



## UvA-DARE (Digital Academic Repository)

### The unequal geography of declining young adult homeownership: Divides across age, class, and space

Hochstenbach, C.; Arundel, R.

**DOI**

[10.1111/tran.12466](https://doi.org/10.1111/tran.12466)

**Publication date**

2021

**Document Version**

Final published version

**Published in**

Transactions - Institute of British Geographers

**License**

CC BY-NC

[Link to publication](#)

**Citation for published version (APA):**

Hochstenbach, C., & Arundel, R. (2021). The unequal geography of declining young adult homeownership: Divides across age, class, and space. *Transactions - Institute of British Geographers*, 46(4), 973-994. <https://doi.org/10.1111/tran.12466>

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

*UvA-DARE is a service provided by the library of the University of Amsterdam (<https://dare.uva.nl>)*

**REGULAR PAPER**

# The unequal geography of declining young adult homeownership: Divides across age, class, and space

Cody Hochstenbach  | Rowan Arundel 

Centre for Urban Studies, University of Amsterdam, Amsterdam, The Netherlands

**Correspondence**

Cody Hochstenbach, Centre for Urban Studies, University of Amsterdam, Amsterdam, The Netherlands.  
Email: c.hochstenbach@uva.nl

**Funding information**

Nederlandse Organisatie voor Wetenschappelijk Onderzoek

**Abstract**

Across countries, the position of young adults on the housing market has worsened over the past decade. Young adults' decreasing access to homeownership has garnered particular attention. Most studies analysing young adults' housing market entry focus on micro-level determinants or national-level patterns and trends. This paper adds an important perspective by focusing on spatial variations within a single country, unravelling pronounced inter-municipal differences in homeownership across age and class. Our case is the Netherlands, where we use full-population register data for the 2011–2018 period to analyse spatial patterns and trends using a range of quantitative spatial methods. Our findings highlight a notable decrease in owner-occupancy among young adults in the Netherlands over the period. Such overall declines, however, belie clear class divisions, with decreases particularly concentrated among low-income young adults. Untangling spatial dynamics reveals both important geographic commonalities and clear divergences. Declining young homeownership was found across 87% of municipalities, suggesting a common experience. Analyses also reveal stark spatial disparities, with the strongest decreases in the most urbanised regions, particularly large cities. Spatially divergent patterns of housing market exclusion are furthermore highly classed: widespread among young adults with a low income, while more spatially concentrated among those with a high income. Finally, using advanced spatial regression modelling, we explore municipal characteristics, revealing how local housing and population factors may explain pronounced differences in changing young adult homeownership entry. The analyses particularly emphasise links between housing unaffordability and competition as determinants of worsening homeownership opportunities for young adults.

**KEYWORDS**

exclusion, generation rent, homeownership, housing market, spatial inequality, young adults

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

The information, practices and views in this article are those of the author(s) and do not necessarily reflect the opinion of the Royal Geographical Society (with IBG).

© 2021 The Authors. *Transactions of the Institute of British Geographers* published by John Wiley & Sons Ltd on behalf of Royal Geographical Society (with The Institute of British Geographers)

## 1 | INTRODUCTION

Across countries, the position of young adults on the housing market has worsened over the last decade. This is evidenced in various ways, such as increasing housing cost burdens, a rise in precarious housing arrangements, and a prolonged dependence on the parental home. Above all, young adults' decreasing access to homeownership has garnered particular attention (Flynn, 2020; Lennartz et al., 2016). This has given rise, for example, to the narrative of a "generation rent," particularly in English-speaking countries (McKee et al., 2017).

Young adults' decreasing entry into homeownership has been analysed from various angles. A range of studies from different countries focus on the micro-level determinants of entry into homeownership. These studies highlight how increasing labour-market precarity impedes young adults' ability to buy (Arundel & Lennartz, 2020; Bayrakdar et al., 2019), and emphasise the growing relevance of the intergenerational transmission of inequality (Coulter, 2017; Öst, 2012; Van Ham et al., 2014). Other studies focus on cross-country variations in young adult homeownership rates and their trends (Filandri & Bertolini, 2016; Flynn, 2020; Lennartz et al., 2016). These studies typically emphasise differences in welfare regime, housing system, and cultural meanings of homeownership (Fernandez & Aalbers, 2016; Schwartz & Seabrooke, 2008). They cite labour market restructuring, stricter mortgage lending criteria post Global Financial Crisis (GFC), and increasing generational disparities as fundamental to decreasing young adult homeownership (Arundel & Ronald, 2021; Forrest & Hirayama, 2018).

This paper adds another important perspective by focusing on intra-national spatial variations in young adult homeownership. More specifically, we unravel inter-municipal differences in young adults' changing access to homeownership. However, as young adults' housing opportunities and experiences are far from homogenous, we also pay attention to inequalities among young adults. We thus stratify our analyses according to young adults' socio-economic position, acknowledging potentially stark disparities in housing-market position *within* generations (Christophers, 2018; Hochstenbach, 2018).

Such a socio-spatial perspective is largely absent, but of crucial importance in understanding tenure dynamics. National perspectives belie the stark variations that exist within these contexts. Recent house-price increases have been particularly steep in cities (Inchauste et al., 2018), while many peripheral regions struggle with both population and economic decline. These intensifying spatial divisions (Arundel & Hochstenbach, 2020; Hochstenbach & Arundel, 2020) may have a particularly strong impact on young adults, as they concentrate increasingly in those urban locations where housing affordability is most under pressure (Moos et al., 2019). Furthermore, homeownership is more advantageous in some locations than in others, providing locational advantages and stronger wealth accumulation potential.

Surprisingly, we do not yet know to what extent such inter-municipal differences in young homeownership access exist – essentially whether declining homeownership among young adults is a widespread phenomenon or strongly spatially contingent – nor do we know which local characteristics are associated with changes in access. This paper addresses these knowledge gaps by answering the following questions:

- How have young adults' homeownership rates changed over time, and to what extent are these trends spatially differentiated?
- Which local characteristics are associated with the variation in homeownership attainment?
- How are these spatially uneven patterns and trends stratified across different income classes?

We draw on the case of the Netherlands, making use of full-population register data for the 2011–2018 period, which allows us to analyse spatial differentiation in homeownership trends for subpopulations. The Netherlands is a salient case, as it represents a highly financialised debt-driven housing market, but one where post-GFC measures have imposed some restrictions on mortgage-credit access, particularly for starters on the housing market (Tu et al., 2018). Furthermore, recent evidence points to a clear intensification of spatial housing-market polarisation across the country, with implications for access to homeownership (Arundel & Hochstenbach, 2020; Hochstenbach & Arundel, 2020). Our analyses here focus on changes between 2011 and 2018, representing two relevant time points that capture a housing bust and boom period, respectively. Over this period, the broad picture has pointed to worsening housing positions for young adults across many countries, including the Netherlands (Eurostat, 2018). However, important geographic and class differences among such young adult housing dynamics have been largely neglected.

The next section first develops a literature framework to understand patterns of changing homeownership access among young adults. We then outline our data and methods before moving to the results of our empirical analyses. We conclude with a discussion of the wider implications of our findings.

## 2 | LITERATURE

### 2.1 | Promoting homeownership

This paper builds on recent literatures that have brought attention to the worsening fortunes of young adults on the housing market, particularly their decreasing ability to buy a home. It is situated within a broader context where many governments have vigorously promoted homeownership as the superior housing tenure for decades. Owning one's home is increasingly considered a marker of class attainment and social status, and is associated with feelings of security and control over one's life (Ronald, 2008). Homeownership furthermore allows for the accumulation of housing wealth, which may augment income, function as an insurance or future pension provision, and thus substitute part of the welfare state (Ansell, 2014; Doling & Ronald, 2010). Nonetheless, perceived and actual advantages of homeownership are not natural, but must be understood as largely the consequence of tenure-specific policies and reflecting socialised preferential attitudes towards owner occupation (Ronald, 2008; Rowlands & Gurney, 2000).

Governments stimulated homeownership, among other means, through fiscal subsidisation and the expansion of mortgage markets (Aalbers, 2016; Crouch, 2009; García-Lamarca & Kaika, 2016; Kohl, 2018). Our case of the Netherlands is indicative in this regard, as the Dutch government continues to promote homeownership through a costly mortgage-interest tax deductibility scheme. Furthermore, levels of per capita mortgage debt in the Netherlands are among the highest in the world: while mortgage debt stood at around 55% of Dutch GDP in 1998, it increased to 104% by 2010 (EMF, 2017). These are part of long-standing state aims to expand homeownership through subsidisation and ever larger mortgage debts (Aalbers et al., 2020).

Fuelled by such policies, most Western countries transitioned from majority renter to majority owner societies over the second half of the last century (Doling & Ford, 2007). In the Netherlands, the homeownership rate increased from 35% in 1971 to around 57% in 2010. From the mid-2000s onwards, but especially following the 2008 financial crisis, this growth began to falter. In countries such as the USA and the UK, overall homeownership rates declined substantially from their mid-2000s peak. In the Netherlands, homeownership rates have not declined since the GFC but rather stabilised (Aalbers et al., 2020). A common trend across countries is that homeownership has particularly decreased among younger adults (Flynn, 2020; Lennartz et al., 2016).

### 2.2 | Housing restructuring

One explanation for decreasing young adult homeownership is that house price increases have far outpaced income growth across most countries (Aalbers, 2016; Knoll et al., 2017). Higher house prices represent a barrier for entry into owner-occupancy for starter households, while benefiting current owners (Stephens, 2007). For a long time, this was offset by making it easier for households to acquire larger mortgages (Aalbers et al., 2020). At the macro-level, more liquid mortgage markets are associated with higher levels of young adult homeownership (Flynn, 2020). This created a reinforcing feedback cycle as larger loans drove house price increases, necessitating further mortgage-market expansion in order to maintain access at higher price levels (Fernandez & Aalbers, 2016; Ryan-Collins, 2018). Indeed, the high levels of Dutch mortgage debt have fuelled price increases.

Following the GFC, most governments put a (partial) halt to this trend, restricting access to mortgage credit in mitigating the type of debt risk and mortgage lending that had triggered the crisis. Restrictions have included lowering maximum mortgages (i.e., loan-to-value and loan-to-income) and stricter employment criteria (i.e., stable employment). These measures, however, did not lead to structurally lower house prices, as historically low interest rates and real-estate investments by wealthy households and firms have become increasingly important in driving price increases (Aalbers et al., 2020). In addition, housing supply is struggling to meet burgeoning demand, contributing to further competition and price appreciation (Nijskens et al., 2019). The combination of increasing house prices and restricted mortgage access particularly excludes young prospective buyers on the housing market.

### 2.3 | Social inequality

Another key reason why homeownership rates have particularly decreased among young adults pertains to their socio-economic situation. Notwithstanding substantial within-group variations, young adults' labour-market position has weakened in comparison with other age groups. Their wages have stagnated or even declined (Bell & Blanchflower, 2011; Hills et al., 2013) and labour-market security has particularly been eroded among younger cohorts (Arundel & Lennartz, 2020; Biegert, 2014).

Growing shares of young adults are likely to be in temporary, part-time, or insecure (self-)employment (Eurostat, 2018). Younger adults are increasingly likely to remain labour-market ‘outsiders’, which is an important negative predictor of homeownership attainment (Dotti Sani & Acciai, 2018; Fisher & Gervais, 2011).

Conversely, older generations are more often ‘insiders’ on the labour market – characterised by more stable, full-time, and better paid employment – translating to stronger housing-market positions (Arundel & Lennartz, 2020). In addition, many of them benefited from more favourable housing-market conditions in the past, facilitating access to homeownership and subsequent housing-wealth accumulation, which they can mobilise when moving or purchasing a secondary property, outbidding starters on the market (Forrest & Hirayama, 2018; Neuteboom & Brounen, 2011). The overall picture is thus one of increasing intergenerational inequalities, with young adults on the losing end.

The dynamics of increasing intergenerational inequality intersect with strong *intra*-generational differences, with housing inequalities *among* young households also increasing (Arundel, 2017; Bayrakdar et al., 2019; Coulter, 2017). Decreasing homeownership access first and foremost excludes relatively marginal households. Deepening housing inequalities between generations thus intersect with, and amplify, inequalities along various other lines such as class, ethnicity, and gender (Christophers, 2018). As young adults increasingly lack the resources to buy, parental background becomes all the more important. Previous studies have shown that parental support helps young adults not only to buy a house (Helderman & Mulder, 2007), but also to buy more expensive housing (Spilerman & Wolff, 2012) and in more sought-after locations (Hochstenbach, 2018). Differentiated support for access to owner occupancy – and in the hottest property markets – may have long-lasting effects, setting more privileged young adults on a trajectory of further wealth accumulation (Arundel & Hochstenbach, 2020; Wind & Hedman, 2018). A near-exclusive focus on divides between generations in recent research has unduly neglected more fundamental socio-economic inequalities that are subsequently reproduced across generations (Christophers, 2018; McKee et al., 2020).

Beyond class inequalities, decreasing homeownership rates also relate to changing life-course trajectories. Young adults’ life-courses have become more individualised and variegated. Commonly captured by the umbrella concept of the second demographic transition (Van de Kaa, 1987) or notions of an extended period of ‘emerging adulthood’ (Arnett, 2006), young adults on average stay single longer, partner and marry later, and postpone childbearing. Additionally, young adults see increasing life-course mobility with temporary migration for study and work. These changes are associated with lower homeownership, and more parental co-residence, rental, and shared-housing situations (Fisher & Gervais, 2011; Lennartz et al., 2016). The link between life-course and housing trajectories is bi-directional, with precarious and constrained housing opportunities impacting attainment of traditional adult milestones, such as family formation and fertility (Mulder & Billari, 2010).

One can ask whether it is problematic that a growing group of young adults is unable to buy, or can only do so at a later age. Renting may be considered more in tune with the transitory life-course trajectories of many young adults. Yet, alongside the promotion of homeownership, most countries – the Netherlands included – have seen diminishing adequate alternatives. The residualisation of the social sector has meant the decreasing availability of affordable and secure social-rental housing, while limiting the target group to the very lowest-income households (Malpass, 2004; Van Gent & Hochstenbach, 2020). Meanwhile, the deregulation of resurgent private-rental markets has given room to higher rents and more precarious contracts (Aalbers et al., 2020; Huisman, 2020). While this pushes households towards owner-occupancy – and thus house prices upwards – it also leaves those unable to buy to reside increasingly in often expensive or precarious rental housing arrangements. High rent burdens in turn reduce the ability of households to save money for a down payment, impeding access to homeownership in the longer run.

## 2.4 | Increasing spatial inequalities

While the literature discussed above explains decreasing levels of young adult homeownership observed in many countries, it gives little insight into more fine-grained spatial variations in homeownership access. This is an increasingly important task, as spatial inequalities are on the rise in many contexts. In a recent paper, Hochstenbach and Arundel (2020) show processes of spatial housing-market polarisation across the Netherlands. House prices have exploded in some locations, typically major cities, while stagnating or declining in more peripheral areas. The increasing levels of residential segregation between rich and poor populations found in many urban regions of Europe and North America (Reardon & Bischoff, 2011; Tammaru et al., 2016) further suggest housing-market polarisation. These trends imply that the housing-market experiences of young adults may be increasingly divergent across space, with the attainability of homeownership under particular pressure in some areas. Furthermore, spatial patterns may intersect with class disparities; entailing different geographies of declining homeownership between young adults of high and low socio-economic status.

## 2.5 | Potential drivers of spatially divergent homeownership access

A key aim of this paper is to unravel how young adults' decreasing homeownership access plays out across space. Although research on the topic is scarce, in this section we elaborate on three key narratives that help us understand potential drivers of spatial trends: (1) the relative affordability of owner-occupied housing; (2) competition from other potential buyers; and (3) the local supply of owner-occupied units. While these narratives can be conceptually separated, they are of course fundamentally intertwined. Tentatively, across all narratives, we would expect to find the strongest impacts on homeownership rates among low-income young adults as they are likely the first to be excluded or crowded out. Conversely, we expect the weakest impacts on high-income young adults, as being better able to withstand higher prices and competition.

### *Relative housing affordability*

First, we expect to find the strongest decreases in young adult homeownership rates in those regions where the decline in housing affordability has been most pronounced. A German study found strong regional variations in overall homeownership attainment, with variations in price-to-income ratios explaining this spatial differentiation (Lerbs & Oberst, 2014). A recent study of England and Wales focusing on young adults similarly found them significantly less likely to become homeowners in regions with higher house prices (Coulter, 2017). Conversely, a paper from the US analysing spatial variations in changing homeownership rates among young adults through the 1990s found house-price increases to be positively associated with increasing young adult homeownership (Myers et al., 2005). The authors suggested positive investment prospects may outweigh decreasing affordability. In the post-GFC environment of decreased access to mortgage credit and labour-market precarity, we expect affordability constraints to limit homeownership access, outweighing potential increased investment appeal.

### *Housing market competition factors*

Second, and relatedly, we expect competition from other prospective buyers to be negatively associated with young adult homeownership rates. Housing market competition can manifest in terms of external competition related to the "crowding out" by other buyers such as older homeowners, buy-to-let landlords, and holiday-rental providers (Kadi et al., 2020). Recent Dutch data suggest that both current owners and landlords increasingly crowd out younger first-time buyers – a trend that has been especially observable in major cities (DNB, 2018). Other Dutch studies further suggest that young adults struggle most to realise their preference for homeownership in high-demand markets as a consequence of this competition (De Groot et al., 2013; Neuteboom & Brounen, 2011).

On the other hand, housing market competition may relate to internal (or intra-group) competition, in terms of potential competition among young adults. We expect municipal pull factors to increasingly drive and concentrate young adults' demand for both rented and owned housing. A large body of literature demonstrates that larger cities increasingly attract and retain young adults, given the presence of higher education, stronger labour prospects, and a wide range of amenities (Florida, 2008; Glaeser, 2011; Moos et al., 2019). On the one hand, these factors especially attract highly educated and higher income young adults (Venhorst et al., 2011), which may be associated with higher young adult homeownership. On the other hand, the increasing concentration of households and capital within these urban centres intensifies housing market pressure, undermining access particularly for younger adults. Additionally, such cities typically also attract young adults that are in a transitory life phase or part of an international workforce and thus not (yet) choosing or able to buy. In practice, many of the urban characteristics that increase competition among young adults are also associated with external and other broader housing market competition pressures.

### *Supply*

Third, the ability of young adults to buy depends on the supply of owner-occupied housing (Myers et al., 2005). This does not always align with the housing-market pressures discussed above. While demand for homeownership may be high and increasing in urban centres, homeownership rates are typically below-average in these locations. Nonetheless, local city governments have also commonly been particularly vigorous in expanding homeownership. This is the case in the Netherlands, where since the late 1990s, homeownership growth in major cities such as Amsterdam and Rotterdam has far outpaced national-level trends (Hochstenbach, 2017). Apart from rates of local new construction, high vacancy shares may supply young adults with housing to buy.

### 3 | DATA AND METHODS

#### 3.1 | Data

To investigate spatial variations in young adults' changing homeownership rates in the Netherlands, this paper draws on the System of Social-statistical Datasets (SSD) from Statistics Netherlands. The SSD contains non-public individual-level register data for the *full* population registered in the Netherlands, drawing on multiple sources (e.g., tax and municipal registers).

From the SSD, we constructed a dataset at the household level; the level where homeownership is registered and, more substantively, where economic resources are bundled. When defining household age (and other essentially individual-level characteristics), we base this on the household main earner. Households with missing tenure information, without adult members, with 10 or more adult members, registered at institutions, or defined as student households are excluded from our dataset. Our dataset contains two data points, 2011 and 2018 (both 1 January), which have been chosen for consistency of data. In 2011, we draw on 7,126,812 households, in 2018 on 7,547,357 households. We use tax registers to define if someone is an owner-occupier. Unfortunately, we cannot distinguish between social and private rental in our data.

To investigate age-specific tenure trends, we use three broad age categories of young (18 to 39),<sup>1</sup> middle (40 to 64), and older households (65+), based on the household main earner. We identify 1,878,695 young adult households in 2011, and 1,903,231 in 2018. We further stratify our analyses according to young adults' socio-economic position, using gross household income to construct income groups: low-income households belong to the poorest 40% of households nationwide and high-income households to the richest 20%. Although this categorisation is necessarily a simplification that does not fully capture class position or economic power, it suits our aim to chart macro-level regional patterns and trends.

Because this paper focuses on regional variations in young adults' homeownership rates, we aggregated household-level data to spatial units. We have opted for municipalities, given that smaller-level units, such as neighbourhoods, would be too small for capturing where households act on the housing market. Municipalities provide a spatially delimited housing market that reflects local housing and population characteristics. Using different spatial modelling methods, we further capture regional effects and spatial spill-overs. We carry out spatial modelling, rather than micro-level models, because we are explicitly interested in explaining spatial trends over time. Municipalities, not households, are therefore the appropriate units of analysis. We use the stable 2011 municipal categorisation, which counts 418 municipalities. Six municipalities were excluded because they didn't meet the minimum privacy requirements for number of cases on every variable. Most municipal-level variables were aggregated from the SSD household-level data. Some variables were supplemented from the public dataset Core Figures (*Kerncijfers*) from Statistics Netherlands for 2011, the starting point of our analyses.

#### 3.2 | Methods

We use different methods to investigate spatial variations in young adult homeownership. First, we compare 2011 and 2018 homeownership rates across age groups and for different spatial units. Furthermore, we dissect spatial and temporal disparities between young adults with a low, middle, and high income. Second, we map out municipal-level homeownership rates and changes using Geographic Information Systems (GIS). We developed a cartogram map of the Netherlands, distorting municipality size proportional to the number of households<sup>2</sup> to visually correct for the relative importance of local housing markets. Third, we apply spatial regression modelling to estimate the relationships between municipal-level characteristics and the dependent variable of changing young adult homeownership. We run four separate models with different dependent variables: the relative change in young adult homeownership for (1) the full sample, and among (2) low, (3) middle, and (4) high-income young adults.

For our spatial regressions, we undertake a multi-step process that investigates spatial effects in the data and determines the appropriate modelling approach to correct for these. Data preparation, exploration, and visualisation is carried out using ArcGIS. The spatial regression modelling is undertaken using GeoDa. First, an OLS regression was run to explore general – non-spatial – relationships as well as additional diagnostics to identify spatial dependence. These diagnostics confirmed a need for spatial regression modelling as well as identifying a Spatial Error Model (SEM) – rather than a Spatial Lag Model – as most appropriate<sup>3</sup> with our data (Anselin & Rey, 2014). All our models pointed to the clear preference of a Spatial Error Model, with the exception of the high-income subgroup where a Spatial Lag Model (SLM) showed marginal predictive improvements. For comparability consistency we run SEMs, while we include SLM results

for the high-income group in Appendix A. By means of Maximum Likelihood estimation, a Spatial Error Model corrects for spatial correlation among the error terms based on the distance weighting provided (see Anselin & Bera, 1998). Optimal spatial distance weighting was carefully assessed through an iterative process. Regular distance intervals were tested ranging from the minimum (all units have at least one neighbour) to the maximum (all units influence all others) – consistently applying an inverse distance weighting that decreases influence with distance up to the threshold. Optimal ranges were identified based on the best fit model minimising the Akaike Information Criterion (AIC). These were subsequently refined with smaller intervals until the precise best fit distance weighting was selected for each model. Several additional tests were performed to assess for multicollinearity, non-normality, and heteroscedasticity. Some adjustments were made to correct for these through using standardised and logarithmic variables. The applied spatial error model was able to fully correct spatial dependency in the final full sample SEM, as measured through a Moran's I diagnostic or residuals' spatial autocorrelation (maps of model residuals provided in Appendix B). While some marginal spatial dependency remained for income subgroup models, the SEM resulted in a substantial reduction as compared to OLS regressions. This modelling approach entailed testing a wide range of models – including OLS regressions, a variety of Spatial Error and Lag Models across different distance thresholds, and selections of additional variables eventually excluded due to multicollinearity concerns. Together, these helped provide robustness checks with largely consistent effects for our main measures.<sup>4</sup>

### 3.3 | Variables

Our key dependent variable is the change in homeownership rates among young adults between 2011 and 2018 at the municipal level. Apart from analysing percentage point changes, we use a measure of relative change in homeownership rates based on the 2018 share divided by the 2011 share (2011 = 100). This measure accounts for the fact that the magnitude of change should also consider the starting level. To give an example: a five percentage point decrease is relatively more substantial if homeownership initially stood at 30%, than if it stood at 60%.

Table 1 presents an overview of the variables in our multivariate models and their descriptive statistics.<sup>5</sup> We group these variables according to the three explanatory narratives identified in the literature framework. In capturing affordability, we measure the ratio between mean values of all homeownership dwellings compared with young adults' mean gross household income. We have to rely on assessed house values (Dutch: *WOZ*) instead of actual sale prices given data availability, which exhibit a time lag of one to two years. In our data, this means the post-2013 housing boom isn't fully captured. For the purpose of our analyses, this limitation isn't problematic as it is consistent across space, but needs to be considered in interpretation. We include both the affordability ratio in 2011 and the change in this ratio over 2011–2018.

For the housing market competition narrative, we first examine several variables related to potential external competition from mid-aged households. The change in the share of middle-aged (between 40 and 65) homeowner households may be a key indicator for competition from other demographic groups. This age group is selected as representing households with the strongest economic capacity, as well as being more active on the housing market than those over 65. We also consider their gross household income level (in 2011) and change (2011–2018) *relative* to younger adult households: a larger ratio signals a comparatively richer mid-aged population – and thus potentially more likely to competitively “crowd out” younger homebuyers.

In terms of further housing market competition factors, we evaluate various pull factors that may increase local demand from young adults, driving intra-group competition as well as broader housing market pressure. We use a dummy variable to identify the 12 Dutch cities hosting a university. To identify opportunity-rich labour markets, we measure the number of jobs relative to the number of households. We take the number of addresses per square kilometre as a proxy for urbanity and access to associated amenities. The measures of young adult household population and its change are included to reflect revealed preferences.

The supply of homeownership is captured through looking at the overall 2011 homeownership share of dwellings, as well as a measure of the absolute change in this homeownership rate over the period. Additionally, we include a measure of the share of smaller dwellings (under 100 square metres) available for 2012<sup>6</sup> as the prevalence of smaller units represents the most relevant stock for young starter households. Finally, vacancy rates are examined as an indicator of potential available supply. In our controls, we additionally include initial levels (in 2011) and change (2018) in the total number of households and the percent native Dutch, as well as change in the mean household size.



TABLE 1 Overview of variables and descriptive statistics; all variables measured at municipal level

	Obs	Mean	StdDev	Min	Max
<b>Dependent variables</b>					
Relative change in total young homeownership share 2011–2018, where 2011=100	412	93.25	6.63	72.33	111.11
Relative change in homeownership share among low-income <sup>a</sup> young adults 2011–2018, where 2011=100	412	65.56	12.16	28.49	118.79
Relative change in homeownership share among mid-income <sup>b</sup> young adults 2011–2018, where 2011=100	412	97.33	6.87	64.48	130.00
Relative change in homeownership share among high-income <sup>c</sup> young adults 2011–2018, where 2011=100	412	99.68	3.32	83.00	114.34
<b>Housing affordability</b>					
Ratio of average homeownership dwelling value (WOZ) to young adult (18–39) gross income 2011	412	4.78	0.75	3.37	8.71
Change in ratio of average homeownership dwelling value (WOZ) to young adult (18–39) gross income 2011–2018	412	−0.83	0.35	−2.08	0.61
<b>Housing market competition factors</b>					
Percentage-point change in mid-aged homeowner households 2011–2018	412	−2.65	1.67	−8.00	1.52
Ratio of gross income of mid-aged compared to young households in 2011	412	1.28	0.07	1.08	1.79
Change in ratio of gross income of mid-aged compared to young households 2011–2018	412	0.04	0.06	−0.13	0.34
University in city (1=yes, 0=no)	412	0.03	0.17	0.00	1.00
Mean number of jobs per households 2011, in thousands	412	0.92	0.35	0.21	2.94
Percent young households (18–39) 2011	412	22.13	4.56	9.00	45.26
Percentage-point change in young households (18–39) 2011–2018	412	−1.36	1.49	−6.40	6.99
Address density 2011 (addresses per square kilometre)	412	991	722	123	6064
<b>Homeownership supply</b>					
Percent homeowner households 2011	412	66.12	8.14	30.04	86.74
Change in absolute number of homeowner households 2011–2018	412	42.03	814.79	−788	10,693
Percent of dwellings under 100 m <sup>2</sup> in 2012	412	33.84	12.55	4.36	85.49
Percent vacancy rate of homeownership dwellings in 2012	412	5.31	2.74	2.25	30.23
<b>Controls</b>					
Mean gross income of young households in 2011	412	68,899	8705	48,928	119,322
Percent native Dutch 2011	412	87.86	7.01	52.20	97.33
Percentage-point change in native Dutch 2011–2018	412	−1.65	1.38	−8.37	2.50
Total number of households 2011	412	17,222	29,730	611	390,000
Percent change in total households 2011–2018	412	5.34	3.14	−2.16	20.43

<sup>a</sup>Low-income = below 40th percentile.

<sup>b</sup>Mid-income = 40th to 80th percentile.

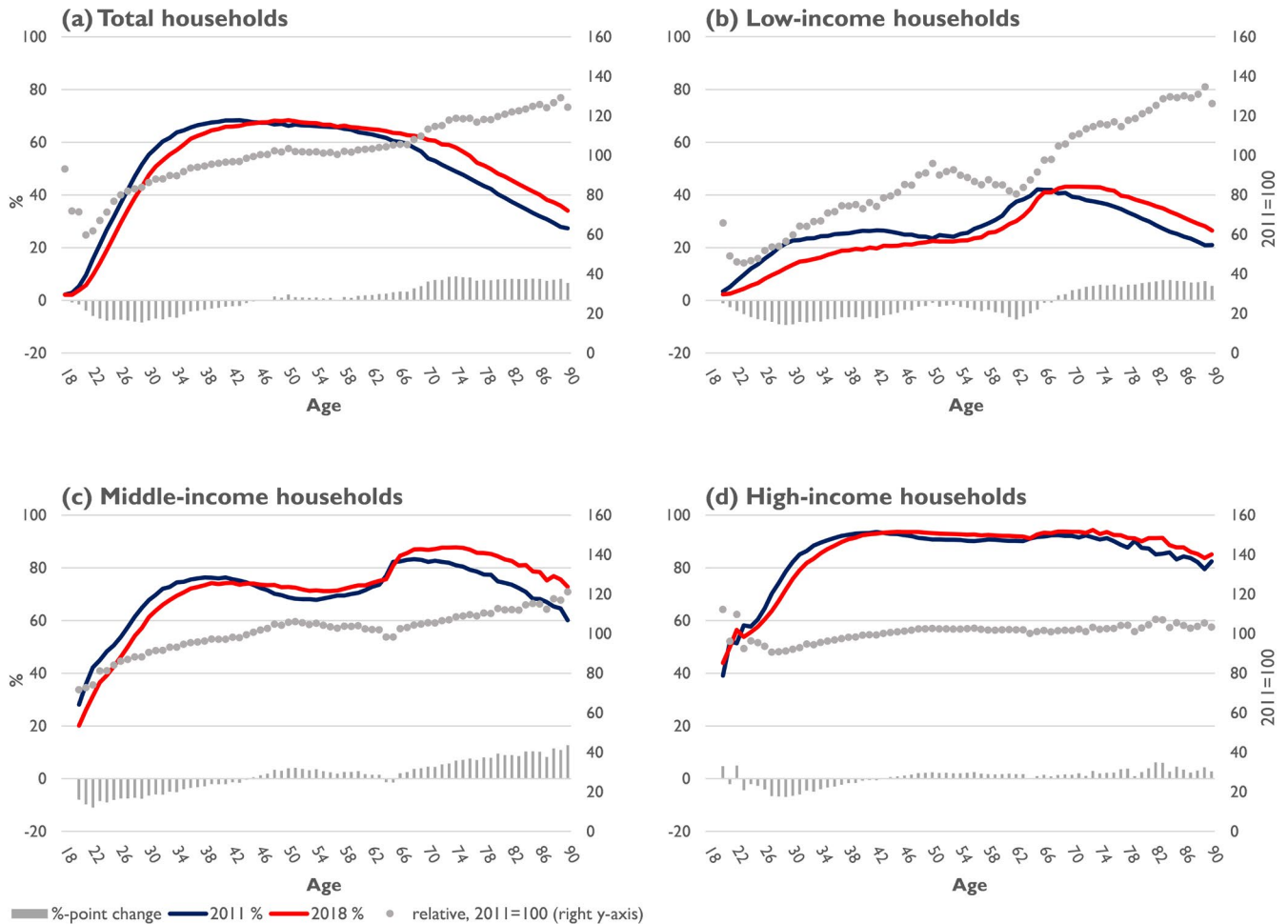
<sup>c</sup>High-income = above 80th percentile.

## 4 | RESULTS

### 4.1 | Homeownership developments by age

For decades, Dutch owner-occupancy rates rapidly increased, stimulated by pro-homeownership policies. In the post-GFC environment, however, this ground to a halt and homeownership rates stagnated. In 2011, 58.3% of all households in our dataset owned their house, compared with 58.2% in 2018. This still meant an absolute increase from 4.15 million to 4.39 million homeowners.

Overall stagnation, however, obscures divergent trends in terms of age (Figure 1a). Nationally, for all households up to the age of 44 (based on the main earner's age) homeownership decreased. The percentage-point decrease was steepest among those



**FIGURE 1** Homeownership rates in the Netherlands by age in 2011 and 2018, and change. Panels for (a) total, (b) low-income, (c) middle-income, and (d) high-income households

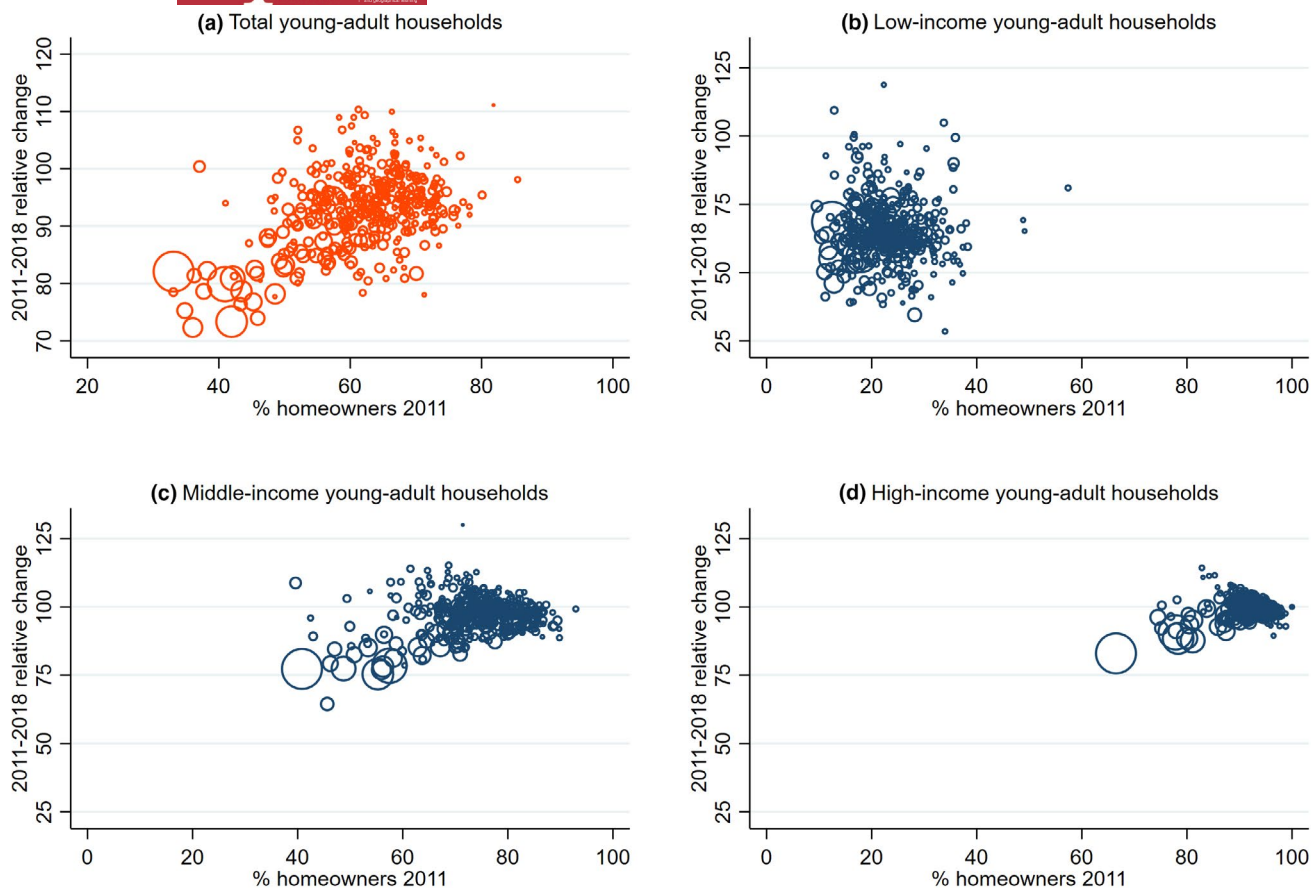
households in the mid-twenties to early thirties age groups. While 51.5% of 29-year-old households owned their home in 2011, this dropped to 43.2% in 2018. The strongest *relative* decreases in homeownership concentrate among those in their early twenties, with values gradually increasing with age.

Among households where the main earner is between the mid-forties to mid-sixties, homeownership slightly increased. For those 65 or older, the picture is one of strong increases, although total rates remain below average. Lower rates among older cohorts largely reflect the legacy of lower homeownership and broader access to social housing. Our findings thus reveal a clear cohort effect, where an older generation of renters is gradually replaced by an older homeowner generation. However, new generations of young households are increasingly renters – likely in the private sector – suggesting their mounting difficulties to buy.

Notable differentiation in homeownership trends exists between income groups (Figure 1b–d). For both percentage-point and relative change, low-income households experienced the strongest decreases in homeownership from already lower starting values, excepting those over 65. Among middle-income households, we find again a particularly clear drop among young adults. For high-income households, however, homeownership remained stable at a high level, except for some decreases among a narrower band of households in their twenties and thirties.

## 4.2 | The geography of changing homeownership

Untangling aggregate decreases in young adult homeownership reveals substantial regional variations. Plotting 2011 homeownership rates among young adult households against subsequent (2011–2018) changes shows that municipalities with the



Relative change in homeownership: 2011=100. Area of symbol proportional to the number of households per municipality in 2011

**FIGURE 2** Scatter diagrams of 2011 young adult (18–39) homeownership rates relative to 2011–2018 change (2011 = 100). Panels for (a) total, (b) low-income, (c) middle-income and (d) high-income young adult households

*Notes:* circle symbols represent municipalities, size weighted according to household population (2011). Pairwise correlations of relative change with % homeowners 2011 and municipality size, respectively: (a) Total: 0.406 ( $p < .001$ ) and  $-0.400$  ( $p < .001$ ); (b) Low-income:  $-0.055$  ( $p = .268$ ) and  $-0.084$  ( $p = .091$ ); (c) Middle-income: 0.187 ( $p = .001$ ) and  $-0.465$  ( $p < .001$ ); (d) High-income: 0.051 ( $p = .301$ ), and  $-0.506$  ( $p < .001$ )

lowest baseline rates by and large also recorded the strongest relative decreases (Figure 2a). These are typically also the largest municipalities in terms of household numbers.

Further disentangling across income groups exposes clear differences in the geography of homeownership declines (Figure 2b–d). The relatively strong decreases in low-income homeownership do not show a clear (statistically significant) relationship with 2011 homeownership rates or municipality size, as evidenced by the absence of clear patterns in the scatter plot. Patterns among middle-income young adults largely reflect overall ones, with significantly stronger decreases in larger municipalities and those with lower initial homeownership rates. Among higher income young adults, homeownership rates remained stable and high in most municipalities (above 80%, see Table 3), though some decreases in larger cities can be discerned. Change in homeownership among high-income young adults appears not significantly correlated with 2011 rates, but does have a significant negative association with municipality size. These differences convey an important message: low-income young adults face substantially decreasing homeownership access across the board, while higher income young adults only increasingly struggle in larger cities where demand is high and price increases have been strong.

Table 2 further unravels these spatially divergent trends in homeownership access across age categories for different urbanisation levels and for the four largest municipalities. In the four major cities, young adult homeownership rates showed a strong decline, particularly in The Hague ( $-11.2$  percentage points), Rotterdam ( $-8.2$ ), and Utrecht ( $-8.0$ ). Amsterdam at first sight seems to be an exception, with a decrease ( $-5.9$ ) below the national trend. The relative decrease was, however, much steeper in Amsterdam than the average.

A relatively consistent trend exists where the strongest decreases in young adult homeownership rates can be found in the most urbanised municipalities (averaging  $-8.3$  percentage points). These are also the locations where 2011 homeownership

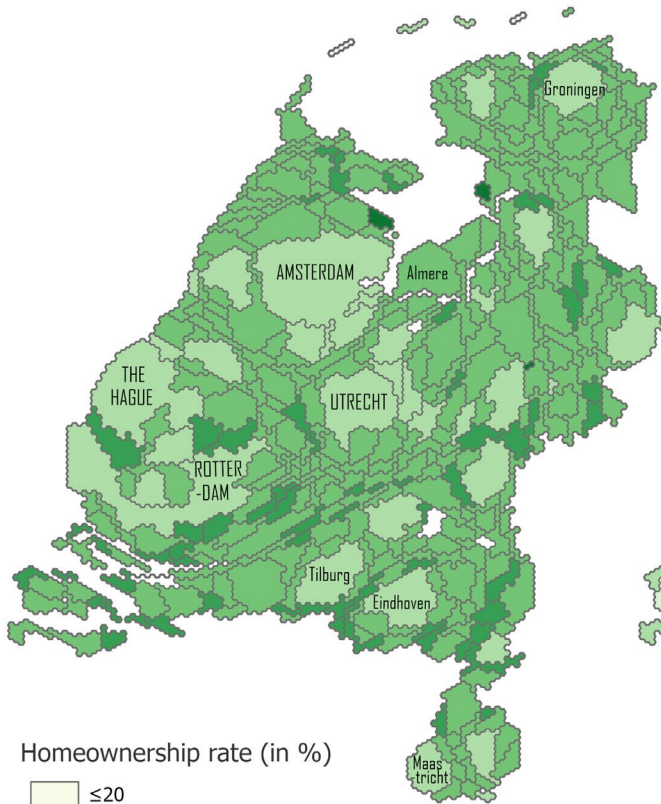
TABLE 2 Homeownership rates in the Netherlands across age groups and areas in 2011 and 2018, and change

	2011%				2018%				% -point change				Relative change (2011=100)			
	18-39	40-64	65+	Total	18-39	40-64	65+	Total	18-39	40-64	65+	Total	18-39	40-64	65+	Total
	Amsterdam	33.1	32.2	16.9	30.0	27.2	37.3	23.4	30.8	-5.9	5.1	6.5	0.8	82	116	139
Rotterdam	40.9	41.0	18.1	36.1	32.7	45.3	25.7	36.6	-8.2	4.3	7.6	0.5	80	110	142	101
The Hague	41.9	51.8	34.2	45.0	30.8	52.6	42.3	43.5	-11.2	0.8	8.1	-1.6	73	102	124	97
Utrecht	42.1	55.2	34.1	46.1	34.1	58.6	41.0	45.0	-8.0	3.4	7.0	-1.1	81	106	106	98
Other highly urbanised	44.8	58.8	36.3	49.3	35.7	60.1	45.2	48.7	-9.0	1.3	9.0	-0.6	80	102	102	99
Highly urbanised	40.2	47.2	27.9	41.0	31.9	50.2	35.8	40.7	-8.3	3.0	7.9	-0.3	79	106	128	99
Urbanised	52.1	63.8	41.3	55.4	45.5	64.8	49.8	55.7	-6.6	1.0	8.5	0.3	87	102	121	101
High density suburban	60.3	71.1	52.3	63.8	54.7	71.0	58.9	63.8	-5.6	0.0	6.5	0.0	91	100	112	100
Low density suburban	64.6	75.4	58.2	68.5	60.6	74.9	63.2	68.4	-4.0	-0.4	5.0	-0.1	94	99	109	100
Rural	66.6	78.1	62.1	71.4	63.6	77.5	67.1	71.6	-3.0	0.6	5.0	0.1	95	99	108	100
The Netherlands	53.3	66.1	47.6	58.3	46.7	66.6	54.6	58.2	-6.6	0.5	7.0	-0.1	88	101	115	100

Note: (1) relative percentage point changes are calculated by dividing percentage point changes by 2011 shares (\*100), (2) urbanisation is based on Statistics Netherlands classification using address density per km<sup>2</sup>: Highly urbanised = >2500, Urbanised = 1500-2500, High density suburban = 1000-1500, Low density suburban = 500-1000, Rural = <500.

(a) all young adults

(b) low-income young adults

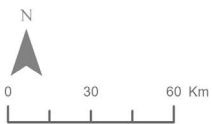
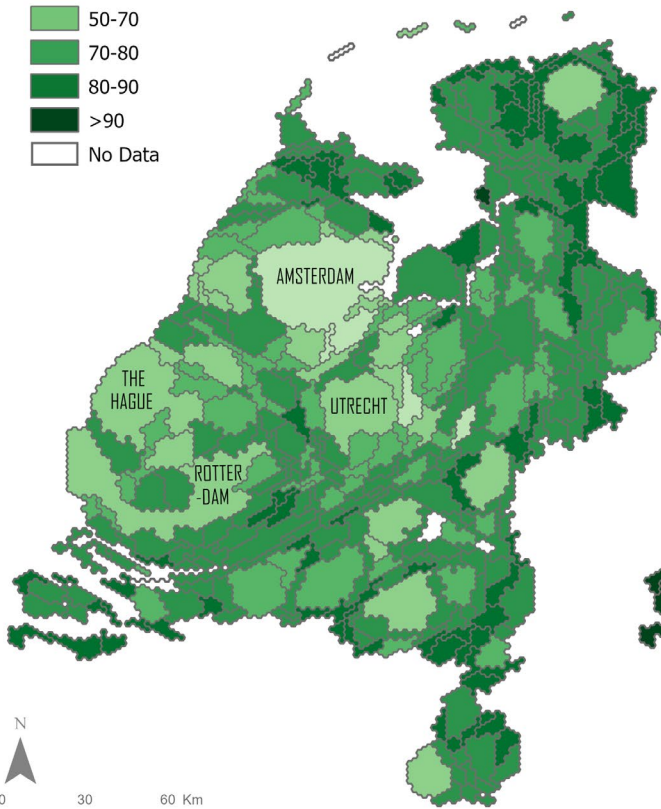


(c) mid-income young adults

(d) high-income young adults

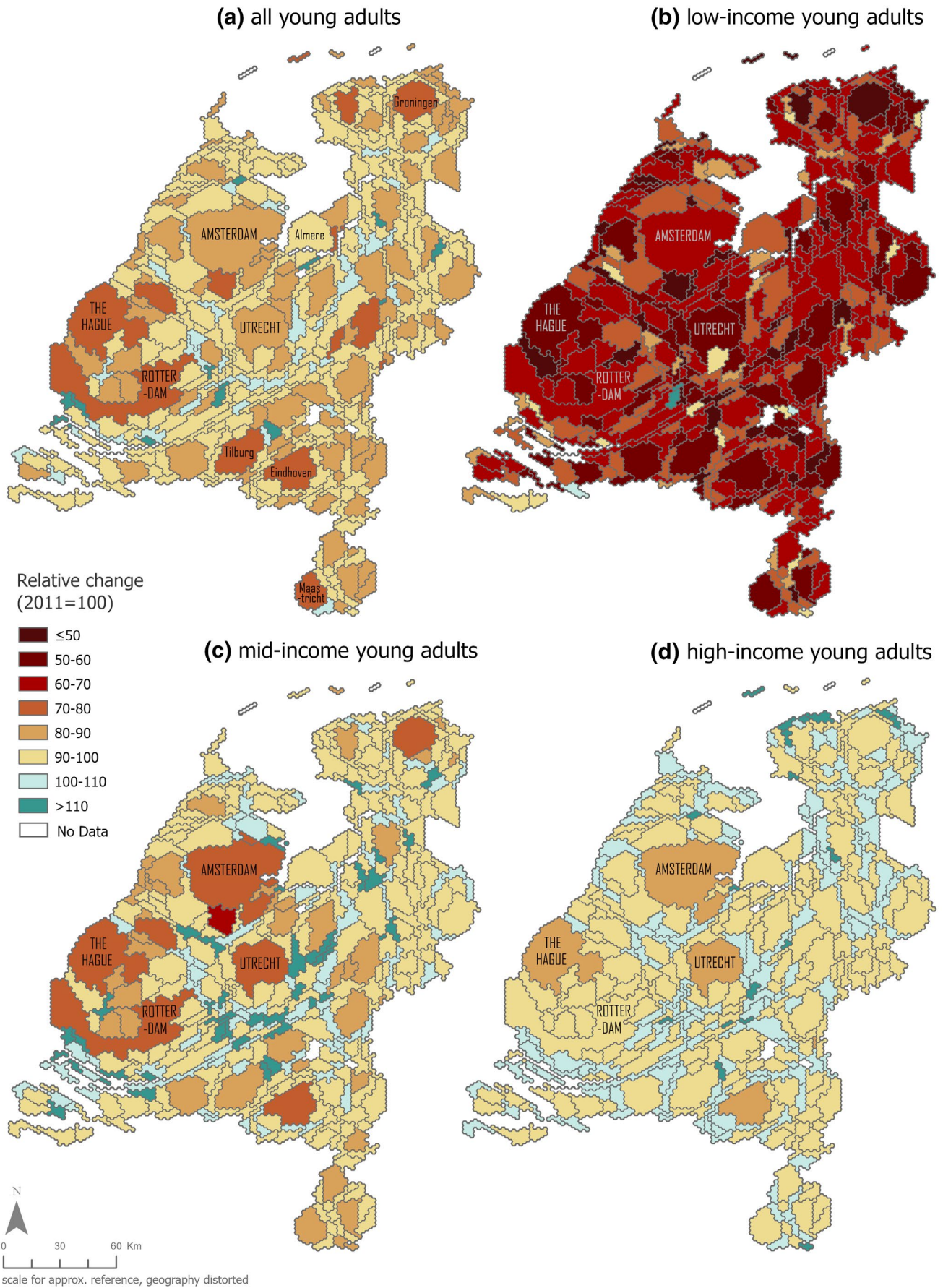
Homeownership rate (in %)

- ≤20
- 20-30
- 30-50
- 50-70
- 70-80
- 80-90
- >90
- No Data



scale for approx. reference, geography distorted

FIGURE 3 Young adult homeownership rates in 2011 at the municipal level. Panels for (a) total, (b) low-income, (c) middle-income, and (d) high-income young adult households. Map is a cartogram distorted based on number of households per municipality



**FIGURE 4** Relative change in young adult homeownership rates between 2011 and 2018 at the municipal level. Panels for (a) total, (b) low-income, (c) middle-income, and (d) high-income young adult households. Map is a cartogram distorted based on number of households per municipality

**TABLE 3** Homeownership rates in the Netherlands among young adult households (aged 18–39), across income groups and areas in 2011 and 2018, and change

	2011%				2018%				%–point change				Relative change (2011 = 100)			
	Low	Mid	High	Total	Low	Mid	High	Total	Low	Mid	High	Total	Low	Mid	High	Total
Amsterdam	12.5	40.8	66.5	33.1	8.6	31.6	55.2	27.2	–3.9	–9.3	–11.3	–5.9	69	77	83	82
Rotterdam	16.9	57.5	77.9	40.9	10.2	45.1	70.6	32.7	–6.7	–12.4	–7.3	–8.2	60	78	91	80
The Hague	18.1	55.3	78.3	41.9	10.1	41.7	69.3	30.8	–8.0	–13.6	–9.0	–11.2	56	75	88	73
Utrecht	12.3	48.7	81.1	42.1	6.8	37.7	71.1	34.1	–5.5	–11.0	–9.9	–8.0	55	77	88	81
Other highly urbanised	15.9	59.9	84.7	44.8	8.9	49.7	80.2	35.7	–7.0	–10.2	–4.5	–9.0	56	83	95	80
Highly urbanised	15.2	52.6	76.8	40.2	9.0	41.3	67.4	31.9	–6.1	–11.3	–9.4	–8.3	60	79	88	79
Urbanised	18.1	67.2	88.7	52.1	11.4	61.4	85.5	45.5	–6.7	–5.8	–3.2	–6.6	63	91	96	87
High density suburban	21.9	73.8	92.7	60.3	13.6	70.6	91.7	54.7	–8.4	–3.1	–0.9	–5.6	62	96	99	91
Low density suburban	24.3	77.1	93.3	64.6	15.6	75.6	93.4	60.6	–8.8	–1.5	0.0	–4.0	64	98	100	94
Rural	27.6	79.2	93.2	66.6	18.6	78.8	93.9	63.6	–9.1	–0.4	0.7	–3.0	67	100	101	95
The Netherlands	19.1	67.8	87.1	53.3	11.9	61.8	82.8	46.7	–7.2	–6.0	–4.3	–6.6	62	91	95	88

*Note:* (1) relative percentage point changes are calculated by dividing percentage point changes by 2011 shares (\*100), (2) urbanisation is based on Statistics Netherlands classification using address density per km<sup>2</sup>: Highly urbanised = >2500, Urbanised = 1500–2500, High density suburban = 1000–1500, Low density suburban = 500–1000, Rural = <500.

shares were already the lowest. Conversely, young homeownership decreased at a lower rate in rural and suburban areas, particularly in relative terms. Such dynamics point to an important trend in rising spatial polarisation, with disparities in young adult homeownership increasing between higher and lower density localities.

Spatial patterns further differ between low-, middle-, and high-income young adults. Figure 3 first maps 2011 homeownership rates per municipality. Looking at the full sample of young adults (Figure 3a), we see a consistent pattern of lower young adult homeownership rates in larger municipalities. Among the ten municipalities with the lowest rates are the two largest cities of Amsterdam and Rotterdam, as well as university cities such as Maastricht and Groningen. The highest rate can be found in Urk (found midway between Almere and Groningen on the maps), a low-density village municipality where some 85% of young adult households were homeowners. Differences across our subgroups (Figure 3b–d) expose the stark variations in homeownership attainment across income classes, with 2011 rates substantially elevated among high-income households and lower among those with lower incomes. Despite differences in absolute terms, geographic patterns are largely reflected across income groups, with the largest and university cities exhibiting relatively lower rates.

Figure 4 subsequently maps relative changes in young adult homeownership (also Table 3). Mapping out trends among all young adults (Figure 4a), first, shows that in the vast majority of municipalities, homeownership rates declined between 2011 and 2018. This was the case in 360 out of 412 municipalities, or 87% of all municipalities (counting 95% of young adult households). Second, while at first glance it may seem difficult to discern a specific geography, the map reaffirms a pattern of the strongest relative declines mostly being in large and medium-sized cities.

Examining the geographic patterns across income classes (Figure 4b–d) once again reflects the particularly disadvantaged position of low-income young adults over this period for which relative declines have been stark and widespread: 99% of municipalities exhibited a decline among this group. Mid-income young adults appear to best reflect the overall geographic variation across the country, but with a somewhat more advantaged position (68% of municipalities revealed a homeownership decline) and somewhat greater variation. Finally, mapping trends among high-income young adults clearly reveals their more privileged position with limited relative change to their already higher homeownership shares. Just over half of municipalities (54%) saw declines, with most of these being relatively minimal, the exceptions being larger cities where decreases are more pronounced. These trends crucially point to the highly classed nature of spatially divergent housing market exclusion.

### 4.3 | Spatial regression modelling

We subsequently unravelled spatial relationships through applying spatial regression modelling, specifically Spatial Error Models (SEM). Turning to the full sample model among all young adults (Table 4a), the regression points to an explanatory power of roughly 66% (pseudo *R*-squared). In terms of affordability, both the ratio of house value to young adult income in 2011 and the change in this ratio are negatively associated with trends in young adult homeownership. In other words, controlling for other factors, housing markets that were already more unaffordable and those that saw worsening affordability are significantly associated with greater declines in young homeownership. Affordability differences across municipalities are thus central to driving geographic divides in housing market opportunities for young adults.

In terms of our second focus on factors driving competition dynamics, we first include several measures related to external (crowding-out) competition. Crucially, and supporting our assumptions, we find relative income improvements among mid-aged households (as a ratio to young adult income) have a substantial negative relationship with young adult homeownership attainment. Simply put, young adult homeownership rates decreased more in municipalities where mid-aged households became comparatively richer between 2011 and 2018, indicating potential housing market competition dynamics.

We also find some relevant results when looking at our factors related to internal competition or broader urban drivers of housing market pressure. The presence of a university ( $p = .086$ ) and address density ( $p < .01$ ) as a measure of urbanity are both negatively associated with trends in homeownership attainment. This suggests that – independent of decreasing affordability – young adults struggle more in higher density and knowledge centres. The findings thus broadly support an expected association between municipal pull factors and more constrained young adult homeownership entry in these more competitive housing markets. At the same time, these factors may also point to higher shares of young adults in transitional phases in these urban areas either not able or not choosing (yet) to enter homeownership. In a similar vein, the initial share of young adults is also negatively correlated with trends in young homeownership ( $p = .053$ ), as expected.

Our final explanatory narrative looks at the effect of local homeownership supply. While we expected that contexts having higher initial homeownership shares would provide greater leeway for homeownership entry, controlling for all other measures,



TABLE 4 Spatial error model (SEM) – maximum likelihood estimation

	a) Total young adults				b) Low-income young adults				c) Mid-income young adults				d) High-income young adults			
	Dependent variable: Relative change in total young adult homeownership share 2011–2018				Dependent variable: Relative change in homeownership share among low-income <sup>b</sup> young adults 2011–2018				Dependent variable: Relative change in homeownership share among mid-income <sup>c</sup> young adults 2011–2018				Dependent variable: Relative change in homeownership share among high-income <sup>d</sup> young adults 2011–2018			
	Spatial weight <sup>a</sup> :	42 km	64 km	50 km	120 km	Observations:	412	412	412	412	Observations:	412	412	412	412	
	Pseudo R <sup>2</sup> :	0.658	0.217	0.543	0.184	Log likelihood:	-1148.25	-1580.04	-1222.24	-1586.52	Akaike info cr.:	2338.5	3202.08	2486.48	3215.05	
	Schwarz cr.:	2422.94	3286.52	2570.92	3299.49	Coeff.					S.E.					
	z					p					z					
<b>Housing affordability</b>																
Ratio of average homeownership value to young adult gross income 2011 (standardised)	-1.61***	0.46	-3.49	.000	-3.51**	1.21	-2.91	.004	-2.46***	0.54	-4.59	.000	-3.86**	1.21	-3.20	.001
Change in ratio of av. homeownership value to young adult gr. income 2011–2018 (standardised)	-2.39***	0.40	-6.03	.000	-2.15*	1.09	-1.97	.049	-2.24***	0.47	-4.77	.000	-2.18*	1.08	-2.02	.044
<b>Housing market competition factors</b>																
Percentage-point change in mid-aged homeowner households 2011–2018 (standardised)	-0.21	0.36	-0.58	.564	-1.44	1.01	-1.42	.157	0.76 <sup>†</sup>	0.43	1.76	.078	-1.75 <sup>†</sup>	1.01	-1.73	.083
Ratio of gross income of mid-aged compared to young households in 2011 (standardised)	0.13	0.31	0.42	.675	0.73	0.86	0.85	.396	0.50	0.37	1.35	.178	1.21	0.84	1.43	.152
Change in ratio of gross income of mid-aged compared to young households 2011–2018 (std.)	-1.81***	0.26	-7.03	.000	-0.82	0.73	-1.12	.263	0.09	0.31	0.28	.776	-0.86	0.74	-1.17	.243
University in city	-2.65 <sup>†</sup>	1.54	-1.72	.086	-5.33	4.39	-1.22	.224	-3.03 <sup>†</sup>	1.84	-1.65	.099	-7.38 <sup>†</sup>	4.41	-1.67	.094
Number of jobs per households 2011, in thousands (standardised)	-0.19	0.26	-0.73	.465	0.33	0.74	0.45	.654	-0.11	0.31	-0.37	.708	0.06	0.75	0.08	.939
Percent young households (18–39) 2011 (standardised)	-0.85 <sup>†</sup>	0.44	-1.94	.053	-1.01	1.23	-0.82	.411	-0.92 <sup>†</sup>	0.52	-1.77	.077	-0.07	1.19	-0.06	.951

(Continues)

TABLE 4 (Continued)

Variables (at the municipal level)	Coeff.	S.E.	z	p	Coeff.	S.E.	z	p	Coeff.	S.E.	z	p
Percentage-point change in young households (18–39) 2011–2018 (natural log, standardised)	0.08	0.21	0.37	.712	0.13	0.60	0.21	.834	0.01	0.25	0.03	.974
Address density 2011 (natural log, standardised)	-1.09**	0.42	-2.60	.009	-3.25**	1.19	-2.73	.006	-1.34**	0.50	-2.68	.007
Homeownership supply												
Percent homeownership in 2011 (standardised)	-1.48**	0.54	-2.74	.006	-1.35	1.49	-0.91	.364	-1.76**	0.63	-2.78	.005
Change in absolute number of homeownership dwellings 2011–2018 (standardised)	0.26	0.30	0.89	.373	0.35	0.85	0.40	.686	-0.04	0.36	-0.12	.907
Percent of dwellings under 100 m <sup>2</sup> in 2012 (standardised)	0.02	0.38	0.06	.950	-0.99	1.07	-0.93	.354	-0.53	0.45	-1.16	.245
Percent vacancy rate of homeownership dwellings in 2012	0.02	0.24	0.07	.942	0.32	0.68	0.47	.636	0.21	0.29	0.71	.477
Controls												
Mean gross income of young households in 2011 (standardised)	1.96***	0.43	4.55	.000	-1.27	1.17	-1.09	.276	1.16*	0.51	2.29	.022
Percent native Dutch 2011 (standardised)	0.67 <sup>†</sup>	0.40	1.66	.097	-3.39**	1.12	-3.02	.003	1.49**	0.48	3.13	.002
Percentage-point change in native Dutch 2011–2018 (standardised)	1.30***	0.28	4.59	.000	4.54***	0.79	5.74	.000	0.45	0.34	1.33	.183
Number of households 2011 (natural log, standardised)	-0.53	0.34	-1.57	.116	2.18*	0.97	2.25	.024	-1.19**	0.40	-2.94	.003
Percent change in number of households 2011–2018 (natural log, standardised)	0.32	0.22	1.47	.140	0.56	0.62	0.90	.368	0.31	0.26	1.19	.235
Change in mean household size 2011–2018 (standardised)	1.10***	0.26	4.26	.000	1.22 <sup>‡</sup>	0.73	1.67	.095	-0.30	0.31	-0.95	.340
Constant	93.2***	1.13	82.34	.000	63.4***	4.31	14.70	.000	97.0***	1.74	55.71	.000
Lambda	0.83***	0.07	12.60	.000	0.87***	0.07	12.12	.000	0.87***	0.06	13.87	.000

<sup>†</sup>Distance thresholds apply inverse distance weighting.

<sup>‡</sup>Low-income = below 40th percentile.

<sup>§</sup>Mid-income = 40th to 80th percentile.

<sup>¶</sup>High-income = above 80th percentile.

<sup>‡</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

our findings in fact point to a negative association ( $p < .01$ ). Furthermore, we do not find statistically significant relationships for increasing homeownership supply (as measured by the absolute change in owner-occupied units), the presence of a stock of smaller dwellings, and the pool of vacant units. These findings suggest little support for the assumption of an isolated effect of increased supply on young adults' ownership prospects.

The subsequent modelling across income groups (Table 4b–d) reveals some notable differences and important commonalities. First, our spatial regression models for both low-income and high-income groups exhibit lower predictive power than for the full sample or mid-income young adults. This reflects the greater geographic homogeneity in homeownership trends within these groups, albeit in relation to very different dynamics, with low-income young households broadly experiencing widespread decline and high-income ones seeing widespread stagnation. Our measures of affordability continue to indicate its central role in homeownership attainment across all income groups, albeit to a lesser degree for high-income households.

While we saw that mid-aged households' relative income strongly relates to dwindling homeownership rates among the full population of young adults, suggesting competition, we do not find this across individual young adult income groups. Tentatively, it may be the case that mid-aged households crowd out young adults of different incomes across municipalities, adding up to a significant *total* effect. In terms of other competition factors, address density is significantly negatively correlated across the three subgroup models, with the effect being most pronounced for both low-income and high-income young adults. This reflects the particularly strong relative decline in homeownership across more urban municipalities, including higher income young adults being crowded out of some of the largest cities. University presence is a negative predictor for changing homeownership among mid- and high-income young adults, but not for their low-income peers. Finally, homeownership supply effects remain largely similar but mostly insignificant across the income groups, with the notable exception of an unexpected negative correlation between change in the number of homeownership dwellings.

Overall, our modelling points to a strong variation in the importance of local explanatory factors dependent on income position and, even where common drivers are apparent, such as affordability and urbanity measures, the strength of such determinants vary across incomes. Several other factors show very different or opposing relationships with homeownership trends dependent on income position. These findings highlight the significantly classed dimension of drivers and outcomes of homeownership attainment among young adults and the necessity to further understand disaggregated – and potentially contradictory – dynamics across different socio-economic groups.

## 5 | CONCLUSION

The worsening fortunes of young adults on the housing market have garnered substantial scholarly attention, particularly their decreasing ability to enter homeownership. While existing research has commonly painted the plight of younger adults with broad brushstrokes in terms of the rise of “Generation Rent” or the dawn of a “post-homeownership society,” we argue the need for understanding how such trends may be crucially differentiated across space and class. In this paper we have presented fine-grained analyses of changes in young adult homeownership across the Netherlands, untangling how such trends are stratified across geography and income classes. From these analyses we can derive several key conclusions with valuable implications towards existing academic knowledge on the topic.

First, our findings stress a notable decrease in owner-occupancy among young adults in the Netherlands between 2011 and 2018. We find consistent decreases for households up to their early forties, suggesting a broad trend, whereas the most pronounced decreases in homeownership were concentrated among those in their late twenties and early thirties. Conversely, homeownership rates increased among those in their sixties or older. These patterns highlight growing generational fractures in homeownership access, echoing assessments from recent studies (Flynn, 2020; Forrest & Hirayama, 2018; Lennartz et al., 2016; McKee et al., 2017).

We contend that such declining access to homeownership has significant individual and societal implications. At the same time, in discussing young adults' worsening fortunes on the owner-occupied market, one risks reproducing discourses privileging homeownership. Preferences for homeownership are not “natural,” but entangled in socialisation and discourses reproducing an ideology of homeownership. Similarly, advantages of homeownership are not self-evident, but largely the product of policies that have privileged it over other tenures (Ronald, 2008). Nonetheless, as affordable and secure rental alternatives are increasingly scarce, young adults' inability to buy becomes more problematic. In the Netherlands, young adults are increasingly dependent on private rental, where their rent burdens are high and increasing, representing 45% of their net income in 2018 (Statistics Netherlands, 2019). Furthermore, a growing share of young tenants in the Dutch context face housing

insecurity following the introduction of short-term leases in 2016 (Huisman, 2020). Given a lack of affordable housing options, an increasing number of young adults are also extending their stay in the parental home, delaying key life-course transitions (Lennartz et al., 2016).

Second, this study adds a novel spatial perspective to the analysis of young adults' entry into homeownership by focusing on municipal-level trends. Findings reveal both key spatial commonalities and divergences. On the one hand, young adult homeownership rates decreased between 2011 and 2018 in the vast majority of municipalities, the case across 87% of municipalities. This highlights that young adults' housing struggles are far from restricted to the "hottest" markets, but are widespread across most of the country. However, despite this common trend, our analyses also reveal stark spatial disparities in the degree of decline. Decreases in young adults' homeownership attainment are strongest in more urbanised regions, specifically the largest cities where price increases have been steep, indicating a trend towards growing spatial inequality in homeownership opportunities for young households. These developments may deepen ongoing spatial housing-market polarisation (Arundel & Hochstenbach, 2020; Hochstenbach & Arundel, 2020).

Our paper underscores the utility of advanced spatial modelling techniques to understand these spatial housing-market trends. Multivariate analyses of municipal-level factors across three explanatory narratives provided exploratory findings of municipal-level drivers of spatial divergences. These analyses confirm local housing affordability conditions to be central in determining young adults' worsening homeownership prospects. Independent of decreasing affordability, we also find evidence of relatively strong decreases in young adult homeownership in more urbanised municipalities and those with a university presence. Together, these findings point to high-pressure housing markets that attract a concentration of population and capital becoming more difficult for young homeownership entry.

Third, and building on the prior two points, this paper feeds into contemporary debates on young adults' homeownership prospects, particularly debates revolving around the utility of the concept of a generation rent or the shift towards a post-homeownership society. We show that declines in homeownership attainment are strongest and most widespread among low-income young adults, whose initial homeownership rates were already much lower. These findings suggest that households previously on the edges of homeownership are now pushed into other housing arrangements – and increasingly more precarious ones. More fundamentally, exclusion from homeownership, especially in the hottest property markets, amplifies structural divides among young adults. As affluent and privileged young households continue to find routes into owner-occupancy, they can subsequently capitalise on future house-price appreciation. This dynamic reproduces and exacerbates structural and long-term wealth disparities among young adults (Christophers, 2018), underscoring the increasing importance of wealth accumulation through housing in class stratification and inequality (Adkins et al., 2021; Arundel, 2017; Forrest & Hirayama, 2018; Hochstenbach, 2018). The findings of this paper thus stress the importance of considering increasing generational housing-market disparities not in isolation, but in their intersection with fundamental, persistent, and even widening class inequalities (Arundel, 2017; Christophers, 2018; Coulter et al., 2020; McKee, 2012).

Our findings further reveal how age and class crucially intersect with space in shaping housing-market outcomes. Spatial patterns vary substantially among young adults of different incomes. Low-income young adults face reduced access across the board, including in low-demand areas (decreasing in 99% of municipalities). High-income young adults, on the other hand, see minimal change in their more privileged homeownership access across most municipalities. Where decreases occur, these are more spatially concentrated, most notably in some larger cities where demand for housing is high, competition fierce, and price appreciation strong. Here, even affluent young adults run up against the limits of what they can afford. Overall, young adults face the strongest exclusion from owner-occupation precisely in those urban municipalities that typically offer most opportunities, which may structure long-term inequalities across labour, housing, and educational trajectories over the life-course. Hence, apart from analysing generational divides along with class inequalities, this paper forwards scholarly debate on young adult housing market exclusion by calling for a more *spatialised* understanding of their worsening prospects.

This paper has unravelled how homeownership access is structured at the intersection of age, class, and space. Housing-market transformations forge and reproduce socio-spatial inequalities both *between* and *within* generations. This results in both common and divergent experiences across space. Here, we have provided an investigation into explanatory factors of spatial divergence in young adult homeownership opportunities, with the hope of spurring further in-depth and multi-scalar research into drivers of intra-national divides in homeownership access. Surprisingly, such spatial housing-market analyses have received scant attention. Housing research tends to focus on national or cross-national variations, while there is also a wealth of sociological and geographical studies focusing on individual-level determinants of housing position. A greater sensitivity to meso-level dynamics – and their interaction with individual and macro levels – can fruitfully inform future research agendas, particularly in how these structure growing inequalities across populations and space.

## ACKNOWLEDGEMENTS

The authors thank the reviewers and editor for their useful suggestions and supportive feedback. Both authors acknowledge the support of an individual VENI grant from NWO, the Dutch Research Council: Cody Hochstenbach for his project “Investing in inequality: how the increase in private housing investors shapes social divides” (VI. Veni.191S.014) and Rowan Arundel for his project “WEALTHSCAPES: the spatial inequality of housing wealth accumulation” (VI. Veni.201S.031).

## DATA AVAILABILITY STATEMENT

This paper draws on author calculations of non-public micro-data from the Systems of Social-statistical Datasets (SSD) from Statistics Netherlands (CBS). Derived data supporting the findings of this study are available from the authors on request.

## ORCID

Cody Hochstenbach  <https://orcid.org/0000-0002-9030-9102>

Rowan Arundel  <https://orcid.org/0000-0003-2518-2923>

## ENDNOTES

- <sup>1</sup> We have run the same analyses using a stricter 18–34 categorisation, returning similar though slightly more pronounced results.
- <sup>2</sup> Municipalities are distorted using the Gastner-Newman diffusion algorithm (Gastner & Newman, 2004). These are binned into a hexagonal lattice for ease of interpretation.
- <sup>3</sup> Spatial diagnostics in GeoDa allow assessing the suitability of a spatial error versus a spatial lag model through comparisons of Lagrange-Multiplier (LM) values and robust LM (see Anselin & Rey, 2014).
- <sup>4</sup> Additional models available on request.
- <sup>5</sup> We present here the statistics before standardisation, to enhance interpretability.
- <sup>6</sup> These data are only available from 2012. Despite the one-year discrepancy, aggregate municipal values are unlikely to have changed to any relevant degree.

## REFERENCES

- Aalbers, M.B. (2016) *The financialisation of housing: A political economy approach*. New York, NY: Routledge.
- Aalbers, M.B., Hochstenbach, C., Bosma, J. & Fernandez, R. (2020) The death and life of private landlordism: How financialized homeownership gave birth to the buy-to-let market. *Housing, Theory and Society*, Online First. Available from: <https://doi.org/10.1080/14036096.2020.1846610>
- Adkins, L., Cooper, M. & Konings, M. (2021) Class in the 21st century: Asset inflation and the new logic of inequality. *Environment and Planning A: Economy and Space*, 53(3), 548–572. Available from: <https://doi.org/10.1177/0308518X19873673>
- Anselin, L. & Bera, A. (1998) Spatial dependence in linear regression models with an introduction to spatial econometrics. In: Ullah, A. & Giles, D.E. (Eds.) *Handbook of applied economic statistics*. New York, NY: Marcel Dekker, pp. 237–289.
- Anselin, L. & Rey, S.J. (2014) *Modern spatial econometrics in practice: A guide to GeoDa, GeoDaSpace and PySAL*. Chicago, IL: GeoDa Press LLC.
- Ansell, B. (2014) The political economy of ownership: Housing markets and the welfare state. *American Political Science Review*, 108(2), 383–402. Available from: <https://doi.org/10.1017/S000305541400045>
- Arnett, J.J. (2006) Emerging adulthood in Europe: A response to Bynner. *Journal of Youth Studies*, 9(1), 111–123. Available from: <https://doi.org/10.1080/13676260500523671>
- Arundel, R. (2017) Equity inequity: Housing wealth inequality, inter and intra-generational divergences, and the rise of private landlordism. *Housing, Theory and Society*, 34(2), 176–200.
- Arundel, R. & Hochstenbach, C. (2020) Divided access and the spatial polarization of housing wealth. *Urban Geography*, 41(4), 497–523. Available from: <https://doi.org/10.1080/02723638.2019.1681722>
- Arundel, R. & Lennartz, C. (2020) Housing market dualization: Linking insider–outsider divides in employment and housing outcomes. *Housing Studies*, 35(8), 1390–1414. Available from: <https://doi.org/10.1080/02673037.2019.1667960>
- Arundel, R. & Ronald, R. (2021) The false promise of homeownership: Homeowner societies in an era of declining access and rising inequality. *Urban Studies*, 58(6), 1120–1140. Available from: <https://doi.org/10.1177/0042098019895227>
- Bayrakdar, S., Coulter, R., Lersch, P. & Vidal, S. (2019) Family formation, parental background and young adults’ first entry into homeownership in Britain and Germany. *Housing Studies*, 34(6), 974–996. Available from: <https://doi.org/10.1080/02673037.2018.1509949>
- Bell, D. & Blanchflower, D. (2011) Young people and the great recession. *Oxford Review of Economic Policy*, 27(2), 241–267. Available from: <https://doi.org/10.1093/oxrep/grr011>
- Biegert, T. (2014) On the outside looking in? Transitions out of non-employment in the United Kingdom and Germany. *Journal of European Social Policy*, 24(1), 3–18. Available from: <https://doi.org/10.1177/0958928713511283>
- Christophers, B. (2018) Intergenerational inequality? Labour, capital, and housing through the ages. *Antipode*, 50(1), 101–121. Available from: <https://doi.org/10.1111/anti.12339>

- Coulter, R. (2017) Local house prices, parental background and young adults' homeownership in England and Wales. *Urban Studies*, 54(14), 3360–3379. Available from: <https://doi.org/10.1177/0042098016668121>
- Coulter, R., Bayrakdar, S. & Berrington, A. (2020) Longitudinal life course perspectives on housing inequality in young adulthood. *Geography Compass*, 14(5), e12488. Available from: <https://doi.org/10.1111/gec3.12488>
- Crouch, C. (2009) Privatised Keynesianism: An unacknowledged policy regime. *The British Journal of Politics and International Relations*, 11(3), 382–399. Available from: <https://doi.org/10.1111/j.1467-856X.2009.00377.x>
- De Groot, C., Manting, D. & Mulder, C.H. (2013) Longitudinal analysis of the formation and realisation of preferences to move into homeownership in the Netherlands. *Journal of Housing and the Built Environment*, 28(3), 469–488. Available from: <https://doi.org/10.1007/s10901-012-9320-7>
- DNB (2018) *Overzicht Financiële Stabiliteit voorjaar 2018*. Amsterdam, Netherlands: De Nederlandsche Bank.
- Doling, J. & Ford, J. (2007) A union of home owners. *International Journal of Housing Policy*, 7(2), 113–117. Available from: <https://doi.org/10.1080/14616710701309446>
- Doling, J. & Ronald, R. (2010) Home ownership and asset-based welfare. *Journal of Housing and the Built Environment*, 25(2), 165–173. Available from: <https://doi.org/10.1007/s10901-009-9177-6>
- Dotti Sani, G.M. & Acciai, C. (2018) Two hearts and a loan? Mortgages, employment insecurity and earnings among young couples in six European countries. *Urban Studies*, 55(11), 2451–2469. Available from: <https://doi.org/10.1177/0042098017717211>
- Eurostat. (2018) *Being young in Europe today – Labour market: Access and participation*. Available from: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Being\\_young\\_in\\_Europe\\_today\\_-\\_labour\\_market\\_-\\_access\\_and\\_participation](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Being_young_in_Europe_today_-_labour_market_-_access_and_participation). Accessed June 11, 2021.
- EMF (2017). *Hypostat 2017. A review of Europe's mortgage and housing markets*. Brussels, Belgium: European Mortgage Federation.
- Fernandez, R. & Aalbers, M.B. (2016) Financialization and housing: Between globalization and varieties of capitalism. *Competition & Change*, 20(2), 71–88. Available from: <https://doi.org/10.1177/1024529415623916>
- Filandri, M. & Bertolini, S. (2016) Young people and home ownership in Europe. *International Journal of Housing Policy*, 16(2), 144–164. Available from: <https://doi.org/10.1080/14616718.2015.1130606>
- Fisher, J.D. & Gervais, M. (2011) Why has home ownership fallen among the young? *International Economic Review*, 52(3), 883–912. Available from: <https://doi.org/10.1111/j.1468-2354.2011.00653.x>
- Florida, R. (2008) *Who's your city? How the creative economy is making where to live the most important question of your life*. New York, NY: Basic Books.
- Flynn, L.B. (2020) The young and the restless: Housing access in the critical years. *West European Politics*, 43(2), 321–343. Available from: <https://doi.org/10.1080/01402382.2019.1603679>
- Forrest, R. & Hirayama, Y. (2018) Late home ownership and social re-stratification. *Economy and Society*, 47(2), 257–279. Available from: <https://doi.org/10.1080/03085147.2018.1459368>
- García-Lamarca, M. & Kaika, M. (2016) 'Mortgaged lives': The biopolitics of debt and housing financialisation. *Transactions of the Institute of British Geographers*, 41(3), 313–327. Available from: <https://doi.org/10.1111/tran.12126>
- Gastner, M. & Newman, M. (2004) Diffusion-based method for producing density-equalizing maps. *Proceedings of the National Academy of Sciences of the United States of America*, 101(20), 7499–7504. Available from: <https://doi.org/10.1073/pnas.0400280101>
- Glaeser, E. (2011) *Triumph of the city. How our greatest invention makes us richer, smarter, greener, healthier, and happier*. New York, NY: Penguin Press.
- Helderman, A. & Mulder, C. (2007) Intergenerational transmission of homeownership: The roles of gifts and continuities in housing market characteristics. *Urban Studies*, 44(2), 231–247. Available from: <https://doi.org/10.1080/00420980601075018>
- Hills, J., Cunliffe, J., Gambaro, L., & Obolenskaya, P. (2013). *Winners and losers in the crisis: The changing anatomy of economic inequality in the UK 2007–2010*. Social policy in a cold climate: Research report 2. London, UK: Centre for Analysis of Social Exclusion, LSE.
- Hochstenbach, C. (2017) *Inequality in the gentrifying European city*. PhD dissertation, University of Amsterdam.
- Hochstenbach, C. (2018) Spatializing the intergenerational transmission of inequalities: Parental wealth, residential segregation, and urban inequality. *Environment and Planning A: Economy and Space*, 50(3), 689–708. Available from: <https://doi.org/10.1177/0308518X17749831>
- Hochstenbach, C. & Arundel, R. (2020) Spatial housing market polarisation: National and urban dynamics of diverging house values. *Transactions of the Institute of British Geographers*, 45(2), 464–482. Available from: <https://doi.org/10.1111/tran.12346>
- Huisman, C. (2020) *Insecure tenure. The precarisation of rental housing in the Netherlands*. PhD dissertation, University of Groningen.
- Inchauste, G., Karver, J., Kim, Y.S. & Jedil, M.A. (2018) *Living and leaving. Housing, mobility and welfare in the European Union*. Washington, DC: World Bank.
- Kadi, J., Hochstenbach, C. & Lennartz, C. (2020) Multiple property ownership in times of late homeownership: A new conceptual vocabulary. *International Journal of Housing Policy*, 20(1), 6–24. Available from: <https://doi.org/10.1080/19491247.2019.1697514>
- Knoll, K., Schularick, M. & Steger, T. (2017) No price like home: Global house prices, 1870–2012. *American Economic Review*, 107(2), 331–353. Available from: <https://doi.org/10.1257/aer.20150501>
- Kohl, S. (2018) The political economy of homeownership: A comparative analysis of homeownership ideology through party manifestos. *Socio-Economic Review*, 18(4), 913–940. Available from: <https://doi.org/10.1093/ser/mwy030>
- Lennartz, C., Arundel, R. & Ronald, R. (2016) Younger adults and homeownership in Europe through the global financial crisis. *Population, Space and Place*, 22(8), 823–835. Available from: <https://doi.org/10.1002/psp.1961>
- Lerbs, O.W. & Oberst, C.A. (2014) Explaining the spatial variation in homeownership rates: Results for German regions. *Regional Studies*, 48(5), 844–865. Available from: <https://doi.org/10.1080/00343404.2012.685464>
- Malpass, P. (2004) Fifty years of British housing policy: Leaving or leading the welfare state? *European Journal of Housing Policy*, 4(2), 209–227. Available from: <https://doi.org/10.1080/1461671042000269038>

- McKee, K. (2012) Young people, homeownership and future welfare. *Housing Studies*, 27(6), 853–862. Available from: <https://doi.org/10.1080/02673037.2012.714463>
- McKee, K., Moore, T., Soaita, A. & Crawford, J. (2017) ‘Generation rent’ and the fallacy of choice. *International Journal of Urban and Regional Research*, 41(2), 318–333. Available from: <https://doi.org/10.1111/1468-2427.12445>
- McKee, K., Soaita, A.M. & Hoolachan, J. (2020) ‘Generation rent’ and the emotions of private renting: Self-worth, status and insecurity amongst low-income renters. *Housing Studies*, 35(8), 1468–1487. Available from: <https://doi.org/10.1080/02673037.2019.1676400>
- Moos, M., Filion, P., Quick, M. & Walter-Joseph, R. (2019) Youthification across the metropolitan system: Intra-urban residential geographies of young adults in North American metropolitan areas. *Cities*, 93, 224–237. Available from: <https://doi.org/10.1016/j.cities.2019.05.017>
- Mulder, C.H. & Billari, F.C. (2010) Homeownership regimes and low fertility. *Housing Studies*, 25(4), 527–541. Available from: <https://doi.org/10.1080/02673031003711469>
- Myers, D., Painter, G., Yu, Z., Ryu, S.H. & Wei, L. (2005) Regional disparities in homeownership trajectories: Impacts of affordability, new construction, and immigration. *Housing Policy Debate*, 16(1), 53–83. Available from: <https://doi.org/10.1080/10511482.2005.9521534>
- Neuteboom, P. & Brounen, D. (2011) Assessing the accessibility of the homeownership market. *Urban Studies*, 48(11), 2231–2248. Available from: <https://doi.org/10.1177/0042098010385155>
- Nijskens, R., Lohuis, M., Hilbers, P. & Heeringa, W. (2019) *Hot property: The housing market in major cities*. Cham, Switzerland: Springer Nature.
- Öst, C.E. (2012) Parental wealth and first-time homeownership: A cohort study of family background and young adults’ housing situation in Sweden. *Urban Studies*, 49(10), 2137–2152. Available from: <https://doi.org/10.1177/0042098011427185>
- Reardon, S.F. & Bischoff, K. (2011) Income inequality and income segregation. *American Journal of Sociology*, 116(4), 1092–1153. Available from: <https://doi.org/10.1086/657114>
- Ronald, R. (2008) *The ideology of homeownership: Homeowner societies and the role of housing*. London, UK: Palgrave Macmillan.
- Rowlands, R. & Gurney, C.M. (2000) Young peoples’ perceptions of housing tenure: A case study in the socialization of tenure prejudice. *Housing, Theory and Society*, 17(3), 121–130. Available from: <https://doi.org/10.1080/14036090051084423>
- Ryan-Collins, J. (2018) *Why can't you afford a home?*. Cambridge, UK: Polity Press.
- Schwartz, H.M. & Seabrooke, L. (2008) Varieties of residential capitalism in the international political economy: Old welfare states and the new politics of housing. *Comparative European Politics*, 6, 237–261. Available from: <https://doi.org/10.1057/CEP.2008.10>
- Spilerman, S. & Wolff, F.C. (2012) Parental wealth and resource transfers: How they matter in France for home ownership and living standards. *Social Science Research*, 41(2), 207–223. Available from: <https://doi.org/10.1016/j.ssresearch.2011.08.002>
- Statistics Netherlands. (2019) *Woonlasten ten opzichte van inkomen niet verder gestegen [Housing costs in relation to income have not risen further]*. Available from: <https://www.cbs.nl/nl-nl/nieuws/2019/14/woonlasten-ten-opzichte-inkomen-niet-verder-gestegen>
- Stephens, M. (2007) Mortgage market deregulation and its consequences. *Housing Studies*, 22(2), 201–220. Available from: <https://doi.org/10.1080/02673030601132797>
- Tammaru, T., Marcińczak, S., Van Ham, M., & Musterd, S. (Eds.) (2016) *Socio-economic segregation in European capital cities: East meets west*. New York, NY: Routledge.
- Tu, Q., de Haan, J. & Boelhouwer, P. (2018) House prices and long-term equilibrium in the regulated market of The Netherlands. *Housing Studies*, 33, 408–432. Available from: <https://doi.org/10.1080/02673037.2017.1346786>
- Van de Kaa, D.J. (1987) Europe’s second demographic transition. *Population Bulletin*, 42(1), 1–59.
- Van Gent, W. & Hochstenbach, C. (2020) The neo-liberal politics and socio-spatial implications of Dutch post-crisis social housing policies. *International Journal of Housing Policy*, 20(1), 156–172. Available from: <https://doi.org/10.1080/19491247.2019.1682234>
- Van Ham, M., Hedman, L., Manley, D., Coulter, R. & Öst, J. (2014) Intergenerational transmission of neighbourhood poverty: An analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402–417. Available from: <https://doi.org/10.1111/tran.12040>
- Venhorst, V., Van Dijk, J. & Van Wissen, L. (2011) An analysis of trends in spatial mobility of Dutch graduates. *Spatial Economic Analysis*, 6(1), 57–82. Available from: <https://doi.org/10.1080/17421772.2010.540033>
- Wind, B. & Hedman, L. (2018) The uneven distribution of capital gains in times of socio-spatial inequality: Evidence from Swedish housing pathways between 1995 and 2010. *Urban Studies*, 55(12), 2721–2742. Available from: <https://doi.org/10.1177/0042098017730520>

## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

**Appendix A.** Spatial Lag Model for high-income young adults – Maximum Likelihood Estimation

**Appendix B:** Map of residuals for Spatial Regression Models (from Table 4)

**How to cite this article:** Hochstenbach, C. & Arundel, R. (2021) The unequal geography of declining young adult homeownership: Divides across age, class, and space. *Trans Inst Br Geogr.*, 46, 973–994. <https://doi.org/10.1111/tran.12466>