



*Final Report*

# Housing affordability dynamics: new insights from the last decade

authored by

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## ACRONYMS

ABS	Australian Bureau of Statistics
AHURI-3M	Australian Housing and Urban Research Institute Housing Market Microsimulation Model
COAG	Council of Australian Governments
CRA	Commonwealth Rent Assistance
CSHA	Commonwealth-State Housing Agreement (replaced by NAHA in 2009)
FTB	Family Tax Benefit
GFC	Global Financial Crisis
HAS	Housing affordability stress
HCR	Housing Cost Ratio
HILDA	Household, Income and Labour Dynamics in Australia
LVR	Loan-Value Ratios
NAHA	National Affordable Housing Agreement (replaced CSHA)
NRAS	National Rental Affordability Scheme
SIH	Surveys of Income and Housing (ABS)
SLID	Survey of Labour and Income Dynamics



## EXECUTIVE SUMMARY

This is the first report of a project that explores the duration of housing affordability stress (HAS) in Australia. It updates research findings previously reported by Wood and Ong (2009), which tracked the housing affordability trajectories of Australians over the period 2001–06. The present project offers more up-to-date estimates of duration in HAS and affordable housing by<sup>1</sup> exploiting a longer 11-year timeframe that covers 2001–11. The dataset employed in this (and the previous) project is the nationally representative Household, Income and Labour Dynamics in Australia (HILDA) Survey.

This project addresses three key research questions:

1. Were escapes from HAS permanent or temporary over the period 2001–11? To what extent did experiences of protracted and temporary spells in HAS vary by household characteristics?
2. To what degree are transitions in and out of HAS caused by changes in housing cost versus changes in income? Do Commonwealth Rent Assistance (CRA) arrangements serve as an effective buffer against sharp rises in rents or income shocks?
3. How often do households churn in and out of HAS? Why do some escape yet fall back into HAS at a later stage of their housing careers?

The present project will offer important innovations and new insights. The longer timeframe of the HILDA Survey offers excellent opportunities to more rigorously distinguish between the characteristics of persons permanently or temporarily trapped in HAS, as well as take into account the disruption to Australian housing markets that followed the Global Financial Crisis (GFC). This project will also inform policy recommendations by firstly providing vital indicators as to whether housing affordability issues in contemporary times would be more effectively dealt with via housing or labour market instruments, or a combination of both, and secondly proposing CRA reforms that strengthen their effectiveness as a protective buffer against HAS.

The key findings are as follows:

- In this project, we find that 73 per cent of Australians in housing affordability stress (HAS) will escape by Year 1. This rate of escape declines rather steeply, but only a small minority fail to climb out of spells of HAS by Year 10. Couples with children, and particularly those in the 35–54 age groups, find it relatively difficult to escape from spells of HAS. These findings confirm the trends presented in the previous project.
- For those in affordable housing, there is a high 79.5 per cent chance that housing remains affordable through to Year 10, again confirming the findings from the previous project. The young (under 35 years of age) and couples with children are particularly prone to slip out of affordable housing. On the other hand, the majority of outright owners retain affordable housing all the way through to the Year 10.
- A past experience of HAS seems to have a ‘scarring’ effect on future prospects of evading HAS.
- For those falling out of affordable housing, changes in housing cost ratios triggered by falls in income are more or less equal to those caused by rising housing costs. However, year-to-year escapes from unaffordable housing are disproportionately driven by changes in income.

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<sup>1</sup> In some countries, the UK for example, affordable housing is a term used to describe housing that is purchased or leased at a cost less than the market price or market rent. In the present context it is used to refer to a low-income persons’ housing circumstances where housing costs (rent or mortgage payments) are less than 30 per cent of income.

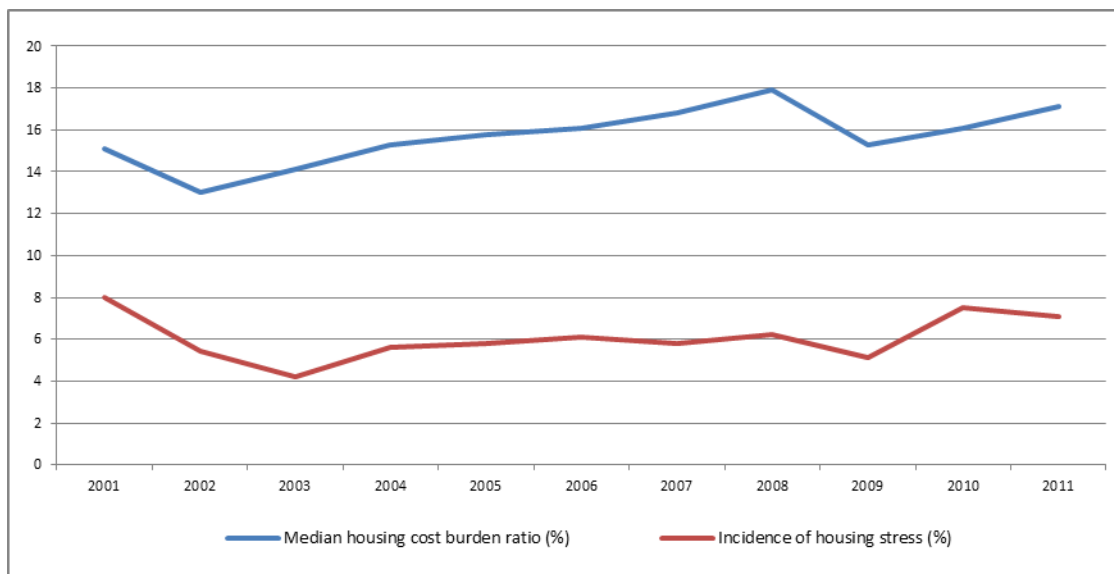
→ The effectiveness of CRA as a protective buffer against HAS has somewhat deteriorated over the decade. At the beginning of the study timeframe (2001) affordability ratios are estimated to be nearly 16 percentage points higher if CRA were withdrawn, and rates of HAS among clients would rise from 12 per cent to 53 per cent. While CRA continues to offer significant protection in later years, it seems to tail off during the second half of the timeframe.

The panel nature of the HILDA data is exploited to track each individual's HAS trajectory over an 11-year period. The sample design and measurement approach largely follow the previous project. We apply an 'attribution' approach which ensures that while we track the housing affordability position of individuals, their housing affordability position is measured on an income unit basis because important variables that affect housing affordability, such as CRA and Family Tax Benefit (FTB), are determined on an income unit basis. Housing costs are measured on a tenure-specific and net basis. Importantly, this means that private renters' housing costs are measured as rent net of CRA and public renters' housing costs are rebated rents. Following the previous project, our income measure is equivalised disposable income.

We adopt two definitions of HAS. Firstly, and as in the team's previous project, a person is defined as being in HAS when income unit housing costs exceed 30 per cent of income. Secondly, we adopt an additional but more commonly accepted definition of HAS, where a person is in HAS when housing costs exceed 30 per cent of income, and the person is in the bottom 40 per cent of the household income distribution.

We profile the housing affordability position of individuals as they age. Unsurprisingly, younger Australians' housing affordability profiles are elevated as compared to other age groups. The housing cost burdens for individuals who were aged under 35 at the beginning of the panel increase over the decade by approximately 1.5 percentage points; and the incidence of HAS remains stubbornly stuck in the 7–8 per cent range (see Figure 1 below). Private renters begin the decade with housing cost ratios and an incidence of housing stress that are below those of home buyers. But by the end of the decade the position is reversed with tenants' housing cost ratios 5 percentage points higher, and the incidence of housing stress 2 percentage points higher than those of home purchasers. These comparisons offer a striking illustration of the welfare protection that the accumulation of savings in home ownership provides as Australians age. They also highlight the vulnerability of enduring private renters to high housing cost burdens.

**Figure 1: Median housing cost ratio (%) and Incidence of housing stress (%) for young Australians aged between 15–34 in 2001**



Our panel analysis confirms those found in our earlier project. Seventy-three per cent (73%) of Australians in HAS will escape by Year 1. This rate of escape declines rather steeply, but only a small minority fail to climb out of spells of housing stress by Year 5. Couples with children, and particularly those in the 35–54 age groups, find it relatively difficult to escape from periods of housing stress.

For those enjoying a spell in affordable housing, any threat to their affordable housing situation is small. Furthermore, the danger of sliding out of affordable housing diminishes as periods of time in affordable housing lengthen. If we randomly selected from a sample of spells in affordable housing, there is a high 79.5 per cent chance that housing remains affordable through to Year 10. The young (under 35 years of age) and couples with children are particularly prone to slip out of affordable housing. In contrast, the majority of outright owners' (75%) 'survival' rates in affordable housing after a decade are very high at 94 per cent. Most outright owners have reached retirement age, so these findings underpin the traditional welfare role of home ownership as a buffer cushioning living standards in retirement. The past experience of housing affordability stress seems to have a 'scarring' effect on future prospects of evading HAS. In succeeding spells it appears to be more difficult for low-income individuals to exit unaffordable housing; the first experience in the study timeframe seems to leave an imprint that makes it more difficult to escape in the future.

We employ shift-share analysis in order to de-compose year-to-year changes in housing cost ratios into a component that can be attributed to changes in income, and a second component that can be attributed to changes in housing costs. For those falling out of affordable housing, changes in housing cost ratios triggered by falls in income are more or less equal to those caused by rising housing costs. However, year-to-year escapes from unaffordable housing are disproportionately driven by income, which accounts for 23.5 percentage points (just over two-thirds) of the overall fall in housing cost ratios.

We analyse the changing effectiveness of CRA in protecting private rental tenants from HAS. We find that housing cost burdens and rates of HAS decline during the early years of the 2001–11 timeframe, but there is evidence of deteriorating housing affordability in the aftermath of the GFC. Simulation exercise estimates suggest that if CRA were withdrawn housing cost burdens would increase by large margins. At the beginning of the study timeframe (2001) affordability ratios are estimated to be nearly 16 percentage points higher if CRA were withdrawn, and rates of HAS would rise from 12 per cent to 53 per cent. While CRA continues to offer significant protection in later years, it seems to tail off during the second half of the time frame.

This project's findings have important policy implications. Younger couples with children and on moderate to low incomes find it more difficult to maintain affordable housing, and are less likely to escape unaffordable housing circumstances. Family Tax Benefit (FTB) is an important source of assistance for this group of households. The cuts to FTB in the recent 2014 budget will expose this group to an even greater risk of HAS due to the freeze in indexation arrangements.

We also find that income and hence labour market drivers are primarily responsible for moves out of unaffordable and into affordable housing, suggesting that labour market policies (e.g. training programs, work incentive measures) could prove effective in lifting Australians out of unaffordable housing circumstances provided they succeed in raising employment participation and hence disposable incomes.

# 1 INTRODUCTION

## 1.1 Policy context

This is the first report of a project that expands on earlier AHURI research by Wood and Ong (2009) on the dynamics of housing affordability stress (AHURI project 30521), and which explored the duration of Australians' episodes of housing affordability stress (HAS) in Australia. That research tracked the housing affordability trajectories of a nationally representative sample of Australians over the period 2001–06, and generated estimates of the duration of spells in HAS, the number of Australians that escape HAS, the number falling out of affordable housing over time, as well as factors driving movements in and out of HAS. The key data source was the Household, Income and Labour Dynamics in Australia (HILDA) Survey.

This new project is designed to update findings from the previous research by offering more robust and up-to-date estimates of duration in HAS and affordable housing. To do this, we exploit a longer 11-year timeframe that covers the period 2001–11, and invoke new empirical methods to generate fresh insights into the dynamics of housing affordability in Australia. This longer timeframe also encompasses the disruption to Australian housing markets that followed the GFC. This shock and the economic policy response to it have had profound impacts on key variables (e.g. interest rates and house prices) driving the dynamics of housing affordability.

Estimates drawn from the Australian Bureau of Statistics' (ABS) Surveys of Income and Housing (SIH) over the period 1982 to 2009 show that Australian housing has become more unaffordable in the long-run. Table 1 below reports long-run median gross housing cost ratios (HCRs), defined by median gross household housing costs as a percentage of median gross household income. The table shows that for owner-purchasers, HCRs have increased from 12 per cent to 18 per cent over the 27-year period. Private renters also experienced an even larger 7 percentage point increase in HCRs, from 17 per cent to 24 per cent.

**Table 1: Median gross housing cost ratio (HCR)<sup>a</sup> of households, by housing tenure, 1982–2009, per cent**

Gross HCR	1982	1990	1996	2000	2002	2007	2009
Owner-purchasers	11.5	16.7	16.9	15.1	15.0	17.3	17.5
Private renters	16.6	20.6	21.7	22.3	22.2	20.3	23.6

Source: 1982, 1990, 1996, 2002, 2007 and 2009 surveys of income and housing from the ABS

Notes: <sup>a</sup>. Owner-purchasers' and private renters' housing costs are mortgage repayments and gross rents respectively. In the case of private renters, we have used the median gross income from the sample of private renters. In the case of owner purchasers, we have used the median gross income from the sample of owner purchasers.

This worsening of the housing affordability position of the median owner purchaser and private renter has also been accompanied by a marked rise in the proportion whose gross housing costs exceed 30 per cent of gross household income. As shown in Table 2 below, the number of owner purchasers with housing costs in excess of 30 per cent of income has more than tripled over the period, from 168 000 to 620 000 households; the incidence of stress has doubled from 10 per cent to 20 per cent of all owner purchaser households. Private renters also exhibit a similar trend, with the number paying more than 30 per cent of their income in housing costs almost tripling over the period. The incidence measure among private renters has jumped from 22 per cent to 31 per cent, or nearly one-third of those renting from private landlords. Between one-third and one-half have been paying more than 30 per cent of their income in housing costs for one year or more (see Table 3).

**Table 2: Number and per cent of households<sup>a</sup> with gross housing costs<sup>b</sup> exceeding 30 per cent of gross household income, by housing tenure, 1982–2002**

	1982	1990	1996	2000	2002	2007	2009
Owner-purchasers							
Number ('000s)	168	325	319	359	368	579	620
Per cent	9.6	18.1	16.6	15.2	14.6	20.4	20.4
Private renters							
Number ('000s)	233	333	473	515	553	529	646
Per cent	21.9	27.1	31.3	31.4	31.0	25.9	31.0

Source: 1982, 1990, 1996, 2002, 2007 and 2009 surveys of income and housing from the ABS

Notes: <sup>a</sup> Population estimates are generated using household weights in the SIH.

<sup>b</sup> Owner-purchasers' and private renters' housing costs are mortgage repayments and gross rents respectively.

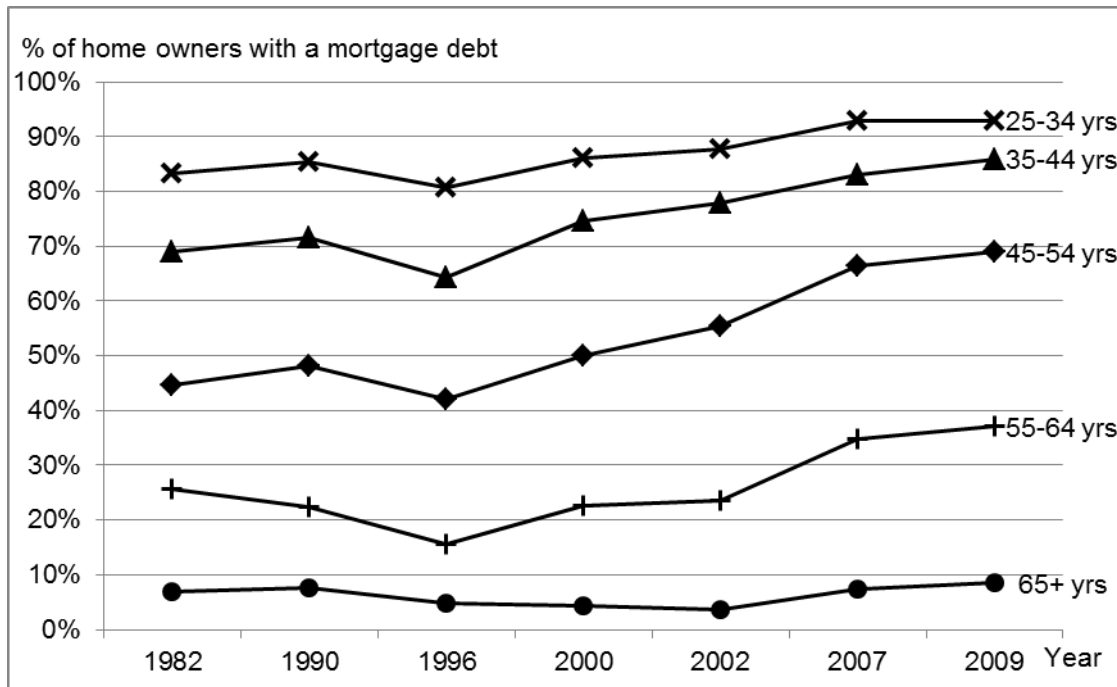
**Table 3: Percentage of those paying over 30 per cent of income in housing costs for one year or more, 2002–11**

Year	%
2002	52%
2003	38%
2004	39%
2005	40%
2006	46%
2007	53%
2008	49%
2009	55%
2010	36%
2011	52%

Source: Authors own calculations from the 2001–11 HILDA Survey

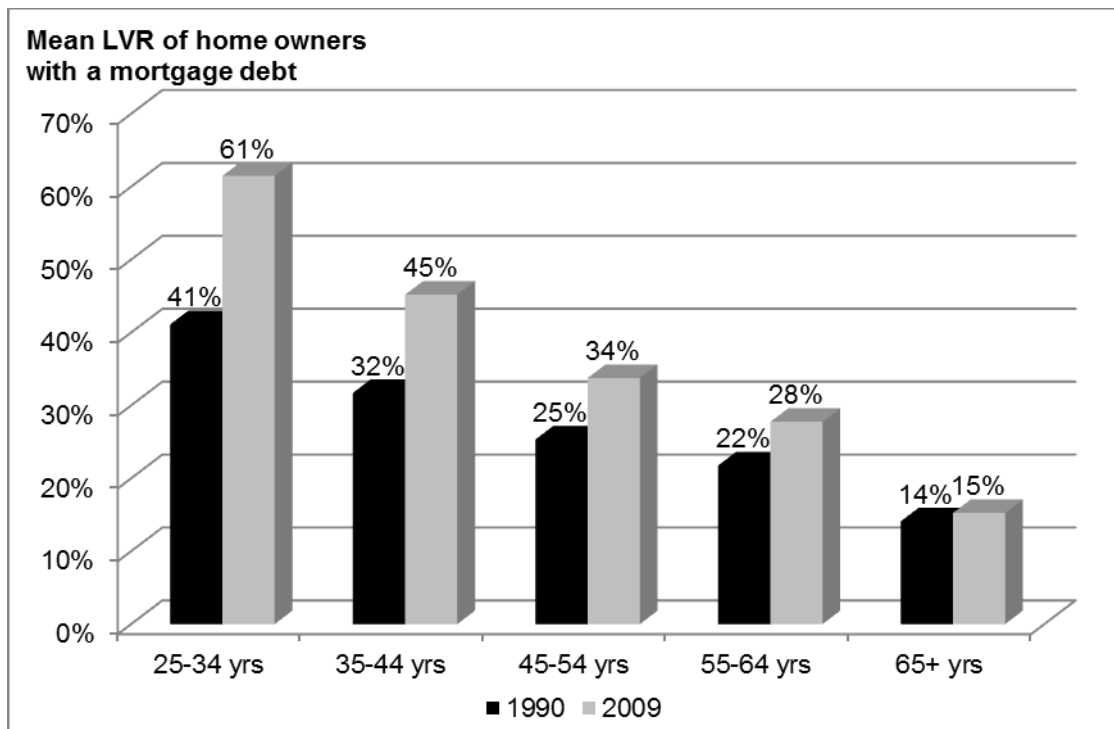
The long run trends in HAS among owner purchasers reflect increasing indebtedness. In the owner occupation sector, as owners are now carrying mortgage debt later in their working lives. Figure 2 below presents the incidence of mortgage indebtedness among home owners in five age groupings across the period 1982–2009. With the exception of those who have reached retirement age (65 years and over), there has been an increase in the proportion of home owners who were mortgagors in all age groups over the 27-year period. The house price boom that began in 1996 is correlated with a rise in the proportion of home owners securing debt against their homes. The relationship is most evident for the 45–54 years-old age group where mortgagors were roughly 40 per cent of all home owners in 1996; but their share increased to nearly 70 per cent in 2009. The GFC slowed, but did not reverse the trend increase across these age groups. Figure 1-3 below compares the loan-value ratios (LVRs) of mortgagors in the same five age bands. Again, with the exception of the post-retirement age group, there is a rise in gearing. The increase is especially high among the youngest mortgagors (25–34), at 20 percentage points. Even those approaching retirement age (55–64 years) are gearing up with LVRs rising from 22 per cent to 28 per cent.

**Figure 2: Percentage of home owners with a mortgage debt, 1982–2009**



Source: 1982, 1990, 1996, 2002, 2007 and 2009 surveys of income and housing from the ABS

**Figure 3: Mean LVR of home owners with a mortgage debt, 1990–2009<sup>a</sup>**



Source: 1990 and 2009 Surveys of Income and Housing from the ABS.

Note: <sup>a</sup>. It is not possible to calculate LVRs for 1982 due to the absence of house value and mortgage debt data in the 1982 survey.

While those already in owner occupation are now carrying higher levels of mortgage debt, those striving to get in are experiencing greater difficulties breaking into home ownership as housing affordability worsens. Long-run trends from the ABS Surveys of Income and Housing

show a sharp decline in home ownership rates over the period 1982 to 2009, especially among the younger age groups. For example, the home ownership rate among those aged 25–34 years has dipped by 18 percentage points. Similarly, those aged 35–44 years have suffered a 13 percentage point decline in home ownership rates. While over three-quarters of this age group were home owners back in 1982, less than two-thirds attained home ownership in 2009.

**Table 4: Home ownership rate, 1982–2009, per cent**

Year	25–34 years	35–44 years	45–54 years	55–64 years	65+ years	25+ years
1982	55.5	75.4	78.3	81.9	74.4	71.3
1990	30.4	67.9	79.7	80.8	79.9	66.6
1996	43.3	70.6	80.7	81.1	80.0	69.0
2000	45.1	69.7	79.2	83.2	82.3	70.1
2002	46.0	69.4	79.9	82.4	81.2	70.3
2007	38.5	63.8	74.6	81.8	82.1	67.3
2009	37.7	62.1	74.5	80.9	81.8	66.4
Percentage point change 1982 to 2009	-17.8	-13.3	-3.8	-1.0	7.4	-4.8

Source: 1982, 1990, 1996, 2002, 2007 and 2009 surveys of income and housing from the ABS

Rising levels of HAS have also put noticeable strain on the public housing sector. Data from the Productivity Commission’s 2014 Report of Government Services<sup>2</sup> indicate that the number of public housing wait list applicants has risen in all states and territories, with the exception of New South Wales and South Australia where eligibility criteria have been tightened. The pressure on public housing is particularly acute in Western Australia (WA) where the number of wait list applicants rose from 11 869 in 2000 to 24 993 in 2012, an increase of 75 per cent<sup>3</sup>. Moreover the WA Social Housing Taskforce Report (2009) reveals a significant increase in median wait time from 30 weeks in 2003–04 to 61 weeks in 2009.

Given the long-run decline in housing affordability in Australia over several decades, housing affordability has become a key policy concern. In January 2009, the Australian Government introduced the National Affordable Housing Agreement (NAHA), replacing what was previously known as the Commonwealth-State Housing Agreement (CSHA). The changeover from CSHA to NAHA brings housing affordability to the forefront of the national housing agenda, and reflects the important role that affordable housing plays in promoting social and economic participation. Indeed, government is now actively paying attention to the range of supply-side issues that exacerbate housing affordability problems in Australian land and housing markets. This is reflected in various housing supply initiatives that have been implemented, including the Council of Australian Governments’ (COAG) Housing Supply and Affordability Reform Agenda, as well as the National Housing Affordability Fund that provides grants to state, territory and local governments who reduce holding costs incurred by developers as a result of delayed infrastructure delivery, and lengthy planning and approval times associated with residential development (Department of Environment, Sustainability, Water, Population & Communities 2011). Expansions to Melbourne’s urban growth boundary have also been implemented in response to fears of inadequate land supplies (Department of Planning & Community Development 2008; Victorian Government 2010). In responding to the shortage of affordable

<sup>2</sup> See <http://www.pc.gov.au/gsp/rogs>

<sup>3</sup> These estimates are taken from the 2001 and 2013 reports on government services produced by the Productivity Commission.

rental housing, the previous Federal Government introduced the National Rental Affordability Scheme (NRAS) in 2008. The scheme offers financial incentives to persons or organisations that build and rent dwellings leased to low-or-moderate-income households at 20 per cent below the market rate (Department of Social Services 2014). However, as part of the recent 2014–15 Budget, the Federal Government has announced that it will discontinue the NRAS scheme as part of its bid to reduce the budget deficit (Commonwealth of Australia 2014).

## 1.2 Aims and key research questions

The cross-section comparisons of housing affordability reported in Table 1 above offer a one-dimensional perspective. While it is important to know the numbers experiencing unaffordable housing at a particular point in time, these ‘snapshots’ offer no information about the length of time people are trapped in unaffordable housing. This second dimension helps us to understand whether acute housing cost burdens are temporary or enduring. Moreover, as panel data sets such as HILDA mature, we are able to more thoroughly explore the housing pathways travelled by those escaping unaffordable housing. Our previous AHURI project 30521, found that for most Australians’ spells of HAS are temporary. However, there seems to be considerable churning in and out of HAS; 40 per cent of those evading housing affordability stress fall back into housing stress within three years. Owners with mortgages are most likely to endure lengthy spells of HAS. Residential moves, the presence of young dependent children and unemployment were also found to increase the odds of an enduring spell of HAS. The previous project used six waves of the HILDA Survey; we now have over a decade’s worth of longitudinal data and therefore a much richer data set with which to offer fresh insights into these dynamics.

The present project will therefore address three key research questions:

1. Were escapes from HAS permanent or temporary over the period 2001–11? To what extent did experiences of protracted and temporary spells in HAS vary by household characteristics?
2. To what degree are transitions into and out of HAS caused by changes in housing cost versus changes in income? Do Commonwealth Rent Assistance (CRA) arrangements serve as an effective buffer against sharp rises in rents or income shocks?
3. How often do households churn in and out of HAS? Why do some escape yet fall back into HAS at a later stage of their housing careers?

The present project will offer important innovations and new insights. Firstly, the new waves of the HILDA Survey offer an excellent opportunity to exploit the longer timeframe to more rigorously distinguish between the characteristics of persons permanently or temporarily trapped in HAS. Differences in personal characteristics could allow a more nuanced policy approach that distinguishes between temporary and permanent HAS. Secondly, the new project will achieve greater contemporary policy relevance by covering a period during which the sustained house price boom of the early 2000s culminated in the GFC at the end of the decade. The GFC ushered in a new era of housing and labour market volatility, that could leave some housing consumers more prone to churning in and out of HAS as they experience increasingly precarious housing careers and insecure job prospects in the post-GFC era. Thirdly, our earlier research offered evidence of cycling in and out of HAS. Though most Australians exit from a first spell of HAS within a year, the improvement in housing affordability is temporary for a sizeable number. Reasons for this are still unclear and warrant further investigation. Fourthly, the new research will uncover whether transitions into and out of HAS are due to changes in housing costs, or changes in income, and the relative importance of each. This will provide vital indicators as to whether housing affordability issues in contemporary times would be more effectively dealt with via housing or labour market instruments, or a combination of both. Fifth, this new project will shed light on the effectiveness of existing housing assistance programs in preventing households sliding into unaffordable



housing. Our findings will help inform policy recommendations seeking to reform CRA and other Housing Assistance programs in ways that strengthen their effectiveness as a protective buffer against sudden adverse changes in housing or labour market circumstances. These recommendations could form part of a more 'preventative' approach that promotes lasting escapes from HAS. Such an approach could include housing education programs directed at home buyers to inform them of the potential risks when taking on a mortgage.

In addition to its policy relevance, this project is also significant because to the best of our knowledge, there have been no new contributions that explicitly measure duration in housing stress in the last five years, since our previous study was published (see Wood & Ong 2009, 2011). In the next section, we present a summary of the existing Australian and international literature on the dynamics of housing affordability.

### **1.3 Literature review<sup>4</sup>**

The last two decades have seen a plethora of international as well as Australian studies analysing the changing incidence of housing affordability using repeated cross-section datasets (for US examples, see Green 1996; Quigley & Raphael 2004); for Australian studies, see Yates and Gabriel (2006), Wood, Watson and Flatau (2006) and Dalton and Ong (2007)). Less common, however, are studies investigating the persistence of housing stress; this is primarily due to the unavailability of longitudinal data in Australia. In the international literature, research into housing dynamics has tended to focus on residential mobility, housing careers, and how tenure transitions are intertwined with phases in the life course.

With the release of the longitudinal HILDA survey in the early 2000s there emerged a number of novel Australian studies offering descriptive analysis of persistence in housing stress. Marks and Sedgwick (2008) examine the incidence and persistence of housing stress over the period 2001–06.<sup>5</sup> The study assessed the duration of housing stress by estimating (in any one wave) the percentage of housing stressed individuals who remain housing stressed in subsequent waves; the authors found that, over the course of a spell, the persistence of housing stress declines steadily for all tenure groups. There are, however, a number of methodological drawbacks. Firstly, the study does not explain how housing costs and income were calculated when providing estimates on an 'individual' basis, and whether the housing costs of renters were net of rent assistance. Nor does the study indicate whether it was using a balanced panel. If it did use a balanced panel, then its persistence measures could confound life cycle effects with the contribution of interest rate, house price, rent and income variables in shaping housing stress.

Yates and Gabriel's (2006) study used the first three waves of HILDA to analyse whether housing stress<sup>6</sup> is enduring. Using a balanced panel of individuals they found that one-half of Australians in housing stress in a particular year continue in housing stress in the following year; one-third endure housing stress in the two following years. The study concluded that housing stress was a protracted rather than transient problem. There are, however, two caveats that warrant caution before drawing any firm conclusions. The first concerns the study's sample design. Because individuals move between households over time, the study selected only one person in each Wave 1 household and measured housing affordability outcomes for the household in which s/he resided in each wave. This might have resulted in sample bias as not all households will have been tracked through time; households that shrink due to departures (because of events, e.g. divorce or separation) will be under-represented,

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<sup>4</sup> For a more detailed overview of the housing affordability literature, please refer to Wood and Ong 2009.

<sup>5</sup> Marks and Sedgwick (2008) adopt a conventional definition of housing stress—housing costs in excess of 30 per cent of gross household income—except that their definition does not restrict the stress measure to those with incomes less than the 60<sup>th</sup> percentile of the income distribution.

<sup>6</sup> The authors define HAS in terms of the 30:40 rule, with the lowest two quintiles of the equivalised disposable household income distribution being used to determine lower income households (Yates & Gabriel 2006).

and since such households typically have fewer earners they could be an important omission from those identified as living in unaffordable housing. Secondly, the authors compute CRA entitlements by assuming that, when eligible, a household receives the maximum rate of CRA available for its particular household type, regardless of how much rent it paid. This approach is likely to under-estimate net housing costs because not all private renter households receive the maximum rate of CRA.

A more recent study by Bentley et al. (2011) models the links between HAS and mental health. The authors apply the 30 per cent threshold to denote households that are in HAS and find that entry into unaffordable housing is detrimental to the mental health of residents in low-to-moderate income households. However, the study used two consecutive waves of the HILDA survey to determine whether a person has remained or exited HAS. Longer trajectories are not measured. The authors do, however, acknowledge the importance of chronic versus transient housing affordability stress on mental health, thus providing a motivation for this project's examination of housing affordability dynamics (Bentley et al. 2011, p.96).

In the international literature, Engeland et al. (2008) used a balanced panel from the Survey of Labour and Income Dynamics (SLID) to investigate housing affordability dynamics in Canada over the period 2002–04. Like Yates and Gabriel, the researchers tracked individuals while measuring housing stress on a household basis. It was reported that 28 per cent of Canadians were spending more than the 30 per cent affordability benchmark at some point during 2002–04 and one-third of them were in housing stress in all three years. Unlike Yates and Gabriel (2006), Engeland et al. (2008) track all individuals in a household (with the exception of individuals belonging to group households) from their analysis.

## **1.4 Scope of report**

We begin in Chapter 2 with an outline of our method. Much of this covers ground already thoroughly discussed in Wood and Ong (2009). There then follows the first of two results sections. Chapter 3 offers a descriptive analysis of the dynamics of housing affordability. It begins by profiling the change in housing affordability among the group of HILDA survey respondents that are retained in the panel over the decade 2001–10. The chapter then switches the focus to Australians experiencing unaffordable housing and the persistence of their high housing cost burdens. Our motivating research question is whether escapes from housing affordability stress are delayed because high housing cost burdens persist. We also investigate whether escapes are lasting, and ask if there are 'scarring' effects such that escapes from subsequent spells in unaffordable housing become more difficult as compared to first spells. Chapter 3 concludes with an examination of the length of episodes spent in affordable housing; here we are principally concerned with the risks of slipping out of affordable housing.

There are two research issues central to the material presented in Chapter 4. The first concerns those occupying the margins of affordable housing. They are the people transitioning back and forth across the boundaries separating affordable from unaffordable housing. We identify whether it is increases in income, or falling housing costs, that are driving these transitions. The second research issue concerns the effectiveness of CRA over the decade 2001–11. We report the findings from a simulation exercise based on those in the HILDA sample that AHURI-3M (a microsimulation model of the Australian Housing Market) identifies as receiving CRA. In each year of 2001–11 we contrast their housing cost ratios, as calculated taking entitlements of CRA into account, with housing cost ratios computed in the hypothetical situation where CRA is withdrawn.

The analysis is pulled together in Chapter 5 where we list key findings and their policy implications. This final section is concluded by a brief outline of the next steps in our program of research.

## 2 METHOD

This chapter describes the methods we have implemented to analyse housing affordability dynamics over an 11-year period using the 2001–11 HILDA survey. The following sections explain the sample design, attrition issues, treatment of missing values, and measurement of housing cost and housing affordability. As the present analysis builds on a previous AHURI project 30521, we have broadly replicated the methodology employed in that project. Hence, where possible we cross-reference sections of the previous AHURI report (Wood & Ong 2009), rather than repeat the detailed methodological statement available in that report. In some instances, we have modified our approach. We highlight deviations and explain our reasons for departures from the previous methodology.

### 2.1 Sample design

The HILDA survey is a nationally representative longitudinal survey that began in 2001 by interviewing 7682 households comprising almost 14 000 adult responding household members. These adult members were then re-interviewed annually, enabling data users to track changes in their life circumstances and personal characteristics over time.<sup>7</sup> It contains a comprehensive range of variables on the socio-demographic characteristics, labour market, income and family dynamics, housing outcomes, and subjective wellbeing of a nationally representative panel of Australians. Of particular importance to our study is the vector of variables that allow us to observe changes in housing costs and income from wave to wave, hence enabling longitudinal analysis of patterns of HAS across the Australian population and factors associated with movements in and out of HAS over the period 2001–11.

#### 2.1.1 Attribution approach

The attribution approach is the method used to define units of measurement and analysis, and the rules for inclusion or exclusion of units in our sample. With this approach, the sample has been designed to track the housing affordability position of adult persons, but measures their housing affordability position on an income unit basis. An income unit comprises one or more persons whose command over income is shared between members of the unit (Australian Bureau of Statistics 1997). It is assumed that income sharing takes place among couples, and between parents and dependents. The income unit is the chosen unit of housing affordability measurement because important variables that affect housing affordability, such as CRA and Family Tax Benefit (FTB), are measured on an income unit basis.<sup>8</sup>

To briefly illustrate the attribution approach, consider an income unit comprising a couple, Tim and Amy, who had a four-year old daughter, Kate, and were home purchasers in Wave 1. The daughter is not an independent adult and is therefore excluded from the sample. But both Tim and Amy are included in the sample frame. Their housing affordability position is calculated by measuring their combined income, and calculating mortgage repayments as a percentage of their combined income. Both Tim and Amy enter the sample and each has the same housing cost ratio (HCR). If Tim and Amy were to divorce in Wave 5, both are retained in the sample, but they now form separate income units and will therefore no longer share the same HCR. If Amy becomes partnered again in Wave 8, the income of Amy's new partner is taken into account in calculating her HCR in Wave 8 (and beyond), but her new partner is not added to the sample (for more details on the attribution approach, refer to Wood & Ong 2009, Section 2.1, p.10).

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<sup>7</sup> For more details, refer to the HILDA survey website: <http://www.melbourneinstitute.com/hilda/>.

<sup>8</sup> Most households in 2011 (87%) contained only one income unit.

### 2.1.2 Attrition and missing values

Attrition affects over 6700 persons or 48 per cent of the survey participants; they are persons unsuccessfully interviewed in one or more waves. In the previous project, 4117 persons or 36 per cent of the sample was lost through attrition. As a panel survey matures, sample attrition grows. Later in this report, we comment further on the issue of attrition and offer evidence to suggest that it will not materially affect our findings (see Section 3.2 and Appendix 2).

In our previous report, we had to deal with a significant missing values problem with respect to mortgage repayments and rental payments, and we devised algorithms to impute missing housing cost values. Imputing rental payments was particularly important because CRA payments are related to rent paid. This is not required in the current report because HILDA has now designed its own imputation procedures and we have relied on them for the conduct of empirical analyses. The number of missing CRA values is small. For instance, in 2011, it was impossible to compute CRA entitlements for only 29 persons, or 0.9 per cent of adult-responding private renters.

### 2.1.3 Inclusion/exclusion rules

At the start of the data collection period—Wave 1(2001)—there were 5247 responding independent adults in HILDA that could be tracked through to Wave 11 (2011), that is these are persons not lost through attrition or missing value issues. There are 185 persons who were dependents in Wave 1, but subsequently became independent adults. These individuals are added to the sample from the wave that independence is attained. However, there is a small number who achieve independence but then return to their dependent status before the end of the study period. As was the practice in our previous project, these individuals are excluded from the sample design in view of their small number and extra complications their inclusion would introduce into the sample design.

Survey respondents with zero housing costs because they live in rent-free employer-provided housing, are included. However, our previous project estimated wage discounts on the assumption that this discount could be interpreted as an effective housing cost for those residing in employer-provided housing. We did not repeat this discounting exercise in this report, on the grounds that those housed in employer-provided dwellings are few in number. Indeed, over the period 2001–2011, between 0.2 per cent and 0.5 per cent of responding independent adults lived in employer-provided housing in each year. In keeping with the previous project, group household residents have been included, while those with zero or negative income, boarders, the homeless and residents in nursing homes are excluded (for a more detailed discussion on these omitted groups, see Wood & Ong 2009, Section 2.1, pp.11–12).

## 2.2 Measurement of housing costs and housing affordability

Housing costs are measured on a tenure-specific basis. Owner-purchasers' housing costs are mortgage repayments. Outright owners are assumed to have zero housing costs.<sup>9</sup> Private renters' housing costs are measured as rent net of CRA. Public renters' housing costs are reported rebated rents. The rent-free have zero housing costs. Both owner occupiers and private renters have one-off upfront costs to meet; for example a purchaser must meet stamp duty and conveyance fees, while private renters are commonly charged a letting fee. Housing affordability studies commonly ignore these upfront charges because their incidence is shared between buyer (tenants) and vendor (investor) when demand and supply price elasticities are

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<sup>9</sup> There is a caveat here: older home-owners who own their homes outright may still have positive housing cost burdens in the form of property taxes and housing maintenance expenditure which are not accounted for in our empirical work.

non-zero and not infinite (see Freebairn 2010, Figure 7.1, for an economic analysis of the incidence of stamp duties which demonstrates this point).

There are also other recurrent charges such as property taxes, utility charges and maintenance that owner occupiers must incur. The first two of these items are typically omitted from measures of housing costs in part because they are not thought to be part of the costs of consuming housing services. Property taxes have come to be regarded as a user charge for local government services such as refuse collection, and charges for water, electricity and so on are, like commuting costs, incidental to the occupation of housing and not therefore regarded as part of what people are paying for shelter. On the other hand, there is a stronger case for the inclusion of maintenance. However, there is a difficulty when a sample includes both owners and renters, because landlords will typically meet maintenance costs, not tenants. Furthermore, some home owners might choose to do their own repairs (sweat equity), while others contract out and pay, so reported maintenance costs are not necessarily a good guide to the economic cost.

The income measure employed is the equivalised disposable income of an income unit, where a weight of 1 is assigned to the first adult member of the income unit, 0.7 to the second adult member, and 0.5 to each additional dependent child. A couple with two children is assumed to be the standard income unit, so their equivalised income is simply equal to their reported unequivalised income. The income of all other income unit types is adjusted with reference to couples with two children. For instance, consider a sole parent with a dependent child, whose unequivalised disposable income is \$20 000. The sole parent has a weight of 1.5, while a couple with two children has a weight of 2.7. Hence, the sole parent's equivalised disposable income is  $\$20\,000 \times 2.7/1.5$  or \$36 000.

The HCR is the ratio of net housing costs to equivalised disposable income, as measured on an income unit basis. Calculations of housing costs and HCRs are based on a measure of housing costs net of recurrent housing assistance (CRA)—so net HCRs subtract CRA from gross housing costs rather than being added to income. Since CRA eligibility and entitlement is conditional on the amount of rent paid to a private landlord, it is more appropriately interpreted as a price subsidy than an income transfer. CRA are computed using AHURI-3M, a comprehensive housing microsimulation model that can compute CRA entitlements for each private renter using a detailed set of socio-demographic characteristics including income unit type, number of dependents, rent paid, private income and government benefit type. The means tests governing eligibility and payments for CRA and the income support program that acts as a 'passport' to the CRA program have been updated on an annual basis for 2001–11. It therefore offers researchers the opportunity to gauge how the assistance offered by such programs have changed over this period. For more details on AHURI-3M, refer to Wood and Ong (2008).

The housing cost ratio measure is a more sophisticated measure than is typical in housing affordability studies. The use of disposable income is a helpful innovation as it recognises that people must pay housing costs from after-tax, not pre-tax, income. With the use of equivalence scales comes an appreciation of the greater pressures that larger household size place on budgets. Finally, the definition of housing costs net of CRA and rent concessions (to public housing tenants) provides a more accurate measure of the actual cash sums that clients of these assistance programs must meet from incomes.

We adopt two definitions of HAS. Firstly, a person is defined as being in HAS when income unit housing costs exceed 30 per cent of income. This follows the approach adopted in the previous project. Secondly, we define a person as being in HAS when housing costs exceed 30 per cent of income and the person is in the bottom 40 per cent of the household income distribution. This is the more commonly accepted definition of HAS (Rowley & Ong 2012). The former is a weak measure because middle to higher income groups with a strong taste for housing may well pay more than 30 per cent of income on housing costs, but this is a discretionary choice

made by these households. It is extremely unlikely to push these groups into after-housing cost poverty. We have nevertheless generated results using this '30 per cent rule' because some previous studies have employed it and our estimates therefore give us an indication of how different the empirics are when using the 30:40 per cent rule.

The 30:40 rule is the preferred measure of housing affordability used by Australian policy-makers. This is not surprising, as its derivation is simple and based on readily available data that facilitates comparisons over time. The measure is commonly used to define housing affordability and is often a guide for policy reform or the basis for affordable housing targets. But it has also been subject to widespread criticism for being an inadequate representation of housing-related financial stress (Rowley & Ong 2012).

However, more recently, research conducted by Rowley, Ong and Haffner (forthcoming) showed that the 30:40 rule is a significantly improved indicator of housing-related financial stress if it is applied within a longitudinal context that takes into account durations in HAS. The study adopted a panel analysis similar to the one undertaken in this report, and found that a focus on duration achieves better alignment of HAS with financial stress experiences. For instance, the study found that those who have been in HAS stress for longer than a single year are more likely to experience cash flow problems in the form of difficulty paying mortgage, rent or utility bills on time, or having to seek help from family or friends to bridge shortages of cash to meet acute spending needs. The incidence of financial stress associated with these indicators rises from 26 per cent to 30 per cent when duration in HAS increases from one to three years. Furthermore, Rowley and Ong (2012) uncovered statistical links between duration in HAS according to the 30:40 rule and health outcomes. The study found that a household in HAS for three years or more exhibited evidence of poorer health outcomes than those in shorter durations of HAS.

More details on the measurement of housing costs and housing affordability can be sourced from Wood and Ong (2009, Section 2.4, pp.16–19).

### **3 DESCRIPTIVE ANALYSES**

This first of two results chapters offers a descriptive analysis of the dynamics of housing affordability. It begins by profiling the change in housing affordability among the group of HILDA survey respondents that are retained in the panel over the decade 2001–11. This is an unusual look at how the housing cost burden changes as people age. We complete this exercise for three age groups—the young, middle aged and seniors.

The chapter then switches the focus to Australians experiencing unaffordable housing and the persistence of their high housing cost burdens. Our motivating research question is whether escapes from housing affordability stress are delayed because high housing cost burdens persist. The findings are broken down by housing tenure, household type and stage in the life cycle with a view to identifying groups especially vulnerable to enduring housing affordability problems. A decade of data tracking the same persons' trajectories in the housing system offers rich opportunities to also examine escapes from housing stress. The analysis investigates whether escapes are lasting, and asks if there are 'scarring' effects such that escapes from subsequent spells in unaffordable housing become more difficult as compared to first spells.

The chapter concludes with an examination of the length of episodes spent in affordable housing; here we are principally concerned with the risks of slipping out of affordable housing. Our analysis distinguishes between spells that have and have not been preceded by episodes of housing affordability stress.

The empirical work has been conducted using both the '30 rule' and '30:40 rule' definitions of unaffordable housing (see Chapter 2 for details). The estimates reported in this chapter apply the 30:40 rule, and estimates based on the 30 rule are reported in Appendix 1. Where there are important differences in the findings we comment on them in the text, and refer the reader to the relevant table in Appendix 1.

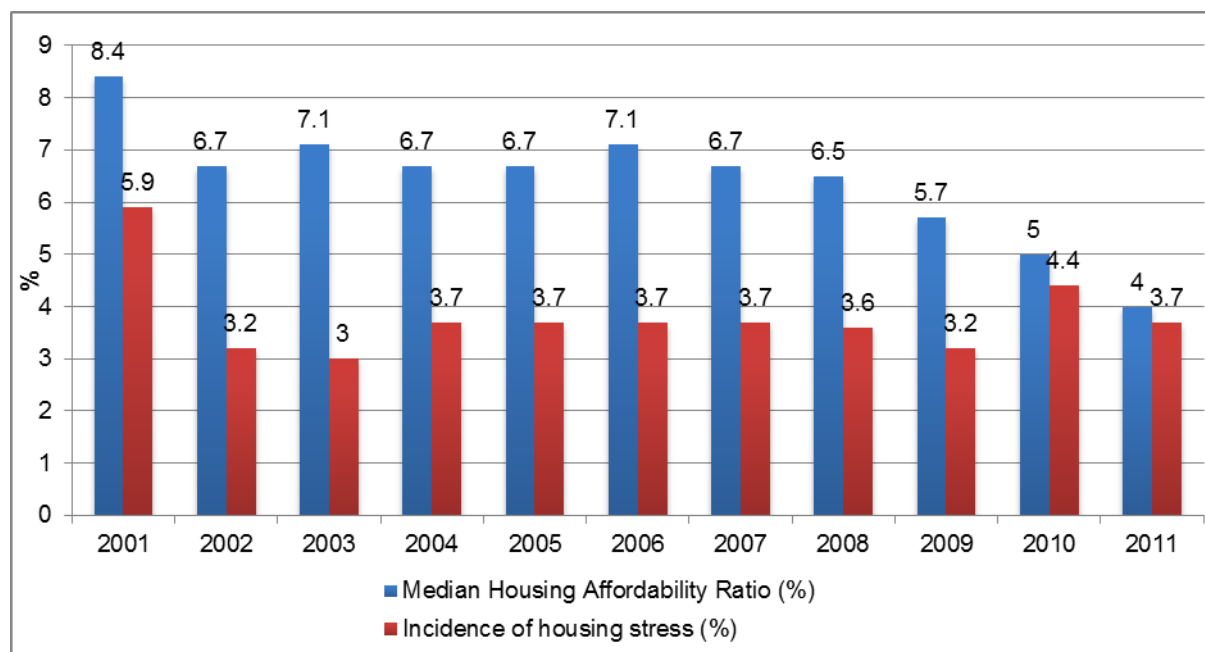
#### **3.1 Housing affordability; life cycle effects**

One of the attractions of panel data is that it allows the researcher to explore patterns in the data that are not possible using cross-section data. For example, analysts often draw inferences on how housing costs differ across the life course by comparing the housing cost burdens of a cross-section sample that are grouped into age categories. But young Australians cannot necessarily look on their parents' housing cost burdens as a guide to the way their own housing career will pan out. The generation that (say) began their housing careers in the 1970s made tenure decisions at a time when real house prices were considerably lower than those prevailing in the first decade of the new millennium. Yet this is the assumption behind use of cross-section samples that are arranged into age groups for the purposes of life course analyses.

As panel surveys such as HILDA mature researchers can conduct more sophisticated analyses of changing housing circumstances across the life cycle. This is especially the case when exploring how those circumstances unfold as Australians age. Figure 4 below reports the findings when we track the housing affordability position of all survey participants as they grow older over the decade 2001–11. At the beginning of the decade, just under 6 per cent of the total sample is experiencing unaffordable housing. But our definition of unaffordable housing is restricted to those below the 60th percentile of the income distribution, so the incidence approaches a higher 15 per cent of low-income households. There is a strong downward trend in median housing cost ratios and a weaker one when inspecting the percentage of the sample that experience housing stress. The fall in housing cost burdens is more pronounced in later post-GFC years, and probably reflects the sharp fall in mortgage interest rates as the Reserve

Bank of Australia (RBA) relaxed monetary policy to help support economic activity.<sup>10</sup> There is some evidence of polarised outcomes because the proportion of the panel in housing stress does not systematically decline over the same post-GFC years.<sup>11</sup>

**Figure 4: Housing affordability as housing careers unfold**



Note: The median age in the balanced sample was 44 at the beginning of the sample period (2001) and reached 54 by the end of the data range (2011).

The findings reported in Table 5 below break down the sample into three age groups; younger Australians aged between 15 and 34, middle aged Australians between 35 and 54 years of age and senior Australians who are 55 years and over. These age ranges are defined with regard to age in 2001. By 2011, all seniors will have reached retirement age or beyond. Roughly half of those middle aged back in 2001 will be approaching retirement age, and the other half will be firmly entrenched in middle age and have passed through the stage where Australians typically marry or partner, have children, and make their first transition into home ownership. The younger Australian cohort will have either left the family home for the first time to rent, or be establishing housing careers in home ownership, and deciding whether to get married and have children.

These caricatures are of course oversimplifications, but they nevertheless highlight common features of life course segments that are relevant to the interpretation of housing affordability dynamics in Table 5. The table reveals considerable differences in housing affordability profiles as Australians age. Unsurprisingly younger Australians' housing affordability profiles are elevated as compared to the other age groups, a pattern that is also apparent with respect to the incidence of housing stress. But more novel is the finding that their housing cost burdens increase over the decade (by approximately 1.5 percentage points); and the incidence of housing stress remains stubbornly stuck in the 7–8 per cent range. This reflects moves into leveraged home ownership. But it also seems to reflect vulnerability in the post-GFC years because the median HCR and frequency of stress are more consistently raised post-2007 as compared to other age groups.

<sup>10</sup> Variable mortgage interest rates increased in Australia through 2007 and 2008 before a steep decline.

<sup>11</sup> The tighter 30:40 definition results in rates of stress that are roughly half those calculated using the 30 rule, but the trends are similar (see Appendix 1).



**Table 5: Housing affordability as housing careers unfold for persons in age ranges 15–34, 35–54 and 55 and over<sup>1,2</sup>**

	Median housing cost ratio (%)			Incidence of housing stress (%)		
	15–34	35–54	55 and over	15–34	35–54	55 and over
2001	15.1	10.6	0.0	8.0	7.2	1.4
2002	13.0	8.0	0.0	5.4	3.4	0.8
2003	14.1	8.3	0.0	4.2	3.5	0.8
2004	15.3	7.9	0.0	5.6	4.2	0.8
2005	15.8	7.8	0.0	5.8	4.0	0.8
2006	16.1	7.9	0.0	6.1	3.8	1.1
2007	16.8	7.3	0.0	5.8	4.1	0.8
2008	17.9	7.3	0.0	6.2	3.5	1.3
2009	15.3	6.2	0.0	5.1	2.8	1.9
2010	16.1	5.5	0.0	7.5	4.2	1.6
2011	17.1	4.1	0.0	7.1	3.3	0.9

Note: <sup>1</sup> See note 1, Figure 4.

<sup>2</sup> Age ranges are defined with respect to age in 2001.

The other two age groups reveal a more expected pattern over the decade 2001–11. The typical housing cost burdens of middle aged Australians in the sample fall by over half their 2001 levels (from 10.6% to 4.1%), as is the proportion experiencing housing stress. Seniors are least prone to stress, and their exposure declines, reaching rates below 1 per cent in 2011. Their secure position reflects a relatively high and rising proportion of outright owners among seniors (from 73% in 2001 to 75% in 2011), a finding that offers some empirical support for the traditional welfare role of owner occupied housing (Yates & Bradbury 2010). However, note that the increase in the proportion of outright owners over the decade is small. This reflects equity borrowing by those approaching retirement (see Figures 1 and 2).

The importance of tenure is evident from Table 6. It takes those who in 2001 were owner purchasers (that is mortgagors), private renters and public renters, and then profiles their housing costs burdens and incidence of stress up to 2011. There is considerable tenure shifting going on over the 10-year timeframe, but nevertheless over 80 per cent of those in ownership back in 2001 remain as ongoing owners through to 2010 (see Wood et al. 2013b); the sharp fall in mortgagors' median housing costs burdens and stress contrasts with the experience of those privately renting back in 2001. Private renters remain much more prone to higher housing cost burdens as rising rents help maintain their housing cost ratios despite direct subsidies in the form of CRA.<sup>12</sup> Private renters begin the decade with housing cost ratios and an incidence of housing stress that are below those of home buyers. But by the end of the decade the position is reversed with tenants' housing cost ratios 5 percentage points higher, and the incidence of housing stress 2 percentage points higher than those of home purchasers. These comparisons offer a graphic illustration of the welfare protection that the

<sup>12</sup> The housing costs of renters are defined net of housing assistance throughout this chapter (see Chapter 2 for details).

accumulation of savings in tax advantaged home ownership provides as Australians age.<sup>13</sup> They also highlight the vulnerability of enduring private renters to high housing cost burdens as their housing careers evolve in this tenure. The other tenure grouping, those in public housing, fare better as a result of concessionary rents that take up no more than 25 per cent of the assessable income of most tenants.<sup>14</sup>

**Table 6: Housing affordability by tenure type in 2001**

Tenure type in 2001		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Owner purchasers	Median housing cost ratio (%)	16.4	12.3	13.0	13.2	13.1	12.6	11.9	12.0	10.6	10.6	10.7
	Incidence of housing stress	9.6	4.5	4.1	5.7	5.5	5.6	5.7	5.0	4.2	5.3	4.7
Private renters	Median housing cost ratio (%)	14.7	12.9	12.8	13.3	13.9	14.3	14.2	14.9	13.7	14.9	15.6
	Incidence of housing stress	8.5	5.2	4.9	5.1	4.8	4.5	4.6	4.9	5.1	7.4	6.7
Public renters	Median housing cost ratio (%)	13.1	12.4	12.2	12.5	13.3	13.0	12.9	13.6	12.1	13.2	13.3
	Incidence of housing stress	9.1	4.0	2.3	2.3	4.0	5.7	4.0	6.3	4.6	6.3	5.1

Note: The measures are calculated using a balanced sample of 5047 independent persons with non-missing housing cost ratios in all 10 waves; the rows represent individuals' tenure status as of 2001.

### 3.2 The persistence of unaffordable housing

Among a sample of 5247 Australians drawn from HILDA survey, 1032 (20%) have experienced one or more spells of housing affordability stress. The majority, 715 (69%) suffered only one spell, while 240 (or 23%) had two spells between 2001 and 2011. Three or more spells in the decade were therefore uncommon (accounting for only 8% of all spells). The persistence of bouts of unaffordable housing can be analysed with the aid of life tables such as Table 7 below. It is formed from all spells in unaffordable housing. We use the unbalanced panel sample design described in Chapter 2, that is, dependents who achieve independence by 2011 are added to the sample in the year they achieve independence. There are a total of 1446 spells in the life table analysis presented in Table 7. We take the first wave in which housing

<sup>13</sup> Though this is true for the average home owner, there is a highly leveraged sub-group with precarious housing circumstances where the welfare function of ownership is less clear cut. These issues are addressed in Wood et al. 2013b.

<sup>14</sup> Public housing tenants' typical housing affordability ratio as reported here is lower than 25 per cent because we express rents as a percentage of equivalised disposable income, not assessable income.

affordability stress eventuates, and measure the length of spells of housing stress from that reference point. If a spell is uninterrupted and ongoing at the end of the data collection period (2011) it is censored as we do not know when that spell ended.

**Table 7: Rates of ‘escape’ from a spell of housing stress**

(1) Year of spell ( <i>t</i> )	(2) Number in housing stress at start of year ( <i>T</i> )	(3) Number who escaped housing stress during the year ( <i>N</i> )	(4) Number censored at the end of year	(5) Hazard rate $H_t$ $= N_t / T_t$	(6) Survival rate $S_t = S_{t-1}(1-H_t)$
0	1,446	0	105		1.000
1	1,341	984	50	0.734	0.266
2	307	181	11	0.590	0.109
3	115	49	6	0.426	0.063
4	60	21	2	0.350	0.041
5	37	6	5	0.162	0.034
6	26	10	2	0.385	0.021
7	14	4	2	0.286	0.015
8	8	4	0	0.500	0.008
9	4	0	1	0.000	0.008
10	3	2	1	0.667	0.003

Table 7 tracks the event histories of the sample of ‘stressed’ individuals from the first year of their spell of housing affordability stress, through to the end of the data collection period.<sup>15</sup> We define the ‘beginning of time’ as the first wave during which a person is recorded to be in housing stress; interest focuses on whether and when the spell of housing stress ends. Time, measured in intervals of one year, is recorded in column 1. The following information is then recorded:

- The number of persons in housing stress during the year (column 2).
- The number of persons who escaped housing stress during the year (column 3).
- The number of persons with spells that were censored because they were still in housing stress when the data collection period ended.

The time intervals are in years, with Year 0 being the ‘beginning of time’. In Year 0, all 1446 persons were in housing stress and 105 peoples’ spells were censored that year because their ‘beginning of time’ corresponds to Wave 11 (2011), the last year of the study timeframe, and so we do not know how their spell progressed beyond that point in time. This leaves 1341 (1446-105) to enter the next time interval, Year 1. During Year 1, 984 people ‘escaped’ housing stress, but 50 peoples’ spells are censored because their Year 1 occurred in Wave 11, the last year of the data collection period. This leaves 307 (1341-984-50) to enter the next time interval, the second year of housing stress. The number of individuals who enter each successive time period is typically referred to as the ‘at risk’ set—those who might escape housing stress during

<sup>15</sup> Table is based on an unbalanced panel which includes dependents who achieve independence by 2011 but omits those who attrited between 2001 and 2011. As in the previous report, we examine the sensitivity of our measurements to attrition by repeating this research exercise using a shorter panel. A detailed explanation of this attrition exercise is provided in Appendix 2 of this report. The results of this exercise suggests that attrition does not affect our findings.

that time interval. The 'at risk' set declines in each year because of both event occurrence—transitions out of housing stress—and censoring. We assume that the 'at risk' set in a particular year is representative of all individuals who would have been at risk of event occurrence, had everyone been followed for as long as necessary to eliminate all censoring. This assumption is critical.

The hazard rate in column 5 is the key measure of the likelihood of escaping housing stress in each successive year of a spell. It is the conditional probability of exiting spells of housing stress given that he or she did not exit in an earlier time period. This conditional probability is given by the proportion of each time period's 'at risk' set who manage to evade housing stress during that interval. For example, in Year 2, 181 people escape housing stress, which is 59 per cent of the 307 people who comprised the risk set at the beginning of Year 2.

There is one final measure reported in Table 7. It is the survival rate and is listed in column 6. The survival rate measures the probability that a randomly selected individual will remain in housing stress in Year  $t$ , given that they have been trapped in housing stress in each year through to  $t$ . At the 'beginning of time' (Year 0) all persons are in housing stress and the survival rate is one. Over time, as people escape housing stress, the survival rate converges on zero. The survival rate offers a different angle on periods of time spent in unaffordable housing.<sup>16</sup>

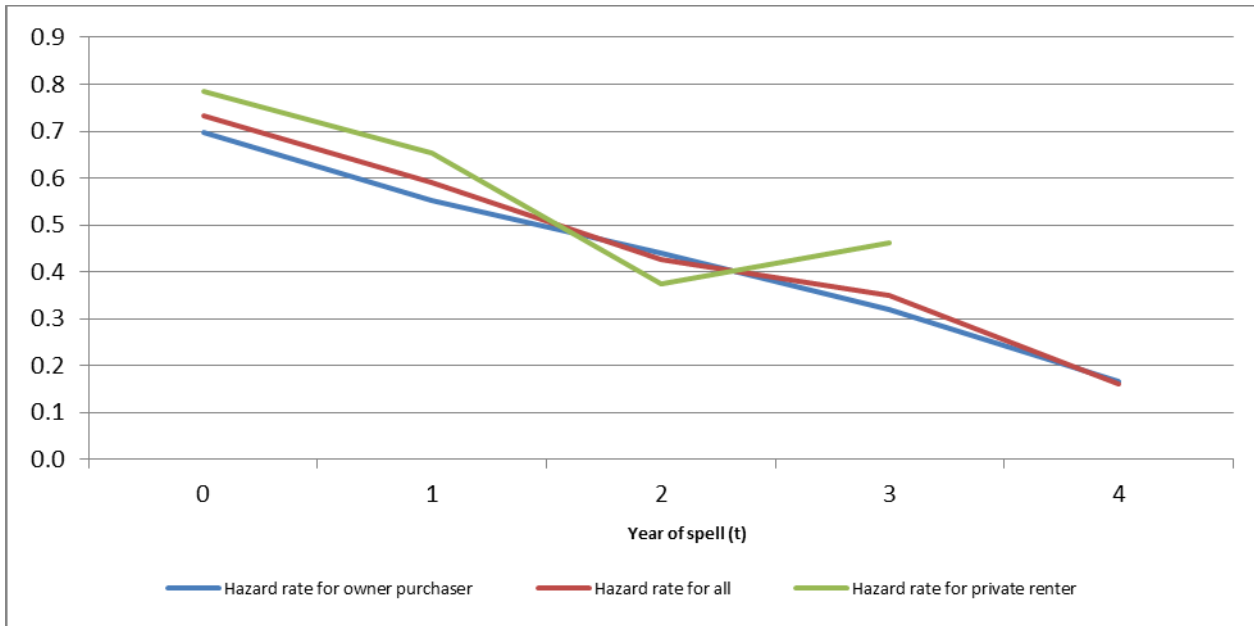
The patterns evident in Table 7 confirm those found in our earlier study (see Wood & Ong 2009, Table 10), and are found whether we use the '30:40' definition or '30' definition of housing affordability (see Appendix 1, Table A2). Most Australians in housing stress will escape by Year 1; the Year 1 hazard rate is very high at 73 per cent. It then declines rather steeply, but because the chances of escape are high in the first few years of a spell, almost all manage to evade stress by Year 10. Indeed only a small minority fail to climb out of spells of housing stress by Year 5. The survival rate calculation suggests that if we randomly selected a spell from the 1446 sample, there was only a small 3.4 per cent chance of remaining in housing stress through to Year 5.

Figures 5, 6 and 7 explore variation in the persistence of high housing cost burdens by tenure status, household type and age group. They do so by plotting hazard rate profiles across different subgroups in the sample. They show that private renters and home buyers (owners with a mortgage) have similar profiles that mirror those for the total sample reported in Table 7. On the other hand, it does seem from Figures 6 and 7 that couples with children, and particularly those in the 35–54 age groups, find it relatively difficult to escape from periods of housing stress.

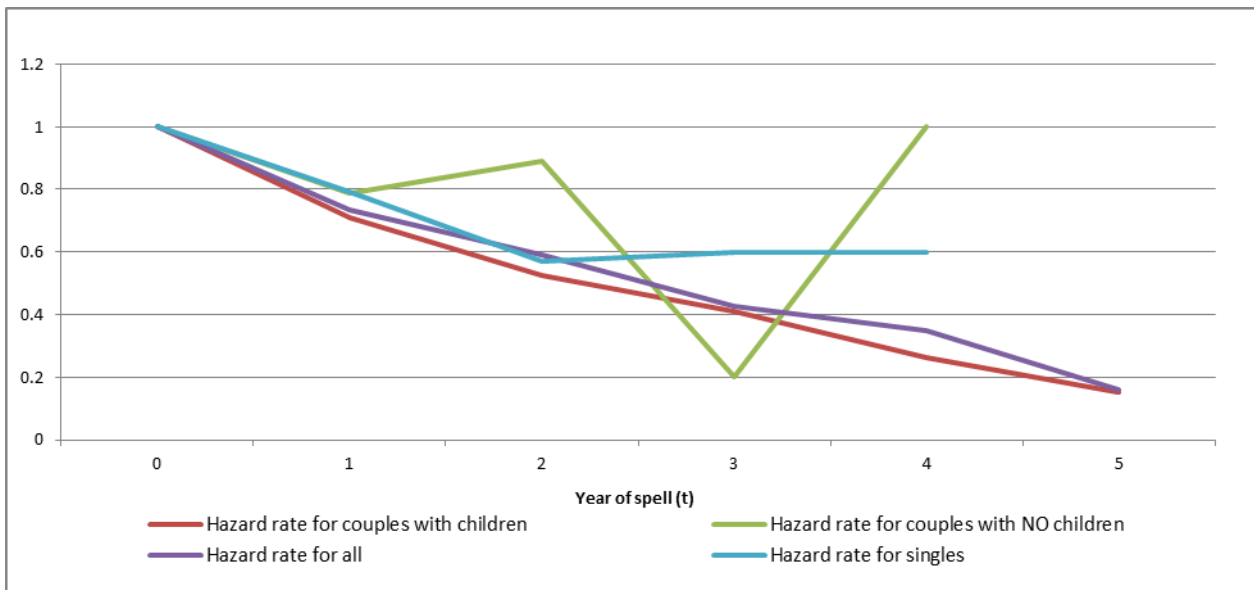
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<sup>16</sup> The survival rate in  $t$  is measured by multiplying the survival rate in the previous year ( $t-1$ ) by 1 minus the hazard rate in Year  $t$ .

**Figure 5: All individuals ‘at risk’ of escaping a spell of housing stress, by housing tenure in first year of spell<sup>17</sup>**

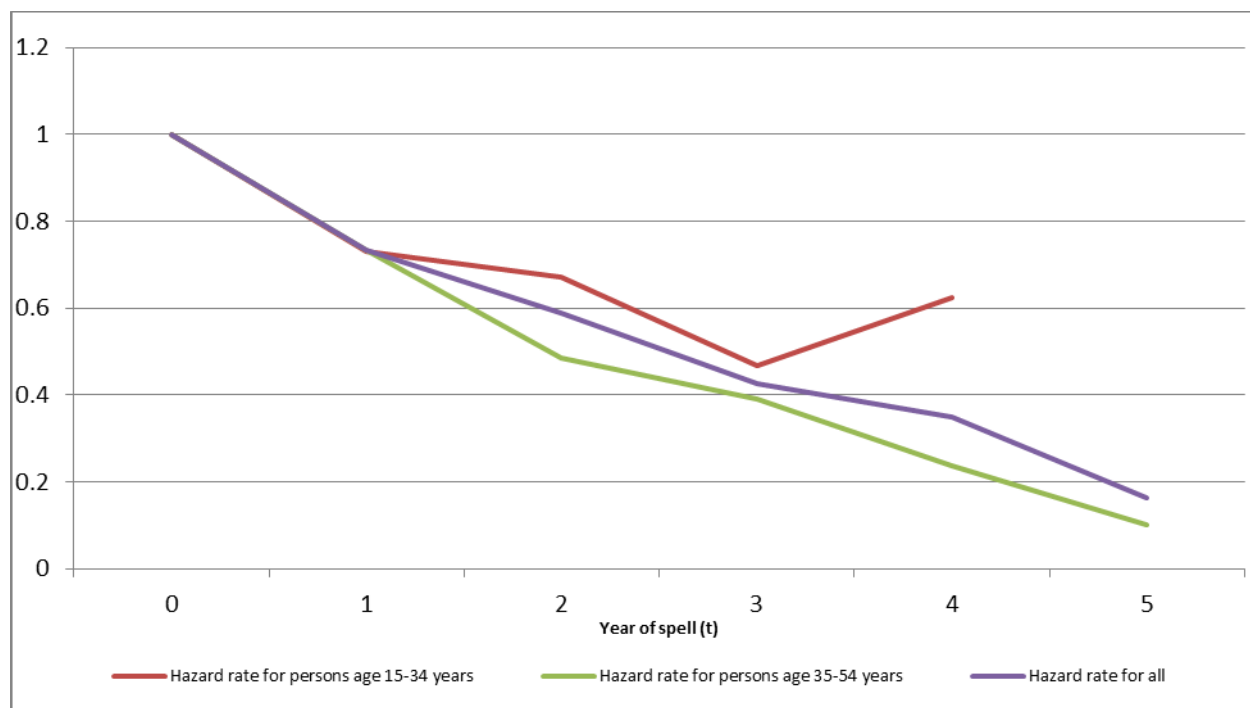


**Figure 6: All individuals ‘at risk’ of escaping a spell of housing stress, by income unit type in first year of spell**



<sup>17</sup> In this figure (and all subsequent figures reporting hazard and survival rates), the hazard functions are truncated when the ‘at risk’ sample falls to below 30 provided that the minimum year of spell in HAS is four years.

**Figure 7: All individuals ‘at risk’ of escaping a spell of housing stress, by age range in first year of spell**



### 3.3 Survival in affordable housing

We now ask two somewhat different questions: Is it easy for people to slide out of affordable housing? Does this risk decline or rise as time in affordable housing lengthens? These questions can be once again answered using life tables. Table 8 below has a similar arrangement to Table 7, but this time the ‘at risk’ set are those in danger of slipping out of affordable housing. A total of 6009 spells of affordable housing are begun by a sample of 5044 persons between 2001 and 2011; these Australians have all had at least one episode in which they secure affordable housing, each person contributing an average 1.2 spells of affordable housing. Most periods spent in affordable housing were ongoing in 2001, the beginning of our study timeframe, and we therefore do not know when their spell began.<sup>18</sup>

Inspection of the hazard rates in column 4, Table 8, indicate that for most people any threat to their affordable housing situation is small. Furthermore, the danger of sliding out of affordable housing diminishes as periods of time in affordable housing lengthen. Survival rates are therefore high; for example, they suggest that if we randomly selected a spell from the 6009 sample, there is a high 79.5 per cent chance that housing remains affordable through to Year 10. If we use a ‘30’ rather than ‘30:40’ definition of housing affordability, survival rates are somewhat lower; for example, in a randomly selected spell the likelihood that housing remains affordable after 10 years is 68.4 per cent. All those tumbling out of affordable housing under the ‘30:40’ definition also do so under the ‘30’ definition. The spells that are terminated before 2011 under the ‘30 rule’ (but not the ‘30:40 rule’) are predominantly those of home buyers with relatively high levels of mortgage indebtedness.<sup>19</sup>

<sup>18</sup> These spells are commonly referred to as left censored. The statistical issues raised by left censoring are discussed in Singer and Willet (2003).

<sup>19</sup> For home buyers sliding out of affordable and into unaffordable housing under the 30 rule, the mean outstanding real mortgage debt was \$180 600 in the wave immediately preceding their entry into unaffordable housing; for home buyers remaining in affordable housing, average outstanding mortgage debt is 33 per cent lower at \$120 500.

We should also note that our sample includes the spells of outright owners who are typically in the later stages of housing careers. If we exclude outright owners, that is those with no mortgage at the start of their spells, then survival rates dip significantly below those apparent from the full sample reported on in Table 8; at Year 5, for instance, the survival rate calculated from the restricted sample is 82 per cent (as compared to 86.2%). By Year 10 the gap is even wider, 73 per cent rather than the 80 per cent obtained from the sample containing outright owners. Most outright owners (75%) have reached retirement age, and they account for over 70 per cent of all those who have reached retirement age; their survival rates after a decade are very high at 94 per cent. These findings underpin the traditional welfare role of home ownership as a buffer cushioning living standards in retirement.

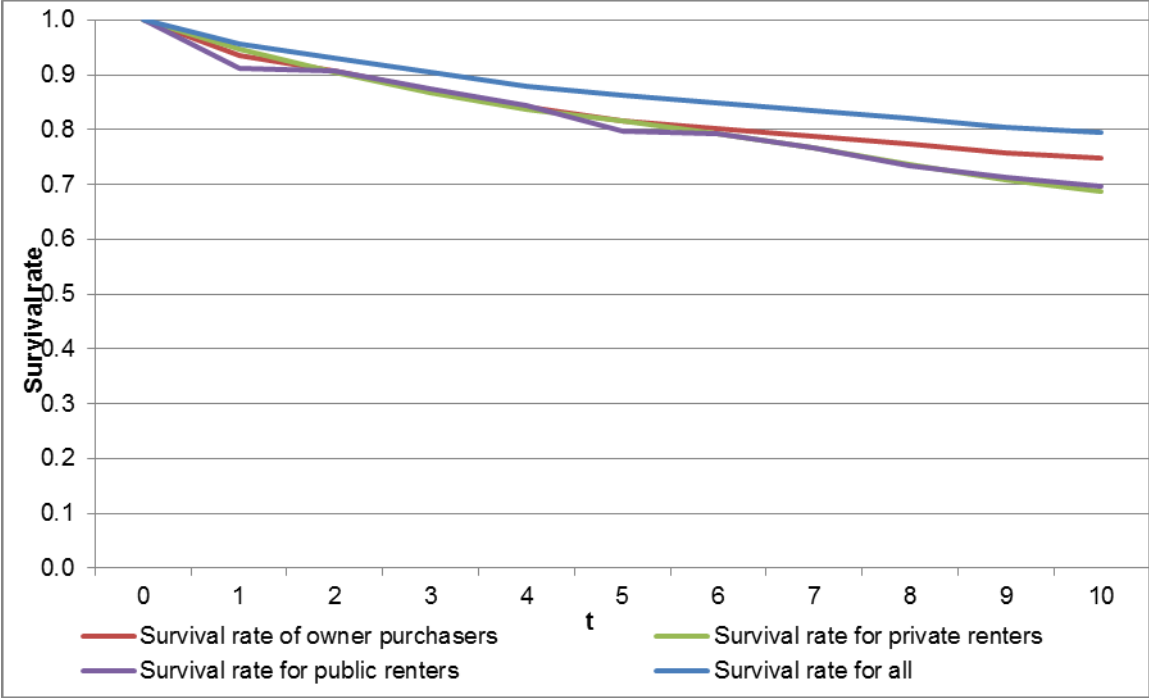
The other factor explaining high survival rates is rapid growth in the household incomes of mortgagors that continue in affordable housing over 10 years. On taking a sample of owners who have mortgages at the onset of their spell in affordable housing, and remain in affordable housing through to Year 10, we find that mean equivalised (nominal) household income has roughly doubled (from \$64 000 to \$124 000). At the onset of their spells, these people are typically in the early stages of middle age (mean age is 40 years), and a majority (58%) have dependent children present in the household.

**Table 8: Duration of spells in affordable housing**

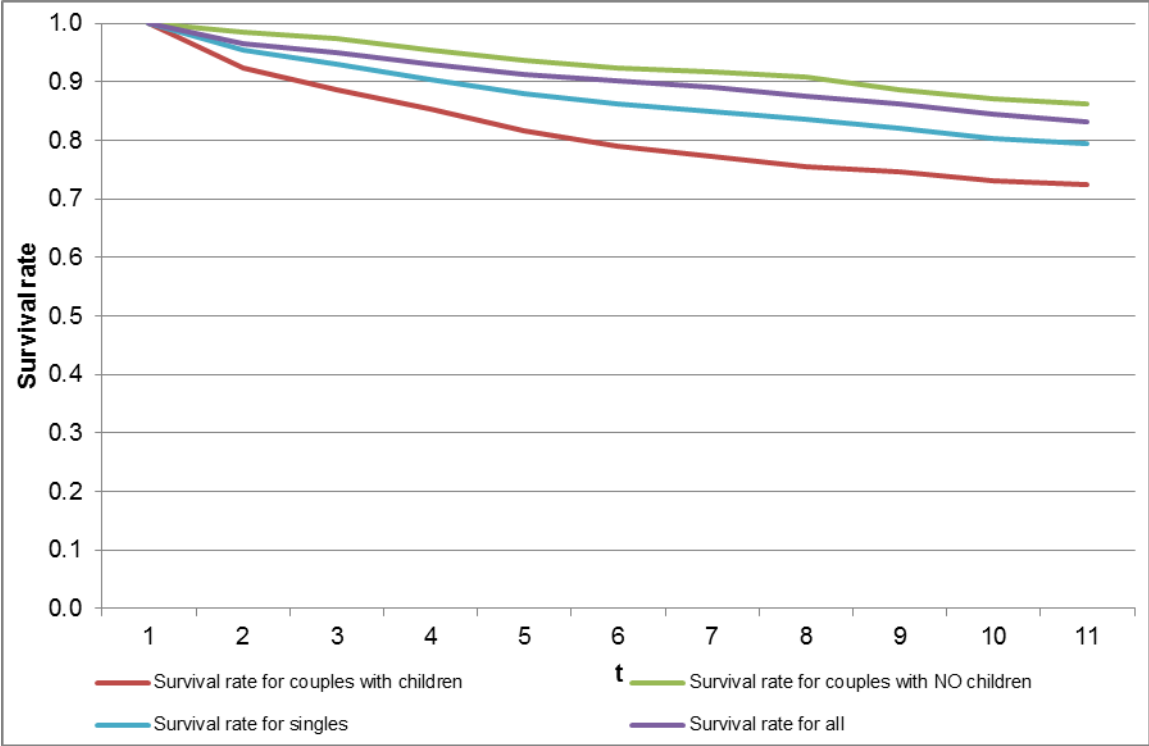
(1) Year of spell ( <i>t</i> )	(2) Number in affordable housing at start of year (T)	(3) Number who fell into housing stress during the year (N)	(4) Number censored at the end of year	(5) Hazard rate $H_t = N_t / T_t$	(6) Survival rate $S_t = S_{t-1}(1-H_t)$
0	6,009	0	242		1.000
1	5,870	263	110	0.045	0.955
2	5,515	143	115	0.026	0.930
3	5,275	147	70	0.028	0.904
4	5,058	136	66	0.027	0.880
5	4,856	101	72	0.021	0.862
6	4,683	67	75	0.014	0.850
7	4,541	74	51	0.016	0.836
8	4,416	80	56	0.018	0.821
9	4,280	85	134	0.020	0.804
10	4,061	46	4,015	0.011	0.795

Survival rates also differ by tenure, household type and age as illustrated in Figures 8, 9 and 10 below. As outright owners have zero housing costs, attention in Figure 8 focuses on owner purchasers, private and public renters. The latter two groups have somewhat lower survival rates. Patterns of survival diverge more markedly by household type and age, with young (under 35 years of age) couples with children particularly prone to slip out of affordable housing. In the 15–34-year age group, a randomly selected spell has an expected survival rate of under 70 per cent at 10 years.

**Figure 8: Survival in affordable housing, by housing tenure in first year of spell**

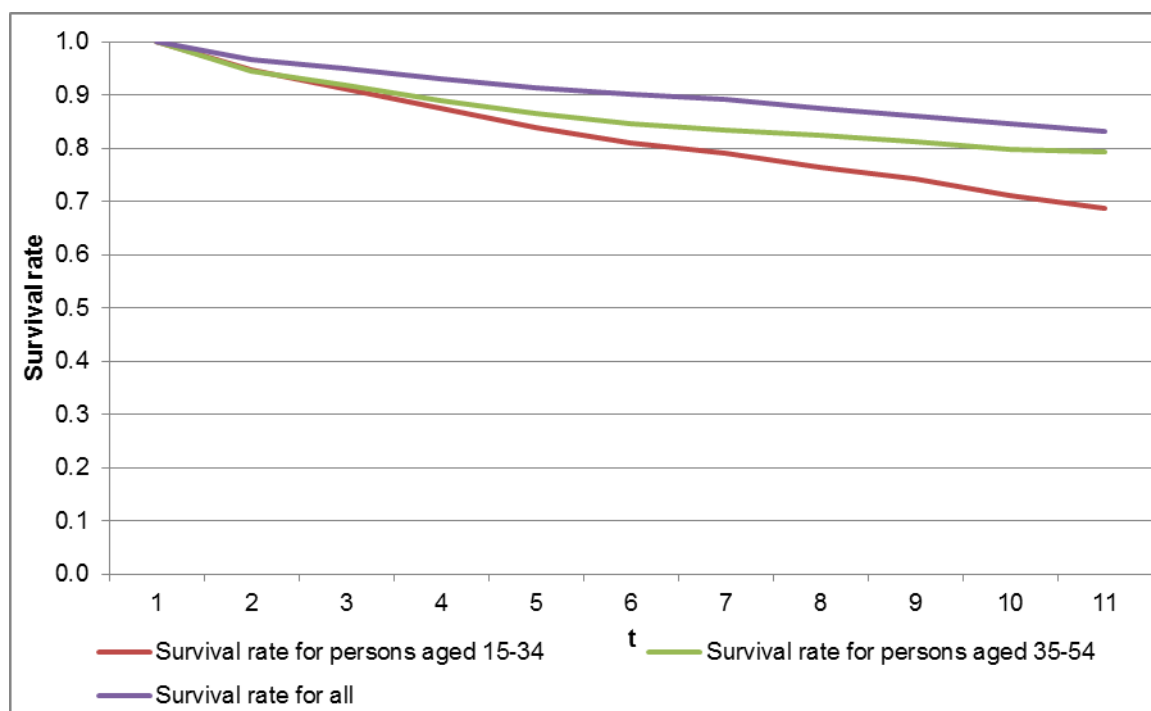


**Figure 9: Duration of all spells in affordable housing, by household type in first year of spell**





**Figure 10: Duration of all spells in affordable housing, by age in first year of spell**



### 3.4 Are escapes from housing stress enduring?

Table 7 shows that a period living in unaffordable housing typically lasts less than one year. But shaking off housing affordability stress could be temporary if there are high rates of recidivism. Table 9 below offers a first insight into lapses back into unaffordable housing by cross-tabulating the number of spells by the number of persons. It shows that while the majority (69.2%) experience unaffordable housing on only one occasion, a sizeable minority (30.8%) enter spells of housing affordability stress on two or more occasions. Individuals experiencing unaffordable housing typically have 1.4 spells over the decade long study timeframe. If we look at cycling in and out of *affordable* housing (see again Table 7), a less fluid picture emerges. Nearly 85 per cent of those with one or more spells in affordable housing experience just the one spell, while only 15 per cent encounter two or more spells. Individuals experiencing affordable housing typically have 1.2 spells.<sup>20</sup>

<sup>20</sup> Under the 30 rule, there is again greater fluidity. Over 76 per cent of those with one or more spells in affordable housing experience just the one spell, while 24 per cent encounter two or more spells. However, individuals experiencing affordable housing typically have still have 1.2 spells under the 30 per cent rule.

**Table 9: The number of persons with more than one spell of housing stress and more than one spell of affordable housing**

Number of spells	Persons with one or more spells of housing stress		Persons with one or more spells in affordable housing	
	Count	%	Count	%
1	715	69.28	4,262	84.5
2	240	23.26	623	12.35
3	59	5.72	138	2.74
4	16	1.55	18	0.36
5	2	0.19	3	0.06
<i>Total</i>	<i>1,032</i>	<i>100</i>	<i>5,044</i>	<i>100</i>

Sliding back into unaffordable housing is a danger that we investigate further in Table 10 below, which is based on a sample of persons who *have exited a spell of unaffordable housing*. It gauges the durability of these exits by forming a life table that has the same design as Tables 7 and 8. Survival in affordable housing is much more difficult for this group of individuals as compared to the sample containing all affordable housing spells, including those who had not experienced housing affordability stress in the study timeframe. In Year 1 we obtain a hazard rate of 15.3 per cent; in other words, someone who has evaded housing affordability stress has a 15.3 per cent chance of returning after enjoying only one year of affordable housing. The equivalent hazard rate calculated from the spells of all individuals benefiting from affordable housing is only 4.5 per cent.

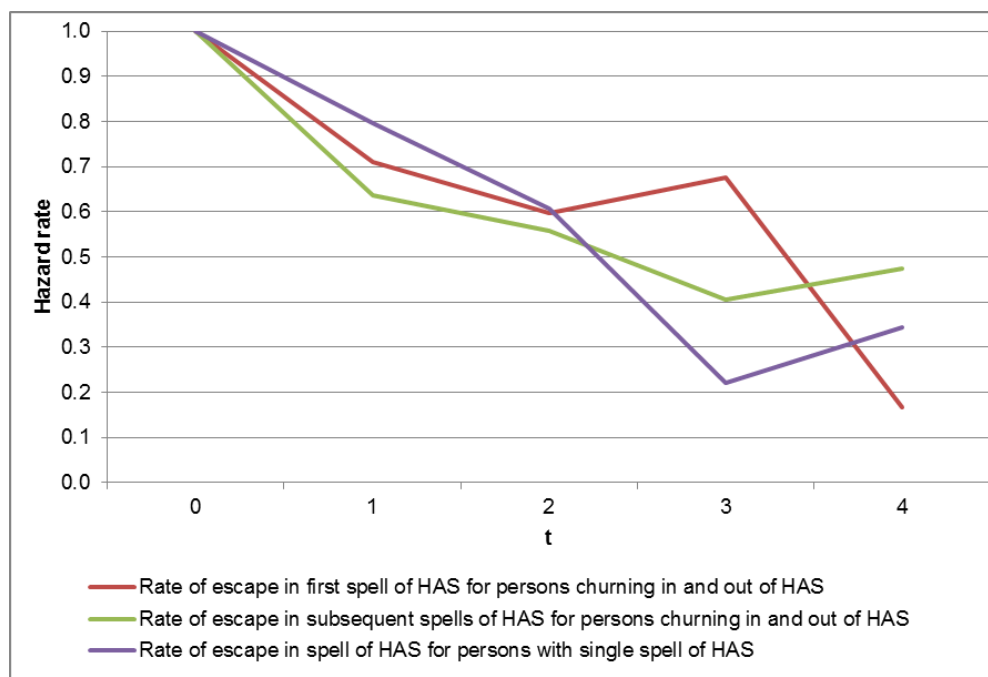
If an individual formerly in housing stress survives beyond Year 1 of a subsequent spell in affordable housing, their position becomes more secure because hazard rates fall to less than 10 per cent in Year 3, and remain there through to Year 10. But these rates are always higher than those calculated from the spells of all individuals enjoying affordable housing. Survival in affordable housing is consequently more precarious in all years as compared to those low-income persons who have never before experienced high housing cost burdens of 30 per cent or more of income (in the study timeframe). For a randomly selected spell from the sample analysed in Table 10, there is a 51.4 per cent chance that housing remains affordable through to Year 10. The equivalent survival rate calculated from all spells is a much higher 79.5 per cent.

**Table 10: Survival in affordable housing, first spell after escape from housing stress**

Year of spell (t)	Number in affordable housing at start of year (T)	Number who fell into housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	1,262	0	142		1.000
1	1,120	171	92	0.153	0.847
2	857	87	90	0.102	0.761
3	680	44	70	0.065	0.712
4	566	44	66	0.078	0.657
5	456	22	72	0.048	0.625
6	362	12	75	0.033	0.604
7	275	13	51	0.047	0.576
8	211	17	56	0.081	0.529
9	138	4	134	0.029	0.514

The past experience of housing affordability seems to have a ‘scarring’ effect on future prospects of evading housing affordability stress, and those cycling in and out of housing affordability stress also appear to have been less likely to evade it in the first place. These ideas receive some empirical support in Figure 11 below. It plots hazard rates during the first four years of the first spell belonging to those individuals who subsequently churn in and out of unaffordable housing. These rates are contrasted with the hazard rates from the first spell of persons who did not experience another spell. The latter are more likely to quickly escape affordability stress in Years 1 and 2. The perhaps more important comparison is drawn with the hazard rates calculated from the subsequent spells of those cycling in and out of unaffordable housing. In succeeding spells it appears to be more difficult for low-income individuals to exit unaffordable housing; the first experience in the study timeframe seems to leave an imprint that makes it more difficult to escape in the future.

**Figure 11: Hazard rates for persons with single versus multiple spells in HAS**



### 3.5 Personal characteristics driving the dynamics of housing affordability

It is helpful from a policy perspective to be able to identify the typical personal characteristics associated with cycling in and of housing affordability stress. For example, if unemployment, underemployment and lack of qualifications are associated with recidivism, labour market programs could turn out to have important and positive impacts on the ability of beneficiaries to secure affordable housing. On the other hand, if particular features of housing markets are associated with the chances of permanent escape from unaffordable housing, then we should look to housing policy as the principal vehicle for assisting Australians into affordable housing that is enduring.

Tables 11a, 11b, 11c and 11d below list different groups of personal characteristics for a sample of individuals who have experienced at least one spell in unaffordable housing. Each of the tables splits the sample into a subsample comprising persons who permanently evade housing affordability stress (see column 3), and a subsample of persons churning in and out of housing affordability stress. Demographic attributes are considered first in this set of tables (see Table 11a); though stage in the life cycle (as measured by age) is not a distinguishing feature, marital status, household size and composition are important. Those slipping back into unaffordable housing are more likely to be married, and regardless of marital status, households slipping back have more children (a mean 1.7) and larger sizes (a mean 2.0) as compared to the comparison group of individuals whose escape is enduring (means of 1.2 and 1.8 respectively). Families do therefore seem to be prominent among those occupying insecure footholds on the margins of affordable housing; so, for instance, we find that couples with children make up 61 per cent of the 'churning' subsample, but only 50 per cent of the subsample who permanently escape affordability stress.

Tables 11b and 11c contrast measures of wellbeing and human capital attributes of the two subsamples. Though long-term physical health conditions are similar, mental health and to a lesser extent life satisfaction measures are lower among those cycling in and out of affordable housing (see Mason et al. 2013). This may also reflect acute spending needs on non-shelter items since the churners' mean income unit disposable income is 13 per cent less than that of permanent 'escapees'. This last contrast reflects poorer qualifications, lower rates of labour market participation and, when employed, churners are also less likely to work in jobs enjoying the security of permanent contracts. The position of those precariously perched on the fringes of affordable housing does appear to be mirrored in *similarly insecure labour market positions*.

Finally, Table 11d compares the housing market and spatial location features of those who evade unaffordable housing on an enduring basis, and those slipping back into unaffordable housing. In fact, divergence here is less marked than in other groups of personal characteristics. There is some evidence that escape from unaffordable housing is more durable in the housing markets of major cities, but tenure and mobility characteristics do not feature as statistically significant attributes. The key group unable to secure a lasting escape from affordable housing appear to be couples with children, where the adults in the household have mental health issues, and their labour market position features insecure employment or no employment at all. However, these conclusions are tentative as interrelationships between these personal characteristics may mask the underlying causal mechanisms driving the dynamics of housing affordability. The multivariate modelling conducted in the second stage of the project will offer a more reliable guide to causal mechanisms.

**Table 11: Characteristics of persons who permanently escape housing stress compared with persons with two or more spells in unaffordable housing**

**a. Demographic and marital status**

	<b>Variables</b>	<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Demographic	Male	336	144
	Female	379	173
	Age	43.4	42.6
	Number of children	1.2	1.7***
	Average household size (income unit)	1.8	2.0***
Marital status	Married	63%	69%**
	Defacto	12%	10%
	Separated	5%	7%*
	Divorced	8%	5%**
	Widowed	2%	2%
	Single	11%	8%
	<i>Total</i>	100%	100%

Note: \*\*\* denotes statistical significance at 1 per cent; \*\* denotes significance at 5 per cent; and \* denotes significance at 10 per cent for this table and all subsequent tables

**b. Human capital and income unit type**

	<b>Variables</b>	<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Human capital <sup>21</sup>	Employed full-time	48%	40%***
	Employed part-time	22%	23%
	Unemployed	3%	4%
	NILF	27%	33%***
	<i>Total</i>	100%	100%
	No post-year12 qualification	39%	47%**
	% of time employed on a permanent basis	39%	24%***
	Whether underemployed	7%	8%*
Income unit type	Couple with children	50%	61%***
	Couples only	24%	17%***
	Sole parents	6%	8%*
	Singles no children	20%	13%***
	<i>Total</i>	100%	100%

<sup>21</sup> Here we report the percentage of time that a person is employed full-time, part-time, etc.

### c. Housing and geography

	<b>Variables</b>	<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Housing	Average housing cost (income unit)	11,654.2	12,759.5**
	Average CRA received (income unit)	349.8	549.8***
Tenure type	Outright owner	8%	6%**
	Owner with mortgage	56%	56%
	Private renter	28%	31%
	Public renter	5%	5%
	Rent free	3%	2%
	<i>Total</i>	<i>100%</i>	<i>100%</i>
Major cities	Major city	64%	57%**
	Inner regional	25%	32%**
	Outer regional	9%	10%
	Remote	1.1%	1%
	Very remote	0.4%	0%
	<i>Total</i>	<i>100%</i>	<i>100%</i>
Mobility	% of person periods in which the person moved	17%	16%

Note: as above.

### d. Health, income and satisfaction

	<b>Variables</b>	<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Health	Long-term health condition <sup>^</sup>	23%	24%
	Mental health [0–100 scale]	68.1	64.9***
	Life satisfaction [0–10 scale]	7.7	7.5***
Income	Average disposable income (income unit)	53,977	46,863***

<sup>^</sup> Percentage of waves an individual reported having a long-term health condition

### 3.6 Summary

Housing stress affected 6 per cent of Australians back in 2001. As this cohort ages, this rate falls to just below 4 per cent in 2010. But there are significant differences across segments of the Australian population. Firstly, because of the way housing affordability is defined it cannot exceed 40 per cent of the population, so the overall incidence is inevitably low even though it affected nearly 15 per cent of low-income persons back in 2001. Secondly, the trends in housing affordability differ across demographic groups. The young (under 35s) actually experienced an increase in housing cost burdens as they aged over the decade 2001–10. This is also true of private renters (in all age groups) as their incomes failed to keep pace with rising rents.

On examining the persistence of spells in unaffordable housing, we find that nearly three-quarters of all spells end within a year. Most Australians' experience of unaffordable housing is therefore temporary. Only a small minority (3.4%) will experience a spell that lasts for five years. There are certain demographic groups that find it more difficult to escape housing stress—couples with children are prominent in this respect.

Once people attain affordable housing, it tends to be secured in the longer term. Our analysis of spells in affordable housing suggests that there is an 80 per cent chance that a randomly selected spell will last for 10 years. These high survival rates reflect the presence of outright owners who have no mortgages; their likely exposure to housing affordability issues is negligible. On the other hand, young mortgagor couples with children are vulnerable with relatively high proportions slipping out of spells of affordable housing before the end of the study timeframe. Finally there is some evidence of 'scarring' effects. Survival in affordable housing is more precarious if the person has experienced unaffordable housing in the past. There are therefore a minority of people who cycle back and forth between unaffordable and affordable housing.

## 4 THE DYNAMICS OF AFFORDABLE HOUSING; EXTENSIONS TO THE ANALYSES

There are two research issues central to the material presented in this chapter. The first concerns those occupying the margins of affordable housing. They are the people transitioning back and forth across the boundaries separating affordable from unaffordable housing. They have yet to establish a firm foothold in affordable segments of the Australian housing system. Those shifting from unaffordable into affordable housing are transitioning toward those firm footholds. We identify whether it is increases in income, or falling housing costs, that are driving this transition. If lower housing costs are driving this shift into affordable housing, it could be a signal that households are compromising housing standards (or trading down) in order to evade unaffordable housing circumstances. If income is the principal driver, it seems likely that improved labour market participation is at least partly responsible.<sup>22</sup> The analysis is also conducted for those slipping out of affordable housing. The role of rising housing costs and falling income in precipitating these shifts can have important policy implications; if sharp reductions in income are the main cause (while the housing costs of these people are stable), labour market factors are likely to be one factor driving these shifts and income support programs (e.g. Newstart allowance, Disability Support Pension, and so on) are insufficient to adequately protect households at risk of falling into unaffordable housing. On the other hand, a finding that housing costs are the more important cause, suggests that housing market factors are driving the shifts and housing assistance programs linking subsidy to housing costs burdens (e.g. CRA or concessional rents for public housing tenants) are ineffective as a buffer preventing those at risk from sliding into unaffordable housing circumstances.

The second research issue concerns the effectiveness of CRA over the decade 2001–11. This is the principal housing assistance program designed to lessen the housing cost burden of private rental tenants. The research reported below conducts a simulation exercise based on those in the HILDA sample that AHURI-3M identifies as receiving CRA. In each year 2001–11 we contrast their housing cost ratios, as calculated taking entitlements to CRA into account, with housing cost ratios computed in the hypothetical situation where CRA is withdrawn. The simulation offers an evidence base on how well CRA is protecting those vulnerable to affordability problems; and, equally importantly, whether that protection varies across different household types. But the particular innovation here is comparisons across the decade-long study timeframe. We ask whether that ‘insurance’ has become stronger or weaker over a decade featuring rapid acceleration in house prices (and rents) in the first half, and a severe shock in the second half as the GFC rocked housing systems across the world.

### 4.1 Drivers of change on the margins of affordable housing

We employ shift share analysis in order to de-compose changes in housing cost ratios into a component that can be attributed to changes in income, and a second component that can be attributed to changes in housing costs (Stimson et. al 2002). The shift-share technique begins with a straightforward identity;

$$HCR_t - HCR_{t-1} \equiv HCR_t - HCR_{t-1} \quad (4.1)$$

Where HCR is the housing cost ratio (converted into a percentage, see Chapter 2), and subscripts  $t$  and  $t-1$  represent the current and previous year values respectively. As defined the difference takes the form of a percentage point change. To the right-hand side (RHS) of this identity we add and subtract  $HCR_t$ , which is a hypothetical housing cost ratio in period  $t$

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<sup>22</sup> Incomes can change for a variety of different reasons; for example, ill health and injury, divorce and separation, (re-)partnering, the birth of a child and retirement will all precipitate changes due to a combination of adjustments to labour supply, income support and private insurance arrangements. This qualification also applies to the role played by income changes in driving shifts from affordable into unaffordable housing.



calculated holding income constant at  $t-1$  values. It reveals the housing cost burden when housing costs change, but in the hypothetical setting of unchanged income. The shift-share equation becomes:

$$HCR_t - HCR_{t-1} \equiv (HCR_t - \overline{HCR}_t) + (\overline{HCR}_t - HCR_{t-1}) \quad (4.2)$$

The first bracket on the RHS captures changes in HCR due to income (as a percentage point change), and the second bracket captures changes due to housing cost (again in terms of percentage point change).<sup>23</sup>

We form a sample that is comprised of individuals who transition out of affordable housing and into unaffordable housing from one year to the next or shift out of unaffordable housing and into affordable housing from one year to the next.<sup>24</sup> The research strategy then isolates the years  $t$  and  $t-1$  over which these transitions occur, and discards any years that are not adjacent to such transitions. Table 12 below reports the findings for the sample of 788 occasions when a sample member slips out of affordable and into unaffordable housing, and the 1244 occasions when a sample member slides out of unaffordable and into affordable housing (between 2001 and 2011).<sup>25</sup>

**Table 12: Shift-share analysis on persons transitioning from affordable housing to unaffordable and vice versa between  $t-1$  and  $t$ , 2001–11**

	Average % point change in HCR between period $t$ and $t-1$	Average % point change in HCR due to changes in income between period $t$ and $t+1$	Average % point change in HCR due to changes in housing cost between period $t$ and $t+1$
	$HCR_t - HCR_{t-1}$	$HCR_t - \overline{HCR}_t$	$\overline{HCR}_t - HCR_{t-1}$
Affordable to unaffordable	18.6	9.2	9.4
Unaffordable to affordable	-34.2	-23.5	-10.7

Note: Dataset is trimmed to remove extreme values at the top 1 percentile of the HCR distribution.

Table 12 below reveals sharp jumps and falls in the housing cost ratios of those on the margins. Consider, for example, those falling out of affordable housing; their housing cost burdens as a per cent of equivalised disposable income rise by an average 18.6 percentage points. For those transitioning in the opposite direction and climbing out of unaffordable housing, the change in cost burdens, at over one-third (minus 34.2 percentage points), is even steeper. There is a balanced picture when we look at the drivers of transitions in the first group, with one half of the changes in housing cost ratios triggered by falls in income and the other half caused by rising housing costs. For the individuals crossing the boundary from affordable into unaffordable housing, income and housing cost causes appear to be equally important. The picture is very different when we look at those crossing the boundary in the reverse direction. Year-to-year escapes from unaffordable housing are disproportionately driven by income, which accounts for 23.5 percentage points (just over two-thirds) of the overall 34.2 percentage point drop in housing cost ratios. The dollar increase in income is commensurately large; median (nominal) equivalised household disposable income nearly doubles from \$32 500 in the year preceding transition to \$62 000 (per annum) in the year unaffordable housing circumstances are evaded.

<sup>23</sup> We decompose the percentage point change. When the separate components take different signs, it does not make sense to talk in terms of the proportionate contribution made by housing cost and income changes.

<sup>24</sup> These transitions can occur as a result of moving or *in situ*.

<sup>25</sup> The analysis is therefore on a person-period basis. One individual can be responsible for more than one transition between 2001 and 2011. There are 6076 persons who experience no change in housing affordability status between 2001 and 2011.

There are some important differences when examining these transitions using the '30 rule' instead of the '30:40 rule'. Under the former, incomes play a less important role while changes in housing cost burdens turn out to be relatively more important (see Table A6 in Appendix 1). This is because fluctuations in income can shift individuals across the '30:40' defined boundaries separating unaffordable from affordable housing even if housing costs are unchanged. Though the overall change in housing cost ratios for the two transition groups is very similar under the alternative definitions, the policy implications are different under the '30' rule as the shift share decomposition implies that improved direct housing cost subsidies are needed to protect those occupying the margins of affordable housing.

In view of the importance of income in driving shifts across the '30:40' defined margins of affordable housing, changes in earnings accompanying fluctuations in labour supply are likely to be significant. On cross tabulating shifts from affordable into unaffordable housing with employment status we find that nearly one in five (19%) of those in full-time employment before the shift, had reduced rates of labour market participation on falling into unaffordable housing.<sup>26</sup> Roughly 16 per cent of those working part-time before the shift also had subsequently reduced rates of employment participation. On examining the shift from unaffordable to affordable housing, we witness large jumps in the rates of economic participation of those previously working part-time or not working at all. Of the 732 cases in this category there is an increase in labour market participation in 119 cases (or 16%).<sup>27</sup> For those not experiencing change in rates of economic participation (including that of partners), the variation in income must be due to other causes. For example, changes to government benefits and pensions are probably an important factor as many of those on the margins of affordable housing will be clients of income support programs since their income puts them below or close to the 40th percentile of the income distribution.<sup>28</sup>

The study timeframe features major changes in economic fortunes with generally buoyant economic conditions 2001–06, and then a sharp shock to the economy in the form of the GFC that disrupted housing markets in the second half of the decade (2007–11). Table 13 below repeats the shift share analysis but with respect to periods 2001–2006 and 2007–11. In the first six-year period, house prices and rents soared as the commodity price driven Australian economy enjoyed healthy growth rates, low rates of unemployment and significant increases in real household disposable income. In the 2007–11 period, economic growth rates were subdued, and house prices and rents plateaued by comparison to their earlier (2001–06) high rates of increase, and interest rates declined as monetary policy was eased in response to the economic crisis. These very different background conditions are reflected in the sub-period shift-share findings; housing costs are relatively more important in driving transitions on the margins of affordable housing in the first half of the decade, while income is a more important factor in the second half when economic conditions deteriorate. It seems that direct housing subsidies will offer more protection to those on the margins in the upswing of a housing cycle, but in the downswing, income support programs could play a more significant role.

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<sup>26</sup> It is closer to 1 in 10 (12%) under the '30 rule'.

<sup>27</sup> Note that these estimates do not take changes in partner's labour market participation into account.

<sup>28</sup> These remarks signal a potentially fruitful direction for further research. A 'national housing budget' that documents how changes to government benefits, allowances and pensions impact the income and hence housing cost burden of those on the margins of affordable housing, would shed light on the Federal Government's fiscal role in shaping transitions into and out of housing affordability.

**Table 13: Shift-share analysis on persons transitioning from affordable to unaffordable housing and vice versa between  $t-1$  and  $t$ , during the timeframes of 2000–11, 2001–06 and 2007–11**

		Average % point change in HCR between period $t$ and $t-1$ ; $HAR_t - HAR_{t-1}$	Average % point change in HCR due to changes in income between period $t$ and $t-1$ ; $HAR_t - \overline{HAR}_t$	Average % point change in HCR due to changes in housing cost between period $t$ and $t-1$ ; $\overline{HAR}_t - HAR_{t-1}$
2001–11	Affordable to unaffordable	18.6	9.2	9.4
	Unaffordable to affordable	-34.2	-23.5	-10.7
2001–06	Affordable to unaffordable	19.7	8.1	11.6
	Unaffordable to affordable	-33.8	-22.7	-11.0
2007–11	Affordable to unaffordable	17.1	10.5	6.5
	Unaffordable to affordable	-35.9	-25.9	-9.90

Finally, in Table 14 below, we explore the changing fortunes of mortgagors and private renters on the margins of affordable housing.<sup>29</sup> The role played by housing subsidies is very different across Australian housing tenures; in owner-occupied housing, assistance with housing costs is mainly received in the form of indirect subsidies delivered through tax exemptions and concessional rates (e.g. lower rates of stamp duty), but there are no tax allowances for mortgage interest (as there are say in the USA). Thus, when mortgage interest rates increase, or incomes fall, Australian housing assistance arrangements offer no safeguards for mortgagors. On the other hand, in private rental housing, assistance is principally provided in the form of direct subsidies such as CRA, that help protect eligible individuals facing increases in rents as assistance is related to rent paid. These different subsidy arrangements leave mortgagors more exposed to interest rate and income risk on the margins of affordable housing. Table 14 shows that income is much more important as a driver of private rental tenants' transitions back and forth across the boundaries separating unaffordable and affordable housing. This is likely due to the cushioning effect of direct subsidy arrangements that offer some 'insurance' safeguarding tenants with respect to rent increases. The effectiveness of the most important of these direct housing subsidies (CRA) is a topic that we address in the following section.

<sup>29</sup> There are insufficient sample numbers to repeat the analysis for public renters.

**Table 14: Shift-share analysis on owners with mortgage and private renters transitioning from affordable housing to unaffordable housing and vice versa between  $t-1$  and  $t$ , 2001–11**

Transition type	Tenure type	Average % point change in HCR between period $t$ and $t-1$ ; $HAR_t - HAR_{t-1}$	Average % point change in HCR due to changes in income between period $t$ and $t-1$ ; $HAR_t - \overline{HAR}_t$	Average % point change in HCR due to changes in housing cost between period $t$ and $t-1$ ; $\overline{HAR}_t - HAR_{t-1}$
Affordable to unaffordable	Owners with mortgage*	16.32	8.46	7.86
	Private renters#	18.04	12.06	5.98
Unaffordable to affordable	Owners with mortgage*	-29.82	-21.83	-7.99
	Private renters#	-33.70	-31.61	-2.08

\* Sample comprises persons who were owners with a mortgage in  $t$  and  $t+1$ ;

# Sample comprises persons who were private renters in  $t$  and  $t+1$ .

Note: Insufficient sample numbers to repeat analysis for public renters.

## 4.2 The effectiveness of Commonwealth Rent Assistance 2001–11

Commonwealth Rent Assistance (CRA) is the principal housing assistance program for tenants renting from a private landlord. A decade-long panel data set such as HILDA offers, when combined with AHURI-3M, an insight into its changing effectiveness in protecting tenants from housing affordability stress. Table 15 below uses AHURI-3M to conduct a simulation exercise in which the housing cost ratios of CRA clients are compared in two settings:

1. A hypothetical housing cost ratio that is calculated assuming that clients lose eligibility for assistance.
2. Their actual housing cost ratio given receipt of CRA entitlements that reduce net housing costs.

**Table 15: Mean HCR and incidence of HAS for CRA recipients while receiving CRA compared with their mean hypothetical HCR and hypothetical incidence of HAS had they not received CRA by year, overall**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Actual housing cost ratio (%) (with CRA)	19.8	17.1	17.5	16.1	18.7	16.6	16.7	19.8	17.1	19.8	21.3
Actual incidence of HAS	12%	8%	8%	7%	7%	7%	16%	7%	9%	12%	7%
Hypothetical housing cost ratio (%) (without CRA)	35.7	31.0	31.7	28.9	33.1	29.4	29.8	34.4	29.2	33.3	36.0
Hypothetical incidence of HAS	53%	43%	43%	42%	42%	41%	42%	38%	30%	40%	39%
% point difference in mean HCR due to CRA	15.9	13.9	14.2	12.8	14.4	12.8	13.1	14.6	12.1	13.5	14.7
% point difference in incidence of HAS due to CRA	41%	35%	35%	35%	35%	34%	36%	31%	21%	28%	32%

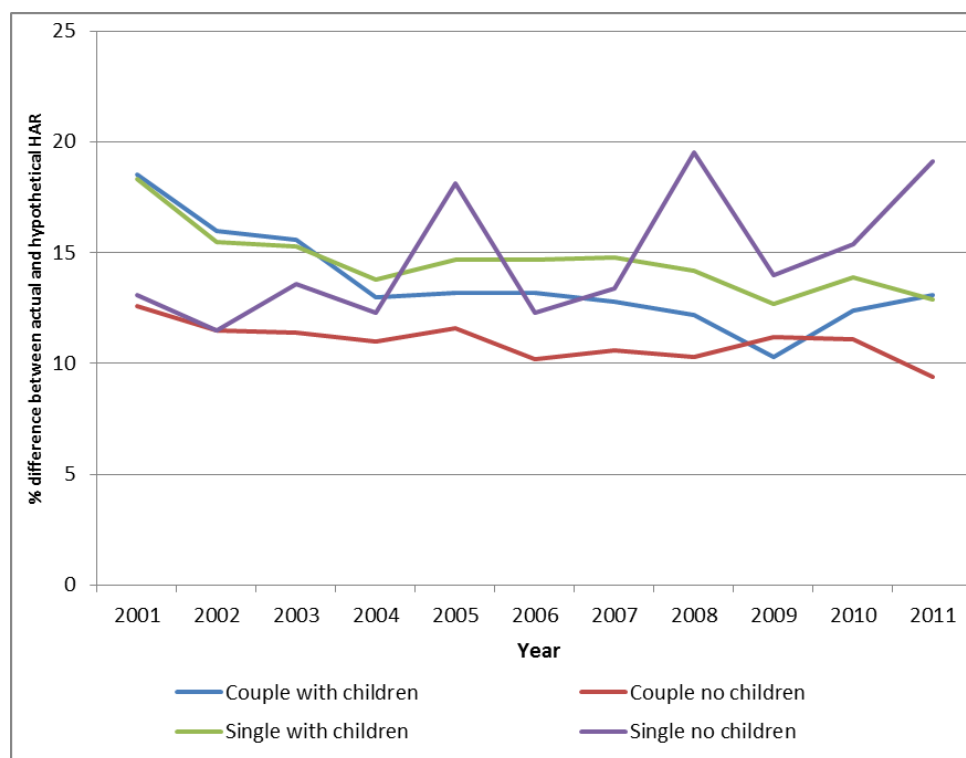
Note: Sample comprises an unbalanced panel of 859 persons who received CRA in at least one wave and compares their mean actual HCR (housing cost while receiving CRA) with their hypothetical HCR (what their housing costs would have been had they not received CRA) in each wave. Brackets report proportion of CRA recipients in actual and hypothetical HAS in each year.

The first two rows of Table 15 list actual housing cost ratios and the incidence of HAS<sup>30</sup> among eligible private rental tenants, while the following two rows list their hypothetical counterparts. The penultimate row presents the percentage point difference in housing cost ratios under the two scenarios, and a last row gives us the percentage point difference in rates of housing affordability stress. The typical housing cost ratio of clients hovers just above and below 20 per cent over the 2001–11 timeframe, but is always well below the 30 per cent threshold, and so less than 1 in 10 typically suffer affordability stress. Actual housing cost burdens and rates of stress fall during the early years of this decade-long timeframe, but there is evidence of deteriorating housing affordability in the aftermath of the GFC.

The hypothetical estimates suggest that if assistance were to be withdrawn, housing cost burdens would increase for most clients. At the beginning of the study timeframe (2001) clients' average affordability ratios are estimated to be nearly 16 percentage points higher if assistance were withdrawn, and rates of stress would soar from 12 per cent to 53 per cent. While rent assistance continues to offer significant protection in later years, it seems to tail off during the second half of the timeframe. Housing cost ratios without rent assistance are 40 per cent or lower from 2008 onwards, as compared to over 40 per cent in earlier years; as actual ratios are somewhat higher in the later years this would seem to suggest lower effective levels of assistance, as well as poorer targeting of assistance. CRA also appears to become less effective in lowering the incidence of housing stress.

The difference between actual and hypothetical housing cost ratios differs by household type (see Figure 12 below); childless couples' differentials are typically smaller, while the gap is always larger for single parents. There is again evidence of a narrowing of the gap between actual and hypothetical affordability ratios for all household types other than singles. We also conducted these simulations for clients according to whether they resided in major cities, inner regional areas and outer regional and remote areas, but found no systematic tendency for CRA to be more or less effective in any of these geographical classifications.

**Figure 12: The effectiveness of CRA by household type 2001–11**



<sup>30</sup> Exploratory analysis not included here indicates that the abrupt jump in HAS in 2007 and 2010 was caused by the equalisation procedure.

## 5 POLICY IMPLICATIONS AND NEXT STEPS

Our panel data set allows us to track the housing affordability profile of Australians as they age. We find over the decade 2001–11 that while housing cost ratios and the incidence of housing stress decline among home buyers as they grow older, these same measures remain stubbornly high as private rental tenants age. Longer term renters are then more vulnerable to lengthy spells of housing stress, and are more likely to cycle in and out of stress; those paying off mortgages and achieving mainstream home ownership are protected from the vagaries of interest rates and rents, and most comfortably maintain affordable housing. This is critical to retirement incomes policy in old age as it allows Australian governments to roll out age pensions that are lower than would otherwise prove necessary in order to fund a satisfactory standard of living. But higher real house prices, growing insecurity in labour markets and increasing indebtedness are a threat to this pillar supporting retirement incomes policy (see also Yates & Bradbury 2010). Home ownership rates are in long run decline across all age groups other than the over 65 years of age group (see Table 3), and growing numbers of owner occupiers are leveraging debt against their homes later in their lives (see Figures 1. and 2).

Our empirical examination of the persistence of housing affordability indicates that most households' experience is temporary. However, the dynamics of housing affordability differ across household types and this has important policy implications. Younger couples with children and on moderate to low incomes find it more difficult to maintain affordable housing, and are less likely to escape unaffordable housing circumstances.<sup>31</sup> This group are striving to 'make ends meet', and are particularly vulnerable if living in private rental housing. Parallel research that we have conducted also suggests that if they are home owners, these young families commonly dip into their housing equity by adding to their mortgages in order to meet pressing spending needs (e.g. school fees, medical expenses), or buffer income shocks (Wood et al. 2013). The cuts to Family Tax Benefit (FTB) in the recent 2014 budget will expose this group to an even greater risk of housing stress. Because the income free area thresholds of allowance payments for working age individuals, students and parents<sup>32</sup> are to be fixed for three years, and the maximum rates will also be fixed for two years, eligible families' *real incomes* will fall all else equal.<sup>33</sup> But equally importantly, for families in private rental housing, the CRA taper will apply at lower levels of *real income* than would have been the case under indexation. This is because CRA is only withdrawn once entitlement to the underlying income support payment (that is a condition of eligibility) is lost. It will therefore offer families less protection, a conclusion that is especially significant in view of our finding that CRA provided a very effective safeguard to *eligible clients* over the decade 2001–11. The program's

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<sup>31</sup> These remarks might also apply to single parents, but they were not subjected to a detailed consideration in this first stage of the research project. In the modelling exercises to be conducted in the second stage it will be easier to analyse a fuller range of personal characteristics that will include single parent status.

<sup>32</sup> Income-free area thresholds define the levels of assessable income at which income support payments begin to be withdrawn. This three-year freeze on income-free thresholds will affect Newstart Allowance, Widow Allowance, Sickness Allowance, Partner Allowance, Parenting Payment Partnered, Parenting Payment Single, Child Care Benefit, Youth Allowance, Austudy and Abstudy. For more details, refer to <http://www.humanservices.gov.au/corporate/publications-and-resources/budget/1415/measures/families/58-000806>.

<sup>33</sup> There are some other changes to FTB that particularly impact single parents and large families. From 1 July 2015, families whose youngest child is aged six or over will no longer be entitled to [Family Tax Benefit](#) Part B. However, a new \$750 yearly allowance will be available to single parent families in receipt of [Family Tax Benefit](#) Part A. It will be paid as an additional component of Family Tax Benefit Part A and each child in the family aged between six and 12 years of age is entitled to the \$750 allowance. Finally, families with three children will no longer receive the large family supplement. For details see: <http://www.humanservices.gov.au/corporate/publications-and-resources/budget/1415/measures/>.

effectiveness as a defence against affordability stress seems to have tailed off toward the end of this timeframe; the changes to FTB in the 2014 budget are likely to accelerate this trend.<sup>34</sup>

The role of rising housing costs and falling income in precipitating transitions out of affordable housing can also have important ramifications for policy. If sharp reductions in income are the main cause (while the housing costs of these people are stable), then labour market factors and other causes of sharp drops in income (e.g. serious accident) are driving these shifts, and income support programs (e.g. Newstart allowance, Disability Support Pension, and so on) are insufficient to adequately protect households at risk of falling into unaffordable housing. On the other hand, a finding that housing costs are the more important cause, suggests that housing market factors (e.g. rising rents, increasing interest rates) are driving the shifts, and housing assistance programs linking subsidy to housing costs burdens (e.g. CRA or concessional rents for public housing tenants<sup>35</sup>) are ineffective as a buffer preventing those at risk from sliding into unaffordable housing circumstances. Our findings suggest that housing cost and income changes appear to be of equal importance in precipitating transitions from affordable into unaffordable housing. But income and the drivers of those changes in income are primarily responsible for moves out of unaffordable and into affordable housing. One of the more important drivers is likely to be labour market participation. This suggests that labour market policies (e.g. training programs, work incentive measures) could prove effective in lifting Australians out of unaffordable housing circumstances provided they succeed in raising employment participation and hence disposable incomes.

Those cycling in and out of affordable housing are a group deserving particular attention as their predicament is clearly of more concern as compared to those permanently evading housing affordability stress. They seem to find it more difficult to climb out of unaffordable housing in the first place; and if and when they do evade unaffordable housing they are more likely to slip back into unaffordable housing than those with no previous experience of housing stress. The experience of stress among those cycling in and out appears to leave an imprint that makes it increasingly difficult to escape housing stress in the future. The source of this 'scarring' was investigated using descriptive statistics. These analyses find that families are more prominent among those occupying insecure footholds on the margins of affordable housing, particularly if mental health issues are evident. Furthermore, the housing situation of those precariously perched on the fringes of affordable housing does appear to be mirrored in similarly insecure labour market positions. The second half of the project will probe this issue more carefully using robust modelling techniques that are capable of uncovering casual links. It will model transitions across the margins of affordable housing, both falls into unaffordable housing, as well as escapes from unaffordable housing circumstances. The use of multivariate techniques permits an examination of the relationship between these transitions and housing and labour market factors, while controlling for personal characteristics. The findings with respect to these personal characteristics will also be of interest in their own right, because they will potentially identify socio-economic and demographic characteristics that make transitions in different directions across the margins of affordable housing markets more or less likely.

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<sup>34</sup> These changes to FTB and their implications for housing affordability are an important area for further research. This point further illustrates the importance of regular updates to a 'national housing budget' that shows how changes to the plethora of government allowances and pensions impact on those prone to housing affordability stress.

<sup>35</sup> While concessional rents are typically 25 per cent of tenants' assessable incomes, state housing authorities apply different rules in deeming assessable income. It means that rents can exceed 30 per cent of *disposable income* because the authority sets assessed income at higher levels.



## REFERENCES

- Australian Bureau of Statistics (ABS) 1997, *Survey of income and housing costs, Australia: user guide*, cat. no. 6553.0, Australian Bureau of Statistics, Canberra.
- Bentley, R, Baker, E, Mason, K, Subramanian, S V & Kavanagh, A M 2011, 'Association between housing affordability and mental health: a longitudinal analysis of a nationally representative household survey in Australia', *American Journal of Epidemiology*, vol. 174, no. 7, pp.753–60.
- Commonwealth of Australia 2014, *Budget 2014–2015: Budget measures*, Budget paper no. 2, available at: [http://budget.gov.au/2014-15/content/bp2/download/BP2\\_consolidated.pdf](http://budget.gov.au/2014-15/content/bp2/download/BP2_consolidated.pdf)
- Dalton, T & Ong, R 2007, 'Welfare to work in Australia: disability income support, housing affordability and employment incentives', *European Journal of Housing Policy*, vol. 7, no. 3, pp.275–97.
- Department of Environment, Sustainability, Water, Population and Communities 2011, *Housing affordability fund*, available at: <http://www.environment.gov.au/housing/haf/index.html>
- Department of Planning & Community Development 2008, *Melbourne 2030: a planning update—Melbourne @ 5 million*, Victorian Department of Planning & Community Development, Melbourne. Available at: <http://www.dpcd.vic.gov.au/planning/plansandpolicies/planningformelbourne/planninghistory/melbourne@5million>
- Department of Social Services 2014, *National rental affordability scheme*, available at: <http://www.dss.gov.au/our-responsibilities/housing-support/programs-services/national-rental-affordability-scheme>
- Engeland, J, Figueroa, R, Rea, W & Yuen, J 2008, *The dynamics of housing affordability*, Income Research Paper Series, Statistics Canada, Ottawa.
- Freebairn, J 2010, 'State taxes on housing in Australia', in M Stewart (ed.), *Housing and tax policy*, Australian Tax Research Foundation, Melbourne, pp. 203–18.
- Green, R K 1996, 'Should the stagnant homeownership rate be a source of concern?', *Regional Science and Urban Economics*, vol. 26, pp.337–68.
- Kiefer N M 1988, 'Economic duration data and hazard functions', *Journal of Economic Literature*, vol.XXXVI, pp.646–79.
- Marks, G N & Sedgwick, S 2008, 'Is there a housing crisis? The incidence and persistence of housing stress 2001–2006', *Australian Economic Review*, vol. 41, no. 2, pp.215–21.
- Mason, K E, Baker, E, Blakely, T & Bentley, R J 2013, 'Housing affordability and mental health: Does the relationship differ for renters and home purchasers?', *Social Science & Medicine*, pp.91–97.
- Productivity Commission (2014), *Report on Government Services 2014*, Productivity Commission, Canberra.
- Quigley, J M & Raphael, S 2004, 'Is housing unaffordable? Why isn't it more affordable?', *Journal of Economic Perspectives*, vol. 18, no. 1, pp.191–214.
- Rowley, S & Ong, R 2012, *Housing affordability, housing stress and household wellbeing in Australia*, Final Report no. 192, Australian Housing and Urban Research Institute, Melbourne.
- Rowley, S, Ong, R & Haffner, M (forthcoming), Bridging the gap between housing stress and financial stress: the case of Australia, Paper accepted for publication by *Housing Studies*.

- Singer, J D & Willett, J B (2003), *Applied Longitudinal Data Analysis: Modelling Change and Event Occurrence*
- Stimson, R J, Stough, R R & Roberts, B 2002, *Regional economic development: analysis and planning strategy*, Springer, Berlin Heidelberg, New York.
- Victorian Government 2010, *Delivering Melbourne's newest sustainable communities*, Victorian Department of Planning and Community Development, Melbourne, available at: <http://www.vic.gov.au/planningmelbourne>
- Western Australia Social Housing Taskforce Report 2009, *More than a roof and four walls*, available at: [http://www.housing.wa.gov.au/HousingDocuments/social\\_housing\\_taskforce\\_report\\_final.pdf](http://www.housing.wa.gov.au/HousingDocuments/social_housing_taskforce_report_final.pdf)
- Wood, G & Ong, R 2008, *Redesigning AHURI's Australian housing market microsimulation model, Report*, November, Australian Housing and Urban Research Institute, Melbourne.
- Wood, G & Ong, R 2009, *The dynamics of housing affordability: movements in and out of housing affordability stress 2001–2006*, Final Report no. 133, Australian Housing and Urban Research Institute, Melbourne.
- 2011, Factors shaping the dynamics of housing affordability in Australia 2001–06, *Housing Studies*, vol. 26, nos. 7–8, pp.1105–27.
- Wood, G, Parkinson, S, Ong, R, Searle, B A & Smith, S J. 2013, Motivations for equity borrowing: a welfare switching effect, *Urban Studies*, vol. 50, no. 12, pp.2588–607.
- Wood, G, Smith, S, Ong, R & Cigdem, M 2013, *The edges of home ownership*, Australian Housing and Urban Research Institute Final Report , no. 216.
- Wood, G, Watson, R & Flatau, P 2006, 'Low income housing tax credit programme impacts on housing affordability in Australia: microsimulation model estimates', *Housing Studies*, vol. 21, no. 3, pp.361–80.
- Yates, J & Bradbury, B 2010, 'Home ownership as a (crumbling) fourth pillar of social insurance in Australia', *Journal of Housing and the Built Environment*, vol. 25, pp.193–211.
- Yates, J & Gabriel, M 2006, *Housing affordability in Australia, National Research Venture 3: Housing affordability for lower income Australians*, Research Paper 3, Australian Housing and Urban Research Institute, Melbourne.

## APPENDICES

### Appendix 1: Tables reporting housing affordability outcomes under the 30 rule

Table A1: Housing affordability as housing careers unfold for persons in age ranges 15–34, 35–54 and 55 and over at beginning of data range

	Median housing cost ratio (%)			Incidence of housing stress (%)		
	15–34	35–54	55 and over	15–34	35–54	55 and over
2001	15.1	10.6	0.0	12.3	11.5	1.5
2002	13.0	8.0	0.0	8.0	5.5	0.9
2003	14.1	8.3	0.0	8.2	5.7	1.0
2004	15.3	7.9	0.0	10.3	6.9	1.1
2005	15.8	7.8	0.0	11.6	7.3	0.8
2006	16.1	7.9	0.0	12.9	7.6	1.1
2007	16.8	7.3	0.0	14.5	7.9	0.8
2008	17.9	7.3	0.0	17.5	8.0	1.5
2009	15.3	6.2	0.0	12.3	5.2	1.9
2010	16.1	5.5	0.0	16.3	6.9	1.6
2011	17.1	4.1	0.0	15.8	6.2	1.1

Table A2: Rates of *escape* from a spell of housing stress

Year of spell (t)	Number in housing stress at start of year (T)	Number who escaped housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	2,328	0	178		1.000
1	2,150	1,390	97	0.647	0.353
2	663	326	25	0.492	0.180
3	312	112	24	0.359	0.115
4	176	59	13	0.335	0.077
5	104	25	13	0.240	0.058
6	66	18	6	0.273	0.042
7	42	13	5	0.310	0.029
8	24	12	6	0.500	0.015
9	6	0	3	0.000	0.015
10	3	2	1	0.667	0.005

**Table A3: Duration of spells in affordable housing**

Year of spell (t)	Number in affordable housing at start of year (T)	Number who fell into housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	6,616	0	388		1.000
1	6,387	418	179	0.065	0.935
2	5,818	277	220	0.048	0.890
3	5,348	220	116	0.041	0.853
4	5,012	226	103	0.045	0.815
5	4,683	158	100	0.034	0.787
6	4,425	131	90	0.030	0.764
7	4,204	159	69	0.038	0.735
8	3,976	93	83	0.023	0.718
9	3,800	118	161	0.031	0.696
10	3,521	62	3,459	0.018	0.684

**Table A4: Survival in affordable housing, first spell after escape from housing stress**

Year of spell (t)	Number in affordable housing at start of year (T)	Number who fell into housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	1,955	0	208		1.000
1	1,747	297	140	0.170	0.830
2	1,310	169	183	0.129	0.723
3	958	72	111	0.075	0.669
4	775	82	97	0.106	0.598
5	596	41	95	0.069	0.557
6	460	25	88	0.054	0.526
7	347	24	63	0.069	0.490
8	260	23	77	0.088	0.447
9	160	2	158	0.013	0.441

**Table A5: Characteristics of persons who permanently escape housing stress compared with persons with two or more spells in unaffordable housing**

**a. Demographic and marital status**

	<b>Variables</b>	<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Demographic	Male	484	247
	Female	536	302
	Age	43	41
	Number of children	1.2	1.8
	Average household size (income unit)	1.8	2.0
Marital status	Married	67%	74%
	Defacto	12%	10%
	Separated	4%	4%
	Divorced	6%	4%
	Widowed	2%	1%
	Single	9%	6%
	<i>Total</i>	<i>100%</i>	<i>100%</i>

**b. Human capital and income unit type**

	<b>Variables</b>	<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Human capital <sup>36</sup>	Employed full-time	53%	53%
	Employed part-time	23%	22%
	Unemployed	2%	3%
	NILF	21%	23%
	<i>Total</i>	<i>100%</i>	<i>100%</i>
	No post-year 12 qualification	37%	36%
	% of time employed on a permanent basis	46%	41%
	Whether underemployed	6%	6%
Income unit type	Couples with children	54%	67%
	Couples only	25%	17%
	Sole parents	5%	6%
	Singles no children	17%	10%
	<i>Total</i>	<i>100%</i>	<i>100%</i>

<sup>36</sup> Here we report the percentage of time that a person is employed full-time, part-time, etc.

### c. Housing and geography

<b>Variables</b>		<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Housing	Average housing cost (income unit)	12,684.9	17,093.9
	Average CRA received (income unit)	257.8	350.4
Tenure type	Outright owner	10%	5%
	Owner with mortgage	60%	66%
	Private renter	24%	24%
	Public renter	4%	3%
	Rent free	3%	2%
	<i>Total</i>	<i>100%</i>	<i>100%</i>
Major cities	Major city	66%	66%
	Inner regional	24%	25%
	Outer regional	8%	8%
	Remote	1%	1%
	Very remote	0.4%	0%
	<i>Total</i>	<i>100%</i>	<i>100%</i>
Mobility	% of person-periods in which the person moved	16%	17%

### d. Health, income and satisfaction

<b>Variables</b>		<b>Persons who permanently leave HAS over sample frame</b>	<b>Persons who churn in and out of HAS over sample frame two or more times</b>
Health	Long-term health condition (% of time persons answered yes)	20%	18%
	Mental health [0–100 scale]	69.5	67.5
	Life satisfaction [0–10 scale]	7.8	7.6
Income	Average disposable income (income unit)	64,389.4	63,857.8

**Table A6: Shift-share analysis on persons transitioning from (1) affordable housing (in period  $t$ ) to unaffordable housing (in period  $t+1$ ); and (2) unaffordable housing (in period  $t$ ) to affordable housing (in period  $t+1$ ) between years 2001–11**

	Average % point change in HCR between period $t$ and $t+1$ ; $HAR_{t+1} - HAR_t$	Average % point change in HCR due to changes in income between period $t$ and $t+1$ ; $HAR_{t+1} - \overline{HAR}_{t+1}$	Average % point change in HCR due to changes in housing cost between period $t$ and $t+1$ ; $\overline{HAR}_{t+1} - HAR_t$
Affordable to unaffordable	17.5	4.0	13.5
Unaffordable to affordable	-27.8	-14.3	-13.5

Note: Dataset is trimmed to remove extreme values at the top 1 percentile of the HCR distribution.

**Table A7: Mean HCR and incidence of HAS for CRA recipients while receiving CRA compared with their mean hypothetical HCR and hypothetical incidence of HAS had they not received CRA by year, overall**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Actual housing cost ratio (%) (with CRA)	19.8	17.1	17.5	16.1	18.7	16.6	16.7	19.8	17.1	19.8	21.3
Actual incidence of HAS	42 (12%)	26 (8%)	28 (8%)	27 (7%)	31 (7%)	28 (8%)	19 (6%)	27 (8%)	31 (9%)	40 (12%)	27 (8%)
Hypothetical housing cost ratio (%) (without CRA)	35.7	31.0	31.7	28.9	33.1	29.4	29.8	34.4	29.2	33.3	36.0
Hypothetical incidence of HAS	191 (56%)	148 (43%)	145 (44%)	181 (44%)	188 (45%)	151 (42%)	136 (43%)	132 (40%)	105 (31%)	136 (40%)	142 (41%)
% point difference in mean HCR due to CRA	15.9	13.9	14.2	12.8	14.4	12.8	13.1	14.6	12.1	13.5	14.7
% point difference in incidence of HAS due to CRA	44%	35%	36%	37%	38%	34%	37%	32%	22%	28%	33%

Note: Sample comprises unbalanced panel of 859 persons who received CRA in at least one wave and compares their mean actual HCR (housing cost while receiving CRA) with their hypothetical HCR (what their housing costs would have been had they not received CRA) in each wave. Brackets report proportion of CRA recipients in actual and hypothetical HAS in each year.



## Appendix 2: Attrition analysis

As in the previous report, we examine the sensitivity of our measurements to attrition by analysing a shorter panel spanning from Waves 1–6 and constructing life tables on using two different samples: the first sample consists of individuals who are continuously present in the panel to Wave 1+j (where  $j = 1, 2, \dots 6$ ) and includes persons who subsequently refuse an interview or could not be tracked down; the second panel, on the other hand, only includes persons who are present in all 11 waves, thus excluding persons who attrit from Waves 7 onwards. This leaves us with a total of 4352 individuals in the first sample and 3787 individuals in the second sample. Appendix Table A8 presents descriptive analyses using two samples. If our findings are unaffected when alternatively including and omitting persons subsequently attriting during Waves 7–11, it lends some credence to our view that attrition does not matter. This is because such findings could only occur if those continuing in the sample remain broadly representative of Wave 1 respondents.

The descriptive analyses begins by examining life tables that estimate hazard rates and survival rates as episodes of housing affordability stress unfold for the two alternative samples (see Table A8 below). They indicate that the hazard and survival rate profiles essentially remain the same across the two samples, hence abating concerns regarding any potential bias that might arise due to attrition. In both samples, the hazard rate in Year 1 is the highest at around 63 per cent, before dropping steeply to about 44 per cent in Year 2 and ending at a low of just over 20 per cent in Year 5. Similarly, there is a steep drop in the survival rate from 100 per cent to over 36 per cent between Years 0 and 1, and we find that less than 7 per cent of persons still in housing stress at the beginning of Year 5 would remain in housing stress by the end of Year 5.

The life tables that report survival rates in affordable housing are equally reassuring (see Table A9 below). The survival rates across the two sample are almost exactly the same, falling gradually to 80 per cent by the end of the study period.

**Table A8: Rates of ‘escape’ from a spell of housing stress, 2001–06**

**a. Sample of persons who are interviewed up till Wave 6, including those who attrit during Waves 7–11**

Year of spell (t)	Number in housing stress at start of year (T)	Number who fell out of housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	1,922	0	305		1.000
1	1,617	1,031	129	0.638	0.362
2	457	201	47	0.440	0.203
3	209	83	26	0.397	0.122
4	100	31	22	0.310	0.084
5	47	10	37	0.213	0.066

**b. Sample of persons who are interviewed up to Wave 6, excluding those who attrit during Waves 7–11**

Year of spell (t)	Number in housing stress at start of year (T)	Number who fell out of housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	1,668	0	260		1.000
1	1,408	890	117	0.632	0.368
2	401	174	42	0.434	0.208
3	185	74	26	0.400	0.125
4	85	24	21	0.282	0.090
5	40	9	31	0.225	0.069

**Table A9: Duration of spells in affordable housing, 2001–06**

**a. Sample of persons who are interviewed up to Wave 6, including those who attrit during Waves 7–11**

Year of spell (t)	Number in affordable housing at start of year (T)	Number who fell into housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	8,090	0	315		1.000
1	7,775	455	225	0.059	0.941
2	7,095	352	244	0.050	0.895
3	6,499	250	177	0.038	0.860
4	6,072	228	192	0.038	0.828
5	5,652	166	5,486	0.029	0.804

**b. Sample of persons who are interviewed up to Wave 6, excluding those who attrit during Waves 7–11**

Year of spell (t)	Number in affordable housing at start of year (T)	Number who fell into housing stress during the year (N)	Number censored at the end of year	Hazard rate $H_t = N_t / T_t$	Survival rate $S_t = S_{t-1}(1-H_t)$
0	6,983	0	274		1.000
1	6,709	395	184	0.059	0.941
2	6,130	305	219	0.050	0.894
3	5,606	215	151	0.038	0.860
4	5,240	200	160	0.038	0.827
5	4,880	143	4,737	0.029	0.803

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