



# HOUSING SATISFACTION AMONG NATIVE AND IMMIGRANT RESIDENTS IN THE NETHERLANDS

Bachelor project Human Geography & Planning

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## Summary

Housing satisfaction is a critical determinant of the success of housing policies, as it relates directly to individual well-being and quality of life. Nationality is identified as an important predictor of housing satisfaction within different spatial contexts. However, within the spatial context of the Netherlands, a knowledge gap exists regarding this relationship. In this paper, I show that there is a positive relationship between being a native resident and perceived housing satisfaction in the Netherlands. Through analysing data from the WoON 2021 dataset ( $n = 39,134$ ), using descriptive statistics, binary logistic regressions and an interaction model, it is shown that nationality, directly and indirectly, influences housing satisfaction. The interaction model shows that nationality, household size and housing size are important individual predictors of satisfaction. Significant interactions between nationality, household size and housing size further expand the relationships identified. The results help to fill the knowledge gap that exists regarding the nationality–housing satisfaction relationship. Additionally, this study could help housing policymakers to solve this satisfaction discrepancy based on nationality.

## 1. Introduction

Housing satisfaction is an important factor in determining the success of housing policies because it correlates directly to the individual well-being and quality of life of the residents subject to the policies (Aminian, 2019; Jansen, 2014; Kimhur, 2020). Therefore, if housing satisfaction in a specific context is not sufficient, this can be improved by reconsidering the policy framework. The existing literature defines perceived housing satisfaction as the degree to which the current housing situation of an individual meets their expectations and needs (Gifford, 2007; Jiang et al., 2020). Physical, social and economic characteristics of dwellings are key determinants often used to assess housing satisfaction. These include but are not limited to, the size of the dwelling, household size and affordability (Acolin & Reina, 2022; Davoodi & Dağlı, 2019; Dekker et al., 2011).

Perceived housing satisfaction varies based on the nationality of the resident. Previous studies identified two possible explanations for this relationship. The first is that immigrants are familiar with the housing characteristics in their country of origin and may struggle to adjust to the characteristics of different housing markets (Thomsen & Eikemo, 2010). As a result, they label similar homes as more, or less, satisfactory than native residents. The alternative explanation is that immigrant residents are disadvantaged in the local housing market (Fang & Van Liempt, 2021; O'Connor, 2015). Thus, they end up in less satisfactory homes when compared to native residents of otherwise similar characteristics. Both of these explanations rely on the spatial context of studies aiming to connect nationality to housing satisfaction. Residents who are immigrants in one spatial context might be natives in another and vice versa. This results in different, often opposing findings when studies within various spatial contexts are compared. Alvarez & Müller-Eie (2022) found a higher satisfaction among native residents in Norway, while Dekker et al. (2011) found an opposite relationship in their study which focused on multiple cities throughout Europe. It is clear that previous research has so far resulted in contradicting results regarding the general relationship between housing satisfaction and nationality. For the spatial context of the Netherlands, a literature gap exists regarding the relationship between nationality and housing satisfaction.

Similar to other European countries, the Netherlands is currently experiencing a severe housing shortage, which has led to a housing crisis (Costarelli et al., 2019; De Vos & Spoormans, 2022). Because of spatial constraints, the Netherlands has failed to live up to housing demand over the last decade (Geis, 2023). Because the population continues to grow, it is unlikely that this housing shortage will be solved within a short timeframe (CBS, 2023). This population growth

is mainly due to high immigration numbers. While the majority of residents in the Netherlands are natives, an increasing share of the population is of non-Dutch descent. In 2022 net natural population decline was 3,046, while net migration was 227,882 (CBS, 2023). Because of the influx of refugees from Ukraine, net migration was significantly higher than in previous years. However, a trend in net migration accounting for the majority of population growth can be identified. Migration is accountable for on average 70% of the annual total population growth in the Netherlands each year since 2015 (CBS, 2023). This increase in the immigrant population in the Netherlands underlines the current relevance of gathering knowledge on immigrant housing satisfaction, to maintain quality of life standards for all residents of the Netherlands.

This study aims to identify the relationship between nationality and housing satisfaction of residents in the Netherlands to fill the literature gap that currently exists within the spatial context of the Netherlands. Two possible pathways for the relationship between nationality and housing satisfaction are proposed and it is analysed which of the two is more explanatory in the Dutch context. The research question that is used in this study is formulated as *What is the relationship between nationality and housing satisfaction of residents in the Netherlands?* This research focuses on the Netherlands specifically as it is an interesting context with high levels of population density and a high degree of urbanisation. The results of this study provide useful insights that can be used by housing policymakers. Additionally, this study contributes to the literature by analysing the relationship between nationality and housing satisfaction within a new spatial context.

The remainder of this paper is structured as follows. After the introduction, the theoretical framework for the study is presented. Here, relevant theories and readings are synthesized and the conceptual model used in this study is presented and explained in this section. In the methodology section, the research design and methods used in this study are laid out. The data collection and analytic sample are explained in this section too, as well as ethical considerations. Next, the results section presents and analyses the findings of the research. Relevant tables and figures illustrate the results and a clear interpretation of the data is provided. The results section is concluded by interpreting and evaluating the results in the context of relevant literature and theories. Finally, the conclusion section briefly answers the research questions, summarizes the main findings of this study and suggests potential areas for future research. The paper is concluded by discussing the limitations.

## **2. Theoretical framework**

Existing literature provides evidence for the significant relationship between perceived housing satisfaction and overall quality of life in the Dutch context (Aminian, 2019). Housing satisfaction is also directly related to mental health outcomes, as secure, satisfactory housing is a key determining factor for the mental well-being of residents (Huisman & Mulder, 2022; Peck & Kay Stewart, 1985). This is especially true for young adults because people who recently moved out of their parental homes have an increased mental vulnerability (Seo & Park, 2021). It is important to maintain resident housing satisfaction as high as possible to ensure their mental health outcomes remain positive. When residents are satisfied with their housing arrangements, they experience enhanced psychological well-being, lower levels of stress, and improved overall mental health. Satisfactory housing conditions contribute to a sense of safety, privacy, and control. Insufficiently satisfactory housing on the contrary causes lower mental health outcomes. These decreased mental health outcomes cause lower GPAs and a higher probability of dropping out among younger, student residents, and relate to unnecessary levels of stress, lower levels of physical health and even premature death among older generations (Eisenberg et al., 2009; Thornicroft, 2011).

## 2.1. Nationality

Throughout Western contexts, immigrant residents struggle to find satisfactory housing while living abroad, when compared to native residents. When immigrants do find a satisfactory living situation, many struggle to maintain it (Kuzmane et al., 2017; Obeng-Odoom, 2012). The literature proposes two possible pathways for this interaction between nationality and housing satisfaction. The first is the direct pathway, explained by a difference in expectations (Gifford, 2007; Jiang et al., 2020). Because immigrants are accustomed to the housing characteristics in their country of origin, their perception of housing satisfaction differs based on their background (Davoodi & Dağlı, 2019; Thomsen & Eikemo, 2010). Therefore, they label houses of similar characteristics as more/less satisfactory than native residents who are accustomed to the local housing characteristics. The second pathway is the indirect influence of nationality. This pathway explains the discrepancy in housing satisfaction using the different housing situations that natives and foreigners end up in. This causes a significant difference in satisfaction because housing conditions and housing satisfaction are directly related (Peck & Kay Stewart, 1985; Thomsen & Eikemo, 2010; Zhang et al., 2018). Due to the absence of social capital, in this context a sufficient local social network to fall back on for help finding a new home, foreigners are at a disadvantage in their search for satisfactory housing (O'Connor, 2015). Immigrant residents also have significantly less cultural capital, such as knowledge of the local housing market and the ability to speak the native language (Fang & Van Liemt, 2021). The difference that both of these pathways predict diminishes over generations, as they adapt to the local housing market characteristics and social and cultural capital continuously grow over time (Arpino & De Valk, 2018).

## 2.2. Living situation measures

Households that pay more than 30 per cent of disposable income in living expenses experience a living expense burden (Gabriel & Painter, 2020). The households that live under such a living expense burden report significantly lower levels of satisfaction (Acolin & Reina, 2022). Low-income households are disproportionately represented in the group of households living under an expense burden, as well as less satisfied with their housing in general (Ault et al., 2016; Dekker et al., 2011). Immigrants in the Netherlands have lower average income over time when compared to native Dutch residents, meaning that they are less likely to live in affordable homes (De Vuijst & Van Ham, 2017).

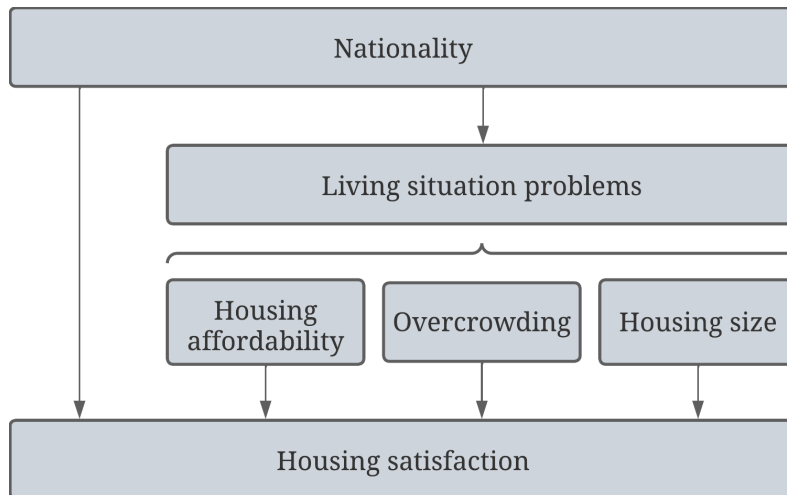
Household size negatively correlates to housing satisfaction (Lee & Parrott, 2010). This is further solidified by Peck & Kay Stewart (1985) who state that a lower ratio of persons per room positively relates to perceived satisfaction. Households without children are most satisfied with their housing situation and households living in multi-household dwellings are least satisfied (Dekker et al., 2011; Kenyon, 2002). Because household size expectations vary between cultural backgrounds, household sizes likely vary between immigrant and native residents (United Nations, 2017).

Housing satisfaction strongly relates to dwelling size (Kabisch et al., 2022). While residents perceive small dwellings as less satisfactory than normal dwellings, large dwellings are evaluated as more satisfactory in the European context. (Dekker et al., 2011). Larger dwellings are more expensive than smaller dwellings and immigrant residents in the Netherlands have lower incomes than natives. Therefore, foreigners are likely to live in smaller homes compared to native residents (De Vuijst & Van Ham, 2017).

## 2.3. Conceptual model

As shown in my conceptual model (Figure 1), I theorize that nationality influences the housing satisfaction of a resident directly and indirectly. The direct pathway is theorized to be explained by the variance in housing expectations between native and immigrant residents in the

Netherlands (Thomsen & Eikemo, 2010). The indirect pathway starts with the influence of nationality on the living situation that residents end up in due to their inferior social and cultural capital (Fang & Van Liempt, 2021; O'Connor, 2015). The living situation of the resident is operationalized using economic, social and physical housing characteristics. These are housing affordability, overcrowding and housing size respectively. Each of these measures is theorized to individually influence housing satisfaction.



**Figure 1.** Conceptual model of the two pathways between nationality and housing satisfaction.

#### 2.4. Control variables

Previous research has shown that there is a correlation between life course and housing satisfaction, therefore this study adjusts for age (Dekker et al., 2011; Zhang et al., 2018). Other studies show a relationship between neighbourhood satisfaction and residential satisfaction (Boschman, 2018; Peck & Kay Stewart, 1985). Therefore, neighbourhood satisfaction is also controlled for. Finally, tenure type is adjusted for (Colburn & Allen, 2018).

#### 2.5. Hypothesis

Building on the theories provided in the framework the following hypothesis is formulated: *Housing satisfaction is significantly higher for native residents than it is for immigrant residents in the Netherlands.* This difference is expected to be mainly due to the first pathway, the difference in housing expectations due to the cultural background pathway. The living situation pathway is also expected to show a significant relationship, but it is theorized that the cultural pathway is more explanatory of the relationship between nationality and housing satisfaction (Davoodi & Dağlı, 2019; Fang & Van Liempt, 2021; Gifford, 2007; Jiang et al., 2020; O'Connor, 2015; Peck & Kay Stewart, 1985; Thomsen & Eikemo, 2010; Zhang et al., 2018).

### 3. Methodology

#### 3.1. Research method and data collection

To test the hypothesis, this study applied a quantitative analysis based on a secondary dataset. While it would have been possible to collect primary data for the quantitative analysis, all the variables necessary for this study were present in the Woononderzoek Nederland (WoON) 2021 dataset. This dataset consisted of the results of a triannual survey on housing and living conditions in the Netherlands, which the Ministry of Internal Affairs of the Netherlands carries out. The results of the survey form an important basis for the housing policy of the Dutch government. Because of the large sample size ( $n = 46,658$ ) and the high quality of the dataset, this secondary dataset was deemed preferable over the collection of primary data. The most recent WoON data (2021) was presented in June 2022. The dataset was available for free via

DANS/Easy. Registration and approval of this registration were necessary to download and use the dataset. Access to the dataset for the year 2021 was granted for this study.

### 3.2. Analytic sample

The analytic sample used in this study contained all cases in the dataset that did not have missing data. The total number of respondents was 46,658. After cases with missing data in the variables used were excluded ( $n = 7,524$ ), the sample used contained 39,134 cases. Of these cases, the majority were natives ( $n = 35,061$ ), while a smaller sample of immigrants remained ( $n = 4,073$ ). Both of these groups were large enough for statistical analysis.

### 3.3. Data analysis

A combination of descriptive and inferential statistics was used to answer the research question. First, descriptives were run to analyse the proportions and means of each of the variables of interest. Using binary logistic regression models the relationships, and their respective strengths, between nationality, living situation measures and housing satisfaction were then tested, while adjusting for control variables. Finally, an interaction model based on binary logistic regression based on nationality, living situation measures, housing satisfaction, and control variables were computed and analysed to assess whether the cultural pathway or the living situation pathway was more explanatory for the variance in housing satisfaction.

### 3.4. Variables

To make the dependent variable *housing satisfaction* suitable for binary logistic regression, it was recoded to a binary variable. The original categories in this variable were *very satisfied*, *satisfied*, *neither satisfied nor dissatisfied*, *dissatisfied*, and *very dissatisfied*. In the binary variable *very satisfied* and *satisfied*, were considered as satisfied. The remaining three classes were recoded as *not satisfied*. Because the majority of respondents indicated that they were either *very satisfied* or *satisfied* ( $n = 34,352$ ), and only 1,245 respondents indicated that they were *very dissatisfied* or *dissatisfied*, the neutral class was included in the *not satisfied* category, to improve the statistical power of the resulting binary variable.

Next, the key independent variable *nationality* was also computed as a binary variable. Because the relationship between nationality and satisfaction diminishes over generations, only first-generation immigrants were considered as immigrants in this study (Arpino & De Valk, 2018). This was achieved using the original variable *country of birth* consisting of the classes *the Netherlands*, *Western country*, and *non-Western country*. For simplicity reasons, the second and third classes were combined into one class for immigrants. This resulted in a binary *nationality* variable with the classes *native* and *immigrant*.

After this, the variables for living situation measures were created. First, housing affordability was computed using the 30 per cent rule (Gabriel & Painter, 2020). By dividing the ratio variable *gross yearly income* by 12, a variable ratio of *gross monthly income* was created. Then, the ratio variable *net monthly living expenses* was divided by the variable for *gross monthly income*. This resulted in *affordability degrees*. These *affordability degrees* were then used to compute a binary *affordability* variable. Affordability degrees ranging from 0 to 0.3 were counted as *affordable*. The other values for the degree of affordability were counted as *unaffordable*.

Next, the *household size* variable, which consisted of five different classes, *one person household*, *two person household*, *three person household*, *four person household*, and *five or more person household* was recoded into a categorical variable with only three classes. These classes were *one person household*, *two person household*, and *three or more person household*.

Based on the findings of Dekker et al. (2011), which stated that households without children are more satisfied, this class division was chosen. *Three or more person households* were considered households with children, while *one* and *two person households* were considered households without children.

Then, housing *size* was measured using the ratio variable *housing size in m2*. Values for this variable ranged from *10 m2* to *2700 m2*. For the bar chart used to interpret the interaction between *nationality* and *housing size* in section 4.3., a dummy variable was computed based on the mean and standard deviation of *housing size*. This resulted in a three-class categorical variable of *small*, *normal*, and *large* homes. The values associated with these classes were *0-74 m2*, *75-156 m2*, and *156 or more m2* respectively.

Additionally, one of the control variables was recoded based on the theory that it was interpreted from. *Age* was recoded into three groups: *17-34 years old*, *35-64 years old*, and *65 and older*. These values were chosen to most accurately match the stages of the life course (Dekker et al., 2011; Zhang et al., 2018). Neighbourhood satisfaction was recoded to a three-class categorical variable consisting of *dissatisfied*, *neutral*, and *satisfied* for ease of interpretation. *Tenure types* consisted of *social rent*, *private rent*, and *owner-occupied*. This was done by combining a variable that determined whether a resident was a *renter* or an *owner-occupier* and a variable which showed whether a *renter* paid more or less rent than the *rent boundary for social and private rent*. Finally, *house built before or after 1985* determines whether or not a resident is living in a *new* or *old* house.

### 3.5. Ethical considerations

Because this study was based only on secondary data, there is a low risk of ethical issues regarding data collection. The WoON research has been conducted ethically. The researchers stored data anonymously, meaning that the risk of potential harm to respondents is low. The dataset was collected for this study with the consent of the body of government responsible for the distribution of this type of data (Data Archiving and Networked Services or DANS). After permission to use the data was granted, the study did not deviate from the original purpose that was given consent for. Since the dataset was collected, it was continuously stored on a password-protected computer and was never shared with third parties. By providing data accessibility, research ethics were ensured. Both the data collection and analysis processes were clearly explained in the methodology section and no additional research steps were taken.

## 4. Results

### 4.1. Descriptive statistics

Table 1 presents an overview of the difference in proportions for each variable of interest, between native and immigrant residents. While natives ( $n = 35,061$ ) made up the majority of the analytic sample, there were sufficient immigrants ( $n = 4,073$ ) for statistical analysis. The proportion of satisfied residents differed substantially between these groups. For natives, this proportion was .89, and for immigrants, this was .76 (difference:  $-.13$ ,  $p < .001$ ).

The differences between natives and immigrants in living situation measures were also considerable. While three quarters of natives lived in affordable housing, only two-thirds of immigrant residents did (difference:  $-.09$ ,  $p < .001$ ). The proportions of one, two and three person households were fairly evenly distributed at 33 per cent, 32 per cent, and 35 per cent respectively. For native residents, there was a slightly lower 31 per cent one person households proportion (difference  $.02$ ,  $p < .001$ ), a majority of 40 per cent two person households (difference  $-.08$ ,  $p < .001$ ), and a 29 per cent three person households proportion (difference



.06,  $p < .001$ ). The mean housing size was widely different between the two groups. The mean housing size of native households was roughly 20 per cent higher than the mean of the immigrant population, at 127.48 m<sup>2</sup>, and 105.78 m<sup>2</sup> respectively (difference -21.694,  $p < .001$ ).

**Table 1.** Differences of proportions by nationality.

WoON 2021 Respondents in analytic sample (n = 39,134)	Natives (n = 35,061)		Immigrants (n = 4,073)		Difference
	Prop.	SE	Prop.	SE	
Satisfied with housing	.89	.00	.76	.01	-.13***
Living situation measures					
Affordable housing	.75	.00	.66	.01	-.09***
One person household	.31	.00	.33	.01	.02***
Two person household	.40	.00	.32	.01	-.08***
Three or more person household	.29	.00	.35	.01	.06***
Housing size (mean)	127.48	.47	105.78	1.00	-21.694***
Control variables					
Age 17-34	.16	.00	.19	.01	.03***
35-64	.51	.00	.60	.01	.09***
65 and older	.33	.00	.21	.01	-.12***
Satisfied with neighbourhood	.05	.00	.07	.01	.02***
Neither dissatisfied nor satisfied	.10	.00	.13	.01	.03***
Satisfied	.86	.00	.80	.01	-.06***
Social rent	.24	.00	.43	.01	.19***
Private rent	.07	.00	.12	.01	.05***
Owner-occupied	.68	.00	.44	.01	-.24***
House built after 1985	.37	.00	.34	.01	-.03***

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

#### 4.2. Inferential statistics - Binary logistic regressions

Table 2 reports the results of the binary logistic regression models for housing satisfaction. The first model was adjusted for age, neighbourhood satisfaction, tenure type and whether the household lives in an old or new home. This model found a coefficient of .514 for native residents ( $p < .001$ ). In model two, living situation measures were taken into account. This reduced the coefficient of native residents to .468, but it still resulted in a significant relationship between nationality and housing satisfaction ( $p < .001$ ). Along with nationality, two living situation measures showed significant relationships with housing satisfaction. Households that consist of three or more persons, reference one person, had a coefficient of -.259 ( $p < .001$ ). Housing size had a coefficient of .003 ( $p < .001$ ). Therefore, while these variables explained some of the variance in housing satisfaction, nationality remained a statistically significant determinant of housing satisfaction.

It should be noted that some of the control variables in the model had relatively high coefficients. Ages 65 and older (coefficient: .544,  $p < .001$ ), neighbourhood satisfaction (coefficients: .577 & 2.180,  $p < .001$ ), owner-occupation (coefficient: 1.658,  $p < .001$ ), and house built after 1985 (coefficient: .641,  $p < .001$ ) each showed significant relationships with coefficients higher than the coefficient of native residents (.468,  $p < .001$ ). These results suggest that there is a possible relationship between nationality and housing satisfaction, but it should be noted that there are other, more explanatory variables in the model.

**Table 2.** Estimated coefficients from binary logistic regressions measuring the relationship between housing satisfaction and nationality, living situation measures, adjusting for control variables.

Binary logistic regressions	Model 1		Model 2	
	Coef.	SE	Coef.	SE
DV: Housing satisfaction				
Nationality				
Native, ref. immigrant	.514***	.047	.468***	.048
Living situation measures				
Affordable, ref. not affordable			-.026	.042
Household size, ref. one person household				
Two person household			-.029	.045
Three or more person household			-.259***	.052
Housing size in m2			.003***	.000
Control variables				
Age, ref. 17-34 years old				
35-64 years old	-.030	.045	-.062	.046
65 and older	.652***	.052	.544***	.054
Neighbourhood satisfaction, ref. dissatisfied				
Neither dissatisfied nor satisfied	.584***	.063	.577***	.063
Satisfied	2.203***	.055	2.180***	.056
Tenure type, ref. social rent				
Private rent	.014	.054	-.024	.056
Owner-occupied	1.732***	.040	1.658***	.045
House built after 1985, ref. before 1985	.645***	.040	.641***	.041
Constant	-1.400***	.074	-1.504***	.082
* $p < .05$ , ** $p < .01$ , *** $p < .001$	Obs. 39,134		Obs. 39,134	

#### 4.2.1. Discussion of binary logistic regressions

The evidence provided by the binary logistic regressions suggests that there is a possible relationship between nationality and housing satisfaction. The model suggests that native residents might have a relatively higher housing satisfaction when compared to their immigrant counterparts. While this is in line with the findings of Alvarez & Müller-Eie (2022), it contradicts the findings of Dekker et al. (2011). These regressions also suggest that there might be a negative relationship between household size and satisfaction, as well as a positive relationship between housing size and satisfaction. This correlates to what was expected based on the existing literature (Dekker et al., 2011; Kabisch et al., 2022; Lee & Parrott, 2010; Peck & Kay Stewart, 1985). With regards to which of the pathways is most explanatory for the variance in satisfaction, the model only provides vague clues. When living situation measures were taken into account, the coefficient of nationality lowered slightly, suggesting that some of the variance might be explained by the living situation pathway. To determine the impact of both pathways, an interaction model is introduced in the following subsection.

#### 4.3. Inferential statistics – Interactions model

Table 3 presents the  $p$ -values of the variables and interactions included in the binary regression model. This model is built upon binary logistic model 2 by including interactions between nationality and affordability, household size and housing size. The interaction between nationality and housing affordability was not significant ( $p = .217$ ). The other two interactions were significant. Nationality interacted with household size had a  $p$ -value of .004, while nationality interacted with housing size had a  $p$ -value of .006.

**Table 3.** *P*-values of the variables and interactions included in the interaction model.

<b>Variable / interaction</b>	<b>Sig.</b>
Constant	<.001
Nationality (binary)	<.001
Housing affordability (binary)	.249
Household size (3 classes)	<.001
Housing size (ratio)	<.001
Age (3 classes)	<.001
Neighbourhood satisfaction (3 classes)	<.001
Tenure type (3 classes)	<.001
New or old house (binary)	<.001
Nationality * Housing affordability	.217
Nationality * Household size	.004
Nationality * Housing size (ratio)	.006

Table 4 reports the results of a binary logistic regression, which built upon Model 2 in Table 2, by including the interactions between nationality and living situation measures. The Table only included specific interactions which were not marked as redundant by SPSS, to improve readability.

When the interactions were included in the regression model, the coefficient of native residents is higher than it was in Model 2 (.626 vs. .468, both  $p < .001$ ). The coefficients of three or more person household and housing size also increased in this model (-.525 vs. -.259 and .006 vs. .003, all  $p < .001$ ). Two interactions with a significant  $p$ -value were identified: Native \* Three or more person household and *Native \* Housing size (ratio)*. The coefficients identified for each interaction were -.525 for *Native \* Three or more person household* and .006 for *Native \* Housing size (ratio)*. Both of these interactions had a  $p$ -value lower than .01. In Model 3, the control variables remained relatively stable, with little to no change in coefficients and significance levels.

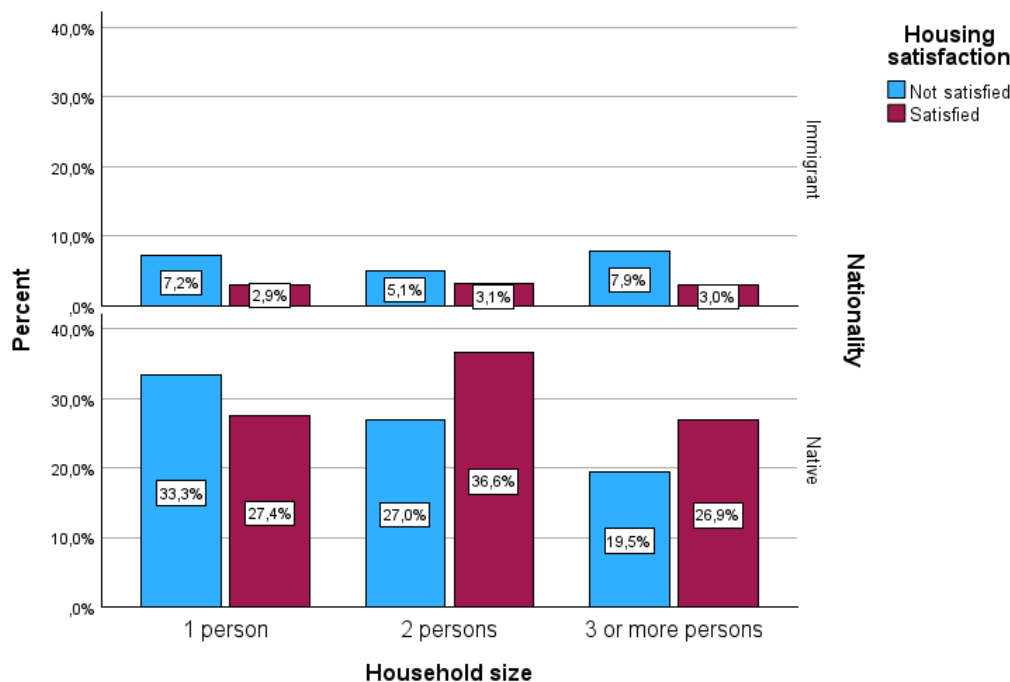
**Table 4.** Estimated coefficients from binary logistic regressions measuring the relationship between housing satisfaction and nationality, living situation measures, interacting nationality with living situation measures and adjusting for control variables.

<b>Binary logistic regression</b>	<b>Model 3</b>	
DV: Housing satisfaction	Coef.	SE
Nationality		
Native, ref. immigrant	.626***	.135
Living situation measures		
Affordable, ref. not affordable	-.127	.096
Household size, ref. one person household		
Two person household	.003	.116
Three or more person household	-.525***	.116
Housing size in m2	.006***	.001
Interactions		
Native * Affordable	-.130	.105
Native * Two person household	.037	.125
Native * Three or more person household	-.337**	.128
Native * Housing size (ratio)	.004**	.001
Control variables		

Age, ref. 17-34 years old		
35-64 years old	-.063	.046
65 and older	.548***	.054
Neighbourhood satisfaction, ref. dissatisfied		
Neither dissatisfied nor satisfied	.579***	.063
Satisfied	2.183***	.056
Tenure type, ref. social rent		
Private rent	-.029	.056
Owner-occupied	1.644***	.045
House built after 1985, ref. before 1985	.640***	.041
Constant	-1.650***	.137
* $p < .05$ , ** $p < .01$ , *** $p < .001$	Obs. 39,134	Obs. 39,134

Figure 2 and Figure 3 are presented to visualize the meaning of the significant interactions between household size, housing size and nationality, relative to housing satisfaction. Because there was a substantial difference in absolute sample sizes of the groups of immigrants and natives, percentages were used to present these findings. The percentages add up to 100 per cent for each satisfaction group. This means that the blue, not satisfied bars collectively count 100 per cent and the red, satisfied bars do the same.

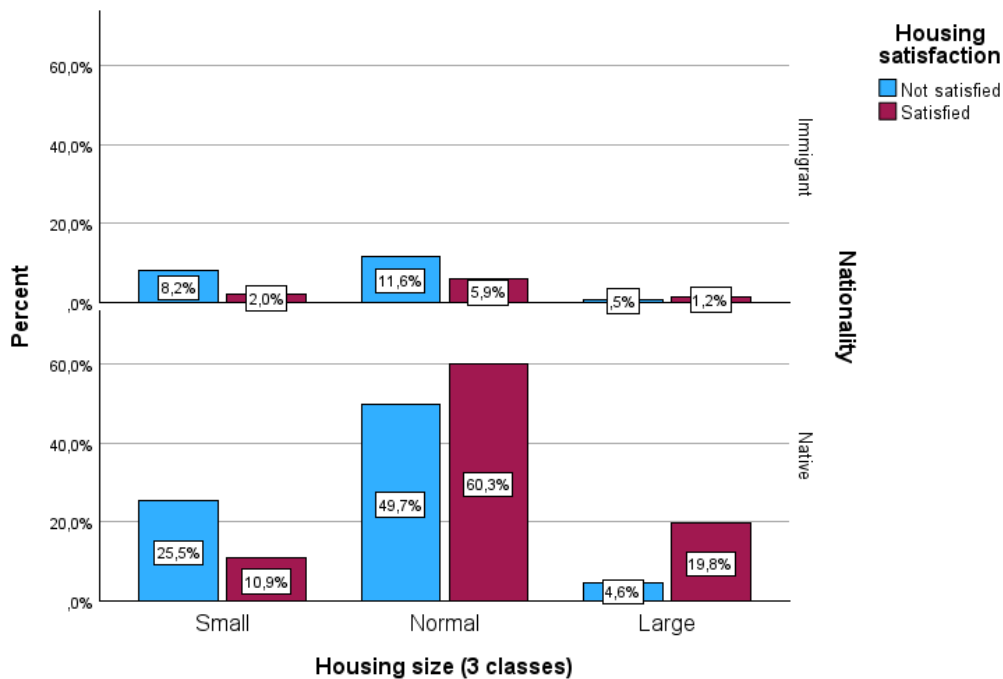
Figure 2 shows that the proportion of not satisfied residents was higher than the proportion of satisfied residents for immigrants for each of the three household sizes (7.2 per cent vs. 2.9 per cent, 5.1 per cent vs. 3.1 per cent, and 7.9 per cent vs. 3.0 per cent respectively). For native residents, this was only true for one person households (33.3 per cent vs. 27.4 per cent). Two, and three or more person households showed larger proportions of satisfied households (27.0 per cent vs. 36.6 per cent and 19.5 per cent vs. 26.9 per cent respectively).



**Figure 2.** Clustered bar charts showing the interaction between nationality and household size, related to housing satisfaction.

Figure 3 reports a similar trend when comparing natives to immigrants. While for immigrant residents the proportion of satisfied respondents was only higher in large home sizes (.5 per cent vs. 1.2 per cent), native residents reported higher proportions of satisfaction in both normal and large home sizes (49.7 per cent vs. 60.3 per cent and 4.6 per cent vs. 19.8 per cent respectively). Immigrants reported a proportion of not satisfied in normal size homes that was

nearly double that of satisfied (11.6 per cent vs. 5.9 per cent). Both nationalities had a higher proportion of not satisfied residents living in small size homes (8.2 per cent vs. 2.0 per cent for immigrants and 25.5 per cent vs. 10.9 per cent for natives).



**Figure 3.** Clustered bar charts showing the interaction between nationality and housing size, related to housing satisfaction.

#### 4.3.1. Discussion of interactions model

The evidence provided by the binary logistic regression model which accounts for interactions, suggests that there is a direct relationship between nationality and housing satisfaction, which has a higher coefficient than the possible relationship found in Model 2. This suggests that, similar to what Alvarez & Müller-Eie (2022) found in the Norwegian context, native residents in the Netherlands experience higher housing satisfaction than immigrants. The suggested correlations of households with children appearing to be less satisfied, while households living in larger homes appear more satisfied is also stronger than it was in Model 2. This also corresponds to the expected relationships based on the theory (Dekker et al., 2011; Kabisch et al., 2022; Lee & Parrott, 2010; Peck & Kay Stewart, 1985). The interactions that were identified as significant in Model 3 suggest that household size and housing size, interacted with nationality, are significant predictors of housing satisfaction. The bar charts in Figure 2 and Figure 3 provide evidence for the expectation that immigrants are relatively less satisfied with housing of similar characteristics. This suggests that the cultural pathway proposed in the theoretical framework could be significant (Davoodi & Dağlı, 2019; Gifford, 2007; Jiang et al., 2020; Thomsen & Eikemo, 2010). Combining the results of the descriptive and inferential analysis, there is also evidence that supports the significance of the living situation measures. Model 3 suggested that housing size and households of three or more persons are significant predictors of housing satisfaction. Table 1 reported evidence that immigrants live in less satisfactory homes when judging by these two characteristics. While this suggests that immigrants do live in less satisfactory homes, it does not prove that this is because of their nationality. Therefore, it cannot be stated that the entire living situation pathway significantly affects housing satisfaction (Fang & Van Liempt, 2021; O'Connor, 2015; Peck & Kay Stewart, 1985; Thomsen & Eikemo, 2010; Zhang et al., 2018).

## 5. Conclusion

This study tested the relationship between nationality and housing satisfaction, as perceived by residents in the Netherlands. The results suggest that there is a positive relationship between being a native resident and perceived housing satisfaction in the context of the Netherlands. This is in line with other single-country contexts (Alvarez & Müller-Eie, 2022). The relationship was theorized to be explained through two separate pathways. The cultural pathway, in which housing satisfaction was expected to vary between nationalities due to different housing expectations, and the living situation pathway, in which the difference in living situations caused by the disadvantages of immigrants in the housing market, was expected to explain the variance in satisfaction (Fang & Van Liempt, 2021; O'Connor, 2015; Thomsen & Eikemo, 2010). This study finds evidence that the cultural pathway is significant in the studied sample. The living situation pathway was partly supported by the evidence presented in this study.

While these findings contribute to the understanding of housing satisfaction in the Dutch context, they should not be assumed as generally significant in other spatial contexts. The results this study has presented should always be interpreted with the methodology in mind. Within the spatial context of the Netherlands, the results may help prevent housing policymakers from operating within a knowledge gap when deciding on policies regarding immigrant housing. Although the results should not be generalized too much, the results might help to improve housing satisfaction within the Netherlands.

The limited timeframe of this research has resulted in limitations, which should be kept in mind when interpreting the presented results. The main limitation of this study is the inability to accurately measure the relative influence of the nationality/satisfaction pathways. While the cultural pathway is theorized to be measured somewhat accurately by comparing the proportions of satisfied and dissatisfied residents of both nationalities between certain housing characteristics, this is of course a simplified view of the expectations versus reality model of housing satisfaction. The living situation pathway was also simplified. It was argued based on the theory that housing situations would differ between nationalities, whereas the results would be more explanatory if the influence of nationality on living situations could be more accurately measured. Other limitations include some data simplifications. During the analysis of affordability, it became apparent that a substantial number of households living in relatively expensive homes had negative incomes. These households were counted as living under an expense burden, while they could be living off of previously accumulated wealth. The definition of households with children being three or more person households is another limitation of the results. This definition counts single-parent families with one child as families without children, which may have led to wrong correlations between overcrowding and satisfaction.

Ideas for future research could include a more in-depth analysis of the two defined housing pathways to statistically determine which of the two is more explanatory, using otherwise similar methodology. It could also be interesting to further expand the spatial context of the relationship between nationality and satisfaction by expanding the location of the survey data to for example study the context of Europe, as multi-country contexts currently find contradicting results. Finally, a qualitative analysis diving deeper into the factors that determine perceived housing satisfaction in the Netherlands could be considered.

## 6. References

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