Neighbourhood selection of non-western ethnic minorities. Testing the ‘own-group preference’ hypothesis using a conditional logit model

ENHR 2013 working paper

Sanne Boschman¹ & Maarten van Ham²
OTB Research Institute for the Built Environment, Delft University of Technology, PO Box 5030, 2600 GA Delft, The Netherlands, ¹E-mail: s.e.boschman@tudelft.nl; ²E-mail: m.vanham@tudelft.nl

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 to what extent this can be explained by own group preferences, or by other neighbourhood or housing market factors. By using longitudinal register data from the Netherlands, this study contributes to the literature on neighbourhood selection by ethnic minorities in two ways. First, it investigates neighbourhood selection for different ethnic minority groups, which allows us to test the own-group preference hypothesis. Second, it takes into account multiple dimensions of neighbourhoods where most other studies look at neighbourhoods one-dimensionally. Using a conditional logit model we find that housing market constraints can partly explain the selection of ethnic minorities into minority concentration neighbourhoods. Also own-group preference was found to be important in explaining neighbourhood selection. We found large differences between ethnic groups in the dominant processes. Own-group preferences and housing market constraints together explain why Surinamese and Antilleans select into minority concentration neighbourhoods. However, when these factors are taken into account, Turks and Moroccans are still found to select into concentration neighbourhoods of minorities other than their own ethnic group.

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

Introduction

Segregation along ethnic lines is caused by the selective mobility of members of ethnic groups into and out of specific neighbourhoods and in-situ demographic processes regarding fertility and mortality. Selective mobility related to different opportunities and constraints within the local housing market is the most important factor explaining segregation (Bolt et al., 2002). There is a large body of research on selective outflow from neighbourhoods and especially ‘white flight’. People are found to more often (want to) leave their neighbourhood when the share of ethnic minorities is high or increasing and this is especially the case for members of the white ethnic majority group (Feijten & Van Ham, 2009; Van Ham & Clark, 2009; Pais, South & Crowder, 2009). An important question is whether individuals leave their neighbourhood because of the ethnic composition, which could be an expression of ethnic preferences of discrimination. An alternative hypothesis argues that the ethnic composition is a proxy for other neighbourhood character-
istics such as low incomes and high levels of crime, and that these factors are the real reason of selective residential mobility, where those who are most affluent, often the white majority population, leave deprived neighbourhoods. Most studies find higher probabilities to leave ethnic concentration neighbourhoods, also when other neighbourhood characteristics such as socio-economic status and tenure composition are taken into account (Crowder, 2000; Feijten & Van Ham, 2009; Van Ham & Clark, 2009). However, Lee, Oropesa and Kanan (1994) and South and Crowder (1997) find no influence of the ethnic concentration on neighbourhood outflow once other neighbourhood characteristics are taken into account, that is, they find ethnic concentration was a proxy for other neighbourhood characteristics.

Studies investigating selective inflow into neighbourhoods study the outcomes of neighbourhood choice or selection by households. Studies typically test how a range of individual or household characteristics affect the probability to move to a certain type of neighbourhood. These existing studies have two important limitations (Hedman et al., 2011). The first is that the choice set of alternative neighbourhoods is not taken into account. The choice for a particular (type of) neighbourhood cannot be understood without knowledge about the potential alternatives. The second problem is that such studies generally characterise neighbourhoods based on a limited number of characteristics. Studies typically model whether households move into a poverty neighbourhood or not (Bolt & Van Kempen, 2003; Clark, Deurloo & Dieleman, 2006; Logan & Alba, 1993), or into an ethnic concentration neighbourhood or not (Brama, 2006; Clark & Ledwith, 2007; Doff, 2010; South & Crowder, 1998). The choice of a particular neighbourhood is often much more complicated than this basic conceptualisation allows (Hedman & van Ham, 2011) as multiple neighbourhood characteristics are assessed simultaneously and in combination.

Ethnic minority households are found to be more likely than others to move to ethnic minority concentration neighbourhoods (Clark & Ledwith, 2007; Doff, 2010; South & Crowder, 1998). An important, and so far largely unanswered, question is whether ethnic minorities select into such ethnic concentration neighbourhoods because they prefer to live there, or because other, correlated, neighbourhood characteristics are the real determinants of neighbourhood selection. Also in studies of neighbourhood selection it is important to investigate whether neighbourhood ethnic composition is merely a proxy for other neighbourhood characteristics. Ethnic minority households differ from the native majority in their housing market opportunities and constraints and therefore different neighbourhoods are available and attractive to them. Ethnic minority households often have a low income, and depend on social housing, and as a result the choice set is limited to neighbourhoods where social rented dwellings are available, most of which are also ethnic minority concentration neighbourhoods (Bolt et al., 2002; Manley & van Ham, 2011). Also own-group preferences might explain neighbourhood selection by ethnic minorities. Living close to family, or to others with the same cultural background can have advantages. Most studies however look at ethnic minorities as one homogeneous group while in reality the group of ethnic minorities in most countries is very heterogeneous. To test whether own-group preferences play a role, it is important to distinguish between different ethnic minority groups.

This study will focus on the neighbourhood selection of ethnic minority households and will contribute to the existing literature in two ways. First, it investigates
neighbourhood selection for different ethnic minority groups, which allows us to test the own-group preference hypothesis. We will investigate whether a move to an ethnic minority concentration neighbourhood is explained by the share of the own ethnic group in the neighbourhood, or whether minorities also move to neighbourhoods with high shares of ethnic minorities other than their own ethnic group. Second, this study takes into account multiple dimensions of neighbourhoods where most other studies look at neighbourhoods one-dimensionally. This way we can get more insight in whether ethnic minority households choose minority concentration neighbourhoods, or whether their selection into these neighbourhoods is explained by a lack of choice due to housing market constraints. Our approach allows us to investigate to what extent the causes of residential ethnic segregation differ between groups (see also Bolt & Van Kempen, 2003). We use data from the longitudinal register based Netherlands Social Statistics Database (SSD), which contains the whole Netherlands population. We are one of the first to use a conditional logit model to investigate segregation. This model allows us to investigate the choice of a specific neighbourhood (not a neighbourhood type), while taking multiple neighbourhood characteristics into account.

**Literature review**

Minority ethnic groups are found to be more likely than others to move to ethnic minority concentration neighbourhoods (Brama, 2006; Clark & Ledwith, 2007; Doff, 2010; South & Crowder, 1998) and less likely to leave these neighbourhoods (Bolt & Van Kempen, 2010; Feijten & Van Ham, 2009; Pais, South & Crowder, 2009; Van Ham & Clark, 2009). These patterns of selective mobility lead to ethnic residential segregation. The literature offers several possible perspectives on the causes of segregation, three of which we will discuss in some detail below.

According to the **cultural perspective**, ethnic residential segregation is caused by ethnic differences in preferences. Ethnic minority groups can have preferences to live close to their own ethnic group and therefore select minority concentration neighbourhoods. Especially newly arrived migrants or individuals who are not assimilated in mainstream society of their host country may prefer to live in concentration neighbourhoods of their own ethnic group. In these neighbourhoods, immigrants can find familiar culture, family ties and help in finding a (first) job or dwelling (Logan et al., 2002; Zorlu & Mulder, 2008). Minority concentration neighbourhoods also provide ethnic facilities and shops and protect ethnic minorities from discrimination (Logan et al., 2002).

According to the **human capital perspective**, ethnic residential segregation can be explained by ethnic differences in socio-economic status and other personal characteristics (Logan & Alba, 1993; Crowder, 2001). Ethnic minority households have, on average, lower incomes than natives and therefore fewer opportunities on the housing market (Bolt, 2001; Boschman & De Groot, 2011). Households who are dependent on the social housing sector can only select into 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 into these neighbourhoods. However, they select into these neighbourhood 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 & Logan, 1992). Therefore the most desirable neighbourhoods will be native majority concentration neighbourhoods and ethnic minorities will be less likely to move into such neighbourhoods. Housing market institutions can have discriminatory effects, and reduce the choice set of ethnic minorities (Alba & Logan, 1991; South & Crowder, 1998). For example, lending institutions might have less trust in those belonging to members of ethnic minority groups, who as a result might have problems getting a mortgage (Aalbers, 2006). Private landlords might prefer households from the majority ethnic group and minorities might fear hostility from landlords or neighbours and therefore choose not to live in neighbourhoods where the native population is the majority (van der Laan Bouma-Do ff, 2006). Based on the stratification perspective it can be hypothesised that more ethnic minorities with a high socio-economic status select into ethnic concentration neighbourhoods than can be expected based on their human capital (Logan and Alba, 1993).

*Ethnic minority groups in the Netherlands*

Although the perspectives discussed above offer to some extent competing explanations, it is most likely that a combination of factors explains ethnic residential segregation. However, it can be expected that depending on the ethnic groups, some factors are more important than others (Bolt & Van Kempen, 2003; Logan & Alba, 1993). Research in the United States shows that the stratification perspective applies for the most stigmatised group of Blacks, while for less discriminated groups such as Asians and Hispanics the human capital perspective offers a better explanation for selective migration (Alba & Nee, 1997; Logan & Alba, 1993; South, Crowder & Chavez, 2005).

Also in the Netherlands differences between ethnic minority groups can be expected to lead to different outcomes with regard to neighbourhood selection. The four largest ethnic minority groups in the Netherlands are Turks, Moroccans, Surinamese and Antilleans. Most Turkish and Moroccan immigrants originally arrived in the Netherlands as guest-workers, recruited by the Netherlands 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) Netherlands colonies. After the declaration of independence of Surinam, 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 a lower socio-economic position than Surinamese and Antilleans, they are lower educated and more often unemployed (Dagevos, 2007). Also the socio-cultural distance to the native Netherlands population is larger for Turks and Moroccans than for Surinamese and Antilleans. 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 society 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 outgroup, while Turks and Moroccans prefer each other over Surinamese and Antilleans (Hagendoorn, 1995; Gijsberts & Vervoort, 2007).

These differences in preferences can lead to selective sorting into neighbourhoods based on own ethnic background and the ethnic composition of neighbourhoods. Turks and Moroccans are found to select into neighbourhoods with the highest shares of ethnic minorities. As far as this is due to their low socio-economic position, this can most likely be explained by housing market constraints. Another explanation could be that, because of their large cultural distance from the native majority and their low position in the ethnic hierarchy, Turks and Moroccans are more likely to be avoided by the native majority or to experience discrimination and therefore select into minority concentration neighbourhoods. Also the large cultural distance of Turks and Moroccans to the native population makes it more likely that these groups prefer to live among their own ethnic group and select into minority concentration neighbourhoods for that reason.

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). Manley & Van Ham (2011) use four different neighbourhood types by combining high and low poverty neighbourhoods with high and low ethnic concentration neighbourhoods. They find ethnic minorities to be more likely to move to minority concentration neighbourhoods, to deprived neighbourhoods and especially to neighbourhoods which are both deprived and have a large concentration of ethnic minorities. Using traditional models such as binary or multinomial logit models it is not feasible to allow for more than much more than four outcome categories (neighbourhood types). Following Hedman and colleagues (2011), we argued in the introduction that it is important to model the combined effect of multiple neighbourhood characteristics on neighbourhood selection. In the context of this particular study we are interested in the effect of the ethnic composition of neighbourhoods after controlling for other neighbourhood characteristics. The literature offers two alternative modelling strategies.

The first is to use aggregated models in which the number of households from a certain population group moving into a neighbourhood is estimated (Beckers & Boschman, 2013; Zavodny, 1999; Zorlu & Mulder, 2008). Zorlu & Mulder (2008) found that recent immigrants select into 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 model 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. We know of only three studies which used this strategy (Aslund, 2005; Hedman et al., 2011; Ioannides & Zabel, 2007). Ioannides and Zabel (2007) and Hedman and colleagues (2011) estimate neighbourhood selection and include interactions between neighbourhood characteristics and households characteristics. Thereby they estimate which households are more likely to move to which neighbourhoods. They both find that ethnic
minorities are more likely than others to move to neighbourhoods with higher shares of ethnic minorities, higher income households are more likely to move to high income neighbourhoods and higher educated household heads are more likely to move to neighbourhoods with more higher educated residents. So there is great continuity in neighbourhood reproduction through selective mobility, partly driven by the available housing stock in neighbourhoods. These existing studies do not test whether ethnic minorities more often than others select into neighbourhoods with many low income or low educated inhabitants, or other residents from their own ethnic group. The current study aims to fill this gap by using a conditional logit model to investigate in detail the neighbourhood selection of non-western ethnic minorities in a Netherlands city, and by including multiple neighbourhood characteristics and interactions between individual level and neighbourhood characteristics. The main question to be answered is to what extent a move to an ethnic minority concentration neighbourhood can be explained by the share of the own ethnic group in the neighbourhood, or whether minorities also move to neighbourhoods with high shares of ethnic minorities other than their own ethnic group, and if so, whether this can be explained from housing market constraints.

Data and methods

We used unique longitudinal register data from the Netherlands Social Statistical Database (SSD). The SSD data covers the entire population of the Netherlands, from 1999 – 2010, and consist of a number of linked registers including demographic, socio-cultural, and socio-economic characteristics of the population. The whole residential histories of the SSD population are geo-coded and this allows researchers to enrich the data with neighbourhood characteristics and to reconstruct neighbourhood histories of individuals. For this study we selected ethnic minority households who moved within the Utrecht urban region. Utrecht is the fourth largest city in the Netherlands, the urban region consists of the city of Utrecht and surrounding suburban municipalities. Within the Utrecht urban region we identified 252 neighbourhoods (buurten in Dutch). We had to exclude 37 neighbourhoods because of missing data\(^1\), which left us with information on 215 neighbourhoods which on average have 2,700 inhabitants.

We selected all household heads\(^2\) who lived in the Utrecht urban region on the first of January 2010 and who had moved within the Utrecht urban region after the first of January 2006. This resulted in the selection of 80,043 household heads, of which 13,137 (16\%) were classified as non-western ethnic minorities. Because of missing data for 37 neighbourhoods we also had to exclude\(^3\) households who had moved to these neighbourhoods (345 of the 13,137 moving non-western minority households). Based on these selection our research population consisted of 12,792 non-western ethnic minority house-

\(^1\) These neighbourhoods had to few dwellings (in 2006) to compute the average dwelling value.
\(^2\) To determine the ethnicity of the household we used the ethnicity of the head of the household. We did not consider the ethnic background of the other household members nor whether and when they moved. In the remainder of the article we use the term households although we only looked at household heads.
\(^3\) The excluded neighbourhoods will be different from the included neighbourhoods. We believe that the potential bias arising from this is limited, because the number of excluded households is small. We also estimated models on a higher spatial level (a choice set of 37 districts), including all households and the results were qualitatively similar to the ones presented.
holds (2,254 Turkish, 4,231 Moroccan, 1,867 Surinamese, 791 Antillean and 3,649 other non-western ethnic minority households).

To model neighbourhood selection we used a conditional logit model (CLM) \(^4\) (McFadden, 1974; see also Hoffman and Duncan, 1988, which includes a comparison to multinomial logit models). Few previous studies have used CLM to investigate residential mobility and neighbourhood selection (notable exceptions are Ioannides and Zabel, 2008; Quillian and Bruch, 2010; Hedman et al., 2011). The CLM is closely related to the generalized multinomial model but where the multinomial model treats neighbourhood selection as a function of household characteristics, the CLM treats neighbourhood selection as a function of the characteristics of the alternatives (potential destinations). The comparison in a CLM is made within rather than between households, as would be the case in a multinomial logit, estimating the probability that household \(i\) will choose alternative \(j\) among a set of alternative neighbourhoods. Thus, let \(P_{ij}\) denote the probability that household \(i\) will choose alternative \(j\), based on the characteristics of the of the \(j\)th alternative \((N_j)\), and given the set of alternatives (the choice set, \(C(i)\)) for the \(i\)th household. The choice of the \(j\)th alternative is related to the other alternatives in the choice set and their characteristics \((N_k)\). Following Hoffman and Duncan (1998), the conditional logit model is written:

\[
P_{ij}(N_j, C(i)) = \exp(\beta N_j) / \sum_{k=1}^{K} \exp(\beta N_k)
\]

The CLM estimates the probability that a household selects a particular neighbourhood (as represented by \(N_j\)) from a choice set of neighbourhoods (as represented by \(C(i)\)), based on neighbourhood characteristics. When modelling neighbourhood choice it is also important to take household characteristics into account. In a CLM, household (or individual) characteristics are invariant across the household’s choice set. Thus, in order to obtain variation on the household level and be able to include household characteristics in the model, they must be interacted with neighbourhood characteristics. We can include this in equation 1 by letting \(X_i\) denote the characteristics of the \(i\)th household.

\[
P_{ij}(N_j, X_i, C(i)) = \exp(\beta N_j X_i) / \sum_{k=1}^{K} \exp(\beta N_k X_k)
\]

We measured 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. Income was measured for 2010 because we used household incomes and the characteristics of the moving household were only known after the move (for example in the case of two singles moving to form a couple with two incomes, the joint income determines the choice of dwelling and neighbourhood). The probability that the \(i\)th household will choose the \(j\)th alternative, or in other words, will live in neighbourhood \(j\) at time \(t\), is thus written:

\[
P_{ijt}(N_{j(i,t)}, X_{k(i,t)}, C(i)) = \exp(\beta N_{j(i,t)} X_{k(i,t)}) / \sum_{k=1}^{K} \exp(\beta N_{k(i,t)} X_{k(i,t)})
\]

\(^4\) The description of the Conditional Logit Model is adapted from Hedman et al., 2011.
Based on the above modelling strategy, for all 12,792 non-western ethnic minority households who moved within the Utrecht urban region between 2006 and 2010, we constructed choice sets consisting of 215 neighbourhoods within the Utrecht urban region. For all these households we know their destination neighbourhood (their neighbourhood on the first of January 2010), and we assumed that they choose their destination neighbourhood from a choice set of all neighbourhoods within the Utrecht urban region. Of course some households might have considered moving out of the urban region, but because they did not find a suitable dwelling, they moved within the Utrecht urban region. However, as most households have considered different 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 set from which moving households selected their destination neighbourhood\(^5\).

Results

Residential segregation and ethnic neighbourhood selection

The share of non-western ethnic minorities in the Utrecht urban region is 16%. Moroccans form the largest ethnic group, followed by Turks, Surinamese and Antilleans. These ethnic minorities live concentrated in certain neighbourhoods. We calculated the segregation index to measure how uneven ethnic minorities are spread over neighbourhoods within the Utrecht urban region. The segregation index can be interpreted as the share of members of a minority group that has to move to another neighbourhood in order to achieve an even distribution of that minority group over all neighbourhoods\(^6\).

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Share</th>
<th>Segregation index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total non-western minorities</td>
<td>16%</td>
<td>39%</td>
</tr>
<tr>
<td>Turkish</td>
<td>2.5%</td>
<td>54%</td>
</tr>
<tr>
<td>Moroccan</td>
<td>5.8%</td>
<td>51%</td>
</tr>
<tr>
<td>Surinamese</td>
<td>2.3%</td>
<td>29%</td>
</tr>
<tr>
<td>Native Dutch</td>
<td>75%</td>
<td>27%</td>
</tr>
<tr>
<td>Other non-western minorities</td>
<td>4.1%</td>
<td>22%</td>
</tr>
<tr>
<td>Antillean</td>
<td>0.8%</td>
<td>20%</td>
</tr>
<tr>
<td>Western minorities</td>
<td>9.5%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Table 1 shows that in the Utrecht urban region there are large differences in the segregation index of ethnic groups. The segregation index of Turks is the highest (54%), followed by Moroccans (51%). The segregation index of Surinamese (29%) and especially

\(^5\) 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 from the analyses.

\(^6\) The segregation index varies between 0% if a minority group is evenly spread over all neighbourhoods in the urban region and 100% if all members of a minority groups live concentrated in neighbourhoods where no members of other groups live.
Antilleans (20%) and the mixed group of other non-western minorities (22%) is much lower. Also the native Dutch population lives segregated in certain neighbourhoods (index of 27%). Western minorities have the lowest segregation index (11%), of all groups they are most evenly distributed over all neighbourhoods.

In this article we focus on households who moved within the Utrecht urban region between 2006 and 2010. Figure 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 minorities selected neighbourhoods with few non-western minorities (17%). Non-western ethnic minority households, and especially Turkish and Moroccan households, moved to neighbourhoods with higher shares of non-western minorities (more than 30%). Interestingly, Figure 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 minorities is high in the destination neighbourhoods of non-western minorities. Therefore ethnic residential segregation is reproduced through residential mobility.

**Figure 1** The share of non-western minorities in the destination neighbourhood of moving households, by ethnic group (N=77,763)

The effects of housing market characteristics

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. If non-western minorities have different preferences and constraints on the housing market than other groups, they will also select other types of neighbourhoods, which are also minority concentration
neighbourhoods. Figure 2 shows the share of social housing and Figure 3 the average dwelling value in the destination neighbourhoods of moving households, by ethnic group. Compared to native Dutch households, all non-western minority groups, and especially Turks and Moroccans, on average end up in neighbourhoods with higher shares of social housing (Figure 2) and lower dwelling values (Figure 3). Non-western minorities are more often dependant on social housing or inexpensive dwellings, and thereby limited in their neighbourhood choice. An important question is whether these housing market constraints can explain why non-western ethnic minority households select minority concentration neighbourhoods. We will investigate this further using conditional logit models.

**Figure 2** Share of social housing in the destination neighbourhood, by ethnic group (N=77,763)

**Figure 3** Average dwelling value in the destination neighbourhood, by ethnic group (N=77,763)
Explaining neighbourhood selection of non-western minorities

Table 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. We estimated models on data including 12,792 non-western minorities who moved within the Utrecht urban region between 2006 and 2010. Model 1 shows that non-western minorities move to neighbourhoods with high shares of non-western minorities\(^7\). In model 2 we distinguish between the share of the own ethnic minority group in the neighbourhood and the share of all other non-western minorities in the neighbourhood. Especially the share of the own group has a strong positive effect on neighbourhood selection, but also the share of non-western minorities other than the own group still has a positive effect on neighbourhood choice. In model 3 we take into account several neighbourhood level housing market and household composition variables to determine whether housing market constraints explain neighbourhood selection. 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. Adding these variables to the model reduces the effect of non-western minorities other than the own ethnic group on neighbourhood selection from 2.430 to 0.405, however the effect remains significant. This result seems to indicate that the fact that non-western ethnic minorities move to ethnic concentration neighbourhoods is driven by two factors: the share of own group and housing market factors.

Table 2: Conditional logit model of neighbourhood selection of non-western minority households (N=12,792)

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacancies</td>
<td>0.001 **</td>
<td>0.001 **</td>
<td>0.001 **</td>
<td>0.001 **</td>
<td>0.001 **</td>
</tr>
<tr>
<td>%non-western minorities</td>
<td>3.563 **</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%own group</td>
<td>6.888 **</td>
<td>4.560 **</td>
<td>4.454 **</td>
<td>4.832 **</td>
<td></td>
</tr>
<tr>
<td>%other non-western min</td>
<td>2.430 **</td>
<td>0.405 **</td>
<td>0.002</td>
<td>0.345 **</td>
<td></td>
</tr>
<tr>
<td>%social rented dwellings</td>
<td>0.014 **</td>
<td>0.014 **</td>
<td>0.012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%private rental dwellings</td>
<td>0.009 **</td>
<td>0.009 **</td>
<td>0.010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%new housing development</td>
<td>0.003 **</td>
<td>0.003 **</td>
<td>0.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>average dwelling value</td>
<td>-0.005 **</td>
<td>-0.005 **</td>
<td>-0.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%couples</td>
<td>0.018 **</td>
<td>0.019 **</td>
<td>0.018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%households with children</td>
<td>0.013 **</td>
<td>0.013 **</td>
<td>0.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%own group *low inc hh</td>
<td></td>
<td></td>
<td>0.268</td>
<td>-0.716 **</td>
<td></td>
</tr>
<tr>
<td>%other non-western min *low inc hh</td>
<td></td>
<td></td>
<td>0.863 **</td>
<td>0.024</td>
<td></td>
</tr>
<tr>
<td>%social rented dwellings *low inc hh</td>
<td></td>
<td></td>
<td></td>
<td>0.003 **</td>
<td></td>
</tr>
<tr>
<td>average dwelling value *low inc hh</td>
<td></td>
<td></td>
<td></td>
<td>-0.003 **</td>
<td></td>
</tr>
<tr>
<td>Pseudo R-squared</td>
<td>0.1304</td>
<td>0.1310</td>
<td>0.1444</td>
<td>0.1447</td>
<td>0.1454</td>
</tr>
</tbody>
</table>

* p<0.05; ** p<0.01

\(^7\) In all models we control for vacancies; 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.
In model 4 we investigate how neighbourhood selection differs between high and low income households by including interaction effects between household income and neighbourhood ethnic composition. The main effect of the own ethnic group remains qualitatively and quantitatively the same compared to the previous model and the interaction effect shows no differences of this effect between low and high income households. The main effect of non-western minorities other than the own ethnic group is no longer significant, but the interaction effect with low household income is, showing that only low income non-western minorities are more likely to select into neighbourhoods with higher shares of non-western minorities other than their own ethnic group. This could indicate that housing market constraints are behind the selection of neighbourhoods with other non-western ethnic minorities for low income households.

In model 5 we also include interactions between housing market characteristics and household income. As could be expected we find that low income households are more likely to move to neighbourhoods with higher shares of social housing and lower dwelling values. Interestingly, several parameters of other variables change considerably compared to the previous model when including these interactions: low income households are not significantly more likely than higher income households to select into neighbourhoods with high shares of ethnic minorities other than their own ethnic group. Surprisingly, however, the main effect of the share of non-western minorities other than the own ethnic group becomes significant again, so both high and low income ethnic minority households are more likely to select neighbourhoods with higher shares of non-western minorities other than their own ethnic group. This can indicate that these neighbourhoods are attractive to ethnic minorities, or it indicates that there are unmeasured housing market factors which we do not capture with our model which are behind this effect.

We also find that low income households are less likely than high income households to select into neighbourhoods with high shares of their own ethnic group. As higher income households have more opportunities on the housing market and therefore more freedom in their neighbourhood choice, their selection into neighbourhoods with high shares of own group members is an indicator that own group preference is important in explaining neighbourhood selection.

Differences between ethnic groups
To get more insight in the role of household ethnicity and the ethnic composition of the neighbourhood we add interactions between these variables by ethnic group in models 6 and 7 in Table 3. Model 6 shows large differences in the effect of the share of own group residents between the five minority groups included. Especially Antilleans select into neighbourhoods with high shares of their own group, followed by Surinamese, Turks and Moroccans. For other non-western minorities, the share of members of their own (very heterogeneous) group in the neighbourhood has a negative effect on their probability of selection into the neighbourhood.

---

8 We included a low income dummy based on the 30% lowest incomes in the income distribution on national level. Based on this definition about half of the moving non-western minorities within the Utrecht urban region are defined as low income households.
Turks and Moroccans also select into neighbourhoods with high shares of non-western minorities other than their own ethnic group. Surinamese and Antilleans select into neighbourhoods with low shares of non-western minorities other than their own ethnic group, which is consistent with the effect of the share of their own group. In model 7 we also included neighbourhood housing market and household characteristics in the model, but the effects of the share of own and other groups stay qualitatively similar to what we found in model 7.

Table 3 Conditional logit model of neighbourhood selection of non-western minority households including interactions with household ethnicity (N=12,792)

<table>
<thead>
<tr>
<th></th>
<th>Model 6</th>
<th>Model 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacancies</td>
<td>0.001 **</td>
<td>0.001 **</td>
</tr>
<tr>
<td>% own group*Moroccan hh</td>
<td>7.550 **</td>
<td>5.029 **</td>
</tr>
<tr>
<td>% own group* Turkish hh</td>
<td>14.773 **</td>
<td>11.434 **</td>
</tr>
<tr>
<td>% own group* Surinamese hh</td>
<td>33.708 **</td>
<td>26.356 **</td>
</tr>
<tr>
<td>% own group* Antillean hh</td>
<td>77.773 **</td>
<td>58.155 **</td>
</tr>
<tr>
<td>% own group* other non-western hh</td>
<td>-0.006 **</td>
<td>-0.003 **</td>
</tr>
<tr>
<td>% other non-western min* Moroccan hh</td>
<td>12.211 **</td>
<td>8.945 **</td>
</tr>
<tr>
<td>% other non-western min* Turkish hh</td>
<td>12.976 **</td>
<td>9.113 **</td>
</tr>
<tr>
<td>% other non-western min* Surinamese hh</td>
<td>-1.558 **</td>
<td>-1.879 **</td>
</tr>
<tr>
<td>% other non-western min* Antillean hh</td>
<td>-1.222 **</td>
<td>-1.677 **</td>
</tr>
<tr>
<td>% other non-western min* other non-western hh</td>
<td>0.005 **</td>
<td>0.003 **</td>
</tr>
<tr>
<td>% social rented dwellings</td>
<td>0.010 **</td>
<td>0.010 **</td>
</tr>
<tr>
<td>% private rental dwellings</td>
<td>0.005 **</td>
<td>0.005 **</td>
</tr>
<tr>
<td>% new housing development</td>
<td>0.001 *</td>
<td>-0.004 **</td>
</tr>
<tr>
<td>average dwelling value</td>
<td>-0.004 **</td>
<td>0.022 **</td>
</tr>
<tr>
<td>% couples</td>
<td>0.006 **</td>
<td>0.006 **</td>
</tr>
<tr>
<td>% households with children</td>
<td>0.1455</td>
<td>0.1539</td>
</tr>
</tbody>
</table>

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). For each ethnic group we show two models, one without and one with interaction effects. We first discuss the models without interaction effects. All ethnic groups select into neighbourhoods with high shares of their own group, but this is especially true for Antilleans (model 14) and Surinamese (model 12). The results show that own-group preference plays a role in neigh-

---

9 An extra model (not shown) shows that Turks and Moroccans not only move to neighbourhoods with high shares of non-western minorities other than their own group because Turks select into neighbourhoods with many Moroccans and vice versa, also when the share of Turks and Moroccans is taken into account, Turks and Moroccans are found to be more likely to move to neighbourhoods with high shares of other non-western minorities.
bourhood selection. Turks (model 8) and Moroccans\(^\text{10}\) (model 10) also select into neighbourhoods with high shares of other non-western ethnic minorities, but this is not the case for Surinamese and Antilleans. In a model (not shown) with only the ethnic composition of the neighbourhood, Surinamese and Antilleans are found to select into neighbourhoods with high shares of their own group and high shares of non-western minorities other than their own group. When housing market characteristics are taken into account Surinamese and Antilleans are still found to move to neighbourhoods with high shares of their own group, but the effect of the share of other non-western minorities disappears. This indicates that selecting into neighbourhoods with many others is mainly driven by housing market constraints and selecting neighbourhoods with a high share of the own group is probably preference driven.

Turks select into neighbourhoods with few private rented dwellings, many newly built dwellings, low average housing values, and many couples. Moroccans select into neighbourhoods with high shares of (social and private) rented dwellings, low average housing values, and many couples and families with children. Surinamese select into neighbourhoods with high shares of (social and private) rented dwellings, few newly built dwellings, low average housing values, and many couples and families with children. And finally Antilleans select into neighbourhoods with a high share of socially rented dwellings, and a low average housing value. Although the effects of neighbourhood characteristics differ between the ethnic groups, all four groups are found to select into neighbourhoods with low dwelling values.

Models 9, 11, 13 and 15 also include interaction effects between neighbourhood characteristics and having a low household income. Including these interaction effects does not qualitatively affect the effect of the share of own group minorities, or the share of other non-western ethnic minorities. Also the effects of the other neighbourhood characteristics remain qualitatively similar after including interaction effects. The interaction effects show that low income Surinamese households (model 13) are less likely to select into neighbourhoods with a high share of other Surinamese than high income Surinamese households. Antilleans (model 15) with a low income are much more likely to select into a neighbourhood with a high share of their own group compared to high income Antillean households. So although both Surinamese and Antilleans select into 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. According to the ethnic enclave theory, especially for new immigrants, or minorities who do not have a high socio-economic status (yet) it is profitable to live in own group concentration neighbourhoods. This might explain why especially low income Antilleans select into neighbourhoods with high shares of their own ethnic group. No interaction effects between own group and household income were found for Turks and Moroccans.

\(^\text{10}\) For Turks and Moroccans the correlation between the share of their own group in the neighbourhood 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%). It was therefore not possible to include the share of the own ethnic group and the share of other non-western minorities in one model. Therefore we added the shares of Turks and Moroccans and the share of non-western minorities not being Turkish or Moroccan. Turks and Moroccans are culturally relatively close to each other, and therefore might prefer living not only close to their own ethnic group, but also close to members of the other ethnic group, or these two groups might select the same neighbourhoods because of ethnic facilities of use for both groups.
The interaction effect between having a low income and the share of non-western ethnic minority households other than the own group shows that low income Turkish and Moroccan households are less likely than high income households to select into neighbourhoods with high shares of non-western minorities other than Turks and Moroccans\textsuperscript{11}. Also when housing market constraints and the share of Turks and Moroccans are taken into account, Turks and Moroccans are still found to select into neighbourhoods with high shares of non-western minorities other than their own ethnic group, and this effect is stronger for Moroccans with higher incomes. This is in line with the stratification perspective; Turks and Moroccans are discriminated or avoided and therefore have less opportunities to select into majority concentration neighbourhoods.

The interaction effect between the share of socially rented dwellings and having a low household income is only significant for Surinamese (model 13), showing that low income Surinamese households are more likely to select neighbourhoods with a high share of socially rented dwellings. All low income ethnic minorities, apart from Antillean are less likely than high income minorities to move into high income neighbourhoods.

\textsuperscript{11} For Turks this effect is also found, but not significant (p=0.091).
Table 4 Conditional logit model of neighbourhood selection for the four largest ethnic minority groups in the Netherlands.

<table>
<thead>
<tr>
<th></th>
<th>Turks</th>
<th>Moroccans</th>
<th>Surinamese</th>
<th>Antilleans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 8</td>
<td>Model 9</td>
<td>Model 10</td>
<td>Model 11</td>
</tr>
<tr>
<td>Vacancies</td>
<td>0.001 **</td>
<td>0.001 **</td>
<td>0.001 **</td>
<td>0.001 **</td>
</tr>
<tr>
<td>% own group</td>
<td>3.163 **</td>
<td>3.120 **</td>
<td>2.359 **</td>
<td>2.453 **</td>
</tr>
<tr>
<td>% other non-western minorities</td>
<td>8.070 **</td>
<td>8.923 **</td>
<td>9.133 **</td>
<td>10.710 **</td>
</tr>
<tr>
<td>% social rented dwellings</td>
<td>0.002</td>
<td>0.004</td>
<td>0.017 **</td>
<td>0.015 **</td>
</tr>
<tr>
<td>% private rental dwellings</td>
<td>-0.014 **</td>
<td>-0.014 **</td>
<td>0.013 **</td>
<td>0.013 **</td>
</tr>
<tr>
<td>% new housing development</td>
<td>0.009 **</td>
<td>0.009 **</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>average dwelling value</td>
<td>-0.010 **</td>
<td>-0.008 **</td>
<td>-0.005 **</td>
<td>-0.004 **</td>
</tr>
<tr>
<td>% couples</td>
<td>0.037 **</td>
<td>0.036 **</td>
<td>0.056 **</td>
<td>0.056 **</td>
</tr>
<tr>
<td>% households with children</td>
<td>0.000</td>
<td>0.000</td>
<td>0.013 **</td>
<td>0.013 **</td>
</tr>
<tr>
<td>% own group * low income hh</td>
<td>0.031</td>
<td>0.031</td>
<td>0.017 **</td>
<td>0.017 **</td>
</tr>
<tr>
<td>% other non-western min * low inc hh</td>
<td>-2.294</td>
<td>-2.294</td>
<td>-3.979 **</td>
<td>-3.979 **</td>
</tr>
<tr>
<td>% social rented dwellings * low inc hh</td>
<td>-0.004</td>
<td>-0.004</td>
<td>0.004</td>
<td>0.004</td>
</tr>
<tr>
<td>average dwelling value * low inc hh</td>
<td>-0.006 **</td>
<td>-0.006 **</td>
<td>-0.003 **</td>
<td>-0.003 **</td>
</tr>
<tr>
<td>pseudo R-squared</td>
<td>0.2239</td>
<td>0.2251</td>
<td>0.1883</td>
<td>0.1890</td>
</tr>
<tr>
<td>N</td>
<td>2254</td>
<td>4231</td>
<td>1867</td>
<td>791</td>
</tr>
</tbody>
</table>

** indicates statistical significance at the 0.01 level.
Conclusions & Discussion

In this study we tested the own-group preference hypothesis in the context neighbourhood selection of non-western ethnic minorities. We investigated whether a move to an ethnic minority concentration neighbourhood is explained by the share of the own ethnic group in the neighbourhood, or whether minorities also move to neighbourhoods with high shares of ethnic minorities other than their own ethnic group. The segregation literature explains ethnic residential segregation from human capital differences, own group preferences or neighbourhood stratification. However, most likely combinations of these theoretical perspectives act in association with each other (Clark, 1986) and different theoretical perspectives apply to different ethnic groups (Bolt & Van Kempen, 2003; Logan & Alba, 1993).

We estimated models of neighbourhood selection for the four largest ethnic minority groups in the Netherlands; Turks, Moroccans, Surinamese and Antilleans. All four groups are found to select into minority concentration neighbourhoods and into neighbourhoods with both high shares of their own ethnic group and high shares of other non-western minorities.

When neighbourhood housing market and household characteristics are taken into account, for Surinamese and Antilleans, the effect of non-western minorities other than their own ethnic group disappears. Their neighbourhood selection is explained by housing market constraints and own group preferences and when these two are taken into account Surinamese and Antilleans do not select into concentration neighbourhoods of ethnic minorities other than their own ethnic group.

For Turks and Moroccans also the neighbourhood housing market and household composition and the share of members of the own ethnic group play an important role in neighbourhood selection. However, when these are taken into account, Turks and Moroccans are still found to more often move to concentration neighbourhoods of ethnic minorities other than their own ethnic group. This is an indicator that also the stratification perspective applies to Turks and Moroccans; because of discrimination or other impediments on the housing market, they are less successful in gaining access to majority concentration neighbourhoods.

To gain more insight in why ethnic minority groups select into neighbourhoods, we included interactions between neighbourhood characteristics and household income. We find that Surinamese households with high incomes are more likely to select into neighbourhoods with many Surinamese. High income households most likely have more opportunities on the housing market and therefore are more likely to select into a neighbourhood of their preference. The fact that especially high income Surinamese select into concentration neighbourhoods of Surinamese is thus an indicator that Surinamese prefer to live among their own ethnic group.

Also Antilleans select into own group concentration neighbourhoods, but for Antilleans this effect is strongest for low income households. If all Antilleans would prefer to live among their own ethnic group and especially high income households are successful in selecting into their preferred neighbourhood we would have expected the strongest effect for high income households. The ethnic enclave theory, however, expects especially new immigrants or minorities who are not assimilated in society or have a low socioeconomic status to prefer to live close to their own group. While most Turks, Moroccans
and Surinamese have been in the Netherlands for a long term, or are born in the Nether-
lands, a larger share of Antilleans have arrived in more recent years and especially the
more recent immigrants from the Antilles are underprivileged (Nicolaas, Loozen, Anne-
ma, 2012). According to the ethnic enclave theory, especially these new, underprivileged
immigrants will benefit from living in concentration neighbourhoods of their own ethnic
group. This might explain why we find that especially low income Antilleans select into
neighbourhoods with high shares of their own ethnic group.

Moroccan households select into neighbourhoods with high shares of non-western
minorities other than their own ethnic group, and this effect is stronger for high income
households. This is in line with the strong version of the stratification theory. Low in-
come Moroccans select into minority concentration neighbourhoods because of housing
market constraints. They can only select neighbourhoods with inexpensive dwellings and
a large social housing supply and those are often also minority concentration neighbour-
hoods. Higher income Moroccans select into neighbourhoods with higher dwelling val-
ues, which are more often majority concentration neighbourhoods, however, within this
choice set, they select the neighbourhoods with the highest concentration of minorities
other than their own ethnic group. Discrimination on the housing market, or more likely a
fear of discrimination in neighbourhoods where they are the only minority or a lack of
knowledge of dwelling supply in those neighbourhoods (Kullberg et al., 2009) keeps
them out of the majority concentration neighbourhoods.

Ethnic residential segregation is reproduced by neighbourhood selection of ethnic
minority households. Housing market constraints, own group preferences and stratifica-
tion all lead to ethnic minorities selecting into minority concentration neighbourhoods.
Policymakers who try reduce ethnic residential segregation by creating more mixed
neighbourhoods in terms of tenure and prices should realize that housing market con-
straints only partly explain ethnic minority selection into concentration neighbourhoods.

References

exclusion in the Netherlands and Italy. Amsterdam: AMIDSt.

Alba, R. & Logan, J. (1991) Variations on two themes; racial and ethnic patterns in the

Alba, R. & Logan, J. (1992) Assimilation and Stratification in the Homeownership Pat-
terns of Racial and Ethnic Groups. International migration review, 26, 4, pp. 1314-
1341.


Beckers, P. & Boschman, S. (2013) A place like home; Residential choices of highly-
skilled migrants in the Netherlands and the role of local amenities. Paper presented
at International Conference on Population Geographies (27-6-2013).

Utrecht: KNAW/ FRW.


