

4 Neighbourhood selection of non-western ethnic minorities; Testing the own-group effects hypothesis using a conditional logit model

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Abstract: The selective inflow and outflow of residents by ethnicity is the main mechanism behind ethnic residential segregation. Many studies have found that ethnic minorities are more likely than others to move to ethnic minority concentration neighbourhoods. An important question which remains largely unanswered is whether this can be explained by own group effects, including own group preferences, or by other neighbourhood factors. We use unique longitudinal register data from the Netherlands, which allows us to distinguish between different ethnic minority groups and to simultaneously take into account multiple neighbourhood characteristics. This allows us to test own group effects; the effect of the share of the own ethnic group on neighbourhood selection, while also taking into account other neighbourhood characteristics such as the housing market composition. Using a conditional logit model we find that housing market constraints can partly explain the moves of ethnic minorities to minority concentration neighbourhoods. Also own-group effects are found to be important in explaining neighbourhood selection. There are, however, important differences between ethnic minority groups. While these effects together explain why Surinamese and Antilleans move to minority concentration neighbourhoods, Turks and Moroccans are still found to move to concentration neighbourhoods of minorities other than their own ethnic group.

Keywords: segregation, neighbourhood selection, ethnicity, own-group preference, conditional logit

§ 4.1 Introduction

Ethnic residential segregation is caused by the selective mobility of ethnic groups into and out of specific neighbourhoods and in-situ demographic processes regarding fertility and mortality. Selective mobility can be caused by choice but also a lack of choice can cause selective mobility patterns. There is a large body of research on selective outflow from neighbourhoods and especially 'white flight' (see, for example, Feijten and Van Ham, 2009; Pais et al., 2009; Van Ham and Clark, 2009). In this paper we study selective inflow into neighbourhoods, which has received somewhat less attention. Existing research shows that ethnic minority households are more likely than others to move to ethnic minority concentration neighbourhoods (Clark and Ledwith, 2007; Doff, 2010; South and Crowder, 1998). This might be explained by own-group effects: ethnic minorities live among others of their own group because of own group preferences, because they want to live close to ethnic specific facilities, or because of the ethnic specific networks they use to find dwellings. Interestingly, most studies investigating ethnic selective residential mobility look at ethnic minorities as one homogeneous group while in reality this group is often very heterogeneous. While ethnic minorities might have a preference to live among their own ethnic group, it is less likely that they prefer to live among other minorities.

Although many studies find that the native majority is more likely to leave minority concentration neighbourhoods, some of the literature on selective outflow from neighbourhoods is critical with regard to the influence of the ethnic composition of neighbourhoods on decisions to leave. Evidence has been found for the racial proxy hypothesis (Ellen, 2000; Harris, 1999), which states that not the ethnic composition, but correlated neighbourhood characteristics such as a low neighbourhood socio-economic status are responsible for white flight (Lee et al., 1994; South and Crowder, 1997). Also when studying selective inflow into neighbourhoods, the racial proxy hypothesis might be important: ethnic minorities might move to ethnic concentration neighbourhoods not because they prefer to live among ethnic minorities, but because of other correlated neighbourhood characteristics. Ethnic minority households differ from the native majority population in their housing market opportunities and constraints and therefore different neighbourhoods are available and attractive to them (Manley and Van Ham, 2011).

When neighbourhood selection is modelled, most studies test how a range of individual or household characteristics affect the probability to move to a certain type of neighbourhood. These studies have an important limitation; they generally characterise neighbourhoods based on a limited number of characteristics (Hedman et al., 2011). Studies typically model whether households move into a poverty neighbourhood or not (Clark et al., 2006; Logan and Alba, 1993), or into an ethnic concentration neighbourhood or not (Bråmås, 2006; Clark and Ledwith,

2007; Doff, 2010; South and Crowder, 1998). However, in reality the selection of a neighbourhood will depend on multiple neighbourhood characteristics that are assessed simultaneously and in combination (Hedman et al., 2011). This paper uses unique longitudinal register data from the Netherlands and conditional logit models, to investigate neighbourhood selection for different ethnic minority groups. This data and methodology allow us to take into account multiple neighbourhood characteristics simultaneously and thus distinguish the effect of the share of the own ethnic group, other ethnic minority groups and housing market characteristics on neighbourhood selection.

Our approach will advance the current literature in two important ways. First, because we distinguish between the share of the own ethnic group and other ethnic minority groups we can test the own group effects hypothesis; whether own group preferences, networks and facilities can explain the selection of ethnic minorities into minority concentration neighbourhoods. Second, it allows us to take into account other neighbourhood characteristics such as the neighbourhood housing market composition when modelling neighbourhood selection and thus to test for racial proxy effects. Do ethnic minority households choose minority concentration neighbourhoods because of own-group effects, or do they end up in these neighbourhoods because of a lack of choice options? Is their lack of choice explained by a dependence on affordable dwellings which are spatially clustered in ethnic concentration neighbourhoods, or do they also end up in the most concentrated neighbourhoods when housing market characteristics are taken into account? These insights are important for the development of theory on the causes of segregation. There is a fierce debate in the literature on the role of own-group effects on the one hand, and restrictions on the other hand. More insight into these mechanisms will advance our understanding of segregation.

§ 4.2 Literature review and background

Minority ethnic groups are found to be more likely than others to move to ethnic minority concentration neighbourhoods (Brâmă, 2006; Clark and Ledwith, 2007; Doff, 2010; South and Crowder, 1998) and less likely to leave these neighbourhoods (Bolt and Van Kempen, 2010; Feijten and Van Ham, 2009; Pais et al., 2009; Van Ham and Clark, 2009). These patterns of selective mobility lead to segregation. The literature offers several perspectives on the possible mechanisms behind these selective mobility patterns, which will be discussed below.

According to the *preferences perspective*, ethnic residential segregation is caused by ethnic differences in preferences regarding the ethnicity of their neighbours. It is argued that ethnic minority residents prefer to live close to their own ethnic group and therefore select ethnic minority concentration neighbourhoods (Bolt et al., 2008). There has been a lot of research on the advantages of living in an ethnic enclave, which is found to be especially advantageous for new immigrants and ethnic minorities with a low socio-economic status (Musterd et al., 2008; Phillips, 2007). It is argued that minorities move to ethnic enclaves, because they expect benefits from living among co-ethnics, such as opportunities for employment (Logan et al., 2002; Zorlu and Mulder, 2008); a familiar culture (Logan et al., 2002); family ties (Hedman, 2013); social support and a sense of security or belonging (Phillips, 2007). Besides preferences to live close to the own ethnic group, also ethnic specific facilities and shops (Logan et al., 2002) can be a reason for ethnic minorities to move to concentration neighbourhoods of the own ethnic group. Also social networks can influence neighbourhood choice (Logan et al., 2002) as these networks influence people's knowledge and opinions about neighbourhoods (Hedman, 2013) and co-ethnics can provide information about housing opportunities (Bolt, 2001). As social networks are often homogenous – in ethnicity, socio-economic status and residential neighbourhood – the dwellings people find through them are often in concentration areas of their own ethnic group (Kleit and Galvez, 2011). Because the effects of preferences with regard to neighbours or ethnic specific services, and ethnic networks can often not be separated, we group these together and use the term 'own group effects'.

According to the *human capital perspective*, ethnic residential segregation can be explained by ethnic differences in socio-economic status and other personal characteristics (Logan and Alba, 1993; Crowder, 2001). Ethnic minority households in the Netherlands have, on average, lower incomes than natives and therefore fewer opportunities on the housing market (Bolt, 2001). Households who are dependent on the social housing sector can only move to neighbourhoods where social rented dwellings are available. Neighbourhoods with high shares of social rented dwellings will therefore often also be ethnic minority concentration neighbourhoods and ethnic minorities will more often move to these neighbourhoods. This is in line with the racial proxy theory, they move to these neighbourhoods not because of the ethnic composition, but because of housing market constraints.

According to the *stratification perspective*, discrimination on the housing market limits the options for ethnic minorities to move into more desirable neighbourhoods, especially for groups who are stigmatized (Alba and Logan, 1992). Therefore the most desirable neighbourhoods will be majority concentration neighbourhoods (Phillips, 2007). Housing market institutions can have discriminatory effects, and reduce the opportunities of ethnic minorities (South and Crowder, 1998). The role of institutional discrimination in the Netherlands is more limited than in the US. However, also in the Netherlands, lending institutions are found to have less trust in those belonging

to ethnic minority groups, who as a result might have problems getting a mortgage (Aalbers, 2007) and ethnic minorities experience discrimination in the private rented sector (Kullberg et al., 2009). Also the social housing sector can have discriminatory outcomes, if groups with lower language proficiency or lower understanding of the allocation system are less likely to end up in attractive neighbourhoods (Bolt, 2001).

A final explanation why ethnic minority households might move to minority concentration neighbourhoods is because they fear discrimination in majority concentration neighbourhoods. Various researchers show that fear for discrimination or harassment prevented ethnic or racial minorities from moving to better (and 'whiter') neighbourhoods (Bowes et al., 1997; Hanhoerster, 2013; Phillips et al., 2007). Also research in the Netherlands shows that minorities do not want to live in neighbourhoods with mainly native Dutch inhabitants; because they are afraid they won't be accepted there or will not be able to get in touch with their neighbours (Kullberg et al., 2009).

Modelling neighbourhood selection

Most research modelling neighbourhood selection takes into account only one aspect of the neighbourhood, for example, whether households move into a poverty neighbourhood or not, or into an ethnic concentration neighbourhood or not, and estimate the effect of individual and household characteristics on neighbourhood selection (Hedman et al., 2011). Following Hedman and colleagues (2011), we argue that it is important to model the combined effect of multiple neighbourhood characteristics on neighbourhood selection. In our study we are interested in the effect of the share of the own ethnic group and other ethnic minority groups on neighbourhood selection, while controlling for housing market characteristics. The literature offers two alternative modelling strategies.

The first strategy is to use an aggregated model which estimates the number of households from a certain population group that moves into a neighbourhood. Zorlu and Mulder (2008) found that recent immigrants to the Netherlands move to neighbourhoods with high shares of ethnic minorities, and especially high shares of their own ethnic group, also when other neighbourhood characteristics such as the housing market composition are taken into account. The disadvantage of such models is that they do not give insight into neighbourhood selection on the individual level.

A second modelling strategy is to use discrete choice models in which a (moving) household selects one neighbourhood from a choice set of a limited number of alternatives. Discrete choice models have been used before to estimate location choices (Kleit and Galvez, 2011), but mostly on a higher geographical level than neighbourhoods. Various authors estimated the selection of immigrants into

municipalities (Åslund, 2005), metropolitan areas (Liaw and Ishikawa, 2008), provinces (Xu and Liaw, 2006) or states (Bartel, 1989). We know of only few studies which used this strategy to model neighbourhood selection. Sermons (2000), who used a survey on the San Francisco metropolitan area, Ioannides and Zabel (2008), who used data from the National American Housing Survey, and Hedman and colleagues (2011), who used register data from the city of Uppsala in Sweden, include interactions between neighbourhood characteristics and households characteristics and estimate which households are more likely to move to which neighbourhoods. These studies find evidence for neighbourhood reproduction through selective mobility: ethnic minorities move to neighbourhoods with higher shares of ethnic minorities (Hedman et al., 2011; Ioannides and Zabel, 2008) and all ethnic groups avoid neighbourhoods with higher shares of other ethnic groups (Sermons, 2000). Besides ethnic neighbourhood reproduction, these studies also find reproduction of other neighbourhood characteristics: families with children move to neighbourhoods with many families with children and low income households to neighbourhoods with a low average household income. These studies do, however, not investigate whether ethnic minorities more often than others move to neighbourhoods with low average incomes or many families with children, nor whether they still move to neighbourhoods with high shares of ethnic minorities when this would be taken into account. The current study aims to fill this gap by using a discrete choice model to investigate in detail the neighbourhood selection of non-western ethnic minorities.

Ethnic minority groups in the Netherlands

The four largest ethnic minority groups in the Netherlands are Turks (2.4%), Moroccans (2.2%), Surinamese (2.1%) and Antilleans (0.9%). Turkish and Moroccan immigrants originally arrived in the Netherlands as guest-workers, recruited by the government in the 1960s to solve shortages on the labour market. At the time it was thought that these guest workers would return to their home countries, however, many of the guest-workers stayed, and in the 1970s and 1980s the immigrant population increased further because of immigration related to family reunification and family formation. Surinamese and Antilleans in the Netherlands are immigrants from (former) Dutch colonies. After the declaration of independence of Surinam in 1975, large scale immigration of Surinamese to the Netherlands started. Up to 1990, Antilleans came mainly to the Netherlands to follow higher education, however, in more recent years also more underprivileged Antilleans came to the Netherlands to find a job.

Turks and Moroccans have, on average, a lower socio-economic position than Surinamese and Antilleans¹⁵. The socio-cultural distance to the native Dutch population is larger for Turks and Moroccans than for Surinamese and Antilleans, mainly because of the colonial (including language) links of the latter two groups. Surinamese and Antilleans more often have contact with native Dutch and adhere to more similar cultural values compared to Turks and Moroccans (Dagevos et al., 2007). Research on perceived ethnic hierarchies or preferences in the Netherlands, shows that all ethnic groups are most positive about their own ethnic group, followed by native Dutch. For native Dutch and Antilleans, Surinamese are the highest valued minority out-group, while Turks and Moroccans prefer each other over Surinamese and Antilleans (Hagendoorn, 1995; Gijsberts and Vervoort, 2007).

Neighbourhood selection of ethnic minorities in the Netherlands

The main question in this study is what explains the moves of ethnic minorities to ethnic minority concentration neighbourhoods. We have discussed three competing theoretical frameworks, and most likely, a combination of these perspectives will apply, but different theoretical perspectives might be important for different ethnic groups. The three theoretical perspectives, in combination with the Dutch context as described above, have led us to formulate a number of expectations with regard of the roles of the share of the own ethnic group, the share of other ethnic groups, and housing market characteristics in explaining neighbourhood selection.

Turks, Moroccans, Surinamese and Antilleans are most positive about their own ethnic groups, but prefer native Dutch people over other minority groups. Based on the *preferences perspective*, we can therefore expect a positive effect of the share of the own ethnic group on neighbourhood selection, but no positive effect of the share of other ethnic minorities.

Turks, Moroccans, Surinamese and Antilleans have on average a lower socio-economic position than native Dutch people, and will therefore be more dependent on affordable dwellings. Based on the *human capital perspective* we expect that the ethnic composition of neighbourhoods no longer affects neighbourhood selection

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Non-western minorities in the Netherlands have a lower average standardized net household income (17.100 euro) compared to the native Dutch population (24.100 euro). Moroccans (16.200 euro), Turks (16.400 euro) and other non-western minorities (16.700) have lower incomes than Antilleans (17.200) and especially Surinamese (19.200 euro). Also the share of unemployed is much higher among non-western minorities (12,6%) than among the native Dutch population (4,5%). Moroccans (14,6%) and other non-western minorities (13,8%) are most often unemployed, followed by Antilleans (12,5%), Turks (11,3%) and Surinamese (10,4%). (source Netherlands Statistics, numbers for 2010).

once housing market characteristics are taken into account; the neighbourhood ethnic composition is a proxy for affordable dwellings in the neighbourhood.

According to the *stratification perspective*, discrimination or fear of discrimination causes ethnic minorities to move to minority concentration neighbourhoods. Based on the stratification perspective, we expect to find a positive effect of the overall share of ethnic minorities in a neighbourhood on neighbourhood selection, even when the share of the own ethnic group and the neighbourhood housing market characteristics are taken into account. Because of their large cultural distance from the native majority and their low position in the ethnic hierarchy, we expect Turks and Moroccans to be more likely than Surinamese and Antilleans to experience or fear discrimination and therefore to move to minority concentration neighbourhoods.

The effect of neighbourhood characteristics might differ for low and high income ethnic minority households. In the models this can be made operational by including interaction effects between household income and neighbourhood characteristics. If neighbourhood selection is explained by own group preferences, high income minorities, who have more options on the housing market, will be most successful in moving to own group concentration neighbourhoods. However, especially low income minorities will benefit from living close to co-ethnics and ethnic facilities in an ethnic enclave and be dependent on co-ethnic networks in their housing search. If these mechanisms are important, especially low income minorities will move to own group concentration neighbourhoods. By including interaction effects between income and the share of the own group we can test whether own-group preferences or other own-group effects such as networks and services explain neighbourhood selection.

According to the human capital perspective, especially low income minorities will move to minority concentration neighbourhoods, but only because they more often move to neighbourhoods with affordable dwellings. We thus expect that once we take into account that low income minorities move to neighbourhoods with affordable dwellings, the interaction effect between individual income and the neighbourhood ethnic composition will disappear.

As stated above we expect that according to the stratification perspective ethnic minorities move to minority concentration neighbourhoods because of discrimination. Discrimination might especially affect neighbourhood selection of higher income ethnic minority households. Logan and Alba (1993) called this the strong version of the stratification perspective; ethnic minorities have lower location returns from a high income than the majority. Where majority households will be able to move to less ethnically concentrated neighbourhoods if their income increases, this effect is less strong for minorities. Once we take into account that low income households move to affordable neighbourhoods, we thus expect to find a positive interaction between household income and the share of ethnic minorities in the neighbourhood.

§ 4.3 Data and methods

We use longitudinal register data from the Social Statistical Database (SSD) from Statistics Netherlands. The SSD data is unique because it covers the entire 1999-2010 Netherlands population, allowing researchers to follow individuals over a long period of time and to select households who moved. The data includes geo-coded residential histories, allowing researchers to link in neighbourhood characteristics. The size of the dataset makes it possible to focus on a very specific group: ethnic minority households who moved within the Utrecht urban region, and to distinguish different ethnic groups within this larger group to test for own-group effects.

We needed a study area that functions as one housing market to ensure that in theory all neighbourhoods in this area are part of the choice set of households. We also wanted an area with a good representation of all main ethnic minority groups in the Netherlands, and with a large variation of neighbourhoods. The Utrecht urban region meets these criteria. The region consists of the city of Utrecht (the fourth largest city in the Netherlands with 322,000 inhabitants), and the surrounding suburban municipalities (adding up to a total of 647,000 inhabitants). Most residential mobility occurs within the urban region. The social housing sector in the region uses a choice based letting system which allows applicants to bid on dwellings all over the urban region. Social housing comprises 33% of the housing stock in Utrecht, 14% of the dwellings are private rented dwellings and 52% of the dwellings are owner-occupied. Within the urban region of Utrecht the demand for housing is high, which results in high dwelling prices and high rents in the private sector and long waiting times in the social rented sector. There is a large variety in neighbourhood types with regard to concentrations of various ethnic minority groups, dwelling prices, waiting times for social housing and tenure composition. The share of non-western ethnic minorities in Utrecht is with 16% somewhat lower than in the three largest cities in the Netherlands, but higher than in most other cities.

Within the Utrecht urban region we identify 252 neighbourhoods (buurten in Dutch) based on municipal definitions. Neighbourhoods defined this way are more in line with what people perceive as their neighbourhood than other types of administrative units available in the Netherlands, such as postal code areas. We had to exclude 37 neighbourhoods because of missing data¹⁶, which left us with 215

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These neighbourhoods had missing data on average dwelling value. Average dwelling value is not provided for neighbourhoods with very few residential dwellings such as rural areas or business parks. The excluded neighbourhoods are different from the included areas, as they are generally low density non-residential areas with a slightly lower share of non-western minorities compared to the included neighbourhoods. The exclusion of these neighbourhoods might bias the results, however, as only a very small share of the moving households moves to an excluded neighbourhood, the possible bias will be very small.

neighbourhoods which on average have 2,700 inhabitants and an average size of 1.5 square kilometre. The neighbourhood size varies from neighbourhoods with no more than 150 inhabitants to neighbourhoods with 10,000 inhabitants, and includes large low density suburban areas and dense inner-city areas of only half a square kilometre. Neighbourhoods are generally homogeneous with regard to building period and building type.

For our analysis, we select all household heads¹⁷ who lived in the Utrecht urban region on the first of January 2010 and who had moved within this region after the first of January 2006¹⁸. This results in the selection of 80,043 household heads, of which 13,137 (16%) are non-western ethnic minorities. Because of missing data for 37 neighbourhoods we had to exclude 345 households who moved to these neighbourhoods. So we are left with 12,792 non-western ethnic minority households (2,254 Turkish, 4,231 Moroccan, 1,867 Surinamese, 791 Antillean and 3,649 other non-western ethnic minority households)¹⁹. For these 12,792 moving ethnic minority households, we model the selection of their destination neighbourhood (their neighbourhood on 1-1-2010). We assume that these households selected their destination neighbourhood from a choice set of all 215 neighbourhoods within the Utrecht urban region. In reality, some households might have considered moving out of the urban region, while others might only have considered a subset of neighbourhoods within the region. However, as most households have considered various neighbourhoods within the Utrecht urban region and selected their destination neighbourhood based on a comparison of these neighbourhoods, we can assume that all neighbourhoods within the urban region are part of the choice set²⁰.

To model neighbourhood selection we use a conditional logit model (CLM)²¹. A conditional logit model estimates the probability that household *i* selects neighbourhood *j* from a choice set of *J* neighbourhoods. A conditional logit model is consistent with the microeconomic theory of utility maximisation; households select

17 To determine the ethnicity of the household we only use the ethnicity of the head of the household. In the remainder of the article we use the term households although we only look at household heads. Minority-majority households will not have a strong disruptive impact on our outcomes and the number of mixed minority-minority households is very small, therefore this choice will not have a strong impact on our results.

18 The 2010 data is the most recent. We focus on households who moved between 2006 and 2010 because we need a reasonably large number of moving households per ethnic group.

19 For comparison reasons (see Figure 4.1) we also include the 57,353 native Dutch and 7,605 western minority households who moved within the Utrecht urban region between 2006 and 2010.

20 For households who moved from elsewhere to the Utrecht urban region, we cannot assume that they only considered all neighbourhoods within the Utrecht urban region, therefore we excluded these households.

21 The description of the Conditional Logit Model is adapted from Hedman et al., 2011.

the neighbourhood with for them the highest utility. The utility of a neighbourhood to a household is calculated as neighbourhood characteristics times parameters plus an error term (Hoffman and Duncan, 1988; McFadden, 1974). If we assume that this error term is identically and independently extreme value distributed across neighbourhoods, the probability that household i chooses neighbourhood j , thus that the utility of neighbourhood j to household i is higher than the utility of all other neighbourhoods, can be calculated with a conditional logit model. Thus, let P_{ij} denote the probability that household i will choose neighbourhood j , based on the characteristics of the of the j^{th} neighbourhood (N_j), and the characteristics of the other neighbourhoods in the choice set (N_k). Following Hoffman and Duncan (1988), the conditional logit model is written:

$$P_{ij} = \frac{\exp(\beta N_j)}{\sum_{k=1}^J \exp(\beta N_k)} \quad (1)$$

Thus for every household i the probability of selecting neighbourhood j is estimated as a function of the characteristics of that neighbourhood in comparison with all other neighbourhoods in the choice set. Because the selection is modelled *within* a household, the household characteristics do not vary between neighbourhood options. Thus, in order to include household characteristics in the model, they must be interacted with neighbourhood characteristics. This can be included in equation 1 by letting X_i denote the characteristics of the i^{th} household.

$$P_{ij} = \frac{\exp(\beta N_j X_i)}{\sum_{k=1}^J \exp(\beta N_k X_i)} \quad (2)$$

We measure neighbourhood characteristics for 2006 (denoted by $t-1$ in equation 3), so before the actual move took place. This is important to avoid that the characteristics of the moving household influence the neighbourhood characteristics. Household income is measured for 2010 because the characteristics of the moving household are only known after the move (for example, when two singles form a couple with two incomes, the joint income determines the selection of dwelling and neighbourhood). The probability that the i^{th} household will choose the j^{th} neighbourhood, or in other words, will live in neighbourhood j at time t , is thus written:

$$P_{ijt} = \frac{\exp(\beta N_{j,t-1} X_{it})}{\sum_{k=1}^J \exp(\beta N_{k,t-1} X_{it})} \quad (3)$$

This equation represents choice probabilities under the assumption that the error terms are identically and independently extreme value distributed. It is unlikely that the error terms are independent across all neighbourhoods; adjacent neighbourhoods or neighbourhoods within the same municipality might share unobservable characteristics that have an impact on their attractiveness to ethnic minority

households. A nested logit or generalised extreme value (GEV) model could take spatial correlation in error terms into account (Chen et al., 2009, see also Ioannides and Zabel, 2008). However, these models require researchers to specify the form of spatial correlation, while the true form of the correlation pattern is unknown (Sener et al., 2011). As we have no theoretical or empirical assumptions on the form of spatial correlation, we use a more simple conditional logit model. Although we acknowledge that spatial correlation might also occur in our data, since we only use internal neighbourhood characteristics and no neighbourhood accessibility measures that are by definition spatially correlated (Chen et al., 2009), we expect the impact of spatial correlation on our modelling outcomes to be limited.

Table 4.1 provides the summary statistics of the neighbourhood characteristics in 2006. Besides neighbourhood characteristics, we also include a dummy variable for low household income in our models to estimate if there are differences in neighbourhood sorting between high and low income households²².

	MEAN	STD. DEVIATION	MINIMUM	MAXIMUM
Number of available dwellings*	968.4	1022.9	7	4872
Percentage of social rented dwellings	28.9	24.3	0	100
Percentage of private rental dwellings	14.3	11.8	0	92
Percentage new dwellings (built after 2000)	13.8	25.3	0	100
Average dwelling value (x1000)	251.9	123.7	123	1032
Percentage couples	27.5	6.7	10	51
Percentage households with children	32.6	13.9	4	64
Percentage non-western minorities	11.7	12.1	0	79
Percentage Turks	1.8	3.1	0	21
Percentage Moroccans	4.2	6.8	0	47
Percentage Surinamese	2.1	1.6	0	10
Percentage Antilleans	0.7	0.5	0	2
Percentage other non-western minorities	3.0	2.1	0	12
Percentage Moroccans + Turks	6.0	9.5	0	68
N = 215				

TABLE 4.1 Descriptive statistics of neighbourhoods in 2006

* This is the number of dwellings that have become available in a neighbourhood. This is calculated as the total number of household heads who moved to a neighbourhood between 1-1-2006 and 1-1-2010.

Source: Own calculations based on SSD (made available by Statistics Netherlands) and Statistics Netherlands neighbourhood data

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Low income households are defined as the 30% lowest income households in 2010 based on the income distribution on the national level. Of the moving households, 40% of the Turks, 40% of the Moroccans, 36% of the Surinamese, 42% of the Antilleans and 48% of the other non-western minorities are classified as having a low household income.

§ 4.4 Results

In our analyses we focus on households who moved within the Utrecht urban region between 2006 and 2010. Figure 4.1 shows for all moving households and by ethnic group, the share of non-western ethnic minorities in their destination neighbourhood. Native Dutch households who moved within the Utrecht urban region selected neighbourhoods with the lowest shares of non-western ethnic minorities (15%). Also western minority households selected neighbourhoods with few non-western ethnic minorities (16%). Non-western ethnic minority households, and especially Turkish and Moroccan households, moved to neighbourhoods with higher shares of non-western ethnic minorities. Interestingly, Figure 4.1 shows that ethnic minority households do not necessarily select neighbourhoods with high shares of their own ethnic group. Turkish households moved to neighbourhoods with a relatively high share of Moroccans and Surinamese, even higher shares than in the destination neighbourhoods of Moroccan or Surinamese households themselves. Not only the share of the own ethnic group, but also the share of other non-western ethnic minorities is high in the destination neighbourhoods of non-western minorities. Therefore concentrations of ethnic minorities are reproduced through residential mobility.

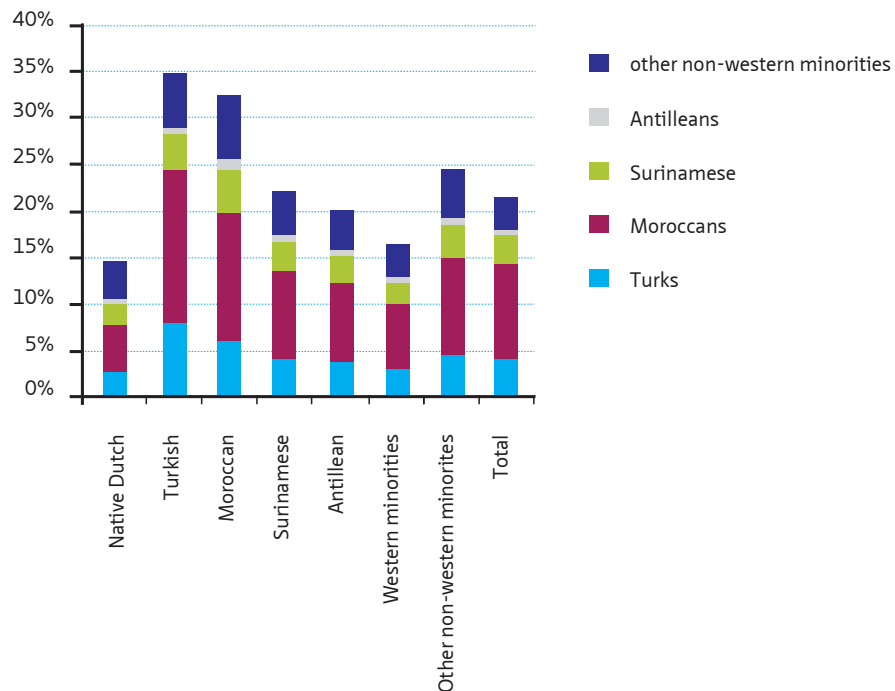


FIGURE 4.1 Share of non-western minorities in the destination neighbourhood of moving households, by ethnic group (N=77,763)

The fact that non-western minorities, and especially Turks and Moroccans, move to neighbourhoods with high shares of non-western minorities might be explained by other neighbourhood characteristics such as dwelling types or prices. Our data shows that compared to native Dutch households, all non-western minority groups, and especially Turks and Moroccans, move to neighbourhoods with higher shares of social housing and lower dwelling values. An important question is whether housing market constraints can explain why non-western ethnic minority households select minority concentration neighbourhoods. We will investigate this further using conditional logit models.

Explaining neighbourhood selection of non-western minorities

Table 4.2 shows the results of five conditional logit models which estimate which neighbourhood characteristics determine that a neighbourhood is selected out of a choice set of all neighbourhoods. Model 1 shows that non-western minorities move to neighbourhoods with high shares of non-western minorities. A 1 percent point increase in the share of non-western minorities leads to a 4% ($\exp(0.036)=1.04$) increase in the odds of a neighbourhood being selected. This indicates that the most ethnically concentrated neighbourhoods (80% non-western minorities) are 17 times (1.04^{80}) more likely to be selected than neighbourhoods with no non-western minorities. Thus, although the parameters seem small, ethnic minority concentration has a substantial effect on neighbourhood selection. In model 2 we distinguish between the share of the own ethnic group and the share of all other non-western minorities in the neighbourhood. Especially the own group has a strong positive effect on neighbourhood selection (1 percent point increase in the share of the own group leads to 7% ($\exp(0.069)=1.07$) increase in the odds of selecting the neighbourhood), but also non-western minorities other than the own group have a positive effect on neighbourhood selection (1 percent point increase in the share of other non-western minorities leads to 2% ($\exp(0.024)=1.02$) increase in the odds). We performed an F-test based on the change in the log likelihood between the 0-model and model 1 and 2, and both model 1 and model 2 are a significant improvement compared to the 0-model²³. In model 3 we take into account housing market and household composition variables. Non-western minorities select neighbourhoods with high shares of (social and private) rented dwellings, low dwelling values, high shares of new dwellings and many couples and families with children. The effects of housing market characteristics are much smaller than the effects of ethnic composition.

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The F-statistic is calculated as -2 times the change in log likelihood and distributed Chi-square with the total number of added parameters as degrees of freedom. For model 1, $F=17914$, $df=1$ and $p<0.001$, thus model 1 is a significant improvement compared to the 0-model. For model 2, $F=18000$, $df=2$ and $p<0.001$, thus also model 2 is a significant improvement compared to the 0-model.

A neighbourhood with only social rented dwellings has a 4 times ($\exp(100 \cdot 0.014)$) higher odds of being selected than a neighbourhood with only owner occupied dwellings. Adding these variables to the model strongly reduces the effect of non-western minorities other than the own ethnic group on neighbourhood selection and significantly improves the model fit ($F=1838$, $df=6$, $p<0.001$).

	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
	B (SE)	B(SE)	B(SE)	B(SE)	B(SE)
Neighbourhood ethnic composition					
% non-western minorities	0.036 (0.000)**				
% own group		0.069 (0.001)**	0.046 (0.001)**	0.045 (0.002)**	0.048 (0.002)**
% other non-western minorities		0.024 (0.001)**	0.004 (0.001)**	0.000 (0.001)	0.003 (0.001)**
Neighbourhood housing market & household composition					
# available dwellings	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**
% social rented dwellings			0.014 (0.001)**	0.014 (0.001)**	0.012 (0.001)**
% private rental dwellings			0.009 (0.001)**	0.009 (0.001)**	0.010 (0.001)**
% new housing development			0.003 (0.000)**	0.003 (0.000)**	0.003 (0.000)**
average dwelling value			-0.005 (0.000)**	-0.005 (0.000)**	-0.004 (0.000)**
% couples			0.018 (0.002)**	0.019 (0.002)**	0.018 (0.002)**
% households with children			0.013 (0.001)**	0.013 (0.001)**	0.013 (0.001)**
Interaction effects					
% own group*low income household				0.003 (0.002)	-0.007 (0.002)**
% other non-western minorities*low income household				0.009 (0.001)**	0.000 (0.002)
% social rented dwellings*low income household					0.003 (0.001)**
average dwelling value*low income household					-0.003 (0.000)**
Pseudo R-squared	0.1304	0.1310	0.1444	0.1447	0.1454
Log likelihood (0)	-68701				
Log likelihood (β)	-59744	-59701	-58782	-58762	-58711

TABLE 4.2 Conditional logit models of neighbourhood selection of non-western minority households, with standard errors shown in parentheses (N=12,792)

* $p<0.05$; ** $p<0.01$

Source: Own calculations based on SSD made available by Statistics Netherlands and Statistics Netherlands neighbourhood data

In model 4 we investigate how neighbourhood selection differs between high and low income households by including interaction effects between a dummy representing low household income and neighbourhood ethnic composition. Adding the interactions significantly improves the model ($F=40$, $df=2$, $p<0.001$). The interaction

effect between household income and share of the own group is very small, and adding this interaction does not change the main effect of the own ethnic group. This indicates that there are almost no differences between low and high income households in the effect of the own group on neighbourhood selection. Adding the interaction effect between household income and the share of other non-western minorities causes the main effect of non-western minorities other than the own ethnic group to become very small. The interaction effect itself is larger and shows that low income non-western minorities are more likely to move to neighbourhoods with high shares of other non-western minorities.

In model 5 we add interaction effects between household income and housing stock characteristics to control for the fact that low income households more often move to neighbourhoods with many social rented dwellings and lower dwelling values. Including these interactions significantly improves the model ($F=102$, $df=2$, $p<0.001$) and causes the interaction effect between household income and the share of other ethnic minorities to disappear. This shows that housing market characteristics explain why low income households more often move to minority concentration neighbourhoods (with minorities other than their own group). Surprisingly, however, the main effect of the share of non-western minorities other than the own ethnic group increases again, indicating that both high and low income ethnic minority households are likely to move to neighbourhoods with higher shares of non-western minorities other than their own ethnic group. Discrimination or fear of discrimination in majority concentration neighbourhoods might explain this.

Once we take into account that low income households move to affordable neighbourhoods, we find that the interaction effect between household income and the share of the own group becomes significant. Low income households are less likely to move to neighbourhoods with high shares of their own ethnic group than high income minorities. As higher income households have more opportunities on the housing market and therefore more freedom in their neighbourhood choice, their stronger selection into neighbourhoods with high shares of own group members is an indicator that own group preferences are important in explaining neighbourhood selection.

Separate models for four ethnic groups

To get a better understanding of which neighbourhood characteristics explain neighbourhood selection of the different ethnic groups, we estimate separate models for the four largest ethnic minority groups in the Netherlands (see Table 4.3). For each ethnic group we show two models, one without and one with interaction effects. We first discuss the models without interaction effects.

	TURKS		MOROCCANS		SURINAMESE		ANTILLEANS	
	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Neighbourhood ethnic composition								
% own group	0.032 (0.002)**	0.031 (0.002)**	0.024 (0.001)**	0.025 (0.002)**	0.254 (0.016)**	0.296 (0.018)**	0.511 (0.086)**	0.318 (0.115)**
% other non-western minorities	0.081 (0.007)**	0.089 (0.009)**	0.091 (0.005)**	0.107 (0.006)**	-0.001 (0.002)	-0.003 (0.003)	0.003 (0.003)	0.002 (0.004)
Neighbourhood housing market & household composition								
# available dwellings	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**	0.001 (0.000)**
% social rented dwellings	0.002 (0.002)	0.004 (0.002)	0.017 (0.001)**	0.015 (0.001)**	0.007 (0.002)**	0.004 (0.002)*	0.006 (0.003)*	0.006 (0.003)
% private rental dwellings	-0.014 (0.004)**	-0.014 (0.004)**	0.013 (0.003)**	0.013 (0.003)**	0.009 (0.004)*	0.009 (0.004)*	0.006 (0.005)	0.006 (0.005)
% new housing development	0.009 (0.001)**	0.009 (0.001)**	0.001 (0.001)	0.001 (0.001)	-0.003 (0.001)**	-0.003 (0.001)**	-0.002 (0.002)	-0.002 (0.002)
average dwelling value	-0.01 (0.001)**	-0.008 (0.001)**	-0.005 (0.001)**	-0.004 (0.001)**	-0.004 (0.001)**	-0.003 (0.001)**	-0.003 (0.001)**	-0.003 (0.001)**
% couples	0.037 (0.007)**	0.036 (0.007)**	0.056 (0.004)**	0.056 (0.004)**	0.025 (0.006)**	0.025 (0.006)**	0.000 (0.008)	0.000 (0.008)
% households with children	0.000 (0.004)	0.000 (0.004)	0.013 (0.002)**	0.013 (0.002)**	0.017 (0.003)**	0.017 (0.003)**	0.005 (0.005)	0.005 (0.005)
Interaction effects								
% own group*low income		0.000 (0.003)		-0.002 (0.002)		-0.116 (0.027)**		0.436 (0.164)**
% other non-western minorities*low income		-0.023 (0.014)		-0.04 (0.009)**		0.004 (0.004)		0.002 (0.006)
% social rented dwellings*low income		-0.004 (0.003)		0.004 (0.002)		0.007 (0.003)*		-0.001 (0.004)
average dwelling value*low income		-0.006 (0.001)**		-0.003 (0.001)**		-0.003 (0.001)**		-0.001 (0.002)
Log likelihood (0)	-12105		-22723		-10027		-4248	
Log likelihood (β)	-9395	-9381	-18444	-18428	-8819	-8791	-3859	-3853
pseudo R-squared	0.2239	0.2251	0.1883	0.1890	0.1204	0.1232	0.0915	0.0930
N	2254		4231		1867		791	

TABLE 4.3 Conditional logit models of neighbourhood selection for the four largest ethnic minority groups in the Netherlands, with standard errors shown in parentheses

* p<0.05; ** p<0.01

Source: Own calculations based on SSD made available by Statistics Netherlands and Statistics Netherlands neighbourhood data

All ethnic groups move to neighbourhoods with high shares of their own ethnic group²⁴. The effect of a 1 percent point increase of the share of the own ethnic group is largest for Antilleans; 1 extra percent Antilleans in the neighbourhood will increase the odds of selection with 67% ($\exp(0.511)=1.67$). For Surinamese a 1 percent point increase in the share of their own group will increase the odds of selection by 29% ($\exp(0.254)=1.29$) and for Turks and Moroccans the odds of selection increase only 3% ($\exp(0.032)=1.03$) and 2% ($\exp(0.024)=1.02$) respectively. However, the neighbourhoods with the highest concentration of Antilleans within the Utrecht urban region still include only 2% of Antilleans, while the maximum share of Turks and Moroccans is 68%. An Antillean household is 2.8 (1.67^2) times more likely to move to a neighbourhood with the highest concentration of Antilleans than to a neighbourhood with no Antilleans. A Turkish household is 8.6 (1.03^{68}) times more likely to move to a neighbourhood with the highest concentration of their own group than to a neighbourhood with no Turks or Moroccans. Besides moving to own group concentration neighbourhoods, Turks (model 6) and Moroccans (model 8) also move to neighbourhoods with high shares of other non-western ethnic minorities, but this is not the case for Surinamese and Antilleans. The effect of other non-western minorities, that is found in a model with only the ethnic composition of the neighbourhood (not shown) disappears for Surinamese and Antilleans once housing market characteristics are taken into account. Own group effects and housing market constraints are thus important in explaining neighbourhood selection for all four groups. These two together explain why Surinamese and Antilleans move to minority concentration neighbourhoods. However, for Turks and Moroccans, a third perspective is needed to explain their neighbourhood selection. Also when the share of the own group and housing market constraints are taken into account, they are still found to move to neighbourhoods with high shares of non-western minorities other than their own ethnic group. Discrimination on the housing market, or fear of discrimination in majority concentration neighbourhoods, might explain this. F tests show that model 6, 8, 10 and 12 are all significant improvement compared to their respective 0-models.

Models 7, 9, 11 and 13 test whether there are differences between high and low income ethnic minority households in neighbourhood selection by including interaction effects between neighbourhood characteristics and household income. F-tests show that for all four groups the model significantly improves when interaction effects are included. This implies that for all four ethnic minority groups there are significant differences between high and low income households in neighbourhood selection.

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For Turks and Moroccans the correlation between the share of their own group and the share of all other non-western minorities in the neighbourhood was very high (78%), mostly because the correlation between the share of Turks and the share of Moroccans is very high (81%). Therefore it was not possible to include the share of the own ethnic group and the share of other non-western minorities in one model. Therefore we include the total share of Turks and Moroccans as 'own group' and the share of non-western minorities not being Turkish or Moroccan as 'other non-western minorities'.

The main effects of the neighbourhood characteristics do not change when these interactions are included. As could be expected, we find that low income households more often move to neighbourhoods with low dwelling values. Among Surinamese, low income households more often move to neighbourhoods with higher shares of social rented dwellings. Taking this into account, we find differences between high and low income households in the effect of the ethnic composition of the neighbourhood on neighbourhood selection.

For Moroccans and Turks we find that low income households are less likely to move to concentration neighbourhoods of other ethnic minorities than high income households. This is in line with the strong version of the stratification theory (Logan and Alba, 1993), which states that the locational returns of income are relatively low for (stigmatised) minority groups.

For Surinamese and Antilleans we find interaction effects between the share of the own group in the neighbourhood and household income. Although both Surinamese and Antilleans move to neighbourhoods with high shares of their own ethnic group, for Surinamese this effect is strongest for high income households, while for Antilleans this effect is strongest for low income households. For Surinamese this might be explained by strong preferences to live among the own ethnic group; higher income households have more opportunities on the housing market and will therefore be more successful in selecting into the neighbourhood of their preference. The stronger selection of low income Antilleans (which are more often recent immigrants) into own group concentration neighbourhoods can possibly be explained by their higher dependence on co-ethnic networks.

§ 4.5 Conclusions and discussion

This study aims to contribute to a better understanding of the mechanisms behind ethnic residential segregation. This is one of the first studies investigating neighbourhood selection that takes into account multiple neighbourhood characteristics and analyses differences between ethnic minority groups. This allows us to test whether the share of the own ethnic group, housing market characteristics or discrimination are the driving forces of segregation. The descriptive analyses show that ethnic minority households are more likely to move to minority concentration neighbourhoods than others. Using a conditional logit model we estimate if this can be explained by housing market characteristics or by own group effects. We find that housing market constraints play a role in neighbourhood selection for all ethnic minority groups. Ethnic minorities move to neighbourhoods with specific housing

market and household characteristics and this partly explains why they move to minority concentration neighbourhoods. Also the share of the own ethnic group is found to be important in neighbourhood selection for all four minority groups. They all move to own group concentration neighbourhoods, probably because they prefer to live among, or find a dwelling via, members of their own ethnic group or are attracted by facilities directed to their own ethnic group in those neighbourhoods. For Surinamese and Antilleans, neighbourhood selection can be explained by the housing market characteristics and the share of their own group. However, for Turks and Moroccans we find that they move to concentration neighbourhoods of ethnic minorities other than their own ethnic group, also after controlling for the share of their own ethnic group and housing market constraints.

An additional explanation is thus necessary to understand neighbourhood selection of Turks and Moroccans. A first possible explanation is that Turks and Moroccans are discriminated by housing market institutions. The social housing letting system could have discriminatory outcomes if Turks and Moroccans are less likely to end up in (attractive) majority concentration neighbourhoods due to, for example, their low language proficiency. Discrimination on the mortgage market (Aalbers, 2007), or on the private rented market, might also restrict ethnic minorities in their neighbourhood choice. Especially Turks and Moroccans, who have a low position in the ethnic hierarchy might experience such discrimination. A second possible explanation is that Turks and Moroccans choose not to move to majority concentration neighbourhoods because they fear discrimination or exclusion. Turks and Moroccans have a larger cultural distance from the Dutch society than Surinamese and Antilleans, therefore a fear of exclusion might prevent them from moving into majority concentration neighbourhoods. A third possible explanation might be that ethnic differences in personal characteristics affect neighbourhood selection. For example, our data did not contain information on education, but since we know that Turks and Moroccans have a lower educational level than the other ethnic groups, and education affects neighbourhood selection, this might explain why especially Turks and Moroccans end up in concentration neighbourhoods of ethnic minorities other than their own group.

An important contribution of this paper lies in the decomposition of the heterogeneous category of ethnic minorities into separate ethnic groups, which allows us to test the own-group hypothesis. While ethnic minorities might have a preference to live among their own ethnic group, literature on ethnic hierarchies shows that it is unlikely that they prefer to live among other minorities. Decomposition into separate minority groups will allow researchers to gain a better understanding of the causes of ethnic residential segregation as it allows them to distinguish own group effects from other reasons why minorities move to concentration neighbourhoods such as discrimination.

Our research has two limitations. First, because we use register data we do not have insight in the choice process or the locational preferences of households and cannot ask them why they selected their neighbourhood or which neighbourhood characteristics were most important in their decision. Second, we do not take into account personal characteristics other than income. Characteristics such as educational level, language proficiency or residential satisfaction are likely to affect neighbourhood selection but are not available in the register data we use. Also the nature of the modelling strategy we use complicates the inclusion of personal characteristics because they can only be included when interacted with a neighbourhood level characteristic.

The main finding of this study is that own group effects are important in explaining the selection of ethnic minorities into minority concentration neighbourhoods. This is important, as it could indicate that ethnic minority groups voluntarily segregate into concentration neighbourhoods, because they prefer to live among their own ethnic group or close to ethnic specific facilities. Our research also shows that the share of the own ethnic group can only partly explain selection into concentration neighbourhoods; also housing market constraints, and for some groups possibly discrimination, constrain the neighbourhood choice of ethnic minorities and cause them to move to minority concentration neighbourhoods. Although we study the case of the Utrecht urban region in the Netherlands, we expect that also in other urban areas in the Netherlands and beyond, similar effects can be found. Also in other regions ethnic minorities are found to move to minority concentration neighbourhoods. This will be (partly) explained by housing market characteristics as in most cities affordable dwellings are concentrated in neighbourhoods that are often minority concentration neighbourhoods and ethnic minorities have on average lower incomes. Also the effect of the own ethnic group might be similar in other regions as previous research shows that ethnic minorities often prefer to live among, or find a dwelling via, members of their own ethnic group. It will be interesting for future research to investigate in different urban contexts with different ethnic compositions and housing markets for which groups these two mechanisms are sufficient to explain their selection into minority concentration neighbourhoods and for which groups discrimination or fear of discrimination affect neighbourhood selection.

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References

- Aalbers MB. (2007) Place based and race based exclusion from mortgage loans; evidence from three cities in the Netherlands. *Journal of Urban Affairs* 29: 1-29.
- Alba RD and Logan JR. (1992) Assimilation and stratification in the homeownership patterns of racial and ethnic groups. *International Migration Review* 26: 1314-1341.
- Åslund O. (2005) Now and forever? Initial and subsequent location choices of immigrants. *Regional Science and Urban Economics* 35: 141-165.
- Bartel AP. (1989) Where do the new US immigrants live? *Journal of Labor Economics*: 371-391.
- Bolt G. (2001) *Wooncarrières van Turken en Marokkanen in ruimtelijk perspectief*, Utrecht: Koninklijk Nederlands Aardrijkskundig Genootschap.
- Bolt G and Van Kempen R. (2010) Ethnic segregation and residential mobility: relocations of minority ethnic groups in the Netherlands. *Journal of Ethnic and Migration Studies* 36: 333-354.
- Bolt G, Van Kempen R and Van Ham M. (2008) Minority ethnic groups in the Dutch housing market: Spatial segregation, relocation dynamics and housing policy. *Urban Studies* 45: 1359-1384.
- Bowes A, Dar N and Sim D. (1997) Tenure preference and housing strategy: An exploration of Pakistani experiences. *Housing Studies* 12: 63-84.
- BråmÅ Å. (2006) 'White Flight'? The Production and Reproduction of Immigrant Concentration Areas in Swedish Cities, 1990-2000. *Urban Studies* 43: 1127-1146.
- Chen, Chen and Timmermans H. (2009) Historical deposition influence in residential location decisions: a distance-based GEV model for spatial correlation. *Environment and Planning A* 41: 2760-2777.
- Clark W, Deurloo M and Dieleman F. (2006) Residential mobility and neighbourhood outcomes. *Housing Studies* 21: 323-342.
- Clark W and Ledwith V. (2007) How much does income matter in neighborhood choice? *Population Research and Policy Review* 26: 145-161.
- Crowder KD. (2001) Racial stratification in the actuation of mobility expectations: Microlevel impacts of racially restrictive housing markets. *Social Forces* 79: 1377-1396.
- Dagevos J, Schellingerhout R and Vervoort M. (2007) Sociaal-culturele integratie en religie. In: Dagevos and Gijsberts (eds) *Jaarrapport integratie*. Den Haag: SCP, 163-191.
- Doff W. (2010) The significance of self selection for neighbourhood sorting. In: Doff W (ed) *Puzzling neighbourhood effects*. Amsterdam: IOS Press, 121-138.
- Ellen IG. (2000) Race-based neighbourhood projection: a proposed framework for understanding new data on racial integration. *Urban Studies* 37: 1513-1533.
- Feijten P and Van Ham M. (2009) Neighbourhood change... Reason to leave? *Urban Studies* 46: 2103-2122.
- Gijsberts M and Vervoort M. (2007) *Wederzijdse beeldvorming*. In: Dagevos and Gijsberts (eds) *Jaarrapport Integratie*. Den Haag: SCP.
- Hagendoorn L. (1995) Intergroup biases in multiple group systems: The perception of ethnic hierarchies. *European review of social psychology* 6: 199-228.
- Hanhoerster H. (2013) Should I stay or should I go. ENHR. Tarragona.
- Harris DR. (1999) Property Values Drop When Blacks Move in, Because...: Racial and Socioeconomic Determinants of Neighborhood Desirability. *American sociological review*: 461-479.
- Hedman L. (2013) Moving Near Family? The Influence of Extended Family on Neighbourhood Choice in an Intra-urban Context. *Population, Space and Place* 19: 32-45.
- Hedman L, van Ham M and Manley D. (2011) Neighbourhood choice and neighbourhood reproduction. *Environment and Planning-Part A* 43: 1381.
- Hoffman SD and Duncan GJ. (1988) Multinomial and conditional logit discrete-choice models in demography. *Demography* 25: 415-427.
- Ioannides YM and Zabel JE. (2008) Interactions, neighborhood selection and housing demand. *Journal of Urban Economics* 63: 229-252.
- Kleit RG and Galvez M. (2011) The location choices of public housing residents displaced by redevelopment: Market constraints, personal preferences, or social information? *Journal of Urban Affairs* 33: 375-407.
- Kullberg J, Vervoort M and Dagevos J. (2009) *Goede buren kun je niet kopen*, The Hague: SCP.
- Lee BA, Oropesa RS and Kanan JW. (1994) Neighborhood context and residential mobility. *Demography* 31: 249-270.
- Liaw K-L and Ishikawa Y. (2008) Destination choice of the 1995-2000 immigrants to Japan: salient features and multivariate explanation. *Environment and planning. A* 40: 806.

- Logan JR and Alba RD. (1993) Locational returns to human capital: Minority access to suburban community resources. *Demography* 30: 243-268.
- Logan JR, Zhang W and Alba RD. (2002) Immigrant enclaves and ethnic communities in New York and Los Angeles. *American sociological review*: 299-322.
- Manley D and Van Ham M. (2011) Choice-based letting, ethnicity and segregation in England. *Urban Studies* 48: 3125-3143.
- McFadden D. (1974) Conditional Logit Analysis of Qualitative Choice Behaviour. In: Zarembka P (ed) *Frontiers in Econometrics*. New York: Academic Press.
- Musterd S, Andersson R, Galster G, et al. (2008) Are immigrants' earnings influenced by the characteristics of their neighbours? *Environment and Planning A* 40: 785-805.
- Pais JF, South SJ and Crowder K. (2009) White flight revisited: A multiethnic perspective on neighborhood out-migration. *Population Research and Policy Review* 28: 321-346.
- Phillips D. (2007) Ethnic and racial segregation: a critical perspective. *Geography Compass* 1: 1138-1159.
- Phillips D, Davis C and Ratcliffe P. (2007) British Asian narratives of urban space. *Transactions of the Institute of British Geographers* 32: 217-234.
- Sener IN, Pendyala RM and Bhat CR. (2011) Accommodating spatial correlation across choice alternatives in discrete choice models: an application to modeling residential location choice behavior. *Journal of Transport Geography* 19: 294-303.
- Sermons MW. (2000) Influence of race on household residential utility. *Geographical analysis* 32: 225-246.
- South SJ and Crowder KD. (1997) Residential mobility between cities and suburbs: Race, suburbanization, and back-to-the-city moves. *Demography* 34: 525-538.
- South SJ and Crowder KD. (1998) Leaving the 'hood: Residential mobility between black, white, and integrated neighborhoods. *American sociological review* 63: 17-26.
- Van Ham M and Clark WA. (2009) Neighbourhood mobility in context: household moves and changing neighbourhoods in the Netherlands. *Environment and planning. A* 41: 1442.
- Xu L and Liaw K-L. (2006) Initial destination choices of skilled-worker immigrants from South Asia to Canada: Assessment of the relative importance of explanatory factors. *Canadian Journal of Regional Science* 29: 299-320.
- Zorlu A and Mulder CH. (2008) Initial and subsequent location choices of immigrants to the Netherlands. *Regional Studies* 42: 245-264.

