

# **The quality of the place of living, social participation and well-being in older age: the evidence from HILDA**

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## **Abstract**

This paper explores the links between the quality of the place of living, social participation and well-being in older age using data from the Household, Income and Labour Dynamics in Australia (HILDA) survey. Using nine waves of the data, random effect models are estimated to isolate the 'net effect' of the place of living on social participation and well being, while controlling for a number of background factors. The findings suggest a strong effects of subjective evaluations of individual housing and local area on well-being outcomes and, at the same time, a lack of similar effects in the case of more objective measures. This indicates that how older people feel about their living environment may play an important role in enabling them to fully participate in society and achieving personal well-being. At the same time, more research into objective conditions of housing and local area is needed to fully understand the links between living environment and outcomes in older age.

## **Introduction**

Recent changes to life style observed in developed societies, including Australia, coupled with advances in medical sciences and increased availability and improved quality of health care, have resulted in people living longer and healthier lives than ever before. This means that people have an increased potential to make important contributions to society well into older age, and to stay active and live independently for as long as possible. However, increased life expectancy and structural population ageing also potentially places more individuals at risk of social isolation, marginalisation and social exclusion (UNECE, 2009). Understanding processes behind social exclusion in older age, including barriers to social participation and achieving personal well-being, is paramount to ensuring that social policies are in place to help older people stay independent and prevent unnecessary institutionalisation and dependence (Willis and Dalziel, 2009).

Much research on social exclusion has focused on understanding the links between three key domains: material conditions, social participation and individual well-being. A recent example of work in the area is provided by Levitas et al. (2007) who conceptualised three domains of social exclusion: Resources, Participation and Quality of Life and structured them in the form of the so-called Bristol Social Exclusion Matrix (B-SEM). More generally, there has been growing interest, both among academics as well as policymakers, in 'soft outcomes', such social participation and well-being, as opposed to 'hard measures' focused on income or other economic resources (Stiglitz et al. 2009).

The benefits of social participation, for individuals and for society, have been extensively discussed in the literature on social capital, social trust and social networks (Bourdieu, 1972; Coleman, 1988; Fukuyama, 1995; Putnam, 2000). With modern societies ostensibly becoming more individualized there is a growing interest in the mechanisms that bind people together. These processes are particularly relevant in older age when people become less mobile and are more likely to experience traumas, such as deteriorating health and bereavement. Aged people tend to have more time to take part in social activities due to retirement and fewer familial constraints and such involvement helps them to maintain networks of social and emotional support and may contribute to preserving individuals' cognitive capacities (Sirven and Debrand, 2008).

Also the concept of well-being, and its implications for social policy, has been receiving a growing attention in the social sciences. It has been pointed out that “*well-being has to do with both economic resources, such as income, and with non-economic aspects of peoples’ life (what they do and what they can do, how they feel, and the natural environment they live in)*” (Stiglitz et al. 2009, p. 11). However, on the side of resources, the research has often focused on investigating the effects of income, while more direct measures of living conditions, including the quality of older people’s housing and their local area, have been largely neglected.

The quality of living environment is particularly important in older people, given that they spend a vast majority of their time in their home and many have spent most of their lives in the same neighbourhood (SEU, 2006). The importance of the quality of the place of living for outcomes in older age has been firmly recognized in the literature (Burrige and Ormandy, 1993; Stirling 1997; Ashmore, 1998; Marsh et al., 2000; Matte & Jacobs, 2000; Hood, 2005; Donald, 2009). However, research in the area has tended to focus on the effects on physical health, rather than on social participation or subjective well-being.

The relatively scarce evidence on the impact of place of living on outcomes other than physical health suggests, for example, that housing plays a key role in creating or ameliorating social division (Lee et al., 1995). The association between urban area deprivation and lower quality of life in older age has also been demonstrated (Scharf et al., 2003). Other research has investigated the quality of housing as an outcome, rather than a driver of other outcomes. For example, the reports by National Social Inclusion Programme (NSIP, 2007) and Social Exclusion Unit (SEU, 2004) in the United Kingdom show that people with mental health problems are at a disadvantage in the housing market, are under-represented among owner-occupiers and face an increased risk of tenancy breakdowns.

Aiming at filling the gaps in the literature, this paper hypothesises that environmental conditions, captured in terms of housing and neighbourhood characteristics, can have independent and potentially cumulative effects on older people’s opportunities for playing their part in society and, ultimately, achieving personal well-being and independence. The central assumption examined empirically in this paper is that living in cramped or uninviting housing, or in a neighbourhood that is unsafe or lacks transport links and basic services, may impede social participation and lead to dependency and helplessness among older people.

## **Research questions**

The paper aims to address a number of distinct but interrelated research questions:

1. What are the characteristics of older people living in places of poor quality?
2. What are the links between living in poor quality places and social participation in older age?
3. What is the effect of living in places of poor quality on well-being of older people, and how is it mediated by social participation?

The first of the research questions aims at understanding what types of people live in disadvantaged places. Addressing this question should give us a better insight into the inequalities in older age and may provide pointers as per what can be done to reduce the number of older people affected by disadvantage in the domains of housing and area quality. The other research questions aim at investigating the presence of a (net) negative effect of living in poor housing and/or a disadvantaged neighbourhood, on social participation and well-being in older age. Answering these questions will help us to understand the processes behind social exclusion in older age, and may identify an important barrier to social participation and well-being of older people.

## Data and methods

This research is based on analysis of the Household, Income and Labour Dynamics in Australia (HILDA) Survey, a large-scale household-based panel study representative of the Australian population, which began in 2001. The paper exploits the longitudinal aspect of the data by including in analyses up to nine waves of the survey (depending on the specific model).

The selected sample covers all people aged 50 and over at Wave 1 of the survey, (i.e. in 2001), living in private households, and who are inactive in the labour market. This paper focuses on older people not in work, i.e. the retired, as well as the unemployed and otherwise inactive in the labour market. This is because employment is a factor strongly affecting the patterns of daily activities and opportunities for social interactions. Mixing people who work with those who do not would distort the associations that are of central interest for this research. The differences in status (e.g. between the unemployed and retired) are statistically controlled for in analyses. The resulting sample yielded data on 2789 older people at Wave 1 (2001), of which 1610 were still available at Wave 9 (2009) of the survey.

### *Key variables*

This section describes the HILDA variables representing the three key concepts used in this research: the quality of the place of living, social participation and well-being.

The quality of the place of living is described at two levels: individual housing and local area. Each of these domains is represented by objective and subjective measures; the following indicators are used:

Individual housing:

- Objective measures:
  - **Crowding:** Measured as the ratio of the number of people per bedroom; also a categorical indicator was used with the following categories: at least 2 bedrooms per person; more than one but less than two bedrooms per person; one bedroom per person; less than one bedroom per person
  - External conditions of the building as reported by the interviewer (waves 1-5 only): represented by four categories (Excellent/Very good; Good, Average; Poor)
- Subjective measures:
  - **Satisfaction with housing:** measured on a scale from 1 to 10;<sup>1</sup>
  - Perceived housing adequacy (waves 1 and 2 only): The adequacy of six specific aspects of housing has been measured (Living space; Number of bedrooms; Comfort; Distance from public transport; Access to services normally used; Housing needs in general) using a 5-point Likert scale (ranging from “Much more than adequate to “Much less than adequate”). An index aggregating the six aspects (a sum of answers) has also been created.

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<sup>1</sup> The precise wording of the question is “How satisfied are you with the home in which you live?”

Local area:

- Objective measures:
  - **Area disadvantage**: measured using quintiles of the SEIFA 2001 Index of Relative Socio-economic Advantage and Disadvantage. Other SEIFA indices (Index of Relative Socio-economic Disadvantage; Index of Economic Resources; Index of Education and Occupation) were used to cross-validate the findings.
- Subjective measures:
  - **Satisfaction with local area**: measured on a scale from 1 to 10;<sup>2</sup>
  - Subjective perception of the area quality (waves 1,2,3,4,6,8 only): an index aggregating up 10 aspects of area quality (Neighbours helping each other out; Neighbours doing things together; Traffic noise; Noise from airplanes, trains or industry; Homes and gardens in bad condition; Rubbish and litter lying around; Teenagers hanging around on the streets; People being hostile and aggressive; Vandalism and deliberate damage to property; Burglary and theft), each of which was measured using a 5-point Likert scale, with the answers ranging from "Never happens" to "Very common" (reverse-coded questions have been recoded).

Those among the above indicators that are marked with a **bold font** are available for all nine waves of the survey. For this reason, they will be the main measures of the quality of the place of living used in this paper, and will be used in most statistical analyses presented here. The other indicators are only available in selected (and sometimes not consecutive) waves of HILDA and therefore will constitute auxiliary measures, used to obtain additional details or test the robustness of the models that use the main measures.

In addition to those measures of the quality of the place of living, two additional indicators related to the housing situation of older people are included in analyses: housing tenure status (owner, private renter, social renter, living rent free), and the type of dwelling (detached house, semi/row house, unit/other). Moreover, there are variables describing how long people lived in a given dwelling, whether they moved last year, and indicators covering the geographical aspects of the place: state (NSW, VIC, QLD, other) and remoteness of the area (major city, regional location, remote location), which will be described in a subsequent section.

The following measures are used as the indicators of social participation:

- Volunteering: measuring whether the person spends any time in a typical week on volunteer or charity work;<sup>3</sup>
- Membership in clubs/organisations: measuring whether the person is currently an active member of a sporting, hobby or community-based club or association;
- Frequency of social contacts with other people not living with the respondent: measured on a seven-point scale ranging from 'Every day' to 'Less often than once every 3 months';<sup>4</sup>

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<sup>2</sup> The precise wording of the question is "*How satisfied are you with the neighbourhood in which you live?*"

<sup>3</sup> The questionnaire gives the following examples of volunteer or charity work: canteen work at the local school, unpaid work for a community club or organization.

- Social support networks: an index aggregating up 10 questions, each of which could be answered using a 7point Likert scale ranging from “Strongly agree” to “Strongly disagree”: - People don’t come to visit me as often as I would like; - I often need help from other people but can’t get it; - I seem to have a lot of friends; - I don’t have anyone that I can confide in; - I have no one to lean on in times of trouble; - There is someone who can always cheer me up when I’m down; - I often feel very lonely; - I enjoy the time I spend with the people who are important to me; - When something’s on my mind, just talking with the people I know can make; - When I need someone to help me out, I can usually find someone (reverse-coded questions have been recoded).

The following measures are used as the indicators of Well-being:

- A satisfaction index, measuring satisfaction with the following five specific aspects of life: financial situation; personal safety; feeling part of one’s local community; health; and the amount of free time, and ranging from 0 to 45;
- Life satisfaction, asked as a single, ‘global’ question, and measured on a scale from 1 to 10;
- A happiness-depression index, combining the ‘Vitality’ and ‘Mental Health’ domains of the SF-36 measure, namely the following nine items: Felt full of life; Been a nervous person; Felt so down in the dumps nothing could cheer you up; Felt calm and peaceful; Had a lot of energy; Felt down; Felt worn out; Been a happy person; Felt tired, where the period of reference is the past four weeks prior to the interview (reverse-coded questions have been recoded). The index summarises the individual answers on a scale from 0 to 45, where the higher values mean more positive outcomes.

### *Background characteristics*

A number of background characteristics of older people and their families were used in analyses presented in the paper (Table 1). They were used both to describe the types of people who live in places of low quality, and as control variables in statistical models predicting social participation and well-being of older people. Based on previous research, the selected variables are known, or likely to shape inequalities in older age and to affect social and well-being outcomes. The background characteristics included in analyses cover the areas of socio-demographic background, family situation, economic resources, health and caring and geography and mobility. Depending on their nature, and the availability of the information in HILDA<sup>5</sup>, the indicators were set up as either time invariant (constant) or time varying; they are marked in Table 1 as (C) or (TV) respectively. The time varying variables were measured at each wave of the survey, while the constant variables at Wave 1.<sup>6</sup>

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<sup>4</sup> The precise wording of the question is “*In general, about how often do you get together socially with friends or relatives not living with you?*”

<sup>5</sup> Some indicators, such as the possession of a car or a of a bank account, were set up as time invariant because the relevant information was only available in a single wave of the survey, rather than because of their constant nature.

<sup>6</sup> The exceptions are the possession of a bank account measured at Wave 2 (the only wave the information was available), and experiencing a stressful event or moving the house during the previous year, in which cases the information was not available for Wave 1 (and was modeled as a ‘No’ at Wave 1 in statistical analyses).

Table 1 Background characteristics

<b>Variable</b>	<b>Categories / units</b>
<b>Socio-demographic</b>	
Age (C)	50-54 (ref); 55-59; 60-64; 65-69; 70-74; 75-79; 80+
Sex (C)	Male (ref); Female
Country of birth (C)	Australia (ref); Main English speaking; Other
Education (C)	University (ref); Trade certificates or diplomas; Year 12 and below
Occupation at last job (C)	Managers (ref); Professionals; Technicians and Trades Workers; Community and Personal Service Work; Clerical and Administrative Workers; Sales Workers; Machinery Operators and Drivers; Labourers
Current activity status (TV)	Retired (ref); Other
<b>Family situation</b>	
Family type (TV)	Couple without children (ref); Couple with children; Lone person; Other (incl. extended families)
Non-resident children (TV)	Has non-resident children (ref); Does not have non-resident children
<b>Economic resources</b>	
Income (TV)	Logarithm of equivalised disposable household income ('modified OECD' equivalence scale used)
Income imputation flag (TV)	Not imputed (ref); Imputed
Financial problems (TV)	Not affected(ref); Affected (*)
Possession of a car within the household (C)	Household has a car (Ref); Household does not have a car
Possession of a personal bank account (C)	Has a bank account in one's name only (ref); Does not have an account in one's name only (**)
<b>Health &amp; Caring</b>	
Self-assessed health (TV)	Excellent (ref); Very good; Good; Fair/Poor
Presence of a long term health condition, disability or impairment (TV)	Does not have a long term condition (ref); Has a long term condition
Cares for a disabled spouse or relative (TV)	No (ref); Yes (***)
Experienced a significant stressful event last year (TV)	No (ref); Yes (****)
<b>Geography &amp; mobility</b>	
State (TV)	NSW (ref); VIC; QLD; Other
Remoteness area (TV)	Major city (ref); Regional Australia; Remote area
Moved home last year (TV)	No (ref); Yes
Number of years at current address (TV)	Years

Notes:

(\*) A person is considered to be affected by financial problems if at least one of the following happened to them because of a shortage of money since the beginning of the year in which they were interviewed: Could not pay electricity, gas or telephone bills on time; Could not pay the mortgage or rent on time; Pawned or sold something; Went without meals; Asked for financial help from friends or family; Asked for help from welfare /community organizations.

(\*\*) People holding joint accounts only are classified as not having a bank account in their name only

(\*\*\*) Defined as spending any time in a typical week on caring for a disabled spouse or disabled adult relative, or caring for elderly parents or parents-in-law

(\*\*\*\*) Defined as any of the following happening to the person during the previous year: Separated from spouse; Serious personal injury/illness; Serious injury/illness to family member; Death of spouse or child; Death of close relative/family member; Death of a close friend; Victim of physical violence; Victim of a property crime; Detained in jail; Close family member detained in jail; Major worsening in finances.

### *Analytical framework and methods*

As mentioned previously, the quality of the place of living is described at two levels: local area and individual housing. Both aspects are captured by indicators included in HILDA, such as the external conditions of dwelling, the quality of the neighbourhood, overcrowding, and the satisfaction with both the individual accommodation and the local area. The first stage of analysis involved estimating regression models to uncover the characteristics of older people most likely to be experiencing problems, or expressing low satisfaction, with their housing and their local area. A series of separate models was run, with a given characteristic of local area or individual housing (including tenure status and dwelling type) as the dependent variable. Depending on the nature of the dependent variable, linear, logistic, ordinal or multinomial regression models were estimated. The models were run on a pooled dataset, combining data from the maximum number of waves available for a particular indicator of housing or local area (2 to 9 waves). Robust (sandwich) estimators of standard errors were used to take into account the autocorrelation of observations over time.

The second stage of analysis investigated the impact of the individual housing and local area on a number of indicators of social participation (volunteering, membership in clubs/organisations, social contacts, and social support). Again, a separate regression model was estimated for each of the social participation outcomes. The main models estimated at this stage used those indicators of housing and area quality that were available for all nine waves of HILDA. Random effect models were used to estimate the 'net effect' of the place of living on social participation and well being, while controlling for other key factors, such as health status, income, gender, family composition, rurality and tenure. The main advantage of using random effects models lies in the fact that they provide a means of controlling for the unobserved heterogeneity among the individuals, i.e. the differences among respondents that cannot be fully captured, or measured using the HILDA data.

The third, and final, stage of analysis explored the effects of the individual housing and local area on well-being outcomes in older age. Again, separate random effect models were estimated for the well-being outcomes but here the analysis proceeded in two steps. Firstly, the effects of housing and local area on well-being was estimated, while controlling for the background characteristics. Secondly, social participation indicators were added into the equation and the change in the housing and area effects was evaluated.

It is important to stress that the analytical procedure employed in the paper does not explicitly test for, or imply causality. While in some cases – due to the nature of the variables concerned – the direction of association can be deduced, it is not necessarily true for all of them. For instance, if a model suggests an association between low social participation and low well-being, it may be the case that the person's well-being is low because of their social isolation but it might also be the case that they do not participate socially because they are feeling down for most of the time.

It also needs to be noted that while the techniques used in the paper take into account for the dependency of the observations over time (created by repeated measurements within the same persons), they do not account for the possible dependency of the observations within the household that may exist in the case of older couples. A proper treatment of this issue would require estimating complex cross-classified models (due to instability of the households as a unit over time), which are beyond the scope of this paper.

## Results

### *The characteristics of older people living in disadvantaged housing/areas*

This section presents the results of the first stage of analysis, in which the characteristics of older people living in places of (relatively) poor quality were explored. The discussion focuses on the models estimated for the four main indicators of the quality of the place of living: crowding, satisfaction with housing, index of advantage-disadvantage, and satisfaction with the local area. The results of these models are presented in Table 2. The results for other indicators of housing and area quality are also briefly discussed but the full results are not shown<sup>7</sup>. The discussion is organised by the aspect of the quality of place (housing vs. local area), and by the type of indicators (objective vs. subjective); other aspects of housing (tenure and dwelling type) are reviewed at the end of the section.

Table 2 Regression coefficients of selected housing and local area indicators on background characteristics of older people

	Individual Housing		Local Area	
	Crowding (Objective)	Satisfaction with housing (Subjective)	SEIFA advantage- disadvantage index (Objective)	Satisfaction with local area (Subjective)
Age (ref: 50-54)				
55-59	0.01	0.12	0.03	-0.07
60-64	-0.02	0.12	0.03	-0.16
65-69	0.02	0.44**	0.10	0.19
70-74	0.08**	0.62***	0.10	0.19
75-79	0.06**	0.87***	0.21	0.43*
80+	0.11***	1.01***	0.38	0.53**
Female	-0.03**	0.23**	0.19	0.26**
Country of birth (ref: Australia)				
Main English speaking	0.01	-0.09	-0.05	-0.15
Other	0.01	-0.06	-0.02	-0.23*
Education (ref: University)				
Trade certificates or diplomas	0.02	0.23	-0.09	0.26
Year 12 and below	0.06***	0.24	-0.56**	0.23
Occupation at last job (ref: Managers)				
Professionals	0.02	-0.33**	0.29	-0.10
Technicians and Trades	-0.03	0.08	-0.71***	0.02
Community and Personal Service	0.01	-0.07	-0.47*	0.03
Clerical and Administrative	0.00	-0.03	-0.03	0.00
Sales Workers	-0.01	0.20	-0.30	0.12
Machinery Operators and Drivers	0.02	0.04	-0.62**	0.10
Labourers	0.02	0.11	-0.50***	0.07
Main activity (ref: retired)				
Other	0.02*	-0.02	-0.09	0.05
Family type (ref: Couple without children)				
Couple with children	0.31***	0.13	-0.27	-0.12
Lone person	-0.28***	0.06	-0.23*	-0.09
Other (incl. extended families)	0.16***	0.27	-0.66***	-0.17
Does not have non-resident children	0.17***	-0.11	0.03	0.20
Log equivalent income	-0.04***	-0.08	0.39***	-0.08
Income imputation flag	-0.01	0.01	0.16*	0.04

<sup>7</sup> Full results are available from the author upon request.



Affected by financial problems	0.03*	-0.18*	-0.29**	-0.18*
Has no car	0.10***	-0.41**	-0.60***	-0.16
Does not have own bank account	-0.01	0.32***	-0.22*	0.11
Has a long term health condition	0.00	0.16***	-0.10	0.02
Self-assessed health (ref: Excellent)				
<i>Very good</i>	0.00	-0.68***	-0.05	-0.68***
<i>Good</i>	0.00	-1.08***	-0.16	-1.16***
<i>Fair or Poor</i>	-0.01	-1.35***	-0.34*	-1.55***
Cares for a disabled spouse or relative	-0.01	-0.13	0.11	0.01
Experienced a stressful event last year	0.00	-0.06	-0.01	-0.08*
State (ref: NSW)				
<i>VIC</i>	0.01	-0.02	0.06	-0.06
<i>QLD</i>	-0.02	-0.01	-0.48***	-0.24*
<i>Other</i>	-0.01	-0.07	-0.36**	-0.24**
Remoteness (ref: Major city)				
<i>Regional Australia</i>	-0.03**	0.27***	-1.88***	0.33***
<i>Remote area</i>	0.04	0.27	-1.07**	0.80*
Number of years at current address	-0.00***	0.00	-0.01	0.00
Moved home last year	0.06***	0.01	-0.13	-0.04

Note: \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

#### *Individual housing: Objective indicators*

Unsurprisingly, crowding is strongly related to family composition: older people living in more crowded dwellings tend to be living with children or other persons. Other important predictors of living in more crowded accommodation include low economic resources such lower incomes or being affected by financial problems, and lower education. Older people living in more crowded places are more likely to live in regional or remote areas and tend to have lived shorter in the accommodation, which may indicate that older people who move tend to move to smaller dwellings. Rather surprisingly, older age groups (70+) tend to also live in more crowded dwellings – one could perhaps expect more people living alone in this age group due to mortality.

Analysis of another objective indicator of housing, external conditions of the dwelling, reveals similar factors: lower incomes, financial problems, having no car or personal bank account, and living with children or in extended family. This indicator also pointed at class-related factors, such as being a former labourer.

#### *Individual housing: Subjective indicators*

Self-reported health is a strong predictor of satisfaction with housing: older people reporting worse health tend to be less satisfied with their housing. Other risk factor include lower economic resources as exemplified by reporting financial problems and not having a car, being in a younger age group, and living in a major city, as opposed to regional or remote Australia.

It is worth noting that mostly subjective correlates came up as significant in this analysis, for instance financial difficulties rather than income, or self reported health rather than having a long-term health condition. This may potentially indicate reporting problems with this measure, such as there being certain types of people who tend to be satisfied with everything and others who tend to complain about everything.

The pattern evident for the satisfaction with housing has been largely confirmed by investigating the perceived housing adequacy as an outcome. For instance, those reporting

inadequacy of their housing tended to also report worse health and have lower resources (lower incomes, be affected by financial problems, have no car). Unsurprisingly, living with children or in extended families was linked to reporting inadequacy in terms of comfort, number of bedrooms and living space, while live in regional or remote Australia was linked to reporting inadequacy of public transport and access to services.

#### *Local area: Objective indicators*

Objective quality of the local area, as measured by the SEIFA index of socio-economic advantage-disadvantage is strongly related to social class: former technicians and trades workers, community and personal service workers, machinery operators and drivers, and labourers tend to live in more disadvantaged areas than managers and professionals or clerical and administrative staff. Also, those who finished education at year 12 or below are more likely to live in disadvantaged areas, as are those on lower incomes, those affected by financial problems, and those without cars or own bank accounts. Other correlates of living in more disadvantaged areas include living alone, or with an extended family, reporting poorer health, living in rural or remote area, and living outside of New South Wales or Victoria.

#### *Local area: Subjective indicators*

Older people less satisfied with their local area included migrants of non-English speaking background, those affected by financial problems, those reporting poor health, and those living in major cities. Furthermore, younger age groups (50-69) tended to be less satisfied with their local area as were those recently affected by a stressful event, and those living outside of New South Wales or Victoria.

This pattern was confirmed by examination of other subjective indicators, namely an index of the subjective quality of local area and the expressed preference to live the area, both of which pointed at factors such as younger age, non-English speaking background, health problems and low resources (low income, financial problems, no car) as well as living in a major city. A recent experience of a stressful even was also a significant correlate. People who lived in the area for a shorter time also tended to rate the area lower.

#### *Other aspects of housing*

There are marked differences between the socio-demographic profiles of older people with different tenancy arrangements. Compared with owners, private renters are more likely to be former labourers, migrants, have low resources (no car, affected by financial problems) Social renters were more likely to be migrants, live on low income, suffer from financial problems, have no car, live alone or in extended family, suffer from a long term illness and live in major urban areas. Unsurprisingly, owners tend to have lived in the same place for a longer time compared with people with other tenancy arrangements.

As per dwelling type, older age groups (70+) were more likely to be living in semis or units than in separate houses, as were those with lower resources (no car, affected by financial problems). Unsurprisingly, there were also geographical differences, with those living in major urban areas, rather than in regional or remote Australia less likely to be living in separate houses; there were also some differences between the states, with older people in NSW more likely than anyone else to be living in semis/row houses, and older people in QLD least likely to live in units.

### **The effect of housing and area quality on social participation**

Four models were estimated at this stage, one for each of the following social participation outcomes, that is volunteering; membership in clubs/organisations; frequency of social contacts; and social support (Table 3)

Table 3 Regression coefficients of social participation measures on housing and local area indicators, controlling for background characteristics of older people

	Volunteering	Membership	Social contacts	Social support
Tenure (ref: Owner)				
<i>Private renter</i>	-0.48	-0.91***	0.04	-0.36
<i>Social renter</i>	-0.40	-0.55*	0.02	0.20
<i>Living rent free</i>	-0.04	-0.10	0.18*	0.91
Type of dwelling (ref: Detached house)				
<i>Semi/row house</i>	0.08	0.50**	0.08	0.41
<i>Unit/other</i>	0.16	0.07	0.14*	0.43
Crowding (ref: at least 2 bedrooms/pp)				
<i>More than 1, less than 2 b-rooms/pp</i>	0.14	-0.04	-0.03	0.31
<i>1 bedroom per person</i>	-0.18	-0.26	-0.03	0.26
<i>Less than 1 b-room per person</i>	0.35	-0.02	-0.08	0.29
Satisfaction with housing	-0.01	0.00	0.03**	0.38***
Area adv-disadv quintile (ref: Lowest)				
<i>2nd</i>	0.12	0.20	0.05	1.20**
<i>3rd</i>	0.24	0.35	0.09	0.91*
<i>4th</i>	0.47	0.25	0.01	1.11*
<i>Highest (most advantaged)</i>	0.29	0.06	0.08	1.85***
Satisfaction with local area	0.02	0.04	0.01	0.43***
Age (ref: 50-54)				
<i>55-59</i>	0.02	0.88*	0.07	0.11
<i>60-64</i>	0.26	1.05**	-0.13	-0.09
<i>65-69</i>	0.25	1.17**	-0.12	0.34
<i>70-74</i>	-0.26	1.52***	-0.13	-0.24
<i>75-79</i>	-0.56	0.77	-0.10	-0.54
<i>80+</i>	-1.98***	-0.73	-0.13	-0.39
Female	0.18	-0.21	0.21***	2.25***
Country of birth (ref: Australia)				
<i>Main English speaking</i>	-0.41	-0.65**	-0.02	-0.09
<i>Other</i>	-1.43***	-1.84***	-0.05	-1.48**
Education (ref: University)				
<i>Trade certificates or diplomas</i>	-0.21	0.22	0.02	-0.07
<i>Year 12 and below</i>	-0.96*	-0.48	-0.06	-0.24
Occupation at last job (ref: Managers)				
<i>Professionals</i>	0.50	0.36	-0.01	0.04
<i>Technicians and Trades</i>	-0.92*	-0.92**	-0.20*	-1.39*
<i>Community and Personal Service</i>	0.20	-0.39	-0.12	0.24
<i>Clerical and Administrative</i>	0.57	0.16	-0.09	-0.09
<i>Sales Workers</i>	-0.66	0.41	-0.05	0.17
<i>Machinery Operators and Drivers</i>	-1.45***	-0.99**	-0.20	-0.64
<i>Labourers</i>	-0.88**	-0.64*	-0.13	-1.27*
Main activity (ref: retired)				
<i>Other</i>	0.35***	0.05	0.08**	-0.29
Family type (ref: Couple without children)				
<i>Couple with children</i>	0.27	-0.42	-0.30***	-0.91*
<i>Lone person</i>	0.90***	0.62**	0.51***	-0.49

<i>Other (incl. extended families)</i>	-0.50	-0.21	0.05	-0.64
Does not have non-resident children	-0.43	0.44	0.14	0.69
Log equivalent income	0.06	0.08	-0.01	0.10
Income imputation flag	0.02	-0.14	-0.03	-0.38
Affected by financial problems	0.10	-0.42**	-0.03	-1.04***
Has no car	-0.93**	-0.50	-0.20*	-0.38
Does not have own bank account	0.31	0.09	0.05	1.73***
Has a long term health condition	-0.36***	-0.01	-0.05	-0.23
Self-assessed health (ref: Excellent)				
<i>Very good</i>	-0.12	-0.28	-0.01	-0.85
<i>Good</i>	-0.42	-0.79***	-0.10	-2.15***
<i>Fair or Poor</i>	-1.03***	-1.42***	-0.22**	-3.46***
Cares for a disabled spouse or relative	0.26	-0.13	0.00	-0.16
Experienced a stressful event last year	-0.14	0.11	0.02	-0.10
State (ref: NSW)				
<i>VIC</i>	-0.09	-0.24	0.00	-0.39
<i>QLD</i>	0.02	-0.21	-0.08	-0.64
<i>Other</i>	-0.28	-0.75***	0.01	-1.01*
Remoteness (ref: Major city)				
<i>Regional Australia</i>	0.72***	0.23	-0.19***	0.36
<i>Remote area</i>	1.67*	1.33*	-0.26	2.56
Number of years at current address	0.00	0.01	0.00	0.04***
Moved home last year	-0.68***	-0.26	-0.02	0.09
Constant	-2.45*	-0.66	4.51***	35.94***

Note: \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

No housing or area effect could be detected in the case of volunteering, while for membership in clubs/organisations the only housing-related indicator that made a difference was tenure status. However, membership in clubs and organisations is clearly related to social class, as other strong predictors include socio-economic status (manual workers and technicians/trade workers less likely to be members), education, migration history, health, but not necessarily to low income or economic resources in general. It is likely that this pattern reflects more individual preferences than an influence of housing conditions per se.

Satisfaction with housing makes a significant difference in terms of social contacts with other people. Interestingly, the effect is only evident in the case of the subjective indicators, but not for a more objective measure of circumstances (crowding). This may suggest that how people think and feel about their accommodation is key for enabling social contacts. For instance, if they do not like their home, they may feel reluctant to invite other people over.

Both satisfaction with housing and satisfaction with the local area were associated with better access to social support networks. Moreover, there is a strong effect of an objective area quality, with older people living in more advantaged areas having better access to social support. This could suggest that older people mainly rely on the support networks formed within their local area.

## The effect of housing area quality on well-being

The final stage of analysis explored the effects of the individual housing and local area on well-being outcomes. Separate models were estimated for each of the previously defined outcomes: a well-being index; a life satisfaction measure; and a happiness-depression measure. For each of these three outcomes, two separate models were estimated: one where, in addition to the control variables, only the measures of housing and local area were included, and another one, where the four social participation indicators were also added to the models. Table 4 summarises the results of these analyses.

Table 4 Regression coefficients of well-being outcomes on housing and local area indicators, controlling for social participation and background characteristics of older people

	Well-being index		Life satisfaction		Happiness-depression index	
Volunteering		0.45***		0.10**		0.42**
Membership in clubs/organisations		0.50***		0.02		0.80***
Social contacts		0.07*		0.01		0.23***
Social support		0.05***		0.02***		0.13***
Tenure (ref: Owner)						
<i>Private renter</i>	-0.36	-0.27	0.07	0.08	0.10	0.10
<i>Social renter</i>	-0.25	-0.21	0.07	0.05	0.25	0.14
<i>Living rent free</i>	-0.06	-0.19	0.06	0.04	-0.09	-0.50
Type of dwelling (ref: Detached house)						
<i>Semi/row house</i>	0.26	0.21	-0.04	-0.08	0.05	-0.10
<i>Unit/other</i>	0.60**	0.47*	-0.01	-0.02	0.35	0.25
Crowding (ref: at least 2 bedrooms/pp)						
<i>More than 1, less than 2 b-rooms/pp</i>	0.18	0.17	-0.02	-0.02	0.58**	0.58**
<i>1 bedroom per person</i>	0.15	0.25	0.06	0.06	0.41	0.46*
<i>Less than 1 b-room per person</i>	0.09	0.22	0.07	0.07	0.37	0.47
Satisfaction with housing	0.61***	0.60***	0.20***	0.20***	0.34***	0.28***
Area adv-disadv quintile (ref: Lowest)						
<i>2nd</i>	0.17	0.05	-0.10	-0.14*	0.16	0.02
<i>3rd</i>	-0.15	-0.23	-0.12	-0.19**	0.48	0.29
<i>4th</i>	-0.08	-0.22	-0.14*	-0.19**	0.63*	0.46
<i>Highest (most advantaged)</i>	-0.17	-0.31	-0.16*	-0.22**	0.77*	0.33
Satisfaction wth local area	1.27***	1.26***	0.16***	0.15***	0.20***	0.16***
Age (ref: 50-54)						
<i>55-59</i>	0.39	0.42	0.11	0.15	0.55	0.50
<i>60-64</i>	0.55	0.46	0.11	0.12	1.60**	1.55**
<i>65-69</i>	1.30***	1.16**	0.37***	0.38***	2.05***	1.89***
<i>70-74</i>	1.39***	1.29***	0.31**	0.34**	1.60**	1.54**
<i>75-79</i>	1.83***	1.86***	0.44***	0.48***	1.08*	1.10*
<i>80+</i>	2.09***	2.23***	0.48***	0.50***	0.52	0.68
Female	0.76***	0.63**	0.23***	0.18**	-0.10	-0.48
Country of birth (ref: Australia)						
<i>Main English speaking</i>	-0.52*	-0.53*	0.10	0.11	-0.17	-0.03
<i>Other</i>	-1.42***	-1.14***	-0.33***	-0.27***	-1.46***	-0.94**
Education (ref: University)						
<i>Trade certificates or diplomas</i>	0.06	0.01	0.05	0.05	-0.18	-0.21
<i>Year 12 and below</i>	-0.28	-0.31	-0.03	-0.02	-0.89	-0.74
Occupation at last job (ref: Managers)						
<i>Professionals</i>	0.00	0.01	-0.04	-0.02	0.18	0.14
<i>Technicians and Trades</i>	-0.59	-0.58	0.07	0.10	-0.05	0.27
<i>Community and Personal Service</i>	-0.59	-0.52	0.12	0.16	-0.33	-0.27
<i>Clerical and Administrative</i>	-0.43	-0.44	-0.02	-0.02	0.04	0.03

<i>Sales Workers</i>	-0.84*	-0.76*	0.02	0.02	-0.42	-0.58
<i>Machinery Operators and Drivers</i>	-0.94*	-0.89*	0.17	0.15	-0.75	-0.47
<i>Labourers</i>	-0.48	-0.33	0.08	0.11	-0.35	-0.18
Main activity (ref: retired)						
<i>Other</i>	-0.65***	-0.72***	-0.09**	-0.08**	-0.15	-0.19
Family type (ref: Couple without children)						
<i>Couple with children</i>	-1.27***	-1.22***	-0.18*	-0.16*	-0.61*	-0.19
<i>Lone person</i>	0.02	-0.05	-0.42***	-0.40***	0.28	0.28
<i>Other (incl. extended families)</i>	-1.13***	-1.23***	-0.27***	-0.26***	-0.74*	-0.49
Does not have non-resident children	0.65	0.53	0.11	0.11	1.04*	0.72
Log equivalent income	0.62***	0.59***	0.07**	0.07**	0.00	-0.04
Income imputation flag	-0.04	-0.01	-0.05	-0.05	-0.39**	-0.40**
Affected by financial problems	-1.39***	-1.46***	-0.21***	-0.20***	-1.08***	-1.03***
Has no car	0.27	0.28	0.01	0.02	-0.43	-0.23
Does not have own bank account	0.00	-0.07	0.03	0.01	-0.19	-0.38
Has a long term health condition	-0.52***	-0.47***	-0.13***	-0.13***	-1.11***	-1.09***
Self-assessed health (ref: Excellent)						
<i>Very good</i>	-1.06***	-1.10***	-0.19**	-0.18*	-1.43***	-1.36***
<i>Good</i>	-2.29***	-2.24***	-0.40***	-0.34***	-3.49***	-3.32***
<i>Fair or Poor</i>	-4.42***	-4.27***	-0.82***	-0.73***	-7.68***	-7.39***
Cares for a disabled spouse or relative	-0.56***	-0.48**	-0.11*	-0.10*	-0.14	-0.14
Experienced a stressful event last year	-0.09	-0.10	-0.09***	-0.08***	-0.70***	-0.68***
State (ref: NSW)						
<i>VIC</i>	0.25	0.30	-0.02	0.00	0.30	0.45
<i>QLD</i>	-0.23	-0.16	0.00	0.00	-0.46	-0.31
<i>Other</i>	-0.43	-0.38	-0.07	-0.04	-0.52	-0.22
Remoteness (ref: Major city)						
<i>Regional Australia</i>	0.82***	0.80***	0.05	0.03	0.54*	0.47*
<i>Remote area</i>	2.16**	2.03**	0.49*	0.42*	0.57	0.33
Number of years at current address	0.01*	0.01*	0.00*	0.00*	0.02*	0.01
Moved home last year	0.52**	0.60**	0.15**	0.15**	-0.03	-0.02
Constant	17.67***	15.66***	4.90***	4.20***	29.65***	23.54***

Note: \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Both the satisfaction with housing and the satisfaction with the local area were found to be associated with higher values of the well-being index. Similarly, we find strong housing satisfaction and area satisfaction effects also in the case of the 'global' life satisfaction question. Here, however, we also find a surprising effect of the objective measure of the local area quality, with older people living in the most disadvantaged area quintile reporting higher levels of life satisfaction than other people. This is especially the case when social participation variables are added to the model. Remembering the results from the previous section (Table 3), it is possible that the area quality is in this case merely a proxy for opportunities for obtaining social support, and once those direct indicators are taken into account, the measure of area quality loses its meaning.

Also in the case of the happiness-depression measure, we do see a strong housing and area satisfaction effects (but not the negative effects of the objective measure of area quality). We also see a positive effect of crowding, which may indicate that older people living in big, empty houses are more likely to be depressed. This housing effect is evident even though recent stressful events, such as divorce or death of a partner, have already been taken into account.

When analysing findings from this section, it is important to remember that the type of analysis presented in this paper cannot be read as proving causality, which has important consequences, especially in the case of subjective evaluations. For instance, depression or low life satisfaction may limit older people's social participation, as well as their perception of their circumstances, including how they feel about their housing conditions and local area.

#### *Further analyses and tests of robustness*

One of the main findings of this paper was that satisfaction with housing, and with the area in which older people live, have strong independent effects on the measures of well-being. One possibility for why this could be the case is the proximity of the items in the questionnaire – the satisfaction items form a part of the same block as the items used in the well-being index and the global life satisfaction question, and are relatively close to the happiness-depression items. It could have been the case that the items are highly correlated simply because people follow the same pattern marking all questions in the. To exclude this possibility a number of robustness checks were performed where the final models were run with the housing and local area satisfaction measures substituted by the index of perceived housing adequacy and a subjective area quality measure respectively.<sup>8</sup> Both of these measures had significant positive effects, which suggested that the proximity of the items in the questionnaire is not the only reason for the effect of area and housing satisfaction.

Furthermore, to confirm the surprising effect of the objective measures of local area on life satisfaction, another model was run with the advantage-disadvantage index substituted by an alternative SEIFA index (Index of Disadvantage); the results yielded the same pattern.

To double check the lack of effect of objective housing and area quality measures on well-being, another model based on a shorter panel was run where an indicator of external conditions of dwelling was added to the model (a measure available in the first five waves). The indicator had no effect on any of the measures of quality of life.

As a final step of analysis, models with interaction effects between individual housing and local area indicators were estimated to test the interrelations between the two dimensions of the place of living. These analyses (results available from the author upon request) demonstrated a cumulative effect of the subjective measures of housing and area quality: the positive effect of satisfaction with housing on well-being outcomes was typically strengthened by the satisfaction with local area. Conversely, older people who were dissatisfied with housing had lower well-being outcomes if they were also dissatisfied with their local area.

## **Discussion and conclusions**

The main finding of this paper is that there appear to be strong effects of satisfaction with housing and satisfaction with the local area on well-being outcomes and, at the same time, there seems to be a lack of similar effects in the case of more objective measures of housing and area quality. This result could indicate that what matters most for outcomes in older age is how people feel about their place of living, whether they find it safe, inviting, comfortable. It may be perhaps more important than what the place looks like to an outsider.

However, it needs to be stressed that the measures of housing and area quality available in HILDA are relatively poor and the information on objective living conditions is fairly limited. It is therefore likely that the observed results demonstrate these limitations of the data, rather than prove the supremacy of subjective measures over the objective ones. It needs to be

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<sup>8</sup> As a reminder, these measures were only used for checking the robustness of the final models, rather than in the models themselves, because they are only available in a limited number of waves (two waves in the case of housing and six non-consecutive waves in the case of local area).

noted that HILDA is no exception in Australia with its superficial coverage of the information on living environment. A specialised housing survey, or at least a strong housing module in a dedicated survey of older people, providing detailed information on various aspects of housing and the quality of local area would be needed to verify the findings reported in this paper.

Another interesting finding reported in the paper was the surprising effect of local area disadvantage on life satisfaction, when social participation measures were taken into account. More research on networks of social support of older people and their geographical dimension is needed to understand how the networks of social support of older people map onto local areas.

Finally, although subjective perceptions of housing and local area were found to be related to a number of social participation and well-being outcomes, it cannot be forgotten that other factors were as important, and sometimes much more important, for shaping these outcomes. Factors such as health problems, low income or financial problems cannot be forgotten as they often play a preponderant role in enabling participation and well-being in older age. However, the effects of these other factors have been well known, widely publicised, and targeted by social policies since a relatively long time. The contribution of this paper is demonstrating that the living environment may play a considerable role as well.



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