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Housing unaffordability and mental health: dynamics across age and tenure

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ABSTRACT

This paper examines changing trends in housing affordability in the Netherlands and its link to mental health across tenures and age cohorts. Using the LISS panel dataset over 11 years (2008 to 2019), we assess trends in the prevalence of unaffordable housing and subsequently examine its relationship with psychological wellbeing based on 'Mental Health Inventory (MHI-5)' responses. Our research shows a clear overall increase in the experience of unaffordable housing. Increases are, however, starkly differentiated by tenure and age, occurring almost entirely within the rental sector and disproportionately affecting younger adults. We also find a clear link between living in housing that is unaffordable and poorer mental health scores, and this association is particularly strong among renters and younger people. The results underscore how changes in housing systems have intensified housing precarity, specifically within the rental sector, and reveal how this may contribute to worsening mental health at the population level and shape tenure-based health inequalities.

KEYWORDS Housing affordability; mental health; tenure; age cohorts; the Netherlands

Introduction

Recent years have seen a growing crisis of housing affordability across advanced economies (see IMF, 2020; Kallergis et al., 2018; Nijskens et al., 2019; Wetzstein, 2017). While understandable attention has been focussed on how affordability problems undermine access, particularly for younger generations, the outcomes extend well beyond the acquisition of housing. Building on a well-established body of research on the links between housing conditions and health, recent research has brought some attention to the relationship between poor housing affordability and the

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psychological wellbeing of residents. Nonetheless, there remains a dearth of empirical understanding on how the experience of unaffordable housing may impact residents' mental health. Moreover, there is a lack of scholarship investigating how associations are changing in the face of welfare and housing system reforms that have intensified precarity and reduced support opportunities. This is of particular interest in contexts where there has historically been a strongly regulated housing system and generous welfare provision but that have faced ongoing liberalisation and retrenchment. In tackling this research gap, this paper turns to the salient case of the Netherlands to, first, understand recent patterns and trends in housing unaffordability across age cohorts and tenure and, secondly, explore its links with self-reported mental health. We begin by outlining the broader context of housing, labour and state transformations that have exacerbated housing affordability problems before turning to existing literature on potential associations with mental health and wellbeing. Our empirical study adds to the very limited understanding of population-wide trends in housing unaffordability and its links to mental health. While we make use of the Dutch case, the Netherlands presents an informative case both in terms of representing a traditionally more protected housing and welfare context while also facing contemporary housing pressures common across advanced economies.

Housing affordability crisis

Over the past decade or so, much attention has been given to housing affordability crises prevalent across many countries, particularly in major urban centres (Nijksens et al., 2019; Wetzstein, 2017). This appears especially intensified in countries that have less regulated housing sectors, have seen stronger housing financialisation, and exhibit increasing flows of investment capital into housing (Dewilde, 2018; Fernandez & Aalbers, 2016; Forrest & Hirayama, 2015). Recent decades have only seen worsening housing shortages and affordability across most economies as evidenced by rising cost-to-income ratios both in terms of house prices and rents (IMF, 2020; Kallergis et al., 2018; OECD, 2020). Growing housing unaffordability clearly can have serious implications for household and individual wellbeing—from presenting barriers to accessing suitable housing, financial difficulties in meeting other necessities, to an increased (perceived) risk of eviction and housing loss.

The study presented here turns to the case of the Netherlands which, on the one hand, represents a context of uniquely high levels of social housing provision, relatively robust tenancy and welfare protections (Haffner et al., 2008; Hoekstra, 2003) and, on the other hand, exhibits declining housing affordability common to other advanced economies (Eurostat, 2020a). As in the Dutch case, many countries have experienced rising housing prices over the longer-term with an acceleration in recent decades (Ahir & Loungani, 2020; Eurostat, 2020b), most intensely in major

cities (Arundel & Hochstenbach, 2020; Hochstenbach & Arundel, 2020; Nijsskens et al., 2019). House prices in the Netherlands have seen steady growth and by 2021 were a full 69.5% higher than the low-point in 2013, or 36.5% higher than the peak in 2008 preceding the Global Financial Crisis (GFC) (CBS, 2022a). The rental sector similarly underwent significant increases with rental rises of 12% overall from just 2015 to 2020, while higher rates were experienced in the private rental sector (CBS, 2022b). Across most OECD countries including the Netherlands, house price increases have outpaced income (OECD, 2022a), undermining affordability for new housing market entrants with concomitant pressure on rental affordability (Dewilde, 2018; Eurostat, 2020a).

Particularly following the GFC, increasing housing costs have collided with growing labour market precarity, especially among younger adults, alongside more restricted access to credit (Arundel & Doling, 2017). This has resulted in declining access to homeownership among new households across advanced economies with an attendant shift towards growing shares in, often more precarious, private rental (Dewilde, 2020; Lennartz et al., 2016; Ronald & Lennartz, 2019). This has also been evidenced in the Dutch context with a recent resurgence of private rental (Hochstenbach et al., 2020; Hochstenbach & Ronald, 2020)—once a relatively marginal tenure—as many households are no longer able to access the declining social sector (van Gent & Hochstenbach, 2020) nor make the step into, increasingly unaffordable, homeownership (Lennartz et al., 2019). A recent study in the Netherlands pointed to a ‘double trend of dualisation’ in both labour and housing, where divides have increased between protected market-insiders and precarious market-outsiders across the interrelated domains of employment and housing (Arundel & Lennartz, 2020).

More broadly, the housing affordability crisis has been fuelled by longer-term processes of housing commodification and financialisation which have seen increased flows of capital into housing (Aalbers, 2016; Aalbers & Christophers, 2014; Rolnik, 2013). Expanded mortgage markets and access to cheaper credit both increased indebtedness risk and worsened affordability through rising prices given the greater debt leveraging for home purchasing (Ahir & Loungani, 2020; Saunders, 1990). In other words, credit expansion and increased investment has seen a long-term inflation in real estate values across economies (Aalbers, 2008; Kohl, 2018; Whitehead & Williams, 2011). This contributes directly to affordability issues in homeownership entry for those without access to substantial capital (Allegré & Timbeau, 2015) as well as being passed on to renters through higher rents. Such trends are also apparent in the Dutch context (see Arundel & Lennartz, 2020; CBS, 2020d).

Housing and welfare system transformations and the Dutch context

In concert with the privileging of homeownership and a neo-liberal re-regulation of housing markets and welfare regimes, most advanced economies

have seen a retrenchment of social housing provision since the 1980s (Baker et al., 2021; Flint, 2003; Scanlon et al., 2015). Although countries have differed in the size of the social stock and timing of restructuring, common trends have pointed to ongoing residualisation (Fitzpatrick & Pawson, 2014; Malpass, 2004; Scanlon et al., 2015). While cases such as the UK's Right-to-Buy have galvanised the most attention, more gradual declines in countries with traditionally strong social housing sectors have progressively undermined access to affordable housing, particularly for new households (Dewilde, 2020; Lennartz et al., 2016). On the one hand, the Netherlands still exhibits the highest social housing share among advanced economies, representing 29.1% of all dwellings (Housing Europe, 2021).¹ On the other hand, this belies a longer-term reduction over recent decades—from 40% of the housing stock in 1990—which has significantly undermined access to the sector (Elsinga & Wassenberg, 2014; Hochstenbach, 2022; van Gent & Hochstenbach, 2020). Declines have been even more dramatic in expensive urban centres such as Amsterdam (Hochstenbach & Ronald, 2020). In major Dutch cities, for example, waiting lists for social housing can exceed a decade while restrictive income requirements exclude many that still struggle to afford in market sectors (Hochstenbach & Ronald, 2020; Jonkman, 2020).

In the face of social housing retrenchment and homeownership unaffordability, many countries saw a significant growth of the private rental sector (Hochstenbach & Ronald, 2020; Lennartz et al., 2016; Rowley et al., 2017), especially accelerated in the years following the Global Financial Crisis. As Kemp (2015, p. 601) argued, the revival of private rental presents a neglected yet 'important sub-plot to the GFC story'. In the Netherlands, private rental has long been more marginal, however, decades of decline and stagnation have been reversed. Recent years have seen an increasing private rental sector from around 10% of the national stock pre-GFC to 13% by 2018 with growth particularly strong in major urban areas and university cities (Dol & Kleinhans, 2012; Hochstenbach et al., 2020; Hochstenbach & Ronald, 2020). Amsterdam, for example, saw a rise in private rental from 24% in 2008 to 30% by 2020 (Howard et al., 2021). Although this need not necessarily translate to growing precarity, as most regulations apply across social and private sectors, in practice, its rise has—given investment motivations—mostly involved growth in liberalised 'free-market' units and often under temporary contracts.

Alongside common trends in the growth of private rental, many countries saw a weakening of tenancy protections, either in terms of tenure security or rent regulation (Byrne, 2020; Kemp, 2015). These policy shifts further undermined safeguards against unaffordability and precarity among tenants. Compared to liberal English-speaking contexts such as the US, UK, Australia and Canada characterised by much weaker tenancy protections (Desmond, 2016; Pawson et al., 2017), the Netherlands has traditionally had strong tenant rights. A large share of rental housing, including most of the social stock and a proportion of private dwellings, fall under

regulations that set maximum rental costs through the *woningwaardestelsel*² based on dwelling characteristics (Rijksoverheid, 2021a). Rent increases within the regulated (social) sector are limited to a set annual maximum usually correlated to inflation. In the liberalised sector, annual permitted changes are not proscribed but must fall within a 'reasonable' level comparable to similar properties (Rijksoverheid, 2021b; Huisman, 2016a). Tenant stability has also been historically strongly safeguarded, with standard unlimited terms and eviction allowed in rare circumstances (Haffner et al., 2008; Huurcommissie, 2021).

On the one hand, these circumstances point to a secure housing sector that protects against unaffordable rental increases and, even when payment is hindered, reduces prospects of eviction. While this remains true for many existing tenants, the Dutch case has been one of ongoing erosion of both affordability protection and tenant security (Huisman, 2016a). First, rental costs have seen sharp increases (CBS, 2020b). While rent rises have been most prominent in the private sector, increases above inflation have also occurred in the rent-regulated social sector (CBS, 2020b; Nijskens et al., 2019). This means that even households entering the social sector are more likely to have a higher cost burden than previous generations. Second, the criteria for dwellings to fall within the rent-regulated threshold has been weakened (Hochstenbach & Ronald, 2020)—such as through policies that included property values as contributing to the assessment (Howard et al., 2021)³—leading to more units classified in the liberalised sector without rent restrictions for new tenancies, particularly in higher value housing markets. Thirdly, there has been a significant move away from unlimited tenancies with the introduction of different forms of temporary contracts. These were firstly allowed under specific circumstances but since 2016 temporary contracts were legally established as a regular category (Huisman, 2016a, 2016b). As expected, changes have particularly affected younger cohorts entering new leases. While official data is limited, a recent study of the largest Dutch rental listings agency found half of all listings in 2020 offered only temporary contracts (NOS, 2020, December 8th).

While the Netherlands *comparatively* remains a context with a large social housing sector and relatively strong tenancy protection, taken together, the dynamics described above imply an ongoing shift in diminished housing affordability and security. Given that regulation changes have focussed on new entrants and largely left protections of existing tenancies unaffected, their impacts disproportionately fall on recent cohorts. While among middle-to-higher income households, the story has been of a tenure change from rental to homeownership, lower-to-middle income populations have seen a generational shift towards worsening affordability and security. Increased housing precarity for younger generations has been amplified by reduced labour market security (Arundel & Lennartz, 2020; Kalleberg, 2018) and reductions in the welfare safety-net (OECD, 2021b; van Kersbergen et al., 2014).

The implications of such developments are not only that younger cohorts are more likely to face housing unaffordability, but that such an experience may also imply a higher likelihood of insecurity and housing loss than for previous generations. This entails that the negative ramifications of housing affordability stress may have increased over the period we examine.⁴ Therefore, the shifting housing, labour and welfare context over recent years may affect both the likelihood of facing housing unaffordability and its potential impact on wellbeing, including in terms of mental health, as outlined below. Given contextual shifts and differentiated impacts across generations, unpacking dynamics over time and across cohorts is of crucial relevance.

In terms of mental health support, the Dutch context remains one which is, relative to an international perspective, extensive, well-funded, and having low barriers for access (Forti et al., 2014). Mental health support is universal and fully integrated within the healthcare system, covered through standard health insurance—which all residents are required to have, being subsidised for those at the lowest income—and also includes non-emergency professional therapy and multi-dimensional approaches (Forti et al., 2014; Zorginstituut Nederland, 2012). While the Dutch healthcare system ranks very high internationally, there have been ongoing reforms towards decentralisation and pro-competitive policies to reduce costs (Westra et al., 2016). Nonetheless, recent studies have not found a decline in the quality of outputs (see van Mens et al., 2018) supporting our focus on the more salient changes in housing and labour markets impacting conditions and consequences of housing affordability.

Linking housing and health

Associations between housing circumstances and health outcomes have a long history, from the early work of Graham (1818) and Chadwick (1842) to the empirical investigations of John Snow (1855). Across contexts, populations, and housing types, there is evidence that quality, security, affordability, tenure and location are associated with varied health outcomes. Herein, we unpack the implicated links between affordability and mental health, with particular focus on the modifying role of tenure. While some of the research evidences a causal link between housing conditions and mental health, we recognise the potentially bi-directional nature of the relationship where worsened mental health situations may also lead to barriers in securing and maintaining better housing and employment positions. The emphasis in our research is to explore the broader association between mental health and housing affordability, while building on valuable scholarship that has posited explanatory links between them.

Whereas the housing and health evidence base is well developed, within it, the less tangible and harder to measure dimensions—such as the link between affordability and mental health—have only recently received

attention. Nascent research across various national contexts, including Australia (Bentley et al., 2011, 2019, 2020; Mason et al., 2013), Canada (Dunn, 2020), the United States (Pollack et al., 2010), and the United Kingdom (Reeves et al., 2016), has begun to demonstrate that the experience of unaffordable housing may have a significant negative impact on mental wellbeing. In research on Australia using longitudinal datasets to assess the direction of effect in modelling mental health over time, Bentley et al. (2011) present evidence of a causal relationship between housing becoming unaffordable and subsequent worsened mental health outcomes among low-income households. Also applying a longitudinal approach, Baker et al. (2020) demonstrate that degree of exposure, in terms of both prolonged and intermittent periods of time in unaffordable housing, have a similar negative mental health effect. Further, we know that the experience of unaffordable housing works in combination with other disadvantages, such as employment insecurity, to increase negative mental health effects (Bentley et al., 2019) alongside potential bidirectional feedback loops between mental wellbeing and housing and job conditions (see Baker et al., 2014; Burgard, 2021). Affordability itself clearly further structures physical housing conditions related to quality, amenities or overcrowding issues, wherein substantial research has pointed to clear impacts of these on health and mental wellbeing of residents (WHO, 2018; WHO Europe, 2007).

On the other hand, less tangible dimensions of the 'home' have been harder to evaluate, particularly in tracing causal relationships with (mental) health outcomes (Gurney, 2021; Rolfe et al., 2020). Nonetheless, related literature in the social sciences has underscored the link between housing security and broader notions of psychological wellbeing and sense of security (Giddens, 1991; Clapham, 2011; Rolfe et al., 2020). This scholarship has recognised how housing goes beyond its materiality as sites for generating and reproducing notions of control, autonomy, homemaking and status (Després, 1991; Dupuis & Thorns, 1998). Housing and 'home' are thus entangled in broader experiences of 'ontological security' and social identity (Giddens, 1991). Focussing on the interactions between inequality, housing and health in the context of Covid-19, Gurney (2021) decries that much of the scholarship on the 'meaning of home' has focussed on positive connotations of ontological security while neglecting the flip side of *unheimlichkeit* (see McCarthy, 2018) with the home as a potential locus of various forms of social harm. This aligns with a focus on housing unaffordability where, as much as shelter, the home can represent a source of financial stress, anxiety and insecurity. While untangling each individual effect remains a challenge beyond the scope of this paper, it is precisely the fact that housing unaffordability implies a complex cumulative and reinforcing nexus between financial stress, physical conditions of housing quality, stability in other life domains, and more intangible notions of ontological security that make it valuable to assess broader links between housing unaffordability and mental wellbeing.

Furthermore, housing unaffordability and its consequences appear strongly differentiated by tenure, with a subset of research underscoring health and wellbeing of renters versus homeowners related to the former experiencing higher costs, reduced security and housing quality issues (Baker et al., 2014; Bentley et al., 2016; Kearns et al., 2000; Mason et al., 2013; Pevalin et al., 2008; Pollack et al., 2010). In terms of less tangible dimensions of the housing experience, tenure also plays a crucial moderating role. Comparisons of homeownership versus different types of rental tenancies have shown significant variations in sense of security and autonomy, social identity, or status (Dupuis & Thorns, 1998; Giddens, 1991; Rolfe et al., 2020). Such experiences may be individual but are entangled in societal expectations of ideal life-course trajectories. This is perhaps most pronounced in ‘homeowner societies’—exemplified by liberal English-speaking countries—where an ideology of homeownership has both promoted normative expectations of its superiority and seen its privileging in policies (Ronald, 2008; Ronald & Lennartz, 2019). Where homeownership is thus a key marker of adulthood or ‘full citizenship’, long-term renting can be perceived as a ‘flawed’ and ‘transitory’ state (Flint, 2003, 2004). Other research has shown a related wellbeing advantage of outright over (precariously) mortgaged owners (Smith et al., 2017).

In many countries, housing policies have further intensified tenure differences through the privileging of homeownership at the expense of rental quality and security (Forrest & Hirayama, 2015; Ronald, 2008). The Netherlands presents a somewhat contradictory context where a large, high-quality social rental sector traditionally represented a normalised secure and long-term option, however, it has also seen growing homeownership in recent decades alongside policies privileging owner-occupation (Aalbers et al., 2020).

The research

This paper addresses the lacunae in research on the link between housing unaffordability and mental health and wellbeing and how this is differentiated across age cohorts and tenure. Adding to limited research from liberal welfare regime contexts (see Baker et al., 2020; Pollack et al., 2010), we investigate these dynamics within the salient case of the Netherlands, representing a more protected welfare and housing context but one which has seen substantial restructuring in recent years. Making use of the LISS panel dataset described below, we examine changes in the prevalence of housing unaffordability from 2008 to 2019 and differentiated across age and tenure. Our approach looking at both trends over the years and age cohorts is crucial in considering how the changing welfare and housing system context may influence the experience of housing affordability and its impacts on mental health. In other words, an average 25-year old in 2008 may face a significantly different housing,

labour and policy context than a young adult of the same age a decade later.

Methods

Data

The analyses make use of the LISS Panel (Longitudinal Internet Studies for the Social Sciences) from 2008 to 2019. We have intentionally excluded 2020–2021 given the strongly confounding impact of the Covid-19 crisis. The LISS dataset, repeated longitudinally on an annual basis, consists of a ‘true probability sample’ which is derived from the full population register of the Netherlands (LISS, 2021a). Refreshment samples are drawn at regular intervals and a stratified sample approach is employed to increase representativeness for difficult to reach population groups (LISS, 2021b). As we are interested in those who are active in the housing system and of working age, we restrict our sample to individuals between 25 and 65 years old and exclude people who have not left the parental home. When further discounting cases with missing data on our key variables, this results in a sample of just over 14,000 individuals, or about 1500 to 1900 per year depending on the wave.

Housing measures

Tenure

Each individual was given a tenure status based on whether their household was designated as in homeownership or rental. Unfortunately, it is not possible in LISS to distinguish private versus social rental. Changing conditions within the rental category thus reflect both shifts towards increasing shares in private rental as well as changes within the social sector where new entrants face higher costs than previous generations (CBS, 2020b). We also separate out a small residual group of ‘other’ tenures (such as rent-free, institutional arrangements) representing less than 3% of our sample—included in the pooled analyses but excluded in comparisons between rental versus homeownership.

Housing cost

A monthly housing cost value was generated for all households. For homeowner households, housing cost was based on monthly mortgage capital and interest repayments. For rental households, the cost value was based on monthly rent. Due to data limitations and inconsistencies over the data period, it was not possible to include utilities or other costs (i.e., homeowner association, insurance, maintenance, service fees) in the assessed housing cost. While costs here can thus be considered as the ‘base’ housing

cost, they represent the best consistent measure available across tenures and time. The use of a base housing cost also motivates our over 30% of income affordability threshold, described below, whereas some researchers have used 40% with complete/inclusive housing costs.

Housing affordability stress

In our assessment of housing affordability, we combined the above housing cost measure with the household income situation based on the '30/40' rule that has been commonly applied in housing affordability research (see Baker et al., 2015; Nepal et al., 2010). Individuals were thus considered as being in 'housing affordability stress' (HAS) when their households' housing costs exceeded 30 percent of their gross household income and in turn, their gross household income was in the bottom 40th percentile of the national distribution. This combination measure of high housing costs and being in a lower income position presents a more accurate means of capturing actual financial hardship, whereas crude housing cost to income ratios alone may falsely include circumstances for higher income households who still retain ample disposable income (Nepal et al., 2010). Given the relative nature of the measure, entering HAS can thus arise from a change in either or both housing costs or income, while the latter may also be impacted by changes in household composition.

Mental health measure

For mental health we made use of self-assessed health questions from the 'Mental Health Inventory 5' (MHI-5) which is a standard set of five questions used to assess psychological wellbeing established within the Short Format 36 (SF-36) questionnaire. The SF-36 is a common self-completion measure providing a comparable international instrument for health assessment (Coons et al., 2000). The MHI-5 questions are applied in several key surveys by Statistics Netherlands and included in the LISS Panel. The MHI-5 is based on five questions on self-reported psychological wellbeing that ask respondents the frequency over the past months of having been/feeling: (1) 'very nervous', (2) 'so down in the dumps that nothing could cheer you up', (3) 'calm and peaceful', (4) 'downhearted and blue', and (5) 'a happy person' (for specific Dutch version see CBS, 2020c). Based on the MHI-5, the mental health measure was standardised into the commonly-used Mental Health Component Score (MCS) providing an index ranging from 0 to 100 where a higher number indicates a better health status corresponding to the standard carried out in much international health research. Larger population studies find population means of around 73 with standard deviations of about 16 points (see Rumpf et al., 2001). Conventional cut-off points applied for general screening for depressive

or anxiety conditions are suggested at 70, although with some variations in practice and conditions (Means-Christensen et al., 2005; van den Beukel et al., 2012). This thus serves as an indication of a potentially problematic result on the MCS, however, as it is recognised that the values represent a health spectrum rather than a dichotomous measure, we choose to focus primarily on differences in average scores between groups.

Empirical analyses

Our study examines changing cohort characteristics divided into four age groups of 25-to-34, 35-to-44, 45-to-54, and 55-to-64 years old. We begin by looking at descriptive statistics across three time periods of equal length⁵: 2008–2011, 2012–2015, and 2016–2019. We then analyse the prevalence of housing affordability stress (HAS) from 2008 to 2019 across our selected age cohorts and subsequently differentiated by housing tenure. Controlling for income, tenure and age, we then model how the probability of *entering* housing affordability stress has changed over this period, as well as, the probability of *exiting* among households experiencing HAS. We make use of the longitudinal data to calculate probabilities based on the situation in the previous year, hence from 2009 onwards.

Our subsequent analyses turn to the relationship between HAS and the self-assessed mental health index. Controlling for income and tenure, we explore differences in mental health scores between those with or without HAS and how this has developed over time. Controlling for income, we examine this separately for renters and homeowners, as well as, lastly, differentiated across the age cohorts. Our exploratory analyses thus provide a key empirical foundation to trends in housing unaffordability and their potential association with mental health while untangling moderating age and tenure dynamics.

Results

Descriptive statistics by age cohort over time periods

Table 1 presents descriptive statistics by age cohort over three time periods, providing an overview of the housing, mental health and socio-economic characteristics for our dataset. Several patterns of interest are apparent in terms of generational developments in housing inequalities. Looking at inflation-adjusted housing costs, we find a clear increase across the three time periods for all age groups except for the oldest, 55–64 year-olds, who in fact have seen declining costs. Additionally, a strong tenure shift is apparent among the youngest age group. This is visualised in Figure 1 showing homeownership shares by age over time.

Table 1. Descriptive overview of the LISS sample by age cohorts over three periods.

	2008–2011						2012–2015						2016–2019					
	25–34		35–44		45–54		25–34		35–44		45–54		25–34		35–44		45–54	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	30.2	2.7	39.6	2.8	49.5	2.9	30.0	2.9	39.8	2.9	49.6	2.9	29.8	2.8	39.7	2.9	49.6	2.9
Mental health	73.1	16.0	73.8	16.3	74.0	17.3	73.1	14.4	73.5	15.4	74.9	15.8	76.4	15.2	71.8	16.4	74.7	16.3
MCS ^a																		
Housing costs ^b	8.4	11.5	9.7	17.2	8.2	23.1	9.3	45.9	8.8	8.5	11.1	14.5	10.7	32.3	7.9	19.3	9.3	11.5
Household income ^b	53.7	122.0	52.7	30.9	61.6	96.1	60.0	171.0	47.4	33.4	52.8	33.7	55.7	34.1	56.3	279.0	53.0	31.4
	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
Tenure																		
Homeowner	69.8	2045	77.2	3533	76.4	3969	74.1	3967	59.8	1680	80.3	3468	76.8	3895	75.0	4202	54.7	1546
Renter	28.1	823	21.2	970	20.2	1049	23.9	1280	37.3	1048	18.0	777	20.6	1045	22.8	1277	41.6	1176
Other tenure	2.1	62	1.6	73	3.5	182	2.0	107	2.9	81	1.7	73	2.6	132	2.3	129	3.6	102
Without HAS ^c	91.3	1416	92.8	2196	94.7	2698	92.8	3430	83.4	1248	89.4	1832	90.9	2382	89.8	3334	83.8	1353
With HAS ^c	8.7	135	7.2	170	5.3	151	7.2	266	16.6	248	10.6	217	9.1	239	10.2	379	16.2	262
Female	55.7	1632	52.0	2380	52.3	2717	50.7	2714	56.5	1587	52.4	2263	51.5	2612	52.2	2924	55.9	1580
Household type																		
Couple w/ children	36.1	1058	64.9	2970	58.1	3018	18.9	1012	30.2	848	63.4	2738	61.0	3094	23.5	1316	25.7	726
Couple w/o children	41.1	1204	16.4	751	22.7	1179	61.7	3303	40.8	1146	16.6	717	18.2	923	55.1	3087	41.1	1161
Single w/ children	2.6	76	5.7	261	5.8	301	2.6	139	2.0	56	5.1	220	6.8	345	3.3	185	2.5	71
Single	17.9	524	12.5	572	12.0	623	16.0	857	24.2	680	14.4	622	12.8	649	16.7	936	27.0	763
Education																		
Below high school	4.0	117	5.1	233	6.4	332	11.3	604	2.4	67	3.8	164	4.6	233	7.7	431	2.0	56
High school	20.3	594	27.3	1248	36.6	1898	43.6	2332	15.0	418	22.3	961	33.7	1705	38.7	2164	10.6	299
Junior college	33.0	966	34.8	1590	24.7	1281	16.8	898	31.2	870	35.9	1547	28.6	1447	21.8	1219	28.2	795
University	29.7	870	23.8	1088	24.1	1250	20.8	1112	31.7	884	25.3	1090	23.6	1194	22.9	1281	33.3	939

Ethnic																										
background																										
Native Dutch	84.3	490	84.0	751	87.7	926	89.1	1077	81.7	1978	83.2	3148	86.4	3809	87.9	4284	78.5	1847	77.9	2470	83.5	3270	86.1	3875		
Non-western	9.1	53	8.4	75	4.9	52	2.9	35	10.6	257	8.5	322	6.0	264	3.7	180	13.0	306	11.2	355	8.0	313	5.5	248		
Western	6.5	38	7.6	68	7.4	78	8.0	97	7.6	184	8.2	310	7.6	335	8.4	409	8.5	200	10.9	346	8.5	333	8.4	378		
Urban density																										
Extremely urban	18.4	537	14.2	649	12.0	623	11.3	605	23.3	647	15.0	643	13.3	671	12.3	686	29.3	818	17.2	640	14.1	639	12.6	663		
Very urban	29.2	853	25.4	1160	26.1	1356	26.5	1418	29.8	828	24.9	1068	24.3	1226	26.5	1478	26.9	751	27.0	1005	22.4	1015	24.4	1283		
Moderately urban	20.4	596	24.1	1101	24.1	1252	23.0	1231	18.4	511	24.8	1064	23.1	1166	24.5	1367	16.0	447	20.1	748	22.4	1015	23.8	1251		
Slightly urban	19.6	572	21.0	959	20.9	1086	23.6	1263	17.4	483	21.3	914	21.3	1075	20.8	1160	14.9	416	19.2	715	21.9	992	20.4	1073		
Not urban	12.3	359	15.3	699	16.8	873	15.5	830	11.0	306	14.0	600	17.9	903	16.0	893	12.9	360	16.5	614	19.1	865	18.8	989		
No. observations	2930		4577		5195		5354		2809		4319		5072		5602		2826		3762		4558		5298			

Notes:

^aMCS refers to the common Mental Health Component Score derived from the MHI-5 Mental Health Inventory 5^a, representing a standard set of five questions used to self-assess psychological wellbeing.

^bHousing costs and household income are measured annually in 1000's, inflation-adjusted converted to 2015 euros.

^cHousing affordability stress (HAS) defined as spending > 30% of household income on housing costs and household is bottom 40% of household income nationally.

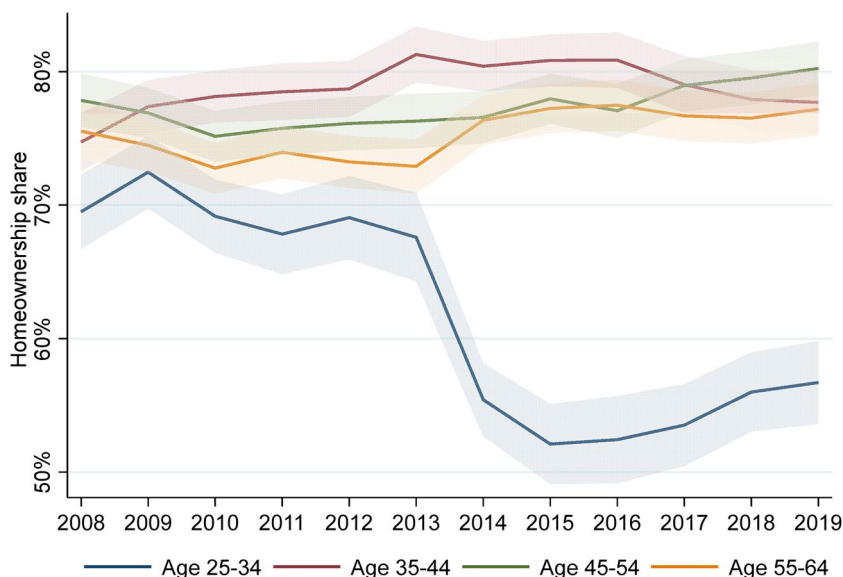


Figure 1. Homeownership shares by age cohorts over time in the Netherlands. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. 90% Confidence Intervals displayed.

While most age groups are quite stable—or gradual increases for older cohorts—we see a clear divergence in attainment rates for 25–34-year-olds, who have experienced steep homeownership declines post-GFC with only minimal recovery more recently. This mirrors international research highlighting declining homeownership among young adults (i.e., Lennartz et al., 2016). We note that LISS exhibits a higher representation of homeowners as compared to other sources, albeit reflects similar trends.

Trends in housing affordability stress by age and tenure

We next turn to trends in housing affordability stress (HAS). Figure 2 shows HAS prevalence for our full sample and by age cohort from 2008–2019. The first striking result is a clear overall increase in working-age people experiencing HAS over the period as indicated by the trendline in the graph: increasing from 6.6% to 11.6% among our full sample. When looking at HAS by age, we find relatively similar trends for all age groups 35 and over, however, the youngest group stands out. From about 2013, 25–34-year-olds exhibit much higher rates of HAS, reaching nearly double that found among most other cohorts. A plateau of higher HAS among younger adults is apparent for several years with a gradual return to rates on par with other ages by the end of our data period. In sum, the results point

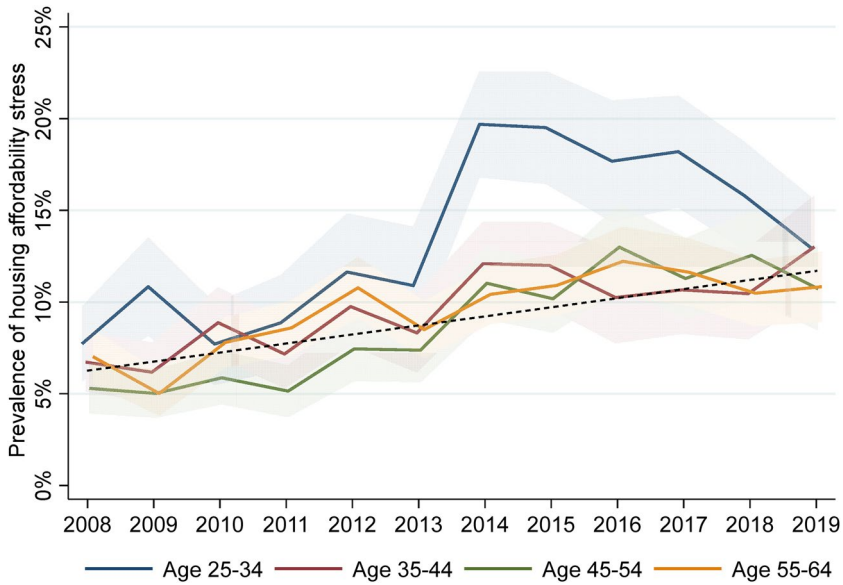


Figure 2. Prevalence of housing affordability stress across age cohorts 2008–2019. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. 90% Confidence Intervals displayed for the different age groups. Dashed line indicates trend for the full sample (25 to 64 year-olds).

to a widespread and clear increase in HAS in the Netherlands from 2008 to 2019 across all age cohorts, alongside a specific spike in HAS for the youngest group in the mid-to-late 2010s. When we consider tenure trends (Figure 1), we can see an alignment between this spike in HAS and declining homeownership among this age group. This correlates broadly with the post-GFC period when labour and housing market deterioration was most prominent in the Netherlands and which disproportionately impacted younger adults (OECD, 2021a, 2022a). The combination of worsening labour market positions alongside stricter mortgage regulations resulted in many young adults unable to enter homeownership and being pushed into private rental (Lennartz et al., 2016). The results support our contextual theorisation of, on the one hand, worsened income and employment opportunities and, on the other, trends towards higher housing costs, with these shifts being particularly concentrated among young adults and within the private rental sector.

This dynamic is further supported in examining housing affordability by tenure. Figure 3 presents HAS rates for homeowners and renters. What is immediately apparent is that renters have consistently faced higher rates of HAS, significant beyond the 90% confidence intervals. On top of this, we see a dramatic increase in affordability stress among renters from about 2013 onwards supporting the expectation that, as labour conditions worsened, affected populations concentrated within—and were pushed

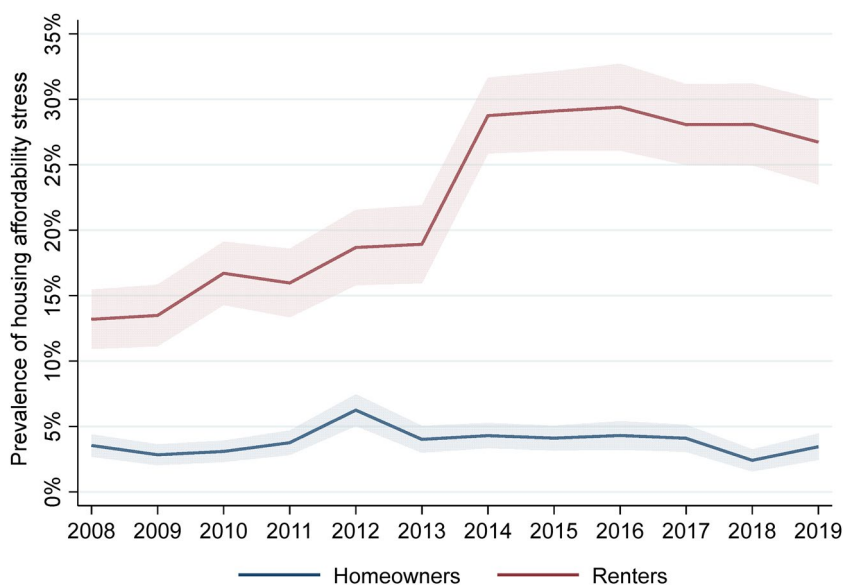


Figure 3. Prevalence of housing affordability stress (HAS) by tenure. Data source: LISS Panel 2008–2020.

Notes: Data at individual level, excludes respondents living in parental home. 90% Confidence Intervals displayed.

into—the (private) rental sector. While our classification combines private and social rental, we know the share of more affordable social housing within this category declined over this period (Hochstenbach et al., 2020; van Gent & Hochstenbach, 2020), further implying rising rental costs and driving HAS. Conversely, we find that homeowners display a strikingly stable pattern with HAS rates largely remaining under 5% over the period—contrasting significantly to renters that already start at about three times more and then rise to over seven-fold higher. These findings reflect the discussed housing system transformations that have seen both growing affordability constraints within the rental sector and an increasing share of those unable to afford homeownership pushed into rental, particularly into the liberalised private sector (Hochstenbach et al., 2020; Hochstenbach & Ronald, 2020). Homeownership, however, appears more insulated from affordability stress, pointing to the expectation that rising prices have translated mostly into constrained access (Dewilde, 2020; Lennartz et al., 2016; Ronald & Lennartz, 2019).

Probability of entering and exiting housing affordability stress over time

We subsequently modelled probabilities of entering and exiting HAS (Figure 4) over time, while controlling for income, tenure and age group.

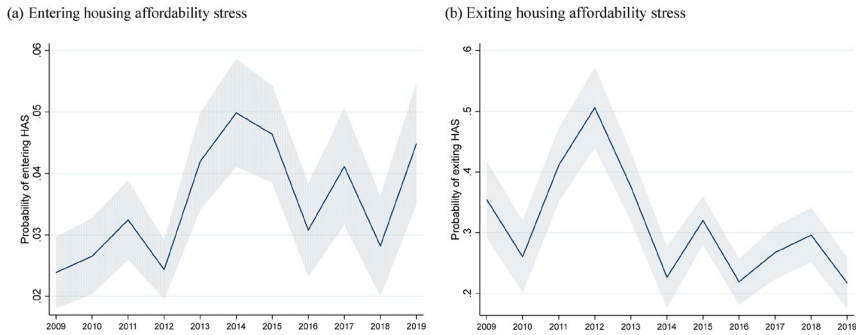


Figure 4. Expected probability of entering and exiting housing affordability stress, controlling for income, tenure and age-group. (a) Entering housing affordability stress, (b) exiting housing affordability stress. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. Different y-axis scales presented since probability of entering is based on those not in HAS in previous year, while exiting is based on only those within HAS in the previous year. 90% Confidence Intervals displayed.

The results for both show substantial volatility over the years making it more difficult to discern clear trends. Nonetheless, for entering HAS (Figure 4a), we find, broadly-speaking, a period of relatively lower probability in the early years of the dataset and a subsequent noticeable jump after 2012/13. While substantial volatility remains thereafter, probabilities of HAS entry remain at a higher average. This generally supports a pattern of rising precarity and unaffordability in the Dutch housing system (i.e., Elsinga & Wassenberg, 2014; Huisman, 2016a; van Gent & Hochstenbach, 2020) that increase chances for households newly entering affordability stress. Figure 4(b) presents the probability of exiting *among* those already experiencing HAS. Although trends are again muddled by substantial volatility, a reverse pattern is broadly discernable, with probability of exiting HAS being on average lower in recent years. Overall, this indicates that alongside a higher likelihood of falling into HAS, the ability to exit has become more difficult even after controlling for changes in income, tenure and age—thus implying an increased probability of staying in HAS for longer. This further underscores the discussed trends in increasingly constrained options in the housing market in the Dutch context (CBS, 2022a, 2022b; Dewilde, 2020; Eurostat, 2020a; Ronald & Lennartz, 2019), as well as in employment (Arundel & Lennartz, 2020), that limit opportunities for moving into more affordable housing.

Mental health and its relation to housing affordability stress

Our second focus of the paper examines the relationship between HAS and reported mental health outcomes. We first examine mental health scores for our full sample comparing those with or without housing affordability stress,

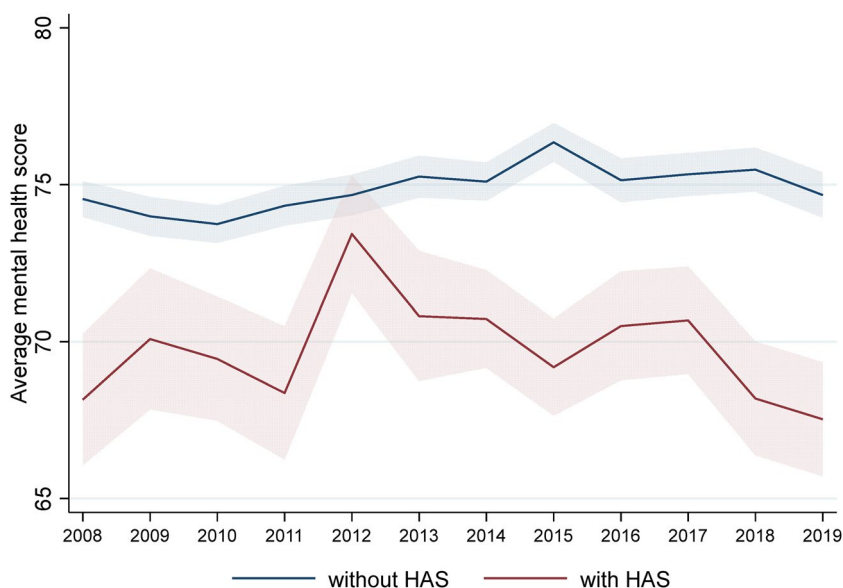


Figure 5. Average mental health score (MHI-5) for those with and without housing affordability stress (HAS) over time, controlling for income and tenure. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. 90% Confidence Intervals displayed.

controlling for income and tenure (Figure 5). What the results show is that there is a strong difference in scores between the two populations. People with HAS report consistently poorer mental health conditions than those without HAS, averaging about 4 to 4.5 points lower for most years. In fact, using the conventional cut-off of 70 for screening depression and anxiety disorders (van den Beukel et al., 2012), we find that the averages of those in HAS frequently cross this threshold while scores for those without HAS consistently remain above general population averages found in other studies (see Rumpf et al., 2001). While there was some convergence between the two groups up to 2012—the only year when there isn't a significant difference at the 90% CI threshold—the story since has been of clearly declining mental health scores among those in HAS versus largely stable values for those without. This trend, since 2012 at least, lends support to the notion of worsening opportunities in the housing market contributing to an additional mental health penalty when experiencing housing unaffordability.

The spike we see around 2012 with minimal differentiation in mental health between the two groups is somewhat unexpected but may be the result of at least two different (but not mutually exclusive) explanations. Firstly, this may be a story of 'social comparison' effects. The period correlates with the strongest impacts of the GFC and, given so much attention on deteriorating economic conditions, those in HAS may have

felt *relatively* less worseoff leading to a smaller penalty on psychological wellbeing. The second explanation relates to the (perceived or real) impacts of the crisis on the housing market that either temporarily allowed more flexibility and affordability, or provided a sense of increased potential opportunities to leave HAS. This does align with the period of more rapid declines in housing prices, alongside interest rate cuts, before a subsequent return to price growth a bit over a year later (CBS, 2020d). While it may have also related to more people just ‘dipping’ into HAS (at a more minimal level) over this period, this is not supported by a further analysis separating out trends in marginal, medium and more severe HAS.⁶ While still low in absolute shares, we did find in our supplementary analyses a more recent increase among those experiencing ‘severe HAS’ (defined with housing costs over 50% of income) which may help explain the subsequent further divergence in mental health scores.

Figure 6 further untangles the relationship between HAS and mental health scores by tenure. Controlling for income, the picture again reveals the consistently higher average mental health scores (regardless of HAS status) among homeowners versus renters, with the gap being of about 6–7 points for those without HAS and about 10 points for those with HAS. A remarkable finding is that experiencing HAS as a homeowner relates to only a minimal reduction in mental health scores which is largely not significantly different from those without HAS (in terms of confidence intervals). Indeed, homeowners with HAS appear to fare slightly better even than renters without affordability stress, with the latter hovering close to the conventional screening cut-off of 70 points (van den Beukel et al., 2012) whereas homeowners exhibit scores higher than expected in general population averages (Rumpf et al., 2001). While it might be expected that homeowners have ‘a lot to lose’ in the face of unaffordable mortgage costs, what may explain the small mental health penalty for homeowners with HAS could be two-fold: first, the fact that it is a more

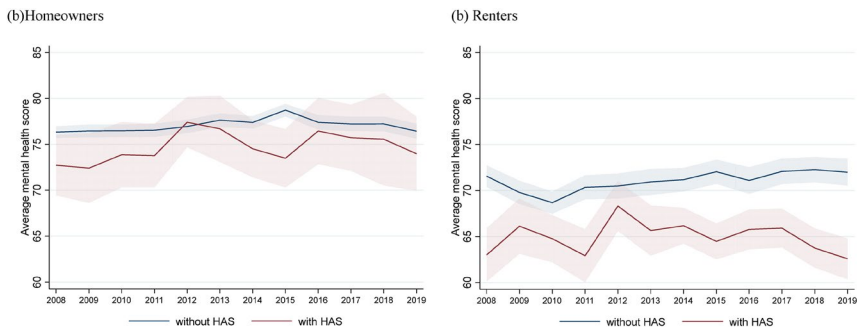


Figure 6. Average mental health score (MHI-5) by tenure for those with and without housing affordability stress (HAS) over time, controlling for income. (b) Homeowners, (b) renters. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. The predictive margins at 90% CI are displayed.

stable tenure given very low rates of foreclosure and protective measures against this in the Dutch context (see NVB, 2021) and, secondly, that many homeowners have also built up (substantial) assets in their home that they may rely on if a move is required. We further acknowledge that homeownership may correlate with other unmeasured factors that relate to improved mental health beyond the scope of this paper. As supplementary investigation, we also ran our analyses while including gender and ethnicity as controls⁷ and encountered highly similar results. Looking at only renters, we find parallel trends to the full sample, however, with consistently lower mental health scores. It appears thus that renters in HAS face a double disadvantage, where being a renter itself is a predictor of lower scores and HAS as a renter is further correlated with stronger reductions in mental wellbeing. The importance of tenure in moderating mental wellbeing when facing HAS points to likely material differences, as renters in HAS often suffer worse housing conditions (i.e., quality or overcrowding issues) (Baker et al., 2014; Mason et al., 2013; Pollack et al., 2010), as well as less tangible dimensions related to the experience of home and ontological security (Clapham, 2011; Dupuis & Thorns, 1998; Giddens, 1991) which could potentially insulate homeowners from some mental health ramifications of HAS.

Our final analyses differentiate these dynamics by age cohorts. We examine trends in mental health for those with and without HAS across

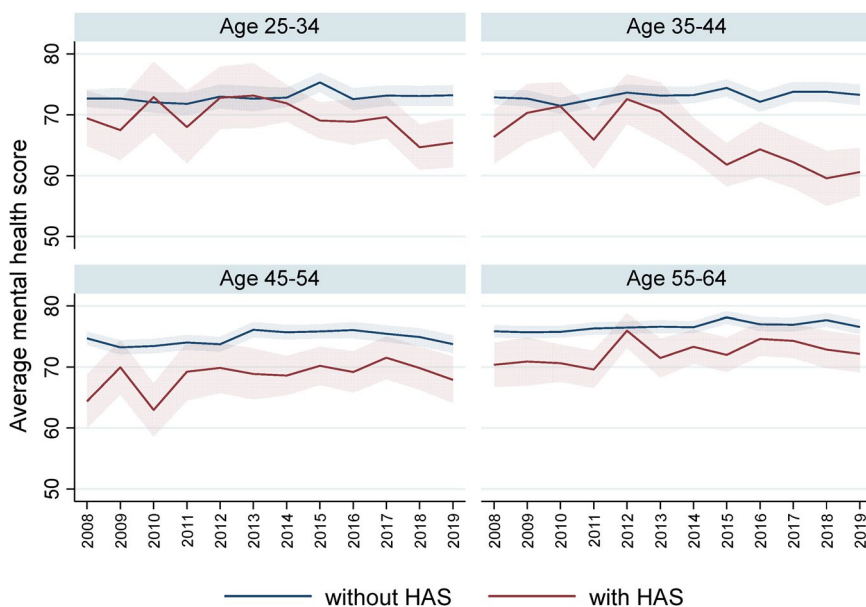


Figure 7. The difference in average mental health score for those in housing affordability stress versus HAS-free by age over time, controlling for income and tenure. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. The 90% Confidence Intervals are displayed.

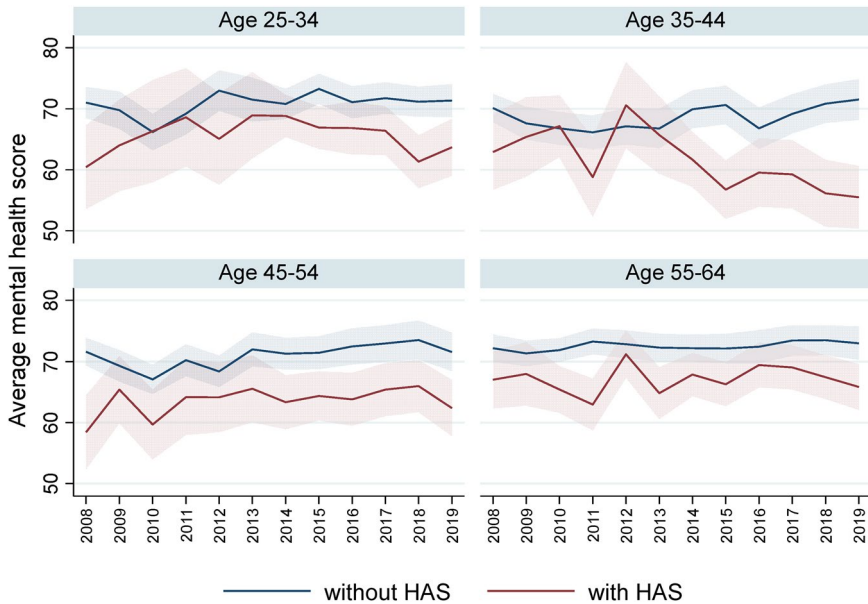


Figure 8. The difference in average mental health score for those in housing affordability stress versus HAS free among renters by age over time, controlling for income. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. The 90% Confidence Intervals are displayed.

our age groups for our full sample (Figure 7), for only homeowners (Figure 8) and only renters (Figure 9). We control again for income and, for the full sample, also tenure. One caveat is that given selections, some subgroups are based on smaller samples (i.e., young homeowners in HAS) leading to less statistical precision, as indicated by the wider CI bands. Further analyses were run including gender and ethnicity as controls, yielding highly similar findings.⁸ Looking at the full sample differentiated by age (Figure 7), we find a relation between being in HAS and lower mental health scores across all age cohorts. However, separating the data by age shows some clear differences between younger and older populations and in trends over time. When considering the whole period, the oldest group of 55 to 64-year-olds exhibit on average the smallest mental health differences between HAS and HAS-free. This could be explained by older populations being able to rely more on other assets or savings beyond income. For the two older groups, we don't find any clear patterns in changing impacts over time. However, the youngest two age groups have seen an increasingly strong mental health penalty related to HAS since about the early-to-mid 2010s. This represents a marked change as in previous years these cohorts displayed minimal mental health effects of HAS. The cohort that has seen the strongest shift towards worsening mental health scores given HAS is those aged 35–44 with a sharp decline

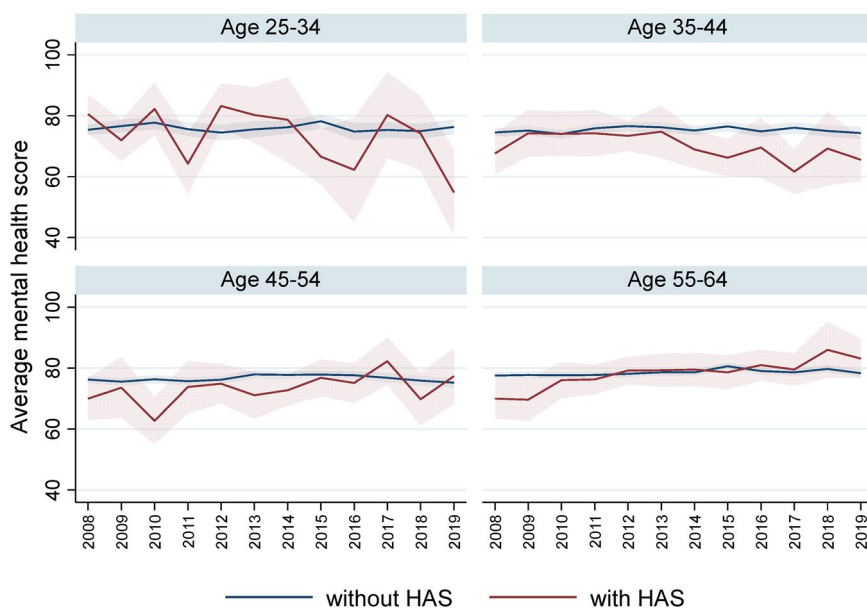


Figure 9. The difference in average mental health score for those in housing affordability stress versus HAS free among homeowners by age over time, controlling for income. Data source: LISS Panel 2008–2019.

Notes: Data at individual level, excludes respondents living in parental home. The 90% Confidence Intervals are displayed.

since 2012. This group reports mental health scores a full 10–15 points lower than their counterparts without HAS. As this age range also correlates with the likelihood of having young children, this may be explained by an additional stress in navigating adequate and affordable family housing. While we are not able to untangle this in our exploratory analyses, the intersection between family formation, housing unaffordability and mental health provides a valuable direction for future research.

In our final analyses we look at HAS effects by age cohorts for homeowners versus renters, while controlling for income. For renters (Figure 8), we again see lower overall mental health scores and stronger effects for those in HAS as compared to homeowners (Figure 9). Among renters, the clearest trend is once more a substantial divergence among those 35 to 44-year-olds since the early 2010s, where previously there was little discernible difference in mental health scores between those in HAS or not. A somewhat similar trend is seen for the youngest group although the divergence is not very pronounced. Homeowners, on the other hand, display no clear differentiation between HAS and HAS-free. The only noteworthy exception is again for 35 to 44-year-olds where, in some recent years, mental health scores are slightly lower for those facing housing unaffordability.

Conclusion

This research has contributed to the limited empirical understanding of trends in housing unaffordability and their relationship with mental health, particularly within a context of traditionally stronger housing system regulation and welfare provision that has faced ongoing liberalisation and retrenchment. Our findings have shown a clear growth in the share of people experiencing unaffordable housing in the Dutch context. This trend, however, is not evenly distributed across the population and appears starkly differentiated by tenure and age. The growth in housing affordability stress (HAS) has occurred almost entirely within the rental sector, in a context where private rental has captured growing shares of the population unable to enter a declining social sector (Elsinga & Wassenberg, 2014; Hochstenbach, 2022; van Gent & Hochstenbach, 2020) or afford access to increasingly unaffordable homeownership (CBS, 2022a). While those in rental already experienced a higher prevalence of unaffordability, rates have greatly increased to about 25–30% of renters facing HAS in recent years. Modelling probabilities further points to a discernable increase in the likelihood of entering HAS whereas exiting has become more difficult.

These results reflect the shifting context of the Dutch housing system, outlined at the start of this paper, which has involved a variety of processes exacerbating housing unaffordability, including: reduced social housing, rising house prices and rental costs, and the growth of the liberalised private rental sector (Dewilde, 2020; Hochstenbach & Ronald, 2020; Eurostat, 2020a, 2022b; van Gent & Hochstenbach, 2020). This has additionally been accompanied by labour market deterioration impacting incomes and employment security (Arundel & Doling, 2017; Kalleberg, 2018; OECD, 2021a). Many developments have disproportionately affected new entrants to housing and labour markets whereas existing ‘insiders’ have remained relatively more protected (Arundel & Lennartz, 2020). Such dynamics are reflected in our results with young adults exhibiting much higher HAS rates compared to older cohorts.

Notwithstanding the exploratory nature of the study, a strong association between experiencing housing unaffordability and worsened reported mental health is supported by our findings, albeit we recognise that with our focus on trends over time, we cannot establish a causal link untangling the (bi)directional nature of this association. Our findings point to the crucial importance of tenure as a key moderating dimension with the association much more pronounced among renters—who both already report lower mental health scores *and* exhibit a greater ‘penalty’ when facing HAS. On the one hand, this points to the housing system transformations that have pushed more precarious households into private rental and undermined the affordability and security of this very sector (CBS, 2022b; Dewilde, 2020; Hochstenbach & Ronald, 2020; Huisman, 2016a; Ronald & Lennartz, 2019). On the other hand, the results may reflect

theorised associations between tenure position and both material conditions of housing (Baker et al., 2014; Mason et al., 2013) as well as less tangible experiences of home and ontological security (Clapham 2011; Giddens 1991; Gurney, 2021; Rolfe et al., 2020) that may moderate the mental health consequences of HAS.

We also find a clear trend towards divergence in recent years with worsening mental health among those experiencing unaffordability. This provides support for the expected increase in the negative outcomes of being in HAS and underscores our discussion of the shifting housing and policy context. Beyond affordability itself, related changes in the Dutch housing context have intensified housing precarity, specifically within the rental sector. As a greater share of rental has been in the liberalised sector (Gemeente Amsterdam, 2020; Hochstenbach & Ronald, 2020) and policy changes have increasingly introduced more temporary contracts and eroded tenant security (Huisman, 2016a, 2016b), the stability of rental in the Dutch context has been undermined. Rising housing costs (CBS, 2022a, 2022b, 2020d) have also meant constrained opportunities of finding alternatives should a move be necessitated. The data confirms an apparent growing mental health penalty of being in HAS which could be explained by such increasing housing precarity and reduced alternative options. This is alongside supplementary analyses carried out that also pointed to some increases in the intensity of unaffordability experienced. Finally, age once again was an important factor in whether HAS correlated with a mental health penalty and the extent of the effect. While the oldest working-age group saw less differentiation, it is particularly renters in the 35–44 cohort that display a growing divergence in reported mental health between those with HAS or without. As this age largely correlates with having young children, this points to a potential additional avenue of research that considers the interaction of family formation with housing affordability and mental health.

Taken together, the research provides a valuable empirical examination of trends in housing affordability stress within the Dutch context and explores how unaffordability may relate to mental health and wellbeing. Crucially, the study emphasises the strong moderating role of tenure and age in such dynamics. The findings point to a growing housing affordability crisis and demand greater attention for problematic outcomes beyond access to housing itself. As housing unaffordability and precarity intensifies, a greater share of the population is likely to face substantial financial stress with potentially serious attendant consequences on mental and psychological wellbeing. These impacts do not fall evenly, however, and appear particularly concentrated among those unable to enter homeownership and among younger adults. The Netherlands provides a salient case which both retains a more protected tenancy and affordable housing stock but also exemplifies common shifts that have occurred across many countries towards welfare residualisation, erosion of tenancy protections, and processes of housing financialisation. Our exploratory empirical analyses

herein compel further research across international contexts into the unequal dynamics of housing unaffordability and its crucial implications for health and wellbeing.

Notes

1. This value is based on a stricter criteria of social housing than some other measures. The OECD measure which includes all dwellings falling below the social rent-regulated threshold (most of which are owned by social housing associations but also including regulated rentals owned by private landlords) puts the rate at 34%. Looking at comparable data for the OECD countries, only Austria (at 23.6%) and Denmark (21.4%) surpass a fifth of units. For comparison the OECD average is 6.9% while the share in Australia is 4.4%, the United States is 3.6%, Canada is 3.5%, and Germany is 2.7% (OECD, 2022c).
2. The *woningwaardestelsel* is a point-based system that assesses dwellings based on a set of criteria, such as size, amenities, quality and tax value. Up to a threshold, maximum rents are prescribed. Dwellings beyond this level (which related to a maximum rent of €752 per month in 2021) fall into the liberalised sector without any rent caps (Rijksoverheid, 2021a).
3. While historically the *woningwaardestelsel* point system was largely evaluated based on dwelling size and some elements of amenities' quality, in 2011, locational bonus points were added for the Amsterdam region (*Donnerpunten*) and, in 2015, subsequently replaced by a broader policy of the tax assessment value (*WOZ*) contributing to the points (Howard et al., 2021; Hochstenbach & Ronald, 2020). In Amsterdam, for example, only around 1% of housing association dwellings and 18% of private rental units in 2003 were in the unregulated sector, whereas this had increased to 8% and 54% respectively by 2019 (Hochstenbach & Ronald, 2020).
4. As of 2022, some tentative national government proposals signal a shift in policies that would (partly) curb continued social housing liberalisation and may limit continued rental contract precarisation. This has followed from growing attention to affordability and access issues in the Dutch housing system (e.g. including some significant housing protests taking place and expansive media coverage). However, it is not clear at this stage what will be implemented and the extent to which this may be a significant reversal of liberalisation trends. Moreover, the research period that is the focus this paper's analysis cannot capture such potential upcoming policy shifts and future research is needed to determine whether this will result in a reduction in housing affordability stress and its potential consequences on mental wellbeing.
5. Time divisions roughly reflect three housing market stages: an initial post-crisis period with house prices largely stagnating at a high level, a more rapid decline from 2012 reaching a nadir in 2013/14, and a subsequent substantial increase in the economic recovery period from 2015/16 (CBS Gemeente Amsterdam, 2020d).
6. Analyses of HAS trends using different income affordability cut-offs are available from authors upon request.
7. Available from authors upon request. Note: multicollinearity checks were applied which motivated the limitation of our selection to the two key variables of ethnicity and gender in our supplementary analyses.
8. Available from authors upon request.

Disclosure statement

No potential conflict of interest was reported by the authors.

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