Who Settles for Less? Subjective Dispositions, Objective Circumstances, and Housing Satisfaction

1. Introduction

Enhancing quality of life is arguably the ultimate goal of human existence and, as such, a key policy target. Over the last few decades there has been a rising interest in subjective evaluations of wellbeing, as it is believed that these complement more objective measures of human welfare and offer further insights. Additionally, subjective evaluations of wellbeing are attractive from a policy perspective because, in devising new policies, *"paternalism can be avoided and people's thoughts and feelings are placed at the centre"* (Waldron 2010, p.4). Since the introduction of the Gross National Happiness indicator in Bhutan in the 1970s, the rhetorics of subjective wellbeing have been increasingly present in political discourses in many countries. This trend has culminated in governments and institutions around the world developing and using formal indicators of subjective wellbeing as a means of monitoring social progress, with examples including the Stiglitz-Sen-Fitoussi commission in France, the Measuring National Wellbeing Programme in the UK, and the Canadian Index of Wellbeing. Such growing policy interest has been accompanied by exponentially increasing academic research, especially within the social and behavioural sciences. For instance, a combined search on the prominent citation database Scopus for the terms 'wellbeing', 'well-being', 'life satisfaction', and 'happiness' in the title, abstract, or keywords of research articles within the Social Sciences and Humanities returns 366 articles published in the 1960s, 1,243 for the 1970s, 3,185 for the 1980s, 8,581 for the 1990s, and a mammoth 25,993 articles published in the 2000s. These contributions come from a variety of disciplines, most prominently sociology, psychology, and economics.

Although research has demonstrated the usefulness, validity, and reliability of quantifiable indicators of subjective wellbeing, this remains a complex construct that is difficult to measure and analyse with survey data. Complexities in studying subjective wellbeing through a quantitative framework include response biases, measurement errors, and the fact that subjective evaluations capture a combination of factors of different relevance to different groups of people. Many of these complexities arise from the idiosyncratic nature of individuals' self-assessments and from the fact that they encompass both cognitive and emotional aspects. Furthermore, the cognitive component of satisfaction judgments draws heavily upon individual expectations and aspirations, defined as *"stable prefigurative orientations composed of specific beliefs"* (Morgan 2006, p.1528). We argue that it is important to understand these subjective dispositions as they not only influence survey responses to wellbeing questions, but also condition behaviour.

This article contributes to research on wellbeing by introducing a formal measurement model that can be applied to a range of subjective wellbeing measures and which, by ruling out objective circumstances, unveils how the subjective component in evaluations of subjective wellbeing differs across population groups. This is then tested using data from an Australian household panel survey and a within-household regression model in which housing satisfaction is the outcome variable, different socio-demographic characteristics

are the predictors of interest, and objective housing conditions are fully accounted for. Our focus is in general mechanisms driving the way in which individuals assess their circumstances and goes beyond housing satisfaction. However, by using housing satisfaction data, we also advance knowledge in the field of housing research with novel and relevant findings. Key results indicate that there are significant differences in the way individuals with different characteristics rate the same objective reality. Specifically, male, older, migrant, and Indigenous individuals rate the same housing conditions more favourably than female, younger, Australian-born, and non-Indigenous individuals. These findings have implications for how housing satisfaction data is to be used in informing housing policy, particularly policies aimed at allocating scarce resources to improve the housing situation of diverse collectives. Such policies need to be mindful that certain groups of people are more predisposed than others to express (dis)satisfaction with equal housing conditions.

2. Theoretical background and review of the literature

In this section we introduce the broad literature on subjective wellbeing, review specific literature on housing satisfaction, and propose a novel methodological approach to further our understanding of subjective wellbeing using survey data.

2.1. Subjective wellbeing

A large body of literature has examined the correlates of subjective wellbeing at the micro level. These include socio-demographic characteristics (e.g. age, gender, ethnicity, education, marital status, family composition), personality traits, attitudes and beliefs, absolute and relative income, major life events (e.g. experiencing unemployment, the birth of a child, or becoming disabled), time expenditure patterns, and contextual and environmental conditions (see Dolan et al. 2008). The relationships between subjective wellbeing and two personal characteristics – age and gender – have particularly received a great deal of attention in the literature. Most research on the associations between age and subjective wellbeing suggests a U-shaped relationship between the two variables, with younger and older individuals being happier than middle-age individuals (Clark & Oswald 1994). The mechanisms behind these relationships are still contested. Some argue that young individuals have unfeasible, overambitious aspirations and expectations, which since middle age are progressively subdued (Blanchflower & Oswald 2008). Others refer to sample selection processes: happier people live longer and are less likely to attrite from panel surveys (Frijters & Beatton 2012). Evidence on the relationships between gender and subjective wellbeing is more mixed. Some studies find that women are happier or more satisfied with their lives than men (Easterlin 2003; Blanchflower & Oswald 2004), others find no gender difference (Kahneman & Krueger 2006; Della Giusta et al. 2011), and yet others find that women are less happy or less satisfied with their lives (Mroczek & Kolarz 1998). What seems to be more certain is that variation in reported wellbeing is higher amongst women (Della Giusta et al. 2011), as they have a higher tendency than men to report both being very happy and very unhappy (Frey & Stutzer 2002). It has been suggested that the relationship between gender and subjective wellbeing is moderated by age, with subjective wellbeing rising for men and declining for women over the adult life

cycle (Marcelli & Easterlin 2005). The latter has been attributed to a higher prevalence of life-course events negatively associated with happiness amongst women, such as retirement and widowhood (Easterlin 2003), as well as to unsustainable normative expectations on women to remain youthful and beautiful with age (Inglehart 2002).

Many of the findings reviewed here apply to subjective wellbeing as a whole as well as to its particular subdomains, such as satisfaction with housing. However, there is also a specific literature on housing satisfaction which we review in the next section.

2.2. Housing satisfaction

Housing constitutes one of the key elements that shape well-being. As stated by the OECD, *"living in satisfactory housing conditions is one of the most important aspects of people's lives".*[1] The home environment is where people typically spend most of their time (Robinson & Godbey 1997) and a focal point for their social networks (Bronfenbrenner & Evans 2000). Furthermore, for most individuals housing is the single largest financial and personal investment they incur in their lives (Taylor et al. 2007). A house is more than simply a dwelling or a shelter with certain objective characteristics. It provides "security, privacy, neighbourhood and social relations, status, community facilities and services, access to jobs and control over the environment" (Vera-Toscano & Ateca-Amestoy 2008, p.258). The importance of housing satisfaction for overall wellbeing has been long established (see e.g. Barresi et al. 1984). Dissatisfaction with housing may result in costly relocation for some and in undesirable health outcomes such as stress or even ordeal for those who are unable to do so due to limited resources (Pevalin et al. 2008; Jacobs et al. 2009). Therefore, it has been argued that housing satisfaction should be at the centre of housing policy and that enhancing our knowledge of the mechanisms producing such satisfaction would aid the design of more effective housing programs. As a result, housing satisfaction is a key component of many composite wellbeing measures, including the recent OECD's Better Life Index (OECD, 2011).

Most research on housing satisfaction has focused on its relationships with the occurrence of one particular outcome, namely residential mobility (Diaz-Serrano & Stoyanova 2010; Nakazato et al. 2011). Only a handful of studies have been devoted to exploring the predictors of housing satisfaction, and these are often of a rather descriptive nature. This limited body of research has uncovered that housing satisfaction is related to, amongst others, income and home ownership, family and home size, housing quality, and neighbourhood conditions (Campbell et al. 1976; Galster & Hesser 1981; Rohe & Basolo 1997; Vera-Toscano & Ateca-Amestoy 2008). However, like other self-reported indicators of wellbeing, housing satisfaction is also determined by subjective factors that cannot be observed, such as the preferences, tastes, and evaluation criteria of the rater and the match between the person and the house (Diaz-Serrano 2009). Being a product of both objective and subjective factors, housing satisfaction is a complex variable that requires sophisticated analysis.

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[1] http://www.oecdbetterlifeindex.org/topics/housing/

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We argue that the subjective factors involved in satisfaction judgements have been largely neglected and deserve to be further scrutinized. In the next section we introduce a theoretical model that separates housing satisfaction into objective and subjective components.

2.3. Theoretical model

Subjective wellbeing can be conceptualised as a combination of cognitive (i.e. judgemental) and affective (i.e. emotional) components. Its cognitive dimension captures relatively stable evaluations of one's life circumstances, while the affective dimension captures transitory feelings and emotions (Diener et al. 1999). Here we concentrate on the cognitive aspects of wellbeing, which are typically operationalized using satisfaction indicators (rather than measures of affect, such as happiness). Specifically, we focus on satisfaction with the domain of housing, which is used as a tool to explore more general mechanisms underpinning individuals' reports of subjective wellbeing.

Classic theories of subjective wellbeing state that, when answering questions about their overall life satisfaction or their satisfaction with specific life domains, individuals use both their actual circumstances and their subjective aspirations and expectations (Campbell et al. 1976; Michalos 1985). When making a satisfaction judgement, people perform an evaluative assessment in which they compare their objective situation (e.g. their salary, their relationship with a spouse, or their housing conditions) against an ideal situation that they expect or aspire to attain. The closer their experienced conditions are to their aspirations and/or expectations, the higher their rating of their satisfaction will be. This simple theoretical model, often denoted as the *'actual-aspirational gap'* model, can be expressed as follows:

$$SAT = f(O;S;e) \tag{1}$$

where 'SAT' denotes individuals' self-reports of their satisfaction, 'O' encompasses objective characteristics of the entity or phenomenon to be evaluated, and 'S' encompasses subjective aspirations and expectations regarding those circumstances.[2] In the context of survey research, individuals' evaluations of their satisfaction contain a small random error – denoted by *'e'* in equation (1). This occurs for a variety of reasons. For instance, individuals' answers might be affected by their mood that day, different individuals may understand the same question differently, or may translate similar underlying satisfaction levels into different numeric answers.

The *'actual-aspirational gap'* framework can be adapted for the study of housing satisfaction (Francescato et al. 1974) and has been used in existing empirical housing

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[2] It is difficult and beyond the scope of this paper to determine whether these subjective dispositions encompass aspirations, expectations, ambitions, motivations, etc. or some/all of the above. Instead, the subjective dispositions term captures the net effect of these factors on housing satisfaction.

studies (Campbell et al. 1976; Galster 1987; Weidemann & Anderson 1985, Diaz-Serrano 2009). Modifying the above equation to fit this context gives:

$$HS = f(OC; SD; e) \tag{2}$$

where 'HS' denotes self-reported *housing satisfaction*, 'OC' stands for *objective (housing) conditions*, 'SD' encompasses *subjective dispositions* regarding those housing conditions, and 'e' is a random error component. Using these terms, we can now apply the above reasoning to the context of housing satisfaction. Individuals cognitively construct a reference condition for all important features of their housing situation, which depends on their aspirations and expectations (SD). This frame of reference is then compared with the actual housing conditions (OC) when formulating the housing satisfaction judgement. When the objective housing conditions do not meet the expectations given by the subjective frame of reference, dissatisfaction with housing is expressed.

Even though the importance of the subjective dispositions in the formulation of housing satisfaction judgements has been acknowledged in previous studies, to our knowledge research has exclusively focused on exploring the links between housing satisfaction and objective housing conditions, and this subjective component has been treated as a nuisance. In some strands of the subjective wellbeing literature, subjective dispositions are 'averaged out' of the equation via the estimation of individual-level fixed-effects models for panel data. In others, statistical controls for socio-demographic characteristics of the individuals performing the satisfaction judgement are included in the model. However, subjective dispositions and objective housing conditions may correlate, giving rise to a classical omitted-variable issue. The socio-demographic characteristics are poor proxies for subjective components if the objective components are not fully controlled for, and would capture a combination of the subjective dispositions and the *unobserved* objective conditions. Therefore, none of these strategies would be useful in exploring subjective aspirations and expectations.

As explained, to date it has not been possible to separate the impacts on individuals' satisfaction reports of objective conditions and subjective dispositions, chiefly due to the scarcity of high-quality information on housing conditions in multi-purpose surveys. In the next section, we propose an innovative empirical modelling strategy for housing satisfaction data that fully controls for the objective component (i.e. housing conditions) and therefore allows for the examination of systematic differences in the subjective component (i.e. individuals' expectations and aspirations) across different population groups. This is achieved through an inventive application of a model originally designed for the analysis of individual-level panel data to household-nested individual-level data.

3. Methodological approach and data source

The bulk of research on individuals' subjective wellbeing in general and housing satisfaction in particular has been carried out using cross-sectional data and methods,

typically OLS regression. In this universe, housing satisfaction is modelled assuming that the following true relationships exist:

$$HS = a + Xb + v \qquad (3)$$

where HS is self-reported housing satisfaction; a is an intercept; X is a vector of explanatory variables; v is an error term; and b is a vector of coefficients of interest.

The emergence of high-quality household panel surveys offers new opportunities to enhance the way in which subjective wellbeing is modelled in quantitative research studies. Of major importance has been the advent of research exploiting the panel structure of the data. When panel data is available, the model can be extended to:

$$HS_{it} = a + X_{it}b + Z_i b + v_{it} \qquad (4)$$

where the i and t subscripts denote individual and time period respectively; X_{it} is a vector of variables which vary over time (e.g. age and income); and Z_i is a vector of variables which do not vary over time (e.g. gender and ethnicity). Additionally, the error term v_{it} can now be decomposed as follows:

$$v_{it} = u_i + e_{it} \qquad (5)$$

where e_{it} is the usual cross-sectional stochastic error term ('luck') and u_i is an additional error term capturing any person-specific time-invariant unobserved heterogeneity affecting individuals' reports of their housing satisfaction. In this context, the error term u_i is a clear proxy for the subjective dispositions (SD) construct in equation (2).

Researchers have used repeated reports on the satisfaction variables and the socio-demographic factors from the same subjects over time to improve the identification of causal relationships between objective housing conditions and satisfaction by controlling for this unobserved (or unmeasured) person-specific heterogeneity – i.e. the subjective dispositions. Specifically, individual-level fixed-effects models (IL-FE) have been recurrently used in this literature. These are estimated by taking deviations from the person-specific mean in both sides of the equation and take the form:

$$HS_{it} - \overline{HS}_i = a + (X_{it} - \overline{X}_i)b + (Z_i - \overline{Z}_i)b + (u_i - \overline{u}_i) + e_{it} \qquad (6)$$

Both Z_i and u_i are time-invariant. Therefore, $Z_i = \bar{Z}_i$ and $u_i = \bar{u}_i$ and consequently $(Z_i - \bar{Z}_i)b = 0$ and $(u_i - \bar{u}_i) = 0$. Thus, the IL-FE model actually estimates:

$$HS_{it} - \overline{HS}_i = a + (X_{it} - \bar{X}_i)b + e_{it} \tag{7}$$

The u_i term which approximates our notion of subjective dispositions is not of interest in this type of model. Instead, it is treated as a nuisance and averaged out by the application of this IL-FE model.

Here, we propose an alternative way to model housing satisfaction using household panel surveys and argue that much can be learnt by adapting the above outlined methodology to exploit the household structure rather than the panel structure of the data. It is possible to think of households as having distinct properties and characteristics which make their inhabitants particularly happy/satisfied or unhappy/unsatisfied. These may include factors such as size, quality and appropriateness of the physical environment, geographical location, and neighbourhood characteristics which should be common to all individuals living in the household. Failing to account for these objective factors in models of housing satisfaction results in the estimated coefficients of the individual-level socio-demographic variables capturing *a mixture of the objective and subjective components of the satisfaction judgement* through omitted variable bias. One way to prevent this is accounting for these household-specific (dis)amenities directly by including an exhaustive set of relevant control variables in the models. While existing research studies have used available variables (see e.g. Diaz-Serrano 2009; Vera-Toscano & Ateca-Amestoy 2008), this information is rarely accessible in survey datasets or exhaustive enough to encompass all possible household-level (dis)amenities. However, data from household panel surveys provide other means to account for objective housing conditions. Let the naïve OLS model in equation (3) be extended to:

$$HS_{hi} = a + X_{hi}b + Z_h b + u_h + e_{hi} \tag{8}$$

where the h subscript represents the household and the i subscript represents the individuals nested within each of these households. X_{hi} and Z_h are now vectors of *household-varying* and *household-invariant* variables respectively, instead of vectors of time-varying and time-invariant variables. The former are observable individual-level characteristics that can take different values for different household members, such as age, gender, and education. The latter are observable household-level characteristics shared by all household members, such as dwelling type, household income, or crowding indicators. Most importantly, in this context the error term u_h represents household-specific unobserved heterogeneity, i.e. any objective housing conditions not explicitly controlled for. What this term actually captures will depend on the richness of the household-level information available in the data, but it is likely to encompass typically unavailable

information on objective housing conditions such as the size and layout of the dwelling, detailed measures of the quality of the living environment, or the geographical location.

Our aim is to exploit the multiple observations from different individuals living in the same household to control for these objective housing conditions. This is achieved through the use of fixed-effects models in which individuals are nested within households, as these specifications explicitly model (by averaging it out) all household-specific heterogeneity. By doing so, their estimated coefficients on the socio-demographic characteristics will reflect the subjective dispositions of different population groups when making satisfaction judgements. We refer to these models as household fixed-effects (HH-FE) models. Formally, these take the form:

$$HS_{hi} - \overline{HS}_h = a + (X_{hi} - \overline{X}_h)b + (Z_h - \overline{Z}_h)b + (u_h - \overline{u}_h) + e_{hi} \tag{9}$$

which reduces to:

$$HS_{hi} - \overline{HS}_h = a + (X_{hi} - \overline{X}_h)b + e_{hi} \tag{10}$$

The household-invariant variables in Z_h and the household-specific heterogeneity error term u_h (i.e. the observed and the unobserved objective housing conditions) are both averaged out of the equation. As a result, identification of the subjective component of housing satisfaction judgements becomes possible. HH-FE models have also an advantage over IL-FE models: they can provide estimates of the impacts on housing satisfaction of time-invariant individual-level characteristics of interest to social scientists, such as gender, socio-economic background, and ethnicity. Moreover, the approach attenuates some of the error typically associated with survey research, as exogenous factors such as the weather on the interview day or the interviewer's personality are constant amongst people within the same household, and therefore 'explained away'.

This is, to our knowledge, the first time that this modelling strategy has been used in the literature exploring the predictors of housing satisfaction. However, such an approach has strong foundations in other areas of academic enquiry. For instance, past research has employed similar methods to control for environment-specific factors, including school- and classroom-level heterogeneity in educational research (Nuttall et al. 1989), neighbourhood- and district-level heterogeneity in geographical research (Jones & Duncan 1996), and workplace- and job-level heterogeneity in labour market research (Booth & Bryan 2004).

We use OLS and HH-FE models to explore the relationships between housing satisfaction, household-level characteristics, and individual-level characteristics using data from the Household Income and Labour Dynamics in Australia (HILDA) survey. This is a multipurpose nationally-representative household panel survey that covers the period 2001-2010 and contains information from annual interviews with around 15,000 adults

living in 8,000 households in Australia. HILDA has advantageous features for our modelling strategy: households are the sampling unit and information is collected from all adults within each household. This enables us to estimate the HH-FE housing satisfaction model described before. We use information from individuals in the first 10 panel waves, with the exception of people living in communal homes and unfixed addresses or who have missing information on model variables. This gives a net sample size of around 129,000 individuals nested within 71,000 households.[3]

HILDA has a module which collects rich information on self-reported subjective wellbeing. This is part of the face-to-face interview and is administered to individuals aged 15 and older. Instructions given to respondents by the interviewer read:

> *"I am now going to ask you some questions about how satisfied or dissatisfied you are with some of the things happening in your life. I am going to read out a list of different aspects of life and, using the scale on this showcard, I want you to pick a number between 0 and 10 and that indicates your level of satisfaction with each. The more satisfied you are, the higher the number you should pick. The less satisfied you are, the lower the number."* [4]

The aspects asked about are: (i) 'the home in which you live'; (ii) 'your employment opportunities'; (iii) 'your financial situation', (iv) 'how safe you feel'; (v) 'feeling part of your local community'; (vi) 'your health'; (vii) 'the neighbourhood in which you live'; (viii) 'the amount of free time you have'; and (ix) 'life (overall)'. We are particularly interested in 'satisfaction with the home in which you live', from hereafter referred to as 'housing satisfaction'.[5] This is captured using an 11-point scale (0-10), where higher values represent higher satisfaction. We use this as a continuous dependent variable and estimate linear models.[6] Our explanatory variables of interest encompass a wide range of individual- and household-level contextual factors expected to affect housing satisfaction. Individual-level factors in all models include age, gender, ethnicity (Indigenous background), marital status, education, health, employment status, and migrant background. Household-level control variables used in OLS models include equivalized household income, dwelling type,

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[3] These figures result from pooling individuals and households across waves. Therefore, we implicitly treat the same individuals and households as different units each wave.

[4] From HILDA documentation. A copy of the showcard is included in Figure A1 in the appendix.

[5] There is some ambiguity in the wording *'the home in which you live'*. As others before us, we assume that this refers chiefly to housing conditions, rather than to family relationships within the home. Other household panel surveys use clearer terms (e.g. *'your house/flat'* in the British Household Panel Survey). The broader term *'the home in which you live'* was chosen for HILDA to make the question relevant to individuals who do not live in standard housing conditions (i.e. a house or a flat), whose number may be higher in Australia than in other developed countries such as the UK. The terms *'home'* and *'house'* are also used interchangeably in policy discourses (e.g. *'home modification programs'* rather than *'housing modification programs'*).

[6] This variable is in fact ordinal, but the number of categories is too large to analyse it using models for ordinal data. The error introduced by assuming cardinality for ordered subjective wellbeing variables has nevertheless been shown to be negligible (Ferrer-i-Carbonell & Frijters 2004).

ownership and tenancy status, number of children age 0-4 and 5-14, number of bedrooms per person, year of interview, state of residence, urban area, and quintiles of socio-economic deprivation. Because *age* and *gender* are the most widely investigated personal characteristics in the literature on subjective wellbeing and of uttermost important to policymakers, we pay special attention to these. However, differences across other socio-demographic groups of interest (e.g. migrants/non-migrants; ethnic majorities/ethnic minorities, etc.) are also addressed. Sample means and standard deviations for model variables are reported in Table A1 in the appendix.

To test the relationships of interest, equivalent linear regression models are estimated using OLS (equation 3) and HH-FE (equation 10) specifications. The HH-FE model allows us to explore how subjective dispositions differ across socio-demographic groups, whereas comparisons between this and the OLS models provide insights on how objective conditions mediate satisfaction judgements across population groups.

4. Empirical evidence

We have argued that much can be learnt from the subjective component of housing satisfaction evaluations. First, understanding systematic differences in the subjective component of housing satisfaction judgements across population groups will improve our knowledge of how individuals generate wellbeing evaluations in general. Second, identifying which categories of people over- or under-rate similar objective housing conditions, by how much, and in which ways is helpful in determining how data on housing satisfaction should be used to inform evidence-based policy. However, existing modelling approaches are restrictive. In this section we present empirical evidence on the relationships between housing satisfaction, subjective dispositions, and objective housing conditions. We take an innovative approach and focus explicitly on unveiling the role of subjective dispositions in housing satisfaction evaluations using specifically-tailored household regression models.

Our outcome variable, housing satisfaction, has a sample mean of 7.97 (out of a maximum of 10) and a standard deviation of 1.88. Figure 1 shows the distribution of responses to this variable. As typically found in this literature, most individuals are satisfied or very satisfied with the home in which they live. Only 10% of respondents report satisfaction values equal to or lower than 5 and over 68% of observations cluster in categories 8 to 10.[7] An analysis of the variance components for this variable reveals that 46.5% of the total variation in housing satisfaction is *between* households and 53.5% is *within* households (Table 1). This evidences that there is more variation in housing satisfaction reports between individuals living in the same household, than between individuals living in different households. This is clear indication that differences in subjective evaluations of equal housing conditions are important.

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[7] The distribution of the housing satisfaction variable is skewed. Previous research has demonstrated that this has little influence on results drawn using samples larger than 300 and recommend that no transformation is applied (Tabachnick & Fidell 2001). Therefore, as all the reviewed studies, we do not transform the housing satisfaction variable.

(FIGURE 1 ABOUT HERE)

(TABLE 1 ABOUT HERE)

We now discuss the results from regression models which allow us to identify the relationships of interest in a multivariate framework. The outcome variable is an indicator of self-reported housing satisfaction and the explanatory variables are a range of individual- and household-level factors thought to be associated with it. Estimated coefficients are presented in Table 2. These give the raw change in the dependent variable for a 1-unit increase in the explanatory variables, controlling for all other variables in the model and – where relevant – for household-specific heterogeneity (i.e. objective housing conditions). Columns 1 and 2 contain results estimated using OLS, and column 3 contains results estimated using HH-FE.

The OLS model in column 1 takes the simplest approach to modelling housing satisfaction. It does not include information on housing characteristics and it does not account for the clustering of individuals within households. In this model, the estimated coefficient on each individual-level socio-demographic variable captures *a mixture of the objective and subjective components of the satisfaction judgement* for that subgroup. Results for our key independent variables (i.e. gender and age) are consistent with those reported in some of the previous studies. Women are 0.025 points more satisfied with their homes than men are and this relationship is statistically significant at the 95% level, which supports arguments that women are generally happier than men (Easterlin 2003; Blanchflower & Oswald 2004). Age is also positively associated with housing satisfaction: ceteris paribus a one-year increase in age raises such satisfaction by 0.023 points and this association is statistically significant at the 99.9% level. This is consistent not only with previous findings from housing satisfaction studies, but also with findings from research on job (Clark et al. 1996) and life satisfaction (Blanchflower & Oswald 2008).

Interesting as these findings might be, it remains to be explained what is behind these associations. Subsequent models will decompose the role of objective housing conditions and subjective dispositions. The first step is adding the few variables on household characteristics available in HILDA to the OLS specification (column 2). In this model, the estimated coefficients on the individual-level socio-demographic variables capture *the subjective component of the satisfaction judgement plus any objective conditions that are correlated with this and not explicitly controlled for*. Model coefficients on our key variables of interest change: there is no longer a statistically significant gender-difference in housing satisfaction, and the size of the coefficient on the age variable is halved. In this model, each one-year increase in age raises housing satisfaction by 0.011 points, and this is statistically significant at the 99.9% level. These changes suggest that the higher levels of housing satisfaction reported by women and older people are partially due to individuals with these

characteristics living in houses in which average satisfaction is higher – that is, better houses. [8]

(TABLE 2 ABOUT HERE)

However, there are more efficient ways to account for household heterogeneity in HILDA than merely using a non-exhaustive set of household-level control variables. The HH-FE model in column 3 fully controls for objective housing conditions by partialling them out and is consequently the best option to estimate how the subjective component of wellbeing evaluations differs across population groups. Model coefficients can now be interpreted as unconditionally capturing *the subjective component of the housing satisfaction judgement exclusively*. The coefficient on the age variable in the HH-FE model indicates that ceteris paribus a one-year increase in age is associated with reported satisfaction with the same house increasing by 0.011 points, and this is statistically significant at the 99.9% level. Its sign and magnitude are therefore comparable to those from the OLS model with the household-level variables. However, the coefficient on the female variable becomes negative and statistically significant and indicates that when rating the same house women attribute a score that is on average –0.056 points lower than that of men, all else being equal. Overall, these results can be interpreted as indicating that, when individuals live in the same households, their gender and age influence how they rate housing satisfaction relative to others. In particular, it appears that men and older people formulate more positive satisfaction judgements than women and younger people when exposed to the same objective housing circumstances. Thus, it seems that men and older people do in fact *settle for less*.

We have used gender and age as example variables to show how the subjective component of satisfaction judgements varies across population groups, and how to identify whether the group differences observable in a naïve OLS model are partially or entirely due to differences in objective circumstances. The predicted impacts on housing satisfaction of other relevant individual-level socio-demographic variables are also statistically significant in the HH-FE model, indicating that this idiosyncratic component varies across other collectives too. Individuals who are single are substantially more satisfied with equal housing conditions when compared to those who are married (b=0.485, p<0.001), and so are those with no educational qualifications relative to those with a diploma (b=–0.070, p<0.001) or a degree (b=–0.178, p<0.001). Healthier individuals have a more favourable view of the same housing conditions than those who are less healthy (b=0.007, p<0.001). However, individuals with a long term condition or disability *settle for less* than those who

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[8] Household-level characteristics are important, as their inclusion almost doubles the model's R^2 (from 6.5% to 10.6%). Their associated coefficients are consistent with expectations. Housing satisfaction increases with household income and home ownership, while it decreases with crowding, area deprivation, and the number of children (especially pre-school age children) in the household. Additionally, housing satisfaction is higher amongst individuals living in detached houses rather than semi-detached houses or flats and amongst those who reside in rural relative to urban areas.

have no disability (b=0.064, p<0.001). Concerning employment status, students (b=0.345, p<0.001), retirees (b=0.312, p<0.001), and individuals who remain out of the labour force (b=0.117, p<0.001) rate equal housing conditions more favourably than the employed. Ethnicity and country of origin are also important, with Indigenous people (b=0.103, p<0.05) and people born in a non-English speaking country (b=0.119, p<0.001) *settling for less* than non-Indigenous and Australian-born people respectively. However, as we will discuss in more detail below, the coefficient on Indigenous status needs to be interpreted with care due to the scarce within-household variation for such variable.

Table 3 sheds light over how objective housing conditions and subjective dispositions interact by summarising how the coefficients on all individual-level model variables vary when estimated using the simplest OLS model and the HH-FE model. The most drastic transformation occurs when the signs of the coefficients reverse and the original and new coefficients are both statistically significant. The coefficient on the female variable is the only one undergoing a change from *positive* (and statistically significant) in the OLS model to *negative* (and statistically significant) in the HH-FE model. This indicates that, while women initially appear more satisfied with their homes than men, the opposite holds true once housing conditions are fully accounted for. Therefore, it is men rather than women who *settle for less*, which constitutes an unexpected and interesting finding. The opposite conversion – i.e. coefficients moving from *negative* and statistically significant in the OLS model to *positive* and statistically significant in the HH-FE model – occurs for the variables on being from an Indigenous background and coming from a non-English-speaking country (relative to being Australian-born). Individuals from these backgrounds appear to report lower housing satisfaction levels in the simple model, but this is because their houses are of 'lower quality' than those of non-Indigenous people and Australian-born respondents. When members of each pairing live in the same house, Indigenous people and immigrants from non-English-speaking countries are predisposed to evaluate the same housing conditions significantly more generously. The second most substantial transformation occurs when the statistical significance of the estimated impacts of explanatory variables on housing satisfaction fade in the HH-FE relative to the OLS model, which occurs for the coefficients on the variables for being divorced, separated or widowed, unemployed, and from another major English-speaking country.[9] This suggests that individuals with these characteristics in the simple model seem less satisfied than married, employed, and Australian-born individuals respectively because their housing situation is generally inferior. When housing conditions are controlled for, there are in fact no differences in the subjective component of satisfaction judgements across these population groups. A third type of transformation occurs when effect sizes change across specifications.[10] This pattern is apparent for coefficients on the variables on age, being a full-time student, general health, having a certificate or diploma, and having a University degree, which are all closer to zero in the HH-FE than in the OLS model. The opposite pattern (larger effect sizes in the

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[9] We found no instances of the opposite pattern (i.e. the coefficient on a given variable being statistically significant in the HH-FE but not in the OLS model).

[10] Usually, effect sizes are relatively small in within-group estimators such as our HH-FE model. This is because coefficients from these models are estimated using only within-group variation in the outcome and explanatory variables.

HH-FE than the OLS model) is apparent for the variables for being single, not being in the labour force, and having a long-term health condition or disability. Only one coefficient appears remarkably similar across all specifications: that for being permanently retired.

(TABLE 3 ABOUT HERE)

These results suggest that accounting for unmeasured objective housing conditions is important in retrieving the role of subjective dispositions in evaluations of housing conditions for a number of individual-level variables. They also demonstrate that the idiosyncratic component of housing satisfaction judgements varies, sometimes substantially, across population groups. Often this is only discernible in the HH-FE model that controls for household-level heterogeneity. We therefore conclude that this specification is a useful tool to shed light over the way in which individuals with different socio-demographic traits formulate wellbeing assessments.

We complete the empirical analyses by performing further investigation of how the subjective component of housing satisfaction evaluations evolves with age and gender. This is achieved by estimating HH-FE and OLS models analogous to models in columns 1 and 3 in Table 2 that add a quadratic term for age and an age-gender interaction. Figure 2 shows men's and women's predicted housing satisfaction by age for both estimation strategies. The familiar concave relationship for age found in studies of job and life satisfaction (Clark 2007; Blanchflower & Oswald 2008) is clearly discernible in HH-FE models for both men (blue line) and women (green line), with relative high housing satisfaction scores during youth and late life and a dip in the 30s and early 40s. Turning points occur at ages 36 and 38 for men and women respectively. This model predicts higher satisfaction amongst men over most of the life course (ages 23-73), but slightly higher satisfaction amongst women at very early and late ages (15-22 and over 73 years). In contrast, the OLS plots for men (red line) and women (yellow line) suggest an almost linear relationship between age and housing satisfaction, with marginally higher housing satisfaction amongst women relative to men at all life stages. The divergences between the OLS and HH-FE model are informative in two ways. First, they suggest that the U-shaped relationship between age and wellbeing recurrently reported in the literature is due to the subjective rather than the objective component of satisfaction judgements. Second, they evidence that the mismatch between objective housing conditions and subjective expectations, aspirations, etc. (i.e. the difference between the predictions from the HH-FE and OLS model) is highest for young people and closes with age, which has important implications for housing policy.

(FIGURE 2 ABOUT HERE)

5. Discussion and conclusion

In this article we have contributed to the growing literature on subjective wellbeing by proposing and fitting a model that unveils how subjective dispositions affect self-reported housing satisfaction using an Australian household panel survey.

Our paper introduces an innovative modelling strategy which is applied to housing satisfaction data, but which can be easily implemented in other contexts including educational and labour market research. This empirical specification allowed us to exploit the household structure of the data to fully control for the objective component (in this case, housing conditions) of evaluative wellbeing judgements and hence retrieve information on the subjective component of such evaluations (individuals' expectations, aspirations, ambitions, etc.). Our findings evidenced that substantial heterogeneity exists in the way in which different individuals rate the same objective reality: satisfaction judgements are largely idiosyncratic and shared objective circumstances do not automatically translate into equal evaluations of wellbeing. Importantly, our results unveiled that such heterogeneity is not random or mere 'noise'. Instead, we found systematic and statistically significant patterns in the way in which individuals from different population groups rate the same objective reality. For example, in our application using housing satisfaction, male, older, migrant, and Indigenous individuals rate the same housing conditions more favourably than female, younger, Australian-born, and non-Indigenous individuals respectively. Such patterns would have gone unnoticed had more traditional modelling approaches been used and, as we will later argue, bear implications for which data and statistical methods should be employed to optimally use survey measures of housing satisfaction to inform evidence-based housing policy.

Despite being innovative, our methodological approach might be subject to certain criticisms. First, the predicted impacts on the outcome variable of explanatory variables that vary little within households might be driven by a relatively small number of observations. To explore to what extent this is an issue for our analyses we calculated how much variation in our model variables of interest occurs within households. Results presented in Table A2 in the appendix are encouraging and show that for all but one variable there is non-negligible within-household variation. The exception is the variable measuring Indigenous status: only 1,137 (3%) of 43,554 multi-person households contain a mixture of Indigenous and non-Indigenous people, and hence contribute to the estimation of the associated coefficient. Therefore, Indigenous and non-Indigenous people who live in racially mixed households might be a selected subgroup and judicious care should be exerted when interpreting this model coefficient. However, as we will highlight in the fourth argument below, such coefficient may actually be a lower-bound estimate. Second, model parameters might be incorrectly estimated in the presence of person-varying household heterogeneity (i.e. if equal housing conditions affect individuals with different characteristics not controlled for in the model differently). Given the richness of the HILDA data and the encompassing set of regressors we include in our models, this is likely to bias our estimates only minimally, if at all. Besides, these two issues relate to all 'within group' estimators, rather than to our modeling strategy in particular and never prevented such models from becoming the 'gold standard' in the subjective wellbeing literature (Ferrer-i-Carbonell & Frijters 2004). We argue that these shortcomings are a small price to pay for the advantages associated with this modeling approach. A third criticism is that, as mentioned in the methodology section, our models pool individuals and households across

waves. Therefore, we implicitly treat the same individuals and households as different units each wave. Unfortunately, simultaneous use of HILDA's household and panel features, for instance for the estimation of models accounting for both the nesting of observations within individuals and the nesting of individuals within households, is not possible. This is because identifiers for households and for individuals within households in HILDA are randomly assigned each wave. Thus, families which stay longer in the survey contribute to the estimation disproportionally, relative to families who attrite at some point. In this respect, it is reassuring that HILDA has the highest respondent retention rate of all major household panel surveys (96.3% in wave 10), clearly outperforming other major household panels such as the British Household Panel Survey, the German Socioeconomic Panel, and the US Panel Study of Income Dynamics (Melbourne Institute of Applied Economic and Social Research, 2012). To test whether pooling panel waves affects our results empirically, we run separate regression models for each wave. Results from this exercise (available upon request) show that the estimated relationships are remarkably consistent across years. Of 15 household-varying regressors, the signs of the coefficients on 8 variables were the same in every single one of the 10 panel waves, for 3 variables they only changed in 1 wave, and for 1 variable they only changed in 2 waves. When coefficients had opposite signs across years, in all instances the predicted impacts were not statistically significant at conventional levels. It must also be stressed that all our models include a set of dummy variables that control for the survey year. Fourth, it can be argued that individuals who live in the same household tend to be 'more alike' than individuals selected randomly from a population (see for example the literature on assortative mating). While this argument is persuasive, it actually plays in our favour. The impacts we report are from more similar individuals than found in the population and hence underestimate (rather than overestimate) the true cognitive biases in housing satisfaction reports that exists across population groups.[11]

Amongst our substantive findings, one key result is that gender influences housing satisfaction judgements net of objective housing conditions, with men on average rating their housing situation more favourably than women. Given women's historical disadvantage in social standing relative to men, this finding appears counterintuitive. Indeed, reference group theory (Merton 1957) would predict that women rather than men would *settle for less*. While *ceteris paribus* this may hold, there are several possible, compatible explanations for the net effect to be the opposite. First, evidence from sociological research suggests that women are in some ways more demanding than men, for instance concerning living conditions. More specifically, our recent analyses show that women of childbearing age find it more important to live in good conditions than men within the same age range (reference deleted for blind review), most likely due to women's usual role as primary child carers. Second, given average labour market participation rates, men spend more time outside the home than women and may consequently be less aware of or less disturbed by any housing limitations. Besides, women are also more exposed to any negative housing conditions via their disproportionate share of the housework (Baxter et al. 2008). Third, women's relative discontent with housing might be related to their share of bargaining power within the household. Because men typically earn more, they

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[11] We would like to thank an anonymous reviewer for bringing this to our attention.

often have the final word on large-scale household financial decisions, such as relocating to a new home, purchasing property, or deciding on the new house's attributes (Pahl 1983). Also, women tend to partner with older men and to move into their male partner's house for family formation (Iacovou 2010). Finally, given that men are mostly responsible for housing provision within families, a certain degree of social desirability bias might move their housing satisfaction responses upwards (i.e. men would be more reluctant to accept their failure to provide optimal housing conditions). Further research that unpacks the mechanisms producing the gender-difference in subjective evaluations of housing satisfaction unveiled in our models would be enlightening.

A second key substantive finding concerns the relationships between age and housing satisfaction, whereby older people are happier than younger people with equal housing conditions. This is consistent with a strand of literature on material deprivation which shows that older people who experience a degree of material deprivation tend to underreport problems, including housing-related problems (McKay 2004). Research on ageing has also reported decreasing demands and requirements with respect to housing conditions as people get older. For instance, older people tend to move from houses that they describe as 'more than adequate' to houses they describe as 'just adequate' (Tomaszewski et al. 2013). Also, younger individuals may have less control over their housing conditions than older individuals (who are more likely to be the primary earners and house owners) – hence the observed increasing rate of housing satisfaction with age.

Results for other socio-demographic groups are in clear agreement with reference/comparison group theories. For example, Indigenous people rate the same objective conditions more favourably than non-Indigenous people. This might be due to lower expectations and or aspirations concerning housing for members of these collectives. In Australia, average housing conditions amongst Indigenous population are markedly worse than those of the white population (Neutze 2010). If Indigenous individuals compare themselves to other Indigenous people rather than to the whole population when evaluating whether their wellbeing is high or low, they might perceive themselves as better off than they actually are. A similar argument can be made for the relatively high levels of housing satisfaction observed amongst unemployed, migrant, and disabled individuals.

Evidence presented here is not only theoretically informative for our understanding of how individuals assess their wellbeing but also directly relevant for housing policy. First, the fact that subjective dispositions play an important part in housing satisfaction decisions suggests that policymakers should be wary of using the results of descriptive or cross-sectional research designs to inform housing policy, as housing dissatisfaction cannot be readily taken as an indicator of housing deficits. When such dispositions are not – as is the case in this article – the focus of the research, studies should employ IL-FE models of the sort advocated by, amongst others, Ferrer-i-Carbonell & Frijters (2004). Failure to do so is likely to result in biased predictions on the impact of both individual- and household-level variables on housing satisfaction and provide a deceitful picture of the housing situation of different population groups. The Australian government periodically invests substantial funds to undertake and analyse large-scale cross-sectional surveys of the housing experiences and housing satisfaction of vulnerable social groups, such as Indigenous Australians, income-support recipients, and tenants of public and community housing,

including the National Social Housing Survey series. In the light of evidence presented here, such data on its own is unlikely to provide optimal, reliable knowledge that can be used in evidence-based policymaking. Second, our findings suggest that survey measures of housing wellbeing devised to inform policy might be complemented with a more qualitative approach devoted to gathering further information on the actual living conditions of social groups who are prone to over or underreport housing satisfaction by a non-negligible amount. For example, 'policy in action' initiatives aimed at ensuring decent living conditions amongst older people might additionally involve implementing (or at least offering) regular checks of their homes, regardless of whether inhabitants report any problems. Third, although our results suggest that housing dissatisfaction is not a synonym to poor housing conditions, observed mismatches between actual and desired housing amongst certain social groups should still be of concern to policymakers, as they may translate into lower overall wellbeing. Amongst those experiencing mismatches, the wealthiest and most capable may eventually close the gap between their desired and actual objective housing conditions either by modifying their existing homes or by relocating to a different house. However, socially and economically constrained individuals, such as those with a low income and/or poor health, will be 'trapped' in unhealthy housing conditions – often for long spells of time – and suffer as a result (Taylor et al. 2007; Pevalin et al. 2008). When possible, housing policy should facilitate house moves and house modification amongst these disadvantaged collectives. Even horizontal relocation into homes of similar value but 'better matched' to the desires and characteristics of residents may prove fruitful.

A number of interesting research avenues emerge directly from the findings we report. Methodologically, integration of multilevel and longitudinal modelling techniques should pave the way to housing satisfaction analyses which exploit both the household and the panel nature of household panel surveys, instead of one at a time. This will only be possible if household panel surveys enable users to track households over time, despite the obvious theoretical and empirical difficulties of doing so. Second, our results apply only to Australia. For further validation, future research might want to replicate these using other major household panel datasets, such as the British Household Panel Survey, the US Panel Study of Income Dynamics, and the German Socio-Economic Panel. Finally, as argued throughout the article, our methodological approach can be easily extended to study individuals' self-reported wellbeing with other dimensions that might be scholastically- or policy-relevant. Obvious examples include individuals' satisfaction with their jobs or workplaces as well as their satisfaction with the neighbourhoods or communities in which they reside. Undertaking these studies will provide a broader and more accurate picture of how social forces urge certain people to *settle for less*.

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7. Tables and figures

Table 1. Variance components for housing satisfaction

	Standard deviation	Variance (sd²)	Percentage of total variance
Between households	1.28	1.63	46.4%
Within households	1.37	1.88	53.6%
Total variance	2.65	3.51	100%

Table 2. Housing satisfaction models

	OLS	OLS	HH-FE
<u>Key individual-level characteristics</u>			
Female	0.025*	0.003	-0.056***
Age	0.023***	0.011***	0.011***
<u>Other individual-level characteristics</u>			
Marital status (ref. Married or cohabiting)			
Single	0.201***	0.131***	0.485***
Divorced, separated or widowed	-0.325***	-0.196***	0.015
Education (ref. Year 12 or lower)			
Certificate or diploma	-0.123***	-0.152***	-0.070***
University degree	-0.216***	-0.269***	-0.178***
General health scale (0-100)	0.012***	0.012***	0.007***
Long-term health condition or disability	0.030*	0.059***	0.064***
Labour force status (ref. Employed)			
Not in the labour force	0.000	0.173***	0.117***
Unemployed	-0.277***	-0.114***	-0.010
Full-time student	0.600***	0.429***	0.345***
Permanently retired	0.327***	0.457***	0.312***
Migrant background (ref. Australian-born)			
Other major English-speaking country	-0.097***	-0.047**	0.020
Other country	-0.064***	0.004	0.119***
Indigenous	-0.130***	0.124***	0.103*
<u>Household-level characteristics</u>			
Log equivalized household income		0.032***	
Type of dwelling (ref. Detached house)			
Semi-detached house		-0.041*	
Flat or other		-0.154***	
House tenure (ref. Owned)			
Rents from private landlord		-0.794***	
Rents from social institution		-0.634***	
Lives there for free		-0.476***	
Number of children age 0-4		-0.199***	

Number of children age 5-14		-0.081***	
Ratio of bedrooms per person		0.084***	
Major or other urban locality		-0.110***	
Socioeconomic disadvantage (ref. Quintile 5)			
Quintile 1		-0.181***	
Quintile 2		-0.114***	
Quintile 3		-0.049**	
Quintile 4		-0.083***	
Constant	6.149***	6.777***	6.863***
N (individuals)	128,958	128,958	128,958
N (households)	71,053	71,053	71,053
R^2 (OLS) / R^2 within (FE)	0.065	0.106	0.030

Notes: *$p<0.05$, **$p<0.01$, ***$p<0.001$. Dependent variable: Self-reported housing satisfaction (11 categories). Linear specifications. OLS: Pooled ordinary least squares. HH-FE: Household fixed-effects. Sample: Individuals age 15 or over; excludes those living in unfixed homes. Models also control for year and state of residence.

Table 3. Changes in the estimated coefficients from the naïve OLS model and the HH-FE model

Change in the estimated coefficients	Variable	OLS	HH-FE
Change of sign	Female	0.025*	-0.056***
(OLS and HH-FE coefficients are statistically	Indigenous	-0.130***	0.103*
significant)	Other country	-0.064***	0.119***
	Divorced, separated or widowed	-0.325***	0.015
Fading of statistical significance	Unemployed	-0.277***	-0.010
	Other major English-speaking country	-0.097***	0.020
Substantial change in effect size	Single	0.201***	0.485***
HH-FE coefficient > OLS coefficients	Not in the labour force	0.000	0.117***
	Long-term health condition or disability	0.030*	0.064***
	Age	0.023***	0.011***
	Full-time student	0.600***	0.345***
Substantial change in effect size	General health scale (0-100)	0.012***	0.007***
HH-FE coefficient < OLS coefficients	Certificate or diploma	-0.123***	-0.070***
	University degree	-0.216***	-0.178***
Little or no change	Permanently retired	0.327***	0.312***

Notes: *p<0.05, **p<0.01, ***p<0.001. Dependent variable: Self-reported housing satisfaction (11 categories). OLS: Pooled ordinary least squares. HH-FE: Household fixed-effects.

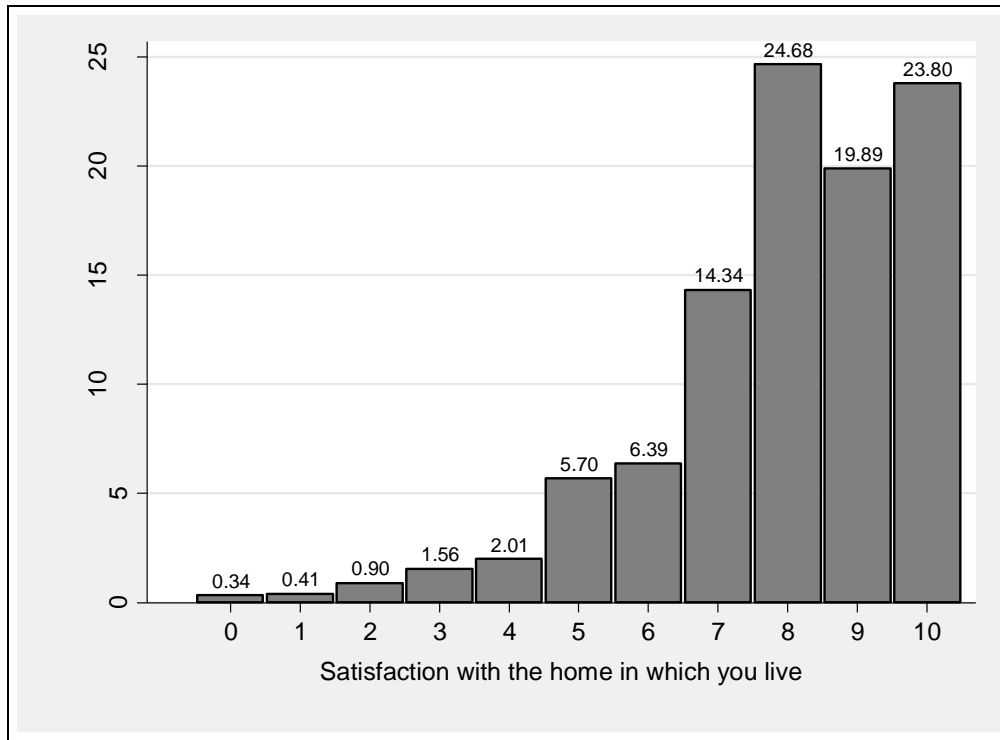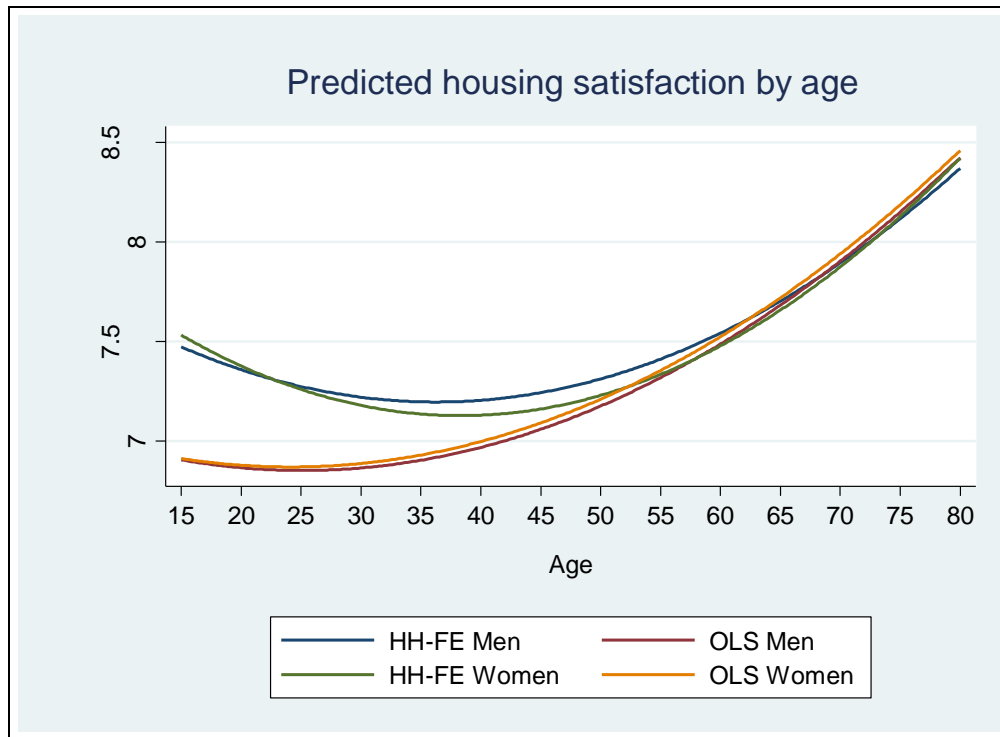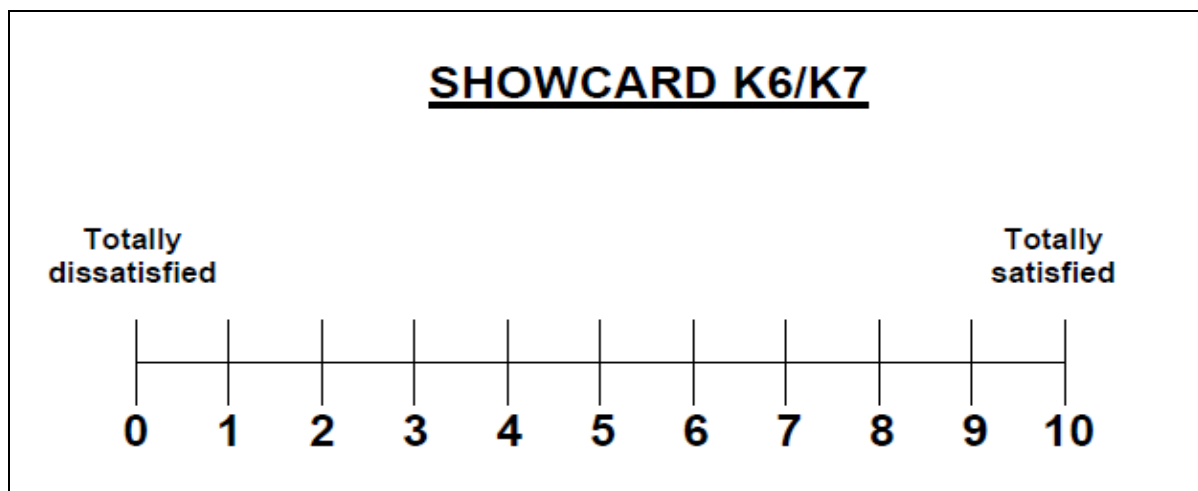**Figure 1.** Distribution of housing satisfaction scores

Figure 2. Predicted housing satisfaction by age, gender, and modelling specification

Notes: The values of all other covariates are set to zero.

8. Appendix

Figure A1. Showcard for satisfaction questions in HILDA

SHOWCARD K6/K7

Totally dissatisfied ——— Totally satisfied

0 1 2 3 4 5 6 7 8 9 10

Notes: Adapted from HILDA documentation for Wave 1 (2001).

Table A1. Sample descriptive statistics

	Mean	SD
Outcome variable		
Housing satisfaction	7.97	1.87
Key individual-level characteristics		
Female	0.53	0.50
Age	43.76	18.30
Other individual-level characteristics		
Indigenous	0.02	0.15
General health scale (0-100)	68.92	19.88
Long-term health condition or disability	0.26	0.44
Marital status		
Married or cohabiting	0.62	0.49
Single	0.24	0.43
Divorced, separated or widowed	0.14	0.35
Highest educational qualification		
Year 12 or lower	0.51	0.50
Certificate or diploma	0.29	0.45
University degree	0.20	0.40
Employment status		
Employed	0.59	0.49
Not in the labour force	0.14	0.35
Unemployed	0.03	0.16

Full-time student	0.09	0.29
Permanently retired	0.15	0.36
Migrant background		
Australian-born	0.78	0.41
Other major English-speaking country	0.10	0.30
Other country	0.12	0.32
<u>Household-level characteristics</u>		
Log equivalized household income	10.49	0.85
Number of children age 0-4	0.19	0.51
Number of children age 5-14	0.43	0.83
Ratio of bedrooms per person	1.37	0.74
Major or other urban locality	0.84	0.36
Type of dwelling		
Detached house	0.83	0.38
Semi-detached house	0.07	0.25
Flat or other	0.10	0.30
House tenure status		
Owned with or without mortgage	0.71	0.45
Rents from private landlord	0.22	0.41
Rents from social institution	0.05	0.21
Lives there for free	0.02	0.15
Number of individuals	*128,158*	
Number of households	*71,053*	

Table A2. Within-household change in household-varying variables

	Number of households		% change[*]
	Change	**No change**	
Gender	40,281	3,273	92%
Age	39,944	3,610	92%
General health scale	38,662	4,892	89%
Housing satisfaction	31,543	12,011	72%
Education	25,585	17,969	59%
Labour force status	20,293	23,261	47%
Long-term health condition or disability	13,907	29,647	32%
Marital status	12,725	30,829	29%
Migrant background	10,069	33,485	23%
Indigenous background	1,137	42,417	3%

<u>Notes</u>: [*] The denominator is the total number of multi-person households.