

The physical attraction of Dutch neighbourhoods: A reason to move or not?

A Binary regression analysis on the relationship between physical characteristics of Dutch neighbourhoods and the wish to move

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June 11, 2021

Colophon

Title	The physical attraction of Dutch neighbourhoods: A reason to move or not?
Subtitle	A Binary regression analysis on the relationship between physical characteristics of Dutch neighbourhoods and the wish to move
Date	June 11, 2021
Version	Final thesis
Word count	5270
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Abstract

This paper aims to investigate the extent to which physical characteristics of neighbourhoods impact the wish to move to the Netherlands. Therefore, the following research question was formulated: To what extent do the physical characteristics of Dutch neighbourhoods impact the wish to move among households in the Netherlands? The Dutch have become more firmly about their housing preferences in the last few years. Moreover, housing satisfaction has decreased in the largest cities in the Netherlands, resulting in a higher wish to move among Dutch households. Hence, the physical appearance of a neighbourhood and the living environment has gotten more attention among buyers in relocation decisions. A binary regression analysis was performed to examine this relationship, using the woOn-survey 2018 from CBS, a large dataset consisting of statistical data on the housing situation of the Dutch population. The most important results indicated that the buildings' maintenance level and physical attraction had a crucial explanatory power on the wish to move. However, contradictive of the expectations, urban density proved no significance in explaining the wish to move. Further, socio-demographic and housing characteristics also proved to be closely associated with the wish to move. This paper concludes that, in line with the existing literature, the relationship between objective physical characteristics of the neighbourhood in regard and the wish to move is significant. However, there are many more factors to consider in predicting relocation decisions. Therefore, there might be room for future research on the neighbourhood's subjective physical characteristics to expand the academic knowledge on the wish to move.

Keywords: relocation decisions, neighbourhood characteristics, physical characteristics neighbourhood

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1. Introduction

1.1 Background

For many Dutch households, relocation is equal to a new phase in life, and Dutch households are well-known for relocating quite often. On average, Dutch households relocate seven times in a lifetime, once every ten years (CBS, 2018). Besides, the wish to move among Dutch households has increased significantly in the last few years. Based on the Central Bureau of Statistics (CBS) research in the Netherlands, Dutch households indicated to have a more significant wish to move than previous years: from 24% in 2012 to 34% in 2018 (CBS, 2019). Relocation decisions are based on many different factors and considerations. However, the Dutch have become more firmly about their housing preferences in the last few years. Research from the online real estate platform Funda (2020) emphasized that people living in the largest cities of the Netherlands often preferred less urbanized areas than before, and their housing satisfaction was often lower than people living in the countryside (Dignum, 2020). However, this trend still does not translate into excessive migration to the countryside, as the largest cities of the Netherlands, such as Amsterdam, Utrecht, Rotterdam, and Delft, remain popular due to the high employment rates and a supply of many high-quality amenities (JLL, 2020). Even though amenities and employment rates are still considered very important, the physical appearance of a neighbourhood and the living environment has gotten more attention among buyers in relocation decisions (Braanker, 2019). Research into relocation decisions of residents of Amsterdam provided evidence that, especially among the age group 25-44 years, one of the most critical indicators in predicting relocation decisions is the quality of the living environment (Dignum, 2020). This age group indicated the importance of residence, neighbourhood appearance, and location when considering an actual move. The quality of the living environment and the satisfaction with the neighbourhood appeared to be some of the most significant indicators for this group in predicting relocation decisions (Dignum, 2020). Research from Wang & Li (2004) also supports this finding in their research among Chinese buyers, where respondents considered physical neighbourhood characteristics a more meaningful indicator than housing characteristics or dwelling type. In addition, Howley et al. (2008) examined the relationship between neighbourhood satisfaction and urban density and proved that high-density neighbourhoods show a low liveability satisfaction and, therefore, a more significant wish to move. Overall, urban density, maintenance level (Parkes et al., 2002) and physical attraction (Gruber & Gladys, 1986) of the neighbourhood appeared to be significant predictors of relocation decisions in previous research.

Nonetheless, next to the upcoming importance of physical characteristics of the neighbourhood in relation to the wish to move, researchers still emphasize the importance of socio-demographic and housing characteristics in predicting the relocation decisions. When it comes to socio-demographic indicators, one of the most crucial relocation predictors is age (Coulter et

al., 2011). Clark & Lisowski (2017) indicated in their research that there is a strong relationship between the increment of age and a lower wish to relocate. Besides age, the household composition is also a vital indicator, whereas an increasing number of people in a household relates to a higher wish to move (Wall & Von Reichert, 2013; Clark, 2013). Thereby, housing characteristics also play an essential role when it comes to home-ownership, as renters show a higher wish to move than owner-occupiers because they are considered more mobile and often less satisfied with their housing situation (Kearns & Parkes, 2003).

Based on the research performed by Dignum (2020), who concluded that the physical characteristics of a neighbourhood are one of the most important predictors of relocation decisions, one might expect to find an extensive amount of existing literature that investigates this relationship. However, physical characteristics of housing or neighbourhoods are not often investigated concerning relocation decisions, especially not in the Netherlands. Investigating this relationship could provide policy-makers with more extensive insight into the importance of the physical appearance of Dutch neighbourhoods and their wish to move. Therefore, this study aims to find out more about the relationship between the physical characteristics of Dutch neighbourhoods and the extent to which the attractiveness of a neighbourhood could lead to a wish to move. This research will be performed by answering the following research question:

“To what extent do the physical characteristics of Dutch neighbourhoods impact the wish to move among households in the Netherlands?”

1.2 Structure of the thesis

In the second chapter of this thesis, a theoretical framework is presented. This theoretical framework describes the most important aspects and variables of the analysis which are most closely associated with the wish to move. The methodology, consisting of an explanation of the data-set and a justification of the descriptive statistics of the variables, is presented in chapter 3. Subsequently, the results are discussed in chapter 4 and finally, the conclusion and discussion are included in chapter 5 and 6. The bibliography is presented in chapter 7.

2. Theoretical Framework

Before looking at the specific determinants on the wish to move, it is essential to understand that relocating is almost always part of a 'bigger picture' consisting of several factors (Mulder, 1993). Moreover, a wish to move does not automatically translate into an actual move (Clark, 2013). This chapter is subdivided into three divisions of relocation determinants according to the existing literature; First, the neighbourhood's physical characteristics are touched upon. Second, socio-demographic characteristics and housing characteristics are discussed.

2.1 Physical characteristics neighbourhood

Based on extensive research conducted by the Dutch government in 2004 (VROM, 2004), respondents indicated that high urban density results in a low liveability of the neighbourhood. According to the VROM (2004), the phenomenon of low liveability strongly affects both the desire to move and the actual moving behaviour. Respondents living in 'bad' neighbourhoods with a lower liveability would more often consider moving out, and they would relate high urban density to a low attractiveness of the neighbourhood. During early US research, the Wirthian approach (1938) argued that high-density living is highly associated with an increased social dissatisfaction and more overall stress in daily life. Moreover, Wirth (1938) also proved that high-density neighbourhoods strongly relates to neighbourhood dissatisfaction and a higher wish to move. However, the wish to move strongly depends on the respondent's age or the average household income (VROM, 2004). In addition, Howley et al. (2008) highlighted the negative impact of high urban density on the quality of life and a higher wish to move. Not only caused by a high number of dwellings in a neighbourhood but also the accompanying factors related to urban density, such as noise, traffic, poorly maintained environment and lack of community feeling in the neighbourhood. Permentier et al. (2009) also found that they wish to move is often positively associated with high urban density since it indicates less green space, high housing stock and environmental stress.

Moreover, Van Ham & Feijten (2008) argued that households living in high urbanized areas often had a higher wish to move than households living in lower urbanized areas. Besides the high density of the neighbourhood, the maintenance level of a neighbourhood is also strongly related to relocation decisions. In terms of maintenance and attractiveness, the general appearance of a neighbourhood is closely associated with the dissatisfaction of a neighbourhood and the wish to move (Parkes et al., 2002). In this research, respondents were asked about their view on neighbourhood dissatisfaction, and the general appearance was a significant independent predictor (Parkes et al., 2002). Gruber & Gladys (1986) concluded that physical attraction was one of the most important predictors for neighbourhood satisfaction. In this research, physical attraction was mainly determined based on the type of housing in the neighbourhood and whether the respondents would consider their neighbourhood as physically attractive.

2.2 Socio-demographic characteristics

Coulter et al. (2011) describe age as one of the most important factors that affect relocation decisions, and this research concludes that the wish to move decreases as age increases. Clark & Lisowski (2017) also highlight the strong relationship between age and the tendency to move; younger people are more willing to move than older people. Generally, it makes sense that younger people are more mobile; they rent more often, and most of the time, they do not have children (Clark, 2013). Next to age, the composition of a household is also an essential determinant for relocation. Wall & Von Reichert (2013) concluded that married people are less likely to move than people who are not married. However, they also concluded that cohabiters, but not married, were also more likely to move.

Moreover, a change in the household composition caused by childbirth, death or divorce, could stimulate the desire to move (Clark, 2013). Besides, Clark (2013) concluded that there is a strong relationship between the desire to move and not having children. These 'triggers' are in line with the critical elements of the life course approach as they consider a spacious home or a child-friendly neighbourhood as an essential stimulus for leaving crowded urban areas (Kulu & Milewski, 2007). Another critical determinant for relocation decisions is social, economic status. Clark & Lisowski (2017) concluded a strong relationship between a change in income and the desire to move, where an increment in resources could lead to different and more divergent housing requirements. Nevertheless, this determinant has been reported as especially important in a later phase in the life course. In addition, Parkes et al. (2002) argue that financial resources are the key factor in explaining the wish to move, as financial resources give the household the capability to choose the type of neighbourhood or living environment independently.

2.3 Housing characteristics

Next to socio-demographic characteristics, some housing characteristics may affect the decision to relocate for households. Housing characteristics can have a significant impact on housing satisfaction and, thereby, the decision to relocate or not. According to Feijten & Van Ham (2009), housing characteristics are even stronger determinants for relocation decisions than socio-demographic characteristics. However, these two are strongly related. Kearns & Parkes (2003) underpin the importance of house ownership for relocation decisions. They concluded that renters are far more mobile than owner-occupiers.

Moreover, owner-occupiers are often more satisfied with their housing situation than renters and feel less need to look for a new home (Kearns & Parkes, 2003). Furthermore, Feijten & Van Ham (2009) add to this that rental homes are often located in less attractive neighbourhoods than owner-occupied homes, influencing the relocation decisions. Another housing characteristic is the size of the house. This determinant strongly relates to the household

composition, as a bigger family requires a bigger home. Moreover, this determinant also accounts for households that are decreasing in size. At the same time, smaller families require smaller housing (Clark & Withers, 1999). It is essential to mention that the size of the residence itself is not a predictor of relocation decisions, but it is about the relationship between the size of the household and the size of the residence (Clark & Huang, 2003).

2.4 Expectations and hypothesis

The main objective of this research was to establish the following relationship:

The wish to move can be predicted on the basis of physical characteristics of the neighbourhood, based on urban density and residents evaluations

Therefore, the hypothesis is formulated as follows:

Physical characteristics of a neighbourhood are significantly related to relocation decisions of Dutch households.

2.5 Conceptual model

The conceptual model is visualized in figure 1. This model provides an overview of the variables that have an expected impact on the dependent variable: The wish to move. Based on the theoretical framework, expectations and hypothesis, a conceptual model was designed. In this research, a distinction can be made between a selection of background variables and key variables. This division was made based on previous studies by Lee & Guest (1983) and Cook (1988); their studies showed the importance of relevant background variables interdependent to the key independent variables to explain their results.

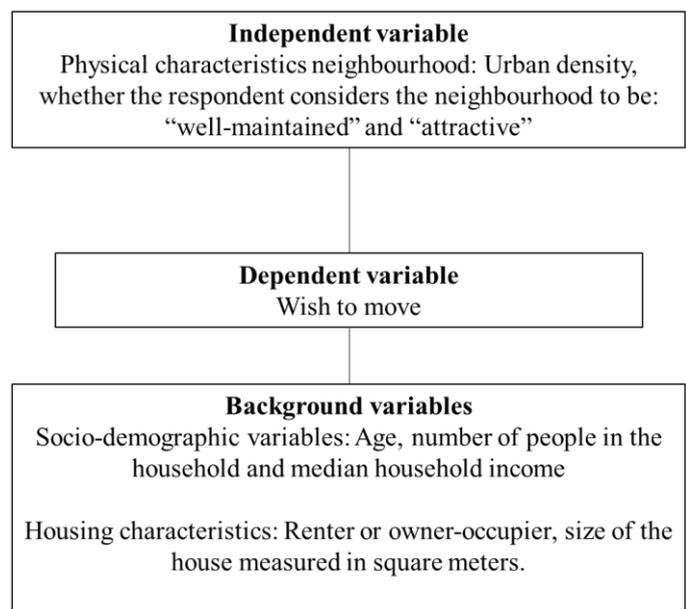


Figure 1. Conceptual model

The key variables are the neighbourhood's physical characteristics, the urban density of the neighbourhood, and whether the respondent considers their neighbourhood to be well-maintained and attractive. The background variables consist of socio-demographic characteristics, the number of people in the household and median household income, and housing characteristics; whether the respondent is a renter or owner-occupier and size of the house.

3. Methodology – data collection

This research aims to investigate the effect of the physical attractiveness of a neighbourhood on the extent to which the attractiveness of a neighbourhood leads to relocation decisions.

Therefore, the choice was made to perform secondary data analysis on a large scale data-set to assess this effect and answer the research question. The following chapter will describe the data-set, the variables, descriptive statistics of the variables, methods used, and a regression model specification.

3.1 Data set

In this study, the woOn-survey 2018 from the Central Bureau of Statistics (CBS) in the Netherlands is used. The goal of this survey is to collect statistical data on the housing situation of the Dutch population. Besides information on the respondents' evaluations, the survey provides the respondents' socio-demographic characteristics and housing characteristics. The questions consider household composition, current housing situation or, for example, the satisfaction level with the current housing situation. Once every three years, CBS performs this survey in cooperation with the Ministry of Internal Affairs. The results from the last survey in 2018 were presented in 2019 (CBS, 2021). More than 67,000 households were surveyed for this purpose, after which this data was enriched with data from, among others, the Municipal Personal Records Database and the Tax and Customs Administration (DANS, 2021). One of the main advantages of this survey is a large number of respondents of the survey; this makes this data-set very reliable. The aim is to make the best possible use of this data set, as this survey is one of the few national surveys that contain a significant amount of questions about the socio-demographic, housing and neighbourhood characteristics.

3.2 Variables

This research aims to provide insights on the dependent variable, whether people wish to move or not. This dependent variable from the data-set as a categorical variable with five categories, ranging from "totally agree" to "totally disagree", that the respondent could choose from on the question of whether they would move out of the neighbourhood if possible. In order to be able to interpret the results more conveniently, this categorical variable was transformed into a dummy variable. For the dummies applies, 1 is yes; I would move out of this neighbourhood if possible. 0 is no; I would not move out of this neighbourhood if possible. Based on the theoretical framework, there is one set of independent variables selected that focuses on investigating the relationship between the wish to move and the neighbourhood's physical characteristics. For this purpose, respondents evaluations from two questions from the woOn survey were selected; whether the respondent considered their neighbourhood to be well maintained or attractive. Additionally, one subjective variable was implemented that took into account the urban density of the neighbourhood. Respondents' evaluations on the first two

questions were measured in five categories, ranging from "totally agree" to "totally disagree" – just like the dependent variable, these ordinal variables were transformed into two nominal dummies: Agree = 0 and disagree = 1. The subjective variable urban density was measured in 5 categories of dwellings per square kilometre, ranging from "very weak (<500 dwellings/km²)" to "very strong (> 2500 dwellings/km²)". Just like the previous variables, this variable was transformed into a variable with fewer categories: Weak (<1000 dwellings/km²), average (1000 – 1500 dwellings/km²) and strong (>1500 dwellings/km²). No extreme values were reported since all measurement levels were categorical.

Second, the first set of background variables focuses on socio-demographic characteristics, age, household composition, and household economic status. Age was an ordinal variable measured in seven categories, ranging from the youngest category 17-24 years to the oldest category 75 years or older. The household composition was also an ordinal variable measured in 5 categories, ranging from the lowest number of people in the household being one person and the highest number of people in the household being five or more. As both variables, age and household composition, were ordinal variables, there was no need for taking out any outliers. However, the variable for median household income acquired some adjustment. The original variable was a ratio-level variable. However, many extreme values were reported, making this variable very challenging to interpret. Therefore, to interpret the variable in a more convenient way, the variable was transformed into an ordinal-level variable with six categories: 1 = €0 - €15.000, 2 = €15.001 – 30.000, 3 = €30.001 – €45.000, 4 = €45.000 – 60.000, 5 = €60.001 – €75.000 and 6 = €75.001 - €90.000. .

Third, the last block of background variables focuses on housing characteristics, house ownership, and the house's size. The variable house ownership is a nominal variable and for the dummies applies; renter = 0 and owner-occupier = 1. The size of the house is measured in seven categories, ranging from the lowest category = < 50 sqm to the highest category = 150 – 199 sqm. These categorical variables did not require any data cleaning procedure as there were no extreme values reported.

Before choosing the variables from the woOn survey and transforming the variables, the data set consisted of 67.523 cases. Not all questions in the woOn survey apply to all the respondents. Therefore, after selecting the crucial variables, a number of 27.852 cases went into this model where 3.352 (12,04%) cases indicated to have a wish to move.

3.3 Binary logistic regression

A binary logistic regression model is applied where the dependent variable is a dummy variable. In this study, this regression predicts changes in the natural logarithm of the odds of the dependent variable, based on the values of the independent variables (Van Smeden et al., 2016). Therefore, the specific model in this research aims to predict a binary dependent variable, the wish to move, based on several independent explanatory variables of any measurement scale. First, in binary logistic regression, SPSS automatically chooses the category with the highest coding value as the reference category. However, this is not always a convenient situation in talking about the results in interpreting the results. Therefore, some variables needed to be transformed manually in order to change the coding in SPSS. The recording of the variables and the reference category per variable is visualised in table 2. Second, the model should be specified correctly. Therefore it is crucial to analyse whether the data is normally distributed. As the data-set consists of many cases, there are no problems in meeting the normality requirements. Furthermore, it is vital to see whether there is an absence of multicollinearity. The Pearson correlations are visualised in appendix 1, and these correlations are all below 0.8, which means there is no correlation between the explanatory variables in the model. The basic logit model for binary logistic regression is denoted as follows:

$$WTM = \log_b \frac{p}{1-p} = \beta_0 + \beta_1 x_1 + \beta_2 x_2$$

In this model, the dependent variable is WTM; the wish to move. Where p is the probability of the event that $WTM = 1$. β_0 indicates the constant; β_i is the average change in WTM per one unit increase in x_i , controlling for the other predictors. Based on the variables in this research, the following logit model is specified that incorporates all the independent explanatory variables of this research:

$$WTM = \beta_0 + \beta_1 A_i + \beta_2 NP_i + \beta_3 HI_i + \beta_4 RO_i + \beta_5 SQM_i + \beta_6 NA_i + \beta_7 NW_i + \beta_8 UD_i$$

Where A indicates the age of the respondent; NP indicates the number of people in the household of the respondent and HI represents the median household income of the respondent. For the housing characteristics; RO is a binary variable which indicates whether the respondent is a renter or owner-occupier and SQM indicates the size of the house of the respondent. The physical characteristics of the neighbourhood are NA which indicates whether the respondent consider their neighbourhood as attractive; NW represents whether the respondent considers their neighbourhood to be well-maintained and UD indicates the urban density of the neighbourhood.

Table 2: Measurement scale & reference category variables

Variables	Measurement scale	Reference category (coding)
Dependent		
WTM	Nominal	No = 1
Socio-demographic		
A	Categorical (7 categories)	Category 1 = 17 – 24 years
NP	Categorical (5 categories)	Category 1 = 1 person
HI	Categorical (6 categories)	Category 1 = €0,- > €15.000,-
Housing characteristics		
RO	Nominal	Owner-occupier = 1
SQM	Categorical (7 categories)	Category 1 = < 50 sqm
Physical characteristics		
NA	Nominal	Agree = 1
NW	Nominal	Agree = 1
UD	Categorical (3 categories)	Category

4. Results

In this chapter, the final results of the binary logistic regression model are discussed. The complete model, containing the three blocks of variables, is significant with a Nagelkerke R Squared of 25.5%. Therefore, the variables improved the prediction and the explanatory power of the wish to move. This chapter presents the regression model presented in two different sections. First, block 3 of the regression model, the neighbourhood's physical characteristics, will be discussed in paragraph 4.1. This block contains the essential variables in order to answer the research question. Second, the coefficients of the two remaining blocks 1 and 2, socio-demographic and housing characteristics, will be discussed briefly in paragraph 4.2. In discussing the results, the main focus is on the B-coefficients and the Exp (B). However, the most crucial statistic to interpret is the exponent B, or exp (B). An Exp (B) of larger than 1 indicates a positive relationship between the independent and dependent variables; an event is more likely to occur. Vice versa accounts for a negative Exp (B), where an event is less likely to occur.

4.1. Physical characteristics neighbourhood

The variables from block 3 examine the explanatory power of the physical characteristics of a neighbourhood and are presented in table 3. Two of the three variables are statistically significant at a 95 per cent level at least. The most important statistic to interpret is the exponent B, or exp (B). This statistic is the odds ratio and explains the impact of each independent variable on the odds ratio of the dependent variable (Sperandei, 2014). The Exp (B) is given by default because odds ratios can be easier to interpret than the coefficient B, which is in log-odds units. An Exp (B) of larger than 1 indicates a positive relationship between the independent and dependent variables; an event is more likely to occur. As shown in table 3, the probability of the wish of a household to move increases when the satisfaction with the maintenance level decreases. By looking at the Exp (B), the group that did not consider their neighbourhood to be well maintained (N = 2593), had an Exp (B) of 2,216 with a positive B-coefficient. This indicates that that group was likely to have a 2,22 higher wish to move than the respondents who considered their neighbourhood to be well-maintained, which means that respondents who did not consider their neighbourhood to be well-maintained had a higher wish to move. In addition, the same effect accounts for the respondents who did not consider their neighbourhood to be attractive. The Exp(B) for the respondents who considered their neighbourhood as “unattractive” was 5,596 (N = 2848). This indicates that respondents living in neighbourhoods that they considered “unattractive” were likely to have a 5,54 times higher wish to move than the respondents who considered their neighbourhood attractive. The third variable investigated the relationship between the urban density of the neighbourhood and the respondents’ wish to move. This variable proved to be not significant. Therefore, we may assume there is no relationship between the urban density of the neighbourhood and the wish to move.

Table 3: Ouput Block 3 – Physical characteristics neighbourhood

	B	Sig.	Exp (B)
BLOCK 3			
<u>The buildings in this neighbourhood are well maintained</u>			
Disagree	0,796	0.000	2,216
<u>The buildings in this neighbourhood are attractive</u>			
Disagree	1,722	0.000	5,596
<u>Urban density neighbourhood</u>			
Low urban density	-0.044	0.093	1.094
No urban density	0.000	0.997	1.004

4.2 Socio-demographic and housing characteristics

The variables from Block 1 (table 4) show that the socio-demographic variables significantly support our understanding of the influence on the wish to move. First, by looking at the age of the respondents, there is a clear distinction between the younger households in comparison to the older households when it comes to their wish to move. The statistical results for respondents between 25 and 44 years old both show an Exp (B) higher than 1 and positive B coefficients compared to the other groups. This indicates that their wish to move for these respondents is significantly higher in comparison to older people. There is also a significant relationship between median household income and the wish to move. Compared to the reference group who's median household income is below €15.000,-, only the households with a median household income between €15.001,- and €30.000,- have a significant higher wish to move. With respect to the number of people in the household, there is no clear line in an increment of number of people and a higher or lower wish to move. Nevertheless, by looking at the B-coefficients and the Exp (B) some groups have a significant higher wish to move compared to the reference group of one person in the household. Just like the results for the socio-demographic variables, housing characteristics contribute to the understanding of the wish to move among the respondents. Based on the Exp (B), with a negative B-statistic, owner-occupiers are significantly 0.603 times less likely to move than renters. However, as the Exp (B) is below 1, this is still a marginal effect. Moreover, the size of the living area in square meters also explains the wish to move significantly. The results in table 4 show that the respondents living in the categories with the least amount of square meters have a more significant wish to move than the respondents living

in houses with a higher amount of square meters. By looking at the Exp (B) statistics, it can be concluded that the higher the living area of the respondent, the lower the wish to move.

Table 4: Output Block 1 & 2 – Socio demographic & housing characteristics

Variables in the equation			
	B	Sig.	Exp (B)
BLOCK 1			
<u>Age respondent</u>			
25 – 34 years	0,293	0.000	1,340
35 – 44 years	0,193	0.000	1,213
45 – 54 years	-0,085	0.000	0,918
55 – 64 years	-0,356	0.000	0,701
65 – 74 years	-0,677	0.000	0,508
> 75 years	-1,197	0.000	0,302
<u>Number of people in the household</u>			
2 person	0.182	0,001	1,199
3 persons	0,267	0,000	1,306
4 persons	0,285	0,001	1,330
5 persons	0.192	0,045	1,212
<u>Median household income</u>			
€15001 > €30000	0,003	0,000	1,003
€30001 > €45000	-0,086	0,000	0,917
€45001 > €60000	-0,191	0,000	0,826
€60001 > €75000	-0,236	0,000	0,790
€75001 > €90000	-0,365	0,000	0,603
BLOCK 2			
<u>Renter or owner-occupier</u>	-0,506	0,000	0,603
<u>Living area</u>			
50 – 69 sqm	0,593	0.000	1,809
70 – 89 sqm	0,435	0.000	1,545
90 – 119 sqm	0,321	0.000	1,379
120 – 149 sqm	0,159	0,037	1,173
150 – 199 sqm	0,120	0,141	1,127

5. Discussion

This study found that, based on the binary regression model, most of the results meet the expectation that the wish to move can be predicted based on the neighbourhood's physical characteristics. The results show that dissatisfaction with the maintenance level and the physical appearance of the surrounding buildings result in a higher wish to move among the respondents. These relationships are consistent with the findings of Parkes et al. (2002) and Gruber & Gladys (1986), who examined this significant relationship. However, the relationship between the urban density of the neighbourhood showed that there was no higher wish to move in neighbourhoods where the urban density was high. Therefore, these results do not confirm the association between high urbanized areas and a higher wish to move, as described by Howley et al. (2008), VROM (2004) and Van Ham & Feijten (2008). There might be two specific explanations for this insignificant relationship. First, VROM (2004) highlighted that the wish to move strongly depends on the household's age and median household income and that these factors are strongly interdependent. Therefore, it could be argued that the wish to move cannot be simply explained by just urban density on its own. Research from Howley et al. (2008) adds to this that many accompanying factors related to the urban density might impact the wish to move, such as noise, traffic, and lack of community feeling. Second, as mentioned in the introduction, the largest cities in the Netherlands remain popular just because of high employment rates and high-quality amenities. Therefore, it can be argued that people chose amenities and job opportunities above satisfaction with their housing situation.

Besides the neighbourhood's physical characteristics, nearly all the results from the two blocks of background variables support our understanding of the impact of socio-demographic and housing characteristics on the wish to move. When it comes to the socio-demographic characteristics, the variable age, the number of people in the household and median household income all proved to be significantly related to the wish to move. In line with research from Coulter et al. (2011) and Clark & Lisowski (2017), age proved to be an essential predictor of the wish to move where younger people indeed had a higher wish to move. In addition, an increment of size of the household resulted in a higher wish to move, as described by Wall & Von Reichert (2013). However, the results for median household income were a little contradictive to the research of Clark & Lisowski (2017), as a higher median household income did not directly result in a higher wish to move.

Furthermore, this effect was only reported for the two lowest income groups. One possible explanation for this result might be that lower-income groups are often less satisfied with their housing situation. Moreover, the housing characteristics of the respondents also further support our understanding of the wish to move. Compared to owner-occupiers, renters indeed had a greater desire to move, as Kearns & Parkes (2003) and Feijten & Van Ham (2009) described. Also, an increase in the size of the house, as described by Clark & Withers (1999), resulted in a higher wish to move.

6. Conclusion

Determinants for relocation decisions are widely touched upon in the existing literature. However, there is just limited research on specific factors that determine relocation decisions regarding the physical characteristics of neighbourhoods and whether the physical attraction of a neighbourhood influences the wish to move. Hence, this research aimed to investigate the relationship between the wish to move and the physical characteristics of a neighbourhood. Therefore, the following research question was formulated: “To what extent do the physical characteristics of Dutch neighbourhoods impact the wish to move among households in the Netherlands?”. This paper has provided a binary logistic analysis of the extent to which physical characteristics of the neighbourhood impact the wish to move, using the woOn-survey 2018 from CBS. This large data set consisted of statistical data on the housing situation of the Dutch population, where more than 67.000 households were surveyed for this purpose. After selecting the crucial variables, a number of 27.852 cases went into this model where 3.352 (12,04%) cases indicated to have a wish to move.

Most of the results were consistent with the expectations based on the theoretical framework. Maintenance-level and physical attraction of the buildings in the neighbourhood appeared to have a crucial explanatory power on the wish to move. Respondents indicated that low satisfaction with the latter resulted in a higher wish to move, which corresponds with earlier research on this topic. However, the urban density proved no significance in explaining the wish to move, which contradicts the theories explained in the theoretical framework. The primary explanation for this insignificance is the persistent high attraction of big cities with high-quality amenities and job opportunities compared to rural areas. Additionally, it is argued that urban density as an explanatory variable alone depends on many more factors related to urban density, such as noise, traffic and lack of community feeling. Notwithstanding, overall, the variables concerning physical characteristics were strongly related to the wish to move compared to the background variables.

This research clearly illustrates the explanatory power of physical characteristics in relation to the wish to move. However, it also raises questions about possible other variables that could have been incorporated in the analysis as the number of variables concerning physical characteristics of the neighbourhood was limited in the analysis. Not many papers include objective features of neighbourhoods to examine the wish to move, mainly subjective evaluations from respondents are used, similar to this study. Studies mentioned in the theoretical framework primarily describe the impact of amenities, social cohesion and overall satisfaction on the wish to move. Therefore, comparisons with other studies are challenging. For this reason, there might be room for future research to investigate more objective features of neighbourhoods that could impact the wish to move, such as building type or construction year of the neighbourhood.

7. Bibliography

Braanker, W. (2019). NEPROM: Waar wonen Nederlanders het liefst? Retrieved on May 12, 2021 from: <https://www.gebiedsontwikkeling.nu/artikelen/woonwensen-tijden-van-schaarste/>

CBS (2019). Minder verhuizingen in 2018. Retrieved on April 26, 2021 from: <https://www.cbs.nl/nl-nl/nieuws/2019/09/minder-verhuizingen-in-2018>

CBS (2019) Meer huishoudens binnen twee jaar verhuisd. Retrieved on April 26, 2021 from: <https://www.cbs.nl/nl-nl/nieuws/2019/14/meer-huishoudens-binnen-twee-jaar-verhuisd>

CBS (2021). WoOn-survey: onderzoeksomschrijving woOnsurvey 2028. Retrieved on March 5, 2021 from: <https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/woononderzoek-nederland—woon>

Clark, W. A. V. (2013) Life course events and residential change: Unpacking age effects on the probability of moving, *Journal of Population Research*, 30, pp. 319–334.

Clark, W. A., & Huang, Y. (2003), The life course and residential mobility in British housing markets. *Environment and Planning A*, 35(2), 323-339.

Clark, W.A.V. & S.D. Withers (1999), Changing jobs and changing houses: mobility outcomes of employment transitions, *Journal of Regional Science*, 39, 653-673.

COOK, C. C. (1988) Components of neighbour- hood satisfaction: responses from urban and suburban single-parent women, *Environment and Behavior*, 20(2), pp. 115– 149.

Coulter, R. Van, Ham, M. & Feijten, P. (2011) Partner (dis)Agreement on Moving Desires and the Subsequent Moving Behaviour of Couples. *Popul. Space Place* 18, 16–30 (2012)

DANS (2021) KNAW. Retrieved on March 5, 2021 from: <https://dans.knaw.nl/en/about/organisation-and-policy>

Dignum, K. (2020). Dynamiek en verhuishwensen in Amsterdam. Gemeente Amsterdam, Wonen

Feijten, P., & Van Ham, M. (2009), Neighbourhood change... reason to leave? *Urban studies* 46(10), pp. 2103-2122.

Gruber, K.J. & Shelton, G.S. (1986). Assessment of neighborhood satisfaction by residents of three housing types. *Social Indicators Research* 19 (1987) 303-315

JLL (2020) “Amsterdam, Utrecht en Delft zijn de beste woonsteden”. Retrieved on June 10, 2021 from: <https://www.jll.nl/nl/nieuws/amsterdam--utrecht-en-delft-zijn-de-beste-woonsteden>

Kearns, A., & Parkes, A. (2003), Living in and leaving poor neighbourhood conditions in England. *Housing Studies*, 18(6), pp. 827-851.

Kulu, H. and Milewski, N. (2007). Family change and migration in the life course: an introduction. *Demographic Research*, 17, 567–590.

Lee, K. O. (2014), Why do renters stay in or leave certain neighborhoods? The role of neighbourhood characteristics, housing tenure transitions, and race. *Journal of Regional Science*, pp. 1-33.

Lee, B. A. and Guest, A. M. (1983) Determinants of neighborhood satisfaction: a metropolitan level analysis, *The Sociological Quarterly*, 24, pp. 287– 303.

Mulder, C. H. (1993). *Migration Dynamics: A Life Course Approach*. Amsterdam: Thesis Publishers.

Parkes, A., Kearns, A., Atkinson, R. (2002). What Makes People Dissatisfied with their Neighbourhoods? *Urban Studies*, Vol. 39, No. 13, 2413–2438, 2002

Ministerie van VROM (2004) *Leefbaarheid van wijken. Typologie van woonmilieus*.

Wang, D. & Li, S.M. (2004) Housing preferences in a transitional housing system: the case of Beijing, China. *Environment and Planning A* 2004, volume 36, pages 69 - 87

Wall, T., & Von Reichert, C. (2013). Divorce as an influence in return migration to rural areas. *Population, Space and Place*, 19(3), 350-363.

Wirth, L. (1938) Urbanism as a way of life, *American Journal of Sociology*, 44, pp. 1– 24

Van Ham, M. van, & Clark, W. A. (2009), Neighbourhood mobility in context: household moves and changing neighbourhoods in the Netherlands. *Environment and planning. A*, 41(6), pp. 1442.

Van Ham M, Feijten P, 2008, “Who wants to leave the neighbourhood? The effect of being different from the neighbourhood population on wishes to move” *Environment and Planning A* 40 1151-1170

Van Smeden, M.; De Groot, J. A.; Moons, K. G.; Collins, G. S.; Altman, D. G.; Eijkemans, M. J.; Reitsma, J. B. (2016). "No rationale for 1 variable per 10 events criterion for binary logistic regression analysis". *BMC Medical Research Methodology*. 16 (1): 163

Sperandei, S. (2014), Understanding logistic regression analysis. *Biochemica Medica*; 24(1): 12–18.

Appendix 1: Pearson correlations

	Wish to move yes/no	Age responde nt	Number of people in the household	Median HH income	Renter/owne r-occupier	Size of the house measured in sqm.	Urban density neighbourho od	“the buildings in this neighbourhood are attractive	“The buildings in this neighbourhood are well- maintained”
Wish to move yes/no	1								
Age respondent	-0.236**	1							
Number of people in the household	0.059**	-0.448**	1						
Median HH income	-0.041**	-0.158**	0.384**	1					
Renter/owner-occupier	0.178**	-0.032**	-0.291**	-0.361**	1				
Size of the house measured in sqm.	-0.163**	0.120**	0.332**	0.383**	-0.488**	1			
Urban density neighbourhood	-0.076**	0.051**	0.137**	0.107**	-0.241**	0.375**	1		
“the buildings in this neighbourhood are attractive	0.316**	-0.139**	-0.015**	-0.96**	0.176**	-0.193**	-0.123**	1	
“The buildings in this neighbourhood are well-maintained”	0.246**	-0.109**	-0.044**	-0.128**	0.221**	-0.226**	-0.176**	0.554**	1

** Significance level = $P < 0.01$