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Productivity Commission

Housing Assistance and Employment in Australia

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The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).

Contents

This Commission paper is in two volumes. Volume 1 contains the chapters, and summary and policy observations of the Commission. **This volume 2 contains detailed background papers that the paper draws on.**

Volume 2: Background Papers

Abbreviations and explanations

Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ASGC	Australian standard geographical classification
BP	Background paper
CH	Community housing
COAG	Council of Australian Governments
CPI	Consumer price index
CRA	Commonwealth rent assistance
CSHA	Commonwealth State Housing Agreement
DCSI	Department for Communities and Social Inclusion
DES	Disability Employment Services
DHS	Department of Human Services
DIPR	Disposable income post rent
DPMC	Department of the Prime Minister and Cabinet
DSP	Disability Support Pension
DSS	Department of Social Services
DVA	Department of Veterans' Affairs
EMTR	Effective marginal tax rate
FTB	Family Tax Benefit
GST	Goods and services tax
HA	Housing assistance
HILDA	Household, Income and Labour Dynamics in Australia Survey
IC	Industry Commission
ICH	Indigenous community housing
ISP	Income support payment
JSA	Job Services Australia

MTR	Marginal tax rate
NAHA	National Affordable Housing Agreement
NHS	National Housing Strategy
NPA	National Partnership Agreement
NRAS	National Rental Affordability Scheme
NRSCH	National Regulatory System for Community Housing
NSW	New South Wales
NT	Northern Territory
NWS	Newstart Allowance
PC	Productivity Commission
PCTT	Productivity Commission tax and transfer model
PP	Parenting Payment
PPP	Parenting Payment Partnered
PPS	Parenting Payment Single
SA	South Australia
SA2	Statistical Area 2
SAAP	Supported Accommodation and Assistance Program
SIHC	Survey of Income and Housing Costs
SH	Social housing
SHA	State Housing Authority
SHI	Social Housing Initiative
SOMIH	State owned and managed Indigenous housing
SPP	Specific Purpose Payment
WA	Western Australia
YA	Youth Allowance

Explanations

Billion	The convention used for a billion is a thousand million (10^9).

Glossary

Community housing	Rental housing provided for low to moderate income and/or special needs households, managed by community-based organisations that have received a capital or recurrent subsidy from government.
CRA	Commonwealth Rent Assistance. An Australian Government payment to income support recipients or people who receive more than the base rate of the Family Tax Benefit Part A, and who rent in the private market.
EMTR	Effective marginal tax rate. A measure of the financial incentive for an employed income support recipient to work more. The EMTR indicates the proportion of an extra dollar of gross private income that is lost from disposable income through income tax and the reduction of benefits.
Household	One or more persons, at least one of whom is at least 15 years of age, usually resident in the same private dwelling. Some households contain more than one family.
Income unit	Income units are formed either by couples or singles, with or without dependent children, living within a household. Income units differ from families in that related, non-dependent individuals form separate income units rather than being attached to the family nucleus.
ICH	Indigenous community housing: dwellings owned or leased and managed by ICH organisations and community councils in major cities, regional areas and remote areas.
Private rent assistance	Private rent assistance is provided to low-income households experiencing difficulty in securing or maintaining private rental accommodation either: • directly by states and territories, or • by not-for-profit organisations funded by state or territory governments. It assists households to meet rent payments, relocation costs and the costs of bonds; advice or information services may also be offered.

Public housing	Dwellings owned (or leased from private landlords) and managed by State and Territory housing authorities to provide affordable rental accommodation.
Replacement rate	A measure of the financial incentive for an income support recipient to enter work. The replacement rate is measured by the ratio of disposable income while not working to an estimate of the disposable income that an individual would receive if they worked.
SA1	Statistical area level 1. The second smallest geographical area as defined by the Australian Statistical Geography Standard. Each SA1 has an average population of 400 people.
SA2	Statistical area level 2. A medium sized geographical area that represents an aggregation of SA1 regions. Each SA2 has an average population of roughly 10,000 people.
Social housing	Public and community housing.
SOMIH	State owned and managed Indigenous housing: dwellings owned and managed by State housing authorities that are allocated only to Indigenous households.

Background paper 1
Institutional and policy arrangements

In the context of this project, housing assistance includes the activities of government in three related areas. First, State Governments are involved directly in the provision of public housing. Second, the Australian and State Governments provide funding to community housing managed by the not-for-profit sector.[1] Together these make up activities that support social housing, and they affect the supply side of the housing market.[2] Third, on the demand side, the Australian Government provides Commonwealth Rent Assistance (CRA) to subsidise the rent paid by low-income households.

Over time, the policy focus has shifted from the direct provision of public housing, to demand side subsidies, in the form of CRA, as well as increased support for community housing. As a result, CRA costs, which reached $3.9 billion in 2013-14, account for the largest share of the Australian Government's expenditure on housing assistance.[3] The number of households receiving CRA increased by 20 per cent between 2010 and 2014 to 1.3 million, while the number of households in social housing rose by about 4 per cent to 384 000. This increase was driven entirely by community housing — the number of households in public housing fell by 2.5 per cent (SCRGSP 2015).

This background paper examines the institutional and policy arrangements surrounding housing assistance. It defines each type of assistance (section 1), examines its objectives (section 2), describes the current housing agreements in place (section 3) and discusses relevant policies (section 4). Annex 1 to this background paper surveys the history of housing assistance in Australia.

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1 The term 'States' is used throughout the paper as shorthand for States and Territories.

2 Social housing also encompasses state owned and managed Indigenous housing (SOMIH), and Indigenous community housing (ICH). SOMIH and ICH form relatively small proportions of the social housing sector, with about 10 000 SOMIH dwellings (3 per cent of the social housing stock) in 2014 and 15 400 ICH dwellings (4.5 per cent of the social housing stock) in 2013 (latest available data) (SCRGSP 2015). Due to data quality issues, figures for SOMIH and ICH are not separately included in this background paper. Chapter 1 includes figures for SOMIH and ICH since 2004.

3 In comparison, the total Australian Government expenditure related to the National Affordable Housing Agreement (which includes funding for public housing) was nearly $2 billion in 2013-14 (SCRGSP 2015).

1 Scope of housing assistance

Social housing comprises both public housing and community housing.[4] Social housing has strict eligibility criteria and is generally allocated to people who have low incomes and face significant disadvantage. CRA is a rent subsidy paid directly to low-income renters in the private rental market and community housing (public housing tenants are not eligible). As indicated above, CRA supports a greater number of people and accounts for a larger amount of Australian Government expenditure than the provision of social housing,[5] although the average subsidy is lower.

Social housing

There are a variety of arrangements for the ownership and management of different types of social housing. Public housing dwellings are managed by state housing authorities (SHAs). They are often owned by SHAs, but can be leased from the private rental market under head-leasing arrangements (for example, Department of Housing NT 2013; Housing NSW 2014a).[6] Community housing is managed by not-for-profit organisations. These properties may either be leased from a State Government, the private rental market, or owned by the not-for-profit organisation. Partnerships also exist between community housing organisations, government and/or the private sector, with varying ownership arrangements. Service providers that have a small number of properties may partner with larger community housing organisations to reduce housing management responsibilities (Winterton 2013).

Public housing makes up the largest proportion of social housing, but community housing is becoming more common. Between 2010 and 2014 the number of tenantable public housing dwellings fell from 328 700 to 321 200, while the number of tenantable community housing dwellings grew from 42 900 to 69 000 (figure 1). The number of community housing providers fell from 931 to 737 over the same period, which mostly reflects changes in the reporting of community housing in Western Australia — the number of community housing providers reported in Western Australia was 29 in 2012, compared with 182 in 2011. To a lesser extent, the fall in the number of community housing providers also reflects amalgamations of organisations in the sector. In New South Wales, amalgamations were only partly offset by the entry of new organisations (NSWFHA 2014).

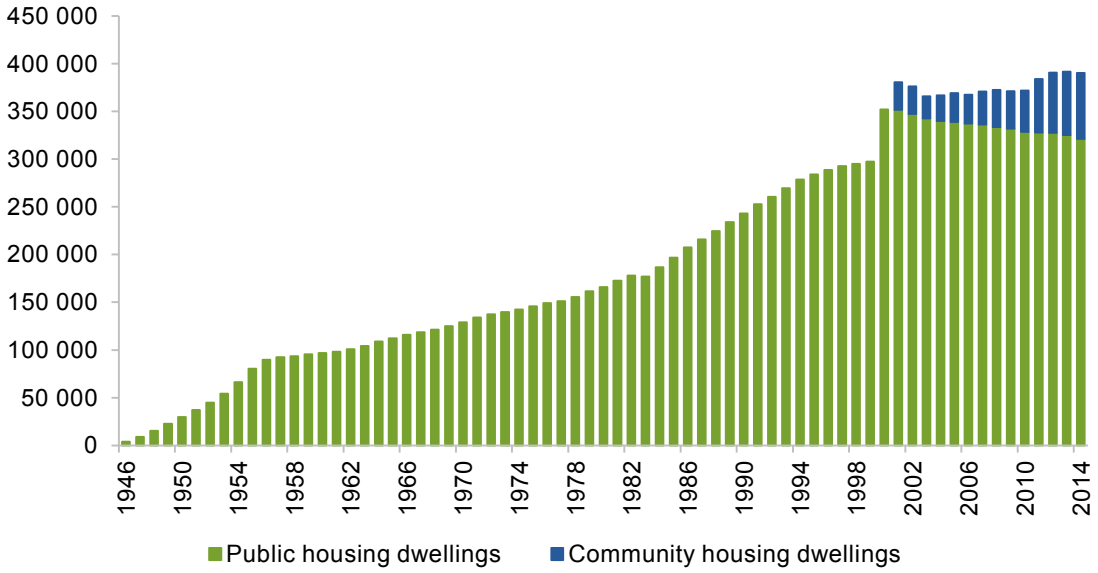
4 Unless otherwise stated, the term ‘community housing’ will be used in this paper to refer to social housing provided by community housing organisations.

5 Community housing tenants make up a small proportion of CRA recipients.

6 Head-leasing refers to the leasing of properties from the private rental market and then sub-leasing them to public housing tenants. Depending on the jurisdiction, head-leasing may be used as a short- or long-term measure to meet public housing demand. Generally, the use of head leasing is fairly limited and only represents a small proportion of the public housing stock.

Overall, the supply of social housing grew by about 4 per cent over the four years to 2014 (SCRGSP 2015) — less than the rate of population growth, which was about 6.5 per cent over the same period (ABS 2014).

Figure 1 **Social housing dwellings, 1946 to 2014[a,b,c,d,e]**

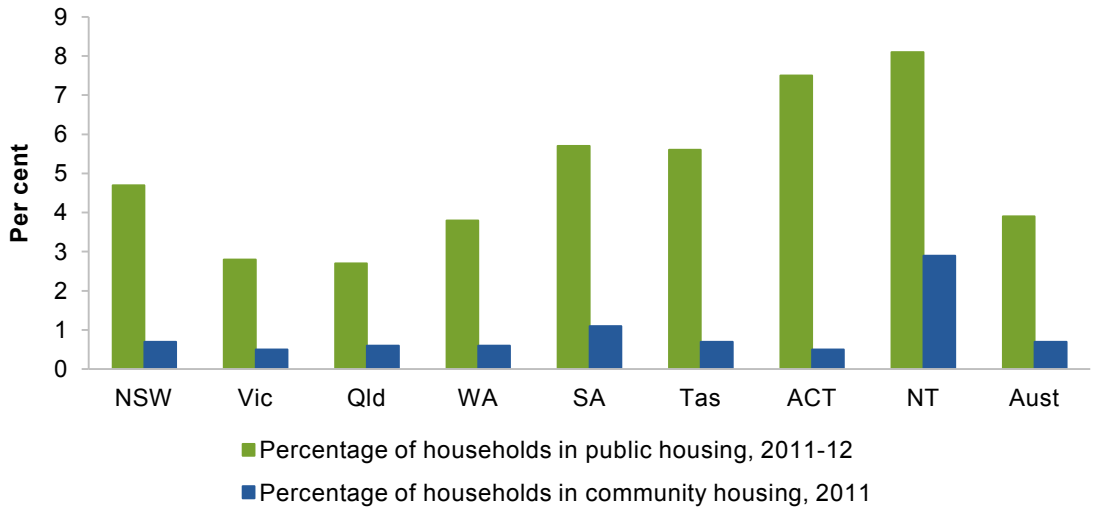


[a] There is a break in the series for public housing dwellings at 2000. Prior to 2000, public housing dwelling numbers are estimated using the data on public housing completions and sales (Troy 2012) presented in figure 6. (Missing data in a few years were imputed.) From 2000, public housing dwellings refer to 'total tenantable dwellings' (SCRCSSP 2000, 2002; SCRGSP 2006, 2010, 2015). [b] Prior to 2005, community housing dwellings refers to 'total tenantable dwellings' (SCRCSSP 2002; SCRGSP 2006). From 2005, community housing dwellings refer to 'total tenancy rental units by ASGC remoteness area' (SCRGSP 2010, 2015), which includes imputed figures for boarding house units with missing data. [c] State owned and managed Indigenous housing (SOMIH) and Indigenous community housing (ICH) are not separately included in this figure due to data quality issues and their relatively small sizes. Some jurisdictions report SOMIH as public housing and to this extent they are included in the figures for public housing. [d] Community housing dwelling figures may overstate actual social housing numbers because some jurisdictions include an unspecified number of National Rental Affordability Scheme properties (box 2) in community housing counts. [e] Community housing that is not provided under the CSHA or the NAHA is not included.

Sources: SCRCSSP (2000, table 15A.2, 2002, table 16A.1 and 16A.15); SCRGSP (2006, table 16A.1 and 16A.15, 2010, table 16A.1 and table 16A.25, 2015, table 17A.5 and table 17A.7); Troy (2012, table 3, table 5, table 7, table 9, table 11, table 12, table 15, table 17, table 18 and table 21).

In 2011-12, about 3.9 per cent of Australian households occupied public housing (figure 2). The community housing sector accommodated a smaller share of households, with 0.7 per cent residing in community housing in 2011. The Northern Territory had the largest proportion of households both in public housing and community housing. In comparison, Queensland had the lowest proportion of households in public housing, and Victoria and the ACT each had the lowest proportion in community housing.

Figure 2 **Proportion of households residing in social housing, by state**



Sources: ABS (2013); SCRGSP (2015).

Community housing organisations differ within and across jurisdictions in terms of size, structure, administration and housing types offered (PC 2010). There are many different models of community housing (box 1).

Box 1 **Models of community housing**

Models of community housing include the following types:

- *Housing associations* provide general property and tenancy management services and localised support services to tenants.
- *Housing cooperatives* are usually small organisations, wholly managed and maintained by tenants.
- *Growth providers* manage large portfolios of housing and have the capacity to undertake housing development activities.
- *Neighbourhood housing providers* manage small numbers of properties, which they own or lease from government.
- *Specialist providers* focus on housing particular tenant groups, such as the aged, homeless youth or people with disabilities. Some organisations are run by religious providers.
- *Joint ventures and housing partnerships* provide housing assistance in partnership with other organisations, such as charitable bodies, local government, private sector organisations or State Governments. Community housing organisations may also form partnerships with each other to maximise growth opportunities and share resources.

These types are not mutually exclusive. For example, housing associations tend to be growth providers, and housing cooperatives can be specialist providers.

Sources: CHFA (2014); CHFV (2010); Housing NSW (2013c); SCRGSP (2014); Tenants' Union of NSW (2012b).

In addition to social housing, some community housing organisations offer 'affordable housing'. Affordable housing has less stringent eligibility criteria than social housing, making it accessible to households earning higher incomes. Rent-setting arrangements also differ between affordable housing and social housing. Affordable housing rents are typically set as a proportion of market rent, while social housing rents are usually a proportion of household income (CHFA 2014). Throughout this background paper, the term 'affordable housing' refers to housing that is provided by community housing organisations with rent set as a proportion of market rent, rather than housing that is affordable in a general sense.

Many of the properties built under the National Rental Affordability Scheme (NRAS) (box 2) are owned or managed by the community housing sector (ACOSS 2014). These properties are better characterised as affordable housing rather than social housing (CHFA 2014).

Box 2 **National Rental Affordability Scheme**

The Australian Government introduced the National Rental Affordability Scheme (NRAS) in 2008 to address the shortage of affordable rental housing. It aimed to stimulate the construction of 50 000 properties by offering financial incentives to investors to build homes and rent them to tenants who meet household income thresholds. The rental rate must be at least 20 per cent below the market level.

Investors in the scheme receive annual incentives per dwelling for up to ten years from Australian and State Governments, with amounts indexed to the rents component of the consumer price index. The incentive amount for 2014-15 is $10 661. As of September 2014, roughly 38 500 properties had been either planned or completed.

In May 2014, it was announced that the fifth and last round of funding, for which applications closed in August 2013, would not proceed. Funding for incentives from earlier rounds was to return to the budget if uncontracted or not used within agreed timeframes. Funding for tenanted NRAS properties was not affected.

Sources: Australian Government (2013, 2014); DSS (2014d, 2014e).

Funding

The Australian Government provides State Governments with funds for the housing and homelessness sector through the National Affordable Housing Specific Purpose Payment (NAH SPP), which is part of the National Affordable Housing Agreement (NAHA) and its supporting agreements. States decide on funding allocations, and part of the NAH SPP goes towards public housing. SHAs also gain revenue from rental income and asset sales. In addition to covering recurrent operating costs, including administrative expenses, maintenance, rates and market rent paid, these funds are used to construct, redevelop and acquire public housing. Some jurisdictions have also attracted external finance through the formation of public–private partnerships. For example, the redevelopment of public housing in the Sydney suburb of Bonnyrigg in New South Wales incorporated private

finance in the provision of public and private dwellings, with the private dwellings to be sold to home buyers (Housing NSW 2013a). Victoria obtained private investment under similar arrangements for redevelopments in Kensington and Carlton (VAGO 2012).

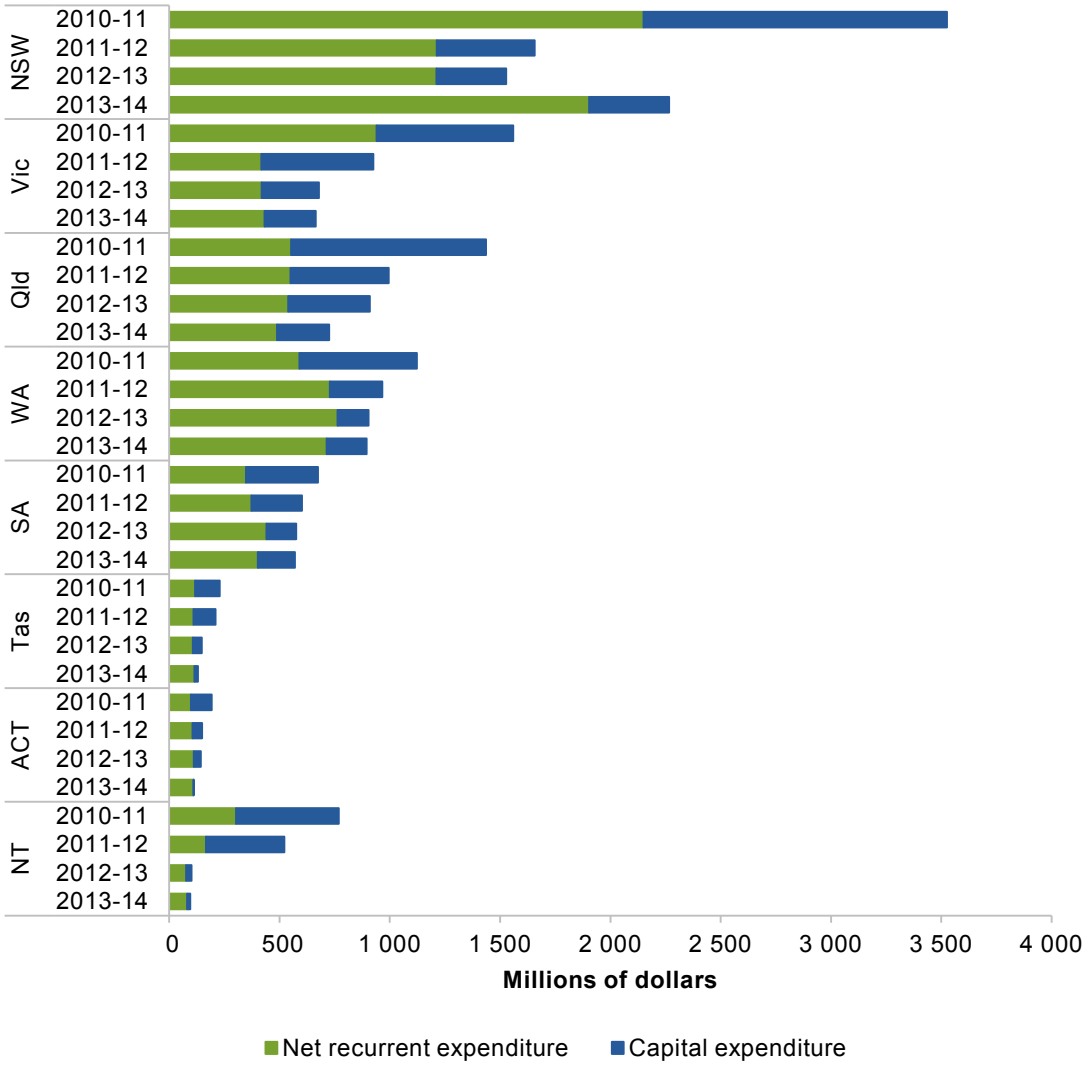
Most public housing tenants pay income-based rents that are below market rents, and the difference between the rent they pay and the market rent is a 'rental subsidy'. Nationally, the average weekly rental subsidy per subsidised household was $162 at 30 June 2014. The ACT had the largest average subsidy, at about $260 a week, while Tasmania had the lowest, at about $87 a week (SCRGSP 2015). The median weekly market rent for houses in Canberra was also higher in June 2013, at $480, compared with $310 in Hobart (APM 2013).

Although community housing organisations receive some government funding, including funding under the NAHA that is distributed through the States, there are also a number that are entirely self-funded (SCRGSP 2014). Like public housing, community housing organisations set rents as a percentage of tenants' income but, unlike public housing tenants, community housing tenants are often eligible for CRA. Community housing organisations typically charge tenants their CRA entitlement as part of rent, thus generating income in addition to what a SHA would raise from the same tenant (section 4). Community housing providers can also use properties that they own to leverage private finance to expand their housing stock. Partnership arrangements with the private sector can be used as an alternative source of funds as well.

Community housing providers can take advantage of a range of tax benefits and concessions that are not available to public housing (Pawson et al. 2013). For example, community housing organisations can benefit from GST concessions on the charitable supply of accommodation, where the rent charged is under 75 per cent of the market rent (ATO 2014a; CHFA 2014). In contrast, the provision of public housing is 'input-taxed', meaning that GST is not included in the rental charge, and credits cannot be claimed for any GST that is included in rental-related expenditures (ATO 2014b). Local governments can offer rate rebates to community housing providers, which reduce their operating costs compared with State Governments (Beer et al. 2014). Some community housing providers are also exempt from company tax, stamp duty, land tax and capital gains tax, which allows them to build housing at a lower cost (CHCWA 2013).

In 2013-14, state government expenditure on social housing was $5.4 billion, $4.2 billion of which was net recurrent expenditure and the remaining $1.2 billion of which was capital expenditure. New South Wales had the highest expenditure on social housing, reflecting their relatively large stock of social housing (figure 3). These figures include some funds from the Australian Government, which provided a total of $1.3 billion under the NAHA and a further $690 million under the NAHA supporting agreements in 2013-14 to improve housing and homelessness outcomes (SCRGSP 2015).

Figure 3 **State government real expenditure for social housing, 2010-11 to 2013-14[a]**

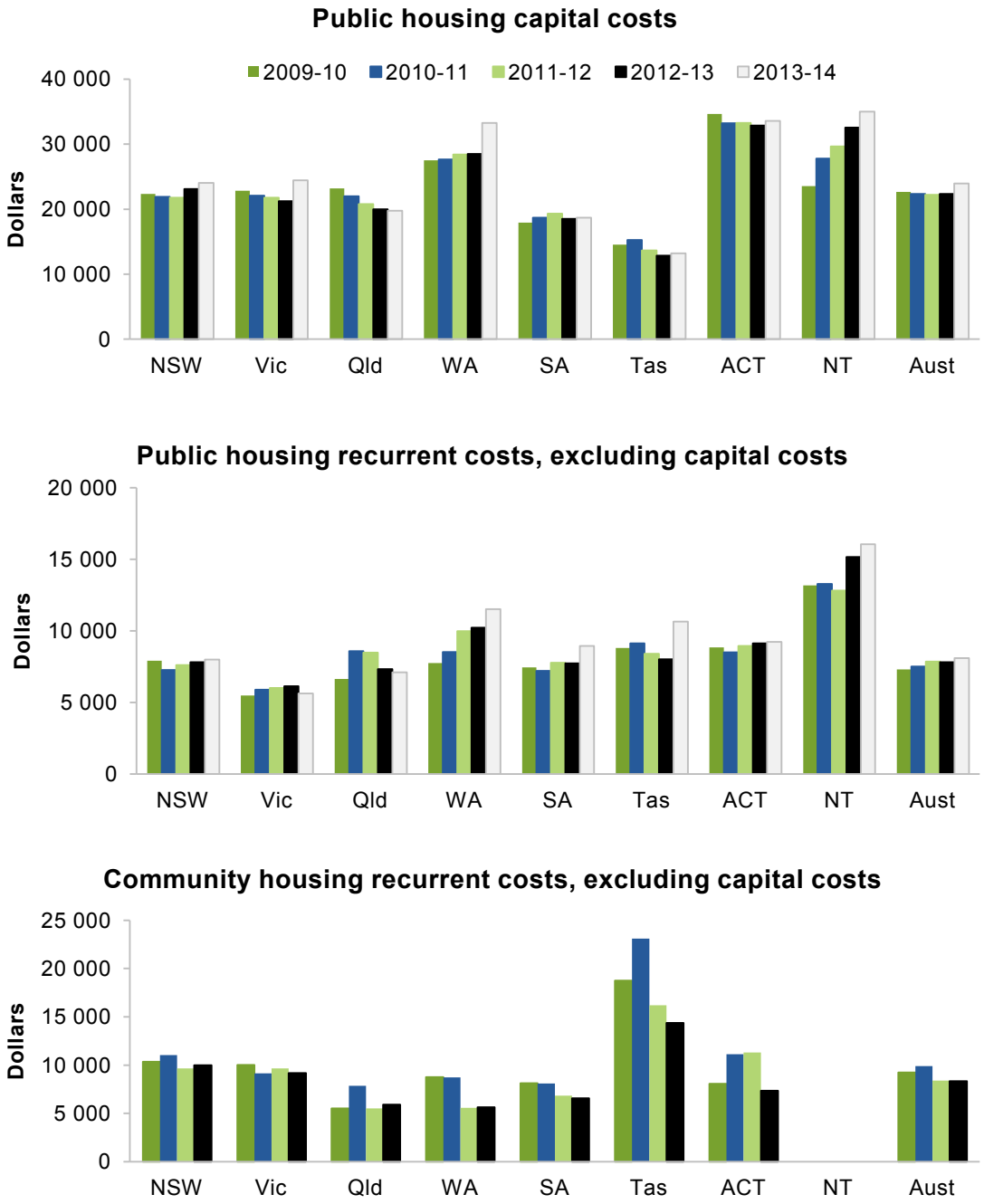


[a] Figures are in 2013-14 dollars. Expenditure in 2010-11 includes funds from the Social Housing Initiative.

Source: SCRGSP (2015).

On average, the costs per dwelling of public housing in Australia increased slightly between 2009-10 and 2013-14, although differences exist between jurisdictions (figure 4).

Figure 4 **Real costs per dwelling, 2009-10 to 2013-14[a,b,c,d,e]**



[a] Capital costs include depreciation, user cost of capital and interest payments. [b] Recurrent costs include administration costs and operating costs (such as repairs, maintenance, rates, disposal costs and market rent paid). [c] Data may not be complete or comparable between public housing and community housing, or between and within jurisdictions because of different data reporting methods and program delivery and funding changes over time. [d] Data are not available for community housing costs in the Northern Territory nor for community housing capital costs for all jurisdictions. [e] SOMIH and ICH are not included, except to the extent that they are reported as public housing or community housing respectively.

Source: SCRGSP (2015, table 17A.19 and table 17A.21).

Transfers of public housing assets to community housing

Community housing is expected to become a more important form of housing assistance in the future due to commitments by jurisdictions to expand the sector while reducing their own roles in the direct provision of public housing. In May 2009, Council of Australian Government (COAG) housing ministers agreed to:

- transfer up to 75 per cent of housing stock constructed from projects initiated under the Social Housing Initiative — around 16 500 homes in total — to community housing providers by July 2014
- develop a large scale community housing sector within five to ten years, with an interim goal that the sector would own or manage up to 35 per cent of social housing by July 2014 (HMC 2009).[7]

These commitments have been prompted by a number of factors. One reason is the financial unsustainability of public housing under current policy settings (HMC 2009). Stock transfers have been further driven by an aim to bring a more diverse range of housing providers into social housing, as well as the community housing sector's ability to leverage stock to obtain private finance for growth. For example, in Queensland, stock transfers are intended to introduce greater choice in social housing, better enable the provision of integrated support services, reduce concentrations of public housing through better planning and design, and make use of private sector resources in finance and property development (Queensland Commission of Audit 2013). The Queensland Commission of Audit (2013) stated that the benefits of community housing include access to CRA, lower operating costs due to tax concessions and lower overhead costs, and the ability to attract alternative sources of revenue. Other current and ongoing initiatives also seek to further develop the sector, such as the National Regulatory System for Community Housing (box 6).

The Community Housing Coalition of Western Australia notes that the ongoing transfer of public housing stock is essential to the development of community housing because it will enable community housing organisations to achieve the scale required to raise private finance and build more homes (CHCWA 2013). It is also argued that the sector can offer more flexible and responsive service delivery to tenants. However, some people raise doubts that better service delivery is exclusive to community housing and can be sustained as the sector grows (Pawson et al. 2013).

Progress towards the COAG housing ministers' goals differs by jurisdiction (table 1). In some cases, transfers to the community housing sector have only involved the management of properties, while in other cases, transfers of both management and ownership have occurred. Tasmania was the only state to have transferred 35 per cent of its public housing stock as at July 2014 (Petrusma 2014a). Queensland and South Australia are also in the

[7] The 35 per cent target has been interpreted by some stakeholders as the limit of the Australian Government's willingness to fund higher CRA expenditures arising from transfers, without affecting NAHA funding (Pawson et al. 2013).

process of transfers (DHPW 2014; Government of SA 2014f). At June 2014, it is estimated that community housing constituted about 18 per cent of social housing in Australia (SCRGSP 2015).

Table 1 **Progress in expanding community housing**

State	*Community housing at June 2010* *(per cent)*[a]	*Community housing at June 2014* *(per cent)*[a]	*Progress in transferring public housing assets to community housing*
NSW	13	19	• Under the *Planning for the Future* policy, the community housing sector grew from 13 000 in 2007 to a target of 30 000 properties by 2012, five years ahead of schedule due to the SHI. • New South Wales' policy on transfers is currently in a period of review.
Vic	12	18	• In 2014, the Director of Housing was considering a strategy for the transfer of up to 12 000 public housing units to community housing organisations.
Qld	12	18	• Under the Housing 2020 Strategy launched in 2013, Queensland plans to grow community housing through transfers, with an aim to see 90 per cent of social housing tenancies managed by community housing providers by 2020.
WA	16	17	• The *Affordable Housing Strategy* outlines the aim of increasing the number of properties managed by community housing providers from 5500 in June 2009 to 12 000 in 2020.
SA	10	13	• Some dwellings for high needs tenants have been transferred to community housing organisations. From January 2015, the management of approximately 1000 public housing properties will be transferred to community housing organisations. A further 4000 properties are to be transferred at a later date.
Tas	9	36	• Under the *Better Housing Futures* initiative, the management of about 4000 tenancies, which accounted for a third of public housing, were transferred from public housing to community housing in two stages. The first stage occurred in March 2013 and the second was completed in July 2014.
ACT	6	5	
NT	3	6	
Australia	12	18	

[a] Community housing dwellings as a percentage of community housing and public housing dwellings. SOMIH and ICH are not included, except to the extent that they are reported as public housing or community housing respectively.

Sources: DCSI (2014); DHHS (2014); HPW (2013b); Gilmour (2013); Government of SA (2014f); KPMG (2012); NSWFHA (2014); Pawson et al. (2013); Petrusma (2014b); SCRGSP (2015, table 17A.3); Victorian Government (2014).

Delays in the transfer of public housing dwellings to community housing organisations reflect a number of factors (Pawson et al. 2013; Queensland Commission of Audit 2013):

- SHAs face financial pressures against large-scale transfers of title. Because asset transfers are not sales, states are concerned about the negative balance sheet impact of

asset disposal. For this reason, transfers of management responsibility can be preferred to transfer of ownership.

- States can also face political pressures against stock transfers when they are interpreted by stakeholders as privatisation.
- The process of contracting transfers is lengthy and expensive for both the SHA and community housing organisations involved. Not least, the parties must address any potential differences in allocation policies used by community housing providers.
- Community housing organisations may be reluctant to accept certain conditions surrounding transfers. For example, if transfer programs involve a high percentage of high-needs tenants with lower incomes, their revenue streams may be adversely affected.

Commonwealth Rent Assistance

Commonwealth Rent Assistance (CRA) is a non-taxable supplement that is paid to people on low or moderate incomes to assist with the cost of renting in the private market. In general, an individual is eligible for CRA if they pay rent above a specific threshold and qualify for either a pension, allowance, Family Tax Benefit (FTB) Part A above the base rate or a service pension (box 3). These payments are typically subject to Australian residency requirements, and income and asset tests.

Box 3 Commonwealth Rent Assistance eligibility criteria

Commonwealth Rent Assistance (CRA) is payable through Centrelink to a person who satisfies at least one of the following:

- receives a pension
- receives more than the base rate of Family Tax Benefit (FTB) Part A
- has part-time care of a child (that is, 14 to 35 per cent of the time) and is not eligible for FTB but does meet other FTB requirements
- receives an allowance or benefit and is either aged over 25 or is aged under 25 and living permanently or indefinitely apart from parents or guardians.

CRA is also payable through the Department of Veterans' Affairs (DVA) to a person who receives a service pension or income support supplement through the DVA.

Exceptions apply in some cases. For example, if a person has a partner who receives CRA through FTB Part A, then they are not eligible to receive CRA through their income support payment.

The sum of rents claimed by each member of a household cannot exceed the total rent paid. If an individual has a partner who is also eligible for CRA, then it is split equally between the partners (where one person is entitled to a higher rate than their partner, the payment is made to that person, rather than each receiving half their entitlement).

Sources: DHS (2014b); DSS (2014b, 2014c); DVA (2014).

The amount of CRA that an individual is eligible for depends on the amount of rent they pay and their family situation (table 2). CRA is paid at a rate of 75 cents for every dollar of rent above a threshold, up to a maximum payment. Maximum payments and rent thresholds are adjusted in March and September each year in line with the consumer price index (CPI).

Table 2 **CRA eligibility and payment scales as at 20 March 2015**
Dollars per fortnight

Family situation[a]	*Minimum rent to be eligible for CRA*	*Minimum rent to be eligible for maximum CRA*	*Maximum CRA payment*
Under the Social Security Act[b]			
Single, no children	114.00	285.20	128.40
Single, no children, sharer	114.00	228.13	85.60
Partnered, no children	185.40	346.47	120.80
Partnered, illness separated[c], no child	114.00	285.20	128.40
Partnered, temporarily separated, no child	114.00	275.07	120.80
Under the Family Assistance Act[d]			
Single, one or two children	150.08	350.75	150.50
Single, three or more children	150.08	376.88	170.10
Partnered, one or two children	222.18	422.85	150.50
Partnered, three or more children	222.18	448.98	170.10

[a] Additional family situations exist, such as illness separated partners that are recognised under the Family Assistance Act. [b] *Social Security Act 1991* (Cwlth) Part 3.7 [c] A couple is 'illness separated' if they are unable to live together at home for an indefinite period due to illness and it results in their living expenses being greater than otherwise. [d] CRA is paid under *A New Tax System (Family Assistance) Act 1999* (Cwlth) and received with FTB Part A if the individual has a 'rent assistance child'. In general, a rent assistance child is a child for whom a parent receives more than the base rate of FTB. It is defined in full under the Family Assistance Act Schedule 1 Part 5 Division 2B.

Source: DSS (2015).

Australian government real expenditure on CRA was about $3.9 billion in 2013-14, up from $3.2 billion in 2009-10 (figure 5). About 1.3 million households were in receipt of CRA in 2014, and the median fortnightly entitlement was $124 (SCRGSP 2015). This was an increase from about 1.1 million households in 2010 and a median fortnightly entitlement of $98 (SCRGSP 2010). Technically, the number of CRA recipients is measured in income units rather than households. An income unit is the base unit that Centrelink uses to calculate a CRA entitlement amount and consists of a single person or a couple, and any dependent children (DSS 2013a).

2 Objectives of housing assistance policies

The aspirational objective of housing assistance, according to the NAHA, is that 'all Australians have access to affordable, safe and sustainable housing that contributes to social and economic participation' (COAG 2009, p. 3). Whereas social housing seeks to

meet this objective by providing housing with subsidised rents, CRA provides renters with a subsidy that is not tied to a particular housing location.

Social housing

The main objectives of both SHAs and community housing organisations are to provide affordable, appropriate and secure housing to low-income households, especially disadvantaged households. They aim to meet these objectives in similar ways (table 3).

Table 3 **Objectives of social housing[a]**

Objective	*Approach*
Affordability	Most tenants pay below-market rents.
Appropriateness	Applicants can typically request their preferred location and type of housing. People with special needs may also be entitled to extra bedrooms and property modifications.
Security of tenure	Tenants are usually offered longer-term tenures compared with those available in the private market. Some providers offer indefinite tenure.
Target the disadvantaged	Priority is given to households that are most in need and that may have difficulties accessing appropriate housing in the private market.

[a] Refer to section 4 for more details.

Sources: Housing NSW (2012a); DHS Victoria (2013a); HPW (2013b); CHCSA (2014a); Department of Housing WA (2013); Housing Tasmania (2014); Department of Housing NT (2012); ACT Community Services (2013).

In the case of public housing, priority is typically given to households that are deemed to be in greatest need, such as those that are homeless or at risk of homelessness. Public housing also aims to cater for people with special needs who may have difficulties finding suitable housing. These include people with physical or mental disabilities and Indigenous people in remote communities (SCRGSP 2014).

States also seek to encourage the employment and social participation of public housing tenants. This goal is pursued through additional services such as job assistance and youth engagement programs. For example, Victoria's *Public Tenant Employment Program* helps tenants develop work skills through hands-on experience and training (DHS Vic 2013b). Policies are also enacted to alleviate potential disincentive effects, for example by freezing rent increases for some time after employment is found (Housing NSW 2013b).

A key objective of many community housing organisations is to promote tenant participation and respond to the needs of tenants (CHFA nd, box 4). Ways in which community housing organisations seek to meet this objective include offering management opportunities and support services to tenants (section 4). Some organisations also cater for specific groups, such as single women or people with disabilities.

Box 4 **Aims of community housing organisations**

Community housing providers, with the support of the Australian and State Governments, have developed the National Community Housing Standards Manual. The manual includes standards of good practice in delivery of community housing, as well as the aims providers are working towards:

- *Affordability:* To ensure that housing costs do not create hardship for tenants.
- *Choice:* To provide people in need of housing with a diverse range of housing options.
- *Responsiveness:* To respond to the needs of individual tenants and their changing circumstances by ensuring that housing is appropriate to tenants' needs and is managed flexibly.
- *Security:* To ensure that tenants are secure in their housing, are housed in accordance with jurisdictional policy and meet the tenancy agreement.
- *Sustainability:* To contribute to successful tenancies and the development of sustainable communities, by being supportive of tenants' wider social needs and building their independence.
- *Fairness:* To ensure equitable access to community housing regardless of people's cultural identity, gender, disability, sexual orientation, age and household composition; and to treat tenants fairly in all matters relating to their tenancy.
- *Respect:* To ensure that all tenants' rights are respected and to treat tenants with respect in all dealings.
- *Participation:* To actively seek the participation of tenants in decisions about their tenancy and the management of organisations.
- *Partnerships:* To work in partnership with governments and communities in developing housing and related services that meet tenant and community needs.
- *Quality:* To provide the best possible accommodation and housing services to tenants.
- *Accountability:* To be accountable to tenants, the community and government for the effectiveness of the services provided and for the use of public funds; and by doing so, to enhance the credibility of community housing options.

Source: JPX Consulting Pty Ltd (2010).

Commonwealth Rent Assistance

The primary purpose of CRA is to assist low-income households with the costs of renting in the private housing market (DSS 2014a). CRA does not aim to ensure that households spend only a specific proportion of their income on rent.

3 National housing agreements

The NAHA provides the current framework for Australian and State Governments efforts to improve housing and homelessness outcomes. Three national partnership agreements

(NPAs) were implemented to support the NAHA, involving the areas of social housing, homelessness and remote Indigenous housing. Furthermore, the NPA on the Nation Building and Jobs Plan included a Social Housing Initiative to fund social housing.

The National Affordable Housing Agreement

The National Affordable Housing Agreement (NAHA) took effect on 1 January 2009 and provides a broad framework for the Australian and State Governments to improve housing outcomes in all tenure types, as well as to reduce homelessness.

The NAHA's intended outcomes include improving housing affordability for renters and purchasers, and facilitating housing access for homeless and Indigenous people (box 5). Information on progress towards these outcomes is collected by the Steering Committee for the Review of Government Service Provision and, until 2014, was measured against a set of performance benchmarks by the COAG Reform Council. Progress will now be measured by the Department of Prime Minister and Cabinet. In 2010-11, the COAG Reform Council found no indication that housing affordability had improved, and rental affordability, in particular, had worsened (COAG Reform Council 2012). A review of the performance reporting framework indicated that it was broadly functional, but there were significant flaws in some indicators (NAHA Review Working Group 2012). Recommendations of the report regarding performance indicators were adopted in 2012.

Box 5 National Affordable Housing Agreement outcomes

The parties to the National Affordable Housing Agreement (NAHA) agreed to the following outcomes:

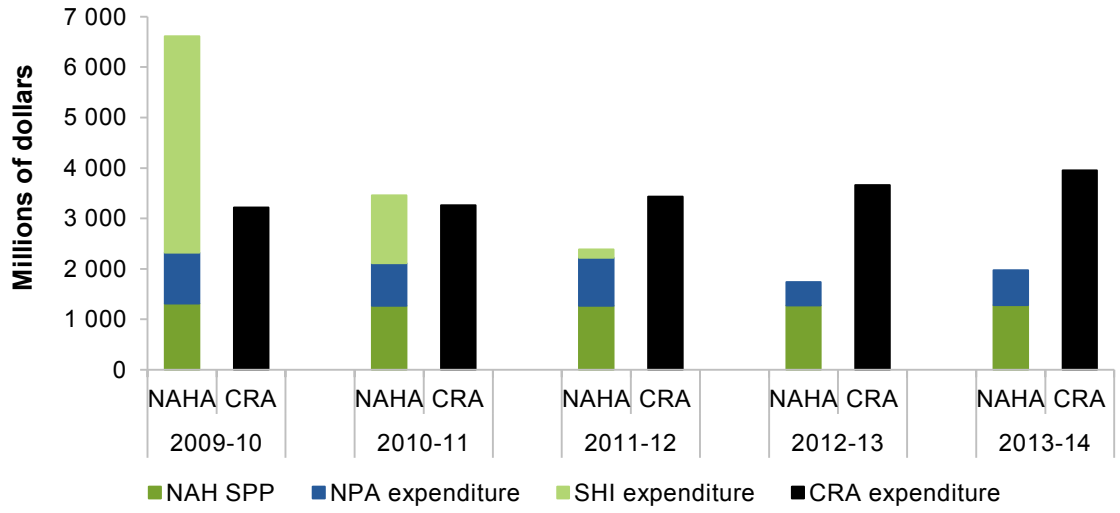
- People who are homeless or at risk of homelessness achieve sustainable housing and social inclusion.
- People are able to rent housing that meets their needs.
- People can purchase affordable housing.
- People have access to housing through an efficient and responsive market.
- Indigenous people have the same housing opportunities as other Australians.
- Indigenous people have improved housing amenity and reduced overcrowding, particularly in remote areas and discrete communities.

Source: COAG (2009).

The National Affordable Housing Specific Purpose Payment (NAH SPP) provides States with ongoing funding on a per capita basis to achieve the goals stated in the NAHA. The combined amount distributed to States was $1.3 billion in 2013-14 (figure 5) with $1.3 billion allocated in the 2014-15 Federal Budget. States can allocate the funding as they wish in the housing and homelessness sectors, and there is no requirement for States to match the funding. The funding arrangements for housing assistance are currently being

reviewed as part of the Reform of the Federation White Paper, expected later in 2015 (DPMC 2014).

Figure 5 **Australian Government real expenditure on housing assistance[a,b,c,d]**



[a] Data have been adjusted to 2013-14 dollars using the General Government Final Consumption Expenditure chain price deflator (SCRGSP 2015, table 2A.51). [b] NAH SPP is the National Affordable Housing Specific Purpose Payment. [c] NPA expenditure refers to spending under the NPA on Social Housing, NPA on Homelessness and NPA on Remote Indigenous Housing. [d] SHI expenditure refers to spending under the Social Housing Initiative element of the NPA on Nation Building and Jobs Plan.

Source: SCRGSP (2015).

National partnership agreements

Social housing

The NPA on Social Housing commenced on 1 January 2009 and expired on 30 June 2010. Its purpose was to finance the Social Housing Growth Fund, which contributed to the NAHA outcomes by increasing the supply of social housing. Under the agreement, the Australian Government provided the States with a total of $400 million to build social housing. Approximately 1980 properties were constructed through this agreement nationwide (DSS 2013d), adding roughly 0.5 per cent to the social housing stock as measured in June 2008.

Further funding for social housing was provided as part of the NPA on the Nation Building and Jobs Plan[8], which began in February 2009 and expired on 31 December 2012. Under the Social Housing Initiative (SHI) element of the NPA, a total of $5.2 billion was granted for the construction of new social housing, and a further $400 million for the repair and upgrade of existing social housing. New construction occurred in two stages:

- Stage one provided funding for existing social housing projects that could be brought forward.
- Stage two provided funding for suitable new projects identified by each state through a competitive selection process (DSS 2013f).

The main aims of the funding included stimulating the construction industry, increasing the supply of social housing and providing long-term housing for homeless people (DSS 2013e). This initiative added over 19 000 properties to the stock of social housing — close to 5 per cent of the stock in June 2008. Furthermore, among the 80 500 properties that underwent repairs, representing about 20 per cent of the stock, around 12 000 would have been uninhabitable, or likely to become uninhabitable within two years (DSS 2013e; KPMG 2012).

Homelessness

The NPA on Homelessness began in January 2009 and was renegotiated in 2012 and 2013. This agreement aims to provide long-term affordable housing and support services to people experiencing homelessness. It also includes an initiative, *A Place to Call Home*, to build 600 new homes for homeless people (DSS 2012). Over the five years to June 2014, about $157 million of funding was provided by the Australian Government under the NPA (SCRGSP 2015). The agreement was extended with funding of $115 million provided for another year to June 2015, to be matched by State Governments (Andrews 2014).

Remote Indigenous Housing

The NPA on Remote Indigenous Housing took effect in February 2009 and runs to 30 June 2018. It supports the NAHA outcome of improving amenity and reducing overcrowding for Indigenous people in remote communities, and contributes to the Closing the Gap initiative on Indigenous disadvantage. A total of $5.5 billion over ten years is being provided for the construction of up to 4200 new properties and the upgrade of at least 4800 existing properties (DSS 2013b). As the target for upgrades was met ahead of time, the target was increased to 6600 by the end of 2014. The agreement also aims to deliver employment support by requiring the engagement of local Indigenous people in new

8 The NPA on the Nation Building and Jobs Plan formed part of the Nation Building Economic Stimulus Package announced in the 2008-09 budget. This package aimed to provide stimulus through the global financial crisis and improve future productive capacity (Australian Government 2008).

housing construction and the provision of accommodation close to training, education, employment and support services.

There were about 117 000 Indigenous people living in remote or very remote areas in Australia in 2011, with levels of overcrowding at about 20 per cent (DSS 2013c). In 29 remote Indigenous communities, where substantial investment had been made through the NPA, the proportion of overcrowded Indigenous households fell from 57.9 per cent in 2006 to 53.5 per cent in 2011 (DSS 2013c).

4 Social housing arrangements

Public housing arrangements differ across jurisdictions in terms of eligibility criteria, rent-setting methods, lease terms and tenant management methods. Further variation is found among community housing providers, although these policies are usually partly set by State Governments and are similar to those for public housing.

Regulation

Public and community housing tenancies are governed by the *Residential Tenancies Act* for the particular jurisdiction or the *Residential Tenancies and Rooming Accommodation Act 2008* in Queensland, which define landlord and tenant rights and obligations.[9] In some states, other acts are relevant, as well as legislation covering specific types of community housing providers, such as cooperatives and associations (for example, CHFV 2013).

A National Regulatory System for Community Housing is currently being implemented in most States to provide a nationally-consistent regulatory environment for community housing organisations and support the growth of community housing (box 6).

9 These acts also regulate the operation of private tenancies.

Box 6 **National Regulatory System for Community Housing**

In 2010, Australian housing ministers reaffirmed their commitment to the growth and regulation of the community housing sector and agreed to the implementation of a National Regulatory System for Community Housing (NRSCH).

The key objectives of the NRSCH are to:

- provide a nationally consistent regulatory environment to support the growth and development of the community housing sector
- pave the way for future housing product development
- reduce the regulatory burden on housing providers working across jurisdictions
- provide a level playing field for providers seeking to enter new jurisdictions.

The NRSCH established the National Provider Register, which is a public record of registered community housing providers. The Register is divided into three tiers that reflect differences in the nature, scale and scope of operations between providers. Each tier has a different level of regulatory oversight and engagement.

The NRSCH is based on regulation in New South Wales, which is either applied or adopted by participating jurisdictions. The National Law includes the National Regulatory Code, which sets out the performance outcomes and requirements that must be met by registered community housing providers.

Full implementation of the NRSCH began on 1 January 2014 and will be progressively introduced over 18 months in participating jurisdictions — New South Wales, Queensland, South Australia, Tasmania, the Northern Territory and the ACT. Western Australia has yet to pass legislation to participate but is committed to ensuring consistency with the NRSCH. Victoria is currently not participating in the NRSCH but has also agreed to align performance and reporting requirements of its current regulatory system with the NRSCH.

Sources: NRSCHD (2014a, 2014b, 2014c).

Eligibility

There is some variation in public housing eligibility criteria across jurisdictions, but most have similar requirements. Generally, applicants must meet income and asset limits based on household size. Gross weekly income limits for a single adult range from $430 for metro and country areas in Western Australia to $970 in South Australia (Department of Housing WA 2014b; Government of SA 2014b). Applicants must also meet requirements relating to Australian and State residency and minimum age, and not own any property that could be used to resolve their housing need, although exceptions apply in special circumstances such as in cases of domestic violence.

Eligibility criteria for community housing are largely consistent with those for public housing. Community housing organisations that cater for a particular disadvantaged group, such as people with disability, have additional criteria to reflect that.

Waiting lists

Public housing waiting lists in all States are segmented based on need. Assessments of need differ across jurisdictions but, in general, people who are placed on priority waiting lists are those who are in urgent need of housing and face difficulties obtaining affordable and appropriate housing in the private market. This may include people experiencing or at risk of homelessness, domestic violence or severe disability whose current housing is inappropriate to their needs (AIHW 2008).

Waiting times for the highest priority applicants are typically less than a year, whereas non-priority applicants might wait for several years, depending on their preferred location. For example, in Victoria, the average wait time for priority applicants was 8.5 months in 2009-10, and several years for non-priority applicants (VAGO 2012) In New South Wales, waiting times for general applicants can be over 10 years in locations around Sydney (Housing NSW 2014b). Separate waiting lists also exist for public housing tenants wishing to transfer to another public housing property. In 2014, there were 154 500 households on public housing waiting lists nationally, and an additional 24 600 were waiting for transfers. This compares with 321 000 public housing tenantable properties (SCRGSP 2015).

In most States, community housing waiting lists are integrated with public housing lists.[10] In these jurisdictions, applicants need only submit one application to be considered for both forms of housing if they choose, as long as they fulfil the eligibility criteria. Community housing allocations may be suggested by the SHA or selected by a community housing organisation, depending on the jurisdiction (CHFA 2014). In States where social housing waiting lists are not integrated, applicants apply separately to SHAs and community housing organisations. In some cases, tenants may be referred to community housing organisations by other organisations. Similar categories of need are used to segment lists for community housing.

In most cases, applicant eligibility for public housing is reviewed periodically and before the offer of housing is made. In New South Wales, for example, the periodic review is conducted in the form of a postcard sent to the applicant's address to check contact details and ask if they wish to remain on the waiting list (Housing NSW 2012b). In Queensland, reviews are conducted through letters or phone calls to confirm details such as contact information, income and number of people on the application (Queensland Government 2013). Non-responses are typically withdrawn from a waiting list. Applicants on waiting lists are also expected to inform the SHA of changes to their personal or household circumstances between periodic reviews (for example, Government of SA 2014d).

Social housing applicants may specify a number of housing characteristics at the time of application. Applicants are often asked to nominate their preferred housing location and some jurisdictions offer a choice of housing type. Bedroom specifications are usually

[10] Jurisdictions that do not have integrated waiting lists are Victoria and South Australia.

based on household structure. People with special needs may request more specific locations, property types, extra bedrooms and properties with modifications.

Rents and other charges

Rent

In most jurisdictions, public housing tenants pay rents equal to about 25 per cent of assessable household income, or market rent, whichever is lowest.[11] Those who are not paying market rent receive a rent subsidy.[12]

The types of income that are included in assessable income vary slightly between jurisdictions, and some types of income are assessed at a lower rate. In general, pension income is assessed at the full 25 per cent, while FTB is assessed at lower rates in some jurisdictions.[13] Assessable income also differs slightly in community housing, both between and within jurisdictions. For example, in Queensland, community housing organisations calculate rent based on after-tax income for household income earned from work, in order to reduce workforce disincentives (DHPW 2013a).

Due to exclusions and lower assessment rates for some types of income, some households effectively pay less than 25 per cent of their income in rent. Media reports claimed that, in Queensland, less than one per cent of public housing tenants paid 25 per cent of their income in rent and 40 per cent of tenants paid less than 15 per cent (Vogler 2014). In June 2014, Queensland reviewed its rent assessment methods so that all income would be assessed at 25 per cent (Mander 2014). Similar changes have been made in Western Australia — prior to the change, older tenants in Western Australia were paying proportionally more than families, whose FTB payments were assessed at a lower rate than pension income (Department of Housing WA 2014a).

Rent-setting approaches in community housing are similar to those used for public housing, although some jurisdictions allow greater discretion in the method used. A common approach by community housing organisations is in their treatment of CRA. Because community housing tenants are eligible for CRA if they receive an income support payment

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11 Subsidised tenants in New South Wales pay between 25 and 30 per cent of household income in rent, depending on household income. In the Northern Territory, tenants pay up to 23 per cent of household income in rent if they are eligible for public housing. Public housing tenants in the Northern Territory can remain in public housing until their lease expires if they no longer meet eligibility criteria. From June 2013, those who are no longer eligible pay up to 30 per cent of household income, up to a maximum of market rent, for the remainder of their lease.

12 The amount of the subsidy is the difference between market rent and actual rent paid.

13 For example, for public housing tenants in New South Wales, 15 per cent of FTB Part B is typically included in assessment if it is received fortnightly, while it is unassessed if received as a lump sum payment at the end of the financial year (Housing NSW 2014c). FTB is excluded completely for tenants in the Northern Territory (Department of Housing NT 2014).

or more than the base rate of FTB Part A, community housing organisations typically charge social housing tenants their full CRA entitlement, as well as about 25 per cent of household income net of CRA, as long as the total does not exceed the market rent (CHFA 2014).[14] In New South Wales, Victoria, Queensland and Western Australia, rents must be set at a point that maximises the amount of CRA that can be claimed (CHFA 2014) (box 7). CRA can be an important source of income for community housing providers — a survey of 24 providers found that CRA comprised between 30 and 39 per cent of rental income for most organisations (CHPPN 2014).

Box 7 Community housing rent calculation

Community housing organisations calculate rents for tenants who are eligible for Commonwealth Rent Assistance (CRA) so that tenants receive as much CRA as possible, while not being left in a worse financial position than equivalent public housing tenants (who are not eligible for CRA).

The total rent charged (RC) by a community housing organisation is equal to the tenant's contribution (TC) of about 25 per cent of assessable income excluding CRA, plus 100 per cent of CRA. The amount of CRA that a tenant is eligible for is the lower of:

- 75 per cent of the difference between RC and a minimum threshold level of rent (MR) (the threshold is the level of rent at which the tenant become eligible for CRA)
- a maximum amount

where the threshold and maximum amounts vary by family situation (table 2).

RC is given by the following formula, provided that the total is less than market rent (in which case, the tenant pays market rent) and that CRA does not exceed the maximum amount for which the tenant is eligible (if it does, CRA equals that maximum amount):

$$RC = 4TC - 3MR$$

For example, consider a single tenant with no children who has an income of $600 per fortnight. Assuming that all of their income is assessed at 25 per cent, the tenant's contribution to rent in a fortnight is:

$$TC = 0.25 \times 600 = \$150$$

The TC is the same as it would be if they lived in public housing.

(continued next page)

[14] In effect, this means that after-rent income is the same whether a tenant is in public housing or community housing. Therefore, CRA should not have an impact on an individual's choice between public and community housing.

Box 7 (continued)

RC also takes into account the CRA for which the tenant would be eligible. The rent threshold for a single person household with no children (at 20 March 2014) is $112 per fortnight. So the rent charged by the community housing organisation is:

$$RC = (4 \times 150) - (3 \times 112) = \$264$$

The amount of CRA received is:

$$CRA = 0.75 \times (264 - 112) = \$114$$

which is equivalent to the difference between RC and the TC.

The maximum amount of CRA that the tenant could have received is $126 a fortnight. But for the tenant to be eligible for this amount, their RC would have needed to be $280. The TC would have had to be $154 (or $280 – $126), more than 25 per cent of their income.

Source: Tenants' Union of NSW (2012a).

Tenants often have the option to have rent deducted automatically from Centrelink payments and sent directly to the housing provider. Public housing tenants can use the Rent Deduction Scheme for this purpose, while community housing tenants can access a similar service via Centrepay (DHS 2014a, 2014c). The vast majority of social housing tenants use these schemes. During the first eight months of 2012-13, about 300 000 customers used the Rent Deduction Scheme and 62 000 customers used Centrepay to pay community housing rent (Buduls 2013).

Rent reviews

Rent reviews are conducted regularly — usually at least once a year — to check social housing tenants' eligibility for rent subsidies and the amount of rent to be paid. Tenants can opt to use the Centrelink Income Confirmation Service to provide proof of income to SHAs and participating community housing organisations. If a tenant does not decide to use the service, other forms of income verification are also accepted, such as payslips or Centrelink Income statements.

Tenants must also inform the housing provider of any changes to their income or household structure that occur between rent reviews, although there is evidence that this does not always occur. For example, New South Wales held an amnesty on unauthorised occupants of public housing properties in 2013, which led to over 2800 tenants declaring over 3600 additional occupants (Parliament of NSW 2013). An amnesty on undisclosed income, financial assets and property ownership in 2014 resulted in 2300 people declaring extra income and assets, and is expected to generate more than $2.5 million a year in extra rental income (Upton 2014).

In some States, changes in income do not have an immediate effect on rent. For example, the *Tenant Employment Incentive Scheme* in New South Wales entitles public housing tenants to a grace period of up to 12 weeks before their rent is adjusted if they start a

paying job (FACS NSW 2014a). In Victoria, rents are reviewed twice a year and cannot be increased at any other point, even if household income increases. Rents can be reduced immediately if household income falls (DHS Vic 2014).

Other charges

In addition to rent, tenants may be charged for utilities, maintenance and other fees specific to each jurisdiction. For example, in South Australia, maintenance charges are applied if a public housing tenant has caused or permitted damage to a property (Government of SA 2014e). Community housing cooperatives in South Australia may charge fees for tenants who are not participating in management of the cooperative (Government of SA 2014a). In New South Wales, a vacant bedroom charge of $20 to $30 a week is applied to public housing tenants in under-occupied properties who refuse two reasonable offers of relocation (FACS NSW 2014b).

Lease terms

Public housing lease terms vary across States. Historically, leases were ongoing with no set end date, however most States now issue fixed-term leases to new tenants, with grandfathering provisions for existing tenants.

The rationale behind the introduction of fixed-term leases varies slightly across States. In New South Wales, they are used to help facilitate the transition from a regime of tenure for life to a more temporary regime of housing for those in need for the duration of their need (Audit Office of NSW 2013). In South Australia, reviews at the end of fixed-term lease agreements allow the SHA to inspect the condition of the property and check that all conditions of the lease agreement are met. Leases may not be renewed if tenants do not allow their property to be inspected (Government of SA 2014c).

In jurisdictions that have fixed-term leases of multiple lengths, such as New South Wales, South Australia, Tasmania and the Northern Territory, the length of the lease offered depends on the tenant's circumstances. For example, short-term probationary leases are usually offered to new tenants, while five- to ten-year leases may be offered to people who are expected to have enduring needs, such as the elderly or people living with disability who require a carer. In New South Wales, about 6 per cent of tenants were on a two-year lease, 17 per cent were on a five-year lease and 7 per cent were on a ten-year lease in 2011-12. The remaining 70 per cent were on continuous leases that dated from before the introduction of fixed-term leases in 2005 (Audit Office of NSW 2013).

Towards the end of a fixed-term lease, the lease is reviewed and can be extended if the tenant remains eligible for public housing. Evidence suggests that most tenancies are renewed, with only about two per cent of tenants in New South Wales who were on two-year leases found to be no longer eligible for public housing (Audit Office of NSW 2013).

Lease terms in community housing differ across States and can vary across providers. On the whole, leases have no fixed term. In South Australia, a policy change introduced in 2010 placed all new tenants in housing associations on fixed-term leases of five or ten years (CHFA 2014).

Tenant services

SHAs offer services and programs to support tenants or encourage community participation. The extent and form of services offered vary between jurisdictions, and include the following examples:

- New South Wales has a *Tenant Participation Resources Services Program* to provide social housing tenants with access to information, services and opportunities to participate in housing processes, as well as to engage tenants in their communities (Housing NSW 2014d).
- Victoria's *Public Tenant Employment Program* helps to provide a pathway to employment through hands-on experience and training (DHS Vic 2013b). Work and Learning centres located near public housing estates are designed to help people find jobs and training opportunities (DHS Vic 2013c).
- South Australia aims to provide localised service models to support tenants and involve them in the community as part of its *Connecting People to Place* framework (DCSI 2013).
- Some States offer public housing tenants the opportunity to purchase the property they rent, or provide assistance with transitioning into private rental (for example, Department of Housing WA 2012).

Community housing organisations aim to respond to local community needs and support tenant engagement. Some organisations, particularly housing cooperatives, may invite tenants to perform management roles, such as rent collection, maintenance, administration and bookkeeping (CHCSA 2014b). Other tenant participation and management initiatives can include contributing to social events and rewards for making payments on time and keeping dwellings clean (for example, Compass Housing Services 2014). Organisations may also provide or link tenants to support services, including employment programs, disability services, and home and community care. Customised services can be offered to tenants with high needs.

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Background paper 2
Housing assistance and financial incentives to work

Key points

- Analysis of budget constraints and effective marginal tax rates (EMTRs) is used to shed light on the effect of housing assistance (Commonwealth Rent Assistance (CRA) and social housing) on recipients' financial incentives to work. A number of caveats apply to analysis of this type. It:
  - typically does not account for the costs of working (for example, childcare and transport costs)
  - ignores non-financial factors that influence employment decisions (for example, health issues)
  - cannot reveal whether a person works — that is an empirical question.
- Housing assistance affects recipients' budget constraints and EMTRs.
- Withdrawal of income support payments (ISPs) with increases in market income contributes more to EMTRs than withdrawal of housing assistance.
  - Although CRA is withdrawn at the same rate as an income support payment (ISP) (for recipients whose eligibility rests on receipt of an ISP rather than Family Tax Benefit Part A), this affects recipients' EMTRs over a relatively small income range and at higher levels of income than withdrawal of the ISP.
- A majority of ISP recipients would have a higher disposable income post rent if they lived in social housing than if renting privately and receiving CRA.
- Differences in public housing rent setting arrangements around the country make for small differences in the contribution of these arrangements to EMTRs.

This background paper considers how the two main Australian housing assistance policies, Commonwealth Rent Assistance (CRA) and rent subsidies associated with social housing, alter financial incentives to work.

Estimates of the financial incentives created by housing assistance are presented for 'typical' individuals — identified by family structure, income support payment (ISP) and type of housing assistance. An example is a single, childless Disability Support Pensioner living in public housing.

A person's financial incentive to work depends on the relationship between their market income and their disposable income — that is, how much their disposable income changes as a result of work. Market income includes wages and salaries, income from business ownership, dividends, interest, superannuation pensions and compensation for lost income (for example, payments from an income protection insurance policy or workers' compensation scheme). For many, market income consists largely of labour income. In the context of this paper, changes in market income are assumed to come from changes in labour supply. Gross income is market income plus direct government transfers (for example, the Age Pension and Family Tax Benefit Part A). Disposable income refers to gross income after direct taxes (for example, income tax).

The relationship between market and disposable income mainly depends on income taxes, and rules relating to the level and withdrawal of transfer payments — that is, the tax and transfer system.[1] Financial incentives to work decrease as a person retains less of their market income.

Housing assistance is part of the transfer system, and its effects on incentives vary greatly according to how it interacts with other parts of the tax and transfer system. The Commission built a model of the Australian tax and transfer system (annex A) to estimate the effects of housing assistance on financial incentives to work. The model and supporting documentation will be available from the Commission's website. The model is referred to in the paper as PCTT 2014.[2]

While this paper identifies the effects of policies on the financial incentives faced by typical individuals, the impact of those incentives on employment outcomes is not considered. Analysis of that question is presented in background paper 5.

The next section defines the measures of financial incentives to work used in the paper, and describes how they are derived. The two housing assistance policies are summarised to demonstrate how assistance changes as market income increases (section 2). Financial incentives to work for typical housing assistance recipients are then analysed (section 3) and incentives for social housing residents and CRA recipients are compared (section 4).

1 What are financial incentives to work?

A policy can affect an individual's financial incentive to work in two ways:

- First, a housing subsidy in effect increases a person's income level. Throughout the paper, this is termed an income effect. Receipt of housing assistance increases a

[1] Concessions, for example for health care services or utilities, also affect the amount of goods and services that a person can purchase with their disposable income. These are not taken into account in the analysis.

[2] The rules, thresholds and rates used in the model in calculating payments and taxes, and that, therefore, underlie the results presented in this paper, were those current at March 2014.

person's disposable income in a way that is independent of the price effect on their work effort. The income effect means they can buy more goods and services, including leisure time.[3]

  - The income effect is measured as the dollar value of housing assistance received, or the size of the subsidy.

- Second, when the subsidy is related to income levels, it can change how much disposable income a person takes home from *any increase* in market income (or income earned from employment).[4] Throughout the paper, this is termed a price effect. The withdrawal of housing assistance as market income rises means that disposable income increases by less than market income (the 'price' of work).[5]

  - The price effect acts as a tax on work. The increase in disposable income per dollar of market income is less than one, and can be thought of as *(1 – tax)*. More generally, *tax* can be thought of as an 'effective tax rate' that accounts for the net effect of all aspects of the tax and transfer system, including income tax payments and any withdrawal of benefits in addition to the withdrawal of housing assistance.

Economists often use shifts in budget constraints and changes in effective marginal tax rates (EMTRs), respectively, to represent these two effects of subsidies on financial incentives to work.[6] Financial incentives to work are described in more detail in box 1.[7]

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3 From the perspective of labour supply theory, an increase in unearned income at any level of employment is thought to cause a person to reduce their hours of work, or reduce their willingness to enter employment if they are not working. This paper makes no judgment on this matter.

4 While recipients of housing assistance might receive market income from dividends and interest, these sources of income are likely to be small. In addition, the paper's focus on incentives to work (and working age housing assistance recipients) means that superannuation pensions are unlikely to be a relevant source of market income. For most working age housing assistance recipients, most market income is likely to be earnings from employment.

5 A change in the effective price that an individual is paid for an extra hour of work has two types of effects — income and substitution effects. The income effect stems from the effect of the price change on the person's income. If the price falls, income declines, so the income effect describes how a person will have an incentive to work more hours to maintain their income. The substitution effect, however, will encourage them to work fewer hours (consume more leisure) because work pays less. The net effect is ambiguous. This is different from the effect of a price change of a normal good, where the income effect and substitution effect work in the same direction. This arises because an extra hour of leisure is preferred by most people to an extra hour of work.

6 Some studies use replacement rates (RR) or participation tax rates (PTRs) to measure financial incentives to work. The RR is the ratio of net income out of work to net income in work. The PTR measure the proportion of a person's gross earnings from work that are lost in taxes or reduced benefits. Both measures require an assumption about what an individual would earn if they entered employment. For this purposes of this project, EMTR schedules are preferred because they illustrate the separate effects of the withdrawal of housing assistance and income support payments and the payment of income taxes at different levels of market income.

7 The term marginal tax rates (MTRs) is used to refer to the amount of tax paid on an additional dollar of market income. Effective marginal tax rates (EMTRs) include MTRs plus the effects of other factors (the tapering of housing assistance and ISPs) that create a difference between market and disposable income.

Box 1 Financial incentives to work

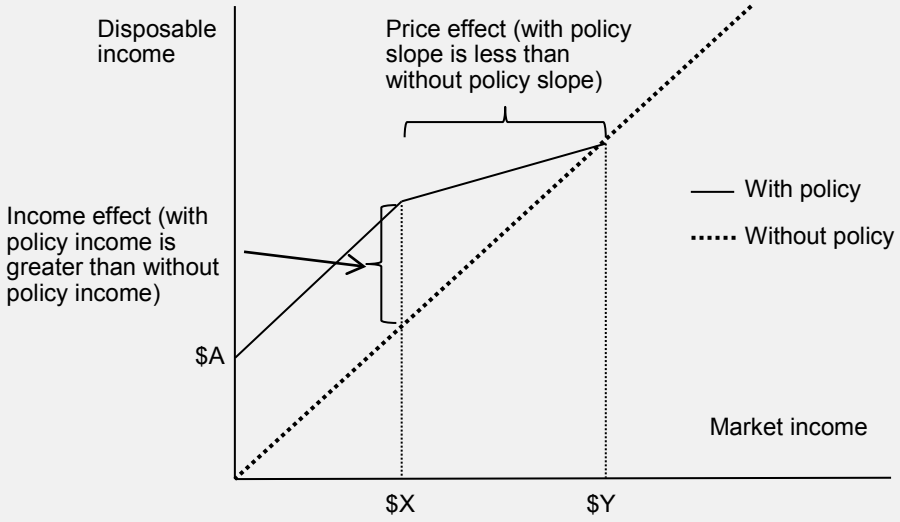
The amount of disposable income that a person has at any given level of market income can be represented as a budget constraint. A comparison of budget constraints 'with' and 'without' a policy reveals the income effect of that policy.

In the figure below, the 45 degree line represents a budget constraint without taxes or transfers — disposable income equals market income. This line is identified as 'without policy'.

Imagine an illustrative policy that provides a subsidy to renters. Disposable income at zero market income increases by the amount of this subsidy, $A — an income effect. The subsidy is unchanged as market income increases to $X, and is then withdrawn as market income increases beyond $X, reducing the income effect and imposing a price effect (explained below). At higher levels of labour supply (beyond $Y market income), the subsidy goes to zero, and the budget constraints with and without the policy coincide. The budget constraint with the policy in place is represented by the solid line up to market income $Y and the 45 degree line thereafter.

The distance between the two budget constraints at any level of market income represents the size of the housing assistance (subsidy) at that income level.

The price effect of a policy at any level of market income is captured by comparing the effective marginal tax rates (EMTRs) faced by a person with and without the policy.



(continued next page)

In the context of housing assistance, tapering includes the withdrawal of CRA and increases in rent paid in public housing as market income rises. In both instances, the withdrawal of housing assistance contributes to the EMTRs faced by recipients.

Box 1 (continued)

EMTRs are derived from the slope of the budget constraints. The slope equals the proportion of an additional unit of market income (the 'marginal' market income) that is retained as disposable income. For example, a slope of 0.8 indicates that a person retains 80 per cent of their marginal market income. The effective marginal tax rate is calculated as 1 minus the slope of the budget constraint — in this example, it would be 0.2, or 20 per cent (effective marginal tax rates are often expressed in percentage form). All else equal, the *lower* (flatter) the slope of the budget constraint, the *higher* the effective marginal tax rate.

In the figure, the slope of the budget constraint with the policy in place is equal to 1 both up to $X and beyond $Y. In this range, the contribution of the policy to the EMTR is zero. The person retains all of each additional dollar of income.

Between $X and $Y, the slope of the budget constraint with the policy in place is less than 1 — the EMTR is greater than zero. In comparison, the slope of the no-policy budget constraint remains equal to 1 over this income range, and the EMTR, therefore, is zero. The difference in EMTRs derived from the budget constraints with and without the policy in place represents the price effect of the policy.

The income and price effects of multiple policies are established by comparing the budget constraints associated with each policy. For example, a person may receive both housing assistance and a welfare payment. In this case (re-interpreting the figure to include the effect of both policies), comparing the 'with policies' and 'without policies' budget constraints identifies the incentives due to the combination of policies. Similarly, the effect of housing assistance could be isolated by comparing the 'with all policies' budget constraint to a 'welfare payment only' budget constraint (not illustrated).

In this paper, the effects of housing assistance policies on budget constraints and EMTRs are used to identify the impacts of Commonwealth Rent Assistance (CRA) and social housing rent setting on financial incentives to work. In adopting this focus, the analysis abstracts from many other factors that might affect a person's employment decisions including, for example, costs associated with working (childcare, transport and the like), health problems and cultural attitudes towards work (box 2). Despite these abstractions, the approach provides insights into the effects of the housing assistance policies under study on the financial incentives faced by different recipients.

Box 2 Limitations of measures of financial incentives to work

Measures of financial incentives to work, and particularly changes in EMTRs, are widely used to investigate the likely effect of a policy on employment (Lovering 2014; National Commission of Audit 2014; Treasury 2010). However, for a number of reasons, analysis of income and price effects supports only limited conclusions about the employment effects of a policy.

First, a policy is likely to affect other, non-financial incentives to work that influence the labour–leisure decision (Dockery et al. 2008). For example, a housing policy may allow a recipient to move closer to locations of employment, decreasing the time (and other costs) required to commute. The effective marginal tax rate (EMTR) estimates do not usually include the effect of a policy on costs associated with working, nor on disposable income after these costs have been deducted.

Second, the estimation of the EMTR is only a first step in estimating employment effects — what matters is the behavioural response of affected people. The price effect is ambiguous (footnote 4). On the one hand, a rise in the EMTR has a substitution effect as the return to working declines (which lowers the price of leisure). On the other hand, the decline in income associated with the higher EMTR may see a person increase their work to maintain their disposable income. Then there is the separate income effect of the subsidy. The recipient may work less, since the subsidy allows them to achieve the same level of income at fewer hours worked.

Ultimately, empirical analysis is required to determine individuals' responses to different financial incentives to work, and that analysis should ideally take into account all financial and non-financial factors affected by the policy.

More generally, EMTRs must be interpreted with care:

- The same EMTR can be associated with very different income effects. For example, a person can face the same EMTR when faced with the progressive withdrawal of a subsidy of $10 000 as with the withdrawal of a subsidy of $1000.
- By definition, EMTRs illustrate changes at the margin — the share of an additional dollar of market income that an individual pays in tax or that is offset by the withdrawal of their income support payment. It is the net return to working that influences work decisions.

2 Interactions between housing assistance policies and market income

To assess the financial incentives to work associated with housing assistance policies, it is necessary to understand how the policies affect disposable income at different levels of market income. To that end, this section provides an overview of CRA and social housing rent setting arrangements. More detail on these policies is available in background paper 1.

An overview of Commonwealth Rent Assistance (CRA)

Eligibility and payment amounts

CRA is a subsidy paid to recipients of ISPs[8] and Family Tax Benefit Part A (FTB A) (in excess of the 'base rate') who rent in the private market or from a community housing provider.[9]

Eligible people who pay rent above a threshold level receive the lower of:

- 75 per cent of the difference between their rent and that threshold amount
- a maximum amount.

The threshold and maximum amounts vary by family situation (table 1).

Table 1 **CRA threshold and maximum amounts by family situation, as at March 2014**

Family situation[a]	*Number of dependent children*	*Threshold amount*	*Maximum amount*
	Number	$ per annum	$ per annum
Single	0	2 912	3 286
Couple	0	4 742	3 089
Single	One to two	3 837	3 847
Couple	One to two	5 678	3 847
Single	Three or more	3 837	4 350
Couple	Three or more	5 678	4 350

[a] Other rules apply to people sharing a rental property and for temporarily-separated couples.

Source: DSS (2014).

Rules governing withdrawal of rent assistance

Once market income reaches a certain level, rent assistance is withdrawn as income increases. The withdrawal of CRA is determined by the 'income test' that applies to the recipient's welfare payment (the Department of Human Services defines the income test to include both the *level* of income above which the benefit is withdrawn and the *rate* of withdrawal). For example, if a person receives the Disability Support Pension (DSP) and

8 ISPs are welfare payments administered by the Department of Human Services (DHS). Family Tax Benefit is also administered by DHS, but is not an ISP.

9 In addition, rent assistance is available to recipients of some Department of Veterans' Affairs pensions, such as the service pension and the social security age pension (DVA 2013). Due to the focus on incentives to work, these payments are not analysed in this paper.

CRA, then the withdrawal of CRA is determined by the DSP income test. If they receive CRA because they get more than the base rate of FTB A, withdrawal of CRA is based on the FTB income test.

Income support payment income tests

Income tests vary by payment type and a recipient's characteristics.[10] For example, the income threshold at which an ISP starts to be withdrawn (also known as the income free area) and the rate of withdrawal (also known as the taper rate) will be different for Disability Support Pension (DSP) recipients and Parenting Payment recipients, and for singles and couples.[11]

CRA is withdrawn only after the ISP has reduced to zero.[12]

The effect of an ISP income test on CRA payments is illustrated in figure 1. Up to market income $A the full ISP and CRA are paid. Between $A and $B, the ISP is withdrawn as market income increases, but the full CRA amount is received. Finally, after the ISP has reduced to zero (at $B), CRA is withdrawn at the same rate as the ISP was withdrawn. At levels of market income above $C, the person no longer receives any CRA.

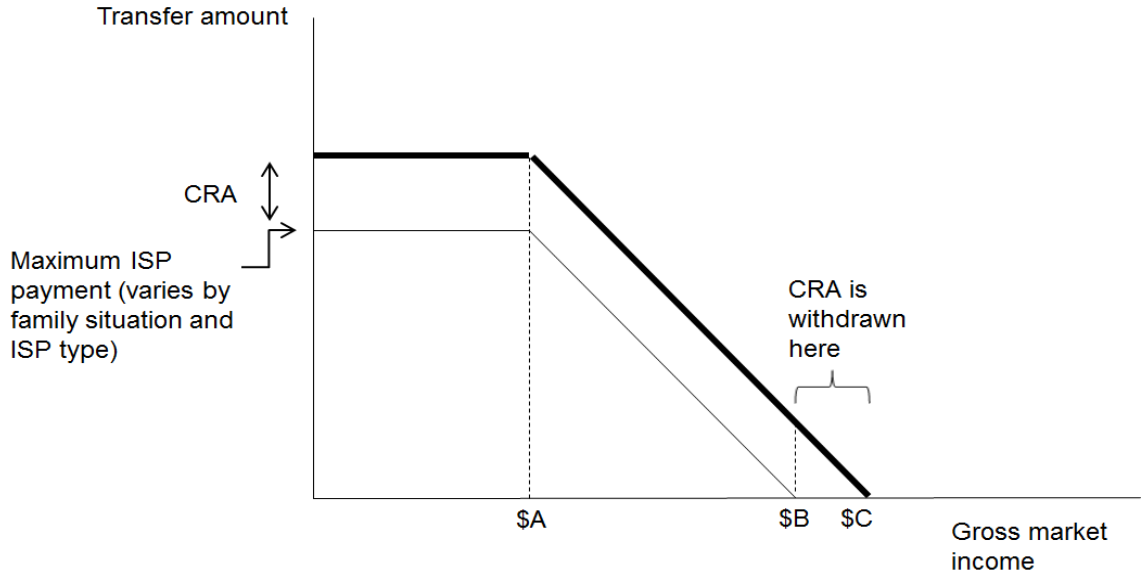
The effect of this approach to withdrawing CRA is to extend the range over which welfare payments are withdrawn, rather than to increase the rate of withdrawal. An alternative approach would see CRA withdrawn at the same time as an ISP — contributing to higher EMTRs for CRA recipients.

[10] All income support recipients, irrespective of payment type, are permitted to combine employment with receipt of welfare payments in line with the income test applying to their payment.

[11] There are some complicating factors. First, most individuals are eligible for more than one payment (for example, Age Pension recipients also receive a Pension Supplement and a Clean Energy Supplement). Only the Pension Supplement has been included in the analysis presented in this paper. Other supplements and allowances are ignored. Furthermore, different withdrawal rates can apply over different ranges of income. This is taken into account in the analysis presented. The situation for couples is more complex again — there is either a joint-income or partner-income test — and becomes even more complex if both receive ISPs. These characteristics of ISPs are not discussed further in this paper, but they are captured by the PCTT 2014 model.

[12] Some smaller components of welfare support (such as part of the pension supplement) are withdrawn after rent assistance.

Figure 1 **The interaction between CRA and the ISP income test[a]**



[a] This schematic ignores supplement payments and is not to scale.

Family Tax Benefit Part A income test

The Family Tax Benefit (FTB) Part A is the larger of two amounts (DHS 2014):

- a maximum rate less 20 cents per dollar of adjusted family income[13] above $50 151
- a base rate less 30 cents per dollar of adjusted family income above $94 316 (or higher if the family includes more than one eligible child).

The maximum and base rates vary according to the number and characteristics of children in the family (for example, their age, student status and whether they are a triplet or quadruplet). The maximum rate also depends on CRA, which is included in calculating the maximum rate for all families that rent in the private market. That is, a family that rents has a higher FTB A maximum rate than a family with otherwise identical characteristics, including income, that owns their home. (Summary tables for each tenure type are presented in annex B.) CRA is withdrawn as adjusted family income rises, and is zero at the income level that qualifies a family to receive the base rate of FTB A, that is, $94 316 if the family includes one child. For families with three or more children, income does not reach a level at which a base rate of FTB applies. In this case, FTB continues to reduce from the maximum payment at a rate of 20 cents per dollar of extra income until it reaches zero.

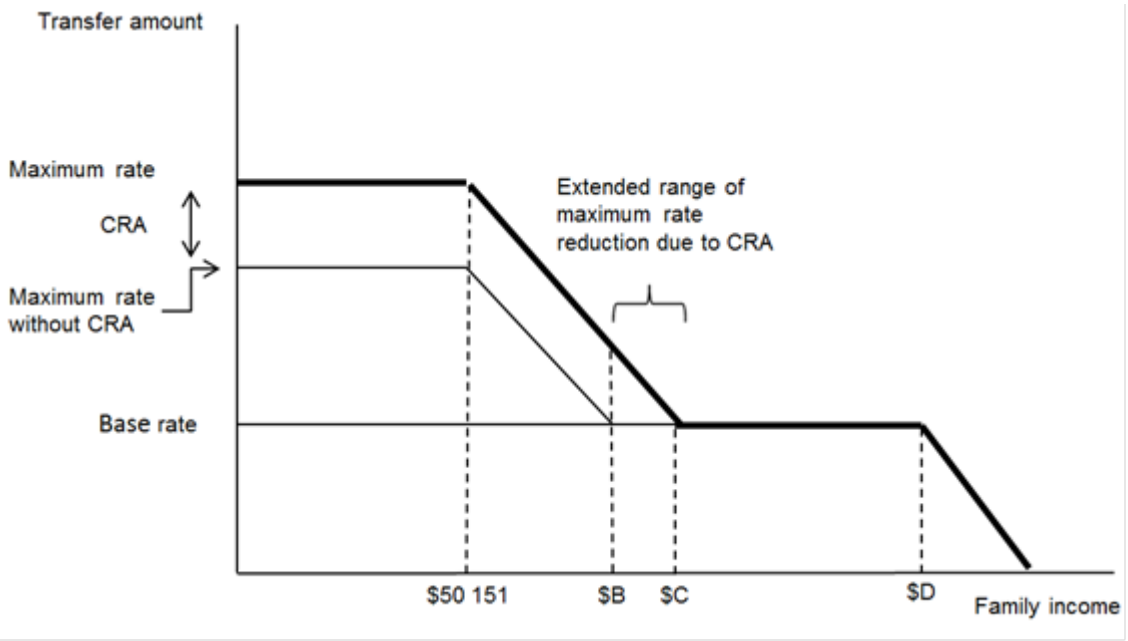
13 'Adjusted' family income is used in the Family Tax Benefit income test. It includes market income and welfare payments.

If CRA was not included in the maximum rate of FTB A, the maximum rate would be lower by exactly the CRA amount, and would decrease to the base rate (or to zero for families for whom the base rate doesn't apply) at a lower level of adjusted family income. In other words, receipt of CRA both increases a family's maximum FTB A rate, and increases the range of income over which this payment is higher than the base rate.

This is illustrated in figure 2 for a family for whom the base rate applies. The bold line represents the amount of FTB A, including CRA, received at different levels of adjusted family income by a renting family. At incomes up to $50 151 the family receives the maximum FTB A rate, which includes CRA. Above this level of adjusted income, the maximum rate is reduced until it reaches the base rate at $C. If the CRA component was not included in the maximum rate, the FTB payment would reach the base rate at a lower family income ($B). The family receives the base rate of FTB A up to income $D (for example, $94 316 if a family has one eligible child, or $98 112 with two eligible children). As income rises beyond $D the family's base rate of FTB A is withdrawn.

Figure 2 **The interaction between CRA and the FTB A income test[a,b]**

Situation for families for which the base rate applies



[a] This schematic is not to scale. For instance, the positions of $B, $C and $D depend on family characteristics. [b] As per previous comment, this diagram only applies to FTB recipients (eligible for CRA) where the base rate is applicable. The base rate is not applicable where the rate calculated under the first income test is higher than the rate calculated under the second income test (i.e. where there are 3 or more children).

There are special rules for families that receive both an ISP and FTB A. First, ISP recipients always receive the maximum rate of FTB A. Second, recipients receive rent assistance through FTB A rather than through the ISP payment, so CRA is withdrawn

along with FTB A, not the ISP. Withdrawal of CRA does not commence until family income reaches $50 151 or all ISP is withdrawn, whichever is higher. CRA is withdrawn in line with the FTB A income test, not the ISP income test, meaning that the EMTRs are lower.

An overview of social housing rent setting

Rent setting in public housing

As discussed in background paper 1, rent setting arrangements vary across the country because public housing is provided by state governments. Nonetheless, there are substantial similarities across jurisdictions:

- Most states charge residents 25 per cent of 'assessable household income', up to market rent. The exceptions are the Northern Territory (23 per cent is charged, up to market rent) and New South Wales (between 25 per cent and 30 per cent is charged depending on household income, up to market rent).[14]
- In calculating assessable income:
  - states include income from all household members, although some states treat income from youths or aged pensioners differently. Also, some states count only a proportion of income from some members of the household (such as children, carers or secondary income earners)
  - states take a similar approach to income from government payments (table 2). The main ISPs are fully counted, and payments that are deemed to be for 'specific purposes' are fully excluded (including the Child Care Benefit and Child Care Rebate). Sixty per cent of Family Tax Benefit is included in most states[15], although the Northern Territory has different rules
  - Tasmania is alone in deducting income tax and the Medicare levy from gross income (market income plus transfers). Other jurisdictions use pre-tax income.

[14] South Australia also charges a lower percentage for cottage flats (single story flats in small groups) — 19 per cent for a bedsitter, 21 per cent for a one bedroom flat and 23 per cent for a two bedroom flat (Government of South Australia 2014).

[15] Although different rules may apply depending on whether FTB is received fortnightly or as a single end-of-financial-year payment. (FTB recipients can choose between these options.)

Table 2 **Proportion of government payment counting as income for public housing rent setting[a]**

Per cent

Government payment	*NSW, SA, Tas*	*NT*
Age Pension; Disability Support Pension	100	100
Newstart Allowance, Youth Allowance	100	100
Parenting Payment, Carer Payment	100	100
Austudy	100	100
Family Tax Benefit part A	60	43
Family Tax Benefit part B	60	0
Child Care Benefit	0	0
Child Care Rebate	0	0

a Information could not be included for Victoria, Queensland or Western Australia.

Source: Personal communication with State Housing Authorities.

Rent setting in community housing

Community housing rent setting closely follows public housing rent setting rules in most jurisdictions (CHFA 2014). For example, in Victoria, community housing rent is set at 25 to 30 per cent of assessable income, although family payments are charged at 15 per cent (CHFV 2013). While community housing tenants are eligible for CRA, tenants are required to pay it to the landlord (CHFV 2013), and it has no bearing on a tenant's disposable income or financial incentives to work (BP 1). Community housing rent setting, therefore, affects incentives to work in much the same way as public housing rent setting despite the receipt of CRA. All of the analysis presented below for public housing tenants can be read as also applying to community housing tenants.

3 Financial incentives to work related to housing assistance

This section summarises and discusses incentives to work under CRA and social housing rent settings for 'typical' housing assistance recipients — the most prevalent types of recipients (box 3).

The observations presented rely on analysis of budget constraints for each typical recipient. The Commission has used the PCTT 2014 model to derive these curves, applying the logic set out in section 1 to isolate the effects of housing assistance.

Rather than explain budget constraints and EMTRs for all typical recipients, only one example is worked through in this paper — for a single, childless DSP recipient. Using this model, other examples can be similarly examined, as needed. This example was chosen because the budget constraints and EMTR curves for a person with these characteristics are

relatively simple to explain. This relative simplicity arises because the DSP is not assessable for income tax purposes for people under age pension age. Other welfare payments, including the Age Pension, Newstart Allowance, Youth Allowance and Parenting Payment (Partnered) are assessable, complicating the analysis for these groups (ATO 2014). It is recognised that DSP recipients face barriers to employment. Nonetheless, some do work and most new recipients since 2006 have been assessed as having some job capacity (BP 3).

Box 3 The most prevalent groups receiving housing assistance

Data from the Department of Human Service's administrative collection indicate that three groups, classified by ISP and family situation, accounted for over 50 per cent of working age CRA recipients who receive ISPs in 2013:[a]

- childless singles receiving the Newstart Allowance — 20.5 per cent
- childless singles receiving the Disability Support Pension — 18.4 per cent
- single parents receiving the Parenting Payment and the FTB — 14.8 per cent.

The same dataset indicates that the same groups make up nearly 60 per cent of working age public housing tenants who receive ISPs:

- childless singles receiving the Disability Support Pension — 36.6 per cent
- childless singles receiving the Newstart Allowance — 10.3 per cent
- single parents receiving the Parenting Payment and the FTB — 10.7 per cent.

[a] Data exclude people who receive FTB only (that is, no ISP).

Summary insights are presented for other typical recipients. Budget constraints and EMTR curves for the other typical recipients are presented in annex C to this background paper.

Unlike in section 1, the budget constraints that are presented link market income to disposable income *less rent paid*. This small change in approach is needed in order to compare the two housing policies. Both policies mean that a recipient has more disposable income after paying rent, but this outcome is achieved in different ways. CRA increases a tenant's disposable income directly, but doesn't change the rent that they pay (they still pay the market rent). In this case, the housing assistance subsidy received by the tenant is explicit. Social housing rent setting doesn't change a tenant's disposable income, but reduces the rent that they pay (they pay less than the market rent). In this case, the housing assistance subsidy received by the tenant is implicit. An example illustrating these differences is presented in table 3.

The different ways in which rent subsidies are delivered also means that the income effect described in section 1 is defined slightly differently for social housing tenants. Because a person's disposable income doesn't change when they move into social housing (because

the subsidy is implicit), the income effect is measured as the change in disposable income less rent. This is equal to the implicit rent subsidy.[16]

Table 3 **Illustrative example — rent subsidies for private renters and social housing tenants[a]**

Housing assistance	*Income*	*Market rent*	*Income less market rent*	*CRA*	*Disposable income*	*Rent paid*	*Disposable income less rent paid*	*Rent subsidy/ income effect*
CRA	20 000	10 000	10 000	5 000	25 000	10 000	15 000	5 000
SH	20 000	10 000	10 000	..	20 000	5 000	15 000	5 000

a This illustrative example does not use actual data. The numbers have been chosen to illustrate the difference between rent subsidies for the two types of housing assistance — not to reflect actual scenarios.

The mechanics of the two rent subsidies are summarised in box 4.

Finally, unless otherwise indicated, it is assumed in examples presented throughout the section that housing assistance recipients live in properties with a market rent of $10 000 per year ($192 per week). This amount would allocate the maximum rate of CRA to an eligible private renter. It is also consistent with an estimate of the median rent paid by DSP recipients who rented privately and received CRA in June 2013 (BP 3, annex A).[17]

A description of the budget constraints and EMTR schedules for a single, childless DSP recipient in either the private rental market or social housing follows. A summary of the income and price effects of housing assistance for CRA recipients and social housing tenants is then presented. Finally, the disposable incomes of otherwise similar CRA recipients and social housing tenants are compared.

16 In-kind support of this type ties a tenant to a housing outcome that they might not have chosen if they instead received a cash subsidy. To the extent that this is the case, the value the person places on their housing assistance is lower than the value of the subsidy — an inefficient outcome.

17 The median rent estimate in BP 3, annexe A is $176. This estimate is probably a bit lower than the median for single DSP recipients — suggesting that use of a higher figure is warranted. First, the estimate is based on rents paid by all DSP recipients. Partnered DSP recipients might pay less rent than singles (that said, 80 per cent of DSP recipients who receive CRA are single so the estimate is primarily driven by singles' rents). Second, rent information for some ISP recipients might be out of date. In the data underlying the median rent estimate, over 80 per cent of CRA recipients had updated their rent details in the preceding 3 years — meaning the information was reasonably current. Those who hadn't presumably either hadn't experienced a rent increase in some time, or were paying rent above the threshold level for maximum CRA, and so did not notify Centrelink. In the absence of more information, it is assumed that $192 is a reasonable estimate of the rent paid by single DSP recipients who rent privately and receive CRA.

Box 4 **The mechanics of Australian rent subsidies in a nutshell**

How the subsidies are paid

- CRA is received as a cash transfer, so directly increases a tenant's disposable income. The recipient pays the private landlord the agreed market rent.
- Under social housing rent setting, subsidised tenants may be charged a rent below the market rate. In this case, there is no explicit cash transfer — the rent subsidy is implicit. The subsidy doesn't change a tenant's disposable income; rather, it decreases the amount of income that has to be spent on rent.

In both cases, after the recipient of housing assistance has paid rent, they can spend more on other goods than they would be able to in absence of the policy. In other words, both policies are a rent subsidy — both increase disposable income *net of out-of-pocket rent*.

How the subsidies are set

- Under CRA, the subsidy is a percentage of market rent above a minimum threshold (that varies by family situation) up to some maximum amount.
- Social housing rent is set as a percentage of income, up to market rent. In other words, the rent subsidy is the difference between market rent and some percentage of income.

How the subsidies change as income increases

- CRA is reduced according to the income test that applies to the recipient's ISP (or FTB A if that is how they qualify for this form of assistance). The rent subsidy does not change at lower levels of market income.
- Social housing rent increases with every dollar of additional market income earned and the rent subsidy decreases accordingly.

Financial incentives for a single, childless DSP recipient

Income effects — rent subsidies

Consider two single, childless DSP recipients — one rents privately and receives CRA, the other lives in social housing. Both receive a DSP of about $21 600 a year, and live in properties with a market rent of $10 000 a year. Without subsidies, each would have a disposable income post rent (DIPR) of about $11 600.[18]

- CRA adds close to $3300 to the private tenant's disposable income per year, giving them a DIPR of about $14 900 if they have zero market income (figure 3a).[19]

[18] They would also receive a range of concessions, for example, via a Health Care Card and for utilities. These are ignored in the modelling (not least because they depend on individuals' spending patterns so vary from person to person).

[19] Centrelink considers all of sources of market income in determining a recipient's ISP payment (DHS 2014b), although compensation for lost income is assessed at a lower rate (DHS 2014a). With the exception of superannuation pensions, income tax is payable on all these sources of income (ATO 2014).

- The social housing tenant pays rent equal to 25 per cent of their income, or about $5400, giving them a DIPR of about $16 200.[20]

The rent subsidies raise DIPR by $3300 for the CRA recipient and $4600 for the social housing tenant. In figure 3, this effect can be seen in the gaps between the budget constraints for each tenant ('DSP, CRA' and 'DSP, SH', respectively) and the budget constraint they would face without the subsidy ('DSP, no HA').

The tenant renting privately continues to receive the full amount of CRA until DSP is fully withdrawn — at a market income of about $45 000. CRA is then withdrawn at a rate of 50 cents in the dollar as market income rises. It is fully withdrawn at a market income of about $52 000. The tenant continues to receive a small amount of pension supplement up to an income of about $54 000, and at higher incomes receives no ISPs or CRA — they have the same budget constraint as someone without DSP or CRA ('No DSP, no HA'). The social housing tenant pays more in rent as market income rises because rent is set as a percentage of income. At a market income of about $36 000, the tenant pays market rent — the rent subsidy reaches zero. Why doesn't this occur at $40 000, when 25 per cent of market income would be equivalent to the $10 000 market rent? The answer lies in the fact that at a market income of $36 000, the tenant receives an ISP of about $4000 — which takes assessable income to $40 000.

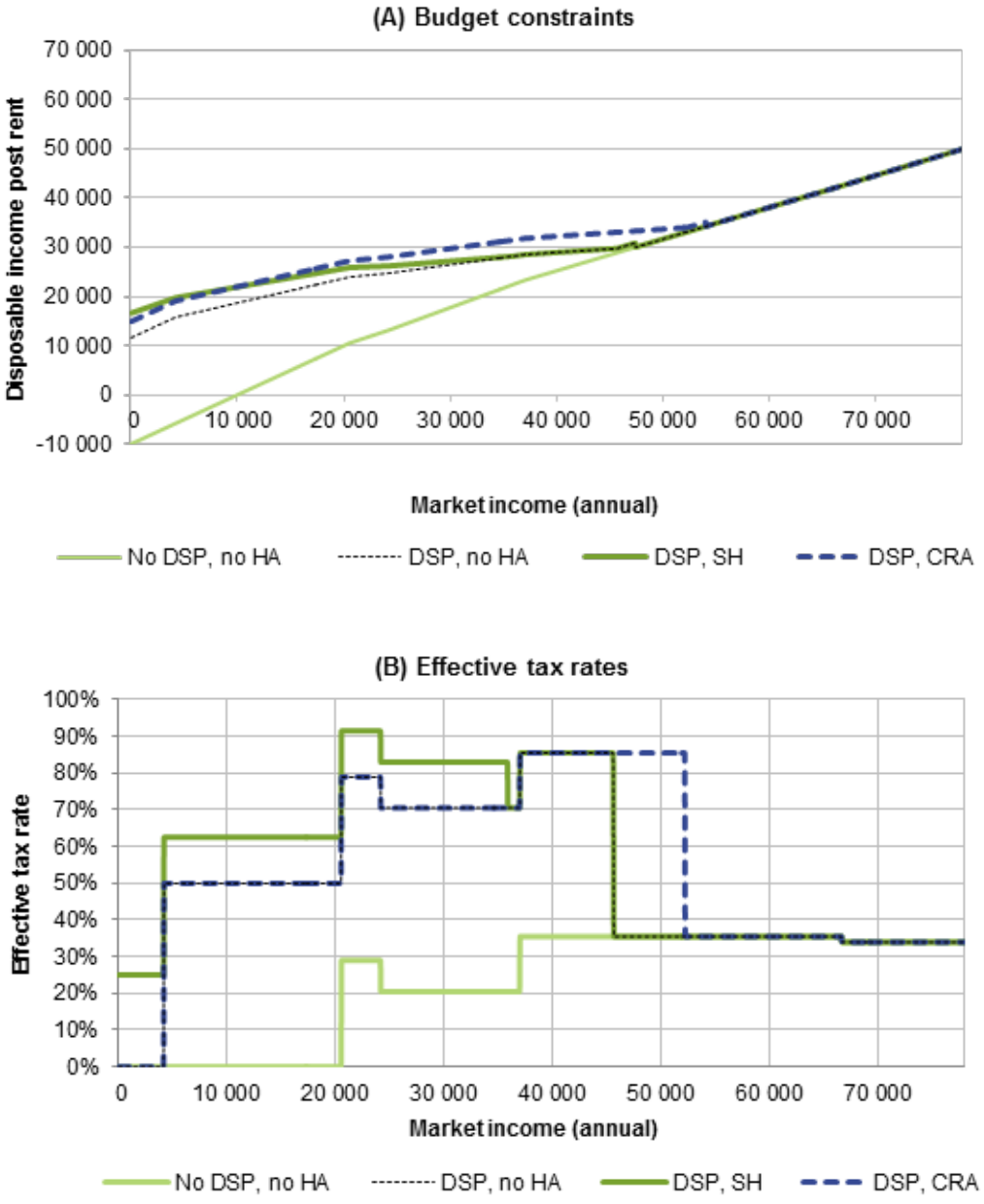
Withdrawal of DSP continues at market incomes above $36 000, until an income of about $44 000. At this point, the social housing tenant has the same budget constraint as someone with no DSP or HA ('No DSP, no HA').

Because this analysis relates to working age housing assistance recipients, it assumes that all sources of market income are taxable.

20 In reality, DIPR is a bit higher than this because the pension supplement (about $1600 per annum) is not included in social housing tenants' assessable income for rent setting purposes. Rent paid is therefore about $5000 and the DIPR, $16 600.

Figure 3 **Budget constraints and EMTRs[a,b,c,d]**

Single, childless DSP recipient



[a] Market rent is assumed to be $10 000 per annum. [b] The small 'notches' in each budget constraint (at an income of about $48 000 for social housing residents and $54 000 for CRA recipients) reflect the fact that pension supplements are withdrawn at a rate of 100 per cent at those income levels. This causes the EMTRs to spike above 100 per cent at these income levels. For simplicity, this is not shown in the diagram. [c] The budget constraints include the effects of income taxes and housing assistance. [d] The small step down in the EMTR schedule at a market income of about $67 000 reflects the point at which the low income tax offset goes to zero.

Source: Estimated from the PCTT 2014 model.

Price effects — effective marginal tax rates (EMTRs)

As market income increases, five factors can influence the share of any extra dollar earned that is retained as disposable income — withdrawal of ISPs, the low income tax offset, income taxes, the Medicare levy and reductions in housing subsidies.

Both tenants can earn about $4000 before DSP starts to be withdrawn — at a rate of 50 cents in the dollar. Both qualify for the low income tax offset, meaning that they don't pay income tax or the Medicare levy until earning more than about $20 500.[21] (Other income earners face a tax free threshold of $18 200.) From about $20 500, the tenants pay income tax at 19 cents in the dollar and the Medicare levy is introduced. Because of their higher effective tax free threshold, the tenants initially face a relatively high Medicare levy (10 cents in the dollar). At an income of about $24 000, the tenants' Medicare contributions are similar to other tax payers', and the levy drops back to 1.5 cents in the dollar — the marginal tax rate (MTR) due to income taxes and the Medicare levy is 20.5 cents in the dollar.[22] From an income of $37 000, income taxes are 32.5 cents in the dollar, the Medicare levy 1.5 cents and the low income tax offset is withdrawn at a rate of 1.5 cents in the dollar. The MTR due to these three factors is, therefore, 35.5 cents in the dollar within a market income range of $37 000 to about $67 000. At about $67 000, the low income tax offset is completely phased out.

Withdrawal of CRA (at 50 cents in the dollar) starts once DSP payments are zero (at an income of about $45 000). The social housing tenant pays 25 cents of each dollar of assessable income in rent.

What does this all mean? Looking at the social housing tenant first, up to a market income of about $4000, rent payments increase by 25 cents for each dollar earned — their EMTR is 25 per cent (figure 3b). Beyond $4000, DSP is reduced by 50 cents with each additional dollar of market income. This means that the income used in determining a tenant's rent payments ('assessable income') rises by 50 cents. Rent increases by 25 per cent of this rise — or 12.5 cents. In total, the tenant faces an EMTR of 62.5 per cent — 50 percentage points from the withdrawal of DSP and 12.5 percentage points from a higher rent payment. In other words, a tenant retains 37.5 cents of each additional dollar of market income.

From a market income of about $20 500 to about $24 000 (a relatively small range), the EMTR increases by the MTR, 29 per cent, to 91.5 per cent.[23] The tenant takes home less than 10 cents of each extra dollar earned. The EMTR drops back to 83 per cent at incomes

[21] In 2013-14, the low income tax offset was $445 and was withdrawn at a rate of 1.5 cents per dollar of income over $37 000. It cut out at incomes above $66 667.

[22] Rates are those prevailing in financial year 2013-14.

[23] Rent payments are calculated on pre-tax income, so income tax rates do not affect the housing assistance component of the EMTR.

between about $24 000 and $36 000 — 62.5 percentage points from withdrawal of DSP and increasing rent payments and 20.5 percentage points from income tax and the Medicare levy.

At about $36 000, the tenant starts paying market rent, and continues to pay this level of rent as market income increases. The contribution of housing assistance to the EMTR goes to zero, but the total EMTR remains at 70.5 per cent — 50 percentage points from withdrawal of DSP and 20.5 percentage points from income tax and the Medicare levy. With the higher marginal income tax rate (32.5 cents per dollar) and decline in the low income tax offset at incomes above $37 000, the tenant's EMTR rises to 85.5 per cent. Once DSP is totally withdrawn (at about $45 000), the EMTR curve summarises the effects of the income tax rate, the Medicare levy and the reduction of the low income tax offset.[24]

In summary, the contribution of housing assistance to EMTRs affects the social housing tenant's disposable income over market incomes between zero and $36 000 with EMTRs of over 80 per cent experienced between $20 000 and $36 000 market income. While the effect of housing assistance on the proportion of an extra dollar of market income retained by a tenant is smaller than the effect of the combination of DSP withdrawal and taxes, it nevertheless contributes overall to a major apparent disincentive to work.

Turning to the tenant renting privately, housing assistance makes no contribution to their EMTR until an income of about $45 000. CRA is then withdrawn, adding to the 35.5 per cent MTR from the income tax, the Medicare levy and reduction of the low income tax offset to give a total EMTR of 85.5 per cent between about $45 000 and $52 000. Once CRA is totally withdrawn, disposable income is not affected by welfare support.[25]

The contribution of CRA to the EMTR is large (50 percentage points) in comparison with the contribution of rent setting rules to a social housing tenant's EMTR (a maximum of 25 percentage points). However, it affects a recipient's disposable income over a relatively small income range and at higher levels of income.

As noted above, there is some variation in public housing rent setting across jurisdictions. The effects of this on EMTRs are described in annex D.

Income and price effects due to housing assistance for typical recipients

Income and price effects faced by the typical CRA recipients and social housing tenants listed in box 3 are presented in this section. For simplicity, only key points are illustrated.

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[24] If the tenant had not started to pay market rent at the point at which their ISP was withdrawn, the contribution of housing assistance to their EMTR would rise to 25 per cent.

[25] The pension supplement that remains when CRA goes to zero is withdrawn at a rate of 100 per cent when income reaches about $54 000. This causes a big spike in the EMTR at that rate. For simplicity, this is not shown in the diagram.

As noted above, the budget constraints and EMTR schedules underlying these points are available in the annex to this background paper.

Price effects are discussed first because they influence the summary presentation of income effects. EMTRs show how much of one more dollar earned a person keeps as disposable income, but employment offers tend to involve work that pays much more than one more dollar — for example, an extra shift a week, a job with the same hours paying more (or less) or a move from unemployment into a part-time job. In this case, it is the cumulative effect of EMTRs that is likely to influence decisions. A person will think about how their disposable income will change in total if they take up a job offer. The cumulative effects of the different factors affecting disposable income are illustrated below, and in the process, so are income effects.

For comparability, both with the preceding analysis and between ISP groups, market rent is assumed to be $10 000 a year in these examples. This is likely to be below the level of rent paid by some single Newstart Allowees and many Parenting Payment (Single) recipients. Setting market rent at a higher level would not affect the CRA analysis (at an annual rent of $10 000, recipients are receiving the maximum rate of CRA). It would, however, affect the range of market income over which housing assistance contributed to EMTRs for public housing tenants. In particular, if tenants were paying rent below the market level at the point at which their ISP was withdrawn, the contribution of housing assistance to their EMTR would increase to 25 per cent.[26]

Price effects

In general, housing assistance (for both social housing and CRA recipients) is not the primary factor determining a person's EMTR, either because the corresponding EMTR is small in comparison with other factors that create a gap between market and disposable income or, where large, do not apply over a big income range. That said, the contributions of housing assistance to EMTRs, and the income ranges over which they apply, vary markedly with welfare payments.

In the case of CRA, EMTRs are relatively high for single Newstart (NWS) and single DSP recipients (60 per cent and 50 per cent, respectively) — reflecting the withdrawal rates for those payments (figure 4). The high withdrawal rates mean that CRA goes to zero reasonably quickly and clearly contributes to high EMTRs. As CRA is withdrawn last, and at a high rate, the high EMTRs apply over a relatively small income range. In contrast, CRA withdrawal rates for FTB recipients are lower (20 per cent), so the contribution of housing assistance to EMTRs applies over a wider range of income.

Similarly, EMTRs for social housing tenants depend on their ISP:

[26] Readers who are interested in the effects of higher market rents on EMTRs for public housing tenants could use PCTT 2014 to generate budget constraint and EMTR schedules.

- the higher an ISP, the smaller the income range over which the contribution of housing assistance to EMTRs applies. This occurs because, the higher the ISP, the more rent a tenant pays at zero market income, and so, other things equal, the tenant reaches market rent at a lower level of market income than they would if they received a lower ISP
- the higher the income threshold for withdrawal of ISPs, the smaller the total income range over which housing assistance contributes to EMTRs. This occurs because, other things equal, the higher the threshold, the larger the income range over which the tenant faces a contribution to EMTRs from housing assistance of 25 per cent (that is, before ISP withdrawal commences), and the sooner they start paying market rent
- the higher the ISP withdrawal rate, the lower the contribution of housing assistance to EMTRs and the larger the range over which those EMTRs apply. This occurs because, other things equal, a higher withdrawal rate means that assessable income rises more slowly with market income, and so, therefore, do rent payments.

The ISPs of typical social housing tenants vary markedly across household characteristics (table 4), and this variation is reflected in the contribution of housing assistance to EMTRs (figure 5). Among the typical recipients, a single parent with one child who receives Parenting Payment and FTB has the highest ISP at zero market income, the highest threshold before payments are withdrawn and the lowest withdrawal rate. Consistent with this, their EMTR goes to zero at a relatively low level of market income, is 25 per cent over a larger income threshold range and is higher when ISP withdrawals begin. They also pay the most rent at zero market income — $5987 (information on rent paid at zero market income is presented in brackets in the legend in figure 5).

Table 4 **ISP characteristics of typical social housing tenants[a,b,c]**

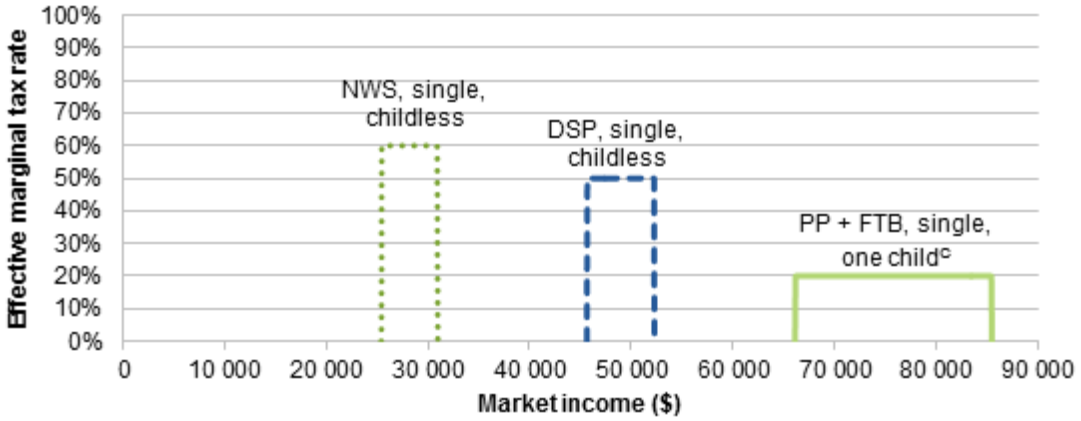
Type of ISP recipient	*Annual ISP when market income is zero*	*Market income threshold before ISP withdrawal commences*	*Rate at which ISP is withdrawn*
	$	$	Cents in the dollar
Single, childless, NWS	13 309	2 607	50 or 60
Single, childless, DSP	21 611	4 171	50
Single, one child, PP + FTB	27 518	4 813	40

DSP – Disability Support Pension; NWS – Newstart; PP – Parenting Payment; FTB – Family Tax Benefit. **a** Rates current at September 2014. **b** The ISP is assumed to include the pension supplement where applicable. Other supplements such as the Energy Supplement, Telephone Allowance and the Pharmaceutical Allowance are ignored. These payments total about $600 annually, but only apply to some recipients. **c** A withdrawal rate of 50 cents in the dollar applies for market income between $100 and $250 per fortnight. At incomes above $250, the withdrawal rate is 60 cents in the dollar.

Source: DHS (2014).

Figure 4 **Contribution of CRA to EMTRs[a,b,c,d,e]**

Selected payment types

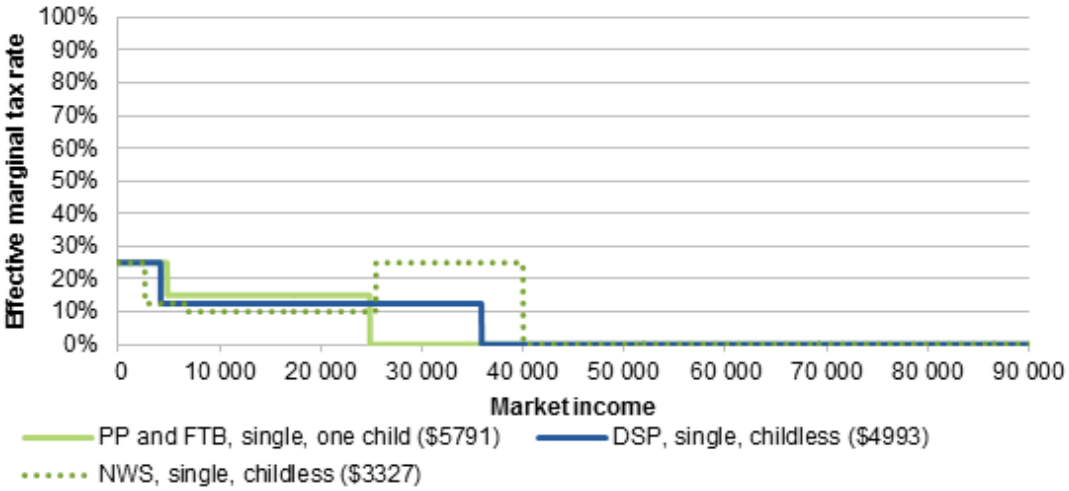


[a] Market rent is assumed to be $10 000 per annum. [b] The payments are: Newstart Allowance (NWS), Disability Support Pension (DSP), Parenting Payment (PP) and Family Tax Benefit (FTB). [c] The single parents' child is assumed to be 5 years old. In reality, at this level of income Parenting Payment is fully withdrawn. The text is included in the label to facilitate comparison with the following figure for public housing tenants. [d] The effect of pension supplement withdrawal is not shown. [e] The schedule for the PP recipient does not include the effects on disposable income of the Seniors and Pensioners Tax Offset. Inclusion of this offset has no discernible effect on the schedule.

Source: Estimated from the PCTT 2014 model.

Figure 5 **Contribution of social housing rent setting to EMTRs[a,b,c]**

Selected payment types



[a] Market rent is assumed to be $10 000 per annum. [b] The payments are: Newstart Allowance (NWS), Disability Support Pension (DSP), Parenting Payment (PP) and Family Tax Benefit (FTB). [c] Rents paid at zero market income are presented in brackets in the legend for each typical ISP recipient.

Source: Estimated from the PCTT 2014 model.

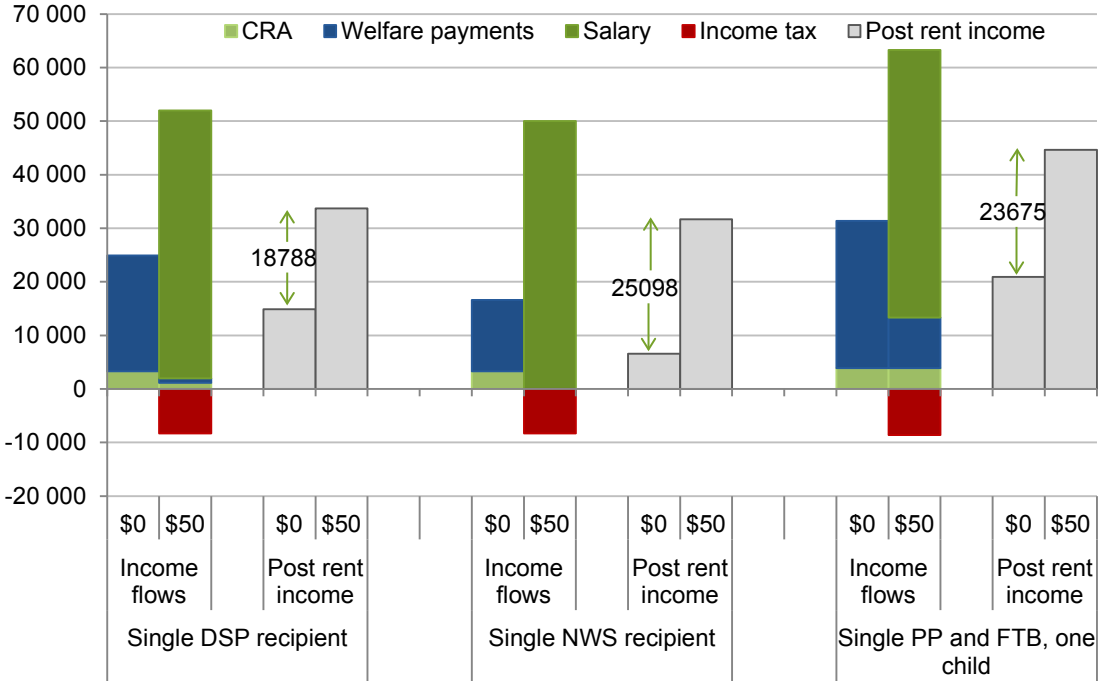
Cumulative price effects and income effects

Relative to ISPs, the income effects of CRA and social housing rent setting are not the primary driver of high EMTRs (figures 6 and 7). For example, for a single, childless DSP recipient, the effect from CRA is about $3300 at zero market income and $1900 at a market income of $50 000. If the same person was in social housing, the income effect would be $4600 at zero market income and zero at a market income of $50 000.

Other factors that affect disposable income as market income rises, that is, price effects other than those created by housing assistance, have a much larger cumulative influence on work incentives than the withdrawal of CRA or social housing rent setting. For example, at zero market income a single, childless DSP recipient renting privately and receiving CRA has a disposable income (including rent) of about $25 000, whereas at $50 000 market income, their disposable income is about $44 000. So the DSP recipient would be better off by about $19 000 if they could take on a job paying $50 000. At this level of income, they would have to pay income tax and would forego benefits worth nearly $23 000 — of which CRA makes up a relatively small part (about $1400). Altering withdrawal rates of housing assistance in isolation is unlikely to alter work incentives in this set of circumstances.

Figure 6 **CRA and other transfers at different market incomes[a,b]**

Income flows and post rent income at zero and $50 000 market income

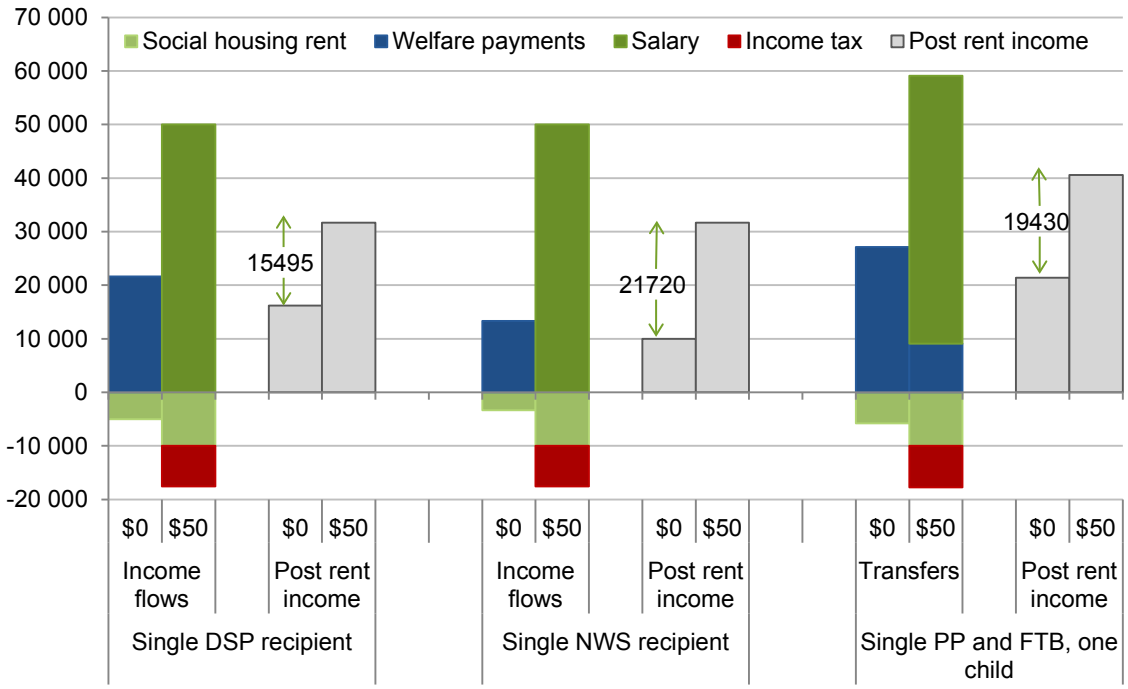


[a] Market rent is assumed to be $10 000 per annum. [b] Data for the PP recipient do not include the effects on disposable income of the Seniors and Pensioners Tax Offset. Inclusion of this offset has no discernible effect on the figure.

Source: Estimated from the PCTT 2014 model.

Figure 7 **Social housing and other transfers at different market incomes[a,b]**

Income flows and post rent income at zero and $50 000 market income



[a] Market rent is assumed to be $10 000 per annum. [b] Data for the PP recipient do not include the effects on disposable income of the Seniors and Pensioners Tax Offset. Inclusion of this offset has no discernible effect on the figure.

Source: Estimated from the PCTT 2014 model.

4 Comparing the income effects of CRA and social housing rent setting

This section compares the income effect of each form of housing assistance — or, in other words, looks at which form of housing assistance leaves a tenant with a higher DIPR. The answer depends on market rents, ISP types and market income.

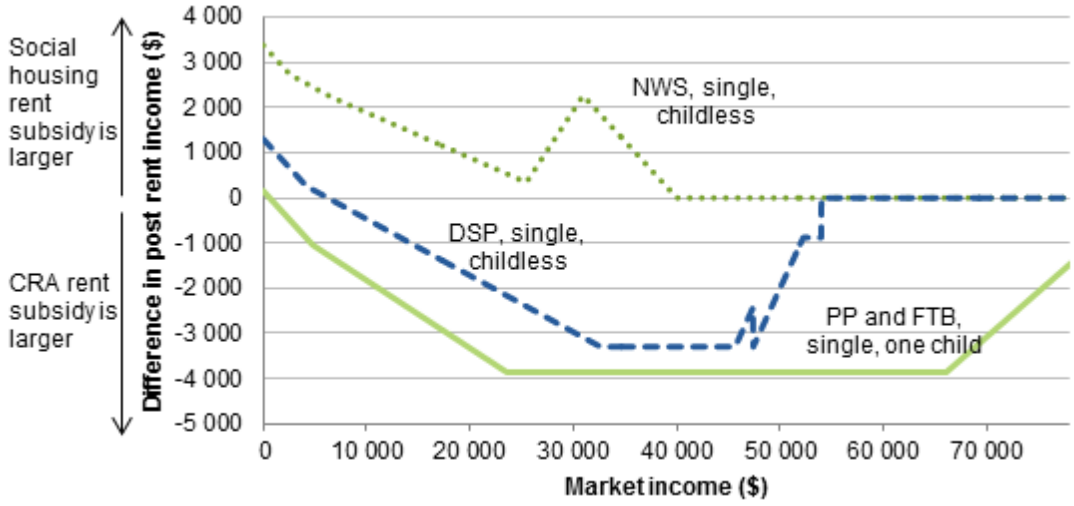
At lower market rents, some tenants who rent privately and receive CRA will have a larger DIPR than an otherwise similar social housing tenant so long as they have some income in addition to their welfare benefits (figure 8). For example, a single person with one child who:

- receives Parenting Payment and FTB
- lives in a property with an annual market rent of $10 000 ($192 a week)
- earns about $10 000 a year ($192 a week)

has about $2000 more in DIPR per annum if they rent privately than if they live in social housing.

Figure 8 **Difference in disposable income post rent (DIPR) under each housing policy[a,b]**

DIPR for a social housing tenant *minus* DIPR for a CRA recipient, $ per annum



[a] Schedules are drawn assuming a market rent of $10 000 per annum, or $192 a week. [b] The schedule for the PP recipient does not include the effects on disposable income of the Seniors and Pensioners Tax Offset. Inclusion of this offset has no discernible effect on the schedule.

Source: Estimated from the PCTT 2014 model.

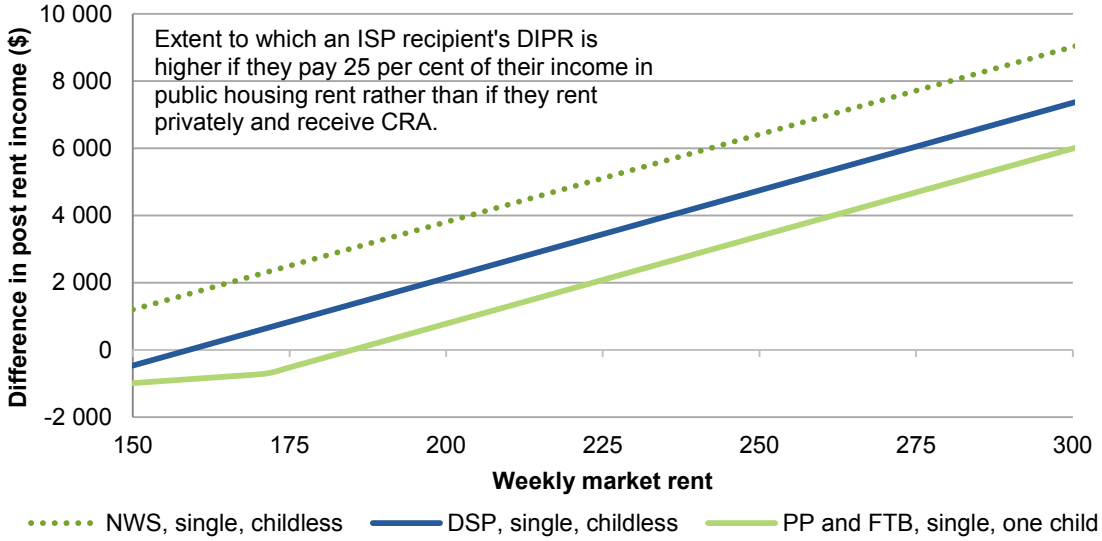
This conclusion raises some key questions:

- How low do rents have to be before the DIPR from renting privately and receiving CRA is greater than the DIPR from renting in social housing?
- Is it possible to rent at those levels in the private market?
- How many tenants have some income in addition to their ISP?

The answer to the first question is that rents have to be quite low for people with zero market income (figure 9), but can be higher for people who earn at least the median market income for their ISP group (figure 10).[27] For example, a single parent with one child who is receiving Parenting Payment and FTB and earning zero market income has a higher DIPR if renting privately up to a rent of about $185 a week. With a market income of $18 000 (the median for single parents who received Parenting Payment in 2013), they have a higher DIPR if renting privately up to a market rent of about $250 a week.

[27] Median annual incomes are estimated by multiplying data for the fortnight ending 30 June 2013 by 26.

Figure 9 **Post rent income under each policy at different weekly rents[a,b]**

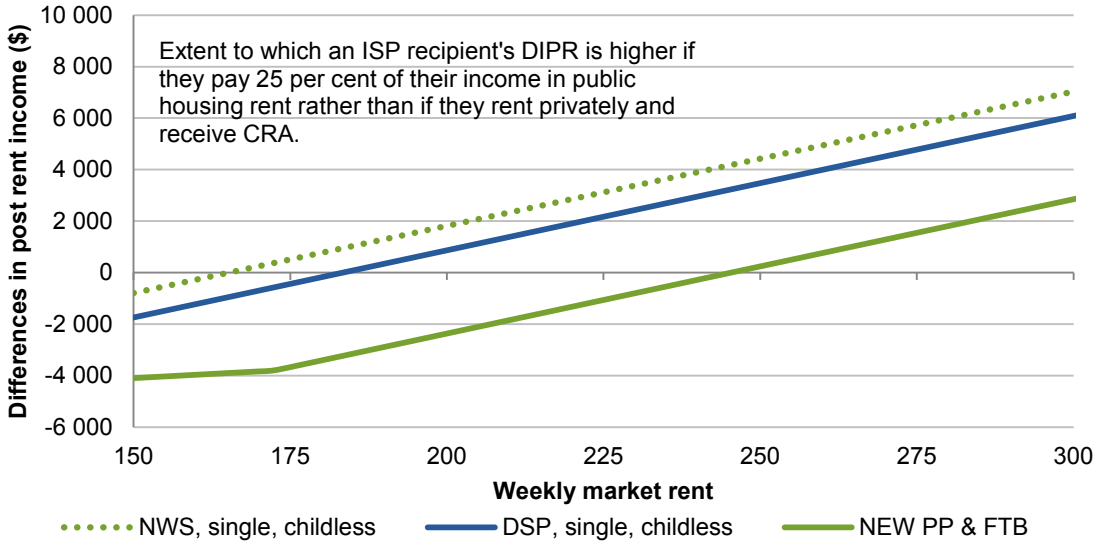


[a] ISP and FTB rates as at June 2014. [b] The schedule for the PP recipient does not include the effects on disposable income of the Seniors and Pensioners Tax Offset. Inclusion of this offset has no discernible effect on the schedule.

Source: Estimated from the PCTT 2014 model.

Figure 10 **Post rent income under each policy at different weekly rents[a,b]**

Median market incomes for each ISP group



[a] Curves are estimates assuming a median annual market income for single Newstart recipients of $15 000, single DSP recipients of $6000 and Parenting Payment (Single) and FTB recipients of $18 000. These estimates are based on data from the DHS database. [b] ISP and FTB rates as at June 2014.

Source: Estimated from the PCTT 2014 model.

So what is the answer to the second question? What proportion of tenants face private market rents that mean that their DIPR from renting privately is higher than it would be if they were living in social housing? As shown in figures 9 and 10, this depends on ISP type and market income. Estimates of rents for CRA recipients provide some insight into this question.[28]

Assuming zero market income:[29]

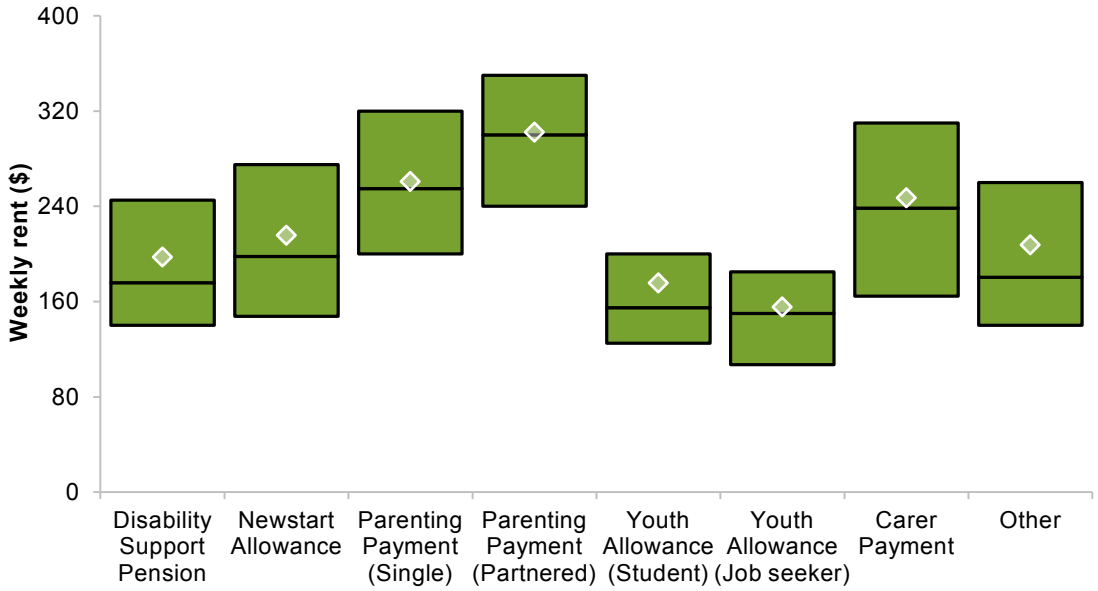
- Single DSP recipients who pay less than about $160 a week in rent have a higher DIPR if renting privately. In 2013, it is estimated that approximately 40 per cent of all DSP recipients who rented privately and received CRA paid rent at or below this level (author estimates based on annex A, BP 3). Assuming that single DSP recipients are likely to pay more in rent than partnered DSP recipients (footnote 17), the percentage of singles paying less than about $160 will be smaller than 40 per cent.
- Single Newstart recipients who pay less than about $100 a week in rent have a higher DIPR if renting privately (extrapolating from the NWS series in figure 9) — but, in 2013, very few Newstart recipients who rented privately and received CRA paid rents at or below this level (figure 11).
- Single recipients of Parenting Payment who pay rent of less than about $185 a week are financially better off renting privately. In 2013, fewer than 25 per cent of recipients who rented privately and received CRA paid rent at or below this level.

These data suggest that a majority of ISP recipients with zero market income would have a higher DIPR if they lived in social housing than if renting privately and receiving CRA.

28 These rent estimates are subject to the same qualifications raised in footnote 17.

29 The situation for median income earners is discussed below.

Figure 11 **Rents paid by CRA recipients by ISP type — mean, median and interquartile range, at 30 June 2013[a]**



a The lower edge of each column represents the 25th percentile of the distribution of weekly rents for an ISP group, the line across a column is the median level, the diamond shape is the mean and the top of a column, the 75th percentile.

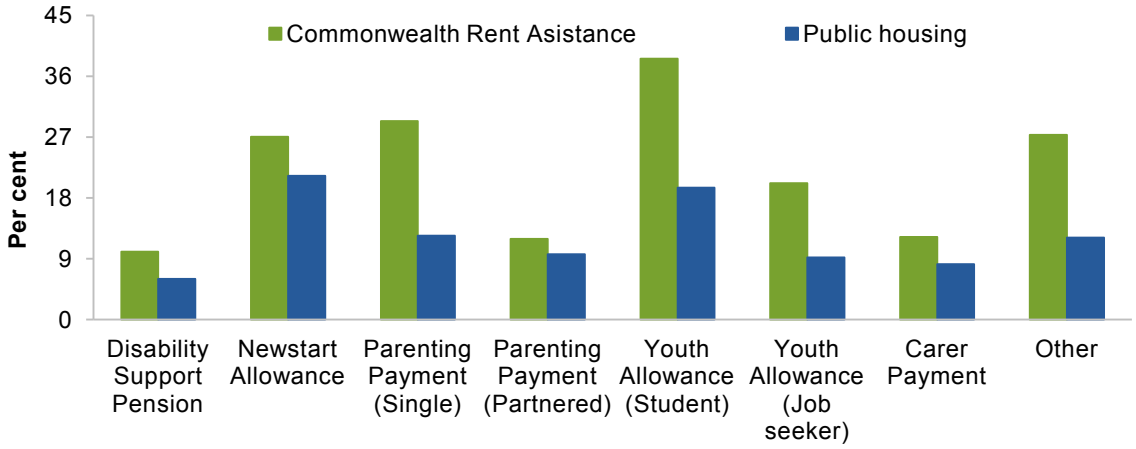
Source: Department of Human Services, administrative data (unpublished).

Finally, how many tenants have some income in addition to their ISP?

Rates of employment vary by ISP type (figure 12) (and by housing tenure); less than 9 per cent of all DSP recipients, 26 per cent of all Newstart recipients and 27 per cent of single parents who received Parenting Payment were working in the fortnight ending 30 June 2013. It is assumed that these rates also apply to single DSP and Newstart recipients and that those in employment at 30 June earned the median annual income estimated for their ISP type. In that case, only half of the members of each these ISP groups who worked earned at least the level of market income underlying the curves shown in figure 10 (because those curves are based on the median income earner in each ISP type).

Figure 12 **Employment of housing assistance recipients by ISP type, 2013[a,b]**

Per cent reporting earned income



[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB(A)-only recipients of CRA. [b] Commonwealth Rent Assistance refers to CRA recipients. Public housing to public housing tenants.

Source: Department of Human Services, administrative data (unpublished).

In other words:

- less than 5 per cent of single DSP recipients are estimated to have earned at least $6000 in 2013. At rents of up to about $180 a week (figure 10) they would have had a higher DIPR if renting privately and receiving CRA than if living in social housing. About 50 per cent of single DSP recipients who rented privately in 2013 are estimated to have paid rent at or below this level (figure 11)
- less than 13 per cent of single Newstart recipients are estimated to have earned at least $15 000 in 2013. At rents of up to about $165 a week they would have had a higher DIPR if renting privately and receiving CRA. About 25 per cent of single Newstart recipients who rented privately in 2013 are estimated to have paid rent at or below this level
- less than 15 per cent of single Parenting Payment recipients earned at least $18 000 in 2013. At rents of up to about $250 a week, they would have had a higher DIPR if renting privately and receiving CRA. About 50 per cent of single Parenting Payment recipients who rented privately in 2013 paid rent at or below this level.

In summary, the data suggest that some people with at least the median level of market income could find properties that left them with a higher DIPR if they were renting privately and receiving CRA, compared with living in social housing.

An important qualification to this conclusion — it rests on an assumption that social housing market rents are a true reflection of a dwelling's market price. If, for example, a

rent was set below the market price, a tenant would be receiving greater housing amenity than a peer renting in the private market.

Overall, the analysis suggests that:

- some single DSP recipients would have a higher DIPR if renting privately and receiving CRA than if living in social housing
- a very small proportion of single Newstart recipients would be in this position
- a majority of single Parenting Payment recipients are likely to have a higher DIPR if living in social housing.

This analysis has focused on financial calculations. Many other considerations influence decisions about where to live and whether to work, especially security of tenure and as well as location relative to work. In addition, decisions about where to live are constrained by the supplies of public housing, social housing and what someone might consider to be affordable housing.

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Annex A The Productivity Commission's Tax and Transfer model

The Commission's model (PCTT 2014) is coded in the language R, and contains the following features of the tax and transfer system:

- the main federal welfare payments administered through the Department of Human Services (Age Pension, Austudy, Child Care Benefit, Child Care Rebate, Disability Support Pension, Newstart Allowance, Parenting Payment, Youth Allowance and Pension Supplement)
- Family Tax Benefit parts A and B
- Commonwealth Rent Assistance
- income tests for welfare payments
- social housing rent setting rules
- income tax rates (income tax is paid on market income and government payments where relevant)
- the Medicare levy and low income tax offset.

Market incomes are assumed to be net of the 9.25 per cent superannuation contribution made by employers.

The parameters of the model were derived from various websites that describe the rules, thresholds and rates used in calculating payments and taxes at March 2014.

The model is used to produce the examples in this background paper. Since it is a program, it can be used to process many observations.

Annex B Maximum incomes for receipt of FTB A

The maximum rate of Family Tax Benefit part A (FTB A) includes CRA for families that rent in the private market. Therefore, many families that rent have a higher FTB A maximum rate (table B.1) than families that own their home but otherwise have identical characteristics, including income (table B.2).

Table B.1 **Income limits at which FTB A (including CRA) stops for families renting privately[a]**

	No. of children aged 13-15 or students aged 16-19			
Number of children aged 0-12	*Nil*	*One*	*Two*	*Three*
Nil		101 787	137 837	174 554
One	101 787	130 779	167 494	201 692
Two	123 717	160 433	194 631	228 829
Three	153 373	187 571	221 769	255 967

[a] Calculations assume that a family pays rent that would qualify them for the maximum level of CRA if their income was low enough. This gives them the highest possible maximum rate of FTB A and, therefore, a larger sum to be reduced at a rate of 20 cents in the dollar than if they received a smaller CRA payment.

Source: Author estimates based on information published on the DSS website.

Table B.2 **Income limits at which FTB A stops for families that do not receive CRA**

	No. of children aged 13-15 or students aged 16-19			
Number of children aged 0-12	*Nil*	*One*	*Two*	*Three*
Nil		101 787	118 552	154 359
One	101 787	113 053	147 296	183 103
Two	113 053	140 233	176 040	211 846
Three	133 171	168 977	204 784	240 590

Source: DSS 2014.

Annex C Examples of budget constraints and effective marginal tax rates

This annex contains a set of figures depicting the budget constraints and effective marginal tax rates (EMTRs) faced by various single income support payment (ISP) recipients (distinguishing between those with and without children), including:

- those in public housing (PH)
- those receiving Commonwealth Rent Assistance (CRA)
- and those who do not receive any housing assistance (HA).

These figures were generated using PCTT 2014, a model of the Australian tax and transfer system built by the Commission (BP 2, annex A). An example of how to interpret the figures (for Disability Support Pension recipients) is provided in BP 2.

As explained in BP 2, the figures only take into account the effects of the main ISPs, the tax system and housing assistance on financial incentives to work. Many other factors potentially influence an ISP recipient's decision to work — not least, the costs associated with working, like transport and childcare. As PC (2015) illustrates, for example, out-of-pocket childcare costs have a marked effect on a single parent's take home pay net of those costs, taxes and ISP withdrawal. Analysis of the extent to which housing assistance affects recipients' employment rates is presented in BP 5 and chapter 3.

The Australian tax and transfer system is complex. In addition to housing assistance, movements in the schedules below are influenced by ISP income tests and withdrawal rates, Family Tax Benefit income tests and withdrawal rates, whether an ISP is taxable, marginal tax rates, tax offsets (low income tax offset, beneficiary tax offset and or, senior and pensioners tax offset), the Medicare levy and Medicare levy reductions.[1]

In the following charts:

- The budget constraints show the annual market income and the annual disposable income post rent available to an ISP recipient.
- Market rent is assumed to be $10 000 per annum ($192 per week). The same rent is used in each example to facilitate comparisons across the different types of ISPs. The level of market rent does not affect EMTRs for CRA recipients. For public housing

[1] Smaller payments received by many income support recipients, for example, the Pharmaceutical Allowance and Clean Energy Supplement are not included in ISPs used in this analysis. The Clean Energy Supplement is included in Family Tax Benefit part A payments.

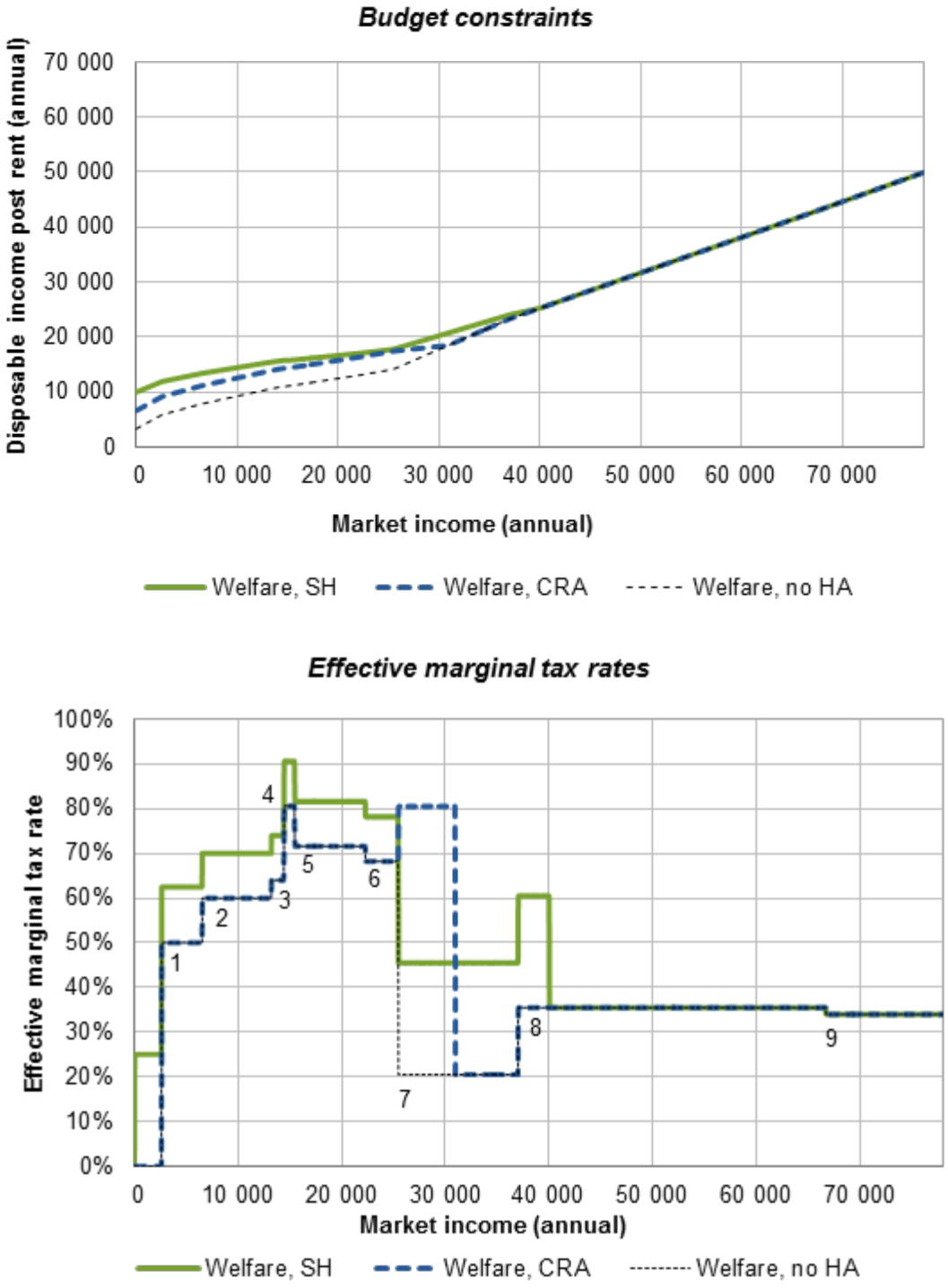
tenants, market rent affects the income range over which rent setting rules contribute to EMTRs. The higher the market rent, the larger the market income range over which public housing rent setting contributes to EMTRs.

- For recipients of Parenting Payment, if the parent has one child they are assumed to be 5 years old. If they have two children, one is assumed to be 5 years old, and the other younger than 5 years.[2] For all other cases, children are assumed to be 10 years old.
- For recipients of Youth Allowance, the budget constraints and EMTRs are calculated based on the rates paid to students living separately from their parents.

Comparing the different ISP recipients, those without children tend to face higher EMTRs (because of higher ISP withdrawal rates). That said, EMTRs faced by Parenting Payment recipients are at least 50 per cent over a large range of income — creating a large financial disincentive for this group too.

2 These assumptions reflect the fact that the receipt of Parenting Payment is dependent on the age of a recipient's youngest child, and the fact that the level of FTB part B depends on whether a child is younger or older than 5 years.

Figure C.1 **Single, childless Newstart recipient[a,b]**

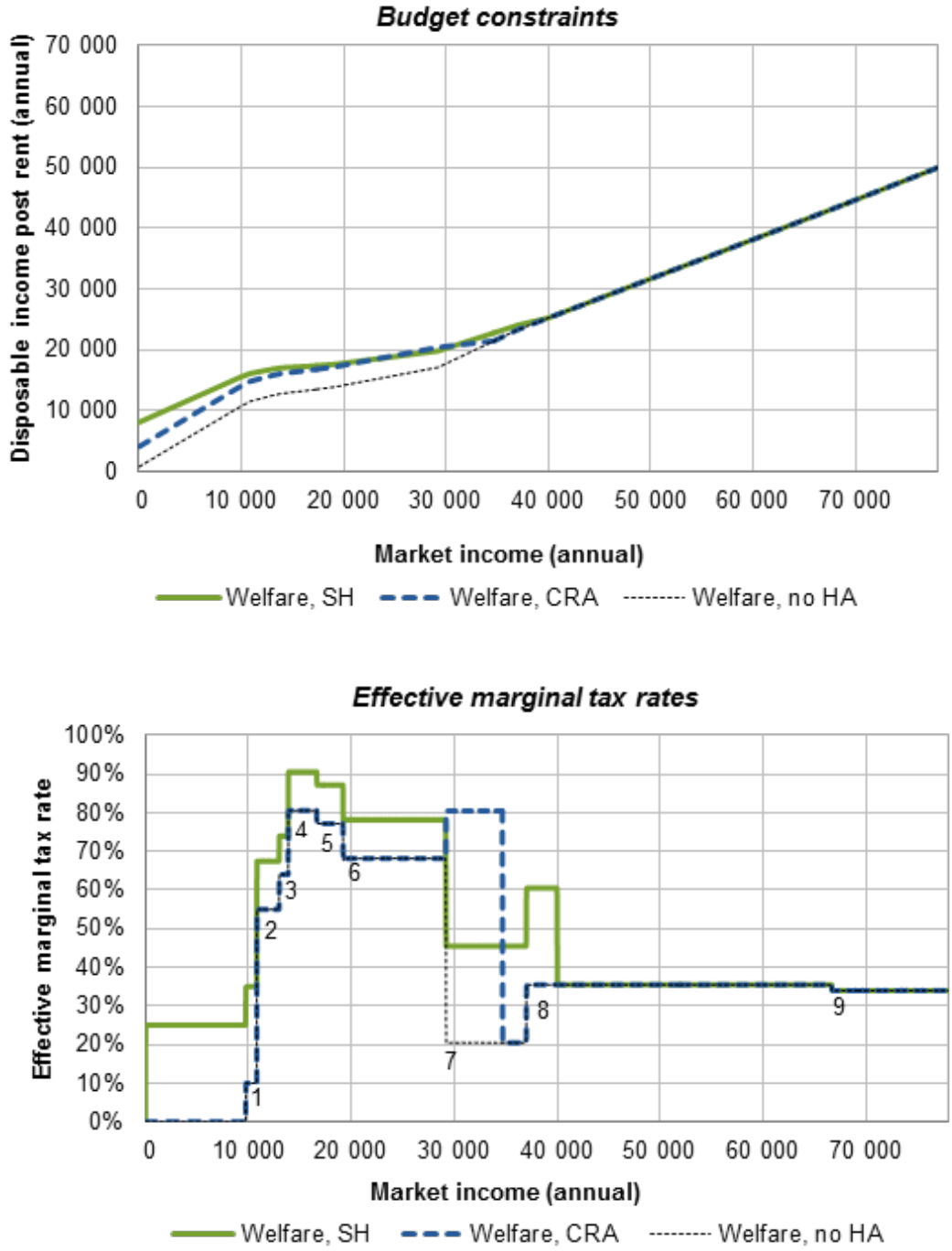


a A key to changes in the height of the EMTR schedule — indicated by numbers in the figure above — for a welfare recipient who does not receive housing assistance is presented in table C.1. The same changes affect the schedules for housing assistance recipients. Differences between the schedules for welfare recipients who do and do not receive housing assistance reflect the effects of that assistance on EMTRs. b This figure is slightly different from the version presented in chapter 2 of volume 1 because of revisions to the treatment of the beneficiary tax offset.

Table C.1 **Key to changes in the height of the EMTR schedules in figure C.1**

No.	*Cause of change in the height of the EMTR schedule*
1	ISP withdrawal starts at a rate of 50 cents in the dollar
2	ISP withdrawal rate changes to 60 cents in the dollar
3	Medicare levy starts at a rate of 10 per cent of taxable income (market income less ISP withdrawn) in excess of $20 542
4	Low income tax offset reaches its maximum level. Income tax and reductions in the beneficiary tax offset now affect take home pay
5	Beneficiary tax offset reduces to zero
6	Medicare levy drops to 1.5 per cent of taxable income
7	ISP withdrawal ends
8	Marginal tax rate increases to 32.5 cents in the dollar and reduction of the low income tax offset starts at a rate of 1.5 per cent of taxable income
9	Low income tax offset reduces to zero

Figure C.2 **Single, childless Youth Allowance (Student) recipient[a]**

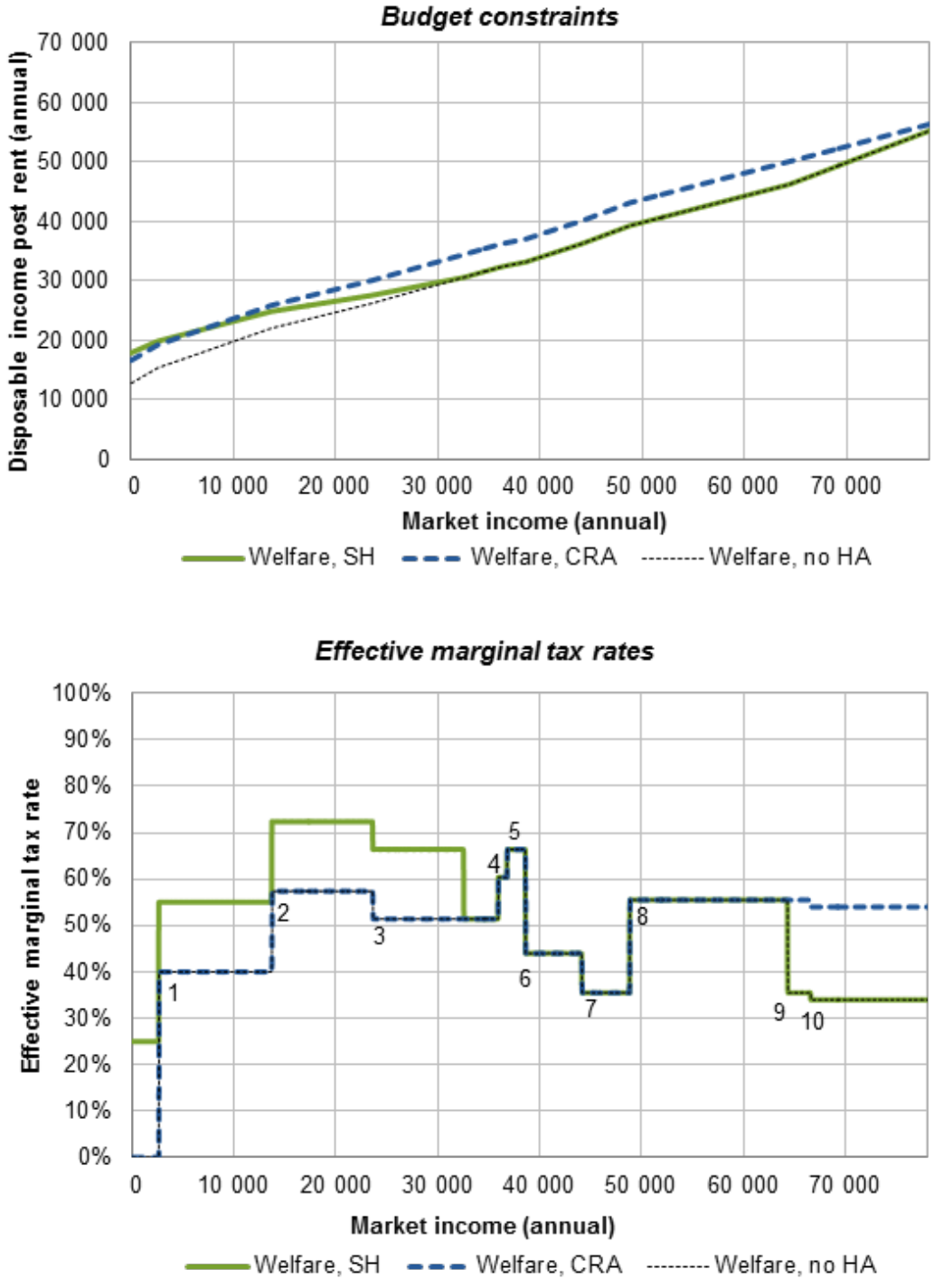


[a] A key to changes in the height of the EMTR schedule — indicated by numbers in the figure above — for a welfare recipient who does not receive housing assistance is presented in table C.2. The same changes affect the schedules for housing assistance recipients. Differences between the schedules for welfare recipients who do and do not receive housing assistance reflect the effects of that assistance on EMTRs.

Table C.2 Key to changes in the height of the EMTR schedules in figure C.2

No.	*Cause of change in the height of the EMTR schedule*
1	Medicare levy starts at a rate of 10 per cent of taxable income (market income less ISP withdrawn) in excess of $20 542
2	ISP withdrawal starts at a rate of 50 cents in the dollar
3	ISP withdrawal rate changes to 60 cents in the dollar
4	Low income tax offset reaches its maximum level. Income tax and reductions in the beneficiary tax offset now affect take home pay
5	Medicare levy drops to 1.5 per cent of taxable income
6	Beneficiary tax offset reduces to zero
7	ISP withdrawal ends
8	Marginal tax rate increases to 32.5 cents in the dollar and reduction of the low income tax offset starts at a rate of 1.5 per cent of taxable income
9	Low income tax offset reduces to zero

Figure C.3 **Single Newstart recipient with one dependent child**[a]

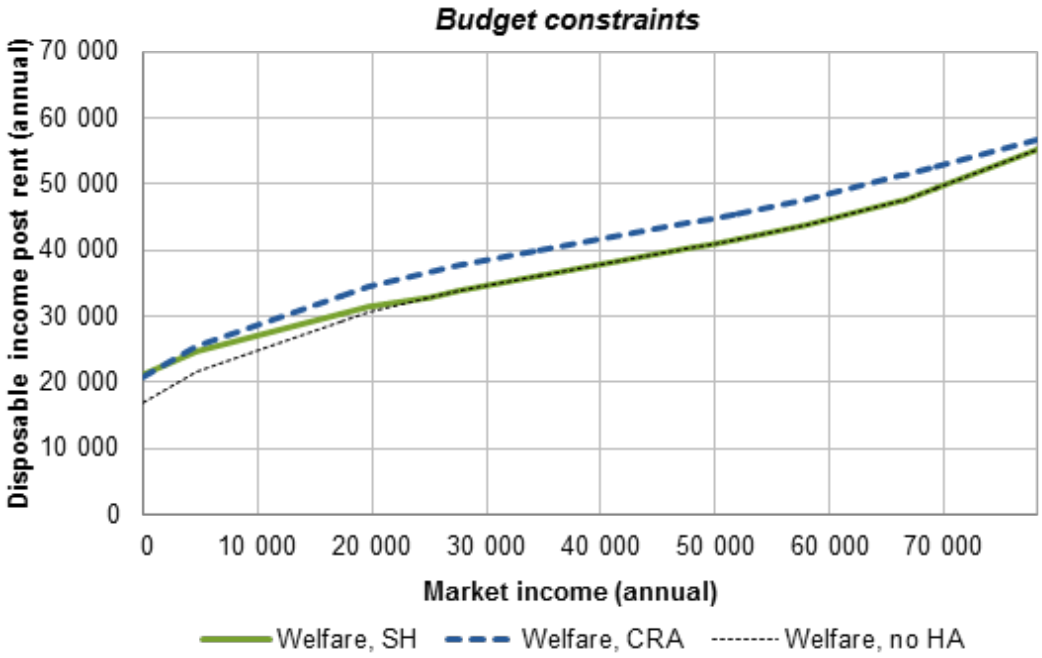


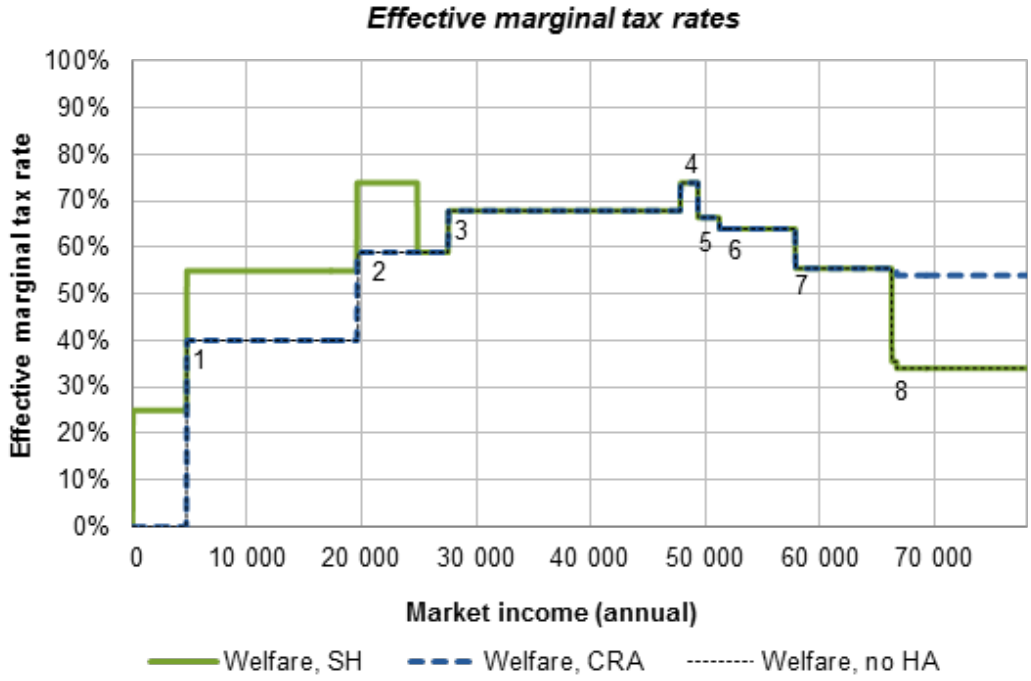
[a] A key to changes in the height of the EMTR schedule — indicated by numbers in the figure above — for a welfare recipient who does not receive housing assistance is presented in table C.3. The same changes affect the schedules for housing assistance recipients. Differences between the schedules for welfare recipients who do and do not receive housing assistance reflect the effects of that assistance on EMTRs.

Table C.3 **Key to changes in the height of the EMTR schedules in figure C.3**

No.	*Cause of change in the height of the EMTR schedule*
1	ISP withdrawal starts at a rate of 40 cents in the dollar
2	Low income tax offset reaches its maximum level. Income tax and reductions in the beneficiary tax offset now affect take home pay
3	Beneficiary tax offset reduces to zero
4	Marginal tax rate increases to 32.5 cents in the dollar and reduction of the low income tax offset starts at a rate of 1.5 per cent of taxable income
5	Medicare levy starts at a rate of 10 per cent of taxable income (market income less ISP withdrawn) in excess of the Medicare levy low income threshold for this ISP recipient of $37 523
6	ISP withdrawal ends
7	Medicare levy drops to 1.5 per cent of taxable income
8	Family Tax Benefit part A withdrawal starts
9	Family Tax Benefit part A withdrawal ends
10	Low income tax offset reduces to zero

Figure C.4 **Single Parenting Payment recipient with one dependent child[a]**



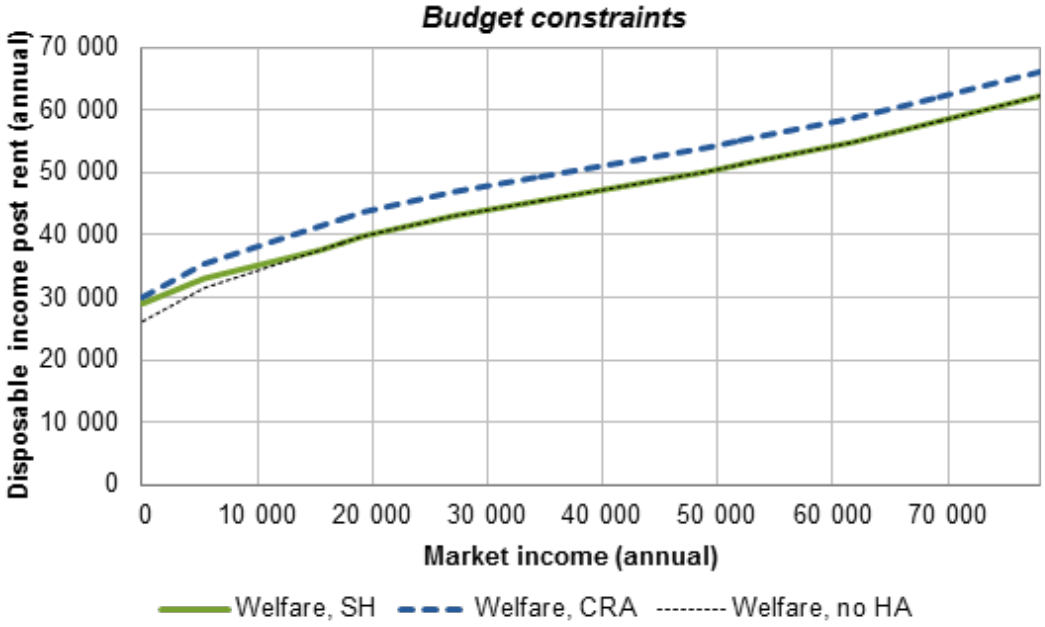


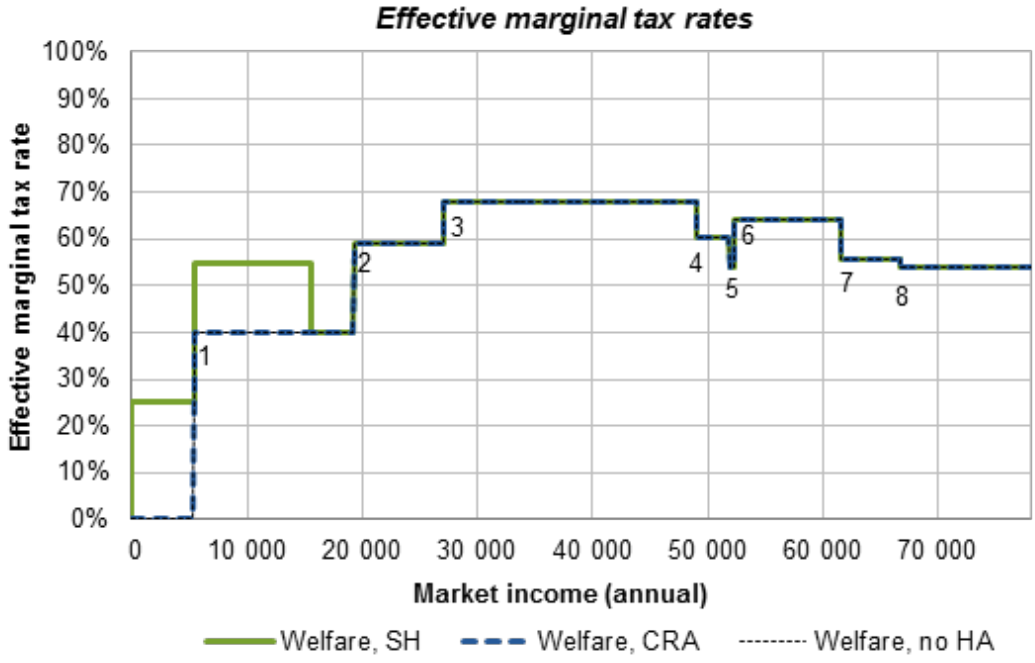
[a] A key to changes in the height of the EMTR schedule — indicated by numbers in the figure above — for a welfare recipient who does not receive housing assistance is presented in table C.4. The same changes affect the schedules for housing assistance recipients. Differences between the schedules for welfare recipients who do and do not receive housing assistance reflect the effects of that assistance on EMTRs.

Table C.4 **Key to changes in the height of the EMTR schedules in figure C.4**

No.	*Cause of change in the height of the EMTR schedule*
1	ISP withdrawal starts at a rate of 40 cents in the dollar
2	SAPTO withdrawal starts at a rate of 12.5 cents in the dollar. LITO reaches a maximum. Offsets no longer increase in step with income tax. Tax now paid at marginal tax rate of 19 cents in the dollar starts to affects take home pay
3	Marginal tax rate increases to 32.5 cents in the dollar and reduction of the low income tax offset starts at a rate of 1.5 per cent of taxable income
4	Medicare levy starts at a rate of 10 per cent of taxable income (market income less ISP withdrawn) in excess of the Medicare levy low income threshold for this ISP recipient of $49 156
5	SAPTO reduces to zero
6	ISP withdrawal ends, Family Tax Benefit part A withdrawal starts. [In this analysis, the ISP does not include the Clean Energy Supplement. If that were taken into account, ISP withdrawal would end, and FTB part A withdrawal would start, at a slightly higher level of income]
7	Medicare levy drops to 1.5 per cent of taxable income
8	Family Tax Benefit part A withdrawal ends, then the low income tax offset reduces to zero

Figure C.5 **Single Parenting Payment recipient with two dependent children[a]**





[a] A key to changes in the height of the EMTR schedule — indicated by numbers in the figure above — for a welfare recipient who does not receive housing assistance is presented in table C.5. The same changes affect the schedules for housing assistance recipients. Differences between the schedules for welfare recipients who do and do not receive housing assistance reflect the effects of that assistance on EMTRs.

Table C.5 **Key to changes in the height of the EMTR schedules in figure C.5**

No.	*Cause of change in the height of the EMTR schedule*
1	ISP withdrawal starts at a rate of 40 cents in the dollar
2	SAPTO withdrawal starts at a rate of 12.5 cents in the dollar. LITO reaches a maximum. Offsets no longer increase in step with income tax. Tax now paid at marginal tax rate of 19 cents in the dollar starts to affects take home pay
3	Marginal tax rate increases to 32.5 cents in the dollar and reduction of the low income tax offset starts at a rate of 1.5 per cent of taxable income
4	SAPTO reduces to zero
5	ISP withdrawal ends, Family Tax Benefit part A withdrawal starts. [In this analysis, the ISP does not include the Clean Energy Supplement. If that were taken into account, ISP withdrawal would end, and FTB part A withdrawal would start, at a slightly higher level of income]
6	Medicare levy starts at a rate of 10 per cent of taxable income (market income less ISP withdrawn) in excess of the Medicare levy low income threshold for this ISP recipient of $52 312
7	Medicare levy drops to 1.5 per cent of taxable income
8	Low income tax offset reduces to zero

Annex D The effects of variation in social housing rent setting between states

As noted in section 2 of BP 2, there are three key differences in rent setting between states:

- Tasmania calculates assessable income on the basis of income net of income taxes; other jurisdictions do not
- the Northern Territory includes Family Tax Benefit (FTB) in assessable income at a lower rate than other states
- New South Wales and the Northern Territory do not set rents at 25 per cent of assessable income at all levels of income. In particular, the percentage of income charged as rent varies at higher incomes.

Effect of excluding income tax in calculating assessable income

Tasmania's approach of using income net of income tax, rather than gross income, in calculating assessable incomes causes lower effective marginal tax rates (EMTRs) whenever tax is paid. It also means that the contribution of rent setting rules to EMTRs is spread over a larger income range than it is in other jurisdictions.

Consider the EMTR for a single, childless recipient of the Disability Support Pension (DSP) from a $1 increase in income above the point at which they start to pay income tax — about $20 500. In Tasmania, a social housing tenant's assessable income increases by $0.71 ($1 minus the income tax rate plus Medicare levy). In other jurisdictions, assessable income increases by $1. In all jurisdictions, at this level of income, assessable income also reduces by $0.50 due to the withdrawal of DSP. The net change in assessable income in Tasmania is, therefore, $0.21, and rent increases by 25 per cent of this, or by $0.05. The contribution of housing assistance to the EMTR is 5 per cent. In other jurisdictions, the net change in assessable income is $0.50, rent increases by $0.125 (25 per cent of $0.50) and the contribution of housing assistance to the EMTR is 12.5 per cent, which adds to any effects from other parts of the tax and transfer system.

Differences between jurisdictions are illustrated for a single, childless DSP recipient living in a property with an annual market rent of $10 000 (figure D.1). The gap between the schedules 'DSP, no HA' and 'DSP, HA…' captures the contribution to EMTRs of housing assistance. The effect of the difference in approach between Tasmania and other jurisdictions is shown by the gap between the 'DSP, HA, Aust excl Tas' and 'DSP, HA, Tas' schedules.

Although social housing residents in Tasmania face a lower contribution of housing assistance to EMTRs than tenants in other jurisdictions, they face this contribution over a larger income range. In the example below, single, childless DSP recipients around the country face the same contribution of housing assistance to EMTRs up to the point at which the tax system starts to affect disposable income — about $18 000. Between $18 000 and $32 000, a tenant in Tasmania faces a lower contribution of housing assistance to their EMTR. At about $32 000, tenants in other jurisdictions start to pay market rent. Tenants in Tasmania continue to face a contribution from housing assistance to EMTRs until a market income of about $45 000, at which point they too are paying market rent.

Figure D.1 **The effect of deducting tax on EMTRs[a]**

Single, childless DSP recipient

[a] The small dip in the 'DSP, HA, Tas' schedule between about $18 000 and $20 500 is due to an assumption that the rent setting rules do not take the low income tax offset into account.

Source: Estimated from the PCTT 2014 model.

Effect of including a smaller proportion of FTB in assessable income

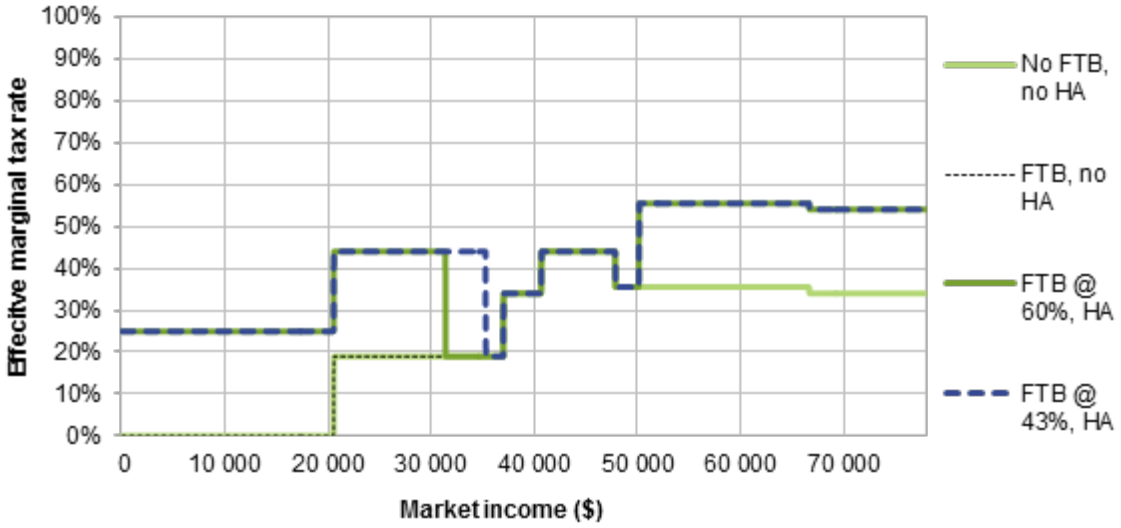
The Northern Territory's approach of including a smaller proportion of FTB in calculating assessable income reduces the level of assessable income at any market income, but does not change a tenant's EMTR. Up to the income threshold at which welfare payments are withdrawn, tenants in the Northern Territory are assumed to pay 25 cents of each additional dollar of income in rent.[1] However, the fact that assessable income is lower means that

[1] In reality, in the Northern Territory, the figure is 23 cents in the dollar, but 25 cents is used in this section to simplify the comparison with other jurisdictions. The figure of 23 cents reduces EMTRs slightly and

housing assistance contributes to EMTRs over a larger range of market income. Tenants have to earn a higher level of market income to reach the level of assessable income at which they pay market rent. This is illustrated for a FTB recipient with two children who lives in a property with a market rent of $10 000 (figure D.2).

Withdrawal of FTB doesn't start until market income reaches about $50 000. Tenants, both in the Northern Territory and other jurisdictions, begin to pay market rent well before that income level — at about $35 000 and $32 000, respectively.

Figure D.2 **The effect of counting FTB at a lower rate on EMTRs**
FTB recipient with two children



[a] For clarity, we have assumed the Northern Territory sets rent at 25 per cent of assessable income, not 23 per cent.

Source: Estimated from the PCTT 2014 model.

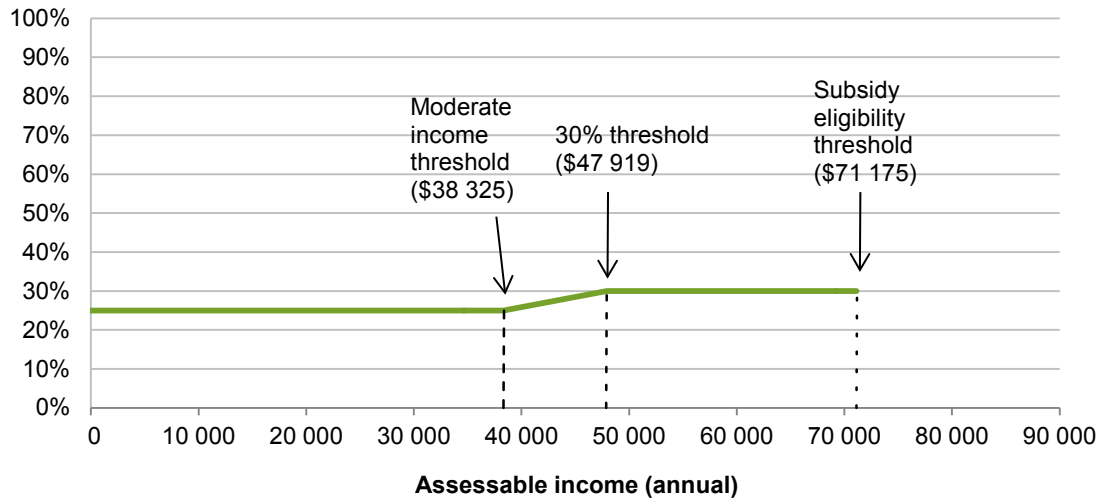
Effect of increasing the percentage of income paid in rent as income increases

In New South Wales, rents are set at between 25 and 30 per cent of assessable income (up to the point where a tenant is paying market rent). Different thresholds determine the percentage paid by a household. For example, at an assessable income of less than $38 325 (the 'moderate income threshold'), the percentage of income charged as rent is set at 25 for a tenant living alone (figure D.3). At incomes between $38 325 and $47 919, the rate increases linearly from 25 per cent to 30 per cent. Above $47 919, the tenant is charged 30

increases the income level at which a tenant pays market rent. For example, an NT tenant will pay a market rent of $10 000 at market income of close to $39 000 when rents are set at 23 per cent of assessable income, versus about $35 000 when they are set at 25 per cent.

per cent of assessable income, until $71 175 (the 'subsidy eligibility threshold') above which market rent is charged (if the tenant is not already paying this level of rent).

Figure D.3 **Rate of assessable income charged as rent in NSW**
Single person[a]



[a] Larger households have higher thresholds. For each additional adult, first child and additional children respectively, the moderate income threshold increases by $10 168, $7561 and $5214, the 30 per cent threshold increases by $12 723, $9438, and $6518, and the subsidy eligibility threshold increases by $19 032, $14 339 and $9386.

Source: Housing NSW (2014).

This rent setting approach can lead to higher EMTRs than a quick glance might suggest because the increase in the percentage of income payable in rent applies to all income and not just to an additional dollar. In other words, as a tenant earns an additional dollar, they lose between 25 and 30 per cent of that additional dollar *plus* they must pay a higher rate on all existing income. This causes a jump in the contribution of housing assistance to EMTRs.

A greatly simplified example illustrates why this jump occurs. Imagine a person who:

- receives an income support payment of $20 000
- pays rent at a rate of 25 per cent of assessable income up to a market income of $10 000
- pays rent at a rate of 30 per cent of assessable income above a market income of $20 000
- pays no income tax, nor faces any income support payment (ISP) withdrawal.

Between the assumed threshold market incomes of $10 000 and $20 000, the percentage of income paid in rent increases linearly by 5 percentage points, or 0.0005 per cent with each additional dollar earned.

At a market income of $10 000, the person has an assessable income (including their ISP) of $30 000, and pays 25 per cent of this, or $7500 in rent (table D.1). Their EMTR is 25 per cent. At a market income of $10 001, their rent is set at 25.0005 per cent of their assessable income, or $7500.400005. Their EMTR is 40.0005 per cent. If the percentage of income paid in rent had remained at 25 per cent, their rent would have been $7500.25 and their EMTR would have remained at 25 per cent. At a market income of $10 002, their rent is set at 25.001 per cent of their income, and they pay $7500.80002 in rent, and their EMTR is 40.0015 per cent. In other words, the EMTR increases with income, and with a dollar increase in market income from $10 000, the EMTR increases from 25 to just over 40 per cent.

Table D.1 **Illustrative example of the effects of NSW's rent setting rules on EMTRs**

	Rent paid at:		*EMTR when rent paid:*	
Market income	*a flat rate of 25 per cent of income*	*an increasing rate at market income above $10 000*	*is a flat rate of 25 per cent*	*increases at market incomes above $10 000*
$	$	$	%	%
9 999	7499.75	7499.750000		
10 000	7500.00	7500.000000	25	25
10 001	7500.25	7500.400005	25	40.0005
10 002	7500.50	7500.800020	25	40.0015

A comparison of the EMTRs faced by a single, childless DSP tenant living in a property with a market rent of $10 000 in New South Wales versus somewhere else in the country illustrates the effect of these rent setting rules (figure D.4).

From a market income of about $4000, a tenant in New South Wales faces a contribution from housing assistance to their EMTR of 12.5 per cent, as do their peers in other jurisdictions. From a market income of $29 250, the contribution of housing assistance to EMTRs in New South Wales increases to over 20 per cent. The higher EMTR means that a tenant in NSW starts paying market rent sooner than their peers in other jurisdictions (at an income of about $31 000 rather than $32 500).

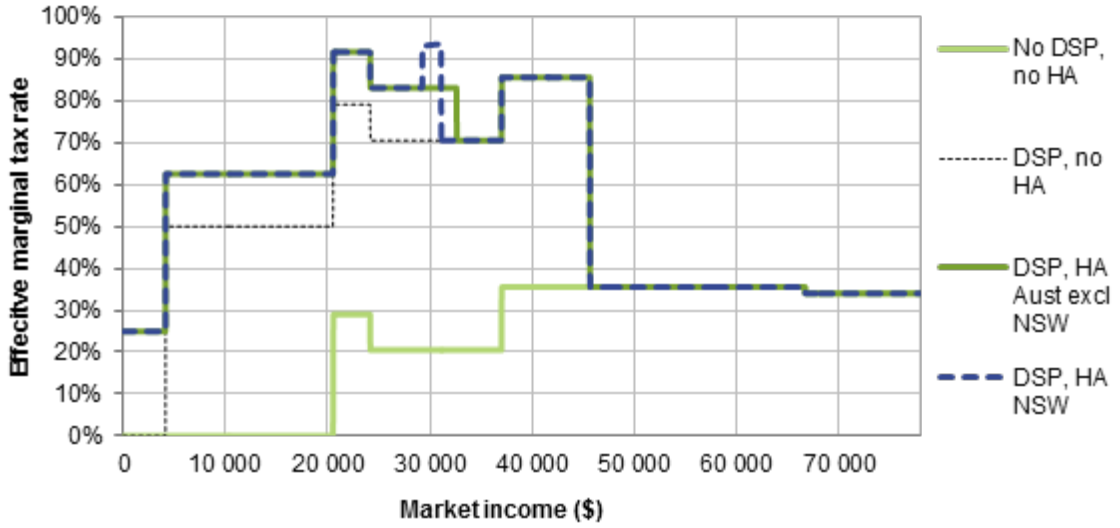
This effect is more pronounced at higher levels of market rent. In New South Wales, total EMTRs exceed 100 per cent at some incomes for a single, childless DSP tenant whose annual market rent is $12 500 (figure D.5). In addition, the contribution of housing assistance to EMTRs increases between the moderate income and 30 per cent thresholds.

Note, the total EMTRs of more than 100 per cent illustrated in this example apply over a relatively small range of market income (from about $37 000 to $41 000). They would be relevant, for example, to the decisions of a tenant weighing up a job offer that would increase their market income from $35 000 to $40 000. (The tenant would have a drop in disposable income if they took up the offer.) But they wouldn't be relevant if the tenant was weighing up an offer that raised their market income, for example, from $20 000 to $25 000. In

addition, tenants in New South Wales would have much the same disposable income at a market income of about $50 000 (and higher) as tenants with similar characteristics in other jurisdictions. At this level of income, tenants face very similar cumulative EMTR effects wherever they live.

Figure D.4 **The effect of NSW rent setting rules**

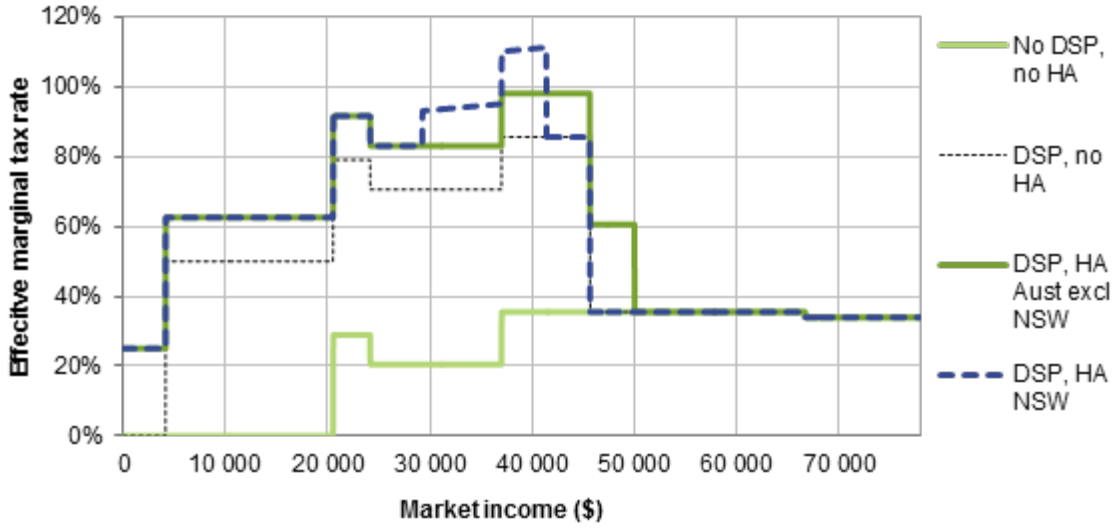
Single, childless DSP recipient, $10 000 market rent



Source: Estimated from the PCTT 2014 model.

Figure D.5 **The effect of NSW rent setting rules with higher market rent**

Single, childless DSP recipient, $12 500 market rent



Source: Estimated from the PCTT 2014 model.

Background paper 3
A profile of working-age housing assistance recipients

Key points

- This paper profiles working-age income support payment (ISP) recipients who either lived in public housing or received Commonwealth Rent Assistance (CRA) in the years spanning 2003 to 2013. The profile is based on administrative data from the Department of Human Services (DHS) about income support and housing assistance payments — the 'DHS data'.
- The DHS data do not cover people who received CRA because they received Family Tax Benefit part A but not an ISP, Department of Veterans' Affairs pensioners, Age Pension recipients, or people living in public housing who did not receive an ISP.
- There were over 2.5 million ISP recipients aged between 15 and 65 in 2013 covered by the DHS data. Around 44 per cent of working-age ISP recipients and 8 per cent of the general working-age population either lived in public housing or received CRA in 2011.
- The rates of receipt of housing assistance, and other characteristics, differ considerably by ISP type. Most ISP recipients who also received housing assistance received either Disability Support Pension or Newstart Allowance payments.
- The number of people receiving CRA increased in recent years, while the number of public housing residents remained relatively constant.
- Public housing tenants had typically received ISPs for a longer period than CRA recipients on similar payment types.
- In 2013, more women received ISPs, and housing assistance, than men. Over half of all housing assistance recipients were single, with no dependent children. Compared with CRA recipients, residents of public housing tended to be older, more likely to self-report as being Indigenous, and have a preferred language other than English.
- About one in five CRA recipients and one in ten public housing residents reported earnings from work at 30 June 2013.
- Job seekers in public housing are more likely to face high barriers to employment than those living in private rentals. About 75 per cent of public housing tenants who receive Newstart Allowance or Youth Allowance (Job Seeker) have severe or significant barriers to employment. In comparison, 45 per cent of CRA recipients have similar barriers.
- Working-age ISP recipients were more likely than other Australians to live in areas of higher socioeconomic disadvantage. In 2013, lower skill employment opportunities and CRA recipients were typically concentrated in similar areas.
- Housing assistance recipients are concentrated in major cities and inner regional areas, although the spatial distribution of housing assistance varies considerably across capital cities. Working-age ISP recipients in all jurisdictions — other than the Australian Capital Territory and the Northern Territory — are far more likely to receive CRA than to reside in public housing.

1 Introduction

This background paper presents a profile of income support and housing assistance recipients at 30 June for each of the eleven years spanning 2003–2013. The profile is based on a unique dataset built from administrative records from the Centrelink payments database managed by the Department of Human Services (DHS), and is the result of collaboration between the DHS and the Productivity Commission. The dataset is referred to throughout the paper as the 'DHS data'.

The profile presents detailed information on working-age housing assistance recipients who receive income support payments (ISPs). This departs from existing approaches to reporting on housing assistance, which focus on either households or the income units of which individuals are a part. A focus on individual recipients allows a better understanding of the individual characteristics that are likely to affect ISP recipients' likelihood of employment. The use of administrative records supports a detailed and comprehensive description of the working-age population of ISP recipients.

The profile provides a brief description of the DHS data, followed by a series of figures that describe broad trends in housing assistance and the diverse population of working-age people who receive both housing assistance and income support. An annex containing detailed tables drawn from the DHS data supports this profile. Background paper 1 provides detail on the operation of different types of housing assistance.

2 The data used in this profile

The administrative records underlying the DHS data contain information about people's eligibility for ISPs, the types and levels of assistance they receive and the demographic characteristics necessary to identify them and deliver payments. The records were created when ISP recipients and Centrelink customer support officers filled out relevant documentation, and when the DHS made payments. The dataset built from these records includes information for the fortnight preceding the 30th of June of each year. The data underlying the profile are de-identified, that is, information that could be used to identify an individual, like their name and address, has been removed.

While the DHS data cover all people receiving an ISP at the end of each financial year, people who were aged less than 15, or more than 65, or who were receiving the Age Pension were excluded, to focus on working-age people.[1] Variables were included in the database to provide information about the relationship between income support, housing assistance and employment. They include information about recipients' ISP types, demographic characteristics, location, income and employment, and time spent on income support.

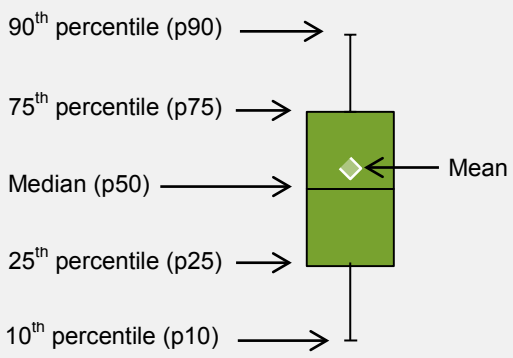
[1] The data cover all ISPs administered by the DHS. Recipients of payments made by the Department of Veterans' Affairs are not included in the data.

Where information about a continuous variable — such as earned income — is presented in the profile, 'box and whisker' plots are used to summarise the distribution of that variable over a group of people (box 1).

Box 1 **Interpreting 'box and whisker' plots**

'Box and whisker' plots can be used to summarize the distribution of an indicator over a particular group of housing assistance recipients; such as the time they have spent receiving income support.

The line in the middle of the box to the right represents the median value of the indicator, while the diamond shows the mean value. The outer edges of the box represent the interquartile range — the gap between the 25th and 75th percentiles — so 50 per cent of observations fall within the box. The whiskers extending out from the box show values of the indicator at the 10th and 90th percentiles.



Source: Williamson et al. (1989).

Counting recipients of housing assistance

The DHS data represent a subset of all Australians who receive housing assistance (figure 1). It is not possible to report the exact number of Australians who receive housing assistance, due to differences in units of measurements (persons, income units, households) used in the reporting on different types of assistance (AIHW 2014). Information about people receiving multiple forms of assistance, such as those simultaneously receiving Commonwealth Rent Assistance (CRA) and living in community housing, is also limited.

- Public housing is typically counted in terms of numbers of households — a household is considered to be a person living alone, or a group of people who usually live in the same dwelling.
- CRA statistics are typically presented for 'income units', where an income unit consists of a person, their partner (if they have one), and any dependent children for whom they (or their partner) receive Family Tax Benefit part A (FTB A) (AIHW 2014). A non-dependent child living at home, including one who is receiving an ISP in their own right, is regarded as a separate income unit. Similarly, non-related adults sharing accommodation are counted as separate income units.

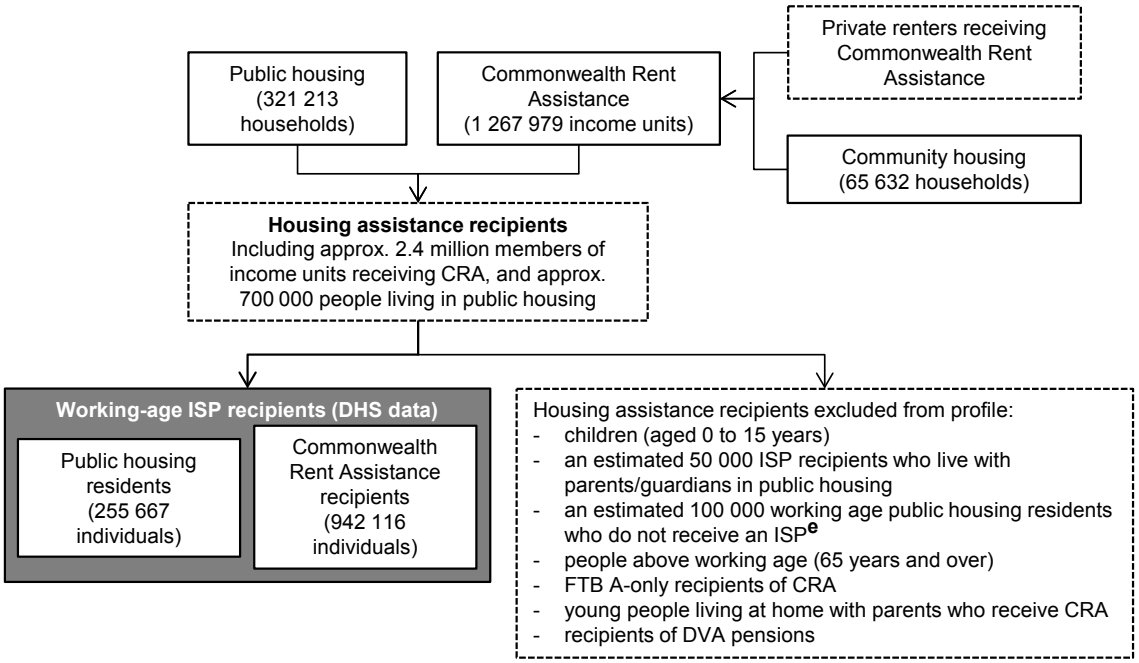
Where an ISP recipient does not receive CRA, but is the partner of an ISP recipient who does, both are identified as recipients of CRA in the DHS data. Any children aged between

15 and 19, and who are part of an income unit that receives CRA, are identified as not paying rent (and included in an 'other' tenure category).[2]

If an ISP recipient's partner does not receive an ISP, but receives CRA by virtue of their receipt of FTB A, the ISP recipient is not recognised as receiving CRA in the DHS data.[3] This is because the DHS data does not include the information that their partner receives FTB A, and therefore CRA. This is estimated to have affected less than 11 500 ISP recipients (around 1.2 per cent of all recipients of CRA) in 2013.

Figure 1 **Recipients of housing assistance in Australia, 2013[a,b,c,d,e]**

Analysis in this paper covers the population in the grey box



[a] Boxes with dashed edges represent knowledge gaps, where a precise number of housing assistance recipients is not known. [b] The total numbers of people living in households receiving housing assistance are estimates based on assumed numbers of people living in households receiving different types of assistance. [c] Residents of State-owned and managed Indigenous housing are not separately identified in the DHS data. [d] Housing assistance measures such as one-off bond payments are not included. [e] Comparisons of administrative and Census data for South Australia and Western Australia suggest that between 5 and 10 per cent of working-age public housing residents are not reported to state housing authorities. The majority of under-reporting appear to be people who are not income support recipients.

Sources: AIHW (2014); SCRGSP (2014); ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); DHS (unpublished).

2 This approach reflects an assumption that a person's employment decisions will be influenced by both their own and their partners' unearned income, but that this income typically does not affect a child's employment decisions.

3 The DHS data arise from the administration of the Social Security Act. People who receive an ISP and CRA are paid CRA under the Social Security Act. People who receive FTB (A) and CRA, but do not receive an ISP, are paid under the Family Assistance Act.

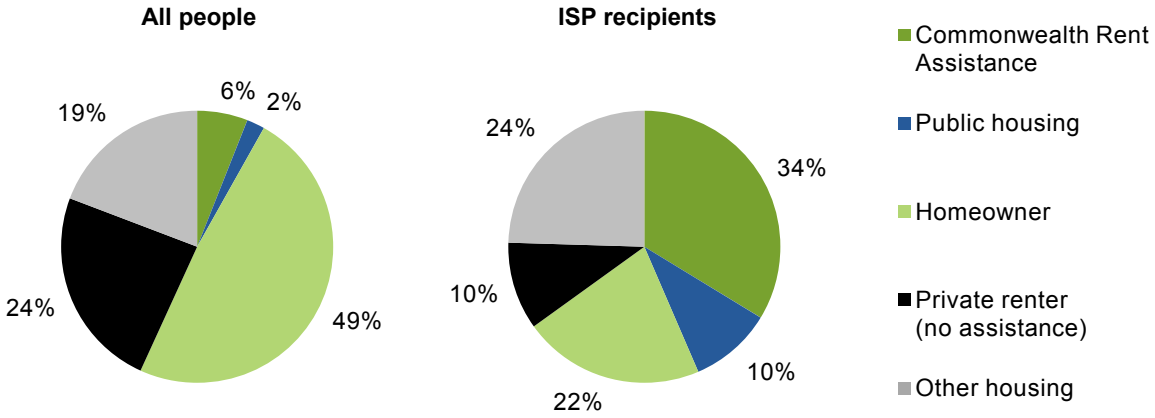
Limitations of the DHS data

The administrative records are a rich source of information about housing assistance recipients because many also receive ISPs administered by DHS. However, the DHS data have some limitations. Most importantly, because they do not include all housing assistance recipients (figure 1), inferences are limited to those in receipt of an ISP. In particular, employment rates among housing assistance recipients are likely to be underestimated because some CRA recipients and public housing residents who may be employed are not included in this data — as their earnings preclude their receipt of an ISP.

3 What are the dimensions of housing assistance?

Around 44 per cent of working-age ISP recipients received housing assistance in 2011 …

Figure 2 **Housing tenures among working-age people by ISP status, 2011-12[a]**



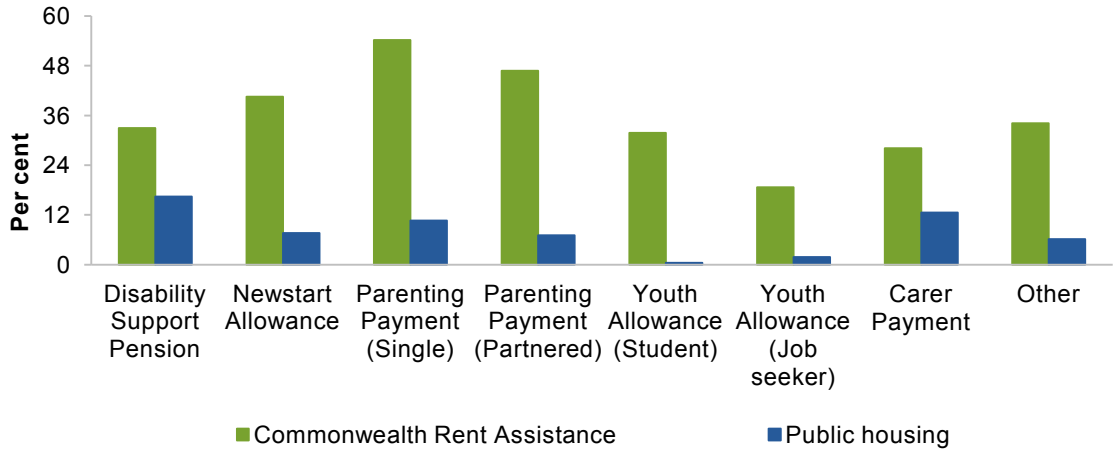
[a] Data for 'All people' are from the ABS Survey of Income and Housing 2011-12, and include people aged 15 to 64. Data for ISP recipients are from the DHS data, and include all ISP recipients aged 15–65, but exclude FTB A-only recipients of CRA. Residents of public housing are people who rent from a State or Territory Housing Authority. People who neither rent nor own their own home are classified as 'Other'. This includes people living rent free, some of whom are the working-age children of ISP recipients in other tenures.

Sources: ABS (Survey of Income and Housing, 2011-12, Cat no. 4130.0); Department of Human Services, administrative data (unpublished).

... although the rates of receipt of housing assistance differed considerably by ISP type.

Figure 3 **Housing assistance by ISP type, 2013[a]**

ISP recipients within a payment type receiving housing assistance

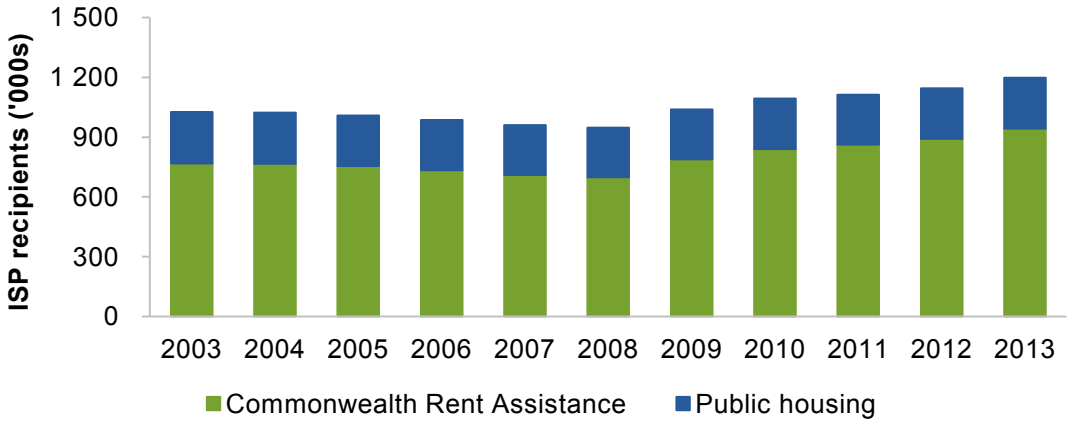


[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA, or working-age children living at home who are not specifically identified as receiving housing assistance.

Source: Department of Human Services, administrative data (unpublished).

The number of working-age ISP recipients receiving CRA has increased over recent years, while the number of public housing residents has remained relatively constant.

Figure 4 **Number of working-age housing assistance recipients, 2003 to 2013[a]**



[a] ISP recipients aged 15–65 at 30 June of each year. This figure does not include FTB A-only recipients of CRA.

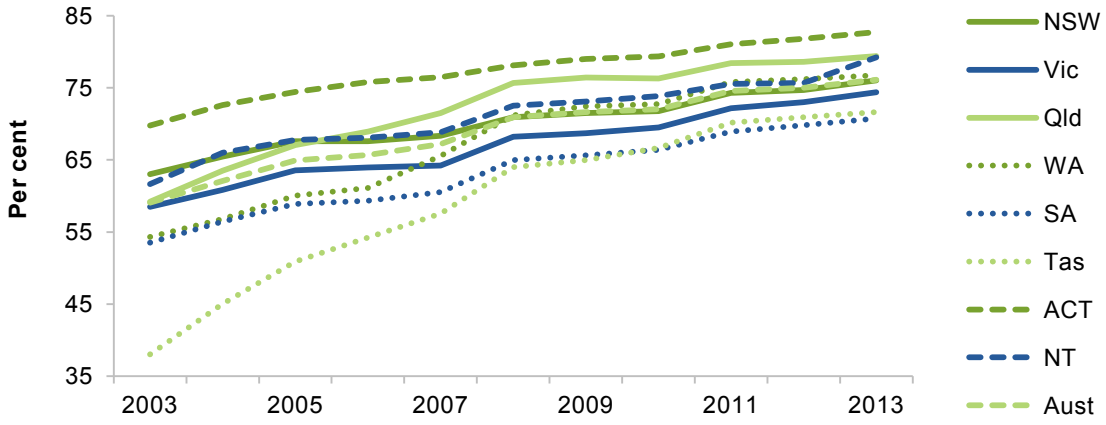
Source: Department of Human Services, administrative data (unpublished).

How has the demand for assistance changed?

The share of income units eligible for the maximum amount of CRA has been increasing ...

Figure 5 **Income units receiving CRA who pay enough rent to be eligible for the maximum rate of CRA, 2003 to 2013[a,b,c]**

Per cent

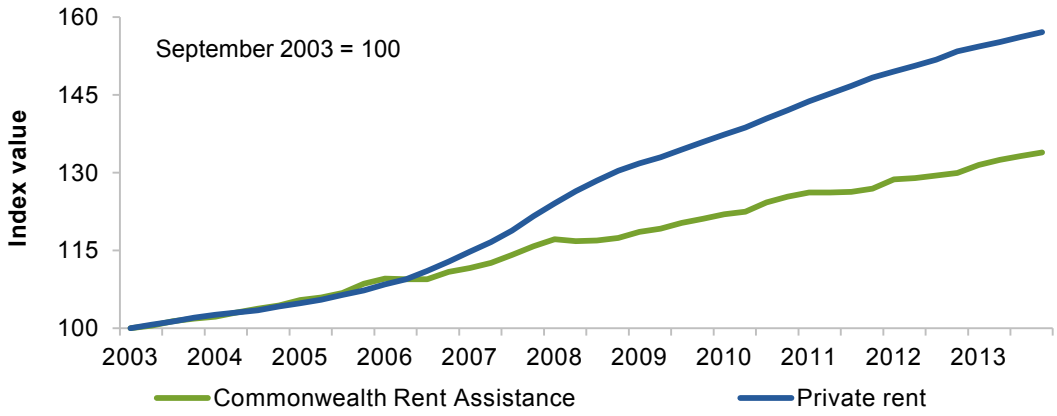


[a] Income units are formed either by couples or singles, with or without dependent children, living within a household. Income units differ from families in that related, non-dependent individuals form separate income units (ABS 2005). [b] This figure is not based on DHS data, and includes FTB A-only recipients. [c] Some income units paying enough rent to be entitled to the maximum rate only receive a partial rate of assistance because of the income/asset test applying to their main benefit.

Sources: SCRGSP (2008, 2009, 2014).

... because private rents have increased faster than the maximum CRA amount, which is indexed to the Consumer Price Index.

Figure 6 **Change in private rents and CRA, 2003 to 2013[a]**



[a] The maximum CRA amount is indexed to the Consumer Price Index.

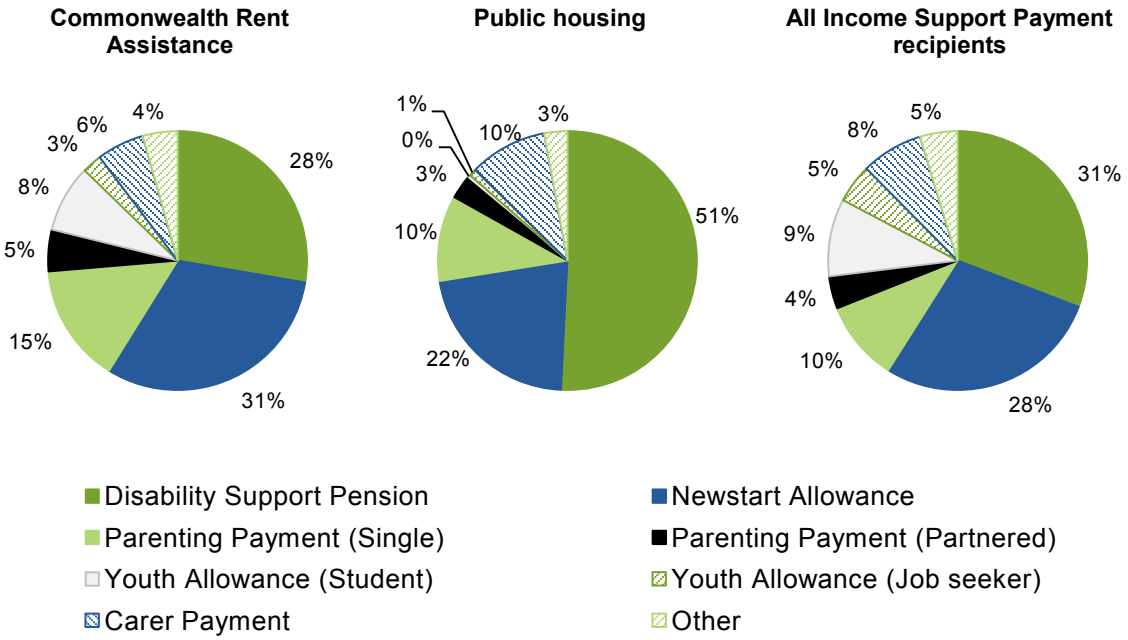
Source: ABS (*Consumer Price Index*, Cat no. 6401.0).

4 Who receives housing assistance?

What ISPs do housing assistance recipients receive?

The share of each type of income support differs between public housing residents and CRA recipients, with over 50 per cent of working-age public housing residents receiving the Disability Support Pension.

Figure 7 **ISP types of housing assistance recipients, 2013[a,b]**



[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA. Labels are rounded. [b] Other payments include a range of less common ISPs, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

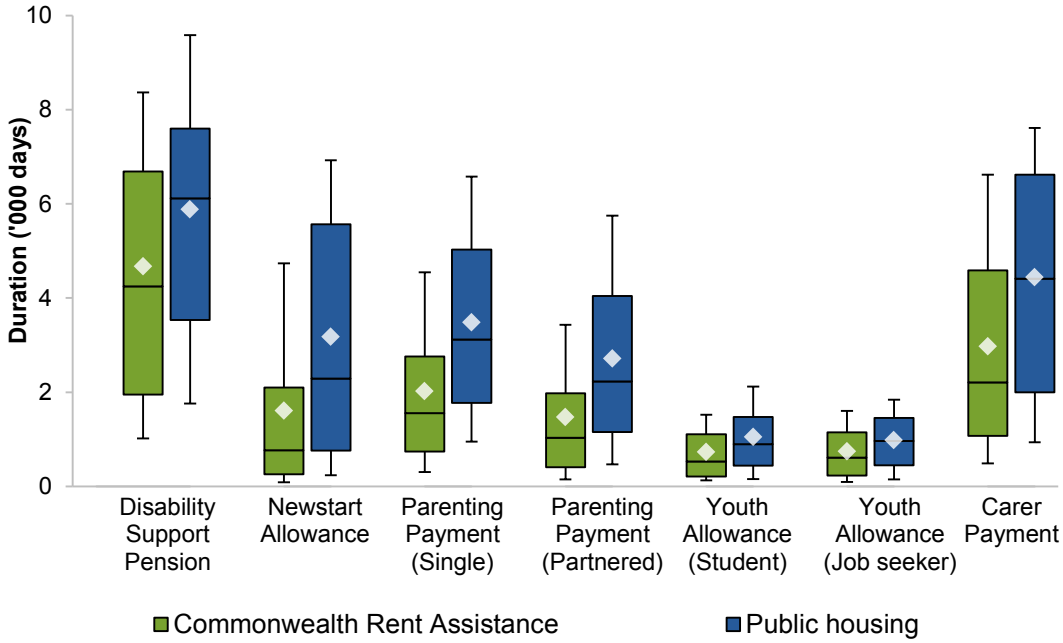
Source: Department of Human Services, administrative data (unpublished).

Are CRA receipt and public housing tenancy associated with different lengths of time on income support?

Public housing tenants have typically received ISPs for a longer period of time than CRA recipients on similar payments.

Figure 8 **Duration of ISP receipt, by ISP and housing assistance, 2013[a]**

P10, P90, interquartile range, median and mean



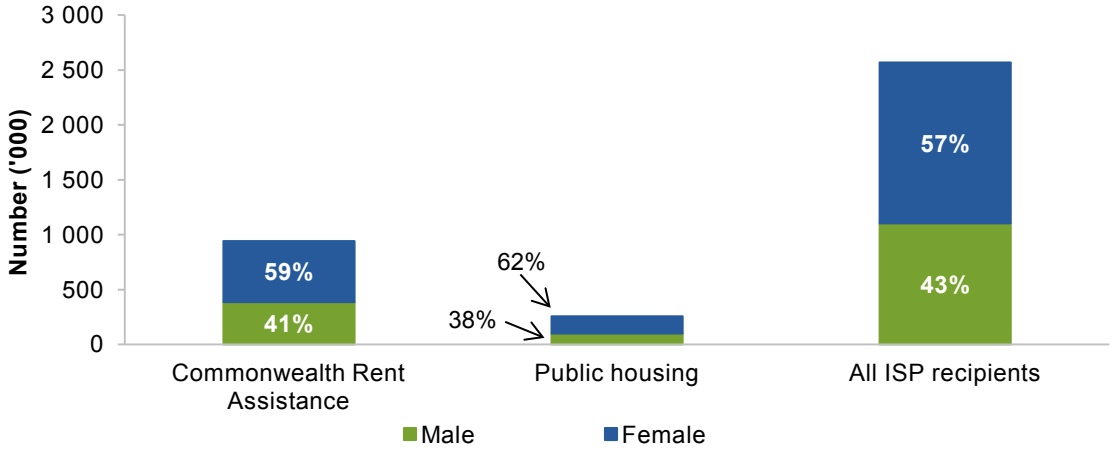
[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA. Other payments have not been included in this figure.

Source: Department of Human Services, administrative data (unpublished).

What are the demographic characteristics of housing assistance recipients?

More women receive ISPs and housing assistance than men.

Figure 9 **Gender of housing assistance recipients, 2013[a]**



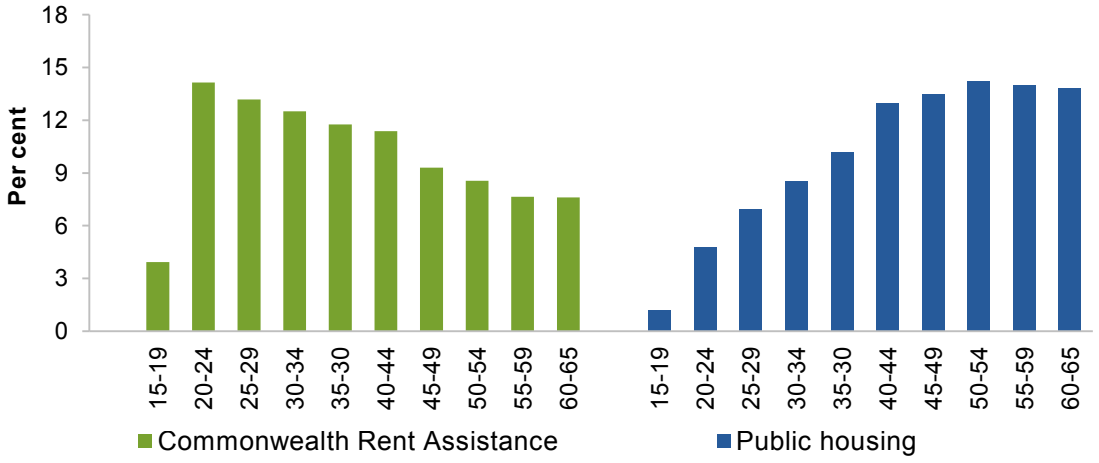
[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA.

Source: Department of Human Services, administrative data (unpublished).

Residents of public housing tend to be older than recipients of CRA …

Figure 10 **Age profile of housing assistance recipients, 2013[a]**

Per cent of housing assistance type in each age group



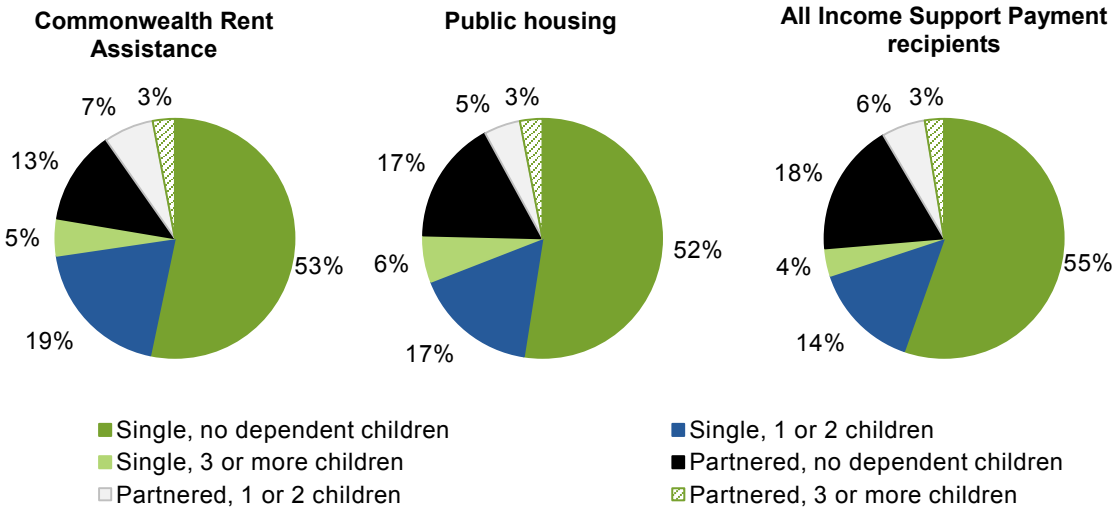
[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA.

Source: Department of Human Services, administrative data (unpublished).

... and over half of all housing assistance recipients are single, with no dependent children, regardless of the type of assistance they receive.

Figure 11 **Housing assistance recipients by household type, 2013[a]**

Per cent of housing assistance type



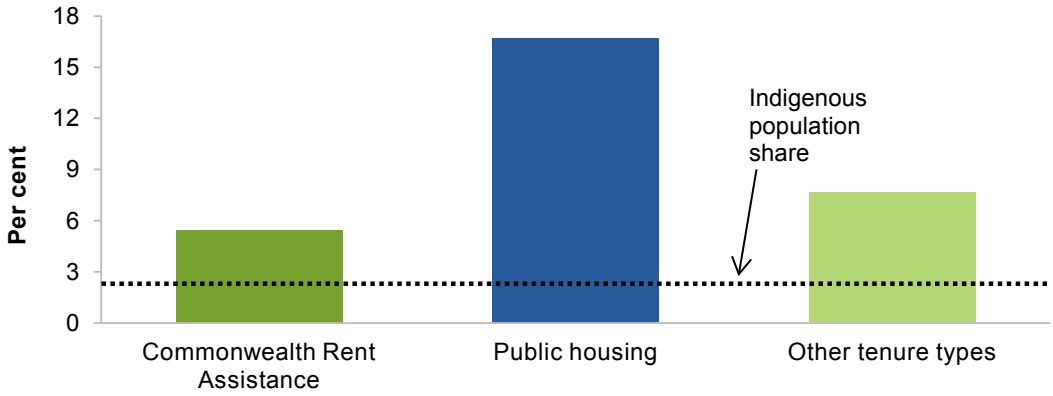
[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA.

Source: Department of Human Services, administrative data (unpublished).

Public housing residents are much more likely than other working-age ISP recipients to self-report as being Indigenous Australians ...

Figure 12 **Housing assistance recipients who self-report as Indigenous Australians, 2013[a,b]**

Per cent of housing assistance type



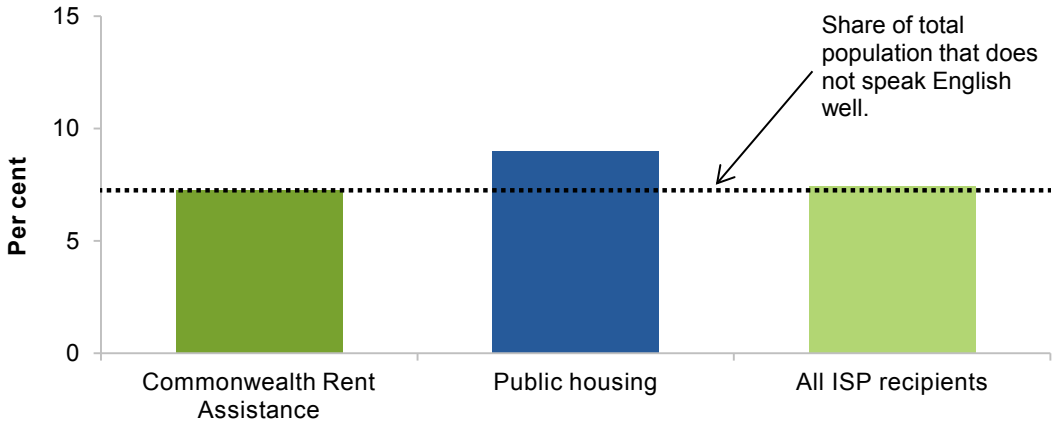
[a] The dotted line represents the proportion of the total population aged 15–65 that identified as being Indigenous at the 2011 Census. [b] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Human Services, administrative data (unpublished).

... and a higher proportion of public housing residents than CRA recipients have a preferred language other than English.

Figure 13 **Housing assistance recipients with a preferred language other than English, 2013[a,b]**

Per cent of housing assistance type



[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA. [b] The dotted line represents the proportion of the total population aged 15–65 that did not speak English either very well or well, and also did not speak only English at home, at the time of the 2011 Census. People who did not state either their language spoken at home or did not state their English proficiency are treated as not speaking English well.

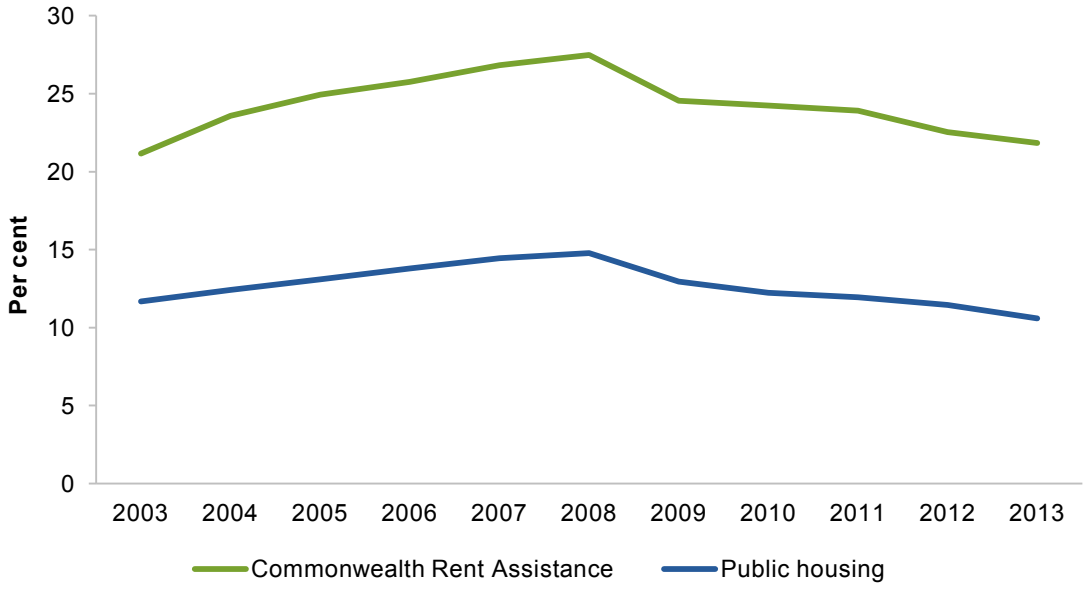
Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Human Services, administrative data (unpublished).

Are housing assistance recipients' labour market activities different?

Although their employment rates decreased from 2008, reflecting general trends in employment, about one in five CRA recipients and one in ten public housing residents reported earnings from work at 30 June 2013.

Figure 14 **Employment of housing assistance recipients, 2003 to 2013[a]**

Per cent reporting earned income



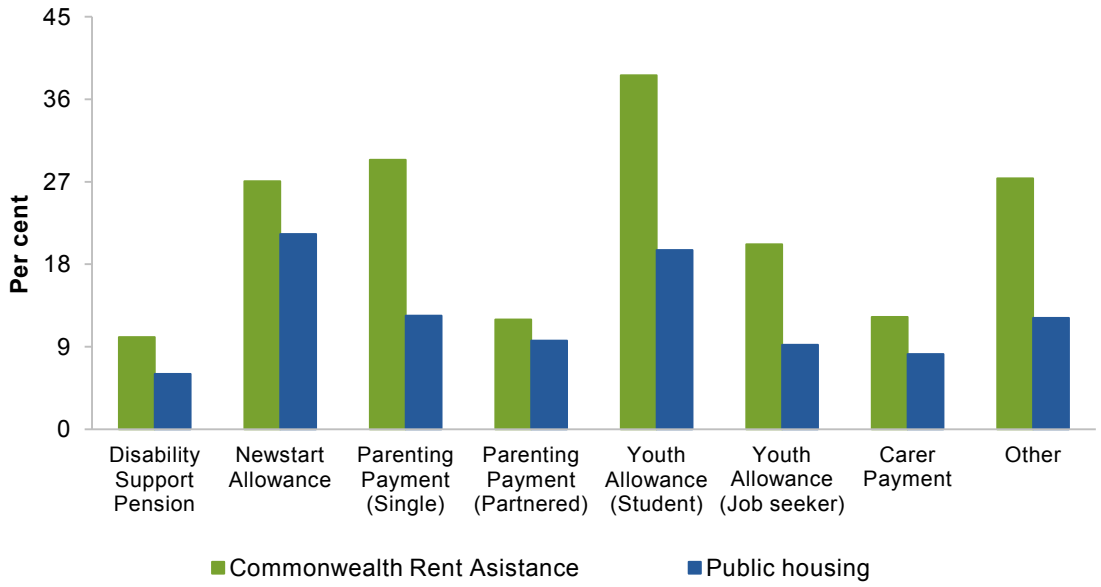
a ISP recipients aged 15–65 at 30 June of each year. This figure does not include FTB A-only recipients of CRA.

Source: Department of Human Services, administrative data (unpublished).

The difference in employment rates between housing assistance types was evident for all ISP types, although the gap differs in size with recipients of Youth Allowance and Parenting Payment (Single) having the greatest gap.

Figure 15 **Employment of housing assistance recipients by ISP type, 2013[a,b]**

Per cent reporting earned income



a ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA. **b** Other payments include a range of less common ISPs, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

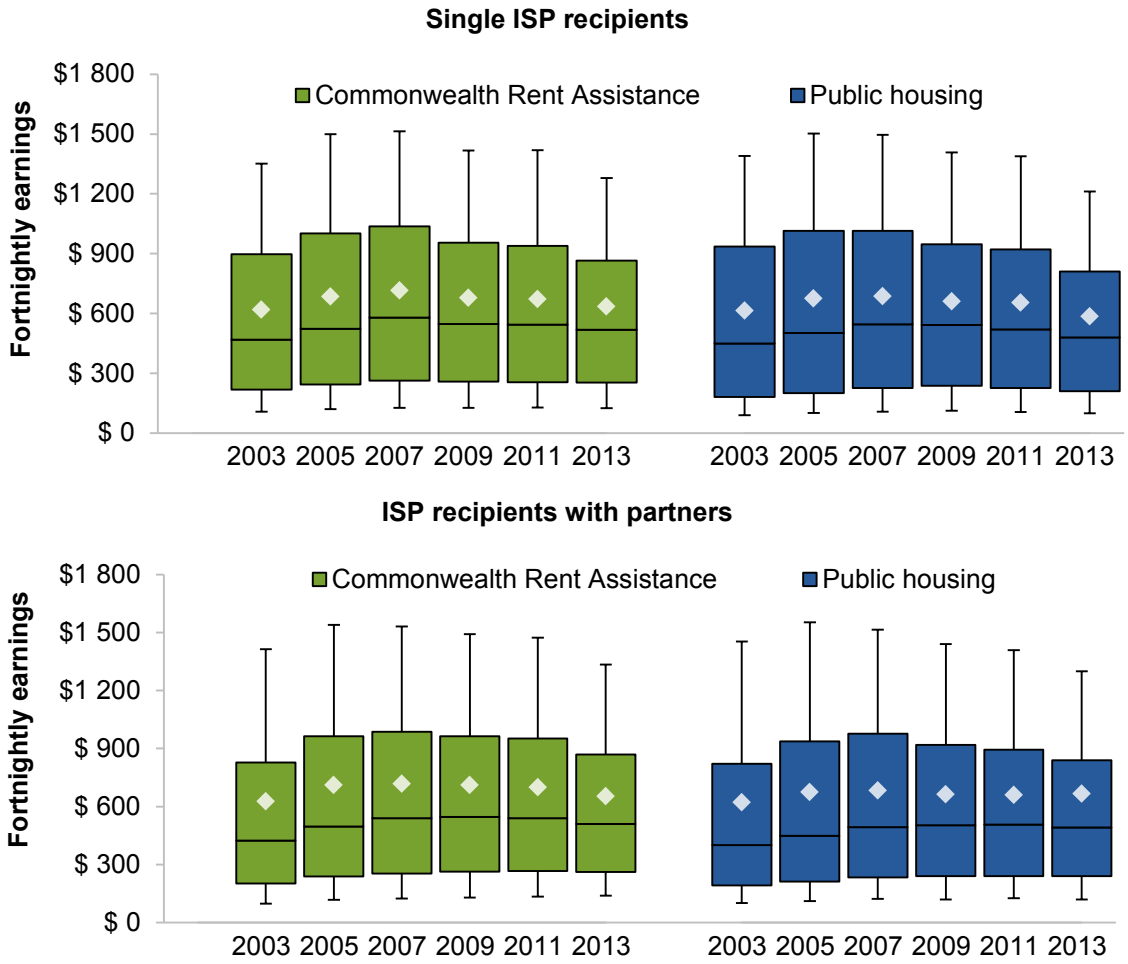
Source: Department of Human Services, administrative data (unpublished).

There was little difference in the average earnings reported by CRA recipients and public housing residents who were employed. Median earnings for single ISP recipients increased between 2003 and 2007, but have declined by about 1.8 per cent since.

The decline in median earnings for ISP recipients with partners is not as apparent, but is evident at the 75th and 90th percentiles.

Figure 16 **Real earned income, by housing assistance status, 2013[a,b]**

P10, P90, interquartile range, median and mean (2013 dollars)



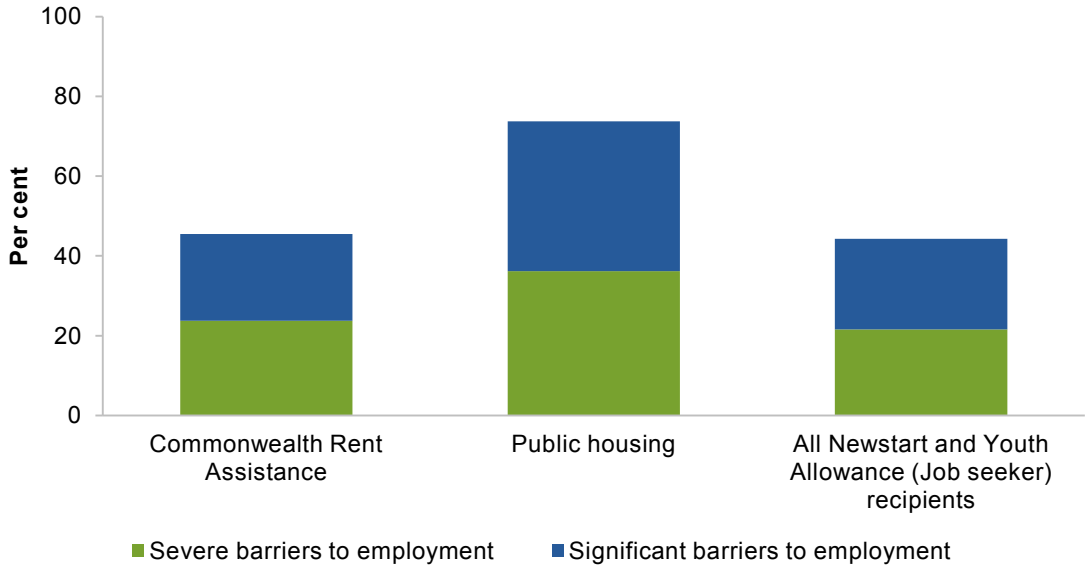
[a] ISP recipients aged 15–65 reporting earned income at 30 June 2013. [b] Earnings values have been inflated to 2013 values using the Wage Price Index (ABS Cat. no. 6345.0).

Source: Department of Human Services, administrative data (unpublished).

Nearly three out of every four Newstart and Youth Allowance (Job seeker) recipients living in public housing have been assessed as having severe or significant barriers to employment. About two of every five CRA recipients receiving either Newstart or Youth Allowance (Job seeker) payments were considered to face similar barriers.

Figure 17 **Assessment of employment barriers by housing assistance type, 2013[a,b]**

Per cent, Newstart and Youth Allowance (Job seeker) recipients only



a ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA. **b** Barriers to employment are only assessed for those ISP recipients required to undertake an activity test, such as those receiving Newstart or Youth Allowance (Job Seeker). Barriers to employment may include problems such as: mental illness; family and domestic violence; family and relationship issues; financial management difficulties; social isolation; language and communication difficulties; drug, alcohol and gambling addictions; and homelessness or unstable accommodation. People with severe barriers to employment are the most disadvantaged job seekers and require integrated, intensive assistance to overcome multiple vocational and non-vocational barriers to employment (JSA 2013).

Source: Department of Human Services, administrative data (unpublished).

What does the work capacity of public housing tenants look like?

One individual characteristic that is highly relevant to employment outcomes is a person's capacity to work. The administrative data do not provide this information. The calculations in this section are based on a variety of sources and assumptions to estimate the potential pool of public housing tenants who might have the capacity to work, given the right support. Given the uncertainties about the data and assumptions made, the calculations in this section are presented in the form of ranges.

Since 2006, applicants for the Disability Support Pension (DSP) who are not profoundly disabled or terminally ill have had to undertake job capacity assessments (box 2). The work capacity of Newstart and Youth Allowance (job seeker) applicants is also assessed, with applicants classified into one of four streams depending on the degree of support that they need to find work. This information, plus assumptions about the work capacity of other ISP recipients, was used to estimate work capacity among all working-age public housing tenants.

On these estimates, the majority of working-age public housing tenants has some work capacity (table 1). In fact, the number who might be thought to have higher work capacity (about 70 000) is larger than the number in employment on 30 June 2013 (about 40 000).[4]

Box 2 Work capacity assessments for DSP recipients

Prior to the Welfare to Work reforms (which commenced on 1 July 2006), people with disability who applied for income support were eligible for DSP if they were assessed as having a work capacity of less than 30 hours a week (for at least the following two years). From 1 July 2006, the threshold was reduced to 15 hours, and people with disability who have a work capacity of more than 15 hours a week have been assessed for alternative payments — usually Newstart or Youth Allowance. People on DSP at May 2005 were grandfathered, and a mix of the pre- and post-Welfare to Work arrangements applied to people assessed between May 2005 and July 2006. People who are clearly eligible because of terminal illness or profound disability receive DSP without a job capacity assessment (JCA). Initially, employment service providers undertook JCAs. From July 2011, they have been undertaken by Centrelink or CRS Australia (formerly the Commonwealth Rehabilitation Service).

People who are assessed as eligible for DSP are classified as capable of either 0–7 or 8–14 hours of work a week. (People assessed between May 2005 and July 2006 can have a work capability of 15 or more hours).

A larger share of public housing tenants than CRA recipients on DSP are on grandfathered arrangements (47 versus 37 per cent). This suggests that work capacity might be higher among public housing tenants (because a larger share would have a work capability of more than 15 hours). On the other hand, among ISP recipients assessed for DSP since July 2006, 62 per cent of public housing tenants are in the lower hours (0–7) category, in comparison with 57 per cent of CRA recipients.

Sources: DEEWR (2008); Welfare Rights Centre (2011); Author estimates from the Research and Evaluation Database (unpublished).

4 The number of tenants who had employment at some point over the past six months would be larger.

Table 1 **Estimates of the work capacity of public housing tenants**

Income support payment type	*Estimated population*[a]	*Employed*	*Not working*	*Work capacity of those not working*		
				Higher	*Lower*	*None*
Disability support pension[b]	149 500	9 000	140 500	52 000	83 900	
(Grandfathered recipients)	69 700					
Profoundly disabled	4 600					4 600
Work capacity bandwidth						
0–7	85 300	1 400	83 900		83 900	
8–14	43 400	3 100	40 300	40 300		
15–29	16 200	4 500	11 700	11 700		
Newstart allowance[c]	62 900	13 300	49 600	8 700	40 900	
Jobseeker classification						
Stream 1 & 2	18 700	10 000	8 700	8 700		
Stream 3	22 500	2 000	20 500		20 500	
Stream 4	21 700	1 300	20 400		20 400	
Parenting payment (Single)[d]	33 800	5 200	28 600	5 300	11 650	11 650
Parenting payment (Partnered)[d]	7 400	700	6 700	200	3 250	3 250
Youth allowance (Student)[e]	10 900	3 600	7 300			7 300
Youth allowance (Job seeker)	10 900	3 200	7 700	3 000	4 700	
Jobseeker classification[f]						
Stream 1 & 2	5 400	2 400	3 000	3 000		
Stream 3	2 800	500	2 300		2 300	
Stream 4	2 700	300	2 400		2 400	
Carer payment[g]	28 500	2 300	26 200	1 500	6 175	18 525
Other[g]	8 800	1 100	7 700	700	1 750	5 250
Total	**312 700**	**38 400**	**274 300**	**71 400**	**152 325**	**50 575**

[a] Estimates are based on a combination of data from the DHS (for 2013) and the ABS Survey of Income and Housing (SIH) 2011-12. SIH was used for estimates of working-age people living with parents or guardians (WPLPs) in public housing because these ISP recipients are not identified as public housing residents in the DHS data. All figures have been rounded. The total is higher than the 300 000 income support recipients figure in the text above because visitors can not be identified (and, therefore, excluded) in the SIH data for WPLPs. [b] Work capacity data for DSP recipients assessed from May 2005 onwards are from the Research and Evaluation Database (RED). In estimating the potential work capacity of people on grandfathered arrangements, it was assumed (on an ad hoc basis) that 20 per cent would be assessed as being able to work 15 or more hours. Information from RED on the work capacities of DSP recipients assessed from May 2005 was used to pro rate other people on grandfathered arrangements across the other work capacity categories. [c] The DHS data include jobseeker classifications for ISP recipients by tenure type, but excluding WPLPs. For WPLPs living in public housing, it was assumed that the distribution of classifications within the total ISP recipient population applies. That distribution includes a higher proportion of stream 1 and 2 Newstart allowees (NAs) than does the distribution for public housing tenants — and it was assumed that WPLPs living in public housing are more likely than their parents/guardians to be in these higher level streams. The DHS data do not separately identify jobseeker classifications for people in employment. It was assumed (on an ad hoc basis) that 75 per cent of employed NAs are streams 1 and 2, 15 per cent are stream 3 and 10 per cent are stream 4. For simplicity, the WPLPs' employment rate was assumed to be the same as their parents'/guardians'. Intuitively, it is likely to be higher but, given the small numbers of WPLPs on Newstart, this assumption has little effect on the overall estimates for NAs. [d] The estimate of the number of Parenting Payment (PP) recipients with higher work capacity was generated by assuming that public housing tenants on this payment could relatively easily achieve the same employment rate as PP recipients overall. If that were the case, for example, an additional 6800 single parents in public housing would be working. The estimate for PP recipients with lower work capacity was generated by assuming that they represent half of the group that is not working less those assumed to have higher work capacity — an ad hoc decision. [e] Detail on whether Youth Allowance (YA) recipients are students or jobseekers is not available in the SIH. It was assumed that YA recipients who are studying full time are receiving the student payment. And it was assumed that none of this group currently has work capacity (although some are likely to be working, at least part time). [f] Most YA jobseekers are WPLPs. As for NA WPLPs, it was assumed that YA jobseekers are distributed across streams in the same proportions as all ISP recipients. [g] Estimates of the numbers of Carer Payment and Other payment recipients with higher work capacity were generated using the same approach as was used for PP recipients. Estimates of lower work capacity were also derived using a similar approach to that used for PP, except that the percentage of the 'remainder' assumed to have work capacity was set at 25 rather than 50.

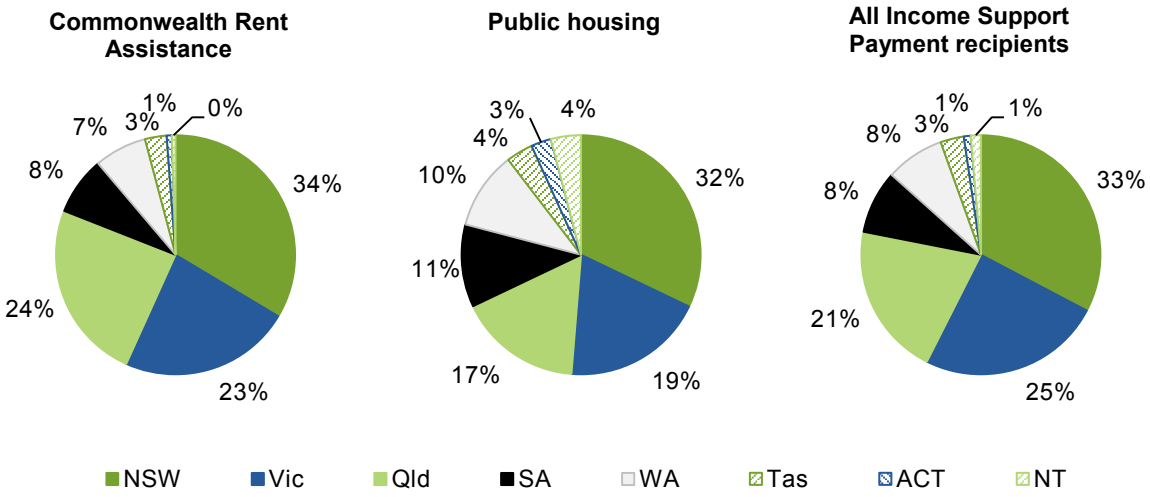
Sources: Author estimates based on: Department of Human Services, administrative data (unpublished); Research and Evaluation Database (unpublished); ABS (Microdata: Income and Housing, Australia, 2011-12).

Where do housing assistance recipients live?

The majority of housing assistance recipients lives in either New South Wales or Victoria.

Figure 18 **Housing assistance recipients by state or territory, 2013[a]**

Per cent in each state or territory

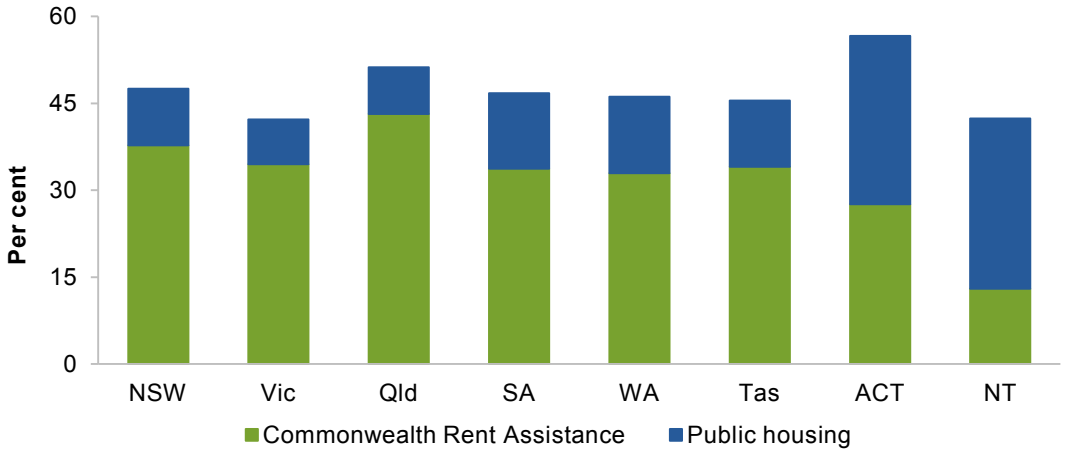


[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA.

Source: Department of Human Services, administrative data (unpublished).

The mix of housing assistance differs between states and territories, with working-age ISP recipients in all jurisdictions — other than the Australian Capital Territory and the Northern Territory — more likely to receive CRA than to reside in public housing.

Figure 19 **ISP recipients receiving housing assistance, by state or territory, 2013[a]**

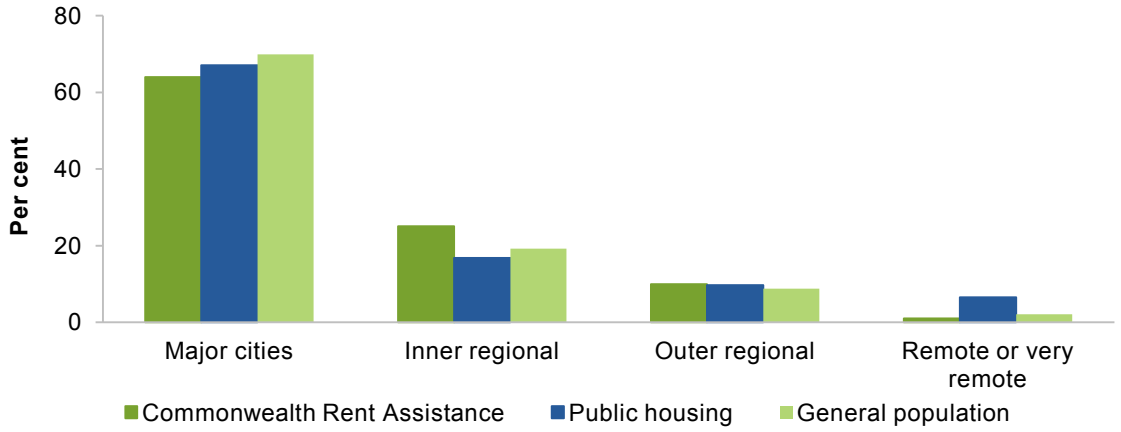


[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA.

Source: Department of Human Services, administrative data (unpublished).

Housing assistance recipients are concentrated in major cities and inner regional areas …

Figure 20 **Income support payment recipients by region and tenure type, 2013[a,b]**



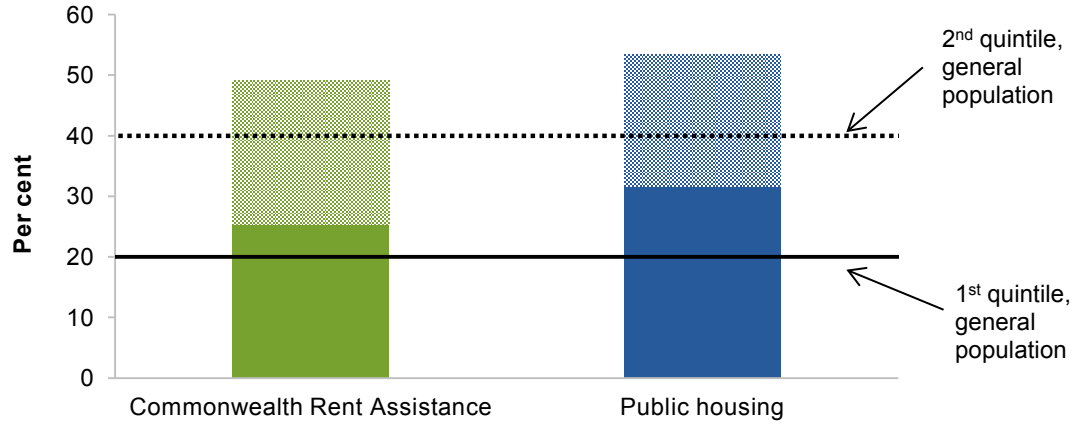
[a] ISP recipients aged 15–65 at 30 June 2013. This figure does not include FTB A-only recipients of CRA. [b] Figures for the general population are from the 2011 Census.

Sources: Department of Human Services, administrative data (unpublished); 2011 Census of Population and Housing.

… and in areas of higher socioeconomic disadvantage.

Figure 21 **Housing assistance recipients living in areas of high disadvantage, 2011[a]**

Per cent in bottom quintile (dark shading) and second quintile (light shading) of the Index of Relative Socioeconomic Disadvantage



[a] ISP recipients aged 15–65 at 30 June 2011. This figure does not include FTB A-only recipients of CRA.

Sources: ABS (Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), 2011, Cat no. 2033.0.55.001); Department of Human Services, administrative data (unpublished).

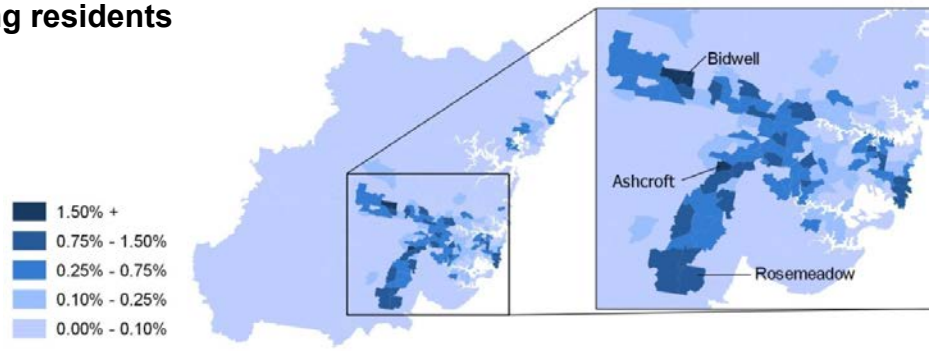
CRA recipients are spread in a broad range of locations across all capital cities and are often found in areas that provide opportunities for employment. In contrast, public housing residents are often located in areas with fewer low skilled jobs.

In Sydney, public housing tenants and CRA recipients tend to live in different areas, and in comparison to other major cities, public housing tenants and CRA recipients are located in areas with fewer low skill jobs.

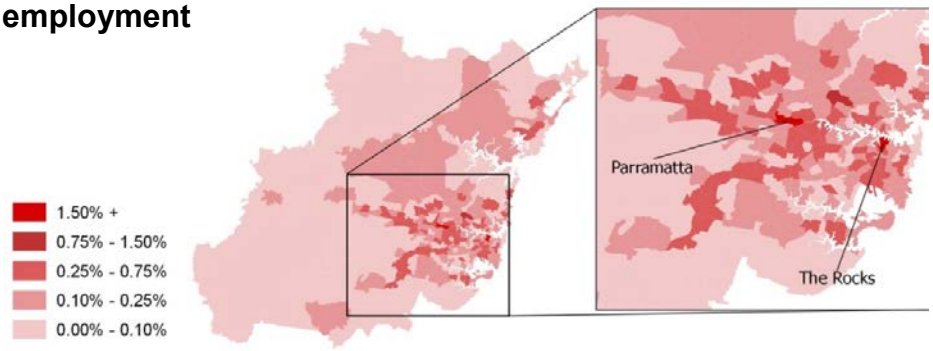
Figure 22 **Housing assistance and lower skill jobs around Sydney[a,b,c]**
Per cent located in each SA2 area, 2011

CRA recipients

Public housing residents



Lower skilled employment



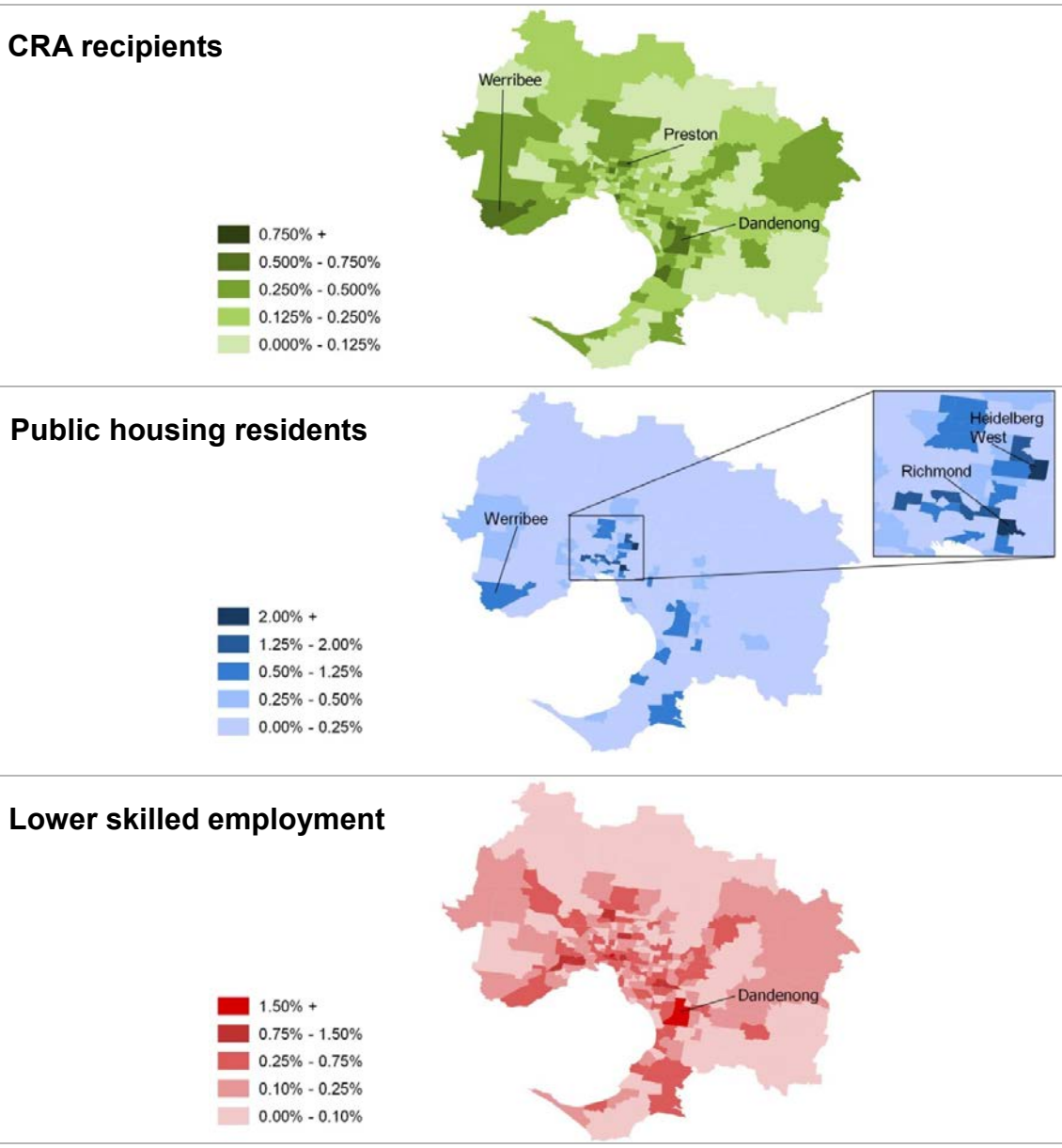
a ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. **b** Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. **c** SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

Public housing tenants in Melbourne are centrally located. CRA recipients in Melbourne are distributed more widely and are more likely than public housing tenants to live in areas with low skilled jobs.

Figure 23 **Housing assistance and lower skill jobs around Melbourne[a,b,c]**

Per cent located in each SA2 area, 2011

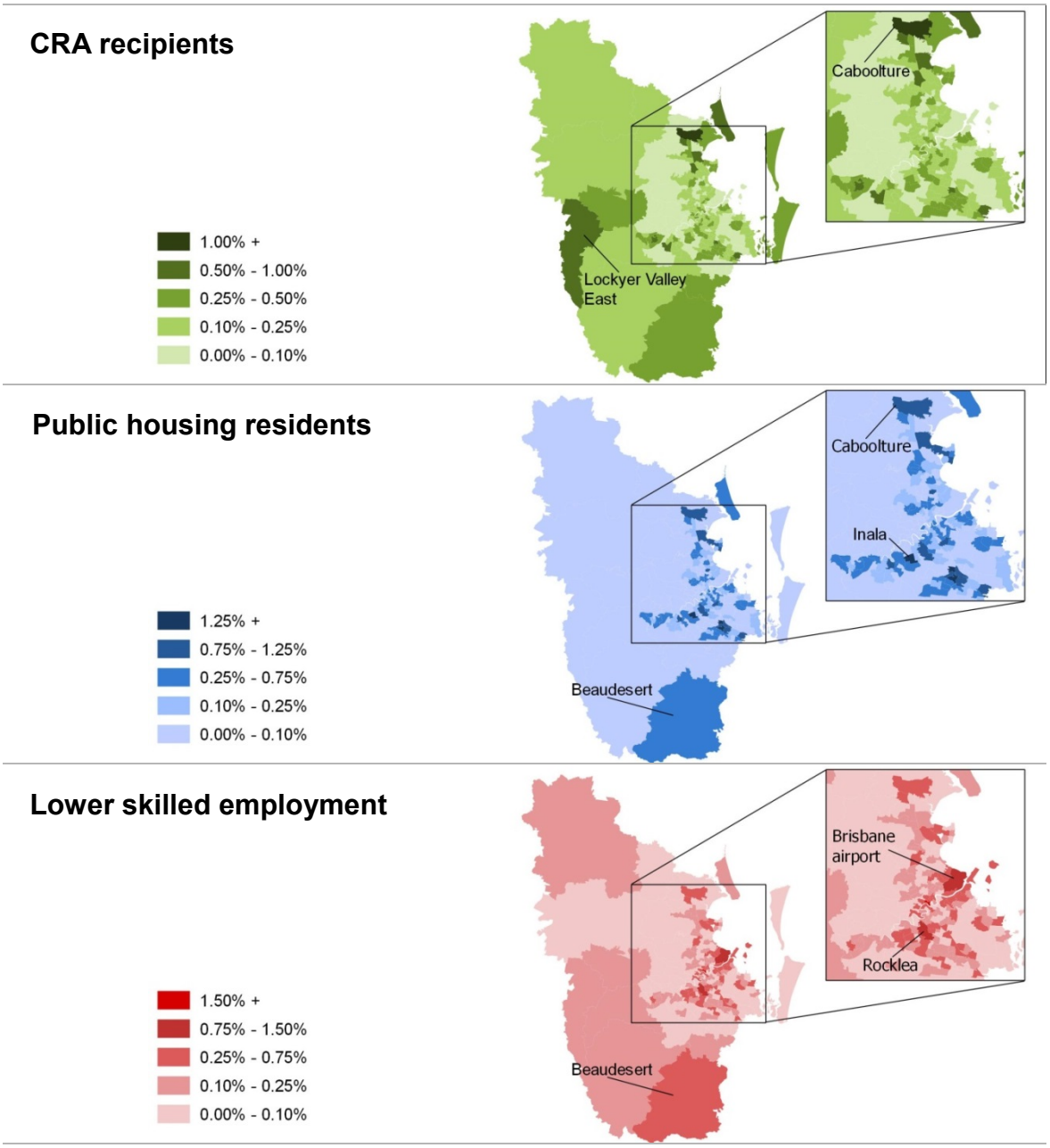


a ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. **b** Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. **c** SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

In Brisbane CRA recipients and public housing tenants live in similar areas and so have a similar exposure to low skilled jobs.

Figure 24 **Housing assistance and lower skill jobs around Brisbane[a,b,c]**
Per cent located in each SA2 area, 2011

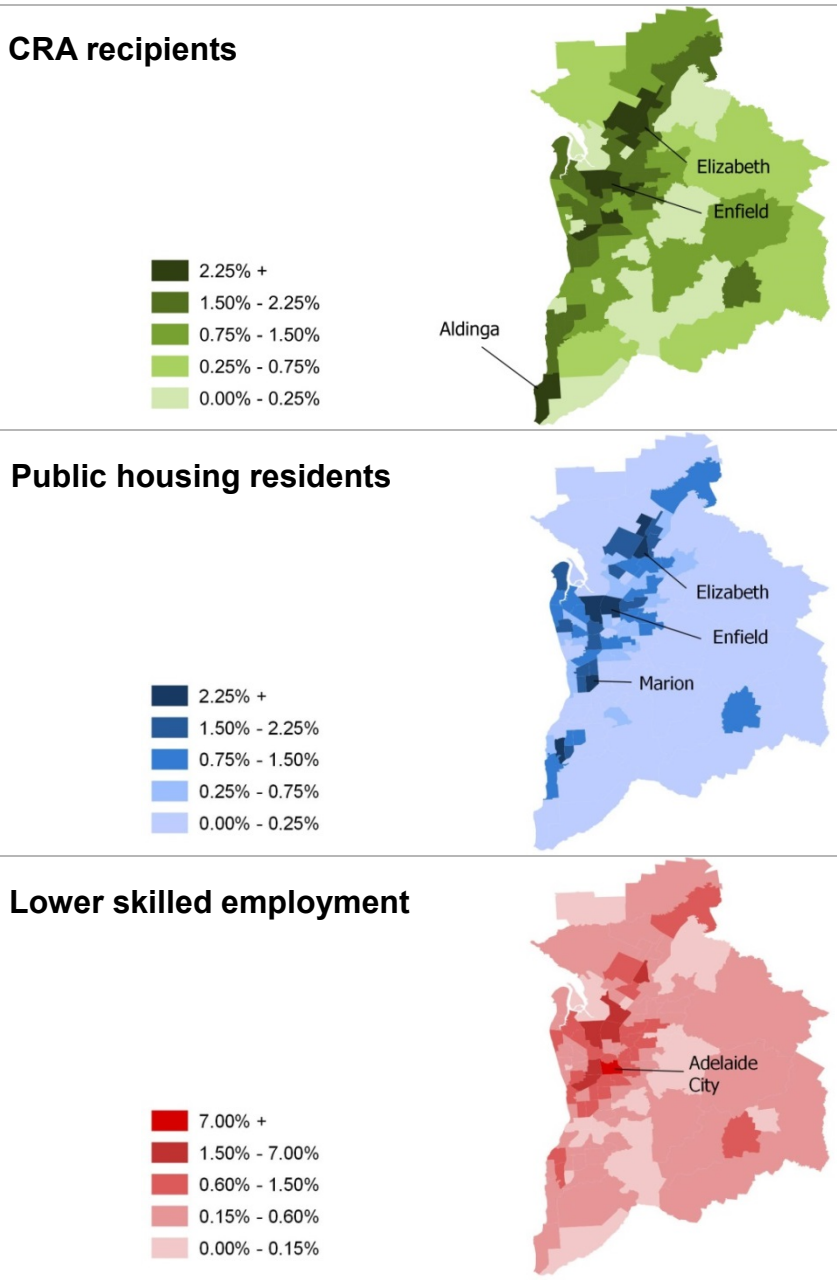


[a] ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. [b] Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. [c] SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

As with Brisbane, in Adelaide public housing tenants and CRA recipients live in similar areas and have similar access to low skilled jobs.

Figure 25 **Housing assistance and lower skill jobs around Adelaide[a,b,c]**
Per cent located in each SA2 area, 2011

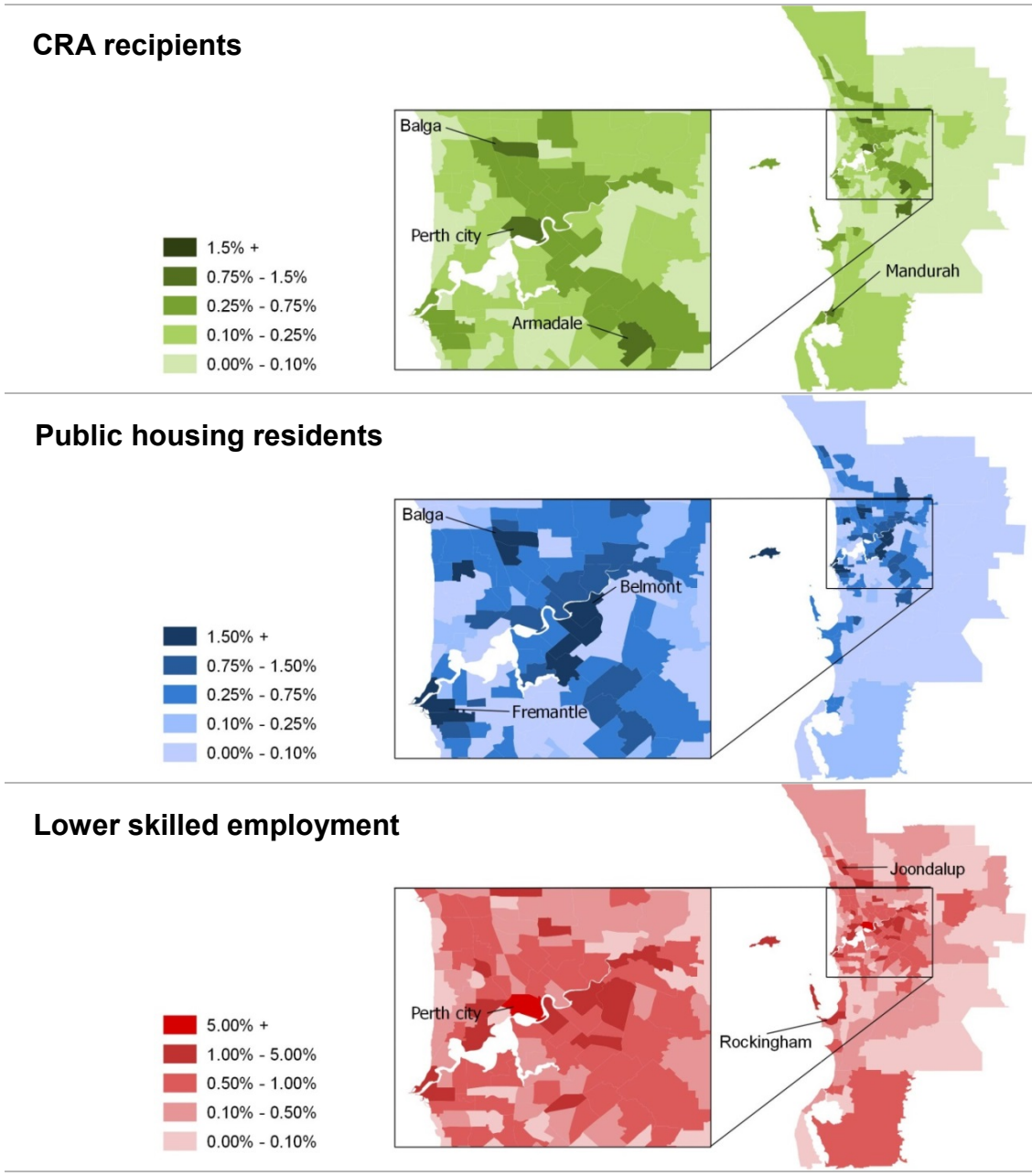


[a] ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. [b] Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. [c] SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

Public housing tenants in Perth are more likely to reside on the urban fringe. This is also where CRA recipients tend to live, and where low skill jobs are found.

Figure 26 **Housing assistance and lower skill jobs around Perth[a,b,c]**
Per cent located in each SA2 area, 2011

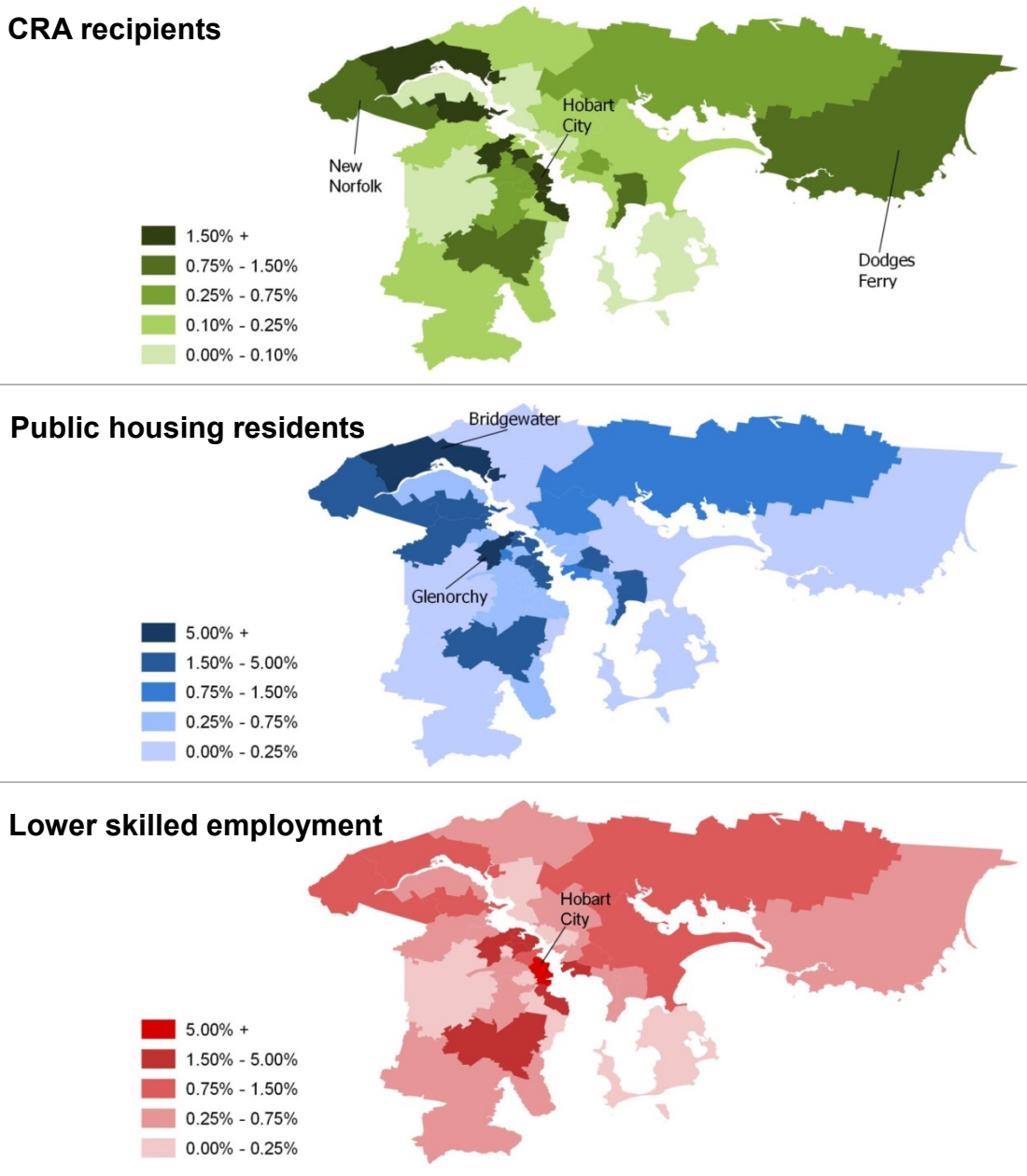


[a] ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. [b] Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. [c] SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

In Hobart, CRA recipients and public housing tenants live in similar areas, which are also where many low skill jobs are found.

Figure 27 **Housing assistance and lower skill jobs around Hobart[a,b,c]**
Per cent located in each SA2 area, 2011

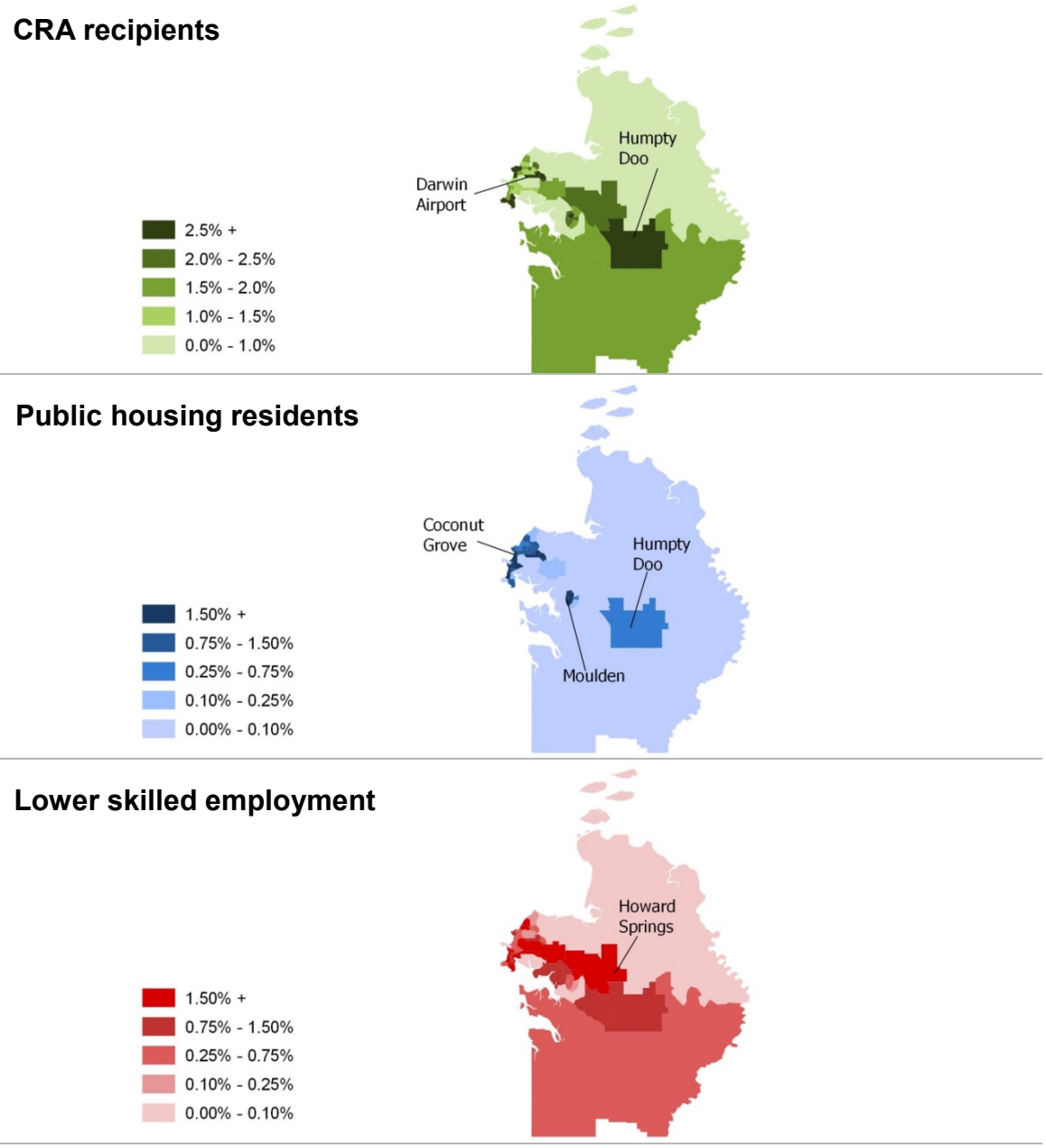


[a] ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. [b] Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. [c] SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

CRA recipients in Darwin are spread in a range of locations. In contrast with public housing tenants, the areas that CRA recipients live in are likely to be areas with low skilled jobs.

Figure 28 **Housing assistance and lower skill jobs around Darwin[a,b,c]**
Per cent located in each SA2 area, 2011



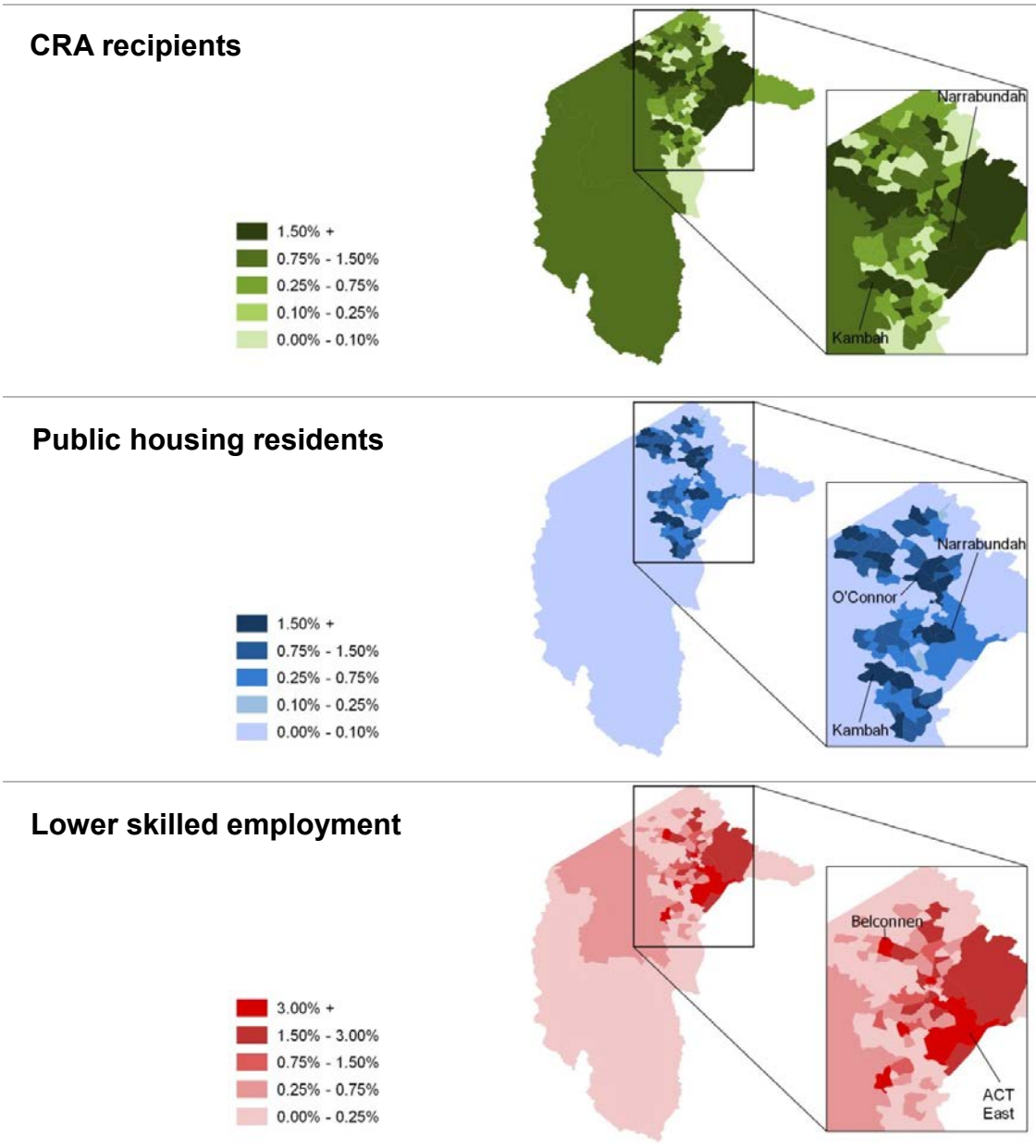
[a] ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. [b] Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. [c] SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

Public housing tenants in the Australian Capital Territory live in similar areas to CRA recipients. In contrast to other major cities, both public housing tenants and CRA recipients live in areas where there are relatively few low skilled jobs.

Figure 29 **Housing assistance and lower skill jobs around the Australian Capital Territory[a,b,c]**

Per cent located in each SA2 area, 2011



[a] ISP recipients aged 15–65 at 30 June 2011. CRA recipients do not include FTB A-only recipients of CRA. [b] Lower skilled employment refers to people in jobs classified as ANZSCO skill level 4 or 5. [c] SA2s are an ABS-defined medium-sized geographic unit that includes an average of around 10 000 people.

Sources: ABS (*TableBuilder Pro, 2011*, Cat. no. 2073.0); Department of Employment, Research and Evaluation Database.

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Annex A A profile of working-age housing assistance recipients

See Excel workbook available online.

Background paper 4
A profile of public housing applicants and tenants in South Australia and Western Australia

Key points

- Between 2004 and 2013, waiting list numbers for public housing declined in South Australia but doubled in Western Australia. Waiting times have increased in both states, but remain shorter for households in greatest need, compared with other applicants.
- The number of households in public housing fell in South Australia but grew in Western Australia between 2004 and 2013. Tenancy durations grew in both states.
- South Australia has the highest income eligibility limits for entry to public housing among Australian jurisdictions, with allocations linked closely to urgency of need. Western Australia has the lowest income eligibility limits. Public housing tenants in Western Australia have also had to comply with relatively low income eligibility thresholds since 2006. No ongoing income eligibility requirements apply for public housing tenants in South Australia.
- Applicants for public housing are more likely to be of working age than tenants. Tenants tend to age in public housing rather than move out.
- Compared with the general population, applicants and tenants are more likely to be female, Indigenous, Australian-born, from single-person households and to have a disability.
- The limited availability of single-bedroom properties means that many single households occupy larger properties than needed and so receive larger rent subsidies.
- Tenants have higher employment rates and incomes than applicants, but employment among both groups is low compared with the general population.
  - In South Australia, 6 per cent of the most disadvantaged working-age applicants were in employment at 30 June 2013. In contrast, about 20 per cent of tenants, as well as applicants experiencing lower levels of disadvantage, were employed. In comparison, 71 per cent of the overall South Australian working-age population was employed in 2013.
  - In Western Australia, about 8 per cent of priority applicants were employed in 2013, whereas the employment rate of wait-turn applicants was about 14 per cent. Of tenants, 22 per cent were employed in 2013. These employment rates are much lower than the general employment rate in Western Australia, which was 75 per cent for working-age people in 2013.

Key points (continued)

- Low income eligibility limits for public housing potentially create 'welfare locks', that is, an incentive for applicants to avoid employment in order to remain eligible for a property. To the extent that income limits also apply for tenants, as in Western Australia, welfare locks potentially exist for them too. For some tenants, the stable address and living arrangements that come with a move into public housing might facilitate employment (a stability effect).
  - A simple comparison of employment rates before and after a move into public housing shows that employment rates increased both while applicants were on the waiting list and following a move into public housing. Overall, the simple analysis is more consistent with a stability effect for tenants rather than a welfare lock for applicants.
  - A simple comparison of employment rates for single tenants in Western Australia and South Australia reveals that they are similar, suggesting that welfare locks do not apply for tenants in Western Australia.

1 Introduction

This background paper looks at the characteristics of public housing applicants and tenants in South Australia[1] and Western Australia[2] using data from administrative records provided by the Housing SA division of the Department for Communities and Social Inclusion in South Australia and the Department of Housing in Western Australia.[3] The Commission gratefully acknowledges the help that these agencies have provided to the project.

Most of the descriptive statistics presented are based on administrative records from 2004 to 2013.[4] The paper complements the multivariate analysis of employment outcomes in BP 6,[5] so particular attention is paid to the characteristics of working-age applicants and tenants. Furthermore, because the relationship between housing assistance and employment is the focus of this project, the characteristics considered in this paper are those typically found by researchers to be related to whether a person works — age, gender, Indigeneity, disability, country of birth and household composition. Some important influences on employment are not captured in the data, including educational attainment and work experience.

1 The South Australian records also include state owned and managed Indigenous housing (SOMIH), which is public housing specifically for Indigenous people. In this paper, all statistics reported for public housing in South Australia include SOMIH.

2 The Western Australian records also include some properties owned by the housing department that are externally managed. In this paper, all statistics reported for public housing in Western Australia include these externally managed households.

3 The Productivity Commission requested data from New South Wales, Victoria, South Australia, Western Australia and Tasmania. Given the timelines of the project, only South Australia and Western Australia were able to provide data.

4 See BP 6 annex A for a description of the administrative records and the data processing steps applied in turning the records into datasets suitable for analysis.

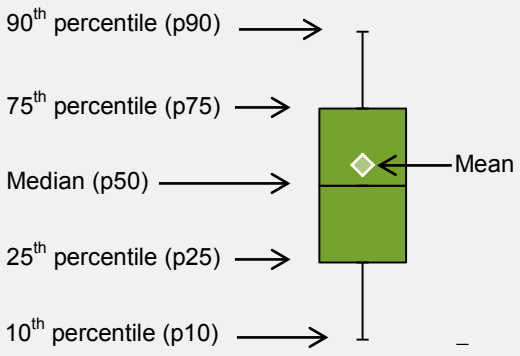
5 Throughout this paper, BP refers to 'background paper'.

Annex A contains tables of data for public housing applicants and tenants. Figures included in the paper are drawn from those tables unless otherwise indicated. Most of the figures are column charts, but a number use box plots to summarise the distribution of a variable of interest. As the latter are seen less frequently in descriptive analyses, an explanation is presented in box 1.

Box 1 **Interpreting 'box and whisker' plots**

'Box and whisker' plots can be used to summarise the distribution of an indicator, such as the time tenants have spent in public housing.

The line in the middle of the box to the right represents the median value of the indicator, whereas the diamond shows the mean value. The outer edges of the box represent the interquartile range — the gap between the 25th and 75th percentiles — so 50 per cent of observations fall within the box. The whiskers extending out from the box show values of the indicator at the 10th and 90th percentiles.



Source: Williamson et al. (1989).

The welfare lock hypothesis — broader context for the analysis

The profile of applicants and tenants presented in this paper sets the scene for the analysis of the 'welfare lock' hypothesis. At the time they apply, applicants for public housing must meet a set of eligibility criteria, including an income limit based on household composition.[6] An applicant household's[7] income must be below the income limit before being placed on a waiting list and before an offer of housing can be made.[8] Because of these income eligibility limits, public housing applicants might choose to remain unemployed, or restrict their employment, to avoid the risk of exceeding the limit and thus not receiving an offer of housing. This disincentive to work is known as a 'welfare lock'.

6 Additional eligibility criteria include Australian and State residency, asset limits and non-ownership of residential property. People who do not meet the criteria but have special circumstances may still apply.

7 The term 'applicant household' is used throughout the paper to describe a household on the waiting list, whereas the term 'applicant' is used to describe a member of a household on the waiting list. 'Head applicant' refers to the main person responsible for the application. Similarly, 'tenant household' describes a household in public housing, 'tenant' describes a member of a tenant household and 'head tenant' describes the main person responsible for the tenancy.

8 Households that exceed the South Australian income limits may still be eligible for public housing if they have a specific and verified housing need that cannot be met by other forms of accommodation.

The potential for tenants to face welfare locks also exists if ongoing tenancy is conditional on not exceeding an income threshold or if tenants have fixed lease terms and need to remain eligible for their tenancy to be extended.

The question of whether welfare locks exist for applicants and tenants in South Australia and Western Australia is examined briefly in this paper and further assessed in BP 6. A summary of the evidence is presented in chapter 4 of the main report.

2 SA public housing waiting lists, entrants and exits

Setting the scene — the SA economy in the decade to 2013

The broader context of the state economy is likely to affect both demand for public housing and the employment rates of tenants and applicants. South Australia's economy grew moderately between 2004 and 2013 (figure 1), reflecting its reliance on declining industry sectors, such as manufacturing. Whereas the increase in total earnings[9] was slightly higher than the national rate of growth, wage income for full-time workers grew at a slower rate than the national average (ABS 2014a). In addition, the state's population — and in particular its working-age population — grew more slowly than the national population. Rents in Adelaide increased at a slower rate than in the other capital cities. However, rents increased at a faster pace than wages and income support payments, which may have led to more households seeking housing assistance.

Waiting list categories are based on housing needs

Since 2000, households applying for public housing in South Australia have been placed on a waiting list in one of four needs-based categories, with priority being given to those in lower-numbered categories (Legal Services Commission SA 2014):[10]

- Category 1 applicant households are in urgent need of housing and unable to access private rental accommodation. Reasons for urgently requiring housing can include homelessness, domestic violence and long-term medical conditions (Government of SA 2014a). Tenant households that have an urgent reason for requiring a transfer between public housing dwellings may also be placed in this category.
- Category 2 applicant households do not have an urgent need for housing but face long-term barriers to accessing suitable housing in the private rental market or other housing options. Tenant households applying for a transfer may be placed in this category if their current housing is unsuitable in the long-term.

9 Total earnings are equal to weekly ordinary time earnings plus weekly overtime earnings (ABS 2014a).

10 A small number of new applicants are placed in a fifth category — low demand housing. These applicants do not meet the income and/or assets tests, nor the needs tests, to be eligible for public housing, but wish to be considered for housing in low demand areas. In 2013, there were 40 applicants for low demand housing, a fall from 152 in 2004.

- Category 3 applicant households meet the income and assets tests but do not have a high enough housing need to be placed in categories 1 or 2.
- Category 4 applicant households are tenant households that have been in public housing for at least three years and are requesting a transfer to another public housing property because of personal preferences, including relocating for work.

Figure 1 **The South Australian economy — key indicators[a]**

Annual compound growth rate, 2004 to 2013

[a] Rent data refer to the change in the rent component in the consumer price index for Adelaide. National rents reflect a weighted average of data for the eight capital cities.

Sources: ABS (*Australian Demographic Statistics*, Cat. no. 3101.0; *Australian National Accounts: State Accounts*, Cat. no. 5220.0; *Consumer Price Index, Australia*, Cat. no. 6401.0; *Average Weekly Earnings, Australia*, Cat. no. 6302.0).

Income limits in South Australia

Income limits for public housing applicants in South Australia are currently the highest across Australia — a single person household is allowed an income of up to $970 a week before they are no longer eligible for public housing (Government of SA 2014c). These income eligibility rules allow applicants to have relatively high earned incomes, implying that they are more likely to be employed while waiting for public housing than applicants in other jurisdictions.

That said, allocations to category 1 and 2 applicants are based primarily on need. Over the period 2004 to 2013, about one per cent of applicants with high or urgent needs for housing exceeded the income limits at entry to the waiting list.[11]

Tenants face no ongoing income eligibility requirements. Fixed-term leases were introduced for tenants who entered public housing from October 2010 and, so long as tenants comply with the conditions of their lease, they are offered further fixed-term leases.

Waiting list numbers have declined as waiting times have grown

There was a marked decline in the number of households waiting to access public housing over the ten years to 2013 (from 27 000 to 21 000) (figure 2). This was driven mainly by a fall in the number of new category 3 households, as well as more category 3 exits from the waiting list than entries (figure 3).[12] The share of new applicant households in category 1 increased over the same period (from 4 per cent to 12 per cent), as did the share in category 2 (from 19 per cent to 30 per cent). The large number of category 1 transfers reflects a number of factors, including inappropriate housing (due to disability or overcrowding), domestic violence and relocation for redevelopments.

Despite the decline in waiting list numbers, the number of households waiting for public housing in 2013 was equal to just over half the number of tenanted public housing properties (about 40 500 in June 2013).

The elapsed waiting time for applicants who were still on the waiting list at 30 June increased steadily over the decade to 2013, although waiting times for category 1 households remain much shorter than for other categories (figure 4). The total length of an applicant's wait before entry to public housing depended on the location that they applied for. The median total waiting time until allocation for category 1 households that were allocated housing in 2012-13 was about 250 days, up from about 160 days in 2004-05.[13]

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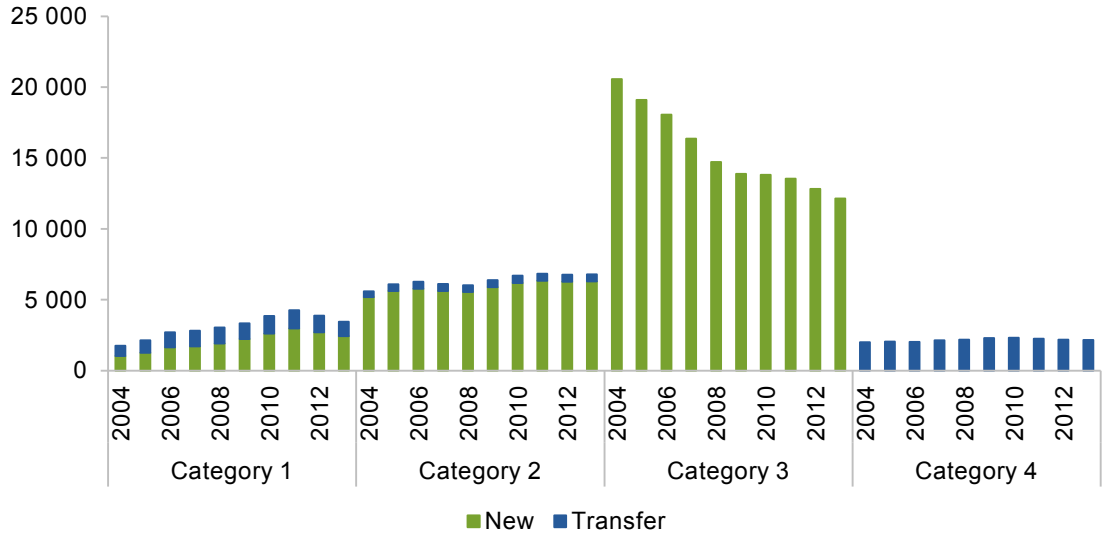
11 According to Housing SA policy, category 1 and 2 applicants remain eligible if they meet the housing needs criteria, regardless of their income or assets. However, all applicants' incomes are still assessed and, in general, they are not explicitly told that their income does not matter. Because applicants could still believe that their income affects their eligibility for public housing, it is likely that welfare locks impact the employment decisions of prospective tenants in these categories.

12 Prior to 2000, applicant households were housed on a wait-turn basis. After the introduction of the categorised waiting list, many existing households on the waiting list were placed in category 3. Because the chances of being housed from category 3 are low, category 3 households have removed themselves from the waiting list over time and fewer new applicant households have applied for category 3.

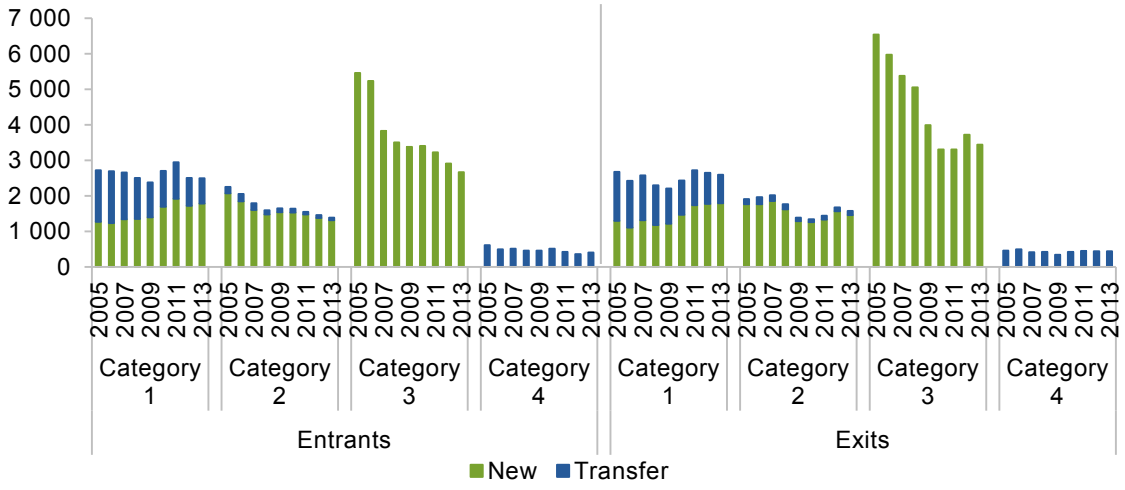
13 Total waiting times are calculated as the time between application and allocation dates. Applicant households that have changed waiting list category have had their entire time on the waiting list included because the date of last category change was not available for all households that were allocated public housing.

Figure 2 **Waiting list applicant households by category, at 30 June 2004 to 2013**



Source: DCSI, Housing SA, administrative data (unpublished).

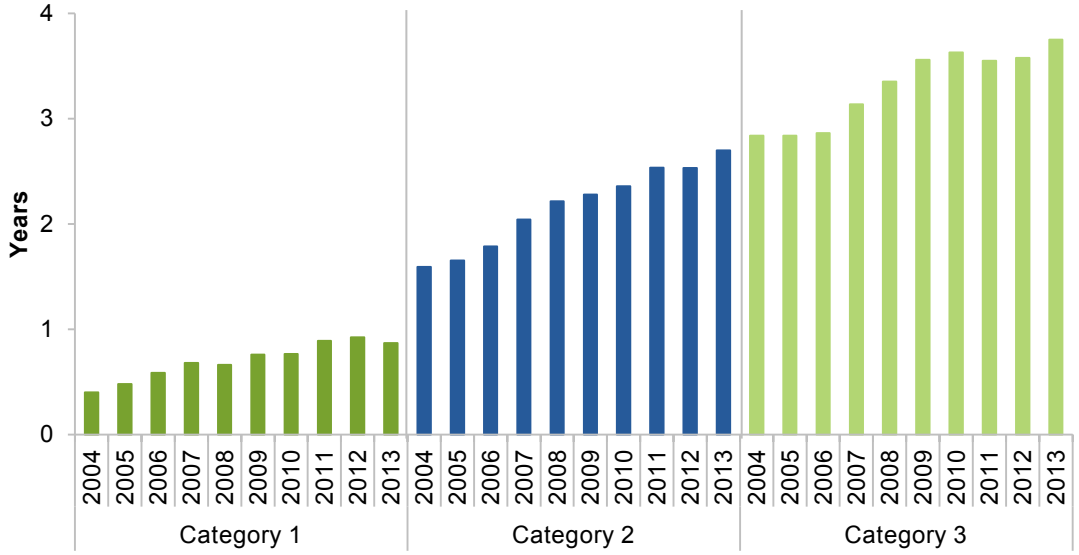
Figure 3 **Waiting list entrants and exits by category, 2004-05 to 2012-13[a,b,c]**



[a] Entrants include applications that were previously deferred by Housing SA (due to the household not responding to a waiting list review) but then later reinstated. [b] Exits include households that exited for any reason, for example if they were allocated housing, their application was deferred (due to no contact for at least 12 months) or if their application was removed from the waiting list at the household's request. [c] Entrants and exits cannot be calculated for 2003-04 because data are not available for applicant households in 2003.

Source: DCSI, Housing SA, administrative data (unpublished).

Figure 4 **Median elapsed waiting time for applicant households by category, at 30 June 2004 to 2013[a,b]**



[a] Median waiting times are calculated as elapsed waiting times for households that are on the waiting list at 30 June, starting from the date of their last category change. [b] Transfer applications are not included.

Source: DCSI, Housing SA, administrative data (unpublished).

Homelessness is a factor in many applications

Households placed in category 1 are assessed as either homeless or at risk of homelessness.[14] Most households placed in category 2 fulfil 'auto entry criteria', meaning that they were automatically placed in the category because they received the Disability Support Pension (DSP) or a Totally and Permanently Incapacitated Pension, had been a refugee in Australia for less than two years, or had exited the direct lease public housing program for young people aged 16 to 25 years.

About a third of new category 1 applicant households in 2013 described their living arrangements as either homeless or moving between family and friends (figure 5).[15] This is a slight increase compared with category 1 households in 2004. A reasonably large proportion of households assigned to categories 2 and 3 also reported these living

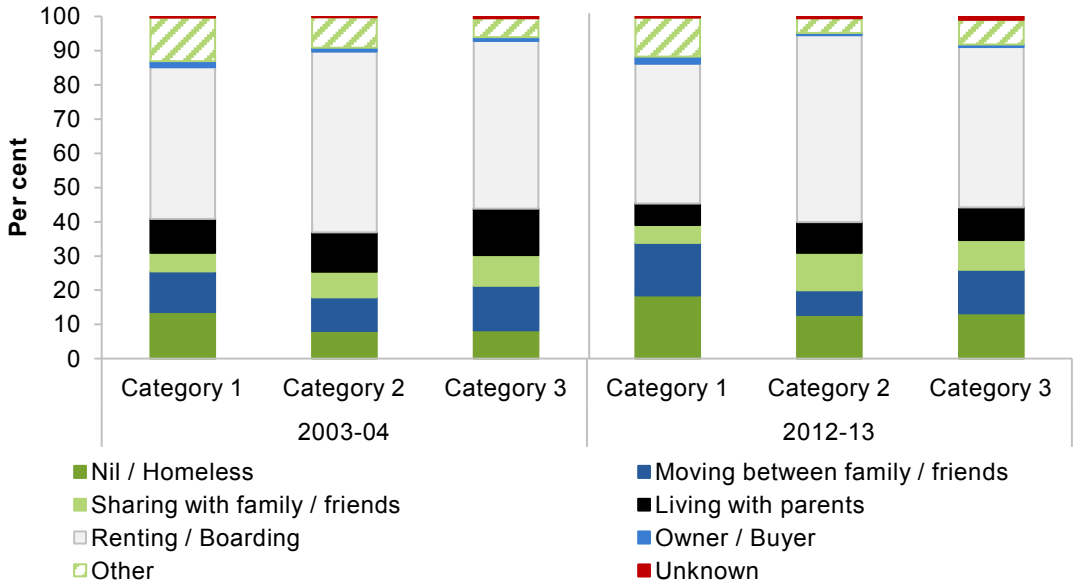
[14] In the housing needs assessment, a person is deemed to be homeless if they do not have access to safe, secure and adequate housing. Housing that is not safe, secure and adequate includes housing that could damage health or threaten safety, does not have adequate amenities or economic and social supports, and has no security of tenure (Government of SA nd).

[15] Transitions between temporary forms of shelter can be classified as secondary homelessness (Chamberlain and MacKenzie 2008). More broadly, the ABS considers a person to be homeless if they do not have suitable alternatives for accommodation and, among other factors, their current living arrangements come with a short tenure (ABS 2012).

arrangements, but they did not meet the housing needs assessment criteria to be placed in category 1.[16]

Figure 5 **Current living arrangements by category[a]**

Households that applied in 2003-04 and 2012-13



[a] Living arrangements are self-reported. Applicant households that did not state a current living arrangement are placed in the 'unknown' category.

Source: DCSI, Housing SA, administrative data (unpublished).

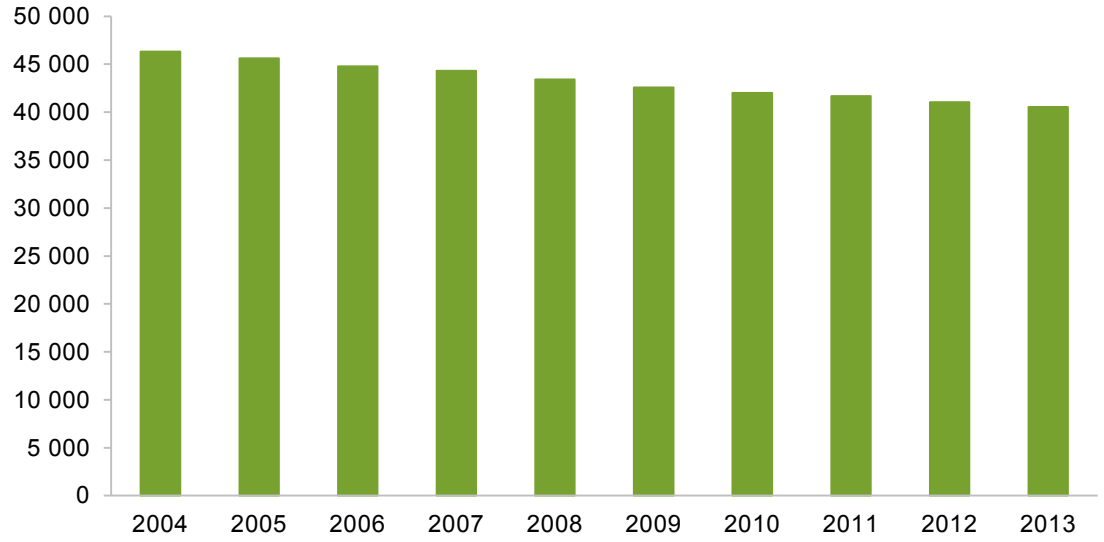
A smaller public stock is increasingly housing people in greater need

Over the decade to 2013, the number of households in public housing in South Australia fell by over 10 per cent (from about 46 000 in 2004 to 41 000 in 2013) (figure 6). This was due to a number of factors, including sales of dwellings to tenants and the transfer of some stock to community housing.[17] The downward trend is consistent with falling total stock numbers in Australia (SCRGSP 2014).

16 Applicant households need to provide supporting documents from a doctor or support worker to confirm they have an urgent housing need.

17 The number of households in community housing increased in South Australia (from 3800 to 5700) between 2004 and 2013, which was lower than the fall in the number of households in public housing (SCRGSP 2006, 2014).

Figure 6 **Households in public housing in South Australia, at 30 June 2004 to 2013[a]**



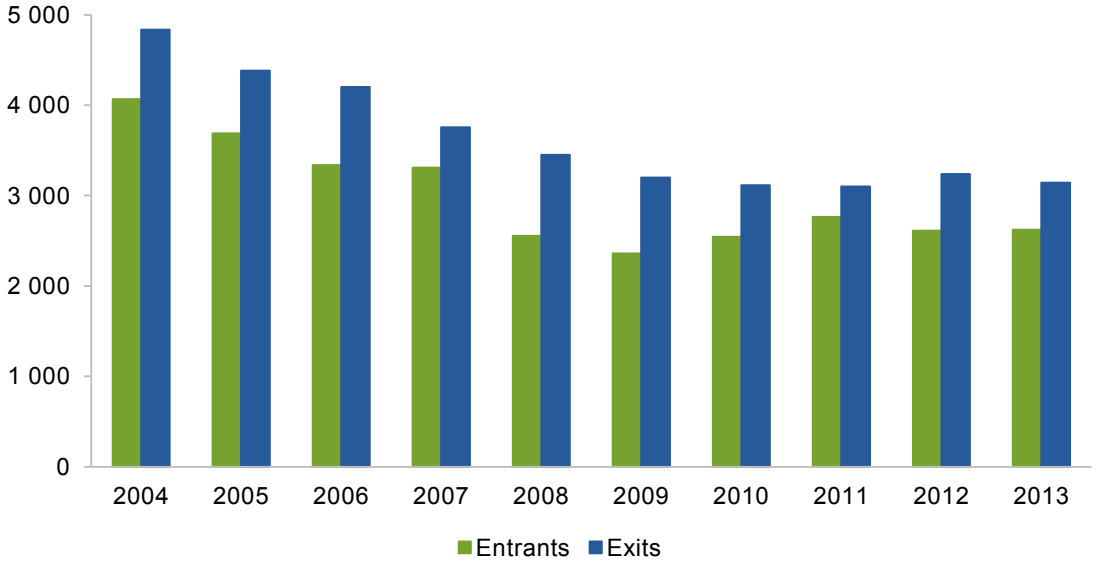
[a] Includes state owned and managed Indigenous housing.

Source: DCSI, Housing SA, administrative data (unpublished).

Consistent with the fall in the number of households in public housing, the number of exiting households was higher than the number of new entrants (figure 7). Stock turnover also fell slightly. In 2004-05, about 9 per cent of tenant households exited public housing. In 2012-13, this figure had fallen to 8 per cent. Allocations to new tenant households represented about 9 per cent of the total number in public housing in 2003-04, and fell to 6 per cent in 2012-13. Both lower exit and entry rates would have contributed to the rise in durations in public housing (figure 9).

About 85 per cent of new public housing allocations go to category 1 households (figure 8). This is consistent with the changes in the composition of the waiting list over time (figure 2), as well as a fall in the stock of dwellings (figure 6).

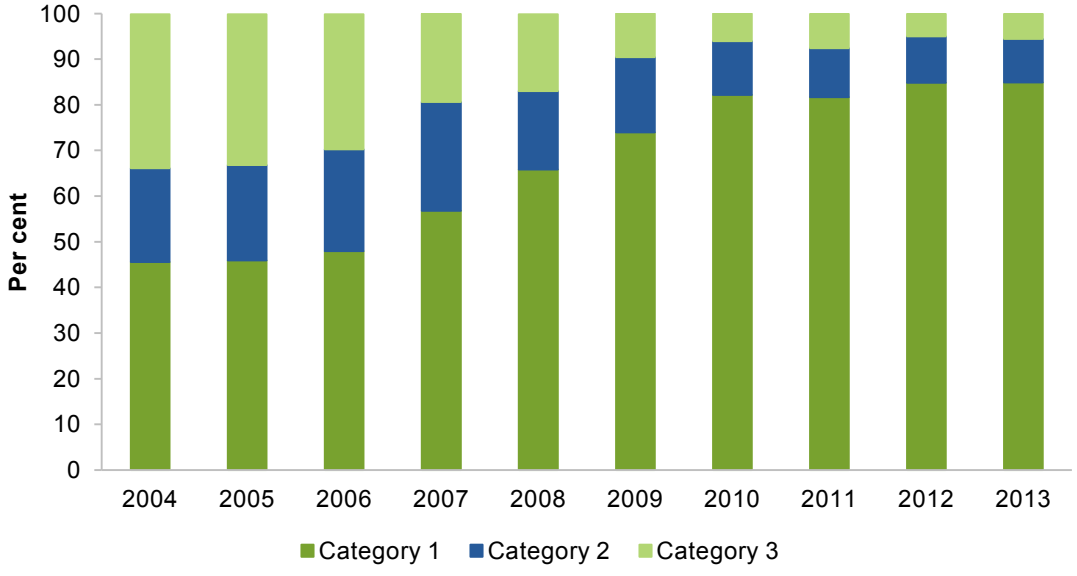
Figure 7 **Public housing entrants and exits, 2003-04 to 2012-13[a]**



[a] Excludes households transferring between public housing properties.

Source: DCSI, Housing SA, administrative data (unpublished).

Figure 8 **Housing allocations by category, 2003-04 to 2012-13[a,b]**



[a] Excludes households transferring between public housing properties. [b] Excludes applicant households in the 'low demand' category and those for which category was unknown (less than one per cent).

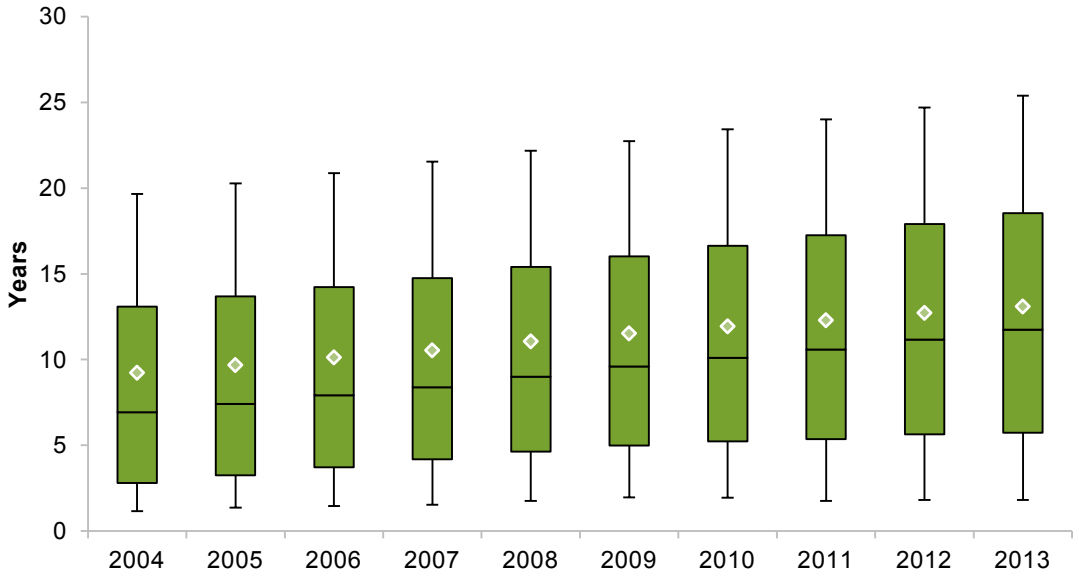
Source: DCSI, Housing SA, administrative data (unpublished).

Tenants are staying longer in public housing

As noted above, in South Australia, once tenants are in public housing, they are not required to meet ongoing income eligibility criteria. There are also few fixed-term lease agreements — historically all households were on ongoing leases, but renewable fixed-term leases (ranging in length from one to ten years) were introduced for new tenant households from October 2010. Reviews at the end of fixed-term leases allow the housing department to inspect the property and check that all conditions of the lease agreement are met. Leases may not be renewed if tenants have serious breaches of their lease agreements (Government of SA 2014d).

Between 2004 and 2013, the median length of tenancies grew from 7 to 12 years (figure 9).[18] About 55 per cent of head tenants in 2004 were also head tenants in 2013.

Figure 9 **Public housing tenancy durations, at 30 June 2004 to 2013[a]**



[a] Transfers are taken into account. For households that began occupying public housing before 2004 and also transferred before 2004, their tenancy duration starts from the date of first observed transfer.

Source: DCSI, Housing SA, administrative data (unpublished).

[18] In comparison, the median completed tenancy length of bond assistance recipients (low-income private renters) was about 1.1 years in South Australia in 2012-13 (unpublished data from Housing SA). The median completed tenancy length in the private rental market was about 1.3 years in Victoria in 2013 (DHS Victoria 2013).

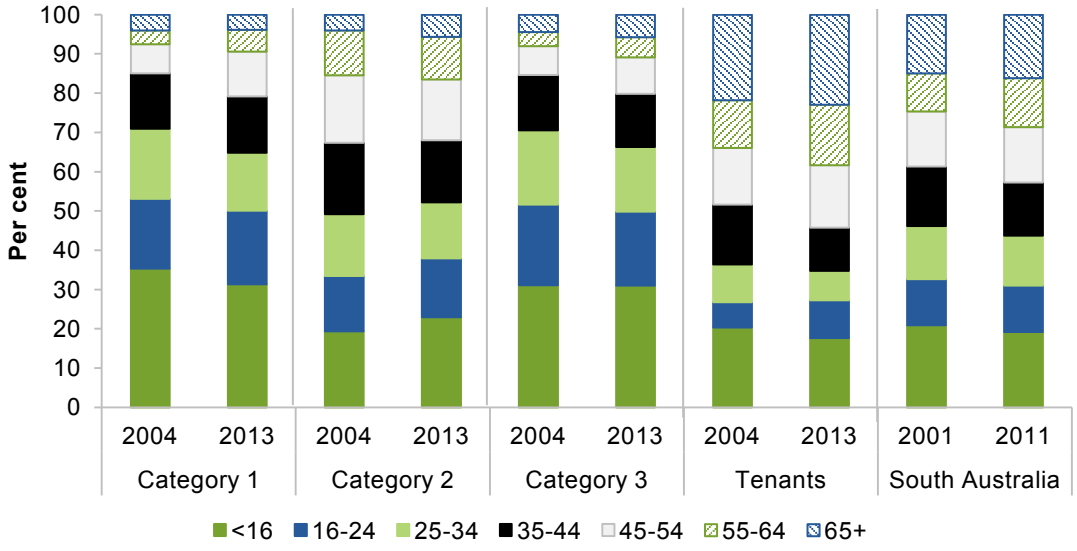
3 Demographic characteristics of SA applicants and tenants[19,20]

Applicants are more likely to be of working age than tenants

The population waiting to access public housing is younger than South Australians in general, and the population living in public housing is older (figure 10). The median age of all applicants was 27 and that of all tenants was 47 in 2013. In comparison, the median age of the general South Australian population in 2011 was 35. Close to one third of the applicant population are children (aged under 16 years), and about one in ten are nearing or past retirement age (55 years or older). Among tenants, less than 20 per cent are children and over one third are nearing or past retirement age. Less than half of public housing tenants are aged between 16 and 54 years — ages at which employment is more likely.

Changes in the age composition of each of the applicant, tenant and general South Australian populations were not large between 2004 and 2013, but each population aged over these years.

Figure 10 **Ages of applicants and tenants, at 30 June 2004 and 2013**



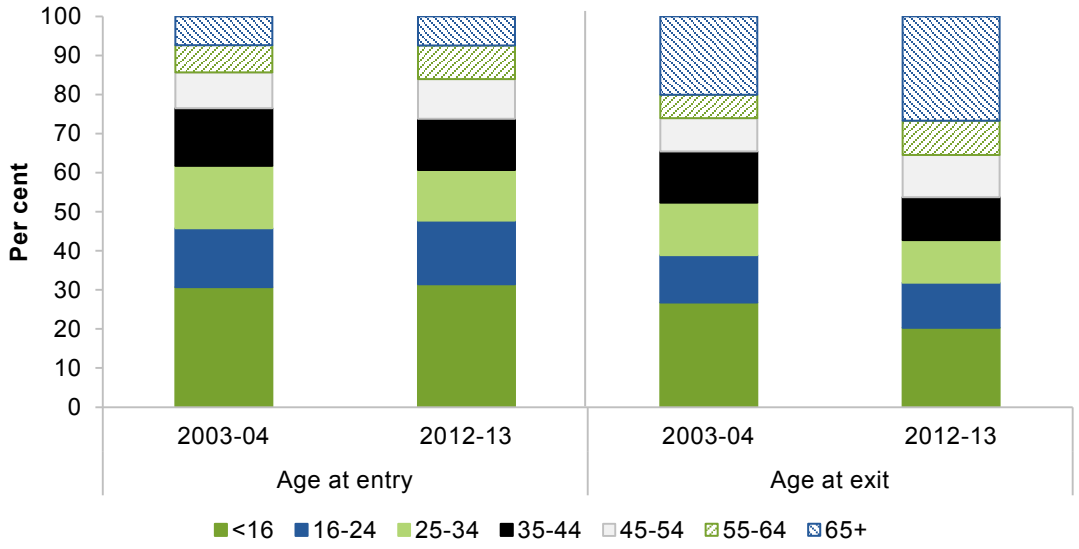
Sources: ABS (*Basic Community Profile, South Australia*, Cat. no. 2001.0); DCSI, Housing SA, administrative data (unpublished).

19 Data used in generating applicants' characteristics exclude applicants seeking to transfer between public housing dwellings.

20 Data on household composition for tenants are valid at the date they exited public housing or at 30 June 2013 for tenants who were residents at that date. It is assumed that a household's membership did not change during their tenancy, apart from households who have had additional children. The children are added to the number of household members from their date of birth.

A comparison of the age profiles of people entering and exiting public housing suggests that tenants are older than applicants mainly because they have aged within the tenure, rather than because of an allocation of housing to older applicants (figure 11). However, comparison of the age profiles of entrants and category 1 applicants shows that entrants are slightly more likely to be older (55 years or more) than applicants. Those who exit public housing tend to be younger than remaining tenants, consistent with the finding that housing mobility is greater among people in younger age groups (ABS 2009).

Figure 11 **Age of tenants who entered and exited public housing, 2003-04 and 2012-13[a]**



[a] It is assumed that all household members entered and exited public housing on the same date as the head tenant, who is the main person responsible for the tenancy. The data reflect all members within the households (not only head tenants).

Source: DCSI, Housing SA, administrative data (unpublished).

Applicants and tenants are more likely to be female, Indigenous and Australian-born than other South Australians

Women make up just over half of both working-age head applicants and head tenants[21] — a slightly higher proportion than in the South Australian population (table 1). Furthermore, both applicants and tenants are much more likely to be Indigenous Australians. An increasing proportion of applicants is coming from countries in which English is not the main language. Nevertheless, people born in Australia are more likely than other South Australians to either live in public housing or apply for tenancy.

[21] In South Australia, each household contains a nominated household head who is responsible for the application or the tenancy.

Table 1 **Head applicant and head tenant demographics, 2004 and 2013[a]**

Per cent

	Applicants		*Tenants*		*South Australia*	
Working-age household heads	*2004*	*2013*	*2004*	*2013*	*2001*	*2011*
Women	57	56	60	59	50	50
Indigenous[b]	9	15	7	10	1	2
Australian-born[c]	81	77	82	82	74	73
NESB[c,d]	12	18	9	11	15	18

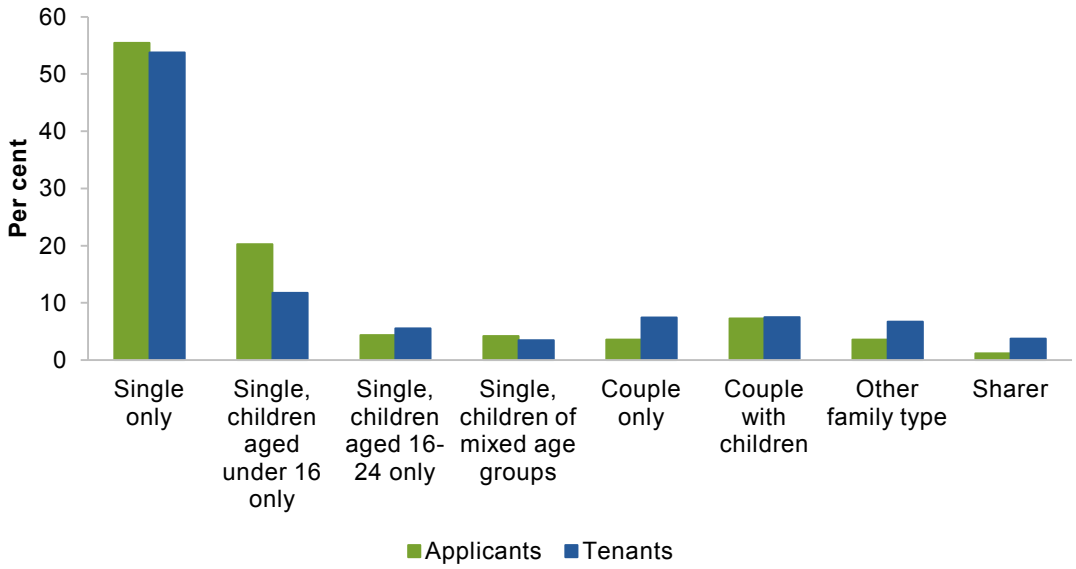
[a] Data for tenants and applicants are for household heads aged 16 to 64 years. Data for the whole population are for all people aged 15 to 64 years. [b] Indigenous status is self-reported. There has been an increase in identification between 2004 and 2013, so it is unclear if any growth in the share of Indigenous Australians in the applicant and tenant populations is due to a change in composition or an increase in self-reporting. [c] Statistics exclude people whose country of birth is unknown. (For applicants, this constituted about 1 per cent in 2004 and 2 per cent in 2013, and for tenants it was 26 per cent in 2004 and 16 per cent in 2013.) [d] Non-English speaking background country of birth.

Sources: ABS (*Basic Community Profile, South Australia*, Cat. no. 2001.0; *Expanded Community Profile, South Australia,* Cat. no. 2005.0; *Indigenous Profile, South Australia*, Cat. no. 2002.0); DCSI, Housing SA, administrative data (unpublished).

Applicants and tenants are mostly single

Over half of all working-age household heads live in single-person households (figure 12). This reflects the profile of income support recipients (BP 3, figure 11). The proportion of single households is slightly higher for applicants in categories 1 and 2 than for tenants and applicants in category 3 (annex A, table SA.12).

Figure 12 **Working-age household type, at 30 June 2013[a,b,c,d]**



[a] Statistics generated from households with a working-age head applicant or tenant. [b] Children aged under 16 include any person in the household aged under 16. Children aged 16 to 24 only include sons, daughters or legal guardianships of the head tenant. [c] Other family types include tenants living with children aged 25 and over, grandparents, cousins or other relatives. [d] Sharer households include any household living with a non-relative.

Source: DCSI, Housing SA, administrative data (unpublished).

Many applicants and tenants report a disability or receive the DSP

The share of working-age head applicants who self-report having a disability nearly doubled over the ten years to 2013, to just over 30 per cent (figure 13). A similar proportion receive the DSP. These proportions are much higher than the 15 per cent of South Australians aged up to 64 years who reported a disability in 2012 (ABS 2013b).[22] The proportions of working-age head tenants and applicants who self-report having a disability are similar. However, the proportion of tenants receiving DSP is much higher, at just over half.

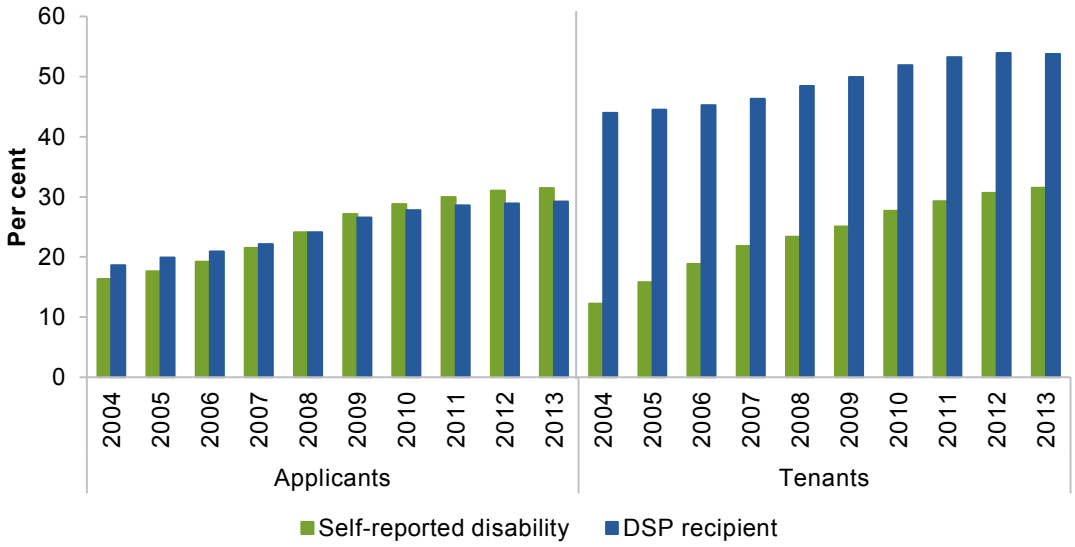
The large difference between self-reported disability and DSP receipt for tenants could partly arise from applicants having a greater incentive to self-report a disability if they have one, as it may help demonstrate an urgent or high housing need. Applicants can provide information about their disability status on entry to the waiting list. Disability information can also be provided to the department at other times, including when applying for services other than housing. For example, tenants requiring a property modification or

22 The ABS figure includes children. ABS data are not separately available for working-age South Australians who reported disability. About 14 per cent of 15-64 year olds in Australia reported a disability.

transfer after developing a disability would have an incentive to update the housing department. However, the majority of tenants who developed disability after moving into public housing may not have alerted the housing department and any tenant disability updates may not be recorded in data systems, which may explain the relatively low rates of self-reported disability among tenants.

Mental and physical disabilities were the most frequently self-reported disabilities (at 16 per cent and 9 per cent respectively for applicants and 13 per cent and 12 per cent respectively for tenants in 2013), and reports of physical disability were more common among tenants than among applicants.[23]

Figure 13 **Proportion of working-age head applicants and head tenants with a disability, at 30 June 2004 to 2013[a,b]**



a Physical, mental and other disabilities (including intellectual, brain injury, hearing impairment and visual impairment) are self-reported. People who have identified to Housing SA as having a disability do not require a medical confirmation. **b** Some people who self-report as having a disability do not receive a DSP, and some who receive a DSP have not reported having a disability. Of the applicants who either had a self-reported disability or received DSP, about 51 per cent had both. For tenants, the degree of overlap was 44 per cent.

Source: DCSI, Housing SA, administrative data (unpublished).

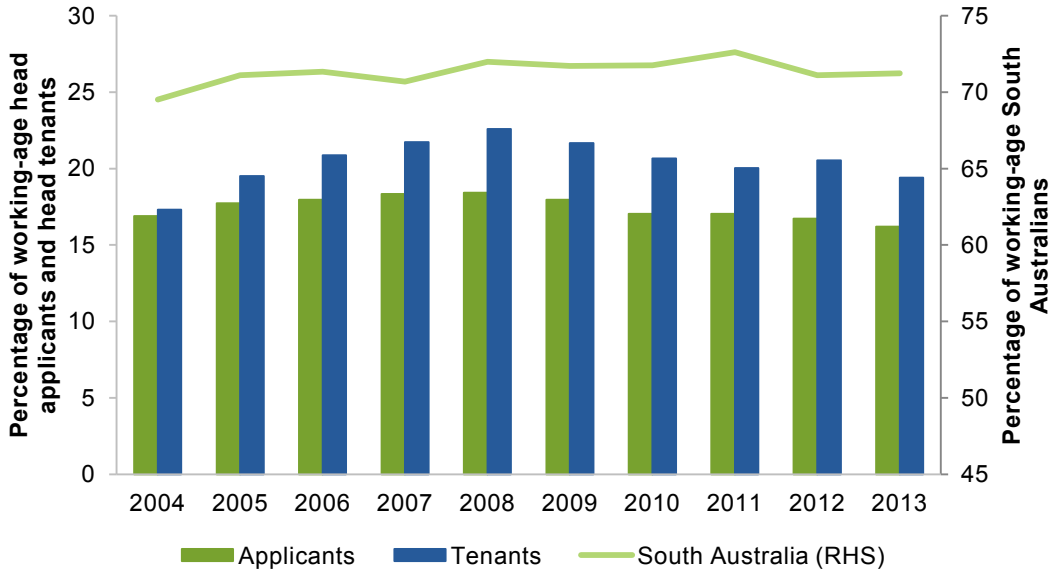
23 People can report more than one type of disability. Physical disability affects a person's physical functioning, including their mobility, dexterity or stamina.

4 Employment among SA applicants and tenants

On average, working-age head applicants are somewhat less likely to be in employment than working-age head tenants (figure 14), but the average for applicants masks large differences between waiting list categories (figure 15).[24] Very few working-age category 1 applicants were in employment at 30 June 2013, in contrast with about 1 in 5 applicants from category 3. Employment rates for both applicants and tenants are much lower than the rate for the overall South Australian working-age population, which was 71 per cent in 2013 (ABS 2014b).

Employment among tenants is relatively high, considering that public housing is mainly allocated to applicants from categories 1 and 2 who typically have very low employment rates. However, some tenants may have been housed before needs-based allocations were introduced in 2000. Among head tenants who were housed before 2000, the employment rate was 28 per cent in 2013. In comparison, the employment rate among head tenants housed in or after the year 2000 was about 16 per cent, which is still higher than employment rates of people in category 1 or 2 on the waiting list. Applicant employment rates could be understated to the extent that they do not update their income.

Figure 14 **Proportion of working-age head applicants and head tenants employed, at 30 June 2004 to 2013**

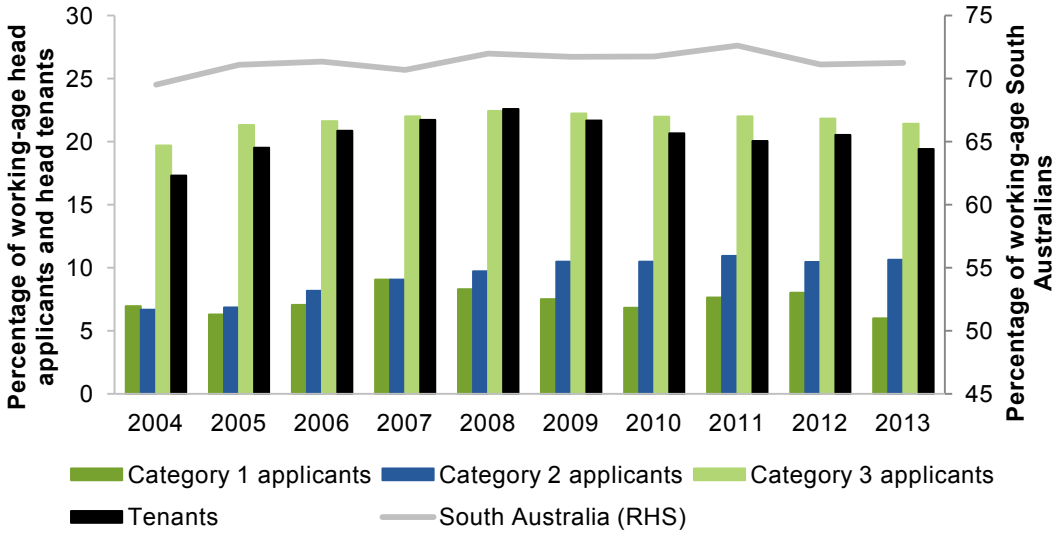


Sources: ABS (*Labour Force, Australia*, Cat. no. 6202.0); DCSI, Housing SA, administrative data (unpublished).

[24] Although the employment status of applicants and tenants cannot be directly observed, it has been inferred from receipt of employment income.

Figure 15 **Proportion of working-age head applicants and head tenants employed, at 30 June 2004 to 2013**

Applicants by category



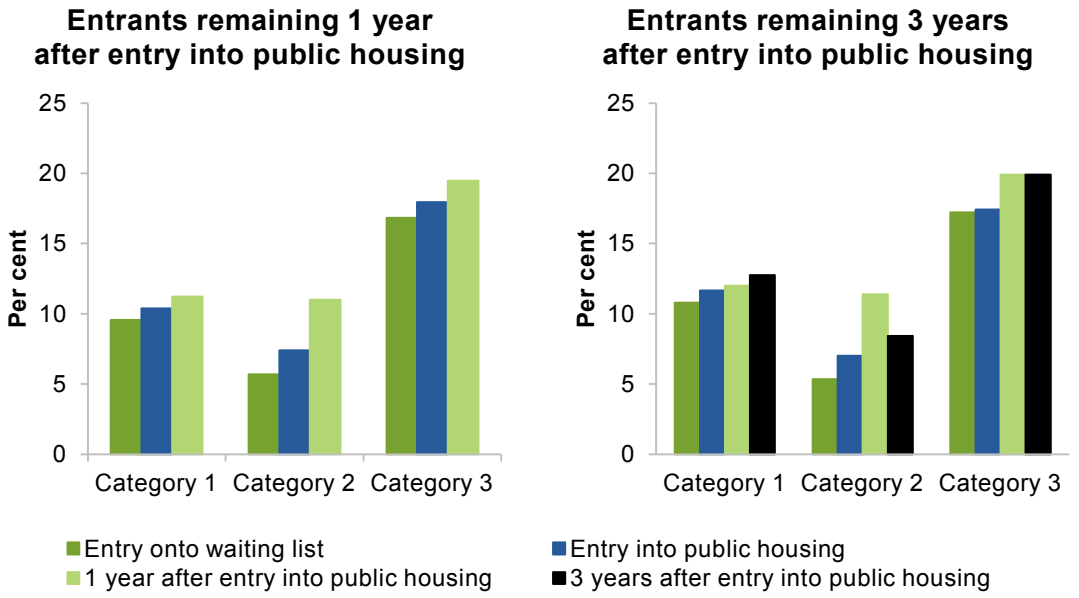
Sources: ABS (*Labour Force, Australia*, Cat. no. 6202.0); DCSI, Housing SA, administrative data (unpublished).

Greater insight into the relationship between public housing and employment is gained by comparing employment rates for entrants before and after a move into public housing (figure 16). Looking at the sample of entrants who were still in public housing one year after entry, the data reveal that employment rates were higher at entry into public housing than at entry onto the waiting list for all categories of applicants. This suggests that applicants do not avoid employment while waiting for public housing. Employment rates also increased in the year following entry into public housing, although not markedly. This could suggest evidence of a welfare lock for a few applicants. Overall, however, the patterns of employment change from entry to the waiting list to the end of the first year of residence are not consistent with applicants in general avoiding employment to remain eligible for public housing. The data are not strongly suggestive of welfare locks in South Australia.

The increase in employment in the years following entry into public housing might reflect the impact of increased housing stability on employment for some applicants. Changes in employment for entrants still in public housing three years after entry provide more insight into a potential role for housing stability in tenants' employment outcomes. Among category 1 entrants, employment continued to increase in the years after they gained a tenancy. Among category 2 entrants, employment rates were also higher three years after entry.

The issue of welfare locks and stability effects is analysed in more detail in BP 6.[25]

Figure 16 **Employment rates pre and post a move into public housing[a,b]**



[a] Observations include working-age household heads who are observed both as an applicant and a tenant between 2004 and 2013. The analysis also only considers people whose category did not change while on the waiting list. (It is assumed that applicants who were housed within the same financial year they entered the waiting list did not change category.) Category changes mainly apply to category 1 entrants — nearly 30 per cent were initially in a different category when they entered the waiting list. [b] Employment rates at '1 year after entry into public housing' are inferred from the first income observation more than ten months after entry into housing. Employment rates at '3 years after entry into public housing' are inferred from the first income observation more than two years and ten months after entry into housing. Tenant income assessments are conducted every six months.

Source: DCSI, Housing SA, administrative data (unpublished).

Turning to incomes, in 2013, the average weekly personal income (from all sources) of working-age head applicants was $440 — slightly higher than the average income of working-age head tenants of $430 (figure 17).[26] However, as applicants who are renting in the private market can receive Commonwealth Rent Assistance (CRA), which is not available to public housing tenants, the income of applicants net of CRA is likely to be lower. After removing CRA from applicants' incomes, their average weekly income falls

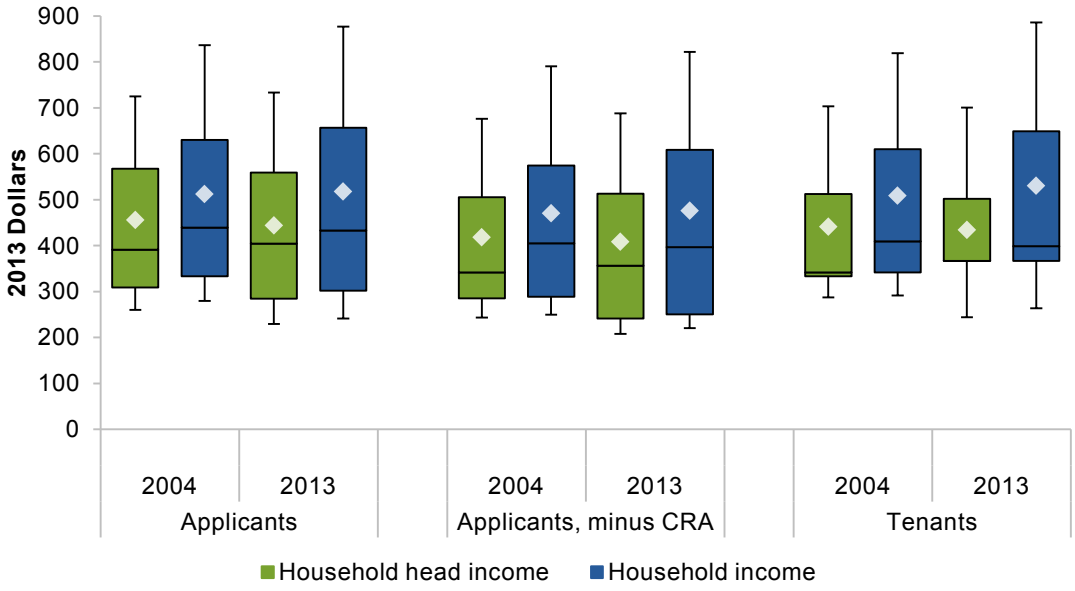
[25] Other possible explanations for the observed increases in employment are policy changes and increases in general employment rates over time. However, discussions with state housing authorities did not suggest there was a change in local approaches to supporting tenants, and employment patterns for income support recipients receiving housing assistance do not suggest that national policy changes led to consistent increases in employment rates across the decade (BP 3). Changes in general employment rates over time also do not fully explain the increases in employment among people who moved into public housing.

[26] These data must be interpreted with caution. Income data for some applicants have not been updated over their time on the waiting list. Although available information has been converted to 2013 dollars, the resulting estimates might not be an accurate reflection of those applicants' current incomes.

to about $410 — lower than that of tenants. These incomes are well below the lowest public housing income eligibility limit for singles. Household incomes are only slightly higher than incomes of household heads because many applicants and tenants are from single-person households.[27]

Real incomes in 2004 (adjusted for changes in average weekly earnings in South Australia), were about the same in 2013 for both applicants and tenants. This reflects the fact that income eligibility thresholds for public housing are indexed to male average weekly earnings in South Australia. This means that, over time, people with higher nominal incomes (but the same real incomes) have been able to apply for and potentially enter public housing in South Australia.

Figure 17 **Real income per week, at 30 June 2004 and 2013[a,b,c]**



[a] Converted to 2013 dollars using average weekly earnings in South Australia. [b] 'Household head income' is the individual income of working-age household heads. 'Household income' is the total income of households with a working-age household head. [c] Excludes individual incomes over $2000 a week or less than youth allowance.

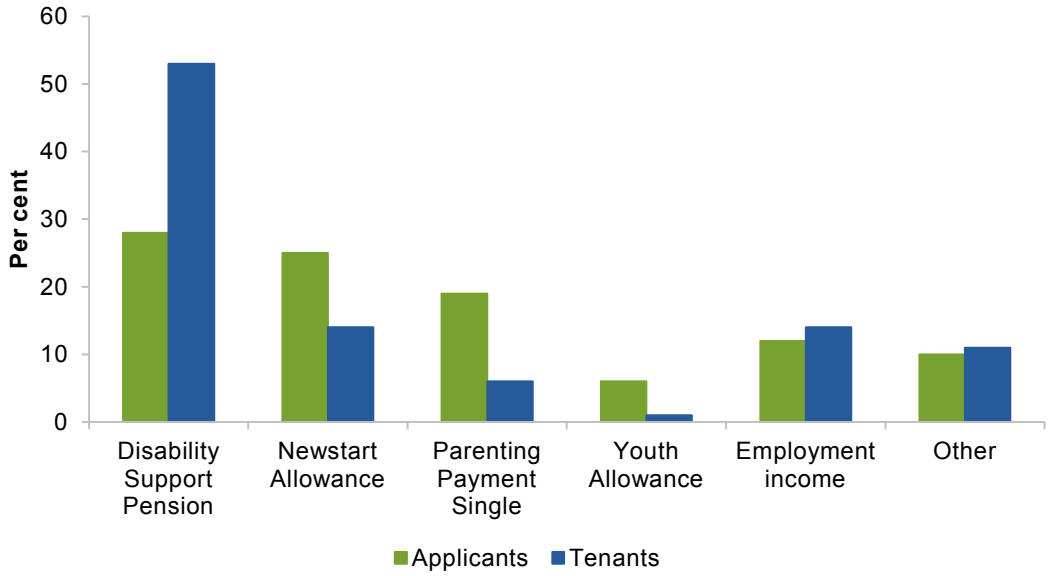
Source: DCSI, Housing SA, administrative data (unpublished).

Although applicants and tenants have similar real incomes, the main sources of incomes for the two groups are somewhat different (figure 18). In 2013, DSP (which is paid at a higher rate than allowances such as Newstart Allowance and indexed to average weekly earnings rather than the Consumer Price Index) was the main source of income for over half of tenants, followed by Newstart Allowance and employment income at 14 per cent

[27] The average applicant or tenant household would fit into the second decile of gross household income, based on the income deciles calculated by the ABS (ABS 2013a).

each. In contrast, less than 30 per cent of applicants had DSP as their main source of income. Employment income was the main income source for 12 per cent of applicants.

Figure 18 **Main source of income for working-age head applicants and head tenants, at 30 June 2013[a,b]**



[a] Employment income includes wages, salaries and self-employment income. [b] Other includes income from all other sources, including other income support payments, interest and foreign pensions.

Source: DCSI, Housing SA, administrative data (unpublished).

The relatively high income eligibility threshold to enter public housing in South Australia raises the possibility that applicants perhaps restrict their hours of work while on the waiting list, rather than whether they work. If that was the case, it might be expected that average income from employment among those who work would increase markedly following entry into public housing. That is not the case for category 1 or 3 applicants (table 2). The pattern for category 2 applicants is consistent with hours increases following entry into public housing. There is no apparent reason for category 2 applicants to behave differently from category 1 and 3 applicants. It is suspected that the result reflects a quirk in the data, rather than being evidence of a welfare lock. In particular, it is possible that the category 2 applicants who entered employment during their first year of tenancy were more highly paid on average, than their peers who were employed while on the waiting list.

Among those who were employed, real employment incomes were less than half of the average weekly earnings for people in South Australia, which were $980 in May 2013 (ABS 2014a), and less than the $606 in income that a minimum wage employee working 38 hours a week would have earned (Fair Work Commission 2013).

Table 2 **Real income per week pre and post a move into public housing[a,b]**

2013 dollars

	Entry onto waiting list	*Entry into public housing*	*1 year after entry into public housing[c]*
Average income excluding CRA[d]			
All	390	386	394
Category 1	399	395	400
Category 2	350	347	364
Category 3	393	396	408
Employment income[e]			
All	417	409	396
Category 1	438	427	410
Category 2	262	251	300
Category 3	427	450	436

[a] Observations include working-age household heads who are observed both as an applicant and a tenant between 2004 and 2013. The analysis also only considers people whose category did not change while on the waiting list. (It is assumed that applicants who were housed within the same financial year they entered the waiting list did not change category.) Category changes mainly apply to category 1 entrants — nearly 30 per cent were initially in a different category when they entered the waiting list. [b] Excludes incomes greater than $2000 a week or less than $50 a week. [c] Income at '1 year after entry into public housing' is from the first income observation more than ten months after entry into housing. Tenant income assessments are conducted every six months. [d] Converted to 2013 dollars using average weekly earnings in South Australia. [e] Employed people only. Converted to 2013 dollars using minimum wage changes.

Source: DCSI, Housing SA, administrative data (unpublished).

5 Larger subsidies go to single adult households

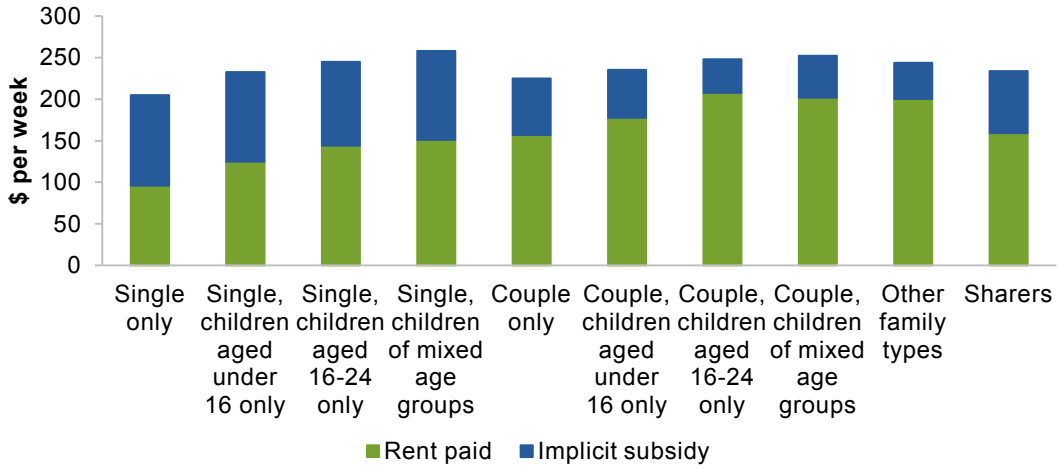
Public housing tenants pay about 25 per cent of assessable income in rent (or market rent, if it is less than or equal to 25 per cent of their income).[28] The difference between rent paid and market rent is the implicit rent subsidy received by tenants. As discussed in BP 2, rent subsidies have the potential to create a disincentive for recipients to take up employment.

Implicit subsidies are larger for singles and sole parents than other household types (figure 19). For singles, this is likely because of the mismatch between the profile of public housing tenants and the housing stock, resulting in properties being under-occupied (figure 20). Close to half of the stock consists of three-bedroom properties, whereas over half of all households are made up of singles. Due to the limited availability of

[28] Public housing rents are usually set at 25 per cent of gross household income, but some exceptions apply. For example, Family Tax Benefit payments and income received by children aged 16 to 20 years are assessed at 15 per cent. Some forms of income, such as the pension supplement, are not assessable. Rents in cottage flats range from 19 to 25 per cent of gross household income. (See BP 1 and BP 2 for more detail.) Market rents are based on information provided by the Valuer General (Government of SA 2014b).

single-bedroom properties (just over 10 per cent of the stock), occupancy standards that allow single people to occupy two-bedroom properties and ageing tenants who stay in larger properties after changes to their household composition, many single-person households occupy two- or three-bedroom properties.

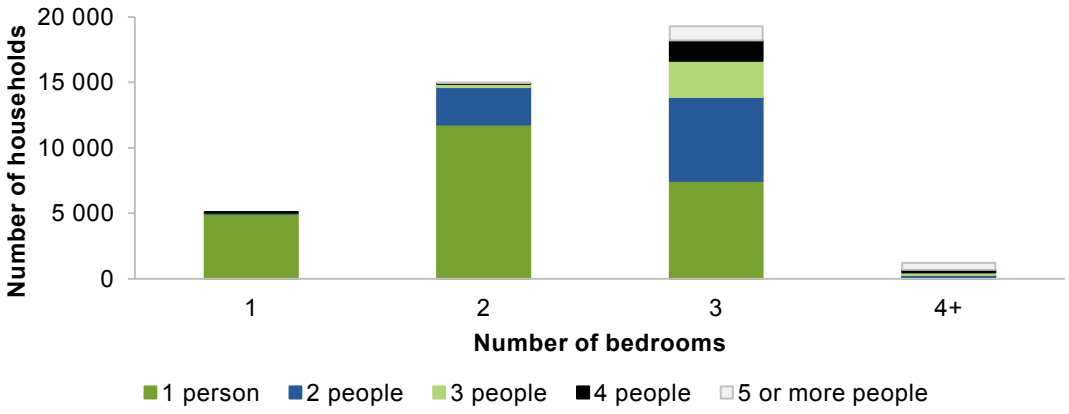
Figure 19 **Mean weekly rents and implicit subsidies, at 30 June 2013[a,b,c,d]**



[a] The rent paid plus the implicit subsidy is equal to market rent. [b] Children aged under 16 include any person in the household aged under 16. Children aged 16 to 24 only include sons, daughters or legal guardianships of the head tenant. [c] Other family types include tenants living with children aged 25 and over, grandparents, cousins or other relatives. [d] Sharer households include any household living with a non-relative.

Source: DCSI, Housing SA, administrative data (unpublished).

Figure 20 **Number of bedrooms by number of people in household, at 30 June 2013**

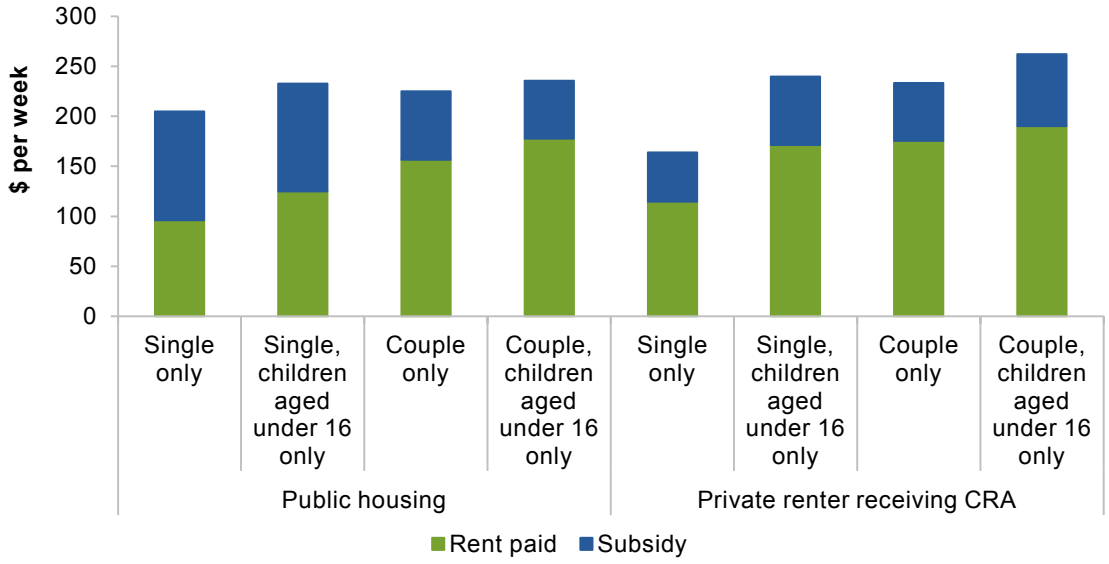


Source: DCSI, Housing SA, administrative data (unpublished).

Implicit subsidies for many public housing tenants are larger than the subsidies received by CRA recipients in similar household types (figure 21). As a consequence, many tenants would face higher housing costs if renting privately (BP 2) — a disincentive to exiting public housing. However, it may not be a disincentive to the extent that the higher subsidy is due to a stock mismatch.

Figure 21 **Subsidies tend to be larger in public housing[a,b,c,d,e,f,g]**

Mean rents in South Australia, 30 June 2013, selected household types



[a] The rent subsidy received by public housing tenants is implicit — tenants do not actually receive a payment. The subsidy is the difference between the market rent for their property and the rent that they pay. [b] CRA recipients pay market rents and receive CRA (the subsidy) as a payment to offset the cost. [c] Children aged under 16 include any person in the household aged under 16. [d] Subsidy figures for public housing are calculated as the difference between mean market rents and mean rents paid by households within each household type, rather than the mean subsidy received by households with market rents equal to the mean market rent. (This approach was adopted because there are relatively few households in properties with exactly the mean market rent. A check of the data showed that households in properties with market rents in the vicinity of the mean market rent typically pay rents that are close to the mean rent paid.) [e] Mean rents for single, childless renters receiving CRA are for all singles, that is, both those who share housing and those who live alone. The CRA subsidy presented in the figure is the maximum rate for singles who live alone. (Sharers receive a lower rate.) [f] The CRA subsidies presented for singles and couples with children aged under 16 years only are the rates for families with less than three children. [g] The CRA subsidy presented for couples only is the rate for people who are not temporarily separated.

Sources: Public housing — DCSI, Housing SA, administrative data (unpublished); CRA — Author estimates based on unpublished data from the Research and Evaluation Database.

6 WA public housing waiting lists, entrants and exits

Setting the scene — the WA economy in the decade to 2013

The Western Australian economy grew very strongly between 2004 and 2013. The mining boom contributed to strong economic growth and an increase in wages, as well as an influx of population into the state. These factors contributed to a substantial increase in rents (figure 22). Although the state's strong economy and additional employment opportunities may have encouraged some public housing tenants to take up employment and move to private rental or other forms of accommodation, rising rents may have led to higher demand for more affordable types of tenure, such as public housing.

Figure 22 **The Western Australian economy — key indicators[a]**

Annual compound growth rate, 2004 to 2013

[a] Rent data refer to the change in the rent component in the consumer price index for Perth. National rents reflect a weighted average of the eight capital cities.

Sources: ABS (*Australian Demographic Statistics*, Cat. no. 3101.0; *Australian National Accounts: State Accounts*, Cat. no. 5220.0; *Consumer Price Index, Australia*, Cat. no. 6401.0; *Average Weekly Earnings, Australia*, Cat. no. 6302.0).

Waiting list categories are based on housing needs

Households applying for public housing in Western Australia are placed in one of two categories:

- Priority applicant households are in urgent need for housing. Factors that contribute to having an urgent housing need include homelessness, medical conditions that are

aggravated by a person's existing accommodation, domestic violence and racial harassment (Department of Housing WA 2011).

- Wait-turn applicant households do not have an urgent need for housing but meet the eligibility criteria for public housing.[29]

Income limits in Western Australia

The income limits for households applying for public housing in metro and some country areas of Western Australia are the lowest in Australia. A single-person household is ineligible when income exceeds $430 a week — less than half of the income limit in South Australia. However, income limits are higher for those applying for housing in the north-west or remote areas of the state ($610 a week for a single, unless they have a disability); and people with a disability ($540 for a single person with a disability applying in metro and country areas, and $760 for a single person with a disability applying for north-west or remote areas) (Department of Housing WA 2014).

Since 2006, income limits have also applied for tenants. The limits have not been adjusted since they were introduced, and are relatively low. For example, the limit for single tenants without disability is the same as for applicants ($430 a week).

Waiting list numbers have doubled in Western Australia

The number of households on public housing waiting lists in Western Australia grew quickly during the second half of the 2000s, but has slightly declined since 2010 (figure 23). In 2013, the total number of households on the waiting list was over half the number in public housing. The increase in the size of the list reflects the fact that the number of entrants onto the waiting list tended to exceed the number of exits, particularly for wait-turn households (figure 24). Large rent rises over the period (figure 21) could explain these increases in demand for public housing.

As might be expected, elapsed waiting times for priority applicant households are shorter than for wait-turn applicant households. The median elapsed waiting time for priority households on the waiting list at 30 June 2013 was about 1.7 years, compared with 2.3 years for wait-turn households (figure 25). For households that were allocated housing in 2012-13, the median waiting time to allocation was about 500 days.

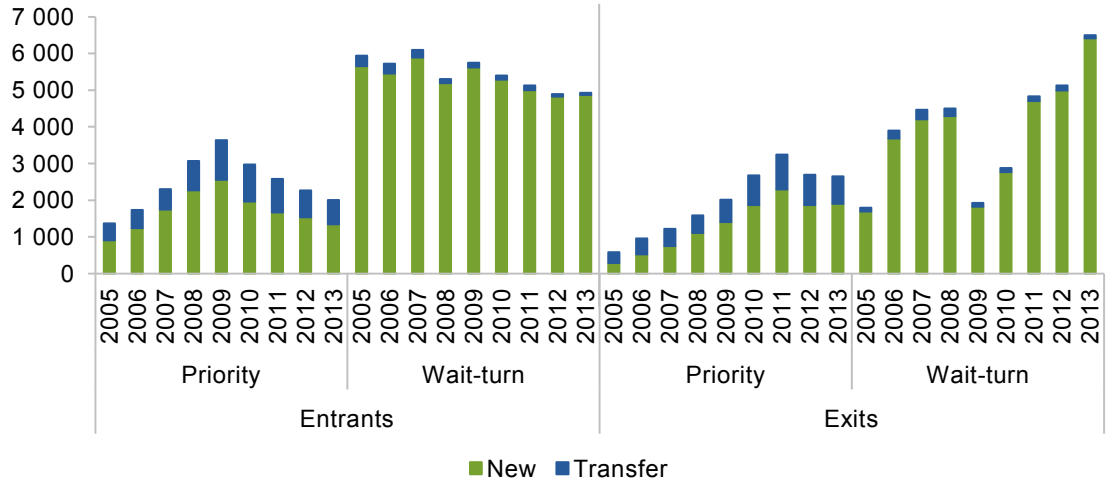
[29] To be eligible, applicants must be Australian citizens or permanent residents, aged over 16 and living in Western Australia. Their income and assets must be below the limits set by the Department of Housing (BP 1).

Figure 23 **Waiting list applicant households by category, at 30 June 2004 to 2013[a]**

[a] The administrative records provided do not include applicants who entered the waiting list prior to 2004. Comparisons with data from SCRGSP (2014) indicate that the data from 2006 onwards are likely to include the majority of waiting lists members.

Source: Department of Housing (WA), administrative data (unpublished).

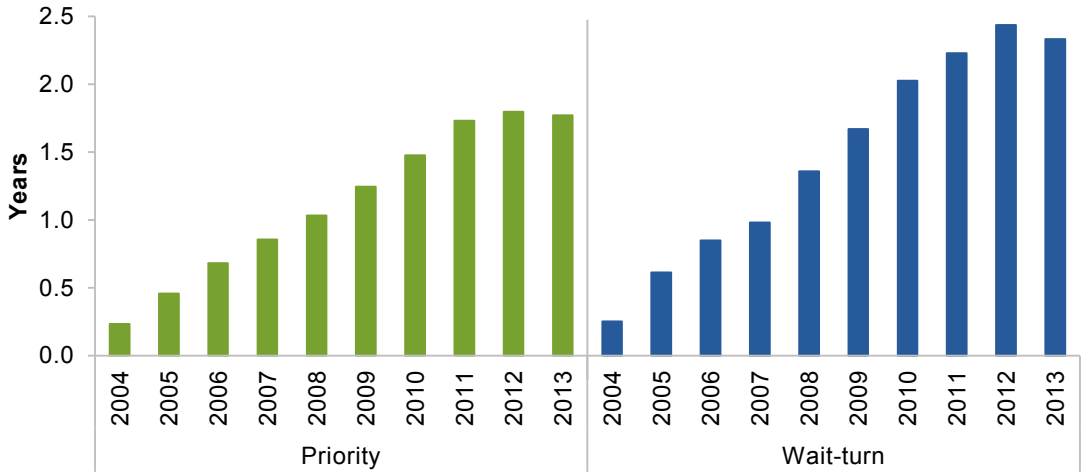
Figure 24 **Waiting list entrants and exits by category, 2004-05 to 2012-13[a,b,c]**



[a] New applicant households include applications for emergency accommodation and remote Indigenous housing. [b] Entrants include only applicant households that entered the waiting list within the financial year and were still on the list at the end of the financial year. Applications that were previously deferred but then reinstated are also included in entrants. [c] Exits include applicant households that were on the waiting list at the start of the financial year and exited for any reason, for example if they were allocated housing or if their application was deferred.

Source: Department of Housing (WA), administrative data (unpublished).

Figure 25 **Median elapsed waiting time for applicant households by category, at 30 June 2004 to 2013[a,b]**



[a] Median waiting times are calculated as elapsed waiting times for applicant households that applied from 2004 onwards and that were on the list at 30 June. [b] Transfer applications are not included.

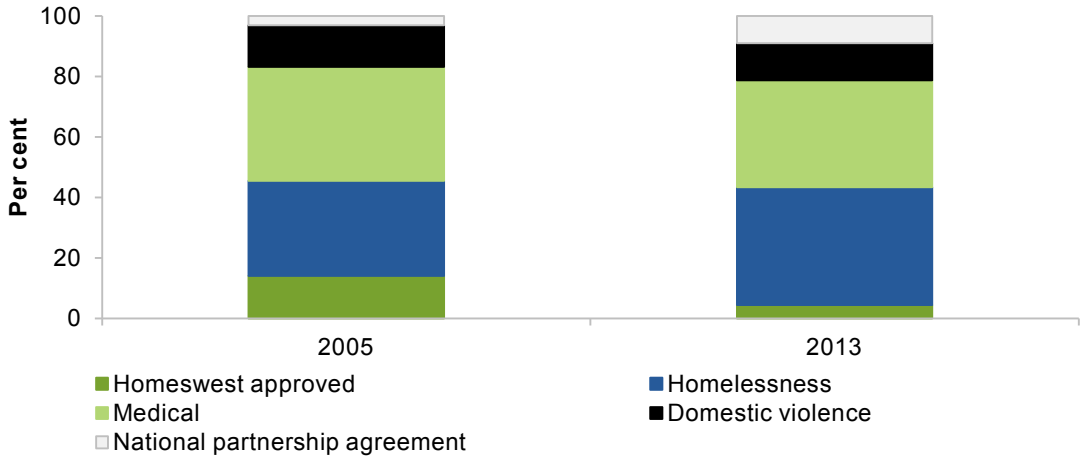
Source: Department of Housing (WA), administrative data (unpublished).

Homelessness and medical conditions are factors in many applications

Nearly 40 per cent of all new priority applicant households are on the priority list because they are experiencing some form of homelessness, and another third are on the list for medical reasons (figure 26). Homelessness became an increasingly important reason for placement on the priority list between 2005 and 2013, although the share fluctuates between these years.

Figure 26 **Primary reason for being placed in the priority category[a]**

Applicants who applied in 2004-05 and 2012-13



a 'Homelessness' includes primary homelessness (rough sleeping), secondary homelessness (moving between temporary forms of shelter) and tertiary homelessness (living in single rooms in private boarding houses without own bathroom, kitchen or security of tenure) (Chamberlain and MacKenzie 2008). 'National partnership agreement' refers to people placed in the priority category due to their eligibility under the National partnership agreement on homelessness. 'Homeswest approved' is a generic category used by Department of Housing staff, which also includes emergency housing and other minor categories (Department of Housing WA, pers. comm., 16 December 2014).

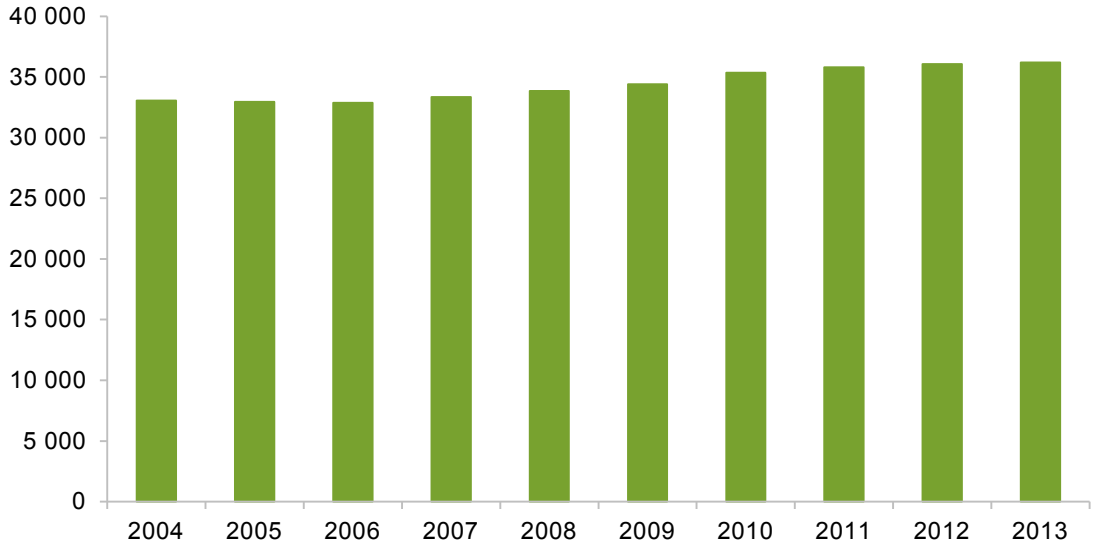
Source: Department of Housing (WA), administrative data (unpublished).

Public housing has grown; the share of priority allocations has been stable

The number of Western Australian households in public housing increased by nearly 10 per cent over the decade to 2013 (figure 27). Consistent with this rise, the number of households entering public housing exceeded the number of exits between 2007 and 2013 (figure 28). The introduction of tenant income limits in 2006 do not appear to have had a large impact on the number of households exiting public housing across the years. In 2005 and 2006, exits from public housing exceeded the number of entrants, which could partly be because the mining boom created employment opportunities that helped people exit into private accommodation.

Turnover rates have been reasonably stable in recent years at about 10 per cent (slightly higher than the turnover rate in South Australia). The proportion of allocations made to priority applicant households has also been fairly stable in the past five years — at about 50 per cent (figure 29).

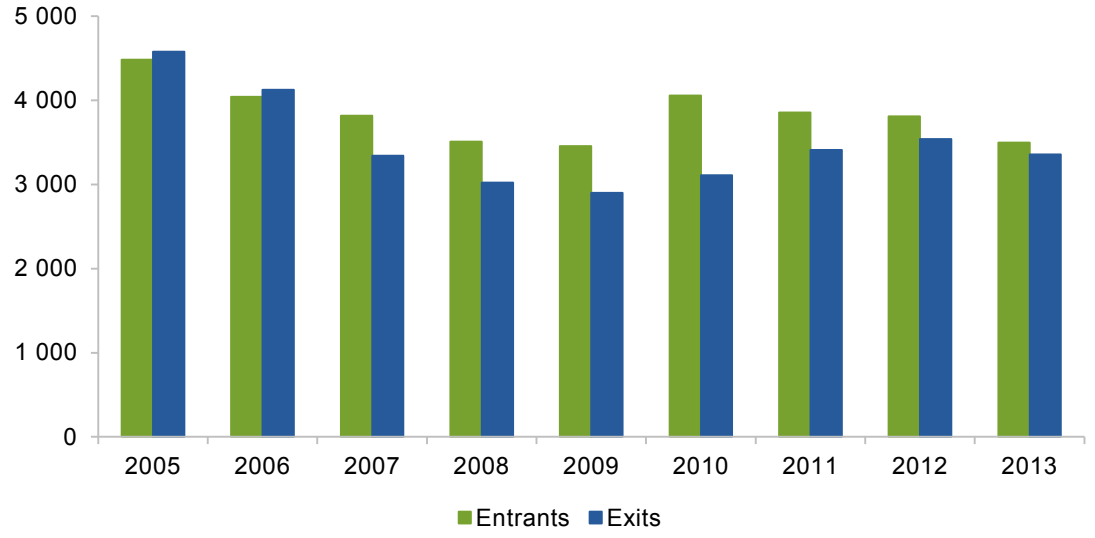
Figure 27 **Households in public housing in Western Australia, at 30 June 2004 to 2013[a]**



a Includes properties owned by the Department of Housing that are externally managed.

Source: Department of Housing (WA), administrative data (unpublished).

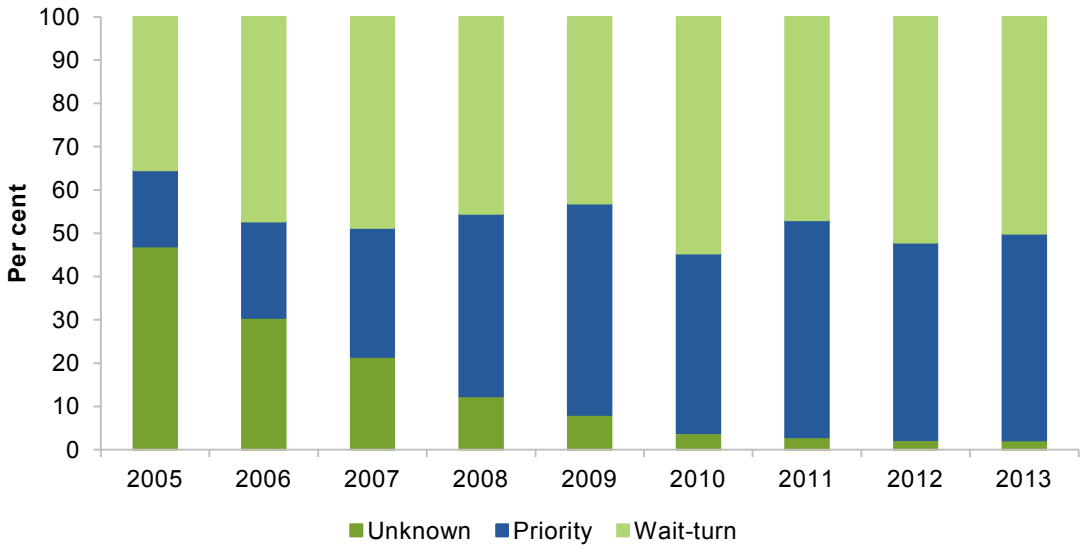
Figure 28 **Public housing entrants and exits, 2004-05 to 2012-13[a]**



a Excludes households known to be transferring between public housing properties but those that applied for a transfer before 2004 are counted. It includes those moving in and out of dwellings owned by the Department of Housing that are externally managed.

Source: Department of Housing (WA), administrative data (unpublished).

Figure 29 **Housing allocations by category, 2004-05 to 2012-13[a,b,c]**



[a] Excludes households known to be transferring between public housing properties but those that applied for a transfer before 2004 are counted. [b] Households with an unknown waiting list category likely applied for housing before 2004. [c] Does not include entries and exits within the same financial year.

Source: Department of Housing (WA), administrative data (unpublished).

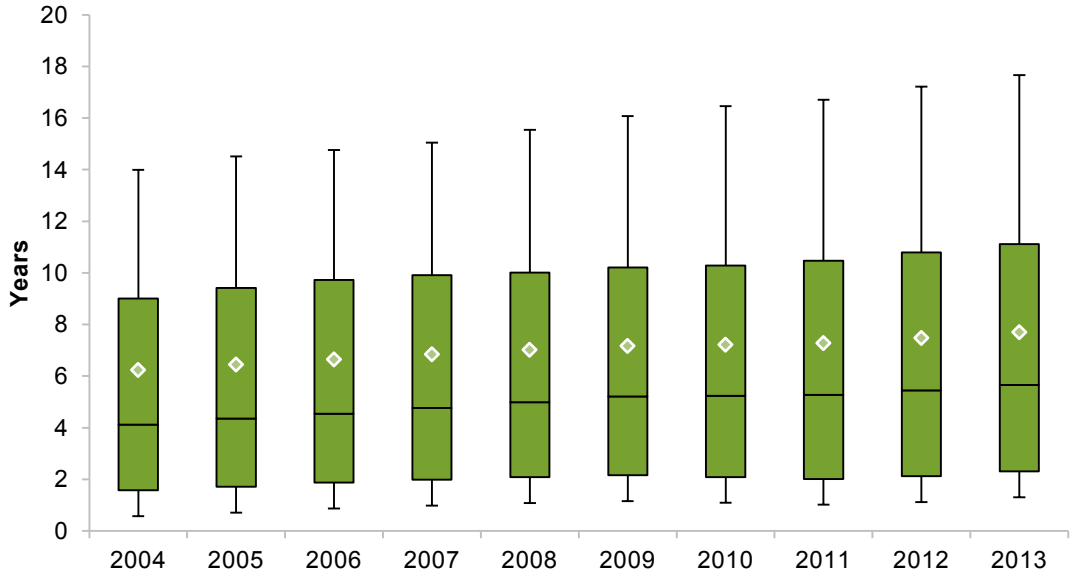
WA tenants are staying longer in public housing

As noted above, unlike in South Australia, income eligibility limits have applied for tenants in Western Australia since 2006. The limits apply to all tenants, both those who were resident in public housing in 2006, and those who have entered since. Tenant households that are no longer eligible for public housing are usually given a period of six to 24 months to find alternative accommodation. Only a small number of tenants have been evicted due to a loss of eligibility since the limits were introduced in 2006 (Department of Housing WA, pers. comm., 16 December 2014). In 2013-14, 104 ineligible tenants were transitioned into other affordable housing options (Government of WA 2014).

Between 2004 and 2013, the median tenancy length grew from about 4 to 6 years (figure 30).[30] This is markedly lower than the tenancy length of South Australian public housing tenant households (12 years in 2013). Given that the number of entrants to public housing was higher than the number of exits (which would bring median tenancy lengths down), this suggests that some households may be entering and exiting public housing relatively quickly, whereas others are more entrenched. About a quarter of tenant households had been in public housing for more than 11 years, and 36 per cent of households that were living in public housing in 2004 were in the same property in 2013.

[30] Tenancy lengths are likely to be understated for Western Australia because transfers could not be taken into account.

Figure 30 **Public housing tenancy durations, at 30 June 2004 to 2013[a]**



[a] Transfers are counted as a new tenancy. Therefore the median lengths of tenancy are understated.

Source: Department of Housing (WA), administrative data (unpublished).

7 Demographic characteristics of WA applicants and tenants[31]

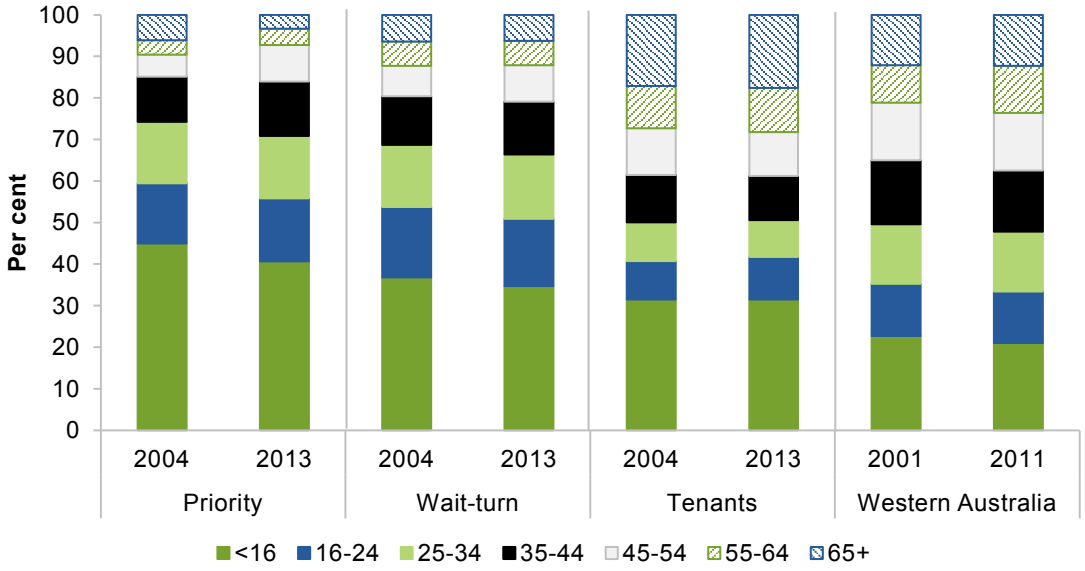
Applicants are more likely to be of working-age than tenants

Both the applicant population and public housing residents in Western Australia are relatively young (figure 31). In 2013, the median age of applicants was 23 and that of tenants was 34. In comparison, the median age of the general Western Australian population in 2011 was 35. Forty per cent of people on the priority list in 2013, and nearly one third of public housing residents, were children (aged less than 16 years). In contrast, less than 20 per cent of South Australian public housing residents were children. Relatively few public housing tenants are of working-age — just over 40 per cent in 2013, in comparison with about two-thirds of the broader population (in 2011).

The ages of people who are allocated housing broadly reflect the age profile of those who are on the waiting list (figure 31 and figure 32). Similar to South Australia, those who exit public housing tend to be younger than remaining tenants.

31 Data used in generating applicants' characteristics exclude applicants seeking to transfer between public housing dwellings.

Figure 31 **Ages of applicants and tenants, at 30 June 2004 and 2013**



Sources: ABS (*Basic Community Profile, Western Australia*, Cat. no. 2001.0); Department of Housing (WA), administrative data (unpublished).

Figure 32 **Age of tenants who entered and exited public housing, 2004-05 and 2012-13**

Source: Department of Housing (WA), administrative data (unpublished).

Applicants and tenants are more likely to be female and Indigenous than other Western Australians

As in South Australia, women make up over half of both working-age applicants and tenants in Western Australia (table 3). Both applicants and tenants are also much more likely to be Indigenous Australians than other Western Australians. Close to one third of tenants self-identify as Indigenous Australians.

Table 3 **Applicant and tenant demographic characteristics[a,b]**
Per cent

	Applicants		*Tenants*		*Western Australia*	
Working-age individuals	*2004*	*2013*	*2004*	*2013*	*2001*	*2011*
Women	61	56	61	60	50	49
Indigenous[c]	19	17	26	31	3	3

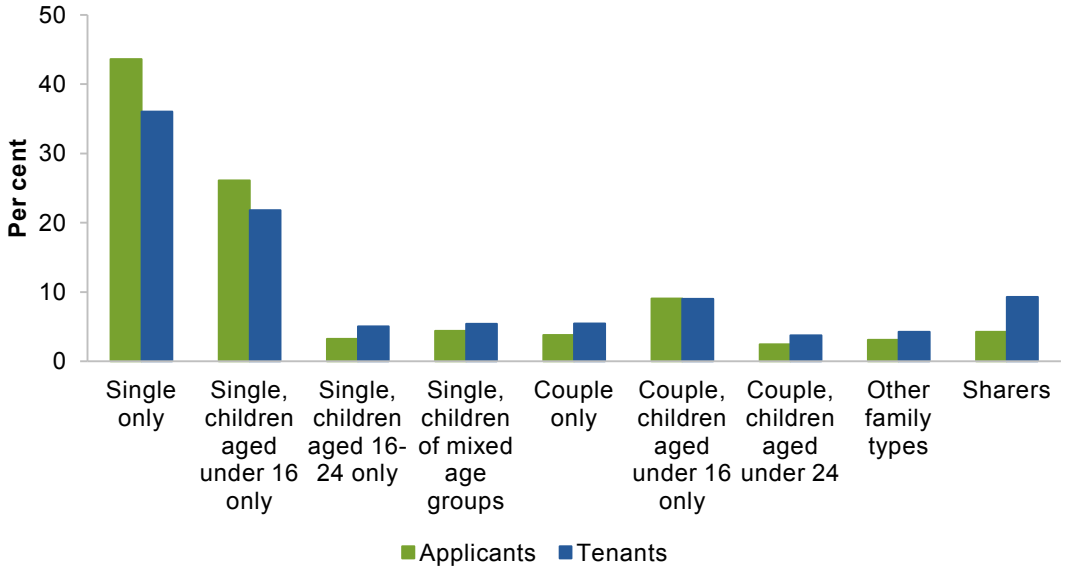
[a] Data for tenants and applicants are for people aged 16 to 64 years. Data for the whole population are for all people aged 15 to 64 years. [b] Country of birth statistics are not reported because it is unknown for over 70 per cent of applicants and over 80 per cent of tenants. [c] Indigenous status is self-reported.

Sources: ABS (*Basic Community Profile, Western Australia*, Cat. no. 2001.0; *Indigenous Profile, Western Australia*, Cat. no. 2002.0); Department of Housing (WA), administrative data (unpublished).

Applicants and tenants are mainly single

Nearly half of all applicant households that include at least one working-age member are single-person households and about a third are single parent households (figure 33). There are more single households on the waiting list than there are in public housing. Reflecting the age profile of the tenant population, about one third of households in public housing include at least one child aged under 16 years.

Figure 33 **Working-age household type at 30 June 2013[a,b,c,d]**



[a] Households that have a working-age applicant or tenant. [b] Children aged under 16 includes any person in the household aged under 16. Children aged 16 to 24 only includes people described as children or dependents. [c] Other family types include tenants living with children aged 25 and over and grandparents. [d] Sharer households include households that consist of all single adults, or those that are identified as having more than one family group.

Source: Department of Housing (WA), administrative data (unpublished).

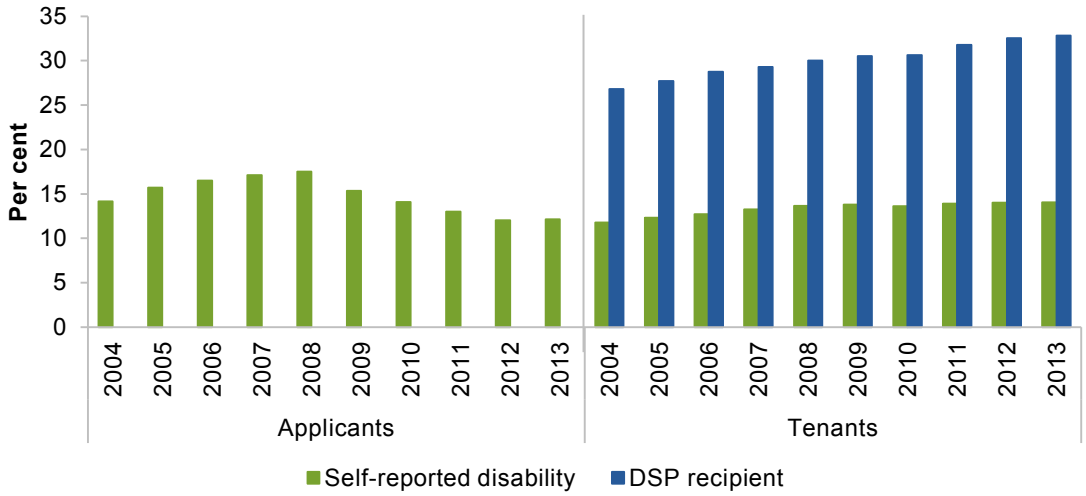
Applicants and tenants are more likely to have a disability than other Western Australians

The percentage of working-age tenants with a disability recorded with the Department of Housing increased slightly over the decade to 2013, from 12 to 14 per cent (figure 34).[32] The self-reported disability figures are similar to the 11 per cent of Western Australians aged up to 64 years who reported a disability in 2012 (ABS 2013b). However, the self-reported disability figures for tenants are likely to be understated because this information is usually only recorded if the disability affects housing. The percentage of working-age tenants who receive DSP is three times as high, at about 33 per cent. Applicants report disability at about the same rate as tenants.[33] Rates of DSP receipt among tenants were markedly lower than in South Australia.

[32] The date at which disability was reported is not included in the data. This has implications for comparisons over time. For example, if someone on the waiting list initially had no disability but developed one later (either as an applicant or as a tenant), they will be counted as having a disability for all years they were on the waiting list.

[33] Data on DSP receipt for applicants are not presented because income support payment type is recorded under a 'high level pension' category for many applicants; the exact payment is not identified.

Figure 34 **Proportion of working-age applicants and tenants with a disability, at 30 June 2004 to 2013[a,b,c,d]**



[a] Self-reported disability types include physical, mental, cognitive, intellectual, neurological and sensory. It does not require a medical confirmation. [b] DSP is not listed for applicants because in many cases it is not separately identified in the income data for applicants. [c] Some people who self-report as having a disability do not receive a DSP, and some who receive a DSP have not reported having a disability. For tenants, the degree of overlap is 33 per cent. [d] The decline in the proportion of applicants with a disability since 2008 may reflect an increase in the number of people without disability applying to public housing following the global financial crisis, as well as improvements in the quality of data collected by the Department of Housing.

Source: Department of Housing (WA), administrative data (unpublished).

The large difference between self-reported disability and DSP receipt for tenants (which also occurs in South Australia) might reflect a tendency for disabilities to be reported by tenants or recorded in the data only if the disabilities are likely to affect their housing.

Physical disability is the most commonly reported disability type, being reported by 8 per cent of working-age applicants (63 per cent of those who reported any disability) and 10 per cent of tenants (69 per cent of those who reported any disability) in 2013. In comparison, only 5 per cent of working-age applicants and tenants in Western Australia were self-reported as having a mental disability in 2013.[34]

8 Employment among WA applicants and tenants

Employment rates among public housing tenants in Western Australia are higher than among applicants but the difference narrowed markedly post 2007 (figure 35).[35] This was due to a

[34] People can report more than one type of disability.

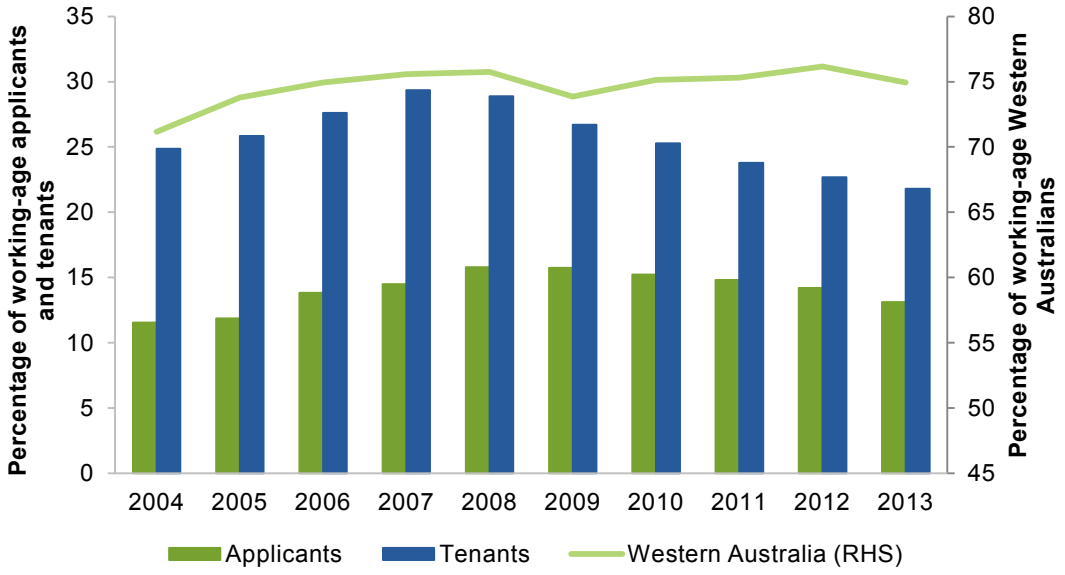
[35] Although the employment status of applicants and tenants cannot be directly observed, it has been inferred from receipt of wage and salary income.

fall in employment rates among tenants. Employment rates in the general Western Australian population and among applicants were reasonably stable post 2007.

The decline in tenant employment rates post 2007 may reflect a compositional effect (tenants who are able to find employment may have left public housing because they are no longer eligible), although, as noted above, very few tenants have been evicted due to a loss of eligibility since the limits were introduced (Department of Housing WA, pers. comm., 16 December 2014). Neither can the fall be attributed to new tenants who entered in the second half of the decade being less likely to work than those who exited — employment rates of tenants who lived in public housing for the whole period, 2007 to 2013, also fell (by 3.4 percentage points).

It is possible that the data reflect the introduction of income eligibility limits for tenants (Department of Housing WA, pers. comm., 16 December 2014). To the extent that this is the case, the fall in employment rates would be consistent with a welfare lock for tenants. The possibility of welfare locks among tenants is revisited below.

Figure 35 **Proportion of applicants and tenants employed, at 30 June 2004 to 2013**

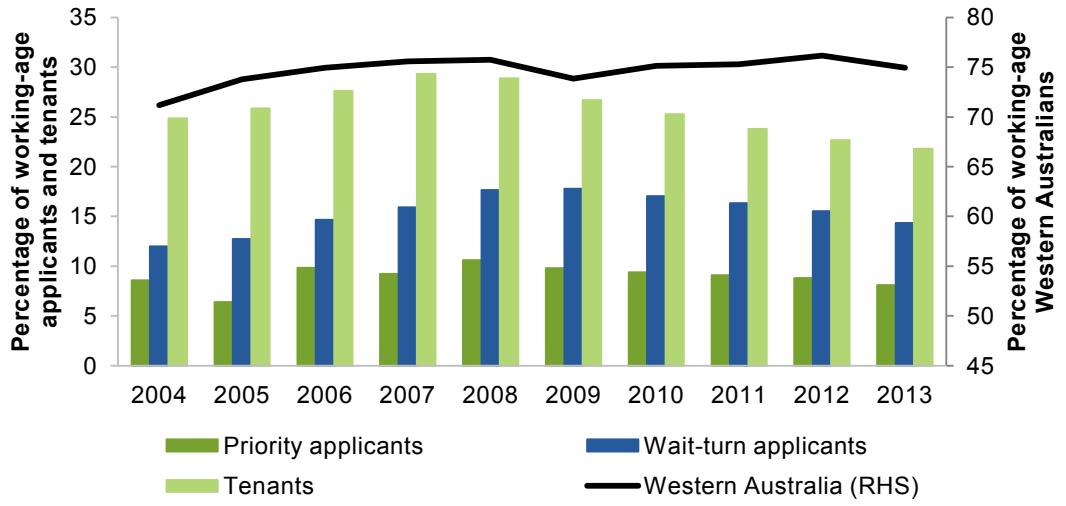


Sources: ABS (*Labour Force, Australia*, Cat. no. 6202.0); Department of Housing (WA), administrative data (unpublished).

Employment rates also differ markedly between working-age applicants from different waiting list categories (figure 36). Less than 10 per cent of priority applicants were employed in 2013, whereas the employment rate of wait-turn applicants was nearly twice as high.

Figure 36 **Proportion of applicants and tenants employed at 30 June 2004 to 2013**

Applicants by category



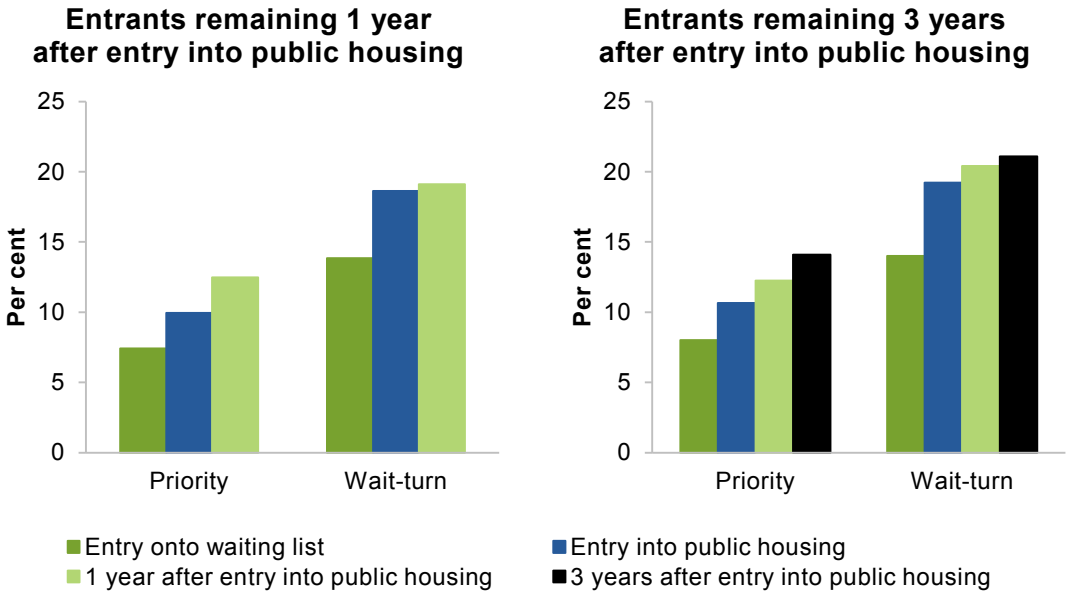
Sources: ABS (*Labour Force, Australia*, Cat. no. 6202.0); Department of Housing (WA), administrative data (unpublished).

Comparison of employment rates pre and post entry into public housing sheds more light on the relationship between public housing residence and employment (figure 37). As in South Australia, increases in employment are observed between entry onto the waiting list and entry into public housing, suggesting that applicants do not avoid employment while waiting for public housing (in contrast with the welfare locks hypothesis). A larger increase in employment is observed for wait-turn applicants, which could reflect their longer waiting times or better employment prospects.

After entry into public housing, there is an increase in the likelihood of employment, which is consistent both with welfare locks for applicants and a stability effect for tenants. That said, if a person faces the same income eligibility thresholds as a tenant as while an applicant, it might be argued that they would manage their employment both before and after entry to retain eligibility. If that were the case, the increased likelihood of employment following entry into public housing might be interpreted as the effect of greater housing stability.[36]

[36] Other possible explanations for the observed increases in employment are policy changes and increases in general employment rates over time. However, discussions with state housing authorities did not suggest there was a change in local approaches to supporting tenants, and employment patterns for income support recipients receiving housing assistance do not suggest that national policy changes led to consistent increases in employment rates across the decade (BP 3). Changes in general employment rates over time also do not fully explain the increases in employment among people who moved into public housing.

Figure 37 **Employment rates pre and post a move into public housing[a,b]**



[a] Observations include working-age individuals who are observed both as an applicant and a tenant between 2004 and 2013. The analysis also only considers people whose waiting list category did not change more than one month after entering the waiting list — 70 per cent of priority entrants were initially wait-turn applicants when they entered the waiting list. [b] Employment rates at '1 year after entry into public housing' are inferred from the first income observation more than ten months after entry into housing. Employment rates at '3 years after entry into public housing' are inferred from the first income observation more than two years and ten months after entry into housing. Tenant income assessments are conducted yearly.

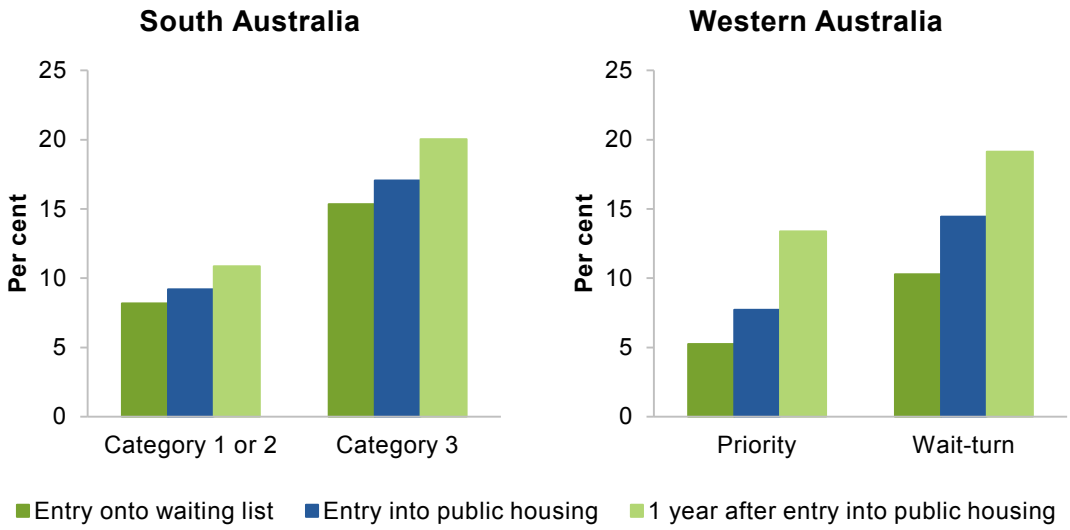
Source: Department of Housing (WA), administrative data (unpublished).

If income eligibility limits for tenants in Western Australia do create welfare locks, then it might be expected that employment rates among Western Australia tenants would be substantially lower than those of South Australian tenants, who are not subject to income limits while in public housing. To facilitate a comparison between South Australia and Western Australia, the investigation of employment before and after entry into public housing was restricted to single-person households to remove differences resulting from the analysis of head tenants in South Australia and all tenants in Western Australia. Data for category 1 and 2 applicants in South Australia were also combined for comparison with priority applicants in Western Australia, whereas category 3 applicants in South Australia were compared with wait-turn applicants in Western Australia (figure 38). The results show that employment rates among Western Australian tenants were not markedly lower than in South Australia, suggesting that welfare locks among tenants are not an issue.[37]

[37] The better employment opportunities in Western Australia could boost employment rates among tenants in Western Australia to an extent. However, if welfare locks were an issue for Western Australian tenants, it is unlikely that employment opportunities would fully offset the welfare lock effect. It is expected that their employment rates would still be markedly lower than in South Australia.

Figure 38 **Employment rates pre and post a move into public housing[a,b]**

Single-person households



[a] Observations include working-age individuals who are observed both as an applicant and a tenant between 2004 and 2013, whose category did not change while on the waiting list, and who were still in public housing one year after entry. [b] Employment rates at '1 year after entry into public housing' are inferred from the first income observation more than ten months after entry into housing.

Sources: DCSI, Housing SA, administrative data (unpublished); Department of Housing (WA), administrative data (unpublished).

Average real incomes (adjusted using changes in average weekly earnings) for both applicants and tenants declined between 2004 and 2013 (unlike in South Australia where there was little change), which can be explained by the fact that income eligibility limits in Western Australia did not grow by as much as average weekly earnings over the period (figure 39).[38] This means that, over time, only people with lower real incomes have been eligible to enter the waiting list and/or remain in public housing.

In 2013, average weekly income was about $370 for applicants and $490 for tenants. The average income received by applicants in Western Australia is much closer to the public housing income limit ($430 for a single applicant without disability in a metro or country area) than it is in South Australia, which is not surprising given the higher income limits in South Australia.[39] Average tenant incomes exceeded the limit for singles without disability, but were within the income limit for singles with a disability ($540 in a metro or

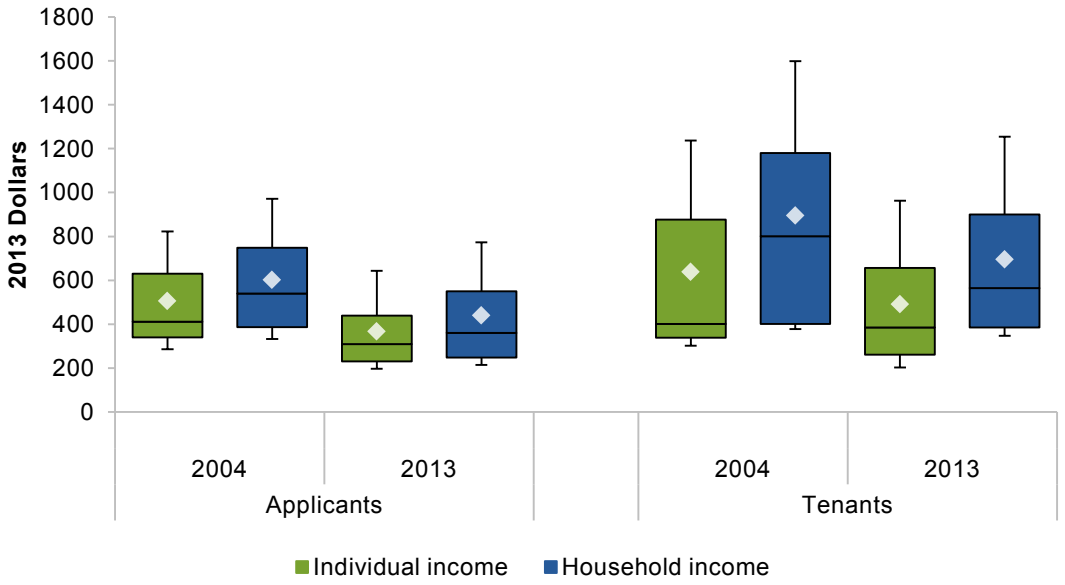
[38] These data must be interpreted with caution. Income data for some applicants have not been updated over their time on the waiting list. Although available information has been converted to 2013 dollars, the resulting estimates might not be an accurate reflection of those applicants' current incomes.

[39] Differences between household incomes for applicants and tenants could also be due to differences in the completeness of income data for applicants and tenants. For application purposes, only the main applicant, partner and any co-applicant's incomes are assessed. Once tenanted, all incomes (of tenants aged 16 and over) are taken into consideration for rent calculation purposes.

country area) and within that for singles in north west or remote areas ($610 for those without a disability and $760 for those with a disability).

Household incomes exceed individual incomes by a greater amount than South Australian tenants because of the larger households in Western Australia.

Figure 39 **Real income per week, at 30 June 2004 and 2013[a,b,c,d]**



[a] Converted to 2013 dollars using the average weekly earnings in Western Australia. [b] 'Individual income' is calculated for all working-age individuals. 'Household income' is calculated for households that contain a person who is of working-age. [c] Excludes individual incomes over $2000 a week or less than youth allowance. [d] Few people are recorded as receiving CRA in the data. It is likely that CRA is included in the high level 'pension' category for most applicants, so is not separately identifiable.

Source: Department of Housing (WA), administrative data (unpublished).

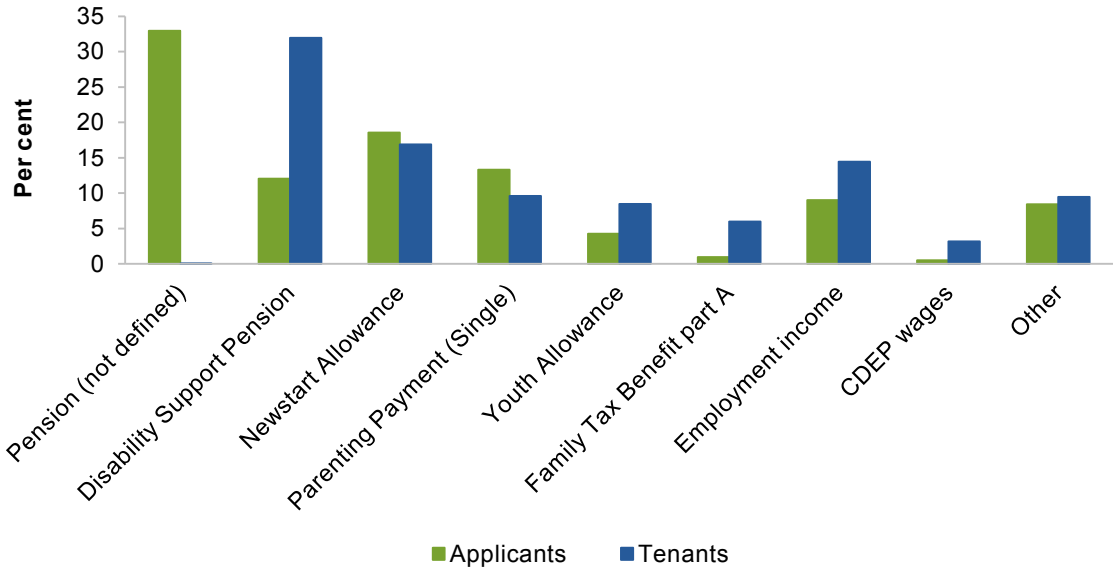
In 2013, the most common main source of income for working-age tenants was DSP (32 per cent), followed by Newstart Allowance (17 per cent) and employment income (14 per cent) (figure 40).[40] For 33 per cent of applicants, the main source of income was 'pensions' (a high level category that includes a variety of income support payments).[41] Other common sources of income were Newstart Allowance (19 per cent), Parenting Payment Single (13 per cent) and DSP (12 per cent). Employment income was the main income source for only 9 per cent of applicants.[42]

[40] Employment income includes wages and salaries and self-employment income. An additional 3 per cent of tenants received CDEP (community development employment projects, a government funded employment scheme primarily for Indigenous people) wages and salary.

[41] Some income support recipients are included in this category, whereas others are included in the separate categories for each payment. This is based on an allocation criteria used by the Department of Housing WA.

[42] An additional 1 per cent of applicants received CDEP wages and salary.

Figure 40 **Main source of income for working-age applicants and tenants, at 30 June 2013[a,b]**



[a] Employment income includes wages, salaries and self-employment income. [b] Other includes income from all other sources, including other income support payments, interest and foreign pensions.

Source: Department of Housing (WA), administrative data (unpublished).

9 Larger subsidies go to single adult households

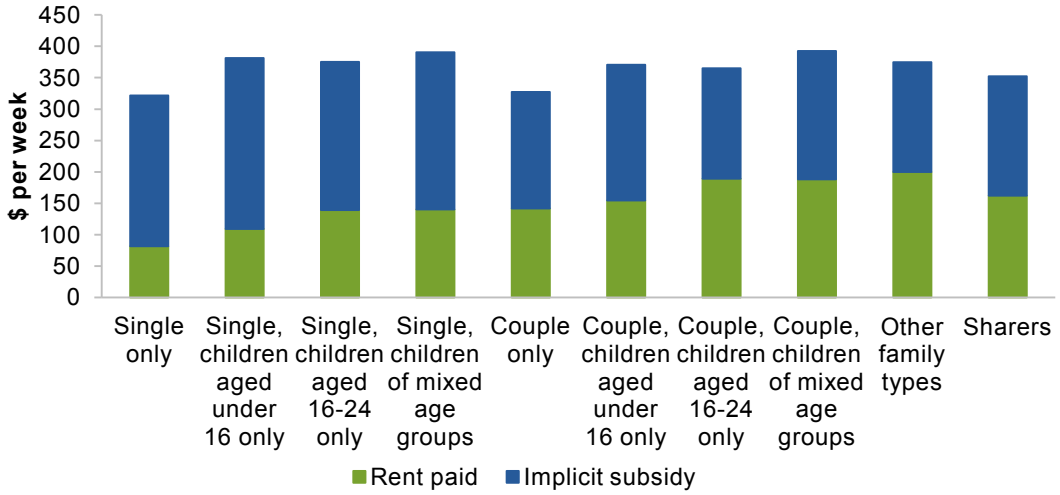
Rent-setting arrangements in Western Australia are similar to those in South Australia — tenants pay up to 25 per cent of assessable income in rent, with a maximum rent payment equal to the market rent.[43]

As in South Australia, single people and singles with children receive a larger implicit subsidy than other household types (figure 41) due to a mismatch between the housing stock and the needs of tenants (figure 42). Furthermore, although tenants in Western Australia pay similar levels of rent to those in South Australia, Western Australian subsidies are larger because of much higher market rents.

High market rents also contribute to much larger subsidies for public housing tenants compared with CRA recipients in similar household types (figure 43).

[43] Tenants pay 25 per cent of gross household assessable income in rent. Some income types are not assessable (such as pharmaceutical allowance) and others are assessed at lower rates (such as Family Tax Benefits). In general, dependents aged 16 to 20 have their income assessed at 10 per cent for rent. An amount is deducted for all working tenants before rent is calculated (known as a working allowance). Market rents are based on information supplied by the Valuer General (Department of Housing WA 2015).

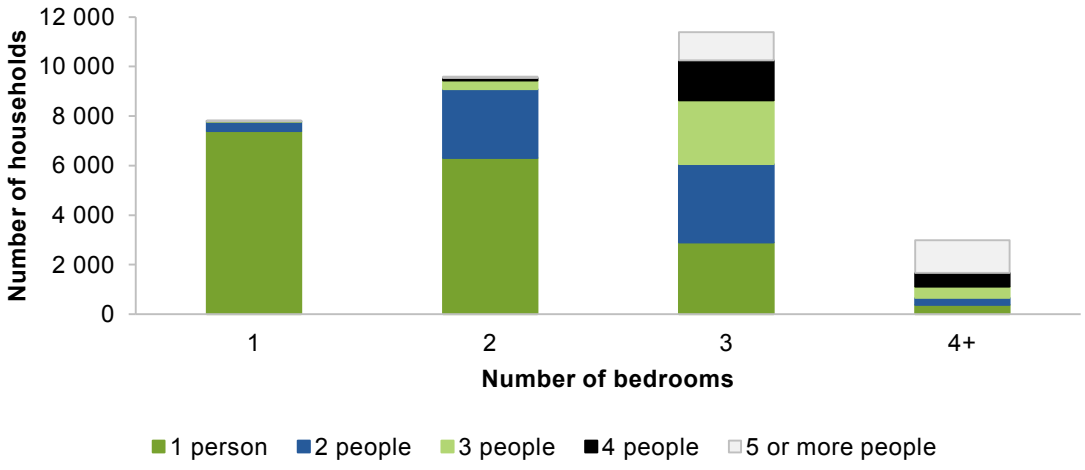
Figure 41 **Mean weekly rents and implicit subsidies, at 30 June 2013[a,b,c,d,e]**



[a] The rent paid plus the implicit subsidy is equal to market rent. Market rents in the data are based on rent valuations in the second half of 2014. Valuation methods were revised from previous years, hence average subsidies displayed here are larger than in the data in SCRGSP (2014). [b] Statistics exclude tenants whose rent or market rent data are not available, who have market rents greater than $1500 per week or who have negative rent or implicit subsidy. [c] Children aged under 16 include any person in the household aged under 16. Children aged 16 to 24 only include people described as children or dependents. [d] Other family types include tenants living with children aged 25 and over and grandparents. [e] Sharer households include households that consist of all single adults, or those that are identified as having more than one family group.

Source: Department of Housing (WA), administrative data (unpublished).

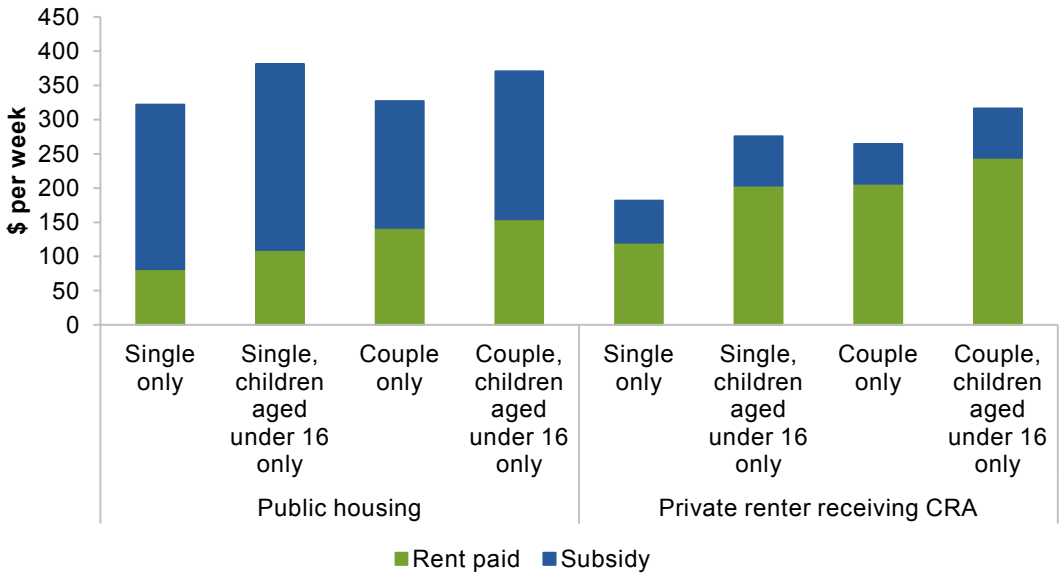
Figure 42 **Number of bedrooms by number of people in household, at 30 June 2013**



Source: Department of Housing (WA), administrative data (unpublished).

Figure 43 **Subsidies tend to be much larger in public housing[a,b,c,d,e,f,g]**

Mean rents in Western Australia, 30 June 2013, selected household types



[a] The rent subsidy received by public housing tenants is implicit — tenants do not actually receive a payment. The subsidy is the difference between the market rent for their property and the rent that they pay. [b] CRA recipients pay market rents and receive CRA (the subsidy) as a payment to offset the cost. [c] Children aged under 16 include any person in the household aged under 16. [d] Subsidy figures for public housing are calculated as the difference between mean market rents and mean rents paid by households within each household type, rather than the mean subsidy received by households with market rents equal to the mean market rent. (This approach was adopted because there are relatively few households in properties with exactly the mean market rent. A check of the data showed that households in properties with market rents in the vicinity of the mean market rent typically pay rents that are close to the mean rent paid.) [e] Mean rents for single, childless renters receiving CRA are for all singles, that is, both those who share housing and those who live alone. The CRA subsidy presented in the figure is the maximum rate for singles who live alone. (Sharers receive a lower rate.) About 17 per cent of single CRA recipients in Western Australia live in share accommodation (author estimate based on SCRGSP (2014)). [f] The CRA subsidies presented for singles and couples with children aged under 16 years only are the rates for families with less than three children. [g] The CRA subsidy presented for couples only is the rate for people who are not temporarily separated.

Sources: Public housing — Department of Housing (Western Australia), administrative data (unpublished); CRA — Author estimates based on unpublished data from the Research and Evaluation Database.

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Annex A A profile of public housing applicants and tenants in South Australia and Western Australia

See Excel workbook available online.

Background Paper 5
Links between housing assistance and employment

Key points

- Housing assistance — in the form of Commonwealth Rent Assistance (CRA) or the provision of public housing — has the potential to limit recipients' incentives to work, and may reduce employment rates among housing assistance recipients.
- A large dataset compiled from the Department of Employment's Research and Evaluation Database was used to assess the effect of housing assistance on employment. The data consist of confidentialised individual-level information about eligibility for and payment of income support between 2004 and 2013, and provide a unique opportunity for an in-depth analysis of the possible effects of housing assistance on employment.
- Regression analysis takes into account differences in the characteristics of Income Support Payment (ISP) recipients and allows for the effects of housing assistance to be isolated from other factors that may also affect employment. Two regression techniques are used in this paper:
  - Cross-sectional models that take into account differences between individuals that are observed in the data.
  - Fixed effects regressions that isolate the effects of housing assistance on employment from individual characteristics recorded in the data and characteristics that are not recorded. These techniques rely on the assumption that unobserved characteristics do not change over time.
- After accounting for differences in observed characteristics, residents of public housing have a predicted probability of employment in the order of 15 per cent, about 6 percentage points below that of ISP recipients who do not reside in public housing. Recipients of CRA have a slightly lower predicted probability of employment than ISP recipients who do not receive housing assistance.
- However, the fixed effects models indicate that, once time-invariant unobserved characteristics have been accounted for, housing assistance has a very small effect on employment. That is, individual characteristics of ISP recipients, rather than their housing assistance status, affect whether or not they are in employment. For public housing, this result is consistent with the provision of housing assistance to high needs individuals, who may have difficulty finding and maintaining employment.
- The effect of neighbourhood disadvantage on employment was also examined, with the analysis restricted to public housing residents to minimise problems of selection bias. Living in a highly disadvantaged area was found to be associated with lower levels of employment, even after accounting for the effects of individual differences, but this effect is small when compared to other determinants of employment.

1 Introduction

Employment decisions typically involve a process where the expected benefits of employment are weighed up against the expected costs associated with working, including, for parts of the population, the potential loss of income support payments (ISPs) and housing assistance. The net benefits of employment are likely to vary across individuals, depending on their likelihood of finding and maintaining employment, the wages that they can expect and their individual circumstances, including whether they have children, their level of education and the neighbourhood in which they live. To assess whether housing assistance affects employment, it is necessary to account for the various factors that affect the decision to enter paid work.

This paper focuses on the potential effects of two key housing assistance strategies on ISP recipients' employment:

- rent subsidies provided by the Australian Government in the form of Commonwealth Rent Assistance (CRA)
- public housing provided by state housing authorities.[1] People with urgent housing needs, including those who are homeless or are at risk of homelessness, are typically prioritised in the allocation of public housing.[2]

Detailed unit record information derived from administrative ISP records allows an empirical assessment of the relationship between housing assistance and employment.

Why might employment be affected by housing assistance?

Housing assistance could reduce a recipient's incentive to work (box 1, with more details in Background Paper 2 (BP 2)).[3] This might occur because the recipient faces either:

- an 'unemployment trap', where the financial benefits of remaining out of work are greater or not substantially less than the benefits of participation in paid work, or
- a 'low-income trap', where they have little incentive to increase earnings through additional hours (Hulse et al. 2003; Whiteford and Angenent 2002).

1 States and territories are referred to throughout the paper as states.

2 The administrative data used in modelling the relationship between housing assistance and employment do not identify community housing residents, who are likely to receive CRA. Because community housing is a relatively uncommon form of tenure, results for CRA recipients are interpreted as if all recipients are renting privately.

3 This background paper (BP) is one of six produced as part of a research project examining the links between housing assistance and employment.

Box 1 An economic approach to assessing the effect of housing assistance on employment

Housing assistance may affect the employment of recipients by influencing their incentives to work.[4] The conventional economic approach to the supply of labour describes an individual's employment decision as the outcome of a constrained optimisation problem, where individuals allocate their time between paid work and unpaid activities to maximise utility. Employment is rewarded in terms of wages — used to purchase goods or services that yield utility — whereas unpaid activities are assumed to yield utility directly.

The choice of time allocation is subject to a budget constraint that is based on feasible combinations of paid and unpaid activities for a given level of wages. The budget constraint is determined by an individual's time endowment, the wage rate at which they are offered work and any non-labour income, including transfer payments. Time spent on unpaid activities, such as childcare and commuting, is valued at the wage rate that an individual faces. In the absence of transfer payments or other forms of unearned income, an individual allocating an additional hour to unpaid activities foregoes an hour's wages.

Unearned income — such as transfer payments — may reduce incentives to work, as it enables consumption without paid employment. The higher income associated with a transfer payment may allow increased allocation of time to non-work activities (an 'income effect'). Public housing could have a similar effect, due to the subsidy implied by the difference between market rent and rent paid by a tenant.

The tapered withdrawal of transfer payments as market income increases can affect work incentives in two ways. Individuals who increase their employment receive the financial benefit of working, less any transfer payments that are withdrawn. This reduction in the net returns to work (in comparison with a situation where benefits were not withdrawn), induces a 'substitution effect' toward non-work activities. At the same time, individuals will have less disposable income for a given number of hours worked (than would be the case if transfers were not withdrawn), meaning that there is an incentive to work more (the income effect associated with benefit withdrawal). The overall effect of the tapered withdrawal of transfer payments is the sum of the income and substitution effects.

As with all models, this approach to explaining labour supply makes simplifying assumptions. For example, it is assumed that individuals choose to work the number of hours that maximise the utility that they gain from their income and unpaid activities. In fact, the number of hours worked is generally a 'lumpy' decision with a small number of discrete choices — something that will limit the ability to choose the utility-maximising number of hours, especially where there are caring obligations. Further, minimum wages may limit employment opportunities for low productivity workers by precluding them from accepting lower wages in order to engage in employment commensurate with their expected productivity. This paper does not examine the effect of minimum wages on the ability of low productivity workers to find work.

4 Employment of housing assistance recipients is affected by their willingness and ability to work and employer demand for their labour. Where employers use housing assistance status to 'screen' possible employees, housing assistance could affect labour demand. However, as employer attitudes towards housing assistance recipients have not been previously identified in quantitative research as an impediment to the employment of housing assistance recipients, this analysis focuses on how housing assistance might affect labour supply.

CRA potentially affects a recipient's incentive to work through its interaction with the withdrawal of transfer payments as earnings increase. As market income increases beyond a specified threshold, income support is steadily withdrawn. Different thresholds are applied to different ISPs. For example, Disability Support Pension (DSP) payments are reduced by 50 cents for each dollar earned in excess of $160 in a given fortnight.[5] For private renters who receive CRA because they are eligible for an ISP, CRA is withdrawn at the same rate as the ISP, once the primary ISP reaches $0.[6] This means that effective marginal tax rates associated with the withdrawal of transfer payments persist over a broader income range for individuals who receive CRA (Hulse and Randolph 2005; BP 2).

The provision of public housing is likely to affect the work decisions of recipients differently. For most public housing tenants, rent is set at about 25 per cent of their assessable income, capped at the market rent for the property occupied. This means that their rent increases as their earnings increase, until rent paid is equal to market rent.[7] This, combined with the withdrawal of ISPs as income increases, reduces returns to entering, or increasing, work. Public housing tenants face effective marginal tax rates that are higher than comparable CRA recipients at low levels of income (BP 2). The measure of income used to determine the amount of rent paid by a household can include the income of working-age children who reside at home, meaning that children who live with parents in public housing may also face a disincentive to find work.

Other factors may affect the net benefits of employment for public housing residents, including:

- eligibility requirements, where public housing residents may become ineligible if their income exceeds a threshold
- mobility restrictions — the limited availability of public housing means that residents seeking to relocate to areas with better employment prospects may be required to move into a private rental tenancy, which may mean higher rents and a less secure tenancy; this is likely to reduce the incentive to relocate for employment purposes
- the stability afforded by secure, ongoing public tenancies may provide public housing residents with better opportunities to find and maintain employment than would otherwise be the case

5 The DSP withdrawal rate and threshold were current as of 19 March 2015 (DHS 2015).

6 Private renters who receive Family Tax Benefit part A (with or without receiving an ISP) receive CRA as part of that payment (provided they are paying rent above a minimum threshold). In their case, CRA is withdrawn alongside other elements of the Family Tax Benefit.

7 Assessable income includes gross market income (except in Tasmania, where the calculation is based on net market income) and most major transfer payments (the pension supplement, for example, is not included). As market income increases, withdrawal of transfer payments means that assessable income increases by less than a dollar when market income increases by a dollar. Public housing rent increases by 25 per cent of assessable income, or a smaller percentage of the additional dollar of market income. Over the market income range that transfer payments are withdrawn, the effective marginal tax rates associated with public housing rents are less than 25 per cent (BP 2).

- the location of affordable rental housing — either public or subsidised — may be in areas where there is geographically concentrated disadvantage, including limited employment opportunities, which could reduce the probability of entering employment.

The key hypothesis examined in this paper is that housing assistance has a negative effect on the employment of housing assistance recipients. The focus of the analysis is on employment status, rather than the number of hours worked by ISP recipients, due to limitations of the administrative data used in this analysis. The data used are discussed in section 2.

The research examines the extent to which receipt of housing assistance affects employment, once the characteristics of those who receive it are taken into account. The effect of parental receipt of housing assistance on the employment of their children who live at home is also tested. In addition, the effect of neighbourhood disadvantage on employment status is briefly examined.

Previous research

Previous research has shown that housing assistance recipients are less likely to be in paid employment than other people. In particular, the employment rate of public housing residents is recognised as being substantially below that of residents of other tenures (Groenhart and Burke 2014; Wood, Ong and Dockery 2009).

A negative relationship between housing assistance and participation in employment may be expected, given that housing assistance is targeted towards people with low income and with complex needs. But it is important to distinguish the extent to which lower employment rates among recipients are related to housing assistance itself or to recipients' characteristics.

Recent Australian studies that attempt to make this distinction by using multivariate approaches include Whelan (2004), Whelan and Ong (2008), Dockery et al. (2008) and Wood, Ong and Dockery (2009). These studies rely on survey data and cross-sectional methods to isolate the employment effects of housing assistance.

Whelan (2004), Whelan and Ong (2008) and Dockery et al. (2008) use the Household, Income and Labour Dynamics in Australia (HILDA) survey to estimate the relationship between CRA and employment status, after taking into account individuals' characteristics.[8] They find that CRA has a small negative effect on employment, however, many of the estimates are not statistically significant.

Wood, Ong and Dockery (2009) use repeated cross-sections from the ABS Survey of Income and Housing Costs between 1982 and 2002. Most of the decline in employment

8 While HILDA is a longitudinal survey, the studies mentioned use cross-sectional models. For example, Dockery et al. (2008) estimate an employment model using a pooled cross-section of the first three waves of HILDA.

among male public housing tenants is attributed to changes in their observed characteristics. However, differences in observed characteristics do not explain the decline in employment rates among female residents of public housing, relative to women residing in other tenures. The authors suggest that unobserved characteristics are one potential explanation for lower employment among this group.

Like all empirical research projects, these studies faced some data limitations. In particular, the HILDA-based studies have no direct indicator of CRA status. CRA status is inferred using reported income, income support payments, demographic characteristics and tenure status (Whelan 2004, Whelan and Ong 2008 and Dockery et al. 2008). In addition, the comparatively small number of public housing residents means that there is a very small number of corresponding observations in the HILDA survey. For example, the 2001 HILDA survey reports 379 households living in public housing (Whelan 2004). The small number of observations means that it can be difficult to estimate any housing assistance effects precisely.

The reliance on survey data that include limited housing assistance information suggests that panel models with large longitudinal administrative datasets of the type used in this paper could provide additional insights into the effects of housing assistance on employment.

2 Data used in this paper

The Research and Evaluation Database (RED) is a large database consisting of the confidentialised administrative records of ISP recipients, extracted from Centrelink's Income Security Integrated System and the Department of Employment's Integrated Employment System. RED includes de-identified, individual-level income support, demographic, housing assistance and employment earnings information for all ISP recipients (box 2).[9]

The estimation dataset comprised a series of linked annual cross-sections, with each cross-section consisting of ISP recipients aged between 16 and 65 active at June 30 of each year. Recipients of the Age Pension are not included due to the focus on employment status.

9 Employment status is inferred from earnings information in RED.

Box 2 The Research and Evaluation Database

The Research and Evaluation Database (RED) is a large administrative database maintained by the Department of Employment. It consists of confidentialised information about eligibility for, and receipt of, income support payments (ISPs) over time. These longitudinal data include changes in individuals' circumstances over time that affect ISPs and housing assistance. Any changes in employment-related earnings are recorded.

As an administrative database, RED provides comprehensive coverage of ISP recipients and, because of its size, allows the examination of detailed population subgroups. RED also identifies recipients of Commonwealth Rent Assistance (CRA) directly, which is a distinct advantage when compared with other sources, such as the Housing, Income and Labour Dynamics in Australia survey, in which CRA status must be imputed.

RED also has a number of limitations. First, it does not include information about ISP recipients' highest level of education. To the extent that education remains constant over time, this is taken into account in the fixed effects model, discussed below. Second, the number of hours worked by ISP recipients is an unreliable variable as it is not collected for all ISP recipients, and was not mandatory for any ISP recipients prior to July 2006. This precluded analysis of the relationship between housing assistance and hours worked.

Third, RED only includes individuals receiving ISPs, so does not include all working age recipients of housing assistance. Specifically, RED does not include information about: public housing residents who do not receive an ISP; recipients of Department of Veterans' Affairs pensions; and people who receive CRA because they receive Family Tax Benefit Part A but do not receive an ISP. Excluding these groups from an analysis of the links between housing assistance and participation in employment may be justified on the basis that:

- public housing residents who do not receive an ISP are likely to be paying market rents, and therefore not receiving a housing subsidy that might reduce their incentive to work
- a large majority of Department of Veterans' Affairs pensioners are older than 65 years of age (DVA 2014)
- people who do not receive income support but are eligible for CRA because they receive Family Tax Benefit Part A are not included in all RED tables, and so cannot be included in the multivariate analysis. This group accounts for about 14 per cent of the CRA population, has relatively high rates of employment, and typically lives in households with higher incomes than ISP recipients (chapter 3 in volume 1 of this report).

Fourth, as noted above, RED does not allow the separate identification of community housing recipients. This is a comparatively small group of ISP recipients who are likely to face similar incentives to those residing in public housing, even though they are in receipt of CRA.

Finally, RED does not specifically identify working age ISP recipients who live with their parents who receive housing assistance. However, it is possible to link some young ISP recipients (aged 16–24) to their parents who also received an ISP, and assign the young ISP recipient their parent's housing assistance status. Linking is made possible by virtue of the fact that a parent had previously applied either for Family Tax Benefit Part A or Child Care Rebate payments. Linked parents and children who live in the same (SA1) geographic region are assumed to be living together. This work is discussed later in this section.

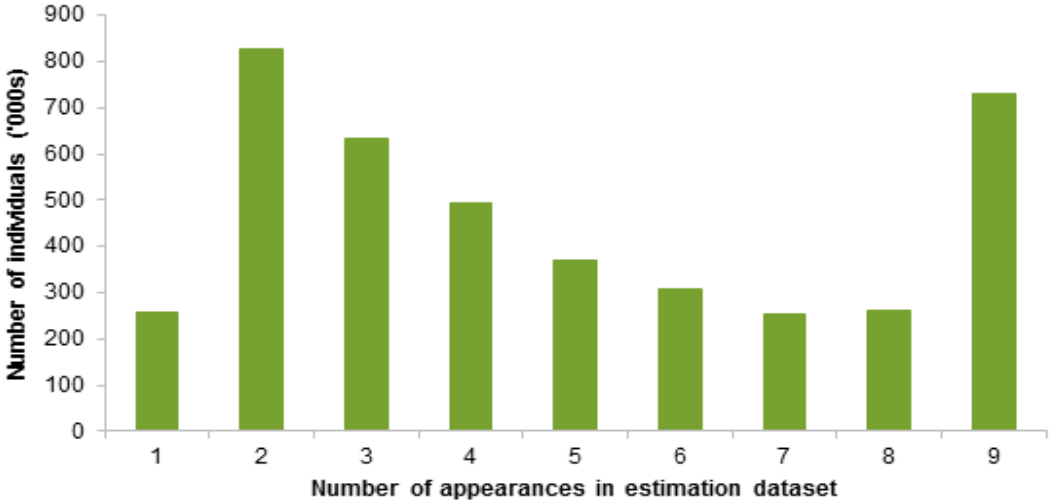
Data for the years between 2004 and 2013 were initially extracted from RED. People who were receiving an ISP at 30 June of a given year were included in this data extraction. However, the housing assistance status variable used in the analysis was lagged by one year,

to address the potential for reverse causality, meaning that the estimation dataset spans from 2005 to 2013. (Reverse causality and the use of lagged housing assistance as an approach to addressing this problem are discussed in section 3.) As a result of using lagged housing assistance status, people must appear in RED at 30 June in two consecutive years to be included in the estimation dataset — that is, information about their housing assistance at 30 June of the previous year as well as contemporaneous information for other variables, must be available.

The estimation dataset comprised over 18 million observations of over 4.1 million working age ISP recipients between the years 2005 and 2013. On average, there were around 2 million individual observations in each year of the dataset. While RED provides information on ISP recipients from 1998 onwards, the lack of a reliable housing assistance variable prior to late 2002 and the size of the database precluded using all available observations.

The panel data are not balanced. While around 18 per cent of ISP recipients are present in all years of the panel dataset, the remainder appear only in a portion of the panel because they transition into and out of the longitudinal dataset over time (figure 1). Given that RED contains a comprehensive representation of ISP recipients at any point in time, the transitions out of the data represent people dying, reaching retirement age or moving off income support as their income changes. It is not possible to ascertain whether income support ceases because people become employed or for other reasons.

Figure 1 **Number of times a person appears in the data, 2005–2013[a]**



[a] Number of ISP recipients aged 16–65 at 30 June of each year. Individuals who make a single appearance in the estimation dataset have one contemporaneous observation and were in the dataset at the preceding 30 June (so their housing assistance status at that point is known).

Source: Author estimates, Research and Evaluation Database.

Variables drawn from RED and used in the estimation dataset are described in table 1.

Table 1 **Variables used in housing assistance analysis**

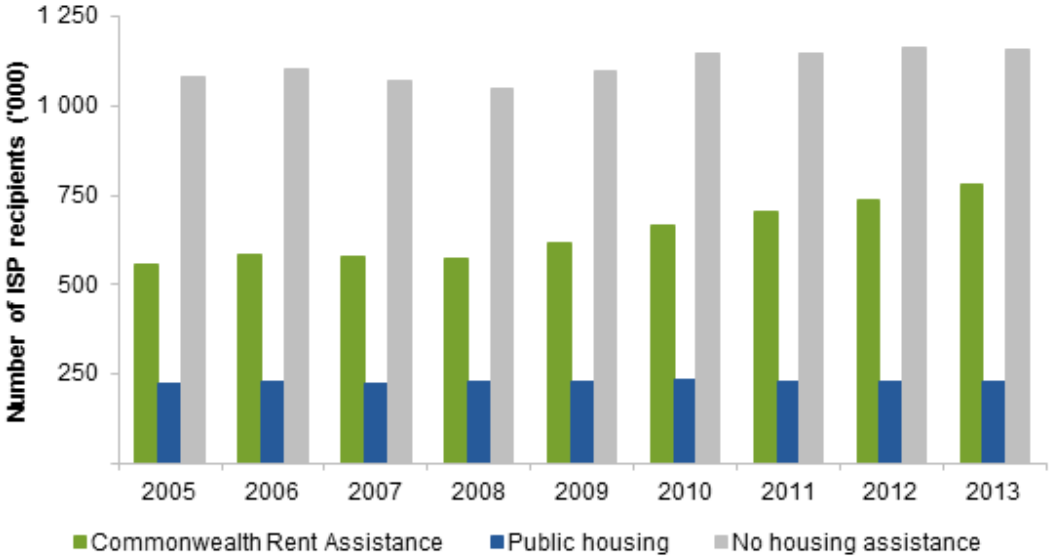
Variable	*Definition*
Employment	Indicates employment status, imputed from reported earnings.
Age group	Age group in a given year.
Female	Indicates if an ISP recipient is female.
Married/de facto	Indicates if an individual is married or in a de facto relationship. The variable is binary, with the default category being 'single'.
Indigenous	Indicates if an individual identifies as an Aboriginal or Torres Strait Islander.
English as preferred language	Indicates if an individual's preferred spoken language for communication is English.
Dependent children, aged 0–4	Number of dependent children under the age of 5.
Dependent children, aged 5–14	Number of dependent children aged between 5 and 14 years.
Medical condition	Indicates if an individual has been assessed as suffering from a medical condition that impairs their work capacity. These assessments are made for people who receive a Disability Support Pension or who apply for a variation to their activity requirements while receiving another ISP. People may suffer from unobserved medical conditions that are not recorded by this variable.
Housing assistance	Indicates if a person had rented from a state housing authority, whether they — or their partner — received CRA, or whether they did not receive any housing assistance. The housing assistance variable is lagged by one year.
ISP type	Indicates the income support payment received by the individual.
State	State or territory of residence.
Region	Indicates if an individual resides in a major city, an inner regional, outer regional area, or a remote or very remote region.[a]
Number of address changes	Number of postcode changes recorded within the preceding year. Used as an indicator of an individual's stability of residence.
Neighbourhood disadvantage	Neighbourhood disadvantage is based on the Index of Relative Socioeconomic Disadvantage (IRSD) (ABS 2013), which ranks geographic areas in terms of the relative disadvantage of their residents. A lower score indicates greater disadvantage. The decile of IRSD score assigned to the Statistical Area level 1 (SA1 level) in which an individual lives is used in the regression models presented below.[b,c]

[a] Region is classified according to the ABS Remoteness Structure(ABS 2010). Remote and very remote regions are combined due to a comparatively small number of observations. [b] The IRSD is an index value assigned to the geographical area in which an individual lives. It is based on the characteristics of the population living in an area such as the prevalence of unemployment and low-skilled employment, low income and/or overcrowded households, single parent families, people with disability, low levels of education and/or poor English skills and a lack of access to cars and the internet among residents. [c] The SA1 level is the most disaggregated geographical unit for which the IRSD is available. Under the 2011 Australian Statistical Geography Standard there were over 54 000 different SA1 areas across Australia, with an average population of 400 people.

Characteristics of people in the estimation dataset

On average, there were around 640 000 CRA recipients, 230 000 residents of public housing and 1.1 million ISP recipients who did not receive housing assistance included in the estimation dataset at 30 June of each year (figure 2).

Figure 2 **Number of ISP recipients, by housing assistance status, at 30 June 2005–2013[a,b]**



[a] Number of ISP recipients aged 16–65 at 30 June of each year. [b] Housing assistance status is a lagged variable and indicates an individual's housing assistance at June 30 of the preceding year.

Source: Author estimates, Research and Evaluation Database.

Housing assistance status is not static, with between 10 and 12 per cent of ISP recipients changing housing assistance status each year (table 2). For example, about 4–4.5 per cent of public housing residents exit public housing and become CRA recipients, and between 1.6–2.5 per cent of CRA recipients enter public housing in any given year.

Table 2 **Housing assistance transitions, 2005–2013[a,b]**

Current housing assistance status by housing assistance status in preceding year

Lagged housing assistance	*Current housing assistance*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*
CRA	CRA	469 627	486 218	481 812	479 646	517 608	565 548	599 728	630 326	670 542
	Public housing	12 696	14 644	14 289	12 817	11 479	11 401	11 707	12 075	12 655
	No housing assistance	73 959	82 716	82 493	78 830	85 804	91 850	90 971	94 287	96 368
Public housing	CRA	9 962	9 442	9 183	9 255	10 354	9 963	9 961	9 226	9 421
	Public housing	206 099	208 673	207 724	208 917	210 752	213 089	211 188	212 114	212 550
	No housing assistance	7 622	8 074	8 896	8 105	8 942	8 693	8 973	8 326	9 057
No housing assistance	CRA	83 008	91 363	93 022	97 796	116 946	123 207	122 553	127 320	132 974
	Public housing	10 877	12 379	12 800	12 770	12 918	13 226	12 437	13 621	14 162
	No housing assistance	988 885	997 124	964 717	938 777	966 621	1 008 499	1 014 792	1 024 161	1 013 161
No. of individual observations		1 862 735	1 910 633	1 874 936	1 846 913	1 941 424	2 045 476	2 082 310	2 131 456	2 170 890

a Number of ISP recipients aged 16–65 at 30 June of each year. **b** Lagged housing assistance indicates an individual's housing assistance at June 30 of the preceding year.

Source: Author estimates, Research and Evaluation Database.

The characteristics of the people in each wave of the longitudinal dataset have remained stable across waves. As a result, the demographic characteristics of a particular wave can be viewed as a reasonable representation of characteristics in other waves.

ISP recipients living in public housing differ from those either receiving CRA or not receiving housing assistance in several ways that are likely to be related to employment (table 3). These differences are reasonably consistent in each wave of the dataset. For example, in each wave, public housing residents are more likely to be older, be of an Indigenous background, receive the DSP, suffer a medical condition or reside in areas of relative disadvantage.

Table 3 **Characteristics of ISP recipients by type of housing assistance, 30 June 2013[a]**

		No housing assistance		*Commonwealth Rent Assistance*		*Public housing*	
	Unit	*Mean*	*sd*	*Mean*	*sd*	*Mean*	*sd*
Employed	Per cent	18.9		19.8		9.8	
Age							
Aged 15 to 19	Per cent	9.3		1.2		0.4	
Aged 20 to 24	Per cent	17.6		12.4		3.7	
Aged 25 to 34	Per cent	16.3		26.7		14.7	
Aged 35 to 44	Per cent	14.5		24.8		23.3	
Aged 45 to 54	Per cent	16.3		19.1		28.8	
Aged 55 to 65	Per cent	25.9		15.8		29.2	
Female	Per cent	55.3		62.0		62.7	
Married/de facto	Per cent	30.5		19.9		23.6	
Indigenous	Per cent	13.2		10.8		18.0	
English as preferred language	Per cent	91.3		93.0		90.0	
Parent	Per cent	21.2		36.3		30.3	
Children aged less than 5[b]	Number	0.7	0.8	0.7	0.8	0.6	0.8
Children aged 5 to 14[b]	Number	1.1	1.0	1.2	1.0	1.5	1.1
Medical condition	Per cent	40.6		41.2		58.5	
Income support payment							
Disability Support Pension	Per cent	32.0		30.5		52.4	
Newstart Allowance	Per cent	25.2		29.3		20.7	
Parenting Payment (Single)	Per cent	6.9		16.5		10.5	
Parenting Payment (Partnered)	Per cent	3.5		5.3		2.6	
Youth Allowance (Student)	Per cent	11.3		6.1		0.2	
Youth Allowance (Jobseeker)	Per cent	6.7		1.9		0.6	
Carers Payment	Per cent	9.3		6.6		10.1	
Other[c]	Per cent	5.0		3.8		2.9	

(Continued next page)

Table 3 (continued)

		No housing assistance		Commonwealth Rent Assistance		Public housing	
	Unit	*Mean*	*sd*	*Mean*	*sd*	*Mean*	*sd*
State							
NSW	Per cent	32.6		33.7		32.6	
Vic	Per cent	27.5		23.3		20.0	
Qld	Per cent	18.6		24.2		17.0	
SA	Per cent	8.7		7.7		11.5	
WA	Per cent	7.4		7.2		10.1	
Tas	Per cent	3.4		2.9		3.9	
NT	Per cent	1.0		0.4		2.4	
ACT	Per cent	0.7		0.6		2.5	
Region							
Major city	Per cent	64.5		64.7		68.5	
Inner regional	Per cent	21.8		24.0		17.1	
Outer regional	Per cent	11.2		10.3		10.2	
Remote or very remote	Per cent	2.5		1.0		4.2	
Address changes in previous year							
None	Number	80.6	0.4	70.0	0.5	89.7	0.3
1 change	Number	12.8	0.3	21.0	0.4	7.0	0.3
2 changes	Number	4.2	0.2	5.8	0.2	2.1	0.2
3 or more changes	Number	2.3	0.2	3.1	0.2	1.2	0.1
SA1 IRSD decile[d]	Decile	5.6	2.7	5.5	2.7	4.1	2.4
Number of observations	Number	1 160 297		779 565		231 028	

[a] The housing assistance variable indicates housing assistance status at 30 June 2012. The use of lagged variables is discussed in section 3. [b] The average number of children in the care of a parent. [c] Other payments include a range of less common income support payments, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy. [d] The average decile of the Index of Relative Socioeconomic Disadvantage at the Statistical Area 1 geographic unit level. A lower decile indicates greater disadvantage.

In contrast, CRA recipients tend to have characteristics more similar to those of ISP recipients who receive no housing assistance. For instance, in all waves, the likelihood of having a medical condition is similar across both groups, as are the socioeconomic characteristics of the areas in which they live. That said, there are some differences between CRA recipients and ISP recipients who do not receive housing assistance. For example, CRA recipients are more likely to be single, and are more likely to have moved in the last year than are ISP recipients who do not receive any housing assistance.

Young people living with parents or guardians

As mentioned above, the employment of people living with parents or guardians may be negatively affected by rent setting rules in public housing.[10] While rules relating to younger household members vary, all states include the incomes of some younger members in determining the rent paid by a household living in public housing. Table 3.2 in volume 1 of this report presents a summary of differences in how the income of young people is treated in setting households' public housing rents.

The RED data do not directly identify working age young people who receive an ISP and live with parents who receive housing assistance. In order to assess if parental housing assistance has any effect on the employment of younger household members, it is necessary to infer the housing assistance status of some young people from their parents' information.

Data for ISP recipients aged between 16 and 24 can be linked to that of their parents who also receive an ISP. While there is no direct information about whether the younger ISP recipients reside at the same address as their parents, they are assumed to live with their parents if they reside in the same Statistical Area Level 1 (SA 1) region.[11]

Young ISP recipients living with parents in public housing are less likely to work than those living with their parents in other housing tenures (table 4). They are more likely to be Indigenous, live in an area of high disadvantage, or have a medical condition. They are less likely to be receiving the Youth Allowance (Student) payment.

10 The term 'parents' is used to refer to both parents and guardians.

11 There are around 54 000 SA1s across Australia, with each area including an average of around 400 people (ABS 2010).

Table 4 **Characteristics of young ISP recipients living at home by their parent's type of housing assistance, 30 June 2013[a]**

		No housing assistance		*Commonwealth Rent Assistance*		*Public housing*	
	Unit	*Mean*	*sd*	*Mean*	*sd*	*Mean*	*sd*
Employment	Per cent	24.1		19.1		13.7	
Female	Per cent	50.0		50.0		47.8	
Married/de facto	Per cent	2.8		2.9		3.5	
Indigenous	Per cent	13.4		18.5		28.4	
English as preferred language	Per cent	98.7		97.1		98.8	
Parent	Per cent	5.7		8.3		10.6	
Children aged less than 5[b]	Number	1.2	0.5	1.2	0.5	1.2	0.5
Medical condition	Per cent	20.4		20.9		28.2	
Income support payment							
Disability Support Pension	Per cent	14.1		12.9		19.2	
Newstart Allowance	Per cent	9.1		8.7		10.7	
Parenting Payment (Single)	Per cent	3.8		6.2		7.5	
Parenting Payment (Partnered)	Per cent	1.0		0.9		1.2	
Youth Allowance (Student)	Per cent	46.7		34.4		22.5	
Youth Allowance (Jobseeker)	Per cent	21.2		30.1		30.4	
Carers Payment	Per cent	2.9		4.5		5.5	
Other[c]	Per cent	1.2		2.3		3.0	
State							
NSW	Per cent	34.2		39.6		34.1	
Vic	Per cent	32.7		23.5		21.9	
Qld	Per cent	14.6		21.9		17.8	
SA	Per cent	8.2		6.8		9.2	
WA	Per cent	5.8		5.5		9.5	
Tas	Per cent	2.8		2.3		3.1	
NT	Per cent	1.3		0.2		2.5	
ACT	Per cent	0.4		0.2		1.9	
Region							
Major city	Per cent	70.8		67.7		71.8	
Inner regional	Per cent	17.6		22.1		15.0	
Outer regional	Per cent	8.8		9.2		8.4	
Remote or very remote	Per cent	2.8		1.0		4.7	
SA1 IRSD decile[d]	Decile	5.4	2.7	5.2	2.6	4.0	2.4
Number of observations	Number	49 283		37 047		24 542	

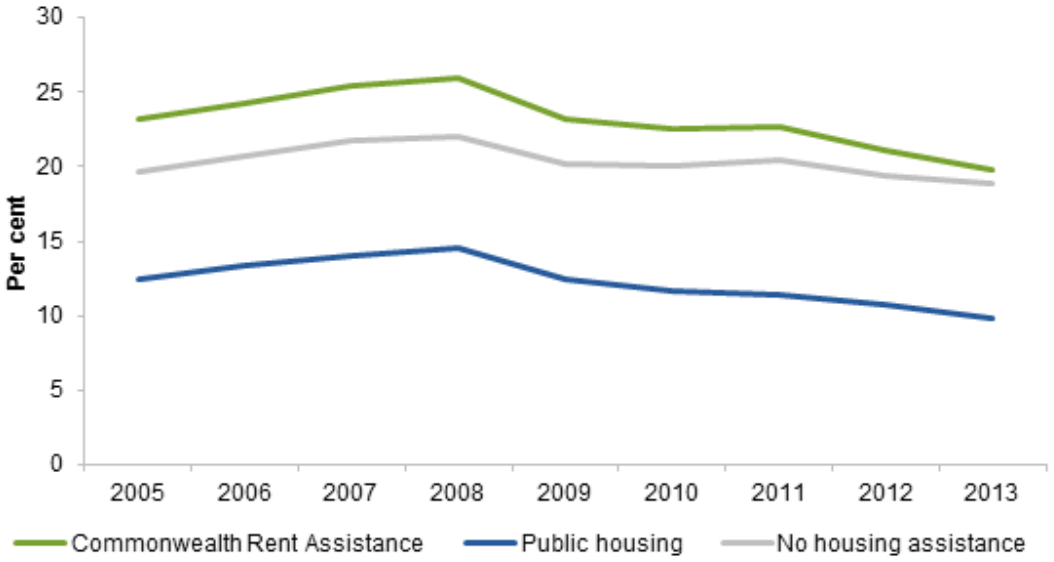
[a] Housing assistance indicates an individual's parent's housing assistance status at 30 June 2012. The use of a lagged housing assistance variable is discussed in section 3. [b] The average number of children in the care of a parent. [c] Other payments include a range of less common income support payments, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy. [d] The average decile of the Index of Relative Socioeconomic Disadvantage at the Statistical Area 1 geographic unit level. A lower decile indicates greater disadvantage.

Housing assistance and employment

Public housing tenants were consistently less likely to be in work than other ISP recipients over the period considered in this study. On average, around one in five ISP recipients reported earning income from employment at 30 June of each year between 2005 and 2013 and are considered as being employed (figure 3). The average figure for those residing in public housing was substantially lower, at approximately 12 per cent.

Figure 3 **Employment rates, by housing assistance status, 2005 to 2013[a,b]**

Per cent



[a] ISP recipients aged 16–65 at 30 June of each year. [b] The housing assistance variable indicates housing assistance status in the previous year. The use of lagged variables is discussed in section 3.

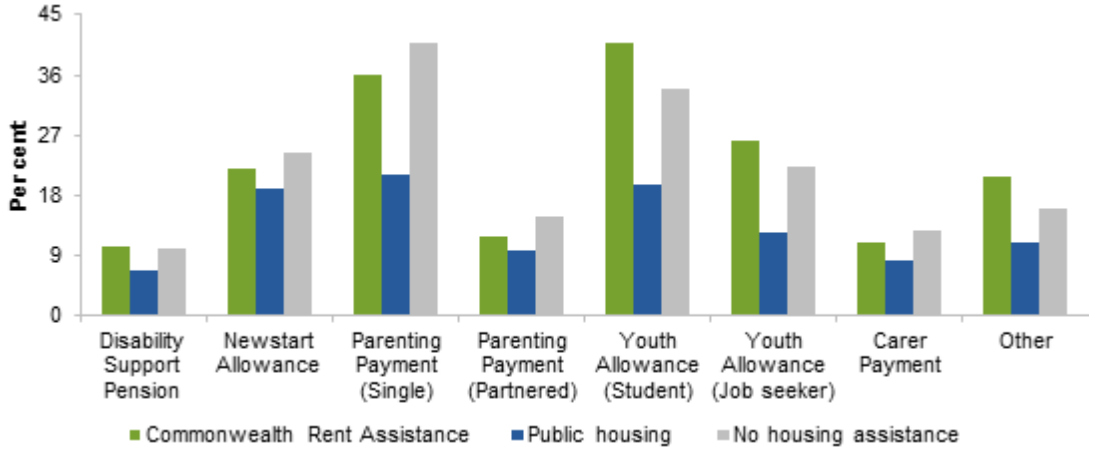
Source: Author estimates based on the Research and Evaluation Database.

Although rates of employment vary considerably across different types of income support, public housing residents record lower employment rates than CRA recipients and other income support recipients who do not receive housing assistance across all ISP types (figure 4).

The rates of employment of young ISP recipients (aged 16–24) living at home with parents who also receive an ISP, appear to be related to their parents' housing assistance status. Across all ISP types, between 2005 and 2013 young recipients living with their parents in public housing had lower employment rates than their peers in other tenures (figure 5). Overall, about 15 per cent of young ISP recipients living with parents in public housing were employed, compared to around 21 per cent of children living with parents who receive CRA and 26 per cent of those living with parents who were not receiving housing assistance.

Figure 4 **Employment of housing assistance recipients by income support payment type, 2005 to 2013[a,b,c]**

Per cent

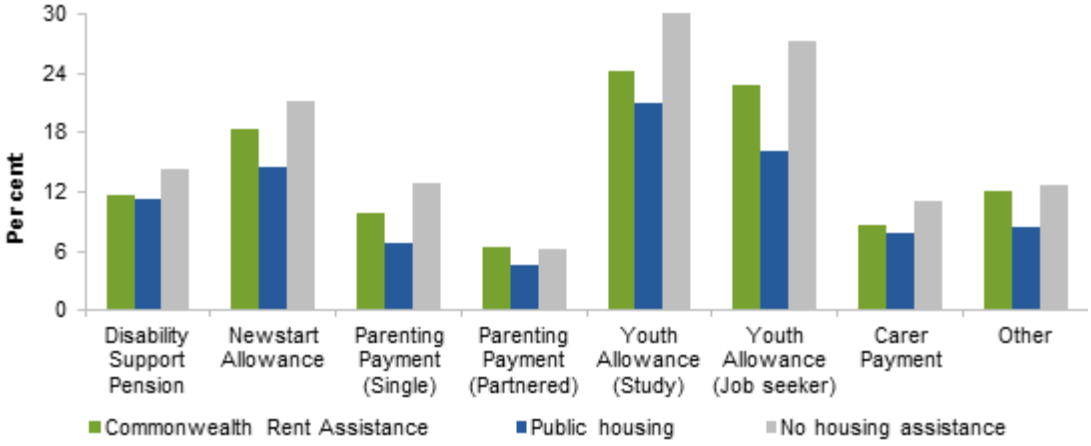


[a] ISP recipients aged 16–65 at 30 June of each year. [b] The housing assistance variable indicates housing assistance status in the previous year. The use of lagged variables is discussed in section 3. [c] Other payments include a range of less common ISPs, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates, Research and Evaluation Database.

Figure 5 **Employment of young ISP recipients living at home, by parents' housing assistance status, 2005 to 2013[a,b,c]**

Per cent



[a] ISP recipients aged 16–24 at 30 June of each year. [b] Housing assistance indicates an individual's parent's housing assistance status in the previous year. The use of a lagged housing assistance variable is discussed in section 3. [c] Other payments include a range of less common income support payments, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates, Research and Evaluation Database.

3 Modelling the relationship between housing assistance and employment

To test whether housing assistance affects employment, other characteristics of housing assistance recipients that are typically associated with employment have to be taken into account. Regression analysis allows the relationship of each factor with employment to be individually quantified.

To evaluate whether the financial incentives created by housing assistance affect employment, the incentives would ideally be taken into account explicitly in the modelling. This could be achieved by incorporating a measure of the financial incentives faced by each individual into a model of employment. This would allow, for example, the effect of public housing on employment through a stability effect to be examined separately from the effect of public housing through the financial effect. However, this was not possible within the timeframe of this project. Instead, as per Whelan (2004), a 'reduced form' approach is adopted, where the overall effect of the receipt of housing assistance on employment is estimated by including variables indicating whether someone receives CRA, lives in public housing, or receives no housing assistance.

This section outlines the approach to modelling the relationship between housing assistance and employment. The employment model, and the control variables that are included are discussed first. A simple pooled cross-sectional model that adjusts for observed differences between ISP recipients is then outlined. The pooled cross-sectional model permits estimation of the employment rates of people with different housing assistance status that are adjusted for differences in their observed characteristics. This is followed by a discussion of possible endogeneity between employment and housing assistance and how it is dealt with; and the potential for unobserved characteristics to affect results. The fixed effects model used to counter bias associated with unobserved characteristics is then presented.

A model of employment and housing assistance

As discussed above, people make decisions about whether or not to participate in work by comparing the benefits and costs of working (box 1). The reduced form model does not specifically include these benefits and costs, but examines the relationship between receipt of housing assistance — which is hypothesised to reduce the relative benefits of working — and the likelihood of observing employment. The relationship between employment, housing assistance and a series of control variables can be represented by a 'latent' variable approach[12], similar to that presented in Whelan (2004) and Whelan and Ong (2008).

[12] The latent variable approach is a way of relating independent variables to a binary dependent variable. The latent variable $E^*_{i,t}$ can be thought of as a continuous variable indicating a person's underlying propensity for employment, as inferred from equation [1]. Where this propensity for employment is positive ($E^*_{i,t} > 0$) an individual is predicted to be employed ($E_{i,t} = 1$). Likewise, where an individual's

$$E^*_{i,t} = X'_{i,t}\beta + HA'_{i,t-1}\gamma + Y'_t\varphi + \mu_{i,t} \quad \text{for } t = 1, \ldots, T \text{ and } i = 1, \ldots, N \qquad [1]$$

$$E_{i,t} = \begin{cases} 1 \text{ if } E^*_{i,t} > 0 \\ 0 \text{ if } E^*_{i,t} \leq 0 \end{cases} \qquad [2]$$

In this model:

- $E_{i,t}$ is a binary variable indicating whether individual *i* is in paid employment at 30 June of year *t.*
- $X_{i,t}$ indicates a vector of individual characteristics, and location and neighbourhood variables that might affect an individual's likelihood of employment. These characteristics act as control variables, isolating the effect of housing assistance on employment.
- $E^*_{i,t}$ is a latent variable used to relate explanatory variables in equation [1] with the binary employment status variable, $E_{i,t}$.
- $HA_{i,t-1}$ is a vector of binary variables indicating whether an individual received CRA, was a resident of public housing or received no housing assistance at 30 June of the preceding year.
- Y_t is a vector of binary variables indicating the year an observation was recorded, designed to control mainly for the effect of changes to policies and labour market conditions.
- β, φ and γ are vectors of parameters to be estimated, and $\mu_{i,t}$ is a randomly distributed error term.

In the analysis presented below, this model of employment and housing assistance is implemented as a logistic model, rather than a probit model (as in Whelan 2004 and Whelan and Ong 2008). This is similar to the approach taken by Dockery, Ong and Wood (2008). While there is little practical difference in the two approaches, the logit model is preferred as it allows for the comparison of results with the fixed effects logit model below.[13]

Control variables

In the estimations of this model presented below, the control variables — indicated by $X'_{i,t}$ above — are consistent with those typically included in analyses of labour supply, and in previous analyses of the relationship between housing assistance and employment (including Dockery, Ong and Wood (2008), Whelan and Ong (2008), and Whelan (2004)).

propensity for employment is equal to or less than zero ($E^*_{i,t} \leq 0$), they are not predicted to be in employment ($E_{i,t} = 0$). See Wooldridge (2002) for a technical explanation of latent variable models.

13 The choice of logit or probit model makes little difference to the results reported here. When calculated with a probit model (using pooled cross-sectional data), the marginal effect of public housing on employment is 6.0 per cent. In comparison the same marginal effect using a logit model is 6.3 per cent.

Control variables include a range of factors expected to affect employment (table 1). Age is included as a categorical variable, with categories selected to account for the impact of crucial states of a person's working life on employment decisions. This treatment of age allows for the inclusion of year variables.

A series of interaction variables are included in the modelling, allowing the effect of housing assistance to vary by state and ISP. The model is estimated both with and without these interaction terms. There are about 70 explanatory variables in the model with interaction terms, and about 40 in the specification without them.

Several variables included in other research are not included in the final specification. Non-work income was excluded as it directly affects the eligibility for and receipt of housing assistance. Partner income was not included due to difficulties in establishing a reliable indicator in RED.[14] Both of these variables were found to have a small and statistically insignificant effect on employment by Dockery, Ong and Wood (2008).

More importantly, RED does not include sufficient information to account for the effect of differences in the level of education on the employment prospects of ISP recipients. RED includes only limited information about the educational attainments of recipients of Newstart Allowance, Youth Allowance and Austudy payments who have undertaken further education in order to meet the activity requirements associated with receipt of those payments. The absence of this information and the potential for omitted variable bias is discussed below.

Pooled cross-sectional estimation

Using the economic model of employment described above, the conditional probability of individual *i* being employed at time *t* can be expressed as:

$$E\left(E_{i,t} = 1 \,\middle|\, X_{i,t}, HA_{i,t-1}, Y_t\right) = F(X'_{i,t}\beta + HA'_{i,t-1}\gamma + Y'_t\varphi), \quad \text{for} \quad t = 1, \ldots, T \qquad [3]$$

where F(.) represents the logistic function that is consistent with the distribution of $\mu_{i,t}$ in equation [1].

To the extent that X accurately reflects differences in individuals' characteristics, location and neighbourhood, the γ coefficients represent the impact of housing assistance on the likelihood of employment.

The pooled data include multiple observations of the same people across time, meaning that observations in the pooled data are not independent. To account for this, the pooled cross-sectional model was estimated using robust standard errors.

[14] An indicator of whether a partner also received an ISP was examined, but was found to be highly collinear with marital status.

Endogeneity of employment and housing assistance

Modelling of the relationship between housing assistance and employment using regression analysis is complicated by the potential endogeneity of housing assistance.[15] Dockery et al. (2008) identify two possible sources of endogeneity that need to be addressed in order to obtain unbiased estimates of the effect of housing assistance on employment, namely:

- reverse causality of housing assistance and employment
- unobserved characteristics of housing assistance recipients.

Reverse causality

The research hypothesis stated in section 1 assumes a causal relationship between housing assistance and employment — housing assistance alters an individual's incentive to work, thereby affecting their employment status. However, the reverse is also possible — an individual who gains employment may earn sufficient income to become ineligible for housing assistance.

The longitudinal nature of RED allows the use of lagged housing assistance to address the problem of reverse causality, as per Dockery et al. (2008). When an individual's employment income affects the rent that they pay for public housing, the causality is clear: their employment status affects their housing assistance. However, if employment at a given point in time (time *t*) is modelled as a function of an individual's housing assistance status in the preceding time period (time *t-1*), then employment in the current time period cannot 'cause' housing assistance in the previous period. As with the employment model presented by Dockery et al. (2008), the possibility of reverse causality is addressed by lagging housing assistance status by one year in the models presented in this paper.[16]

Unobserved characteristics of housing assistance recipients

Where the receipt of housing assistance and employment are affected in a systematic way by unmeasurable or unobserved factors — such as motivation or education — the estimated effect of housing assistance on employment can be biased.[17] That is, estimates of the effect

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15 Endogeneity refers to correlation between a dependent variable and the error term, that results in a biased coefficient. It is necessary to account for possible endogeneity to ensure that the coefficient associated with a particular variable is unbiased.

16 Shorter lag periods were examined using monthly panels of data, but involved insufficient variation to obtain meaningful results.

17 Unobserved factors are all factors that are not included in the available dataset. In comparison, unobservable factors are all factors that are unmeasurable and can therefore never be observed. Omission of unobserved (and unobservable) factors will bias the coefficients on the observed factors where they are correlated with the observed factors. If uncorrelated, then the absence of factors that do matter for the outcomes from the model increases the standard error.

of housing assistance on employment will reflect both the relationship between housing assistance and employment, and the relationship between unmeasurable or unobserved factors and employment.

For example, the severity of a disability affects employment prospects among people with a disability (Wilkins 2003). At the same time, DSP recipients with a severe disability may be more likely to be allocated public housing and less likely to be employed than those with a moderate disability. However, information about the severity of an individual's disability is unobserved. This means that any observed association between housing assistance and employment could incorporate both the effect of housing assistance *and* level of disability.

The administrative data used do not include information on some potentially important correlates of employment and housing assistance, such as education and mental health status. As a result, there is potential for the measured effect of housing assistance on employment to be biased.

Two strategies were used to minimise bias associated with unobserved characteristics:

- As many relevant independent variables as possible were included in the model in order to minimise the likelihood of unobserved variable bias.
- The panel nature of the data was exploited through the use of fixed effects models to examine how an individual's housing assistance affects their employment status after taking into account unobserved characteristics that remain constant across time.

Limiting the sample to ISP recipients — as is necessarily the case when using RED — will limit the variation attributable to unobserved factors to some extent, given that receipt of an ISP (or Family Tax Benefit Part A) is a prerequisite for the receipt of CRA(Whelan and Ong 2008; Whelan 2004). However, even within this subpopulation, there is likely to be a selection effect, where unobserved factors affect both an individual's selection into housing assistance and their employment.

Fixed effects models

Panel regression techniques can be used to account for individual differences that do not change over time, irrespective of whether those differences are observed or not. In a fixed effects model, assuming that those differences are constant over time, and observing an individual over time, any variation in employment is attributed to the observed characteristics that do vary over time.

In the panel framework, an individual's probability of employment at time t may be thought of as a function of their observed demographic characteristics (for example, age, marital status, number of children), their housing assistance status and their unobserved individual-specific characteristics (for example, motivation or risk of poor mental health), which are assumed to remain constant over time. In essence, the panel model is an

extension of the cross-sectional model presented above, with the addition of an individual-specific term that is constant over time (c_i):

$$E\left(E_{i,t} = 1 \,\middle|\, X_{i,t}, HA_{i,t-1}, Y_t, c_i\right) = F(c_i + X'_{i,t}\beta + HA'_{i,t-1}\gamma + Y'_t\varphi) \quad [4]$$

for $t = 1, \ldots, T$ and $i = 1, \ldots, N$.

The choice of panel model is dependent on the nature of the individual-specific term. If the expected value of the individual-specific term is equal to zero and randomly distributed given the individuals' characteristics, then a random effects model can be used.[18] If this condition does not hold then a fixed effects model is appropriate. A fixed effects model can therefore be thought of as more flexible than a random effects model, as it places no restrictions on the distribution of the individual-specific term. A fixed effects panel model is used in this instance.[19]

The fixed effects model is estimated using the Chamberlain estimator, a method that allows for the consistent estimation of parameters β, φ, and γ in a way that does not depend upon the individual-specific term, c_i (Chamberlain 1980). Producing estimates of β, φ, and γ that are independent of the individual-specific term relies on characteristics of the logit functional form to remove c_i from the estimation equation (Wooldridge 2002). In practical terms, this means that the parameters can be estimated without knowing or estimating c_i.

There are two limitations to the fixed effects model.

First, where there is little or no variation in a control variable over time, it is not possible to estimate the effect of that variable on employment. For example, it is not possible to quantify the effect that gender has on employment status using a fixed effects model. Any effect of gender is controlled for by the inclusion of the time-invariant fixed effect.

Second, as the individual-specific fixed effect is never estimated, it is necessary to adopt a value for the underlying 'baseline' employment rate in order to calculate the estimated impact of changes to key variables on employment rates. Specifically, in the results from the fixed effects estimation presented below:

- the expected rate of employment of people receiving a particular type of housing assistance in a given state is estimated by multiplying the odds of employment in New South Wales (which is treated as the default state in the logistic regressions) by the estimated odds ratio associated with the type of housing assistance received and the given state of residence

[18] In other words, random effects models assume that each person's individual-specific and time-invariant value for c_i — that represents their unobserved characteristics — is randomly distributed around zero, meaning that the value for c_i is zero for the average person.

[19] Both random and fixed effects models were considered. As per Greene (2008), a Hausman test showed that the data are not consistent with the random effects assumption. A linear model did not fit the data well; nonparametric classification models were not considered within this project because of time constraints.

- the expected rate of employment of people receiving a particular ISP and living in a particular state is estimated by multiplying the odds of employment among Carers Payment recipients by the estimated odds ratio associated with the type of housing assistance and ISP received.

Despite these limitations, the ability to account for time-invariant unobserved characteristics makes the fixed effects model preferable to the pooled cross-section approach. This is primarily because of the absence of information about individual factors that may substantially affect employment in the estimation dataset, and the potential that this biases coefficients in the pooled cross-section model. If unobserved characteristics did not affect employment, there would be no substantial difference between the results from the fixed effects and pooled cross-sectional models.

4 Results

This section presents results from both the pooled cross-sectional and the fixed effects models.

The pooled cross-sectional model takes into account a range of observed characteristics; this model is used to test the extent to which observed characteristics can account for the differences in employment rates between public housing tenants, CRA recipients and other ISP recipients that were observed in section 2. Given the different characteristics of recipients of different ISPs, results are presented separately for different ISP types. Similarly, as rules regarding eligibility, lease terms and rent-setting in public housing vary between the states and have the potential to lead to different employment outcomes, results are also presented for each state.[20] Estimates of the effects of housing assistance on the employment of young ISP recipients who live with their parents are also included, with effects presented for different ISPs separately.

The fixed effects model accounts for observed and unobserved characteristics that do not vary over time as well as the observed differences that do vary. This model is used to test whether the differences in employment rates that were observed in section 2 can be better explained by also accounting for the time-invariant characteristics of ISP recipients. As with the pooled cross-sectional model, results are presented separately for each ISP type and state.

The effect of parental receipt of housing assistance on the employment of children who live at home is not tested using the fixed effects model. This is because it is considered inappropriate to assume that education (an important unobserved variable) remains fixed over time within this cohort.[21] Finally, the relationship between stability of residence and

[20] For example, New South Wales has offered fixed term leases to new tenants since 2006, whereas public housing residents in Victoria have ongoing tenure. Differences in public housing arrangements across states are discussed in section 4 of BP 1.

[21] While it may be reasonable to assume that the education levels of adult ISP recipients remain unchanged over time, this assumption is unlikely to be realistic for many young people.

employment is considered in the context of the preferred, fixed effects model. The potential for neighbourhood disadvantage to affect employment is also briefly examined.

Accounting for observed characteristics: pooled cross-sectional estimates of the relationship between housing assistance and employment

After taking into account the observed characteristics of ISP recipients, this model indicates that public housing tenants are still less likely than other ISP recipients to be employed (annex A, table 1). That is, based on the results in this section, one might conclude that public housing residents are less likely to be employed *as a result of* receiving housing assistance. However, as shown by the fixed effects results below, this conclusion is likely to be incorrect.

Overall, on the basis of the observed characteristics, residents of public housing have a predicted probability of employment net of other factors that is:

- around 6.2 percentage points lower than that of a CRA recipient
- around 6.4 percentage points lower than that of a comparable recipient of income support who receives no housing assistance.

Income support payment type and state of residence

As noted above, the inclusion of interaction terms in the pooled cross-sectional employment model allows housing assistance status to have different effects for people living in different states or receiving different income support types.[22] The predicted probability of employment for public housing residents across both ISP types and states is consistently lower than it is for other ISP recipients.

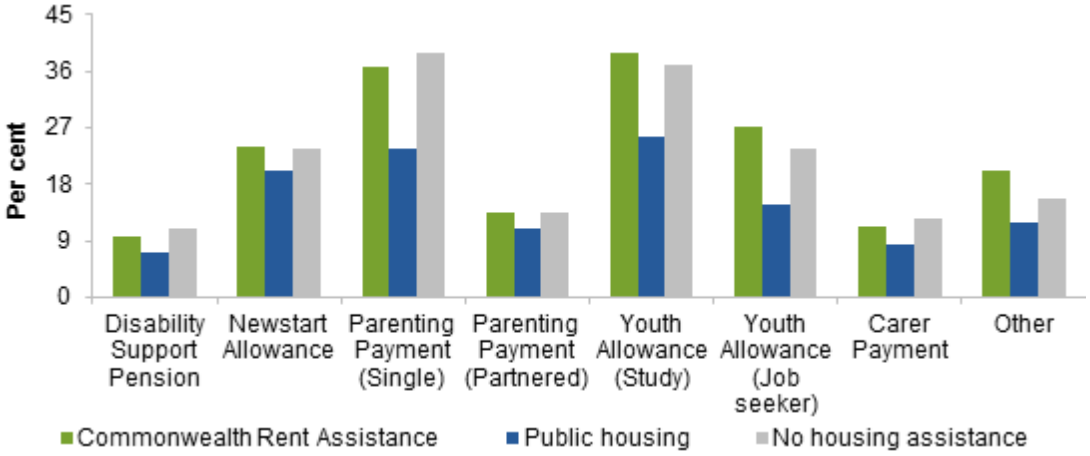
Across ISPs, the predicted employment probabilities vary considerably by housing assistance status (figure 6). For example:

- the predicted employment probability for DSP and Newstart Allowance recipients residing in public housing is around 3.5 percentage points less than the predicted probability for those who do not receive any housing assistance.
- the gap for recipients of Parenting Payment (Single) is about 15 percentage points
- the gap for Youth Allowance recipients is about 11 percentage points.

[22] This is achieved by interacting housing assistance with both the state/territory variables and the ISP variables. Odds ratios for the interaction terms are presented in annex A.

Figure 6 **Predicted probability of employment, by housing assistance type and income support payment type[a,b]**

Average predicted probability of employment



[a] ISP recipients aged 16–65, between 2005 and 2013. Estimates are calculated using a pooled cross-sectional logit model that includes interactions between housing assistance and ISP type. Odds ratios for all covariates are presented in annex A. [b] Other payments include a range of less common ISPs, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

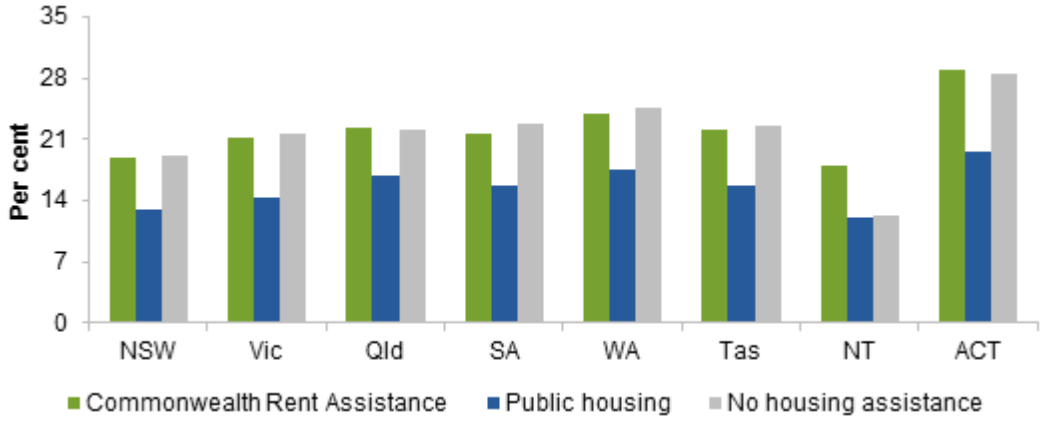
Source: Author estimates, Research and Evaluation Database.

Across most states, the gap in the predicted probability of employment between CRA recipients and public housing residents is between 5.5 and 7 percentage points (figure 7). The exception is the ACT, where CRA recipients can be expected to have an employment rate that is 9.2 percentage points higher than ISP recipients living in public housing.

The predicted probabilities of employment for CRA recipients are similar to those of people who do not receive housing assistance in each of the states and territories, with the exception of the Northern Territory. While the predicted probability of employment of CRA recipients in the Northern Territory is comparable to that in other states (about 18 per cent), the predicted probability of employment for those who do not receive housing assistance is lower than in other states and is almost the same as it is for those living in public housing (12.3 and 12.1 per cent, respectively). The relatively low employment rates among people receiving no housing assistance in the Northern Territory can be explained by the high concentration of Indigenous people and the high proportion of people living in remote areas in the Northern Territory. Indigenous status and remoteness both have large, negative marginal effects on employment (around 5.7 and 3.2 percentage points, respectively).

Figure 7 **Predicted probability of employment, by housing assistance type and state/territory[a]**

Average predicted probability of employment



[a] ISP recipients aged 16–65, between 2005 and 2013. Estimates are calculated using a pooled cross-sectional logit model that includes interactions between housing assistance and ISP type. Odds ratios for all covariates are presented in annex A.

Source: Author estimates, Research and Evaluation Database.

Young people living with parents or guardians

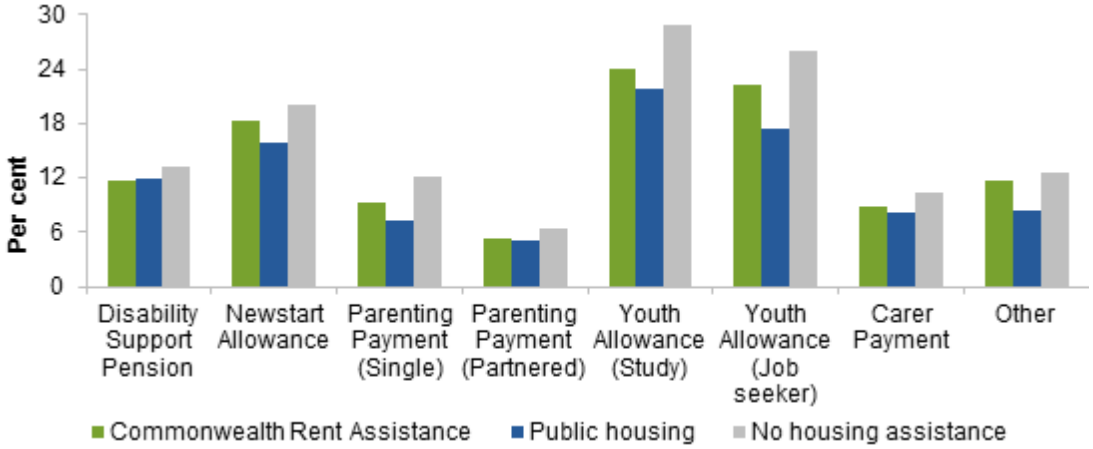
As with the broader population of ISP recipients, after taking into account the characteristics of young people living with parents who receive an ISP, the model still indicates that young ISP recipients who reside with their parents in public housing are less likely to be employed than other ISP recipients.

However, differences in the probability of employment are reduced once observed factors are taken into account, although there remains considerable variation between different ISP types (figure 8). Young people with parents in public housing have a predicted probability of employment, net of other factors, that is:

- around 2.4 percentage points lower than that of comparable children whose parents receive CRA
- around 6.1 percentage points lower than that of comparable children whose parents do not receive any housing assistance.

Figure 8 **Predicted probability of employment of younger household members, by parental housing assistance status[a,b]**

Average predicted probability of employment



[a] ISP recipients aged 16–24, between 2005 and 2013. Estimates are calculated using a pooled cross-sectional logit model that includes interactions between housing assistance and ISP type, and housing assistance and state. [b] Other payments include a range of less common ISPs, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates, Research and Evaluation Database.

Accounting for observed and unobserved characteristics: fixed effects estimates of the relationship between housing assistance and employment

The pooled cross-sectional model shows that residents of public housing have lower predicted probabilities of employment than other ISP recipients, after taking into account observed differences. CRA recipients have slightly lower predicted probabilities of employment than ISP recipients who do not receive housing assistance. However, as discussed above, CRA recipients and residents of public housing may have unobserved characteristics that relate both to the receipt of housing assistance and to the probability of finding employment. If those relationships do exist and the unobserved characteristics are not taken into account, estimates of the effect of housing assistance on employment might be biased.

This section presents results of fixed effects models of the relationship between housing assistance and employment that take into account the time-invariant unobserved characteristics of individuals. The fixed effects estimates in annex A are presented as odds ratios, which represent the strength of an association between employment and the characteristics that determine employment (box 3). As mentioned above, the odds ratios are used to generate expected differences in employment rates for recipients of different types of housing assistance.

Box 3 Interpreting odds ratios

The crude 'odds' of an outcome is the number of times an event is expected to occur, relative to the number of times that event is expected *not* to occur. For example, when rolling a six-sided die, there is a 16.6 per cent chance of rolling a three — a person trying to roll a three can expect to be successful in one of their first six attempts, and unsuccessful in the other five rolls. This means that the odds of rolling a three are 1/5, or 20 per cent.

A change in odds represents a change in the probability of the event occurring. An increase in the odds of an event means that the event is more likely to happen. An increase in the odds of someone finding employment from 0.25 to 0.5 means that their likelihood of finding employment has doubled.

Outputs from logit regressions are often presented as 'odds ratios' — a measure of association between an outcome (such as employment) and a characteristic expected to affect that outcome (such as housing assistance).

An odds ratio greater than one indicates that a person with the associated characteristic is more likely to be employed than a person without the characteristic. The converse applies for an odds ratio less than one. The greater the difference between the odds ratio and one, the larger the relative impact of a characteristic on the likelihood of employment. For example, the pooled cross-sectional estimate of the odds ratio for those living in public housing is reported as 0.617 (table 5). This means that the expected odds of employment — adjusted for all other control variables — among public housing residents are around 0.617 times that of the expected odds of employment among ISP recipients who do not receive housing assistance.

After both observed and unobserved factors are taken into account, the odds ratios associated with the housing assistance variables are found to be close to one (table 5). That is, according to these results, housing assistance has little effect on the probability of employment. Odds ratios for all covariates in the pooled cross-sectional and fixed effects models are presented in annex A, table 1.

Table 5 Association between housing assistance and employment

Crude, pooled cross-sectional and fixed effects odds ratios

Housing assistance	*Crude odds ratio*[a,b]	*Pooled cross-sectional odds ratio*[b]	*Fixed effects odds ratio*
Commonwealth Rent Assistance	1.167	0.980	1.080
Public housing	0.547	0.617	1.015[c]

[a] The crude odds ratio represents the odds of employment among recipients of housing assistance, relative to the odds of employment among ISP recipients who receive no housing assistance. [b] Both the crude and cross-sectional odds ratios are calculated on a pooled sample of observations from 2005 to 2013. The fixed effects odds ratios are the result of the panel model estimated over the period 2005 to 2013. [c] With the exception of the fixed effects odds ratio for public housing, all results are significantly different from one at the one per cent level.

Source: Author estimates using Research and Evaluation Database.

Further, the difference in the odds of employment among ISP recipients living in public housing and those receiving no housing assistance is not statistically significant at the one per cent level. This is despite the very large dataset used, which leads to many other parameter estimates to be significantly different from one at the one per cent level. The odds of employment among recipients of CRA are slightly higher than the odds for those receiving no housing assistance. While the difference is statistically significant, the effect is small and is, therefore, of limited relevance from a policy perspective.

These results are consistent with the observation that the allocation of public housing is targeted at persons in greatest need and that some of the characteristics associated with that level of need are likely to be associated with lower employment rates. In other words, the relatively low probability of employment among ISP recipients living in public housing is related to their individual characteristics rather than their receipt of housing assistance.

Income support payment type and state of residence

While the effect of housing assistance on employment is small in aggregate, it could have a larger effect on some groups. This section considers the possible effect for recipients of different ISPs and across states. As described above, odds ratios are combined with a 'baseline' probability of employment to produce estimates of an effect of housing assistance on employment. This is presented as a percentage point difference relative to the baseline. The odds ratios are presented in annex A, and the baseline probability is the probability of employment for a person in the relevant default category, as described in the notes for figures 9 and 10.

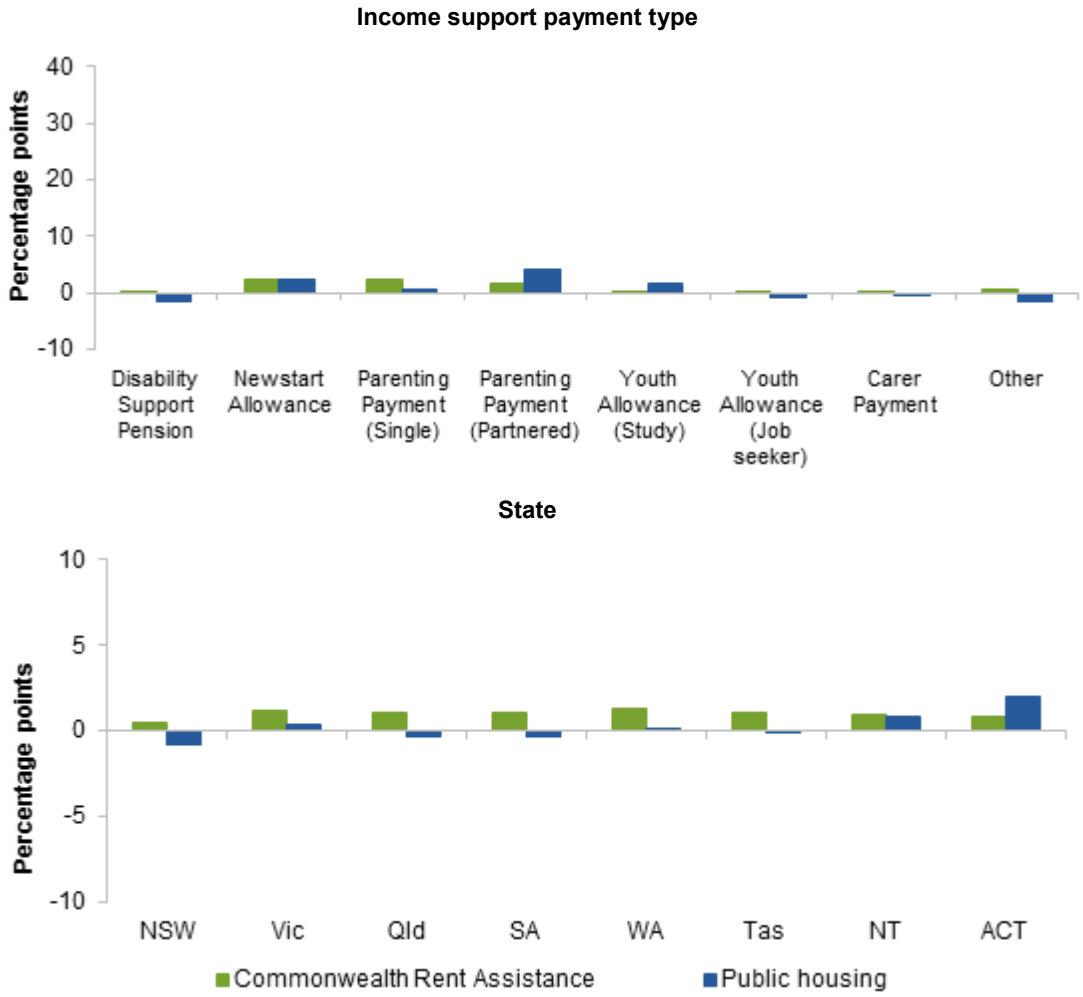
The expected effect of housing assistance on employment is relatively small for most ISP types and states (figure 9).

- Public housing has a small positive effect on employment amongst recipients of Newstart Allowance and Parenting Payment (Partnered) of about 2 and 4 percentage points, respectively. There is little difference in the expected employment probabilities, relative to those not in public housing, for other ISP recipients.
- Public housing is associated with a decrease in employment probability of around 0.8 percentage points in New South Wales and an increase of around 2 percentage points in the ACT. The effect of public housing on employment in all other states lies between -0.3 and 0.9 percentage points.

The differences in expected employment effects between public housing and receipt of CRA are also small. A move from public housing to CRA would be expected to increase the probability of employment by less than one percentage point, although the effect varies slightly across ISPs. A move from public housing to CRA could be expected to increase employment by about 1.8 percentage points for recipients of DSP, and by 1.7 percentage points for recipients of Parenting Payment (Single) payments. The expected effects for all other ISPs are less than 1.2 percentage points (figure 10).

Figure 9 **Expected effect of housing assistance on employment by ISP type and state, 2005–2013[a,b]**

Percentage point difference relative to no housing assistance

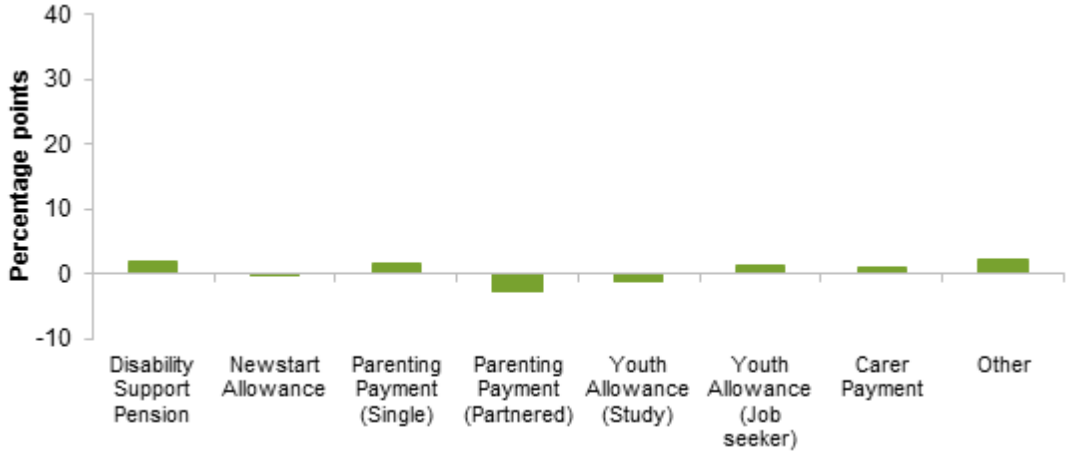


[a] The employment effect of housing assistance is calculated using odds ratios from a fixed effects logit model that includes interaction terms between housing assistance type and ISP, and takes into account unobserved characteristics of ISP recipients. As the odds ratio is a relative measure, the expected effects are calculated on the basis that 12.2 per cent of Carers Payment recipients who do not receive any housing assistance and that 18.3 per cent of ISP recipients in NSW who do not receive any housing assistance are employed. [b] Other payments include a range of less common ISPs, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates, Research and Evaluation Database.

Figure 10 **Expected employment effect of receipt of CRA, relative to public housing by ISP type, 2005–2013[a,b]**

Percentage point difference



[a] The employment effect of housing assistance is calculated using odds ratios from a fixed effects logit model that includes interaction terms between housing assistance type and ISP, and takes into account unobserved characteristics of ISP recipients. As the odds ratio effect is a relative measure, the expected effect is calculated on the basis that 12.2 per cent of Carers Payment recipients who do not receive any housing assistance are employed. [b] Other payments include a range of less common ISPs, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates, Research and Evaluation Database.

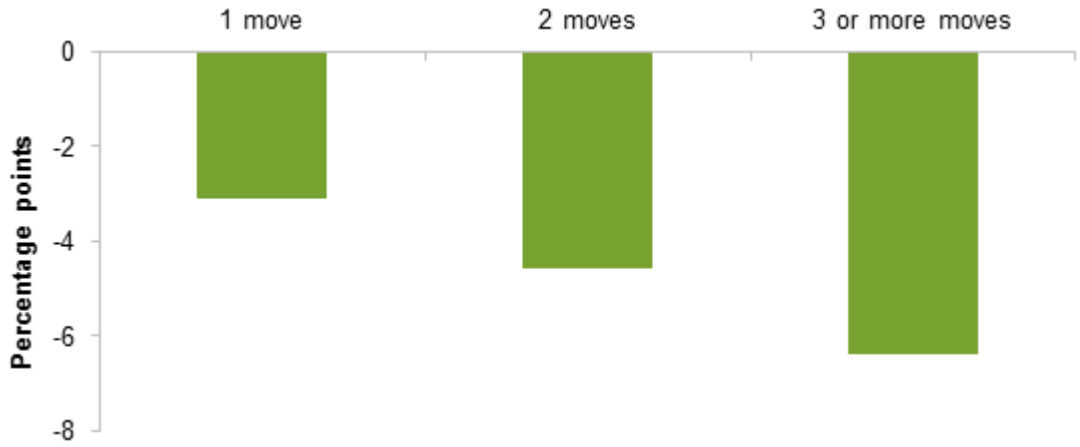
Stability of residence

The stability afforded by secure, ongoing public tenancies may provide public housing residents with better opportunities to find and maintain employment than would otherwise be the case. In the results presented in this paper, stability of residence is indicated by the number of times an individual has moved postcode in the preceding 12 months.

The fixed effects estimates provided evidence that stability is positively related to employment. Even a single move seems to be associated with sufficient disruption to reduce the probability of employment (figure 11). Beyond that, people who had relocated twice in the previous year were 4.6 percentage points less likely to be employed than ISP recipients who had not moved in that time, and those who had moved three or more times were 6.4 percentage points less likely to be employed.

Figure 11 **Expected employment effects of moving house**

Percentage point difference



[a] The employment effect of housing assistance is calculated using odds ratios from a fixed effects logit model that includes interaction terms between housing assistance type and state, and takes into account unobserved characteristics of ISP recipients. As the odds ratio is a relative measure, the expected effect is based on the fact that 20.8 per cent of ISP recipients who did not move in the preceding year were employed.

Source: Author estimates, Research and Evaluation Database.

Neighbourhood disadvantage and employment

The fixed effect model is used to obtain some information about the likely effects of neighbourhood disadvantage on employment.[23]

It makes intuitive sense that neighbourhood disadvantage can be associated with poor education, employment and health outcomes. Growing up and living in a poor neighbourhood may limit an individual's opportunities to access quality services, expose them to negative socialisation and criminal behaviours, and lead to a disconnection from mainstream society and job finding networks (Manley and van Ham 2012).

However, it is difficult to demonstrate a causal link between neighbourhood disadvantage and poor employment and educational outcomes:

> There is no doubt that neighbourhood poverty and individual disadvantage are strongly correlated, but it is much less certain that there is a causal relationship between the two. (Manley and van Ham 2012, p. 148)

In particular, demonstrating a causal link between neighbourhood disadvantage and individual employment status is hampered by the problem of selection bias — the neighbourhood in which an individual lives is unlikely to be independent from their

[23] Neighbourhood disadvantage was controlled for in the pooled cross-sectional models, but the effect was not analysed in view of the unobserved variable bias problem in those models.

employment prospects. That is, people with a lower probability of employment may be more likely to live in neighbourhoods with lower housing costs and greater disadvantage. The relationship between neighbourhood disadvantage and employment may, therefore, not be causal, but simply reflect people's limited choices when choosing a neighbourhood in which to live.

That said, the process by which people end up living in different neighbourhoods allows insight into the possible effects of neighbourhood disadvantage on employment (Hedman and van Ham 2012). Private renters who receive CRA have some ability to choose the neighbourhood in which they live — subject to budgetary constraints and the availability of affordable housing. In contrast, public housing residents have little, if any, choice over where they live — they are *assigned* housing by the respective State Housing Authorities.

The limited ability of public housing residents to choose their neighbourhood minimises the problem of selection bias in estimating neighbourhood effects among that sub-population (Manley and van Ham 2012).

In order to gauge the relationship between neighbourhood disadvantage and employment, the employment model was run for public housing residents only. The results provide some indication that living in a highly disadvantaged area is associated with lower levels of employment, but this effect is less important than other variables in explaining differences in employment probabilities. The ratio of odds of employment among public housing residents living in areas in the bottom two quintiles of the Index of Relative Socioeconomic Disadvantage to the odds of employment of those living in the top three quintiles, was 0.93.[24] As the employment rate of public housing residents is about 12.2 per cent over the panel as a whole, this is equivalent to about 0.7 percentage points.

5 Conclusions

This background paper examined whether housing assistance reduces the employment of housing assistance recipients. The hypothesis was tested using a longitudinal dataset drawn from the Research and Evaluation Database (RED) — a comprehensive administrative database covering Australian income support recipients, many of whom either live in public housing or receive Commonwealth Rent Assistance (CRA). Access to RED provided a valuable opportunity to advance the available knowledge about the employment effects of housing assistance. Previous research had largely relied on survey data that included small numbers of public housing residents and imprecise identification of CRA recipients.

[24] Results for the fixed effects logit model that was applied only to residents of public housing are included in annex A. In contrast to the other model specifications shown in this paper, a categorical variable describing neighbourhood disadvantage was used in this specification. This was to allow for the possibility that disadvantage may only have an employment effect beyond a particular threshold.

Consistent with previous research (Groenhart and Burke 2014; Wood, Ong and Dockery 2009), residents of public housing in RED have markedly lower employment rates than other ISP recipients, even after observed differences are taken into account. That said, there is little difference between the employment rates of CRA recipients and ISP recipients who do not receive any housing assistance.

However, the lower rates of employment among public housing residents cannot be attributed to the receipt of housing assistance. Public housing residents are more likely to have a number of observed characteristics that are typically associated with lower levels of employment. For example, ISP recipients who live in public housing are more likely to receive the DSP, suffer a medical condition that impairs their ability to work, live in a disadvantaged area and are more likely to be Indigenous, than other ISP recipients.

Other characteristics that are not directly observed in the data are also likely to affect employment. These may be unobserved because they could not be measured with sufficient accuracy for empirical analysis, or because they were not required for the purposes of administering income support and so were not recorded. For example, characteristics like risk of poor mental health, motivation and education are not captured in the administrative data used in this study. A fixed effects logit model was used to isolate the effects of housing assistance on employment from the effects of time-invariant unobserved factors.

When both observed and unobserved characteristics are taken into account, differences in expected rates of employment between public housing tenants and other ISP recipients are shown to be very small. Similarly, there is little difference in the employment rates of ISP recipients who receive CRA and those who do not. In other words, it is the characteristics of the individual ISP recipients rather than their housing assistance status that explain the differences in employment rates between public housing tenants, CRA recipients and other ISP recipients.

Three other issues were briefly considered in this background paper. First, the effect of parental receipt of housing assistance on the employment of young ISP recipients living with parents or guardians was examined. While differences in observed characteristics explain some of the difference in the employment rates of youths, the predicted probability of employment among young people whose parents live in public housing is still substantially lower than for those with parents not receiving any housing assistance. It was not appropriate to apply the fixed effects model to this cohort, given the assumption about unobserved characteristics (that includes education) remaining fixed over time. As a result, it is not possible to conclude whether the difference in predicted employment rates is attributable to housing assistance or unobserved individual characteristics.

Second, moving between different postcodes was found to reduce the probability of employment. This suggests that housing stability may provide ISP recipients with opportunities to find and maintain employment.

Third, the effect of neighbourhood disadvantage on employment among public housing residents was also considered. The fixed effects employment model was re-estimated using only public housing residents so as to minimise problems of selection bias. Living in a highly disadvantaged area is associated with lower levels of employment, even after accounting for observed and unobserved characteristics, but this effect appears relatively small when compared with other determinants of employment. Further work in this area could explore the question of neighbourhood effects by make greater use of the rich administrative data included in the RED. In particular, the data provide an opportunity to examine the effects of location on employment status using spatial regression and analysis techniques, which could not be applied in the timeframe of this project.

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Annex A Detailed results

Results from the pooled cross-sectional and fixed effects logit models used to quantify the relationship between housing assistance and employment are presented in this annex (table 1). Models are presented both with and without interaction terms between housing assistance and state and income support payments (ISPs). Even if they are small, many of the odds ratios are estimated as being significantly different from one, given the very large estimation sample. Given this, a 'dot' next to an odds ratio in these tables is used to indicate that the parameter is considered *not* to be significantly different from one.

The logistic regressions presented were conducted to test the hypothesis that housing assistance negatively affects employment of recipients. Results from the pooled cross-sectional models provide some support for this hypothesis. However, the preferred fixed effects models — which account for unobserved differences — indicate that housing assistance has minimal, if any, effect on employment. Though there is a small positive effect of Commonwealth Rent Assistance (CRA) on employment, the ratio of odds of employment among public housing residents to the odds of employment among those not receiving housing assistance is not significantly different from one.

A range of other variables were included as control variables in these model specifications, with the odds ratios of these control variables generally matching expectations. For example, the odds of employment among recipients of Newstart Allowance and Youth Allowance (Jobseeker) are estimated to be about 4 and 6 times that of the default ISP, Carers Payment in fixed effects model. A notable exception was the estimated effect of region on employment, where ISP recipients in remote or very remote regions were found to be more likely to be employed than those in major cities in the fixed effects models. Though this result is not key to understanding the relationship between housing assistance and employment, and may be related to the operation of Community Development Employment Projects in these areas, it could merit further investigation.

Results from the pooled cross-sectional analysis of younger ISP recipients living with parents or guardians (table 2) and the analysis of neighbourhood effects among public housing residents are also presented (table 3).

All income support payment recipients

Table 1 **Odds ratios, pooled cross sectional and fixed effects models**

	Pooled cross section		*Fixed effects*	
	No interactions	*Interactions*	*No interactions*	*Interactions*
Housing assistance status (default: no assistance)[a]				
CRA recipient	0.980	0.885	1.080	1.047
Public housing tenant	0.617	0.626	1.015 *	0.973 *
Housing assistance × State interaction terms (default: Housing assistance × NSW)				
CRA × Vic		0.975		0.984 *
CRA × Qld		1.035		0.968
CRA × SA		0.942		0.969 *
CRA × WA		0.975 *		0.972 *
CRA × TAS		0.968 *		0.975 *
CRA × NT		1.701		0.939 *
CRA × ACT		1.036 *		0.958 *
PH × Vic		0.945		0.980 *
PH × Qld		1.161		0.939
PH × SA		0.997 *		0.943 *
PH × WA		1.038 *		0.966 *
PH × TAS		0.989 *		0.944 *
PH × NT		1.605		0.959 *
PH × ACT		0.984 *		1.066 *
Housing Assistance × ISP interaction terms (default: Housing assistance × Carer Payment)				
CRA × Disability Support Pension		1.012		1.002
CRA × Newstart Allowance		1.158		1.077
CRA × Parenting Payment (Single)		1.013		1.083
CRA × Parenting Payment (Partner)		1.117		1.085
CRA × Youth Allowance (Student)		1.230		0.989
CRA × Youth Allowance (Jobseeker)		1.374		0.986
CRA × Other		1.577		1.019
PH × Disability Support Pension		0.969		0.924
PH × Newstart Allowance		1.257		1.172
PH × Parenting Payment (Single)		0.707		1.089
PH × Parenting Payment (Partner)		1.181		1.400
PH × Youth Allowance (Student)		0.896		1.136
PH × Youth Allowance (Jobseeker)		0.842		1.018
PH × Other		1.145		0.972
Income support payment (default: Carer Payment)				
Disability Support Pension	1.205	1.216	1.067	1.083
Newstart Allowance	2.627	2.488	4.032	3.852
Parenting Payment (Single)	4.651	4.953	3.493	3.347
Parenting Payment (Partner)	1.605	1.547	1.496	1.404
Youth Allowance (Student)	4.539	4.284	2.824	2.787
Youth Allowance (Jobseeker)	3.549	3.332	6.017	5.933
Other[b]	1.525	1.370	1.897	1.877

***** Not statistically different from 1 at the 1 per cent level.

(Continued next page)

Table 1 (continued)

	Pooled cross section		*Fixed effects*	
	No interactions	*Interactions*	*No interactions*	*Interactions*
Age (default: 35 to 45)				
Aged 15 to 19	0.449	0.462	0.469	0.465
Aged 20 to 24	0.755	0.758	0.782	0.783
Aged 25 to 34	0.903	0.906	0.879	0.879
Aged 45 to 54	0.899	0.897	1.103	1.102
Aged 55 to 65	0.460	0.462	0.748	0.747
Female	1.461	1.457		
Married/de facto	1.034	1.037	1.279	1.280
Indigenous	0.671	0.672		
English as preferred language	2.021	2.026		
Children aged less than 5	0.491	0.489	0.498	0.498
Children aged 5 to 14	0.932	0.933	0.843	0.842
Medical condition	0.661	0.659	0.581	0.581
State (default: NSW)				
Vic	1.091	1.104	0.988 *	0.998 *
Qld	1.207	1.178	1.201	1.225
SA	1.283	1.307	1.038 *	1.057
WA	1.320	1.327	1.433	1.456
Tas	1.215	1.228	0.966 *	0.982 *
NT	0.980 *	0.788	2.082	2.151
ACT	1.428	1.428	1.599	1.624
Year (default: 2005)				
2006	1.093	1.093	1.258	1.259
2007	1.214	1.214	1.574	1.574
2008	1.316	1.316	1.910	1.911
2009	1.157	1.156	1.516	1.518
2010	1.144	1.142	1.514	1.516
2011	1.175	1.172	1.643	1.646
2012	1.085	1.083	1.531	1.533
2013	1.042	1.039	1.437	1.439
Region(default: major city)				
Inner regional	1.135	1.135	0.947	0.946
Outer regional	1.078	1.073	0.993 *	0.992 *
Remote or very remote	0.778	0.788	1.343	1.342
Address changes in previous year (default: none)				
1 change	0.804	0.801	0.820	0.820
2 changes	0.634	0.631	0.736	0.737
3 or more changes	0.432	0.430	0.642	0.642
SA1 IRSD decile	1.051	1.051	1.011	1.011
Constant	0.053	0.054		
Observations	17 690 692		5 572 473	

* Not statistically different from 1 at the 1 per cent level. PH – public housing. [a] The housing assistance variable indicates housing assistance status in the previous year. [b] Other payments include a range of less common income support payments, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates based on Research and Evaluation Database.

Young ISP recipients living with parents or guardians

Table 2 **Odds ratios, pooled cross sectional models**

	Pooled cross section without interactions	*Pooled cross section with interaction*
Parental housing assistance status (default: No assistance)[a]		
CRA recipient	0.798	0.834 *
Public housing tenant	0.679	0.822 *
Parental housing assistance × State interaction terms (default: Parental housing assistance × NSW)		
CRA × Vic		1.008 *
CRA × Qld		1.047 *
CRA × SA		0.985 *
CRA × WA		0.942 *
CRA × TAS		0.933 *
CRA × NT		2.408
CRA × ACT		0.893 *
PH × Vic		0.848
PH × Qld		0.967 *
PH × SA		0.928 *
PH × WA		0.770
PH × TAS		0.892 *
PH × NT		1.800
PH × ACT		0.740
Parental housing assistance × ISP interaction terms (default: Parental housing assistance × Carer Payment)		
CRA × Disability Support Pension		1.018 *
CRA × Newstart Allowance		1.069 *
CRA × Parenting Payment (Single)		0.883 *
CRA × Parenting Payment (Partner)		0.958 *
CRA × Youth Allowance (Student)		0.931 *
CRA × Youth Allowance (Jobseeker)		0.958 *
CRA × Other		1.075 *
PH × Disability Support Pension		1.161 *
PH × Newstart Allowance		0.979 *
PH × Parenting Payment (Single)		0.736
PH × Parenting Payment (Partner)		1.009 *
PH × Youth Allowance (Student)		0.909 *
PH × Youth Allowance (Jobseeker)		0.772
PH × Other		0.800 *

***** Not statistically different from 1 at the 1 per cent level.

(Continued next page)

Table 2 (continued)

	Pooled cross section model without interactions	*Pooled cross section with interactions*
Female	1.536	1.537
Married/de facto	0.927	0.930
Indigenous	0.549	0.553
English as preferred language	2.295	2.276
Children aged less than 5	0.571	0.570
Medical condition	0.574	0.574
State (default: NSW)		
Vic	1.096	1.122
Qld	1.434	1.416
SA	1.282	1.303
WA	1.405	1.502
Tas	1.052 *	1.090
NT	0.856	0.589
ACT	1.176	1.351
Income support payment (Default: Carer Payment)		
Disability Support Pension	2.225	2.151
Newstart Allowance	2.588	2.583
Parenting Payment (Single)	1.809	2.042
Parenting Payment (Partner)	1.322	1.357
Youth Allowance (Student)	2.785	2.936
Youth Allowance (Jobseeker)	3.119	3.377
Other[b]	1.914	1.980
Year (default: 2005)		
2006	1.059	1.060
2007	1.126	1.126
2008	1.109	1.110
2009	0.919	0.919
2010	0.895	0.896
2011	0.873	0.874
2012	0.883	0.884
2013	0.952	0.951
Region(default: major city)		
Inner regional	1.154	1.157
Outer regional	0.992 *	0.993 *
Remote or very remote	0.518	0.545
Address changes in previous year (default: none)		
1 change	0.787	1.157
2 changes	0.649	0.648
3 or more changes	0.422	0.420
SA1 IRSD decile	1.052	1.053
Constant	0.036	0.034
Observations	1 140 839	

· Not statistically different from 1 at the 1 per cent level. PH – public housing. [a] Parental housing assistance indicates parental housing assistance status in the previous year. [b] Other payments include a range of less common income support payments, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates based on Research and Evaluation Database.

Neighbourhood effects model

Table 3 **Odds ratios, fixed effects model**
Public housing residents only

	Odds ratios
Index of Relative Socioeconomic Disadvantage quintile (Default: Top three quintiles)	
Bottom quintile	0.931 *
Second quintile	0.934 *
Age (default: 35 to 45)	
Aged 15 to 19	0.228
Aged 20 to 24	0.481
Aged 25 to 34	0.743
Aged 45 to 54	1.093
Aged 55 to 65	0.776
Female	
Married/de facto	1.345
Indigenous	
English as preferred language	
Children aged less than 5	0.440
Children aged 5 to 14	0.757
Medical condition	0.619
Income support payment (Default: Carer Payment)	
Disability Support Pension	0.890
Newstart Allowance	4.545
Parenting Payment (Single)	3.430
Parenting Payment (Partner)	1.989
Youth Allowance (Student)	2.359
Youth Allowance (Jobseeker)	5.376
Other[a]	1.724
State (default: NSW)	
Vic	0.860 *
Qld	1.086 *
SA	1.066 *
WA	1.427 *
Tas	0.507 *
NT	2.277
ACT	2.841
Year (default: 2005)	
2006	1.339
2007	1.751
2008	2.314
2009	1.735
2010	1.595
2011	1.643
2012	1.504
2013	1.262

* Not statistically different from 1 at the 1 per cent level.

(Continued next page)

Table 3 (continued)

	Odds ratios
Region(default: major city)	
Inner regional	1.079 *
Outer regional	1.065 *
Remote or very remote	2.326
Address changes in previous year (default: none)	
1 change	0.777
2 changes	0.615
3 or more changes	0.552
Observations	396 499

* Not statistically different from 1 at the 1 per cent level. [a] Other payments include a range of less common income support payments, including Bereavement Allowance, Wife's Pension, Wife's Disability Support Pension, Austudy, Partner Allowance, Sickness Allowance, Special Benefits, Widow Allowance and Abstudy.

Source: Author estimates based on Research and Evaluation Database.

Background paper 6
Links between public housing and employment in South Australia and Western Australia

Key points

- Datasets drawn from South Australian and Western Australian public housing administrative records, spanning the years from 2004 to 2013, were used to analyse:
  - factors associated with exits from public housing
  - factors associated with tenant transitions into employment
  - the effect of public housing on employment.
- Employment status was not found to be significantly related to exiting public housing in South Australia and Western Australia early in a person's tenancy, but employed tenants were more likely to exit the longer they had been in public housing, relative to those who were not employed.
- Tenants who had been low priority applicants while on the waiting list were more likely to become employed than tenants who had been priority applicants and had urgent housing needs. This is likely to be because the former had a greater capacity for employment.
- Evidence on the welfare lock hypothesis (that public housing applicants limit their employment while on the waiting list to remain eligible for public housing) was not conclusive. The analysis suggests that the probability of employment increased after entering public housing. However, these results should be interpreted with caution because they are likely to be biased in favour of finding a positive association between public housing and employment.
- Linking state and Centrelink data would allow a more thorough empirical test of the welfare lock hypothesis because it would provide more frequent income and employment data for people before, during and after their time on the waiting list. Other related avenues of research merit further attention, such as whether welfare locks might affect public housing tenants in states and territories where tenant income limits exist.

Public housing is designed to help people who have low incomes and who face significant disadvantage to obtain adequate and stable accommodation. This paper addresses three key questions.

1. What factors are associated with exits from public housing (section 2)?
2. What factors are associated with public housing tenants becoming employed (section 3)?
3. How does transitioning from a public housing waiting list into a public housing property affect employment — is there any evidence of a welfare lock, that is, do applicants avoid employment in order to remain under the public housing income eligibility limit (section 4)?

Few Australian studies have examined these questions. A couple of analyses used Western Australian data for 1999 to 2005 (Dockery et al. 2008; Whelan 2009). The current study adds to this work by analysing data from both South Australia and Western Australia, and for a more recent time period: 2004 to 2013.

The paper opens with a description of the data and methodologies used in the Commission's analysis.

1 Data, institutional detail and research methods

Datasets were constructed from administrative records

The analysis presented in this paper is based on administrative records for public housing applicants and tenants,[1,2] which cover the period from 2004 to 2013.[3] The Commission is very grateful to the Housing SA division of the Department for Communities and Social Inclusion in South Australia and the Department of Housing in Western Australia for providing these records, answering the Commission's queries about the data and providing feedback on the research. That said, the views in this background paper (BP) are the Commission's only.[4]

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1 The South Australian records include state owned and managed Indigenous housing, which is public housing specifically for Indigenous people. In this paper, all statistics reported for public housing in South Australia include state owned and managed Indigenous housing.

2 The Western Australian records include some properties owned by the housing department that are externally managed. In this paper, all statistics reported for public housing in Western Australia include these externally managed households.

3 For most variables that change over time, the South Australian applicant records were provided in yearly snapshots at 30 June, while tenant records were at the date the household exited public housing, or at 30 June 2013 for tenants who had not yet exited. Income data were available at each income assessment (every six months for tenants), and disability data were available at each disability assessment. In the Western Australian data, most variables were provided in an episodic format, with a start and end date.

4 This background paper is one of six produced as part of a research project examining the links between housing assistance and employment.

The administrative records are a rich source of data, in that they cover all public housing applicants and tenants, and offer more information on applications and tenancies than is available in nationally representative datasets. The records are confidentialised — they do not include identifying information such as names or addresses. The Commission constructed datasets from the records. Variables include:[5]

- dates at which individuals entered and exited a waiting list or public housing
- level of housing need while on a waiting list
- demographic characteristics of applicants and tenants
- income details.

In 2013, there were about 40 500 households in public housing in South Australia, compared with about 36 200 in Western Australia.

The populations analysed in this paper differ from those considered in BP 3 and BP 5, which used datasets built from Centrelink payment records, because:

- they include public housing tenants who are not income support recipients
- applicants for public housing are identified.

The characteristics of public housing applicants and tenants in this data are described in detail in BP 4. Descriptive statistics for the individuals included in the multivariate analysis presented in this paper can be found in annex A (table 2 and table 3).

The administrative data have some drawbacks. A key drawback is that income information (from which employment status is inferred) is not observed for every individual in every year. This information is updated especially infrequently for applicants. The problems this creates for the analysis of welfare locks are explained in section 4. Furthermore, detailed information on variables that may have important influences on employment, such as education or drug and alcohol problems, are not collected for administrative purposes and are therefore not available for the analysis.

Because of differences in the format and extensiveness of the records provided by each state, the analysis was conducted on working-age household heads for South Australia,[6] but on working-age individuals for Western Australia. This issue should be kept in mind when interpreting the results of the study and in making any comparisons between the two states.

5 A number of decisions about how to treat the records had to be made in the process of building the datasets. These are described in annex A.

6 In South Australia, each applicant or tenant household contains a nominated household head who is responsible for the application or the tenancy. Comprehensive data were not available on dates of entry to and exit from the waiting list or public housing for other household members.

Key institutional detail

There are important differences in the management of applicants and tenants in each state.[7]

- In South Australia, the waiting list consists of three categories for new applicants.
  - Category 1 includes households that have an urgent housing need.
  - Category 2 includes households that have a high housing need.
  - Category 3 includes households that do not have high or urgent housing needs but meet income and asset tests.

  In Western Australia there are only two categories.
  - Priority applicants are in urgent need of housing.
  - Wait-turn applicants meet eligibility requirements but are not in urgent need.

  In both states, being placed in a higher priority category depends on factors such as homelessness, domestic violence and long-term health issues (BP 4). The circumstances in which applicants for public housing in South Australia qualify for category 1 or 2 status are similar to those for priority applicants in Western Australia, making these groups somewhat comparable. Category 3 applicants in South Australia are similar to wait-turn applicants in Western Australia.
- South Australia's income limits for public housing eligibility are the highest in Australia, while Western Australia has the lowest limits. In Western Australia, the income limit for a single household without disability applying for housing in a metro or country area is $430 per week. In South Australia, the income limit for singles is more than double, at $970 (SCRGSP 2014). This means that if welfare locks do exist, their effects are likely to be more marked in Western Australia, as a smaller increase in employment is needed for an applicant to become ineligible for public housing.
- In South Australia, people living in public housing are not subject to income eligibility limits, so welfare locks do not affect tenants. Welfare locks might influence tenants in Western Australia, as tenant income limits were introduced in 2006.
- In South Australia, tenant incomes are assessed twice a year (in April and October) for rent review purposes. In Western Australia, tenant incomes are assessed yearly from the date that the tenant entered into public housing. Tenants in both states are required to notify the housing authority of income changes when they occur, but this does not always happen. In both states, the main occasions at which applicant incomes are assessed are at entry onto the waiting list and before an offer of housing is made, although income records might be updated if applicants voluntarily report their income or if an assessment is conducted for other services within the same department.

7 For a full description of institutional arrangements in public housing, see BP 1.

Research methods

This analysis uses two techniques similar to those used by Dockery et al. (2008).

- Survival analysis methods are applied to two research questions, namely, the characteristics associated with the timing of:
  - public housing exits
  - tenant transitions into employment.

  Survival analysis models the time until a particular event occurs. In the context of this paper, the events of interest are tenant exits from public housing and transitions into employment[8], respectively. Cox proportional hazards regressions, a survival analysis method, are used to relate observed characteristics to the timing of these events.
- The difference-in-difference method is used to estimate the impact of entry into public housing on employment and to provide evidence on whether welfare locks occur. This method analyses changes in employment among a pool of applicants for public housing, comparing changes between one group that enters public housing and another group that remains on the waiting list within the period analysed. (A simplified illustration of the method is provided in box 1.) It takes into account observed characteristics, such as age and gender, as well as time effects, which can control for the potential influence on employment of factors such as macroeconomic conditions and policy changes. The method also factors in unobserved differences between public housing entrants and remaining applicants, to the extent that these differences are constant over time.

Episodic data[9] were used in the survival analysis models, whereas yearly panel data were used in the difference-in-difference models. A full description of the data and research methodology used in generating the results presented in this paper can be found in annex A.

8 Transitions from non-employment to employment were examined. Non-employment was defined to include all people who are not working (as suggested by their wage and salary income), regardless of whether or not they were searching for work. This is different from unemployment, which comprises people who are not working and are actively searching for work.

9 The episodic data contained observations at the dates that tenants entered and exited public housing and at each update of their income.

Box 1 **The difference-in-difference method**

In this paper, the difference-in-difference method is used to analyse the effect on employment participation of moving into public housing (PH) by comparing differences in changes in employment between people who remain on the waiting list and those who enter public housing.

Consider a simple example with two groups of people and two time periods.

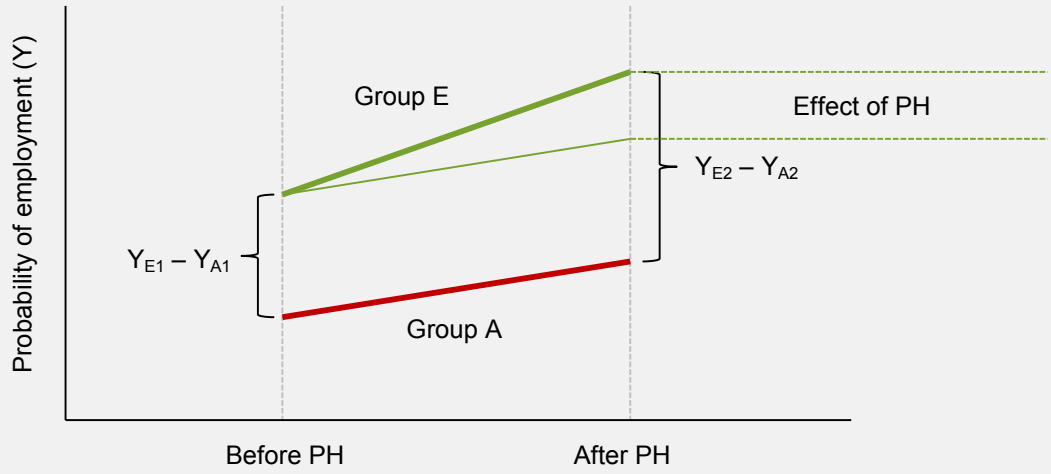
- *Group A:* applicants who never enter public housing in the time periods under consideration.
- *Group E:* applicants who enter public housing.
- *Time before PH:* groups A and E are applicants on the waiting list.
- *Time after PH:* group E has entered public housing while group A remains on the waiting list.

The model assumes that the change in the probability of employment for both groups over time would have been the same if neither had entered public housing. That is, the difference in the probability of employment between both groups would have been ($Y_{E1} - Y_{A1}$) in both time periods.

The effect of public housing is calculated as the difference in the probability of employment between the two groups 'after PH', minus the difference between the two groups 'before PH'.

$$\text{Effect of PH} = (Y_{E2} - Y_{A2}) - (Y_{E1} - Y_{A1})$$

In the analysis in this paper, 'before PH' and 'after PH' correspond to the time around which a tenant enters public housing, which is different for each tenant.



2 Analysis of public housing exits

The question of how exits from public housing are associated with various demographic and tenancy characteristics is examined using survival analysis methods. Of particular interest are the links between employment and public housing exits. Limitations to the analysis are discussed in annex A.

Existing evidence

There is limited information on the reasons why tenants leave public housing and their outcomes after moving (AIHW 2014). The few Australian studies that have analysed the dynamics of public housing tenancies have presented a mixed picture of the links between various factors, including employment, and exits from public housing.

- Whelan (2009) analysed the determinants of tenancy lengths, using a dataset created from public housing administrative records from Western Australia from 1999 to 2005. The length of spells in public housing was found to depend on individual characteristics. Lone parents and single households were likely to stay longer in public housing than couple households. Tenants with low earnings from employment were less likely to exit public housing than tenants with higher earnings.
- Seelig et al. (2008) examined housing pathways of income support recipients using a longitudinal dataset compiled from Centrelink administrative data covering 1993 to 2003. Although increases in earned income were observed before and after exits from public housing to private rental, modelling suggested that exits from public housing to any tenure in general were associated with lower levels of earned income. This highlights the importance of the destination tenure in the analysis of exits and employment.
- More recently, Wiesel et al. (2014) examined social housing exits using both qualitative and quantitative methods, including:
  - a cohort analysis based on administrative records for tenants who entered public housing in New South Wales in 2007 and in Victoria in 2007-08
  - a longitudinal analysis of public housing tenants in the Household, Income and Labour Dynamics in Australia survey from 2002 to 2010
  - surveys and interviews of tenants in New South Wales and Victoria.

  The authors found that the link between employment and exit from public housing was weak. This was attributed in part to tenant concerns about long-term job security. However, employment did make private rental a more viable option for tenants who exited social housing for other reasons, such as to move in with a new partner. It was also found that financial hardship caused some tenants to struggle to sustain tenancies once they exited social housing and some experienced multiple exits and re-entries into the social housing sector.

What factors are associated with exits from public housing?

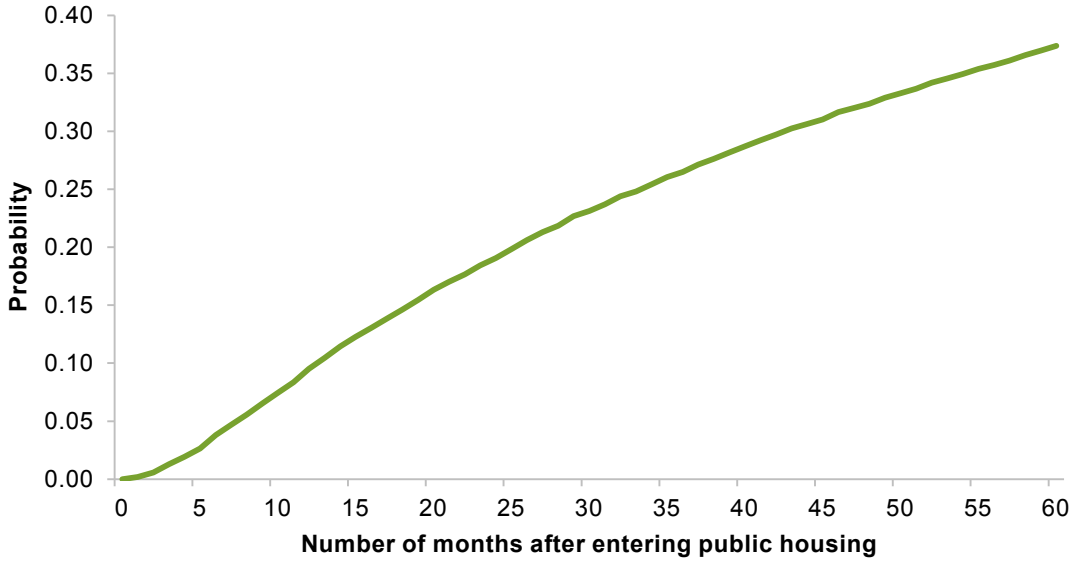
South Australia

Patterns of exit from public housing

An analysis of the time that head tenants aged 15 to 64 in South Australia spend in public housing shows that about 19 per cent of head tenants can be expected to leave within two

years, and about 37 per cent within five years (figure 1).[10] In comparison, private tenancy lengths are much shorter: of the low-income households in private rental that were provided a bond guarantee by Housing SA and whose tenancy ended in 2012-13, half had tenancies that lasted for less than 60 weeks (based on unpublished bond data from Housing SA).

Figure 1 **Cumulative probability of exiting public housing over time — South Australia[a]**



[a] Head tenants aged 15 to 64.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Correlates of exits from public housing

The Cox proportional hazards model of exits aims to identify the unique links between observed characteristics and public housing exits. Box 2 explains how the results of multiple regression models should be interpreted. In the model used in this paper, controls were included for employment status, waiting list category, gender, age, receipt of Disability Support Pension (DSP), partnered status, number of children, Indigenous status, country of birth, location, housing type and number of bedrooms. Variables capturing changes over time in the relationship between these controls and exits were included where such time-varying impacts were found to matter.

[10] These survival analysis estimates take into account censoring. In the context of this analysis, censoring occurs when an individual is still observed in public housing by the end of the study period.

Box 2 Interpreting results in a multiple regression analysis

Multiple regression analysis involves the study of the relationships between multiple factors and an outcome variable. The analysis aims to identify the unique contribution of each factor on the outcome. Results for a particular factor are interpreted 'holding other factors constant'. For example, in the results of the analysis of exits from public housing, the relationship between employment and exit is interpreted holding fixed other characteristics that are included in the model, including waiting list category, gender and age.

The results of a multiple regression analysis may be different from the results of an analysis that looks only at one factor and the outcome. This is because there could be other characteristics that affect both the factor of interest and the outcome, which are not taken into account in a simple analysis. For example, it is likely that gender and age are related to both employment and the probability of exiting public housing. If the relationship between employment and exit from public housing was examined without taking into account gender and age, the effects of gender and age on exit would be combined in the results for employment. Therefore, the unique links between employment and exit cannot be isolated in a simple analysis.

A multiple regression model may not be able to take into account all possible factors affecting the outcome, for example, in cases where there is a lack of data on a particular variable. If there are factors in the regression that are correlated with omitted variables, then their coefficients will be biased. Where panel data are available, statistical techniques exist to take unobserved factors into account, to the extent that they are constant over time.

Figures 2 and 3 display the differences in the probability of exiting public housing for various groups. Where the bar is above (below) zero, head tenants with the given characteristic were more (less) likely to exit public housing than those with the default characteristic, holding other factors constant.[11] The 95 per cent confidence interval of the estimate (indicated by the vertical line) shows that many of the relationships are statistically significant.[12]

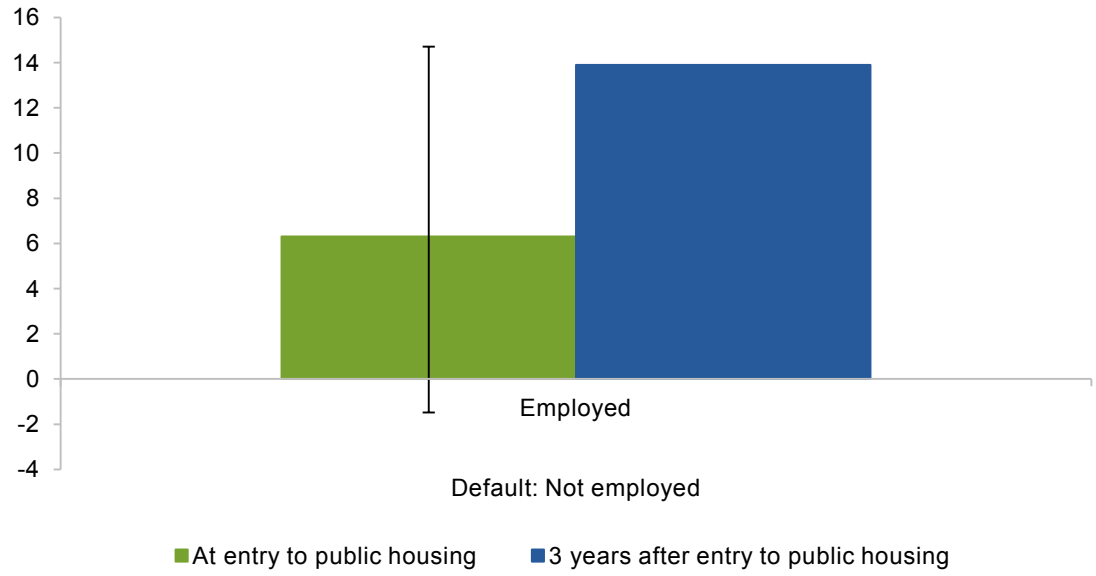
For example, the large interval in figure 2 indicates that, early in their tenancy, tenants who were employed were no more (or less) likely to exit public housing than tenants who were not employed. This is consistent with Wiesel et al.'s (2014) finding that employment was not a significant driver of exits. However, the likelihood of exit was found to increase over time for the employed in this analysis — employed tenants were more likely to exit than non-employed tenants three years after entry to public housing.

[11] Where the bar at three years after entry to public housing is the same as that at entry, the time-varying relationship for that variable was not found to be significant. For example, in figure 3, the gender chart shows that males in South Australia were 22 per cent more likely to exit public housing than females both at entry and three years after entry, and this is because no time-varying relationship was found for gender.

[12] 95 per cent confidence intervals are not displayed for relationships at three years after entry to public housing due to difficulties in calculating these intervals at three years. Standard errors for time-constant and time-varying components of the hazard ratio for each factor are displayed in the tables of results in annex A.

Figure 2 **Differences in probability of exiting public housing, by employment status — South Australia[a,b,c,d,e]**

Per cent



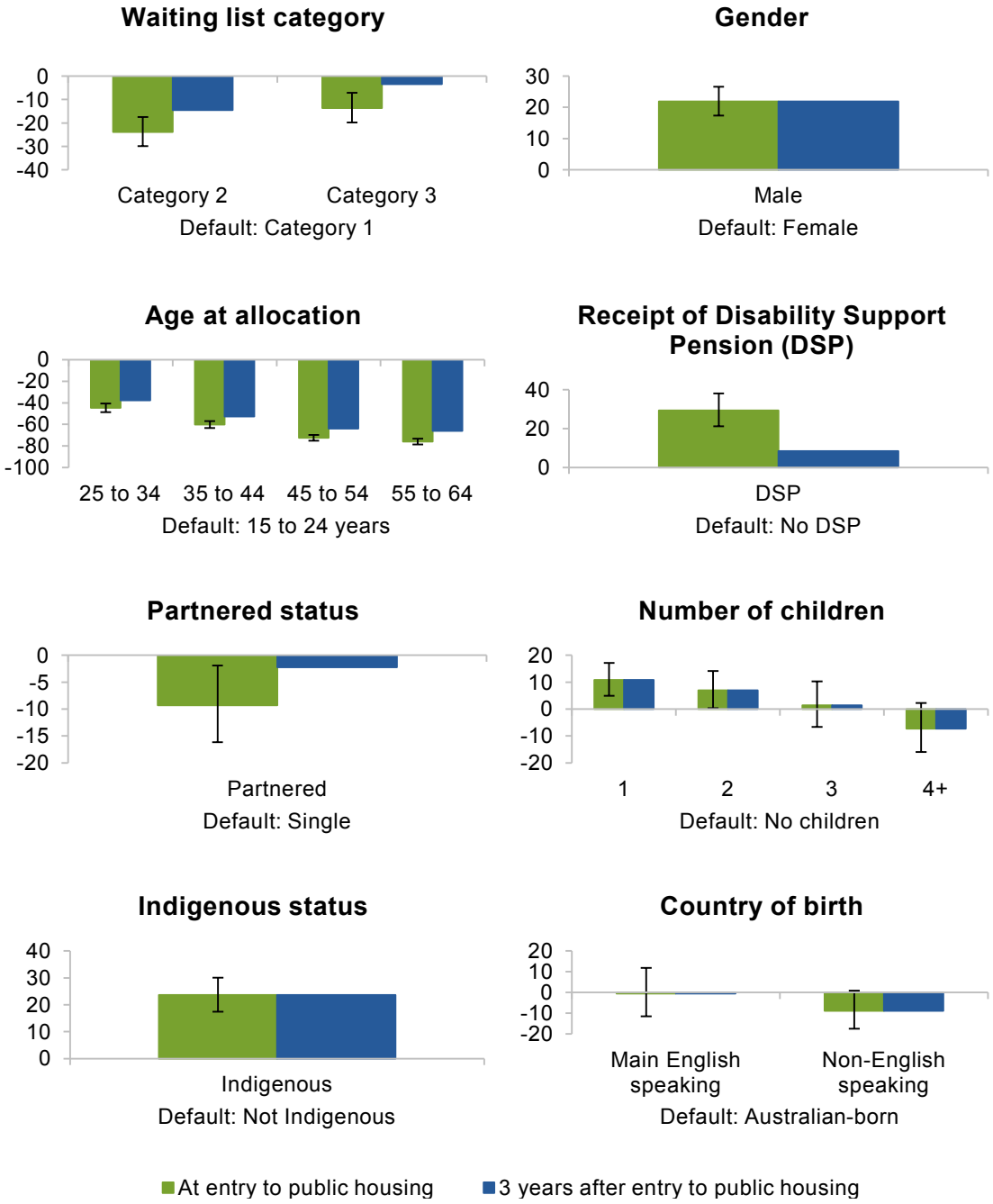
[a] Head tenants aged 15 to 64. [b] All comparisons are made with respect to the default category. In this case, the default is 'not employed'. [c] Percentage difference calculated as the hazard ratio minus one. [d] Vertical line indicates 95 per cent confidence interval. [e] Refer to footnote 12.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Tenants who were in categories 2 (high housing need) or 3 (standard applicant) when they were on the waiting list were initially less likely to exit public housing than tenants who were in category 1 (urgent housing need) (figure 3). On average, category 3 tenants were 14 per cent less likely to exit public housing than category 1 tenants, whereas category 2 tenants were about 24 per cent less likely to exit than category 1 tenants, other characteristics equal. This suggests that some people who were deemed to be in greater need of housing prior to public housing entry may have had more difficulty in sustaining their public housing tenancy than their peers in other applicant categories. Research into the housing experiences of homeless people with a mental disability in New South Wales found that those who were in public housing had problems sustaining their tenancy because of factors such as difficulties in meeting rent payments and a lack of support services (Sowerwine and Schetzer 2014). Differences in the probability of exit between categories were found to decline over time in this analysis, suggesting that category 1 tenants who did not exit public housing early in their tenancy were more similar to category 2 and 3 tenants in terms of their probability of exit.

Figure 3 **Factors associated with exiting public housing — South Australia[a,b,c,d,e,f]**

Percentage difference in probability of exit, compared to default group



[a] Head tenants aged 15 to 64. [b] All comparisons are made with respect to the default category. For example, a male tenant was 22 per cent more likely to exit public housing than a female tenant. [c] Percentage difference calculated as the hazard ratio minus one. [d] Vertical lines indicate 95 per cent confidence intervals. [e] Refer to footnotes 11 and 12. [f] Location, stock type and number of bedrooms are not illustrated in these figures, but are detailed in annex A.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Tenants were more likely to exit the younger they were when they entered public housing (figure 3). Young head tenants in South Australia might have had unobserved characteristics associated with greater life instability, leading to higher probabilities of exit when compared with older tenants. The differences in the probability of exit between age groups declined slightly over the study period.

Tenants receiving the DSP were more likely to exit public housing than non-DSP recipients initially, but the difference fell over time (figure 3). Similar to the results for the waiting list category, this could be due to the presence of a subgroup of tenants who received the DSP, such as people with a mental disability, who might have had relatively more unstable patterns of housing and so were more likely to exit public housing early in their tenure. Other DSP recipients may have been more entrenched in public housing — for example, people with a physical disability may not have been able to find similar accommodation in the private rental market that suited their needs.

Public housing tenants in South Australia were generally more likely to exit if they were male, Indigenous, single or if they had fewer children, holding all other factors constant (figure 3).

It is possible that some tenants who exited public housing re-entered at a later date. For example, tenants who were from category 1 or those who had a mental disability and exited public housing early in their tenure may have experienced an urgent need for housing again later in their lives and hence could have re-applied for public housing. The analysis presented does not take into account re-entries into public housing.[13]

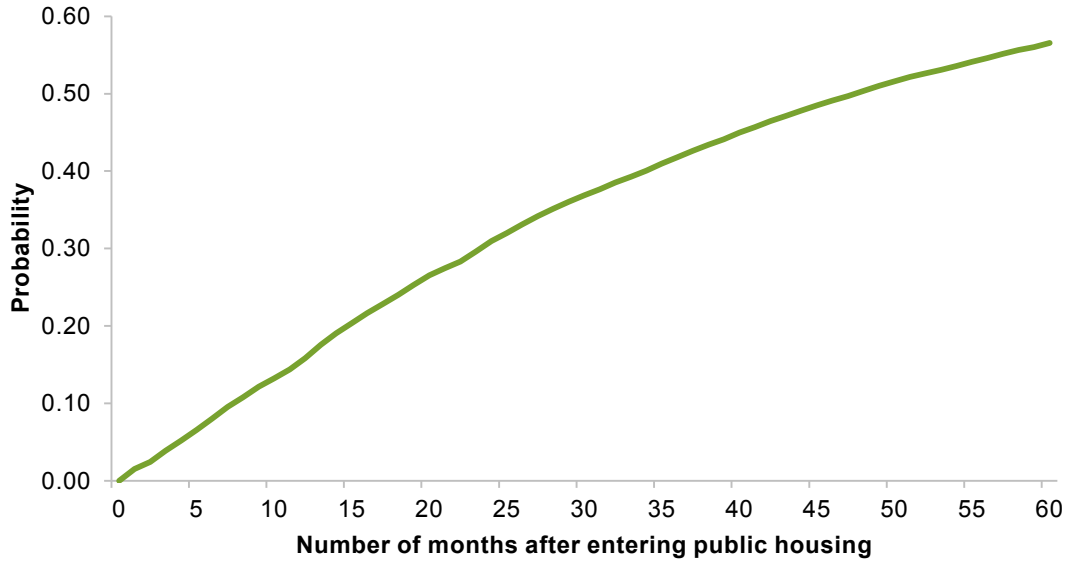
Western Australia

Patterns of exit from public housing

In Western Australia, on the basis of analysis of data for 2004 to 2013, about 31 per cent of tenants can be expected to exit within two years and over half within five years (figure 4). These percentages are higher than those found in the South Australian analysis, which only examined household heads, and may be explained by other household members being more transitional than the household head. For example, relationship breakdowns and adult children moving out of the family home may mean that these other household members stay in the household for a shorter period of time when compared with the household head. Other possible explanations include differences in state policies and administrative rules or differences in the characteristics of people housed within each state.

[13] If an individual entered public housing more than once within the study period, only their first entry is considered in the analysis.

Figure 4 **Cumulative probability of exiting public housing over time — Western Australia[a]**



[a] Tenants aged 15 to 64.

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

Correlates of exits from public housing

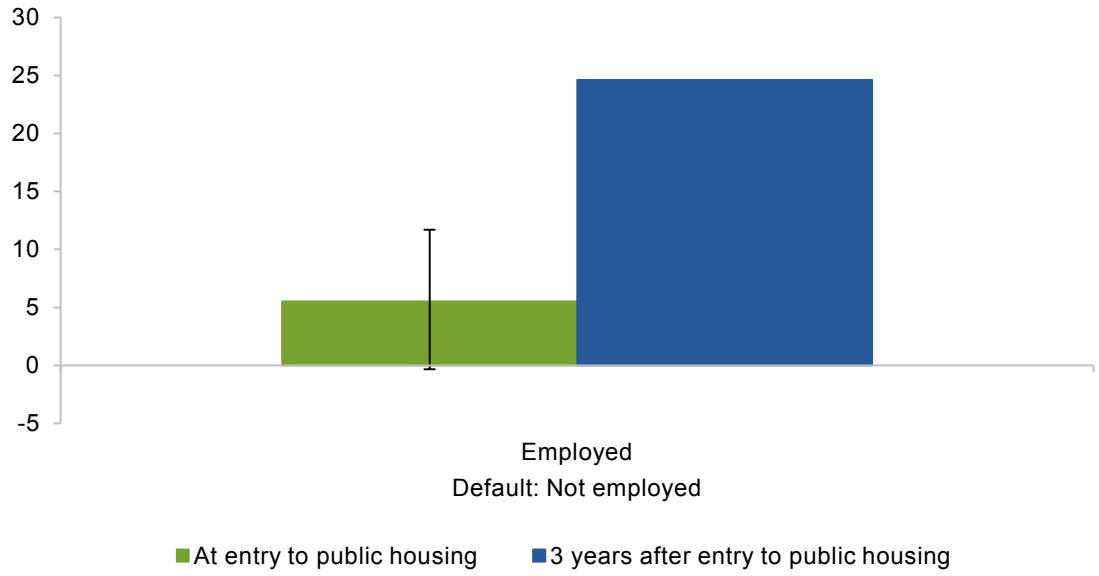
The Cox proportional hazards model of exits for Western Australia controlled for employment status, waiting list category, gender, age, receipt of DSP, partnered status, number of children and Indigenous status.[14] Time-varying relationships were also included in the model.

Like in South Australia, employment was not found to be significantly related to public housing exits immediately after entry to public housing, but tenants who had been in public housing for longer were more likely to exit if they were employed, compared with those who were not employed (figure 5).

[14] Other factors, such as country of birth, that were controlled for in the South Australian analysis were not controlled for in the Western Australian analysis due to there being insufficient data on these variables for all tenants (annex A).

Figure 5 **Differences in probability of exiting public housing, by employment status — Western Australia[a,b,c,d,e]**

Per cent



[a] Tenants aged 15 to 64. [b] All comparisons are made with respect to the default category. In this case, the default is 'not employed'. [c] Percentage difference calculated as the hazard ratio minus one. [d] Vertical line indicates 95 per cent confidence interval. [e] Refer to footnote 12.

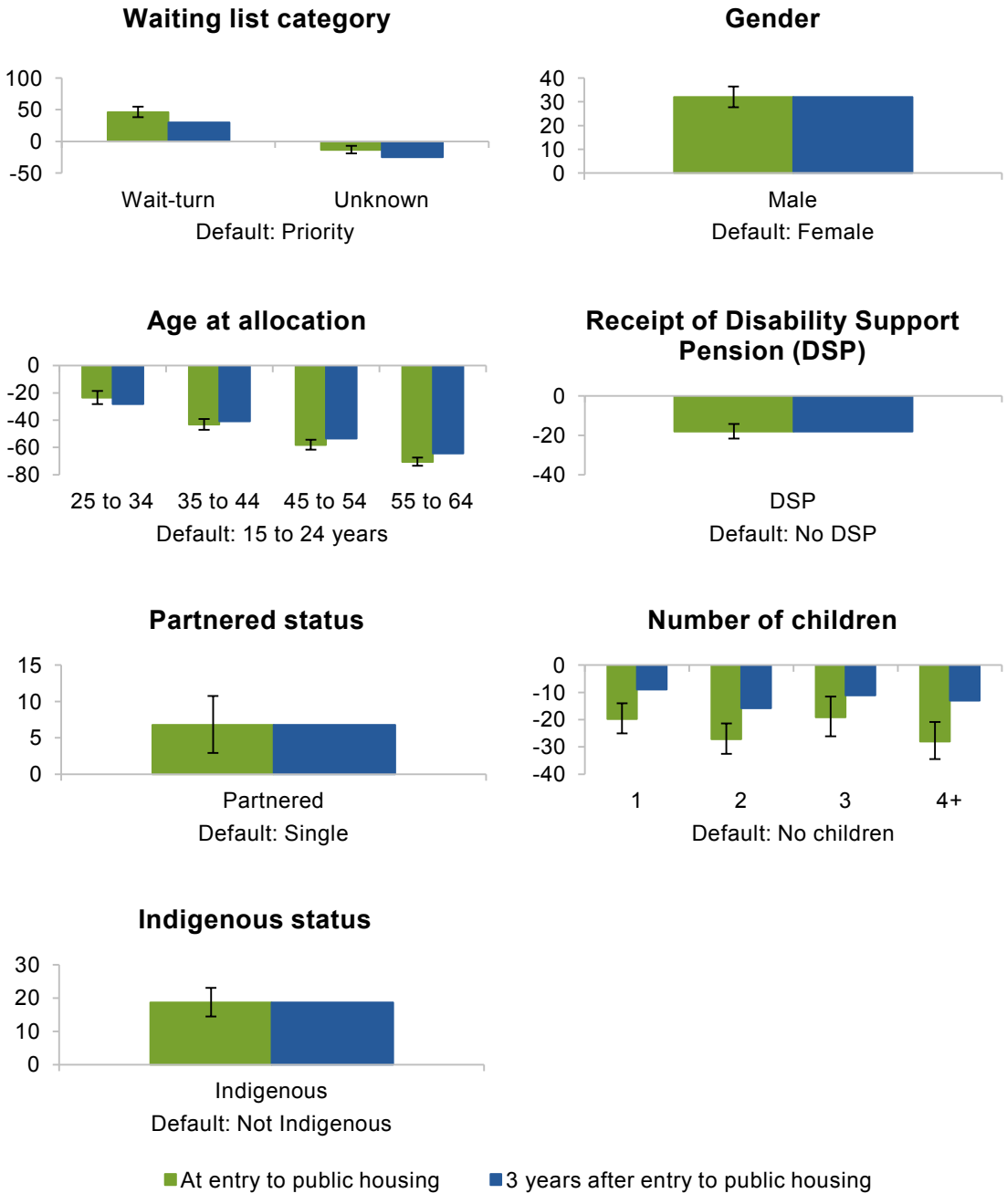
Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

In contrast to the South Australian results, 'wait-turn' tenants were initially more likely to exit public housing than those who had a priority application (figure 6). (Whelan (2009) drew a similar conclusion using Western Australian data for 1999 to 2005.) It is unclear whether this is due to differences between states or differences between household heads and other household members. Intuitively, individuals who were in the wait-turn category are more likely to be able to sustain a tenancy outside of public housing and so may decide to vacate their property, although this was not observed in the South Australian results. Tenant income limits in Western Australia could also be playing a role — it may be that wait-turn tenants were more likely to exceed the income eligibility limit for public housing. Nevertheless, similar to South Australia, the difference in the probability of exit between priority and wait-turn tenants declined over time.

Other differences from the South Australian results are evident. For example, partnered head tenants in South Australia were initially less likely to exit public housing, whereas partnered tenants in Western Australia were more likely (although the sizes of these relationships were small), and tenants receiving DSP were initially more likely to exit in South Australia, whereas those in Western Australia were less likely to exit. However, for both of these factors, the differences between tenants among each group decreased over time in South Australia.

Figure 6 **Factors associated with exiting public housing — Western Australia[a,b,c,d,e,f]**

Percentage difference in probability of exit, compared to default group



[a] Tenants aged 15 to 64. [b] All comparisons are made with respect to the default category. For example, a male tenant was 32 per cent more likely to exit public housing than a female tenant. [c] Percentage difference calculated as the hazard ratio minus one. [d] Vertical lines indicate 95 per cent confidence intervals. [e] Refer to footnote 12. [f] Location was excluded from the model due to model misspecification issues. There were insufficient data on country of birth and number of bedrooms to include these variables in the model.

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

Similar to Whelan (2009), public housing exits were found to be negatively associated with age, number of children and being female. Although people receiving the DSP were less likely to exit public housing,[15] this may be a more recent phenomenon as Whelan (2009) found that those who had a disability were more likely to exit — a result that is more consistent with the South Australian analysis. Furthermore, while no significant relationship with employment at entry into public housing was found in this analysis, Whelan (2009) found that tenants earning low amounts of income from employment were less likely to exit public housing, and the probability of exit increased with earnings. These different findings suggest that changes in the relationship between various factors and public housing exits can occur over time.[16]

What do these findings mean?

The results shed some light on public housing exits, but there is still much to understand about the forces behind these exits. For example, the factors affecting exit may differ depending on the reasons for vacating public housing. Detailed information was not available on the reasons for exits, which might have been voluntary or due to eviction. Evidence on the drivers behind voluntary exits and evictions, and more information on tenant outcomes after exit, would be valuable.[17] Furthermore, past studies have found patterns of multiple exits and re-entries into social housing among some tenants (Seelig et al. 2008; Wiesel et al. 2014). Further work on exits from private rental for low-income populations and re-entries to social housing could add to the evidence on housing stability among low-income renters, specifically on whether the stability of tenure in public housing has positive effects on employment.

The results suggest that South Australian and Western Australian tenants differ, on average, in a few factors associated with exits from public housing — notably waiting list category and receipt of DSP, both of which reflect housing need. However, the differences between tenants decreased over the period in public housing for both of these factors in South Australia, and for the waiting list factor in Western Australia. Further research is required to examine whether differences in the results between states are due to state policies, or the characteristics of people housed within each state or the research populations — head tenants and other household members.[18]

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15 DSP receipt is used as a disability indicator in this analysis because self-reported disability does not require a medical confirmation.

16 The different findings could also be explained by differences in the variables included in each model, to the extent that those variables are correlated with employment.

17 Analysis using data available in the Household, Income and Labour Dynamics in Australia Survey on the reasons for changing address among public housing tenants could provide some insight on this issue. This could be considered in future research on this topic.

18 This analysis was not feasible with these data because dates of entry and exit into public housing were not available for all household members in South Australia and because of difficulties in identifying a unique household head in the Western Australian data.

Despite some differences between the South Australian and Western Australian results, both analyses suggest that employment is not significantly related to exiting public housing initially. This may be because the relationship between employment and exit depends on the reason for exit — tenancies could end because of eviction due to rent arrears or because of voluntary exit due to gains in employment. More information on the reasons for exiting would be useful in this respect. In both states, employed tenants were more likely to exit public housing than non-employed tenants the longer they had been in public housing. It could be that there were fewer evictions and more voluntary exits among people who had been in public housing for a long time. It is likely that employed people are more likely to be able to sustain a tenancy outside of public housing, as suggested by Wiesel et al. (2014).

Other topics of interest for future research include investigations into how exits are impacted by housing adequacy. In particular, a measure could be included in the model that assessed the number of people in the household against the number of bedrooms in the property. Tenants might be more likely to exit if there is overcrowding, and less likely to exit if they have spare bedrooms. Future research could also examine how impacts of various factors differ by family type. Knowledge of the effects on exits among singles and lone parents would be particularly useful, as these are key groups among public housing tenants. These topics could not be examined within the timeframe of this project.

3 Analysis of tenant transitions into employment

Survival analysis methods are also used to examine transitions into employment and the factors associated with becoming employed, for tenants who were not initially employed when they entered public housing.[19,20]

The results are subject to data limitations. In particular, tenant incomes, from which employment status was inferred, are primarily observed at rent reviews rather than when incomes change. The rent reviews occur twice-yearly (in April and October) in South Australia and yearly (from the date the household entered public housing) in Western Australia. Tenants are asked to notify their state housing authority of changes in their incomes when they occur, but do not always do so. This means that transitions into employment may not be observed in the data at the exact month of the change. In addition, spells of employment may go unrecorded if they occur between income assessments. As a result, the estimated probabilities of tenants becoming employed, presented below, are likely to be underestimates. Furthermore, lack of a control group in this analysis means that causal impacts of entry into public housing on gains in employment cannot be identified — the analysis simply looks at transitions into employment after becoming a public housing tenant. Data limitations are further discussed in annex A.

[19] The analysis examines tenants aged 16 to 64 years, rather than 15 to 64 years as in the above section, because income data are mainly collected on people aged 16 and over.

[20] Because applicant incomes are infrequently updated, changes in employment status are rarely captured. Therefore, transitions into employment were only examined for tenants and not for applicants.

Existing evidence

Other Australian research of public housing tenants' employment outcomes reported that:

- those who were in the labour force tended to be younger, Indigenous and more likely to have children when compared with other tenants (descriptive analyses from the National Social Housing Survey of public housing tenants in 2007 (AIHW 2008)). The latter two factors are likely to be related to age, because of the younger Indigenous population in public housing and younger age profile of tenants with children. The main reasons given by survey respondents for not participating in the labour force included disability or old age, caring for children and lack of childcare, as well as a lack of training, education and experience. Transport options and location were not found to be very important to employment. However, the response rate for the survey was low (37 per cent) and the results might be affected by selection bias
- the main barriers to employment among housing assistance recipients (including public housing tenants and private renters receiving Commonwealth Rent Assistance) included mental and physical disabilities, family responsibilities, transport options and location (Hulse and Saugeres 2008)
- among families with two children, public housing subsidies had a small negative effect on the employment participation of men, but no significant effect on women. Men who were sole parents were less likely to work, as were Indigenous women (Dockery et al. 2008).

What factors are associated with tenants becoming employed?

South Australia

Patterns of transitions into employment

Across the study period, about 11 per cent of working-age head tenants in South Australia were already employed at entry into public housing.[21] About 18 per cent of tenants who were not working at entry to public housing are expected to have found employment within two years of entering public housing, and about 29 per cent within five years (figure 7).[22] (While an individual may have found employment, this does not mean that they were in employment for the remainder of their time in public housing.)[23]

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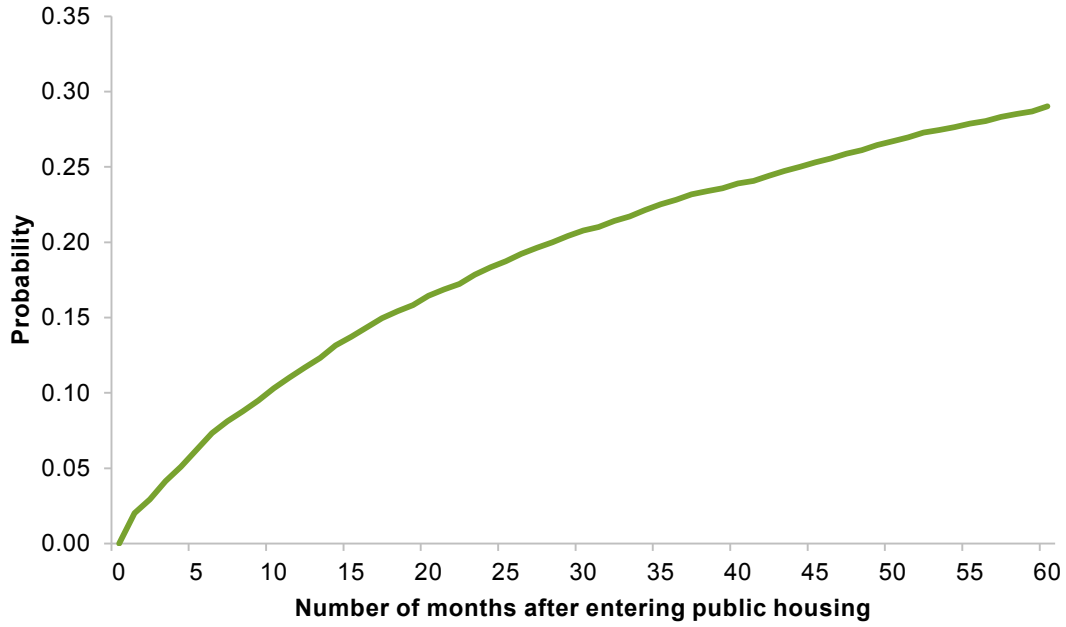
21 This result is reasonably consistent with the employment rates at entry to public housing presented in figure 13. This is because the vast majority of entrants to public housing in South Australia are from category 1 (BP 4, figure 8).

22 These survival analysis estimates take into account censoring. See annex A, table 7 for a list of cases where censoring occurs in this analysis.

23 The employment rate of all working-age head tenants in South Australia in 2013 was about 19 per cent (BP 4), suggesting that not all tenants stay in employment after finding a job.

Figure 7 **Cumulative probability of becoming employed over time — South Australia[a,b]**



[a] Working-age head tenants who were not employed at entry to public housing. [b] These estimates are mainly based on income observations at entry to public housing and at rent reviews in April and October each year. To the extent that employment changes at different times are not recorded in the data, probabilities will be understated.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Correlates of transitions into employment

Cox proportional hazards models were used to estimate the links between various factors and transitions to employment, including waiting list category, age, receipt of DSP, partnered status, number of children, Indigenous status, country of birth and location, as well as the time-varying impacts of these variables. Results are presented separately by gender because the factors associated with employment tend to differ between men and women.[24]

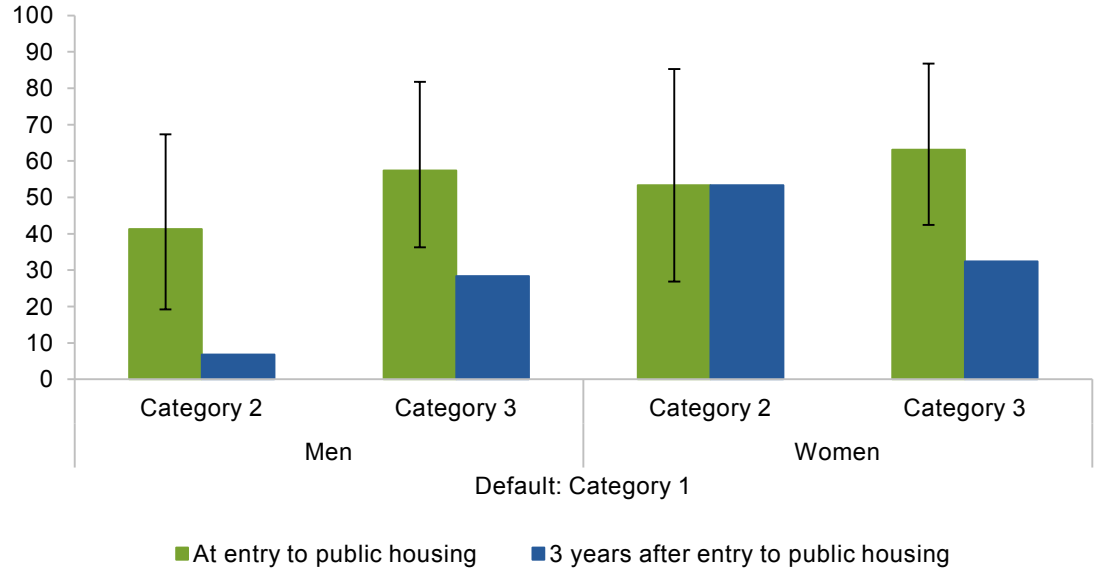
Tenants who were in category 2 (high housing need) or category 3 (standard applicant) while on the waiting list were more likely to become employed after they entered public housing than those who were in category 1 (urgent housing need) (figure 8). For example, a male

[24] As in section 2, where the bar is above (below) zero, tenants with the given characteristic were more (less) likely to become employed than those with the default characteristic, holding other factors constant. The 95 per cent confidence interval of the estimate at entry to public housing (indicated by the vertical line) shows whether the relationship is statistically significant from zero. If no significant time-varying relationship is found for the variable, the bar at three years after entry to public housing is the same as that at entry.

tenant from category 3 was initially 57 per cent more likely to become employed than someone from category 1. This suggests that tenants housed from category 2 or category 3 might have been more employable than those from category 1. Tenants housed from category 1 could have had unobserved characteristics that hindered their chances of finding employment, relative to people from other categories. These differences were generally found to decrease with the length of time in public housing.

Figure 8 **Differences in probability of becoming employed, by waiting list category — South Australia[a,b,c,d,e,f]**

Per cent



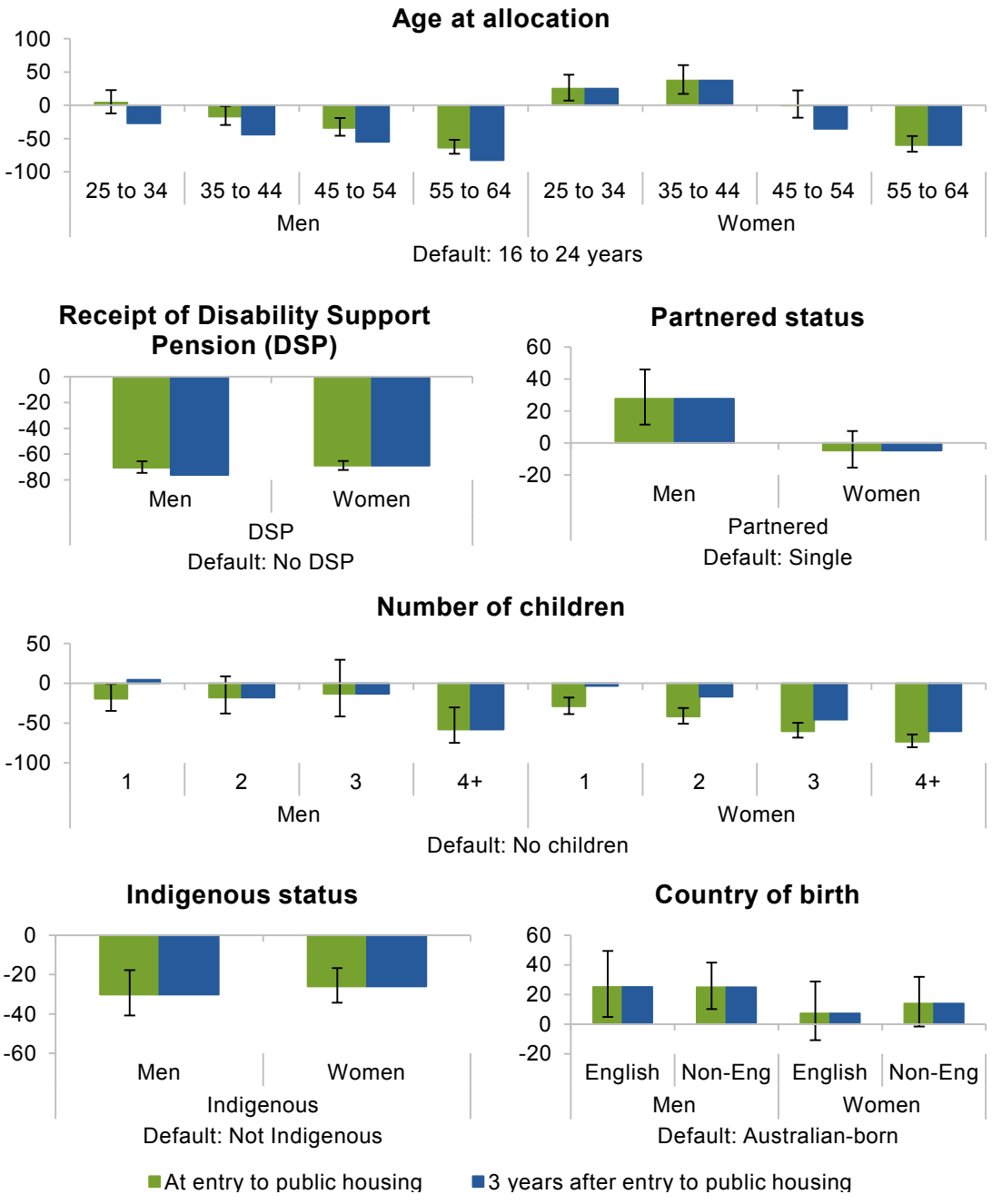
[a] Working-age head tenants who were not employed at entry to public housing. [b] Category 1 includes households that have an urgent housing need, category 2 includes households that have a high housing need, and category 3 includes households that do not have high or urgent housing needs but meet income and asset tests. [c] All comparisons are made with respect to the default category for the respective gender. In this case, the default is category 1. [d] Percentage difference calculated as the hazard ratio minus one. [e] Vertical lines indicate 95 per cent confidence intervals. [f] Refer to footnote 12.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Apart from waiting list category, other characteristics that were found to be related to employment included age, receipt of DSP, partnered status, number of children, Indigenous status and country of birth, some of which had relationships that varied slightly over time (figure 9). There were few differences between men and women, but an increase in age was negatively related to the probability of becoming employed for men, as was an increase in the number of children for women, although the latter effect declined over time.

Figure 9 **Factors associated with becoming employed — South Australia[a,b,c,d,e,f]**

Percentage difference in probability of employment, compared to default group



[a] Working-age head tenants who were not employed at entry to public housing. [b] All comparisons are made with respect to the default category for the respective gender. For example, a male tenant who was 35 to 44 years old when they were allocated housing was initially 17 per cent less likely to become employed than a male tenant who was 16 to 24 years old. [c] Percentage difference calculated as the hazard ratio minus one. [d] Vertical lines indicate 95 per cent confidence intervals. [e] Refer to footnotes 11 and 12. [f] Location is not illustrated in these figures, but is detailed in annex A.

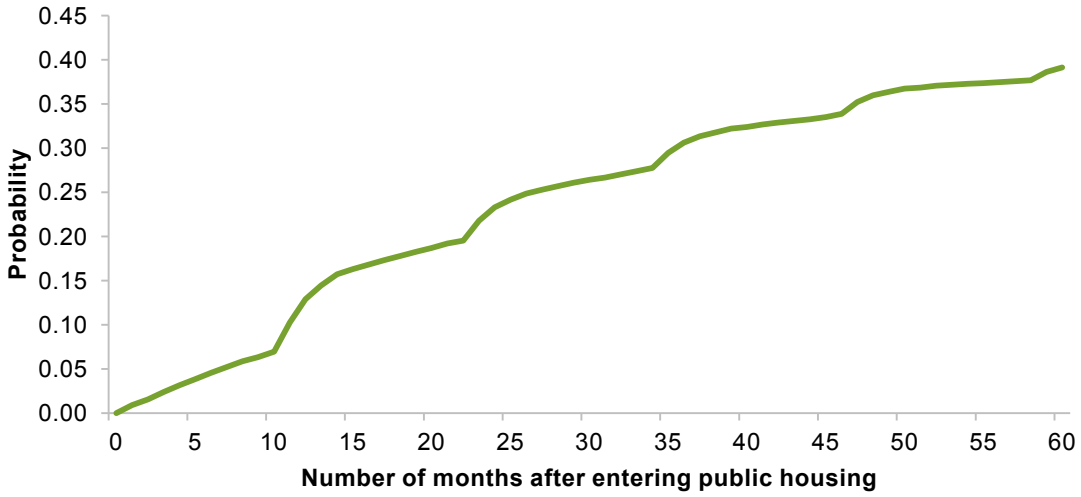
Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Western Australia

Patterns of transitions into employment

Across the study period, about 18 per cent of working-age tenants in Western Australia were employed when they entered public housing.[25] Similar to the patterns observed by Dockery et al. (2008), kinks in the probability of employment are observed about every 12 months due to the income assessments that the Department of Housing (WA) conducts each year (figure 10).[26]

Figure 10 **Cumulative probability of becoming employed over time — Western Australia[a,b]**



a Working-age tenants who were not employed at entry to public housing. **b** These estimates are mainly based on income observations at entry to public housing and at rent reviews every year thereafter. To the extent that employment changes at different times are not recorded in the data, probabilities will be understated.

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

25 This is higher than the employment rates at entry to public housing presented in figure 13 because of differences in the people included in each piece of analysis. The survival analysis of tenants includes those who did not have income observed in the data at entry to the waiting list, whereas they are not included in the data underlying figure 13. About 37 per cent of tenants in the survival analysis did not have an income observation at entry to the waiting list, about half of whom were people who applied for public housing before 2004 (the date from which waiting list records were available). One explanation that accounts for the higher employment rates at entry to public housing in the survival analysis is the fact that people applying for public housing in remote areas of Western Australia tend to be housed quickly and have higher employment rates. Those who were housed quickly are included in the survival analysis but not in the analysis in figure 13 because there is only one income assessment that corresponds to both entry onto the waiting list and entry into public housing.

26 The patterns are not observed in the South Australian data because their rent reviews are conducted in April and October each year, so each tenant will have been in public housing for different durations at the reviews.

The figure shows that about 23 per cent of tenants who were not initially employed are expected to have found employment two years after entering public housing, and about 39 per cent are expected to have found employment within five years of entering public housing.[27] These probabilities are greater than those for South Australian public housing tenants. Differences between the state results might reflect differences in: the measured tenant populations (that is, head tenants in South Australia versus all tenants in Western Australia); economic conditions in the two states over the study period; or because of a smaller proportion of high needs entrants in Western Australia.

Correlates of transitions into employment

Cox proportional hazards models of transitions into employment were estimated for Western Australia, controlling for waiting list category, age, self-reported disability, partnered status, number of children, Indigenous status and location, as well as time-varying effects of these variables.

Similar to South Australia, tenants who were in the wait-turn category were initially more likely to become employed than those who were in the priority category (figure 11). These relationships were not found to change over time. The relationships between other factors and the probability of becoming employed were also broadly similar to those in South Australia (figure 12).

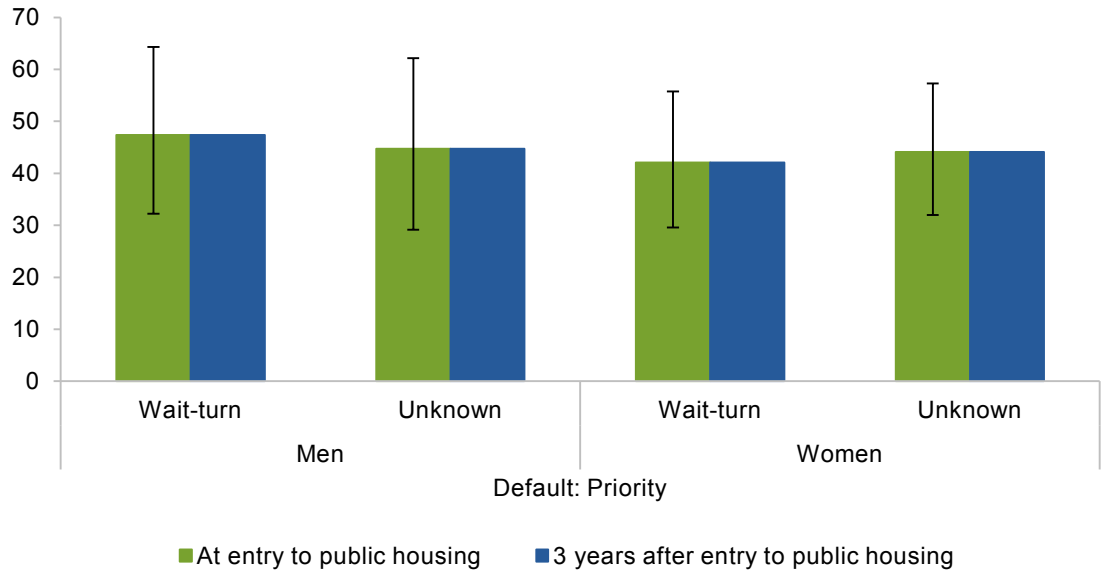
What do these findings mean?

The findings suggest that there are some transitions into employment among working-age head tenants in South Australia and working-age tenants in Western Australia following entry into public housing, although the analysis does not say whether the gains in employment are caused by public housing. The trend towards a more tightly targeted allocation of public housing, and declining employment rates for tenants (BP 4), suggests that some tenants may need more intensive assistance in gaining employment than they currently receive. Past examples of intensive case management programs provide some evidence that these programs can have positive effects on employment (chapter 5).

[27] The employment rate of all working-age tenants in Western Australia in 2013 was about 22 per cent (BP 4), suggesting that not all stay in employment after finding it.

Figure 11 **Differences in probability of becoming employed, by waiting list category — Western Australia[a,b,c,d,e,f]**

Per cent



[a] Working-age tenants who were not employed at entry to public housing. [b] Priority applicants are in urgent need of housing and wait-turn applicants meet eligibility requirements but are not in urgent need. People with an unknown waiting list category entered the waiting list before 2004 and therefore did not have a waiting list record available in the data provided. They are more likely to be wait-turn applicants. [c] All comparisons are made with respect to the default category for the respective gender. For example, a male tenant who was in the wait-turn category while on the waiting list was initially 47 per cent more likely to become employed than a male tenant who was a priority applicant. [d] Percentage difference calculated as the hazard ratio minus one. [e] Vertical lines indicate 95 per cent confidence intervals. [f] Refer to footnote 12.

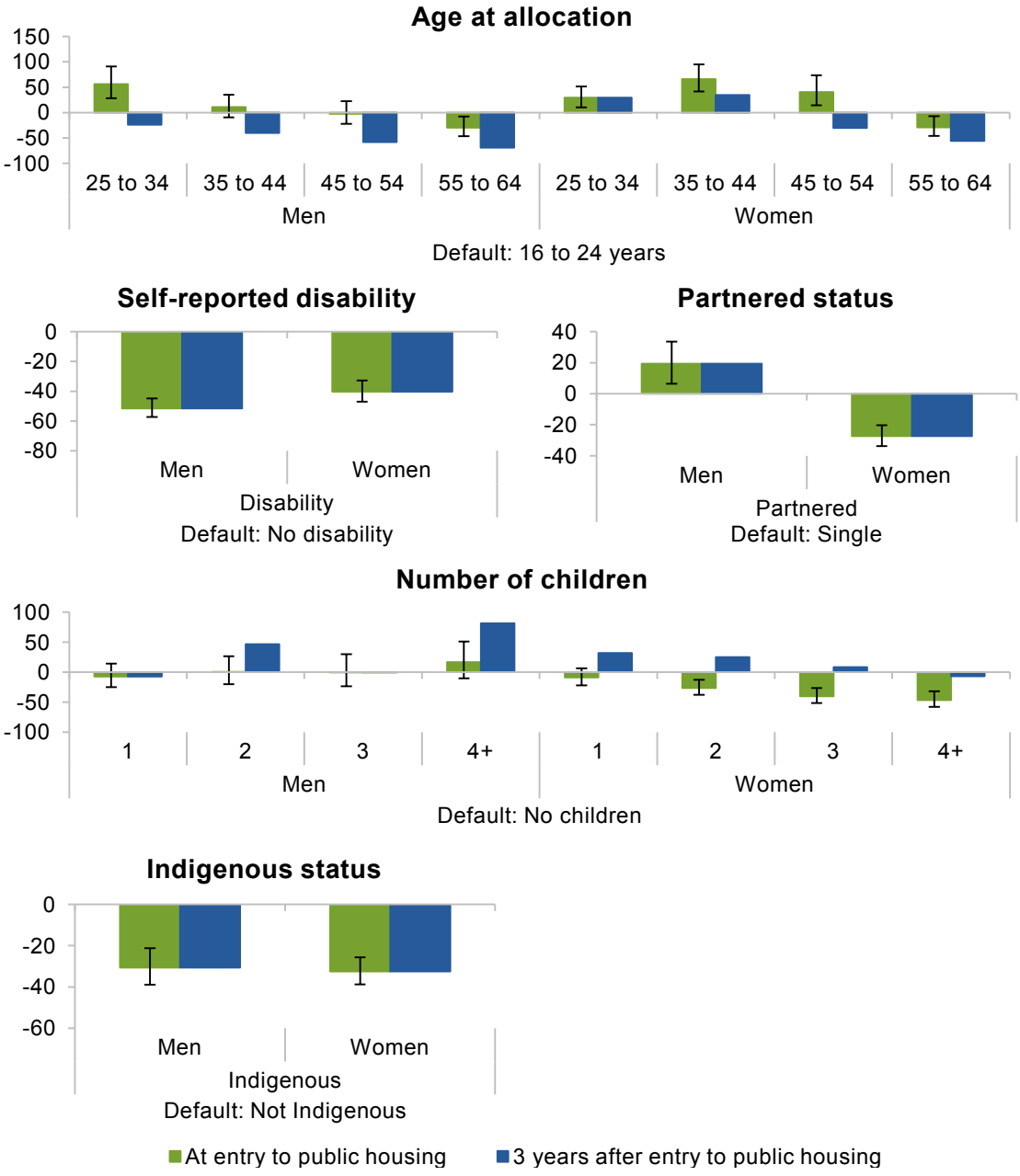
Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

In this analysis, waiting list category may be capturing a number of factors that are related to employment. People from higher priority categories might have unobserved characteristics that limit their probability of becoming employed after entering public housing. For example, people who have recently experienced rough sleeping or domestic violence may find it more difficult to secure employment immediately after entering public housing. Accurate and detailed recording of the reasons for being placed in a priority category would allow researchers to analyse the association between these characteristics and entry to employment for public housing tenants.

As in the analysis of public housing exits, future research could examine whether housing adequacy has an impact on transitions into employment, and how impacts of various factors differ depending on household type. Better and more frequent collection of income data would allow other avenues of research to be explored, such as how hours of work change and how long tenants remain in employment.

Figure 12 **Factors associated with becoming employed — Western Australia[a,b,c,d,e,f]**

Percentage difference in probability of employment, compared to default group



[a] Working-age tenants who were not employed at entry to public housing. [b] All comparisons are made with respect to the default category for the respective gender. For example, a male tenant aged 25 to 34 at entry to public housing was initially 56 per cent more likely to become employed than a male tenant aged 16 to 24 years. [c] Percentage difference calculated as the hazard ratio minus one.[d] Vertical lines indicate 95 per cent confidence intervals. [e] Refer to footnotes 11 and 12. [f] Location is not illustrated in these figures, but is detailed in annex A. There were insufficient data on country of birth to include this variable in the models.

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

4 Do welfare locks exist?

The welfare lock hypothesis suggests that applicants for public housing might avoid employment to remain under the income eligibility limit for public housing. If welfare locks do affect applicants, then employment rates are likely to be relatively low for people on the waiting list, but increase after they become public housing tenants and are no longer subject to strict income limits.[28]

A simple investigation in BP 4 indicated that, in South Australia and Western Australia, employment rates increased while applicants were waiting for public housing over the decade to 2013. (An example of this type of analysis is presented in figure 13.)[29] This observation suggests that welfare locks are not present. Employment rates also generally increased following a move into public housing. This could reflect a positive influence of housing stability on employment. (People might be more likely to work after moving into public housing because of the stability and security that it brings to their lives.) It might also reflect macroeconomic conditions or policy changes (although BP 4 concludes that these are not compelling explanations for the patterns in the data). Furthermore, the counterfactual is unknown — it is possible that employment rates would have been similar whether people moved or did not move into public housing. If that were the case, the patterns in the data would not be attributable to welfare locks or stability effects.

Difference-in-difference analysis was used to further examine welfare locks. The employment statuses of applicants who entered public housing and those who remained on the waiting list were compared, taking into account individual characteristics, time effects and unobserved characteristics (to the extent that they were constant over time). Time effects account for changes in macroeconomic conditions and policy.

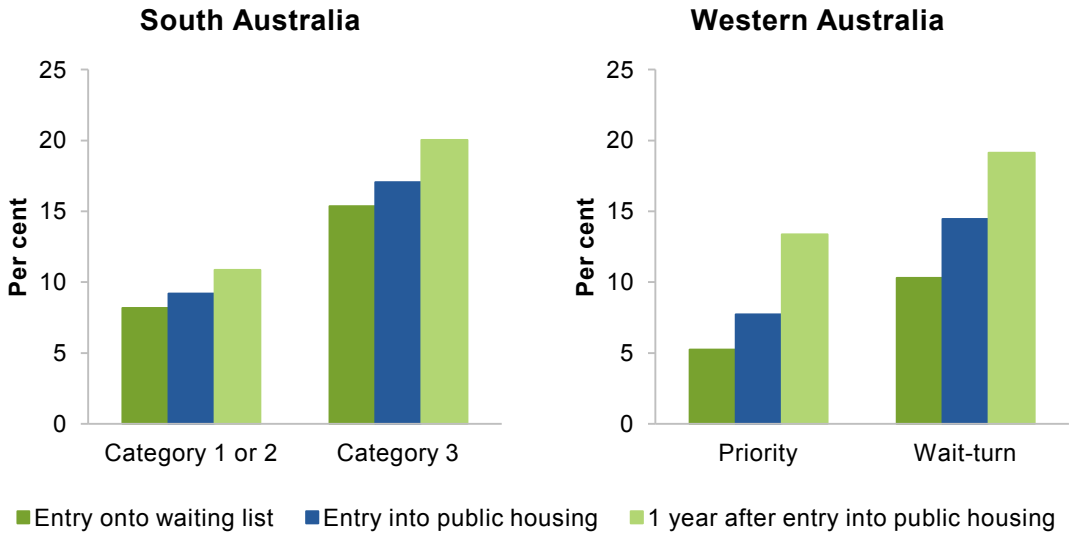
The results presented below are subject to a number of important data limitations which could result in some bias in estimates (box 3).

[28] Welfare locks might still affect public housing tenants in states and territories where ongoing income eligibility limits exist for tenants, such as in Western Australia.

[29] Rather than examining all household heads in South Australia and all tenants in Western Australia, figure 13 depicts employment rates for single-person households only, to facilitate a better comparison between the two states.

Figure 13 **Employment rates pre and post a move into public housing[a,b]**

Single-person households



[a] Observations include working-age individuals who are observed both as an applicant and a tenant between 2004 and 2013, whose category did not change while on the waiting list, and who were still in public housing one year after entry. [b] Employment rates at '1 year after entry into public housing' are inferred from the first income observation more than ten months after entry.

Sources: Author's estimates based on DCSI, Housing SA, administrative data (unpublished); Author's estimates based on Department of Housing (WA), administrative data (unpublished).

Existing evidence

Only one other study has tested the welfare lock hypothesis using Australian data. Dockery et al. (2008) used administrative records from the Department of Housing in Western Australia from 1999 to 2005 to look at differences in employment rates between public housing applicants and tenants. They found that:

- tenants had a higher probability of becoming employed than applicants
- entry into public housing was associated with improved probabilities of employment for both men and women in both priority and wait-turn categories.

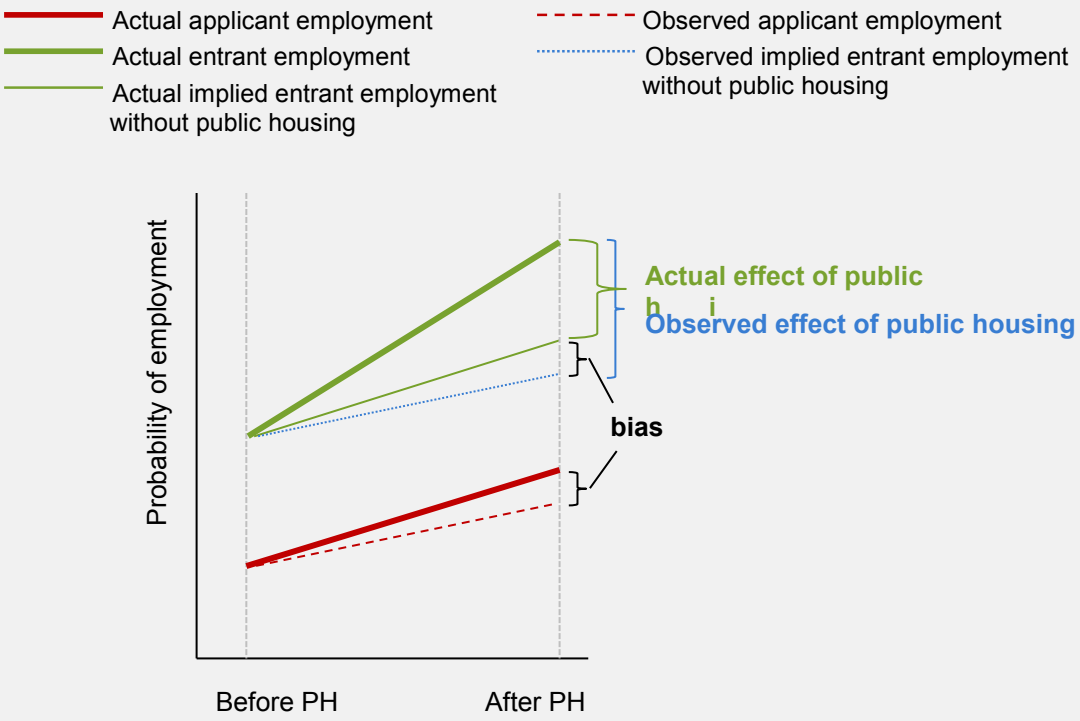
Dockery et al. (2008) argued that, for priority applicants, increases in employment after entry into public housing were likely due to stability effects because they were more likely to be in unstable housing situations while on the waiting list. In contrast, they argued that wait-turn applicants were more susceptible to welfare locks, as they were likely to be in stable housing while on the waiting list. Because the increase in the probability of employment for wait-turn applicants was found to be more than twice that of priority applicants after moving into public housing, Dockery et al. (2008) concluded that the welfare lock effect was stronger than the stability effect.

Box 3 Qualifications to the analysis — selection bias

The difference-in-difference analysis makes use of panel datasets that are constructed from South Australian and Western Australian public housing administrative records for applicants and tenants. Although these data are rich, in that they cover all public housing applicants and tenants, income information (from which employment status is inferred) is not available for every individual at each year of the data. To the extent that missing data are non-random, selection bias may arise. Data are missing from the panel datasets for two main reasons.

- Incomes are assessed infrequently for applicants. Income data are more likely to be out of date for lower priority applicants who have been waiting longer. Individuals were only included in the panel for a particular year if they were on the waiting list at 30 June and had an income observation within the past financial year.
- Applicants may exit the waiting list before being housed. Individuals were only included in the panel for the years in which they were on the waiting list or in public housing.

Analysis suggests that applicants who were missing income data (after their initial income assessment at entry to the waiting list) and those who exited the waiting list were more likely to be employed. As a result, applicants who were observed in the data after their initial income observation were less likely to be employed. To the extent that this is the case, entrants to public housing would be compared with a subset of less employable applicants and the estimate of the effect of public housing would be biased upwards, as illustrated below. Therefore, it is difficult to conclude confidently that public housing promotes (or does not promote) employment. Further details are available in annex A.



Qualitative studies also suggest that welfare locks may exist, although overall conclusions about the impact of a move into public housing on employment are mixed. Hulse and Saugeres (2008) conducted in-depth interviews of housing assistance recipients in New South Wales and Victoria and reported that several public housing applicants were not working so that they could remain eligible for housing. A number of study participants stated that lack of housing stability had impacted their capacity to find work. Another qualitative study found that some tenants worked less following a move into public housing because of the increased disposable income generated from rent savings, while others reported that an increase in self-esteem and additional disposable income helped them look for work (Phipps and Young 2005).

Other studies have not focused specifically on the welfare lock hypothesis, but some Australian and overseas studies have examined the relationships between housing assistance (both public housing and rent subsidies) and the labour supply of recipients. Results on the whole are mixed. However, the largest studies from the United States have found that receiving housing assistance leads to lower labour supply in the short term (Carlson et al. 2008; Jacob and Ludwig 2012; Olsen 2001; Olsen et al. 2005).

How does transitioning from a waiting list into public housing affect employment?

South Australia

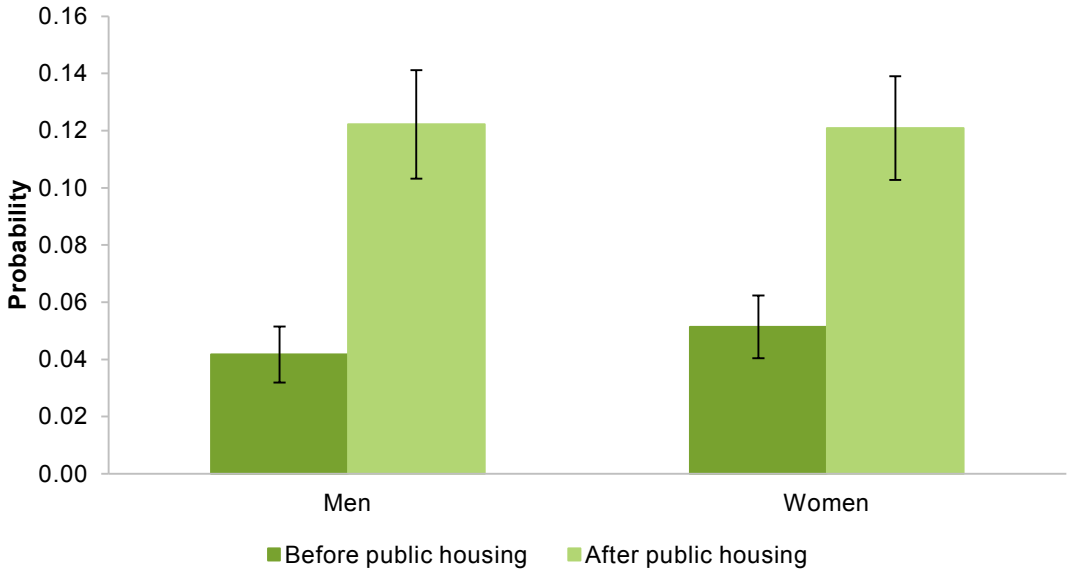
Assuming that the data provide an accurate reflection of applicant employment, public housing had a positive and significant effect on employment, even after individual characteristics (waiting list category, age, receipt of DSP, partnered status, number of children, Indigenous status and country of birth) and time effects were taken into account. For both men and women in South Australia, the predicted probability of employment increased (by 8 percentage points and 7 percentage points, respectively) after entry into public housing (figure 14).[30,31]

The links between observed characteristics and employment were broadly similar to those in the survival analysis of tenant transitions into employment in section 3. Details are provided in annex A.

[30] The average predicted probabilities of employment before and after public housing are the predicted averages in the years before entering public housing and in the years after entering public housing, respectively.

[31] Predicted probabilities from the random effects logit models underlying the figures presented below are lower than observed rates of employment. Predicted probabilities from pooled logit models for the same samples are much closer to observed rates of employment. It is not clear why the random effects estimates are relatively low. One possible explanation for this outcome is that it is due to the fact that random effects models set the individual-specific random effect as zero (the average random effect), while predicted probabilities from the pooled models have a (likely non-zero) constant term that is the same for all individuals.

Figure 14 **Average predicted probability of employment — South Australia[a,b]**



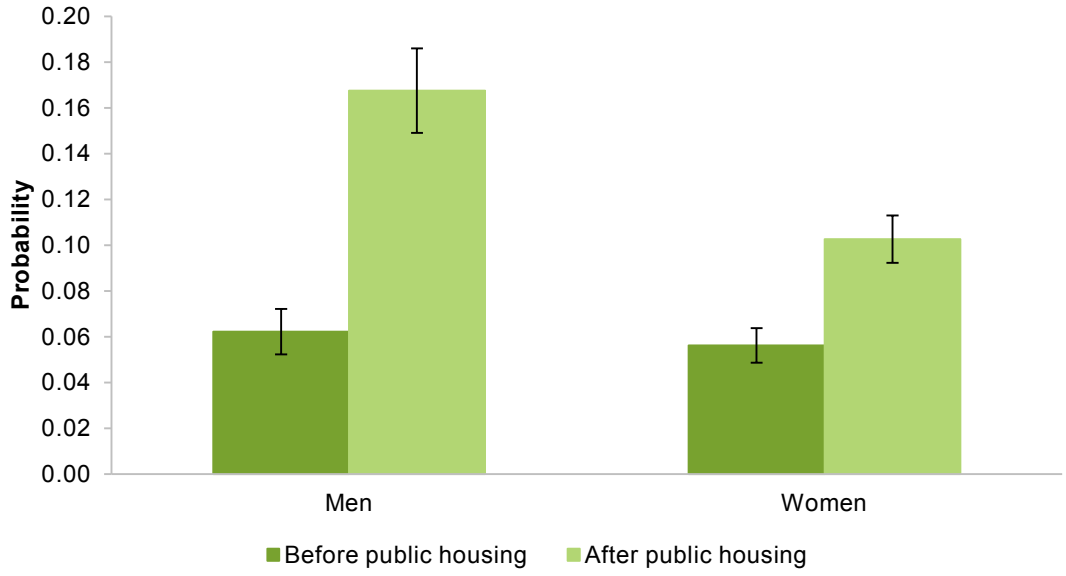
[a] Working-age household heads who did not change waiting list category over time. Applicants could change to a higher or lower priority category if their circumstances changed. [b] Vertical lines indicate 95 per cent confidence intervals.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Western Australia

As in South Australia, and assuming that the data accurately reflect applicants' employment statuses, public housing had a positive and significant effect on employment in Western Australia, even after individual characteristics (waiting list category, age, receipt of DSP, self-reported disability, partnered status, number of children, Indigenous status and location) and time effects were taken into account. After moving into public housing, the probability of employment for men increased by about 11 percentage points on average. For women, the increase was lower, at about 5 percentage points (figure 15). Dockery et al. (2008) find the same percentage point increases for both men and women using Western Australian data from 1999 to 2005. As in South Australia, the links between observed factors and employment were generally consistent with those in the survival analysis of tenant employment, and are detailed in annex A.

Figure 15 **Average predicted probability of employment — Western Australia[a,b]**



[a] Working-age individuals who did not change waiting list category over time. Wait-turn applicants could change to the priority category if their circumstances changed. [b] Vertical lines indicate 95 per cent confidence intervals.

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

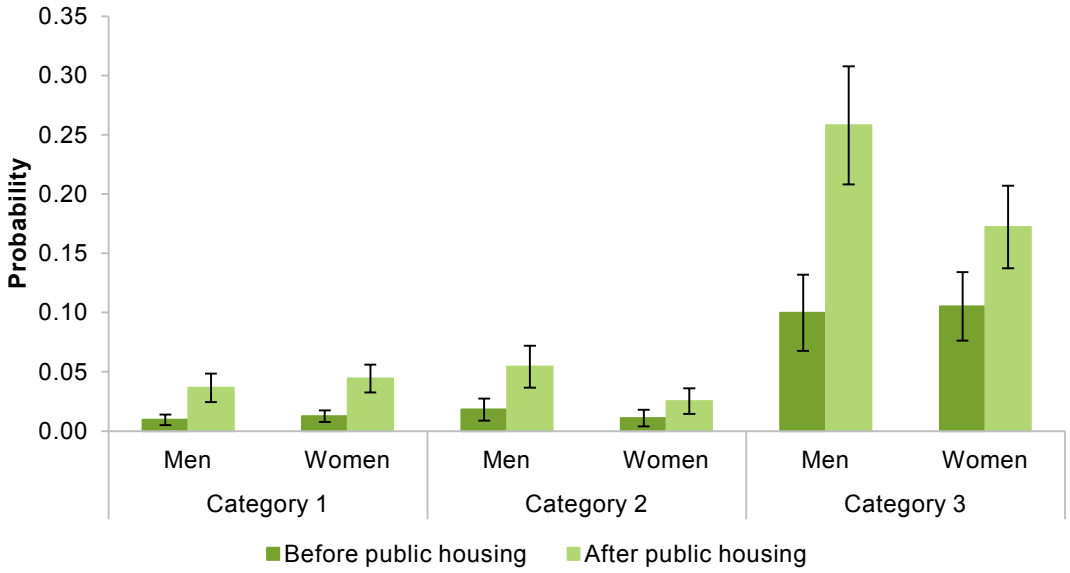
Welfare lock or stability effect?

In order to investigate the potential effects of welfare locks versus stability effects, this paper follows Dockery et al. (2008) and estimates separate models for applicants from different categories. In the case of South Australia, applicants from category 3 exhibit the lowest levels of disadvantage, and therefore are the most comparable to wait-turn applicants in Western Australia, whereas category 1 or 2 applicants are likely to experience more disadvantage, and are similar to priority applicants.

If the data are assumed to accurately reflect applicants' employment rates, the results suggest that category 3 applicants experienced greater increases in their probability of employment after entering public housing than did category 1 or 2 applicants (figure 16).[32] This is in line with Dockery et al. (2008)'s finding of greater increases in employment for wait-turn applicants than priority applicants. Applying Dockery et al.'s (2008) argument, the results suggest that category 1 and 2 applicants experienced a relatively small housing stability effect and category 3 applicants were subject to a relatively large welfare lock which was removed after entering public housing.

[32] It is likely that category 3 (wait-turn) applicants' employment data are less accurate than those for category 1 and 2 (priority) applicants because category 3 (wait-turn) applicants have longer wait times and thus more opportunities to enter employment while on the waiting list.

Figure 16 **Average predicted probability of employment by category — South Australia[a,b]**

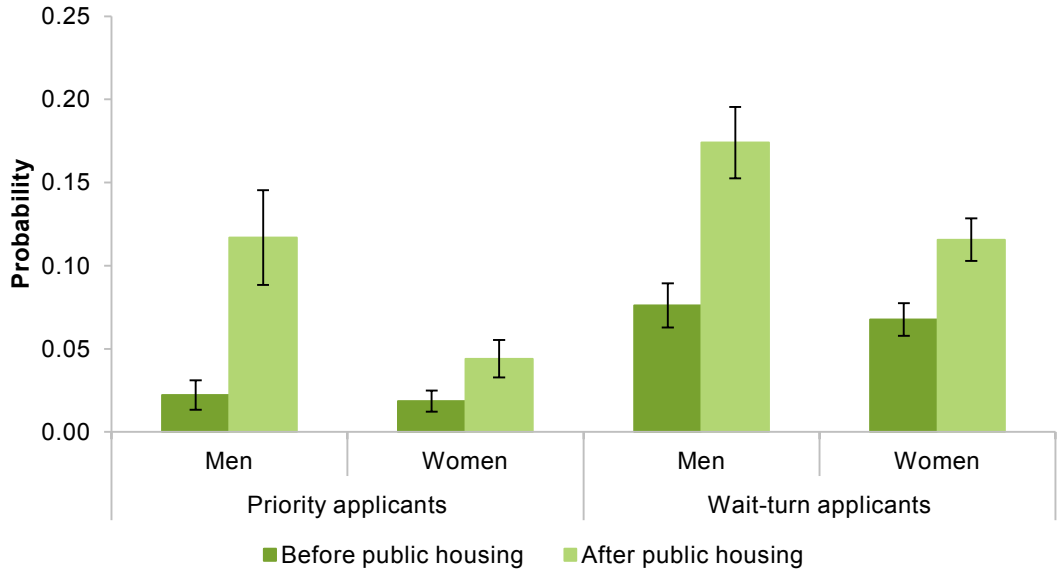


[a] Working-age household heads who did not change waiting list category over time. Applicants could change to a higher or lower priority category if their circumstances changed. [b] Vertical lines indicate 95 per cent confidence intervals.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

For Western Australia, both priority applicants and wait-turn applicants were found to have experienced an increase in their probabilities of employment after entering public housing (figure 17). The size of the increase was greater for wait-turn applicants than for priority applicants in percentage point terms for both men and women. However, the difference between categories was not as pronounced as it was in South Australia. This might be due to the different populations analysed (head tenants in South Australia and all tenants in Western Australia). Similar to South Australia, the findings suggest the presence of stability effects for priority applicants and welfare locks for wait-turn applicants.

Figure 17 **Average predicted probability of employment by category — Western Australia[a,b]**



[a] Working-age individuals who did not change waiting list category over time. Wait-turn applicants could change to the priority category if their circumstances changed. [b] Vertical lines indicate 95 per cent confidence intervals.

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

However, even assuming that the results are reliable, caution is required in interpreting them in this manner. That is, even if increases in employment for low priority applicants are observed to be larger than increases in employment for higher priority applicants, this might not be a good indicator of welfare locks. It might be argued that higher priority applicants are more likely to be subject to welfare lock effects than low priority applicants because they have a higher probability of entering public housing. There could be a greater incentive for them to limit their employment for a short time while on the waiting list, so that they remain eligible and receive the expected benefits that come with a public housing tenancy. In contrast, lower priority applicants have a smaller chance of entering public housing and may wait years before they are offered a place. Hence, they might believe that limiting their employment over such a long time period is not worthwhile. Therefore, it is difficult to interpret this as evidence of a welfare lock, that is, that applicants were deliberately not seeking employment in order to remain eligible for public housing.

What do these findings mean?

This analysis suggests that entering public housing leads to an increase in a person's probability of employment, other factors equal. However, as mentioned, data issues mean that the estimated effect of public housing on employment is likely to be overstated. Therefore, no clear conclusions can be drawn about the effect of public housing on

employment from these results. That said, sections 4 and 8 in BP 4 provide somewhat stronger evidence of stability effects.

Because employment status is inferred from employment income, regular collection of income data for applicants is needed to enable robust analysis of the welfare lock hypothesis. To isolate the effects of welfare locks for applicants, it would be ideal to have longitudinal data on employment participation for people before they enter a public housing waiting list, and after they exit a waiting list for a reason other than entry into public housing. This would allow researchers to see the effect that entry onto (or exit from) the waiting list may have on employment. Linkage of Centrelink income records with data from state housing authorities holds the potential of creating data with these characteristics. Fortnightly earnings information could be obtained for income support recipients before, during and after their time on the waiting list.

Randomised controlled trials would also allow the issue of welfare locks to be examined more clearly. For example, the employment outcomes of applicants who are subject to income limits could be compared with the outcomes of similar applicants who are not subject to income limits.[33]

With tenants now required to meet income limits on an ongoing basis in Queensland and Western Australia, the existence of welfare locks for tenants merits further investigation. There is potential for the difference-in-difference method to be applied to public housing data from Western Australia and South Australia, where the treatment is the introduction of tenant income limits affecting tenants in Western Australia, while South Australian tenants who are not subject to income limits could be used as the control group. This analysis could not be explored within the timeframe of this project but could be considered as part of future research on the topic of welfare locks.

[33] This may be difficult to implement on the grounds of fairness. However, trials have the potential to improve employment outcomes for some, in contrast to not improving outcomes for anyone. To avoid the issue of self-selection bias in a trial, applicants could self-nominate to participate in the trial, and then be allocated to treatment and control groups through a process of random selection.

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Annex A Public housing analysis — data, research methodology and results

This annex describes the public housing administrative records obtained from South Australia and Western Australia, and the processes undertaken in preparing the records for analysis. Descriptive statistics for these data are presented in BP 4[1] and a summary of statistics for individuals included in the multivariate analysis is presented below. This annex also explains the methods used in analysing exits from public housing (BP 6, section 2), tenant transitions into employment (BP 6, section 3) and welfare locks (BP 6, section 4), which are similar to the approaches adopted by Dockery et al. (2008). In particular, survival analysis techniques and difference-in-difference models were used. Limitations to the analysis and tables of results that underlie the analysis and discussion in BP 6 are also detailed in this paper.

1 Creating datasets from public housing administrative records

The analyses presented in BP 4 and BP 6 were based on confidentialised administrative records for public housing applicants and tenants spanning the years 2004 to 2013. The records reflect the information that housing officers collect to manage applications and tenancies. In addition to information related to the application or tenancy, such as waiting list category, weekly rent charged and dates at which individuals entered and exited a waiting list or public housing, the records include socio-demographic details, such as gender, date of birth and country of birth.

The datasets created from the administrative records include:

- for tenants: datasets in duration format, which contain observations at the dates that tenants entered and exited public housing and at each update of their income. These were used for the survival analysis of public housing exits and tenant transitions into employment in BP 6
- for applicants and tenants: panel datasets with observations at 30 June of each year, used in the difference-in-difference analysis of welfare locks in BP 6.

[1] Throughout this paper, BP refers to 'background paper'. Six BPs were produced as part of this research project, which examines the links between housing assistance and employment.

For South Australia, these datasets cover working-age (16 to 64 years) household heads[2] only, while the Western Australian datasets include all working-age individuals who were part of an applicant or tenant household. People applying to transfer between public housing properties (and included in waiting lists), were excluded from multivariate analysis of applicants.

Data characteristics and limitations

Some amendments were made to the data to adjust for possible errors in data entry and to assist in structuring the records into duration and panel data formats. Most of these amendments were not material to the analysis because they affected only a small number of observations. However, there are some characteristics of the data that limit the conclusions that can be drawn from the survival and difference-in-difference analysis. These limitations arise from how the data were collected, how variables were derived and missing data (table 1). Additional limitations as they apply to each piece of analysis are discussed in the following sections. Therefore, although population-level data were available, limitations on the individuals that could be included in the study mean that analysis was based on a sample, and so confidence intervals are presented in the results in BP 6.

Tables 2 and 3 present descriptive statistics of applicants and tenants included in the difference-in-difference analysis of welfare locks in 2013. Descriptive statistics were broadly similar across each piece of analysis. Sample sizes differed for each estimated model depending on restrictions on the individuals that could be included. The survival analysis of public housing exits, which represents the largest sample, consisted of close to 33 000 individuals in the South Australian analysis, and 28 000 in the Western Australian analysis. Sample sizes for each model are presented in the tables of results.

[2] In South Australia, each applicant or tenant household contains a nominated household head who is responsible for the application or the tenancy.

Table 1 General data limitations

Issue	*Example*	*Implication*
Applying to both South Australia and Western Australia		
Income and employment variables	Employment status was inferred from available data on employment income. Housing departments collect this income data from Centrelink and other sources, such as wage slips.	Employment might be understated because people have an incentive to underreport their income so that they remain eligible for public housing or Centrelink payments, or to keep their income-based rent low.
	Employment income is not necessarily updated in the income data at the exact time that a person's employment status changes. It may be recorded at a later date, or the spell of employment may go unrecorded if the person is no longer employed at their next income assessment.	If people do not voluntarily report employment gains to the housing department, these issues mean that employment could be understated.
	There were no variables on hours of work or the exact length of each employment spell.	This prevents more detailed analysis of employment outcomes.
Other variables	Tenants have an incentive to understate the number of people living in their household, to avoid an increase in income-based rent.	Household composition may not be accurately captured in the analysis.
	Indigenous status was self-reported.	Indigenous status may not be accurately captured in the analysis.
Missing variables	Some variables that may affect outcomes, such as applicants' current location, education level, work experience and drug problems, were not included in the administrative records.	These variables were not controlled for, which could lead to omitted variable bias if they are correlated with factors that were included in the multivariate models.
Applying to South Australia only		
Sample selection	Only household heads were analysed because detailed data were not available on when other household members entered or exited the waiting list or public housing. This means that working-age partners and children were not included in the analysis.	The results are not generalisable to excluded groups, to the extent that they differ to household heads. In 2013, head tenants were more likely to be female and older and less likely to be employed than other household members.
	Because applicant data were provided in yearly snapshots, applicants who entered a waiting list and exited within the same financial year were not included in the analysis. Many of these are likely to be priority applicants, who tend to exit the waiting list into public housing within a short timeframe.	The results may not be generalisable to all applicants. But if differences between those who exited within the same financial year and those who did not are fully explained by differences in waiting list categories, then results of separate analyses by category could be generalised.
Other variables	Rents paid and market rents were only available at the latest date that the household was in public housing.	Rent variables were not included in longitudinal analysis.
	Disability status was self-reported and does not require a medical confirmation.	Receipt of Disability Support Pension was used as a disability indicator.
	For tenants, data on household members were only available at the latest date that the household was in public housing, whereas for applicants, they were available at 30 June for each year.	Changes in household composition, including partnered status and number of children, may not be accurately captured in the analysis.

(Continued next page)

Table 1 **(continued)**

Issue	*Example*	*Implication*
Applying to Western Australia only		
Sample selection	Applicant data only included information on people who applied from 2004.	Unlike in the SA analysis, those in WA who applied before 2004 but who were still on the waiting list in 2004 could not be included.
Income and employment variables	Income data for applicants were collected at a lower level of detail — Disability Support Pension was generally grouped into a broad pension category.	For multivariate analysis involving applicants, self-reported disability was used as a disability indicator.
Other variables	A tenant's level of housing need while they were waiting for public housing (priority or wait-turn applicant) was only known if they applied for housing after 2004.	An 'unknown' waiting list category was included in multivariate analysis for tenants.
	Disability status was self-reported and does not require a medical confirmation.	For multivariate analysis of tenants, receipt of Disability Support Pension was generally used as a disability indicator. In cases where inclusion of the receipt of Disability Support Pension variable led to the failure of tests of model specification, whereas the self-reported disability status variable did not, the latter variable was used instead.
	The date at which disability was self-reported was unknown. It was assumed that an individual was affected by the disability for all years that they are observed.	This may overstate the rate of disability if it was actually developed after joining a waiting list or entering public housing.
	The current location of applicants was not available in the data, but applicants can choose one preferred area for public housing.	Preferred area for public housing was used as a proxy for the current location of applicants.
Missing variables	Country of birth was not reported for most people.	Country of birth was not controlled for, which could lead to omitted variable bias if it is correlated with factors that were included in the multivariate models.
	Information on the characteristics of public housing properties, such as market rent and number of bedrooms, was not available for all tenants for the whole study period.	These variables were not controlled for in the multivariate analysis, which could lead to omitted variable bias if they are correlated with factors that were included in the multivariate models.

Table 2 **Characteristics of applicants and tenants, 2013 — South Australia[a]**

Per cent

		Men		*Women*	
		Applicants	*Tenants*	*Applicants*	*Tenants*
Category	Category 1 — urgent	11.2	58.3	7.2	69.2
	Category 2 — high	39.4	28.7	20.6	16.6
	Category 3 — other	49.5	13.0	72.2	14.2
Age	16 to 24	17.5	7.5	21.7	11.0
	25 to 34	24.7	17.3	35.7	24.7
	35 to 44	27.3	22.8	22.2	24.4
	45 to 54	20.9	29.9	14.3	21.6
	55 to 64	9.7	22.5	6.1	18.4
Country of birth	Australia	72.8	77.7	79.8	82.5
	Main English speaking	4.0	6.1	3.2	4.8
	Non-English speaking	21.7	15.3	16.0	11.8
	Unknown	1.6	0.9	1.0	0.9
Indigenous status	Indigenous	10.4	9.6	11.7	22.0
	Not Indigenous	84.6	87.2	85.5	76.6
	Unknown	5.0	3.1	2.8	1.4
Partnered		19.3	11.7	9.7	10.9
Number of children	0	78.4	89.0	46.6	56.8
	1	9.2	5.8	26.4	18.6
	2	6.7	2.8	16.5	12.5
	3	2.7	1.4	6.9	6.5
	4 or more	3.0	1.0	3.6	5.7
Receiving DSP[b]		38.4	67.3	17.2	47.6
Region (Statistical Area Level 4)	Adelaide — Central and Hills	**na**	11.3	**na**	8.9
	Adelaide — North	**na**	25.0	**na**	28.4
	Adelaide — South	**na**	16.4	**na**	16.5
	Adelaide — West	**na**	21.3	**na**	19.1
	Barossa — Yorke — Mid North	**na**	4.6	**na**	4.6
	South Australia — Outback	**na**	11.2	**na**	12.5
	South Australia — South East	**na**	10.2	**na**	10.0
Employed		18.7	14.0	17.9	17.5

na Not available. **a** These statistics are generated from the sample of applicants and tenants in 2013 used in the difference-in-difference analysis and are broadly reflective of the characteristics of the samples used in the survival analysis. **b** Disability Support Pension.

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Table 3 **Characteristics of applicants and tenants, 2013 — Western Australia[a]**

Per cent

		Men		*Women*	
		Applicants	*Tenants*	*Applicants*	*Tenants*
Category	Priority	4.6	33.7	5.5	35.4
	Wait-turn	95.4	66.3	94.6	64.6
Age	16 to 24	8.7	3.9	15.7	10.3
	25 to 34	25.7	15.1	33.9	29.9
	35 to 44	30.8	25.9	28.5	25.8
	45 to 54	22.8	27.3	15.0	17.3
	55 to 64	12.0	27.9	6.9	16.7
Indigenous		8.8	13.7	8.9	20.6
Partnered		33.8	26.8	19.1	21.8
Number of children	0	62.6	72.9	25.8	38.4
	1	14.7	8.1	32.0	21.4
	2	9.0	9.1	21.4	20.5
	3	7.9	5.0	12.5	11.5
	4 or more	5.9	4.8	8.4	8.3
Receiving DSP[b]		19.2	54.9	7.4	27.0
Region (Statistical Area Level 4)	Bunbury	6.4	9.2	8.4	11.1
	Mandurah	5.6	5.0	5.6	4.5
	Perth — Inner	24.7	7.5	17.7	4.2
	Perth — North East	6.3	7.8	7.8	7.4
	Perth — North West	18.4	14.3	20.8	12.2
	Perth — South East	13.4	13.5	15.5	14.0
	Perth — South West	9.5	13.7	11.2	12.8
	Western Australia — Outback	10.6	14.6	8.8	21.1
	Western Australia — Wheat Belt	5.1	6.1	4.1	6.0
	Unknown	0.0	8.4	0.0	6.7
Employed		17.0	18.4	16.8	18.3

a These statistics are generated from the sample of applicants and tenants in 2013 used in the difference-in-difference analysis and are broadly reflective of the characteristics of the samples used in the survival analysis. **b** Disability Support Pension.

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

2 Survival analysis of public housing exits

Methodology

Following Dockery et al. (2008), survival analysis was used to model the time until exit from public housing. Both non-parametric and semi-parametric survival analysis techniques were applied. Non-parametric techniques were used to estimate cumulative probabilities of exiting public housing over time, while semi-parametric techniques were used to analyse how various factors were associated with exits from public housing (holding all else constant).

Non-parametric survival analysis

Non-parametric survival analysis methods make no assumptions about the distribution of time until exit or how covariates change the time until exit (Cleves et al. 2008). Instead, the data are presented as they are.

The convention in survival analysis is to refer to the survivor function, which in this model describes the probability of remaining in public housing after a certain length of time:

$$S(t) = \Pr(T > t)$$

where t represents the time spent in public housing and T denotes the time of exit from public housing. The survivor function is equal to one at $t = 0$ and decreases towards zero as t goes to infinity.

The Kaplan-Meier estimator of the survivor function takes into account individuals who are censored[3] in the data by only considering data for individuals at times that they are observed. Use of this estimator involves the assumption that censoring is unrelated to exiting public housing.[4] For a dataset with observed exit times $t_1, \ldots, t_k$, where k is the number of unique exit times observed in the data, the Kaplan-Meier estimator is:

$$\hat{S}(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right)$$

where n_j is the number of individuals 'at risk' of exiting public housing at time t_j and d_j is the number of exits observed at time t_j.

3 Censoring occurs if the individual is still living in public housing by the end of the study period.

4 If censoring is positively (negatively) related to exiting public housing, estimates will be negatively (positively) biased. This is unlikely to be an issue in the survival analysis of public housing exits because censored individuals are not reasonably expected to be more or less likely to exit public housing, all other factors equal.

The figures presented in BP 6 are the estimated cumulative distribution functions of time until exit from public housing (the inverses of the survivor functions), that is, the probability of exiting public housing:

$$\hat{F}(t) = 1 - \hat{S}(t)$$

Closely associated with these concepts is the hazard function. In this context, the hazard function represents the risk of exiting public housing at a particular time, given that the individual has not yet exited public housing:

$$h(t) = \frac{f(t)}{S(t)} = \frac{dF(t)}{dt}\frac{1}{S(t)}$$

where $f(t)$ is the density function of time until exit. The hazard function ranges from zero (no risk of exit) to infinity (certainty of exit).

Semi-parametric survival analysis — Cox proportional hazards model

The Cox proportional hazards model is a method that allows the time until exit from public housing to be modelled as a function of covariates that are associated with the probability of exit. It is a semi-parametric method because it makes no specific assumptions about the distribution of time until exit, but it assumes that the hazard that any individual faces is proportional to a baseline hazard, that is, the hazard an individual would face if all covariates were set to zero. This means that a one unit increase in a covariate is assumed to have the same multiplicative effect on the hazard rate for all individuals.

The hazard function (the risk of exiting public housing) is specified as:

$$h_i(t) = h_0(t)\exp(X_i'(t)\beta + tX_i'(t)\gamma)$$

where:

- t is the number of months after entry into public housing[5]
- $h_i(t)$ is the hazard of exiting public housing at time t for individual i
- $h_0(t)$ is the baseline hazard
- $X_i(t)$ is a vector of control variables representing the characteristics of each individual i in public housing at time t
- β is a vector of coefficients for the control variables
- γ is a vector of coefficients for control variables where the effect of that variable on the hazard is found to vary over the time spent in public housing.

5 The duration datasets contain observations at the dates of entry to and exit from public housing and at the dates of each income assessment. Although this means that the unit of time in the analysis was essentially in days, the time variable was scaled to months to facilitate interpretation.

The selection of control variables was based on characteristics that are expected to be related to the probability of exiting public housing, and for which there were sufficient data available in the administrative records. As noted in table 1, some variables that may have an effect on public housing exits were not included because of a lack of data.

Data limitations

In addition to the general limitations of the data for each state (table 1), the data have two characteristics that were not previously discussed that limit their use in Cox proportional hazards models (table 4).

Table 4 **Data limitations — survival analysis of public housing exits**

Issue	*Example*	*Implication*
Sample selection	Tenant employment status at entry to housing was assumed from their income assessment either just before they entered public housing or, if that was not available, their first income assessment after entering public housing. In the latter case (which mainly affects WA tenants who joined a public housing household after the tenancy began), the assumption may be less reasonable the longer the time between entry and income assessment. Therefore, tenants in the analysis were restricted to those who had an income assessment within the first six months of the household entering public housing.	The results are not generalisable to the extent that excluded tenants differ from those included in the analysis.
Missing variables	Data were not available on the reason for exiting public housing (such as voluntary exit or eviction). It is likely that observed characteristics affect exits differently depending on the reason for exit.	If the effects of observed characteristics work in opposite directions depending on the reason for exit, then coefficients could be biased towards zero.

Estimation results

Tables 5 and 6 present the results of Cox proportional hazards models of exiting public housing for tenants in South Australia and Western Australia. For each control variable included in the regression, the hazard ratio of exiting public housing is displayed. Hazard ratios are the exponentiated coefficients of the model, $\exp(\beta)$, which can be interpreted as the estimated hazard of exiting public housing, relative to the default group[6] for the corresponding categorical variable. If the hazard ratio for a particular group is greater (less) than one, then people in that group are more (less) likely to leave public housing than people in the default group. For example, for tenants in South Australia, the hazard ratio for males was 1.22, meaning that men were estimated to be 22 per cent more likely to exit public housing than women — other characteristics equal.

6 For each categorical variable, one 'default group' must be excluded from the regression. Estimates have to be interpreted relative to that default group.

The hazard ratios for some variables were found to vary over the length of time in public housing, in which case the variable was interacted with time (number of months in public housing) in the regression model.[7] The time-varying components of the hazard ratios, $\exp(\gamma)$, are also reported in tables 5 and 6. For example, for tenants in South Australia who were in category 2 while on the waiting list, the time-constant component of the hazard ratio was 0.76, meaning that they were initially 24 per cent less likely to exit public housing than people from category 1. The time-varying component of the hazard ratio for category 2 tenants was greater than one, meaning that the overall hazard ratio increased over time and thus the difference in the probability of exit between category 1 and 2 decreased, the longer tenants had been in public housing.

Results for selected factors from tables 5 and 6 are presented in BP 6 at entry to public housing and three years after entry to public housing. At entry to public housing, the percentage difference in probability of exit between the group x and the default group for the corresponding categorical variable was calculated as the time-constant component of the hazard ratio minus one, multiplied by 100:

$$[\exp(\beta_x) - 1] * 100$$

At three years (36 months) after entry to public housing, the percentage difference in probability of exit takes into account the time-varying component of the hazard ratio and was calculated as:

$$[\exp(\beta_x + 36\gamma_x) - 1] * 100 = [\exp(\beta_x)\exp(\gamma_x)^{36} - 1] * 100$$

[7] The proportional hazards assumption was checked using tests based on the analysis of Schoenfeld residuals, which examine whether there is a relationship between the residuals and time. For variables that were found to be related to time, an interaction term between the variable and time was included in the model. Although many time-varying impacts are significant, the hazard ratios are found to be quite close to 1. Because the unit of time is months, this suggests that the effects of a variable were not vastly different in between months. However, these time-varying effects accumulate and can result in more notable differences over a number of years in public housing.

Table 5 **Cox proportional hazards model results for factors associated with the probability of exiting public housing — South Australia[a]**

Hazard ratio (standard error)

Number of observations[b]	532 191	
Number of individuals	32 715	
Variables		
Category (default: category 1 — urgent need)		
Category 2 — high need	0.76 ***	(0.03)
Category 3 — other	0.86 ***	(0.03)
Male	1.22 ***	(0.02)
Age at allocation (default: 15 to 24)		
25 to 34	0.55 ***	(0.02)
35 to 44	0.40 ***	(0.02)
45 to 54	0.27 ***	(0.01)
55 to 64	0.24 ***	(0.01)
Country of birth (default: Australia)		
Main English speaking	0.99	(0.06)
Non-English speaking	0.91 *	(0.05)
Unknown[c]	0.49 ***	(0.05)
Indigenous status (default: not Indigenous)		
Indigenous	1.24 ***	(0.03)
Unknown	1.23 ***	(0.06)
Partnered	0.91 **	(0.04)
Number of children (default: 0)		
1	1.11 ***	(0.03)
2	1.07 **	(0.04)
3	1.01	(0.04)
4 or more	0.93	(0.05)
Receiving Disability Support Pension	1.29 ***	(0.04)
Employed	1.06	(0.04)
Region (Statistical Area Level 4) (default: Adelaide — Central and Hills)		
Adelaide — North	1.33 ***	(0.08)
Adelaide — South	1.33 ***	(0.08)
Adelaide — West	1.10	(0.07)
Barossa — Yorke — Mid North	2.56 ***	(0.20)
South Australia — Outback	2.14 ***	(0.14)
South Australia — South East	2.49 ***	(0.16)
Stock type (default: house)		
Apartment	3.59 ***	(0.57)
Cottage flat	1.25 ***	(0.06)
Flat	1.42 ***	(0.05)
Medium density[d]	1.03	(0.03)
Number of bedrooms	0.86 ***	(0.02)

(Continued next page)

*** significantly different from one at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Table 5 (continued)

Time-varying impacts (variables interacted with number of months since entry to public housing)[e]		
Category		
Category 2 — high need	>1.00 ***	(0.00)
Category 3 — other	>1.00 ***	(0.00)
Age at allocation		
25 to 34	>1.00 ***	(0.00)
35 to 44	>1.00 ***	(0.00)
45 to 54	1.01 ***	(0.00)
55 to 64	1.01 ***	(0.00)
Country of birth		
Main English speaking	>1.00	(0.00)
Non-English speaking	>1.00	(0.00)
Unknown	>1.00 ***	(0.00)
Partnered	>1.00 ***	(0.00)
Receiving Disability Support Pension	<1.00 ***	(0.00)
Employed	>1.00 ***	(0.00)
Region (Statistical Area Level 4)		
Adelaide — North	<1.00	(0.00)
Adelaide — South	<1.00 **	(0.00)
Adelaide — West	<1.00	(0.00)
Barossa — Yorke — Mid North	0.99 ***	(0.00)
South Australia — Outback	<1.00	(0.00)
South Australia — South East	<1.00 ***	(0.00)
Bedrooms	>1.00 ***	(0.00)

a Preliminary regressions that included the addition of control variables for year of entry to public housing suggested that tenants who entered later in the data period were more likely to exit than those who entered earlier. The sign and significance of other variables remained broadly similar, but there were some changes in magnitudes. These models could not be examined further within the timeframe of the project. **b** Observations at dates that tenants entered and exited public housing, and at each income update. **c** Unknown country of birth could potentially be capturing low English ability. **d** Medium density housing includes attached houses, bedsitters and townhouses. **e** Where the time-varying component of a hazard ratio is 1.00 to two decimal places, the > sign is used to indicate that it is greater than 1 and the < sign is used to indicate that it is less than 1.

*** significantly different from one at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Table 6 **Cox proportional hazards model results for factors associated with the probability of exiting public housing — Western Australia[a,b]**

Hazard ratio (standard error)

Number of observations[c]	236 397	
Number of individuals	27 752	
Variables		
Category (default: priority)		
Wait-turn	1.46***	(0.04)
Unknown	0.87***	(0.03)
Male	1.32***	(0.02)
Age at allocation (default: 15 to 24)		
25 to 34	0.76***	(0.02)
35 to 44	0.57***	(0.02)
45 to 54	0.42***	(0.02)
55 to 64	0.29***	(0.02)
Indigenous	1.19***	(0.02)
Partnered	1.07***	(0.02)
Number of children (default: 0)		
1	0.80***	(0.03)
2	0.73***	(0.03)
3	0.81***	(0.04)
4 or more	0.72***	(0.03)
Receiving Disability Support Pension	0.82***	(0.02)
Employed	1.06*	(0.03)
Time-varying impacts (variables interacted with number of months since entry to public housing)[d]		
Category		
Wait-turn	<1.00***	(0.00)
Unknown	<1.00***	(0.00)
Age at allocation		
25 to 34	<1.00**	(0.00)
35 to 44	>1.00	(0.00)
45 to 54	>1.00***	(0.00)
55 to 64	1.01***	(0.00)
Number of children		
1	>1.00***	(0.00)
2	>1.00***	(0.00)
3	>1.00**	(0.00)
4 or more	1.01***	(0.00)
Employed	>1.00***	(0.00)

[a] Location does not appear in the model due to misspecification issues when it was included. The models presented pass the link test of model specification. When location variables were added to the model, the link test failed, suggesting that the logit model might not be the best link function to model location variables in this case. Alternative specifications could not be analysed within the timeframe of the project. [b] Preliminary regressions that included the addition of control variables for year of entry to public housing suggested that tenants who entered later in the data period were more likely to exit than those who entered earlier. The sign and significance of other variables remained broadly similar, but there were some changes in magnitudes. These models could not be examined further within the timeframe of the project. [c] Observations at dates that tenants entered and exited public housing, and at each income update. [d] Where the time-varying component of a hazard ratio is 1.00 to two decimal places, the > sign is used to indicate that it is greater than 1 and the < sign is used to indicate that it is less than 1.

*** significantly different from one at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

3 Survival analysis of tenant transitions into employment

Methodology

The methods used to analyse the probability of transitioning into employment are similar to those used to examine the probability of exiting public housing. Non-parametric and semi-parametric survival analysis techniques were used to model the time until a non-employed[8] public housing tenant became employed, from the date that they entered public housing. Cumulative distribution functions of the probability of becoming employed over time are presented in BP 6. Similar to the analysis of public housing exits, Cox proportional hazards models were estimated, where $h_i(t)$ was the hazard of becoming employed while in public housing. The other elements of the analysis are defined as per the model in section 2, except that each coefficient relates to the effect of a covariate on becoming employed rather than its effect on exiting public housing.

As in section 2, the selection of control variables was based on characteristics that are expected to be related to becoming employed and that were available in the dataset.

Data limitations

In addition to the general limitations discussed in table 1, the data have a few other characteristics that have to be taken into account in interpreting the results of the survival analysis of becoming employed (table 7). The main limitations revolve around the frequency and accuracy of income reporting, because income records were used to infer employment status. Tenant incomes are observed at entry into public housing, at rent reviews (which occur twice a year in South Australia and once a year in Western Australia), through voluntary reports and when the tenant has income assessments for other services within the housing department. To the extent that entry into employment is not captured when it occurs, the probabilities of a tenant becoming employed will be understated at any tenancy duration.

The Commission considered analysing the probability of becoming employed for applicants. However, because applicant incomes are observed infrequently, the results of such an analysis would be heavily biased downwards. In both South Australia and Western Australia, applicant incomes are typically assessed at entry onto the waiting list and before receiving an offer of housing. Incomes can also be observed at other points in time if an individual makes a voluntary report to the state housing authority or has undertaken an income assessment as part of applying for other services in the department — primarily rental bond assistance. In Western Australia, applicants rarely update their incomes voluntarily, and income records

[8] Non-employment was defined to include people who are not working (as suggested by their lack of wage and salary income), regardless of whether they are searching for work. This is different from unemployment, which comprises people who are not working and are actively searching for work.

may not be updated if a change does not affect their application (Dyson, G., Department of Housing, pers. comm., 15 January 2015). It is assumed that a similar situation applies in South Australia. Unlike for tenants, there are no regular checks of applicant incomes.[9] Because applicant transitions into employment may not be recorded for some time after they have found employment, if at all, the time until employment for applicants would be overstated in survival analysis, and probabilities of becoming employed would be understated.

Table 7 **Data limitations — survival analysis of tenant transitions into employment**

Issue	*Example*	*Implication*
Sample selection[a]	At least two income assessments per tenant were required, to ensure that an 'episode' could be created for survival analysis. Tenants who were excluded because they had only had one income assessment (about three per cent of the SA sample and 26 per cent of the WA sample) may have been in public housing for only a short period of time. Alternatively, they might have entered housing towards the end of the study period and only had one income observation during that time.	The results are not generalisable to the extent that individuals with short tenures in public housing differ from those with longer tenures.
Censoring[b]	Tenant observations could be censored because: • the tenant household vacated public housing, either by choice or due to eviction. Tenants may choose to vacate housing because of improved circumstances related to finding employment. Alternatively, eviction could occur if the tenant has fallen into rental arrears, which could be associated with a lack of employment • the tenant household was paying market rent, in which case their income data were no longer collected in SA. If market rent was reached due to finding employment and this was observed before income data collection stopped for that household, then the tenant's transition into employment would be taken into account before they became censored. About 12 per cent of households in public housing at 30 June 2013 in SA were paying market rent. Of these households, about half had a head tenant who was employed at their last income assessment • the tenancy was transferred from public housing to community housing in SA.[c] Assuming that employment is not a factor in tenancy transfers to community housing, this should not affect the survival analysis results • the tenant was still in public housing at 30 June 2013, the end of the study period. This is unlikely to be related to gaining employment.	Although survival analysis methods can account for censored observations, it assumes that censoring occurs randomly. To the extent that censoring is positively (negatively) associated with employment, probabilities of becoming employed will be underestimated (overestimated).

[a] The nature of the analysis means that only people who were not employed at entry to public housing were included in the sample. Of the tenants who had more than one income assessment and entered within the study period, about 11 per cent in SA and 18 per cent in WA were already employed. [b] Censoring occurs if the individual has not been observed in employment by the time they are no longer observed in the data. [c] Public housing is managed by state housing authorities, whereas community housing is managed by not-for-profit organisations.

9 Applicant income checks were introduced in Western Australia from 2012 through an annual review (Department of Housing WA 2011). This is likely to facilitate future analyses of applicant employment outcomes — provided that administrative records are updated with new information from tenants.

Estimation results

Tables 8 and 9 present the results of Cox proportional hazards models of transitions into employment separately for men and women in South Australia and Western Australia because the factors associated with employment tend to differ between men and women. For each variable included in the regression, the hazard ratio of becoming employed is displayed. In these models, the hazard ratio for a particular group can be interpreted as the estimated hazard of becoming employed relative to the default group. The time-varying components of the hazard ratios are also reported in tables 8 and 9. For example, for male tenants in South Australia, the time-constant component of the hazard ratio for category 3 tenants was 1.57, meaning that those who were in category 3 while on the waiting list were initially 57 per cent more likely to become employed than someone who was in category 1. As the time-varying component is less than one, although they were initially more likely to find employment than people who were in category 1, this effect declined with a tenant's duration of residence in public housing.

As per the survival analysis of public housing exits, BP 6 presents percentage differences in the probability of employment for selected factors at entry to public housing and three years after entry to public housing.

Table 8 **Cox proportional hazards model results for factors associated with the probability of becoming employed — South Australia**[a]

Hazard ratio (standard error)

	Men		*Women*	
Number of observations[b]	89 921		127 588	
Number of individuals	9 892		11 707	
Variables				
Category (default: category 1 — urgent need)				
Category 2 — high need	1.41***	(0.12)	1.53***	(0.15)
Category 3 — other	1.57***	(0.12)	1.63***	(0.11)
Age at allocation (default: 16 to 24)				
25 to 34	1.04	(0.09)	1.25***	(0.10)
35 to 44	0.83**	(0.07)	1.37***	(0.11)
45 to 54	0.66***	(0.07)	1.00	(0.10)
55 to 64	0.36***	(0.05)	0.40***	(0.06)
Country of birth (default: Australia)				
Main English speaking	1.25**	(0.11)	1.07	(0.10)
Non-English speaking	1.25***	(0.08)	1.14*	(0.08)
Unknown	1.24	(0.19)	0.86	(0.11)

(Continued next page)

*** significantly different from one at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Table 8 **(continued)**

	Men		*Women*	
Indigenous status (default: not Indigenous)				
Indigenous	0.70***	(0.06)	0.74***	(0.04)
Unknown	0.99	(0.12)	0.99	(0.13)
Partnered	1.28***	(0.09)	0.95	(0.06)
Number of children (default: 0)				
1	0.81**	(0.09)	0.71***	(0.05)
2	0.82	(0.12)	0.58***	(0.05)
3	0.87	(0.18)	0.40***	(0.05)
4 or more	0.42***	(0.11)	0.26***	(0.04)
Receiving Disability Support Pension	0.30***	(0.02)	0.31***	(0.02)
Region (Statistical Area Level 4) (default: Adelaide — Central and Hills)				
Adelaide — North	0.87*	(0.07)	0.79***	(0.07)
Adelaide — South	0.90	(0.08)	0.90	(0.08)
Adelaide — West	0.94	(0.07)	0.89	(0.08)
Barossa — Yorke — Mid North	0.80	(0.11)	0.97	(0.12)
South Australia — Outback	1.07	(0.10)	1.10	(0.10)
South Australia — South East	1.33***	(0.12)	1.03	(0.09)
Time-varying impacts (variables interacted with number of months since entry to public housing)[c]				
Category				
Category 2 — high need	0.99**	(0.00)	0.99*	(0.00)
Category 3 — other	0.99**	(0.00)	0.99***	(0.00)
Age at allocation				
25 to 34	0.99***	(0.00)	<1.00	(0.00)
35 to 44	0.99***	(0.00)	<1.00*	(0.00)
45 to 54	0.99***	(0.00)	0.99***	(0.00)
55 to 64	0.98***	(0.01)	0.99*	(0.01)
Number of children				
1	1.01**	(0.00)	1.01***	(0.00)
2	>1.00	(0.01)	1.01***	(0.00)
3	<1.00	(0.01)	1.01***	(0.00)
4 or more	1.01*	(0.01)	1.01***	(0.00)
Receiving Disability Support Pension	0.99**	(0.00)	..	..

.. Not applicable. **a** Preliminary regressions that included the addition of control variables for year of entry to public housing suggested that year of entry did not affect transitions into employment. The sign and significance of other variables remained broadly similar, but there were some changes in magnitudes. These models could not be examined further within the timeframe of the project. **b** Observations at dates that tenants entered and exited public housing, and at each income update. **c** Where the time-varying component of a hazard ratio is 1.00 to two decimal places, the > sign is used to indicate that it is greater than 1 and the < sign is used to indicate that it is less than 1.

*** Significantly different from one at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Table 9 **Cox proportional hazards model results for factors associated with the probability of becoming employed — Western Australia[a]**

Hazard ratio (standard error)

	Men		*Women*	
Number of observations[b]	36 741		80 281	
Number of individuals	7 462		12 104	
Variables				
Category (default: priority)				
Wait-turn	1.47***	(0.08)	1.42***	(0.07)
Unknown	1.45***	(0.08)	1.44***	(0.06)
Age at allocation (default: 16 to 24)				
25 to 34	1.56***	(0.16)	1.29***	(0.10)
35 to 44	1.11	(0.11)	1.66***	(0.14)
45 to 54	0.98	(0.11)	1.41***	(0.15)
55 to 64	0.70**	(0.10)	0.71**	(0.10)
Indigenous	0.69***	(0.05)	0.67***	(0.03)
Partnered	1.19***	(0.07)	0.73***	(0.03)
Number of children (default: 0)				
1	0.93	(0.10)	0.91	(0.07)
2	1.01	(0.12)	0.74***	(0.06)
3	1.00	(0.14)	0.60***	(0.06)
4 or more	1.17	(0.16)	0.54***	(0.06)
Self-reported disability[c]	0.49***	(0.03)	0.60***	(0.04)
Region (Statistical Area Level 4) (default: Perth — Inner)				
Bunbury	0.87	(0.15)	0.86	(0.11)
Mandurah	1.46***	(0.20)	1.21	(0.14)
Perth — North East	1.23	(0.20)	0.90	(0.12)
Perth — North West	1.27*	(0.18)	0.81*	(0.10)
Perth — South East	1.29*	(0.18)	0.85	(0.10)
Perth — South West	1.20	(0.18)	0.88	(0.11)
Western Australia — Outback	1.52***	(0.21)	0.97	(0.11)
Western Australia — Wheat Belt	1.27	(0.20)	1.02	(0.13)
Unknown	1.69***	(0.22)	1.27**	(0.14)

(Continued next page)

*** significantly different from one at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Table 9 **(continued)**

	Men		*Women*	
Time-varying impacts (variables interacted with number of months since entry to public housing)[d]				
Age at allocation				
25 to 34	0.98***	(0.00)	<1.00	(0.00)
35 to 44	0.98***	(0.00)	0.99**	(0.00)
45 to 54	0.98***	(0.00)	0.98***	(0.00)
55 to 64	0.98***	(0.01)	0.99**	(0.01)
Number of children				
1	>1.00	(0.00)	1.01***	(0.00)
2	1.01**	(0.00)	1.01***	(0.00)
3	1.01*	(0.01)	1.02***	(0.00)
4 or more	1.01**	(0.01)	1.02***	(0.00)

[a] Preliminary regressions that included the addition of control variables for year of entry into public housing suggested that year of entry had a nonlinear relationship with transitions into employment. The sign and significance of other variables remained broadly similar, but there were some changes in magnitudes. These models could not be examined further within the timeframe of the project. [b] Observations at dates that tenants entered and exited public housing, and at each income update. [c] Self-reported disability was used as a disability indicator because of misspecification issues when receipt of Disability Support Pension was used instead — the link test of model specification failed, suggesting that the logit model might not be the best link function to model receipt of Disability Support Pension. [d] Where the time-varying component of a hazard ratio is 1.00 to two decimal places, the > sign is used to indicate that it is greater than 1 and the < sign is used to indicate that it is less than 1.

*** significantly different from one at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

4 Difference-in-difference analysis of welfare locks

Methodology

Following Dockery et al. (2008), the existence of welfare locks and stability effects was examined using a difference-in-difference panel logit model.

The difference-in-difference approach estimates the impact of entry into public housing on employment by comparing the employment outcomes of applicants who entered public housing ('entrants', the treatment group) and those who remained on the waiting list ('applicants', the control group) within the period analysed, while taking into account characteristics that might influence employment. The method assumes that entrants and applicants would have experienced similar trends in employment over time, had entrants remained on the waiting list instead of entering public housing. Therefore, the effect of public housing can be estimated by comparing differences in changes in employment over time between entrants and applicants.

In a panel data context, where individuals can enter public housing at different times, the probability of employment is estimated as:

$$Y_{it} = F\left(\alpha + \varphi ALLOC_i + \delta(ALLOC_i \cdot TENANT_{it}) + X'_{it}\beta + \sum_{j=2}^{T} \gamma_j YEAR_{ij} + \varepsilon_{it}\right)$$

where:

- t refers to the year
- Y_{it} is an indicator variable equal to 1 if individual i is employed at time t and 0 otherwise
- $F(*) = \frac{1}{1+\exp(-*)}$ is the cumulative standard logistic distribution function, where the $*$ represents the function's arguments as described below
- $ALLOC_i$ is an indicator variable equal to 1 if individual i was allocated public housing within the study period ('entrants', the treatment group) and 0 otherwise ('applicants', the control group)
- φ is a coefficient corresponding to time-invariant differences in employment between the applicant group and entrant group
- $TENANT_{it}$ is an indicator variable equal to 1 if individual i is a tenant at time t and 0 otherwise. For the applicant group ($ALLOC_i = 0$), $TENANT_{it} = 0$ for all t
- δ is the difference-in-difference estimator, which estimates the effect of entering public housing on employment
- X_{it} is a vector of control variables representing the characteristics of each individual i at time t
- β is a vector of coefficients for the control variables
- $YEAR_{ij}$ are indicator variables for each time period
- γ_j captures year-specific effects on employment
- ε_{it} is an error term.

For the difference-in-difference estimator to effectively identify the effect of moving into public housing on employment, the applicant group must display similar trends in employment to the entrant group over time, had entrants remained on the waiting list. Any time-varying differences between applicants and entrants should not be correlated with any omitted variables associated with employment.

The main factor affecting whether an individual was an applicant only or an entrant is their waiting list category, which is taken into account in the analysis by its inclusion as a control variable. Because entry into public housing is also determined by an applicant's position on the waiting list, it was assumed that waiting list position was not associated with any unobserved characteristics (such as industry closures) that affected employment.

This assumption could be examined by regressing employment on time on the waiting list, for example. However, this check was not possible with the available dataset because applicant incomes were observed very infrequently.

Data limitations

The results of the difference-in-difference analysis are limited by a number of characteristics of the data not previously highlighted (table 10). Most notably, selection bias could arise because of: characteristics of the individuals included in the sample; missing income data; and sample attrition. The extent to which these issues could bias the estimated impact of entering public housing on employment, and the likely direction of the bias, are described in box 1.

Estimation results

Tables 11 to 17 present the results of the difference-in-difference employment logit models separately for men and women in South Australia and Western Australia, including results of the models estimated for people from different waiting list categories. Estimated coefficients and robust standard errors[10] are reported, and the difference-in-difference estimates are displayed in bold.

In a logit model, the relationship between an independent variable and the dependent variable is interpreted based on the sign of the coefficient. If the coefficient is positive (negative), then the probability of employment is higher (lower) for people in that category compared to the default category, all else equal. In all estimated regressions, the difference-in-difference estimate was positive, suggesting that public housing had a positive effect on employment for all groups and subgroups examined. However, as mentioned, these results should be interpreted with caution due to the limitations of the data and potential biases arising from sample selection and attrition.

BP 6 presents average predicted probabilities of employment from the model, before and after entering public housing, given that the individuals entered public housing.

[10] Robust standard errors are consistent in the presence of heteroscedasticity, that is, when the variance of the errors changes across observation points.

Table 10 Data limitations — difference-in-difference analysis of welfare locks

Issue	*Example*	*Implication*
Sample selection	Applicants' waiting list category can change. The analysis was restricted to people whose waiting list category did not change. Those whose waiting list category did change could have different employment experiences to those whose category did not.	Results are not generalisable to the extent that people who changed categories differ from those included in the analysis.
	Individuals were included in the analysis if they had income assessments in at least two different financial years. About 47 per cent of applicants in SA and 28 per cent of applicants in WA who never entered public housing between 2004 and 2013 had income observed in at least two different years while on the waiting list. Applicants with only one income assessment were either less likely to have been allocated housing or to have applied for other services, and may have been on the waiting list for only a short period of time, or applied for housing towards the end of the study period.	Results are not generalisable to the extent that people with only one income assessment differ from those included in the analysis.
Attrition and selection bias	Individuals were included in the analysis for a particular year if they had an income assessment within the financial year. Applicants could be missing data because: • they left the waiting list. This could be because they could not be contacted (possibly due to a worsening of their housing circumstances and reduced probability of employment) or because they no longer required public housing (which could be because of an improvement in their housing situation and employment) • they did not have an income observation within the financial year due to applicant incomes not being regularly updated. The reason for missing income data while on the waiting list could be related to employment. For example, people who did not have extra income assessments might not have required other services within the department for reasons associated with better employability. Tenants could be missing data because: • they exited public housing, which could be positively related to employment (if improvements in employment meant that they no longer required public housing) or negatively related (if they were evicted for rent arrears) • their rent (maximum of about 25 per cent of household income) reached market rent and the state housing authority no longer required their income details to be updated. People who reached market rent were probably more likely to be employed.	If individuals were missing data or left the study for reasons related to employment, selection bias may arise. For example, if applicants were more likely to be observed when they were less likely to be employed, then estimates of the effect of public housing would be overestimated. This is because the employment of observed applicants would be compared with the more accurately measured employment of tenants, so part of an observed increase in employment for tenants could be due to better measurement of tenants' incomes.

Box 1 Sample selection and attrition in the analysis of welfare locks

Selection bias can arise from the process by which individuals are included in an estimation sample (sample selection) or the way in which they leave the sample over time (sample attrition). If the sample is not randomly chosen from the population, estimated effects of an independent variable may be biased if there are unobserved factors determining inclusion in the sample that influence the outcome variable and that are also related to the independent variable (Honoré, Vella and Verbeek 2008).

In the analysis of welfare locks, the outcome variable is employment and the independent variable of interest is public housing tenancy.

A range of unobserved factors relating to selection and employment could bias the estimated effects of public housing. These factors are likely to bias results through applicants rather than tenants. To illustrate, consider a group of applicants whose incomes were all observed at entry to the waiting list, but for which only some had an income observation in the year after entering the waiting list because they applied for additional housing services. If the applicants who applied for additional housing services were less likely to find employment, then applicants for whom data were observed in the years after they entered the waiting list are not representative of all applicants — the observed applicants are less likely to be employed. Therefore, entrants would be compared with a subset of less employable applicants and the estimate of the effect of public housing would be overstated.

A comparison of employment rates at entry to the waiting list suggested that the group of applicants who were included in the sample for a particular year (because they had subsequent income observations) were less likely to be employed than those who were not included in the sample due to missing income data. This suggests that the observed applicants are less likely to be employed and the estimated effect of public housing might be overstated. If this is the case, then the estimated increase in the predicted probability of employment after moving into public housing may not be attributable to a welfare lock effect or a stability effect, but to selection bias.

However, some unobserved factors affecting selection and employment may have been captured through observed characteristics. For example, waiting list category is correlated with the degree of housing instability an applicant was experiencing (an unobserved factor), because homelessness is a major reason in determining waiting list category. This factor could have affected an applicant's likelihood of applying for additional housing services and thus the chances of having an income assessment recorded in the data. This in turn determines whether the applicant was included in the sample for a particular year. If this is the case, then selection bias on the estimated effect of public housing may be reduced because the effects of this unobserved factor were at least partially included in the model as it was highly correlated with observed characteristics.

A negative consequence of this is that the estimated coefficients on observed variables may be affected by omitted variable bias (a form of endogeneity). Because they were correlated with omitted variables affecting employment, the estimated coefficient captures the effects of both the observed and unobserved factors. Therefore, these coefficients should be interpreted with caution. Furthermore, not all unobserved factors affecting selection can be taken into account through observed characteristics. For example, whether or not an individual had a social worker might not have been highly correlated with any observed variable in the model, but could have affected both selection into the estimation sample and employment among applicants.

Table 11 **Difference-in-difference employment logit model results — South Australia[a]**

Coefficient (robust standard error)

	Men		*Women*	
Number of observations	31 374		45 635	
Number of individuals	9 294		13 175	
Variables				
ALLOC	-0.20	(0.13)	-0.29**	(0.12)
ALLOC*TENANT	**1.24*** **	(0.11)	**1.01*** **	(0.10)
Category (default: category 1 — urgent need)				
Category 2 — high need	0.76***	(0.15)	0.38***	(0.14)
Category 3 — other	0.96***	(0.14)	1.07***	(0.12)
Age (default: 16 to 24)				
25 to 34	0.05	(0.09)	0.61***	(0.07)
35 to 44	-0.09	(0.11)	1.18***	(0.09)
45 to 54	-0.18	(0.13)	1.47***	(0.10)
55 to 64	-0.61***	(0.17)	0.68***	(0.14)
Country of birth (default: Australia)				
Main English speaking	0.07	(0.19)	0.26*	(0.15)
Non-English speaking	-0.21*	(0.11)	-0.35***	(0.11)
Unknown	0.36	(0.43)	-0.70*	(0.38)
Indigenous status (default: not Indigenous)				
Indigenous	-0.67***	(0.14)	-0.67***	(0.11)
Unknown	0.24	(0.20)	-0.12	(0.24)
Partnered	0.40***	(0.11)	-0.07	(0.10)
Number of children (default: 0)				
1	0.06	(0.12)	-0.64***	(0.07)
2	0.19	(0.14)	-0.95***	(0.09)
3	0.14	(0.20)	-1.42***	(0.12)
4 or more	0.05	(0.26)	-2.23***	(0.19)
Receiving Disability Support Pension	-2.16***	(0.12)	-2.02***	(0.13)
Year				
2005	0.28**	(0.12)	0.34***	(0.09)
2006	0.58***	(0.12)	0.39***	(0.09)
2007	0.88***	(0.13)	0.61***	(0.10)
2008	0.99***	(0.13)	0.74***	(0.10)
2009	0.74***	(0.13)	0.76***	(0.10)
2010	0.76***	(0.13)	0.66***	(0.10)
2011	0.87***	(0.13)	0.67***	(0.10)
2012	0.93***	(0.14)	0.72***	(0.10)
2013	0.91***	(0.14)	0.66***	(0.11)
Constant	-4.61***	(0.24)	-4.75***	(0.19)

a Region was not included as a control variable because the locations of applicants were unknown.

*** significantly different from zero at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Table 12 **Difference-in-difference employment logit model results — category 1 (urgent need), South Australia[a]**

Coefficient (robust standard error)

	Men		*Women*	
Number of observations	7 234		9 531	
Number of individuals	1 743		2 157	
Variables				
ALLOC	-0.27	(0.33)	0.11	(0.31)
ALLOC*TENANT	**1.42*** **	(0.19)	**1.33*** **	(0.16)
Age (default: 16 to 24)				
25 to 34	0.20	(0.26)	0.31	(0.22)
35 to 44	-0.17	(0.29)	0.78***	(0.24)
45 to 54	-0.65**	(0.32)	0.82***	(0.28)
55 to 64	-0.77*	(0.42)	-0.11	(0.38)
Country of birth (default: Australia)				
Main English speaking	0.86*	(0.48)	-0.21	(0.47)
Non-English speaking	0.25	(0.29)	0.18	(0.28)
Unknown	0.84	(1.01)	-3.47**	(1.50)
Indigenous status (default: not Indigenous)				
Indigenous	-0.35	(0.32)	-0.66***	(0.22)
Unknown	-0.01	(0.62)	-0.66	(0.59)
Partnered	0.49	(0.35)	0.31	(0.25)
Number of children (default: 0)				
1	0.00	(0.35)	-0.61***	(0.20)
2	-0.29	(0.43)	-0.69***	(0.24)
3	0.38	(0.54)	-1.25***	(0.31)
4 or more	1.42	(0.87)	-2.15***	(0.44)
Receiving Disability Support Pension	-2.09***	(0.22)	-2.26***	(0.23)
Year				
2005	0.34	(0.53)	-0.30	(0.42)
2006	0.67	(0.57)	-0.27	(0.46)
2007	1.23**	(0.58)	0.03	(0.46)
2008	0.99*	(0.60)	0.23	(0.46)
2009	0.80	(0.60)	0.27	(0.46)
2010	0.95	(0.60)	0.26	(0.47)
2011	0.83	(0.61)	0.37	(0.47)
2012	0.98	(0.61)	0.54	(0.47)
2013	1.02	(0.62)	0.45	(0.48)
Constant	-4.96***	(0.74)	-4.90***	(0.60)

a Region was not included as a control variable because the locations of applicants were unknown.

*** significantly different from zero at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Table 13 **Difference-in-difference employment logit model results — category 2 (high need), South Australia[a]**

Coefficient (robust standard error)

	Men		*Women*	
Number of observations	10 959		8 394	
Number of individuals	3 155		2 427	
Variables				
ALLOC	-0.31	(0.26)	-0.62 **	(0.31)
ALLOC*TENANT	**1.21** ***	(0.25)	**0.86** ***	(0.30)
Age (default: 16 to 24)				
25 to 34	-0.06	(0.22)	0.28	(0.27)
35 to 44	-0.59 **	(0.25)	0.43	(0.30)
45 to 54	-1.00 ***	(0.27)	0.22	(0.30)
55 to 64	-1.62 ***	(0.31)	-0.39	(0.34)
Country of birth (default: Australia)				
Main English speaking	0.15	(0.38)	-0.32	(0.39)
Non-English speaking	-0.82 ***	(0.24)	-1.07 ***	(0.26)
Unknown	-0.54	(0.91)	-1.09	(0.97)
Indigenous status (default: not Indigenous)				
Indigenous	-1.06 **	(0.51)	-1.75 ***	(0.61)
Unknown	-0.04	(0.45)	-0.35	(0.62)
Partnered	-0.03	(0.21)	-0.56 **	(0.23)
Number of children (default: 0)				
1	-0.12	(0.26)	-0.26	(0.24)
2	0.04	(0.28)	-0.75 **	(0.29)
3	0.15	(0.35)	-2.51 ***	(0.50)
4 or more	0.01	(0.38)	-1.90 ***	(0.48)
Receiving Disability Support Pension	-2.50 ***	(0.25)	-1.69 ***	(0.26)
Year				
2005	0.08	(0.27)	-0.20	(0.29)
2006	0.68 **	(0.28)	0.35	(0.31)
2007	1.15 ***	(0.29)	0.85 ***	(0.31)
2008	1.18 ***	(0.29)	1.10 ***	(0.31)
2009	1.06 ***	(0.30)	1.42 ***	(0.31)
2010	1.07 ***	(0.30)	1.19 ***	(0.31)
2011	1.25 ***	(0.31)	1.16 ***	(0.31)
2012	1.26 ***	(0.31)	1.28 ***	(0.32)
2013	1.28 ***	(0.32)	1.05 ***	(0.32)
Constant	-3.60 ***	(0.63)	-5.20 ***	(0.74)

a Region was not included as a control variable because the locations of applicants were unknown.

*** significantly different from zero at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Table 14 **Difference-in-difference employment logit model results — category 3 (other applicants), South Australia[a]**

Coefficient (robust standard error)

	Men		*Women*	
Number of observations	13 181		27 710	
Number of individuals	4 396		8 591	
Variables				
ALLOC	-0.07	(0.19)	0.01	(0.17)
ALLOC*TENANT	**1.19*** **	(0.19)	**0.63** ***	(0.17)
Age (default: 16 to 24)				
25 to 34	-0.04	(0.11)	0.65 ***	(0.08)
35 to 44	0.07	(0.13)	1.30 ***	(0.10)
45 to 54	0.37***	(0.15)	1.84 ***	(0.12)
55 to 64	0.10	(0.23)	1.05 ***	(0.18)
Country of birth (default: Australia)				
Main English speaking	-0.26	(0.23)	0.43 **	(0.17)
Non-English speaking	-0.03	(0.15)	-0.21	(0.14)
Unknown	0.45	(0.53)	-0.06	(0.47)
Indigenous status (default: not Indigenous)				
Indigenous	-0.62***	(0.16)	-0.61 ***	(0.14)
Unknown	0.33	(0.21)	-0.02	(0.28)
Partnered	0.72***	(0.14)	-0.01	(0.12)
Number of children (default: 0)				
1	0.12	(0.14)	-0.68 ***	(0.08)
2	0.34*	(0.18)	-0.99 ***	(0.10)
3	0.16	(0.26)	-1.32 ***	(0.13)
4 or more	0.11	(0.42)	-2.35 ***	(0.24)
Receiving Disability Support Pension	-2.84***	(0.32)	-2.31 ***	(0.32)
Year				
2005	0.33**	(0.13)	0.43 ***	(0.09)
2006	0.49***	(0.14)	0.44 ***	(0.10)
2007	0.67***	(0.15)	0.64 ***	(0.10)
2008	0.87***	(0.15)	0.74 ***	(0.11)
2009	0.55***	(0.15)	0.69 ***	(0.11)
2010	0.53***	(0.15)	0.60 ***	(0.11)
2011	0.69***	(0.15)	0.58 ***	(0.11)
2012	0.72***	(0.16)	0.57 ***	(0.11)
2013	0.66***	(0.17)	0.54 ***	(0.12)
Constant	-3.44***	(0.22)	-3.62 ***	(0.18)

a Region was not included as a control variable because the locations of applicants were unknown.

*** significantly different from zero at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on DCSI, Housing SA, administrative data (unpublished).

Table 15 **Difference-in-difference employment logit model results — Western Australia[a,b]**

Coefficient (robust standard error)

	Men		*Women*	
Number of observations	20 623		39 272	
Number of individuals	6 605		12 166	
Variables				
ALLOC	0.18*	(0.11)	-0.03	(0.08)
ALLOC*TENANT	**1.22*** **	(0.11)	**0.69*** **	(0.08)
Wait-turn applicant (default: priority)	0.83***	(0.12)	1.06***	(0.10)
Age (default: 16 to 24)				
25 to 34	-0.14	(0.12)	0.32***	(0.08)
35 to 44	-0.33***	(0.12)	0.94***	(0.08)
45 to 54	-0.30**	(0.13)	1.09***	(0.10)
55 to 64	-0.63***	(0.16)	0.25**	(0.13)
Indigenous	-0.42***	(0.12)	-0.54***	(0.09)
Partnered	0.55***	(0.09)	-0.42***	(0.07)
Number of children (default: 0)				
1	0.32***	(0.10)	-0.24***	(0.07)
2	0.44***	(0.12)	-0.43***	(0.08)
3	0.55***	(0.14)	-0.83***	(0.10)
4 or more	0.77***	(0.15)	-1.13***	(0.13)
Receiving Disability Support Pension (DSP)	-1.70***	(0.12)	-1.46***	(0.12)
Self-reported disability	0.00	(0.11)	-0.57***	(0.10)
Year				
2005	0.11	(0.22)	-0.18	(0.18)
2006	0.35	(0.22)	0.43**	(0.18)
2007	0.73***	(0.21)	0.63***	(0.18)
2008	0.96***	(0.21)	1.09***	(0.18)
2009	0.85***	(0.21)	1.00***	(0.18)
2010	0.72***	(0.22)	1.01***	(0.18)
2011	0.74***	(0.22)	0.95***	(0.18)
2012	0.84***	(0.22)	1.03***	(0.18)
2013	0.90***	(0.22)	0.89***	(0.18)
Region (Statistical Area Level 4) (default: Perth — Inner)				
Bunbury	0.36*	(0.19)	0.61***	(0.14)
Mandurah	0.16	(0.19)	0.59***	(0.15)
Perth — North East	0.53***	(0.19)	0.48***	(0.15)
Perth — North West	-0.05	(0.15)	0.26**	(0.13)
Perth — South East	0.53***	(0.15)	0.33***	(0.12)
Perth — South West	0.36**	(0.16)	0.31**	(0.13)
Western Australia — Outback	1.22***	(0.15)	0.93***	(0.12)
Western Australia — Wheat Belt	0.26	(0.19)	0.63***	(0.15)
Unknown	0.40**	(0.18)	0.82***	(0.16)
Constant	-4.77***	(0.30)	-5.03***	(0.24)

a Self-reported disability was included as a control variable in addition to 'Receiving DSP' because DSP tended to be grouped under a broad pension category for applicants in the income records. **b** Although the locations of public housing applicants were unknown, applicants were asked to nominate one preferred area to live in. It was assumed that the nominated area was in the same region they currently lived in.

*** significantly different from zero at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

Table 16 **Difference-in-difference employment logit model results — priority applicants, Western Australia[a,b]**

Coefficient (robust standard error)

	Men		*Women*	
Number of observations	3 664		7 005	
Number of individuals	1 051		1 881	
Variables				
ALLOC	-0.37	(0.37)	-0.29	(0.29)
ALLOC*TENANT	**1.97*** **	(0.24)	**0.90*** **	(0.18)
Age (default: 16 to 24)				
25 to 34	0.16	(0.35)	0.55**	(0.24)
35 to 44	-0.23	(0.34)	0.89***	(0.25)
45 to 54	-0.16	(0.36)	0.97***	(0.28)
55 to 64	-0.52	(0.44)	0.33	(0.38)
Indigenous	-0.64**	(0.27)	-0.67***	(0.22)
Partnered	0.34	(0.23)	0.15	(0.17)
Number of children (default: 0)				
1	0.84***	(0.27)	-0.30	(0.20)
2	1.41***	(0.31)	-0.29	(0.22)
3	0.90**	(0.37)	-0.89***	(0.27)
4 or more	1.65***	(0.37)	-0.84***	(0.30)
Receiving Disability Support Pension (DSP)	-1.74***	(0.24)	-1.22***	(0.24)
Self-reported disability	0.14	(0.24)	-0.12	(0.23)
Year				
2005	1.58	(1.03)	-1.45**	(0.58)
2006	2.75***	(1.04)	-0.51	(0.53)
2007	2.49**	(1.06)	-0.46	(0.54)
2008	2.53**	(1.03)	-0.35	(0.51)
2009	2.56**	(1.04)	-0.49	(0.50)
2010	2.31**	(1.04)	-0.62	(0.49)
2011	2.04*	(1.05)	-0.48	(0.50)
2012	2.16**	(1.04)	-0.54	(0.50)
2013	2.22**	(1.05)	-0.45	(0.50)
Region (Statistical Area Level 4) (default: Perth — Inner)				
Bunbury	-0.70	(0.70)	0.35	(0.61)
Mandurah	-0.52	(0.53)	1.04**	(0.43)
Perth — North East	0.55	(0.46)	0.90**	(0.40)
Perth — North West	-0.05	(0.42)	0.35	(0.39)
Perth — South East	0.13	(0.39)	0.78**	(0.37)
Perth — South West	-0.65	(0.43)	0.68*	(0.38)
Western Australia — Outback	1.03**	(0.42)	1.40***	(0.38)
Western Australia — Wheat Belt	-0.02	(0.56)	1.09**	(0.47)
Unknown	-0.43	(0.43)	0.93**	(0.41)
Constant	-6.09***	(1.18)	-4.06***	(0.65)

a Self-reported disability was included as a control variable in addition to 'Receiving DSP' because DSP tended to be grouped under a broad pension category for applicants in the income records. **b** Although the locations of public housing applicants were unknown, applicants were asked to nominate one preferred area to live in. It was assumed that the nominated area was in the same region they currently lived in.

*** significantly different from zero at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

Table 17 **Difference-in-difference employment logit model results — wait-turn applicants, Western Australia[a,b]**

Coefficient (robust standard error)

	Men		*Women*	
Number of observations	16 959		32 267	
Number of individuals	5 554		10 285	
Variables				
ALLOC	0.30**	(0.12)	0.04	(0.09)
ALLOC*TENANT	**1.02*** **	(0.12)	**0.62*** **	(0.09)
Age (default: 16 to 24)				
25 to 34	-0.17	(0.13)	0.29***	(0.08)
35 to 44	-0.32**	(0.13)	0.95***	(0.09)
45 to 54	-0.31**	(0.14)	1.12***	(0.11)
55 to 64	-0.64***	(0.17)	0.25*	(0.14)
Indigenous	-0.40***	(0.13)	-0.52***	(0.10)
Partnered	0.59***	(0.10)	-0.52***	(0.07)
Number of children (default: 0)				
1	0.24**	(0.11)	-0.23***	(0.08)
2	0.29**	(0.13)	-0.46***	(0.09)
3	0.50***	(0.15)	-0.81***	(0.11)
4 or more	0.62***	(0.17)	-1.19***	(0.14)
Receiving Disability Support Pension (DSP)	-1.71***	(0.13)	-1.54***	(0.13)
Self-reported disability	-0.04	(0.13)	-0.67***	(0.12)
Year				
2005	0.08	(0.22)	-0.07	(0.19)
2006	0.31	(0.23)	0.53***	(0.19)
2007	0.75***	(0.22)	0.73***	(0.19)
2008	1.02***	(0.22)	1.24***	(0.19)
2009	0.88***	(0.22)	1.16***	(0.19)
2010	0.75***	(0.22)	1.19***	(0.19)
2011	0.83***	(0.23)	1.09***	(0.19)
2012	0.93***	(0.23)	1.20***	(0.20)
2013	0.98***	(0.23)	1.01***	(0.20)
Region (Statistical Area Level 4) (default: Perth — Inner)				
Bunbury	0.44**	(0.20)	0.59***	(0.14)
Mandurah	0.25	(0.20)	0.52***	(0.16)
Perth — North East	0.44**	(0.21)	0.41**	(0.16)
Perth — North West	-0.06	(0.17)	0.27*	(0.14)
Perth — South East	0.57***	(0.16)	0.26**	(0.13)
Perth — South West	0.54***	(0.18)	0.25*	(0.14)
Western Australia — Outback	1.24***	(0.16)	0.86***	(0.13)
Western Australia — Wheat Belt	0.28	(0.20)	0.58***	(0.16)
Unknown	0.57***	(0.19)	0.84***	(0.18)
Constant	-3.99***	(0.27)	-4.04***	(0.23)

a Self-reported disability was included as a control variable in addition to 'Receiving DSP' because DSP tended to be grouped under a broad pension category for applicants in the income records. **b** Although the locations of public housing applicants were unknown, applicants were asked to nominate one preferred area to live in. It was assumed that the nominated area was in the same region they currently lived in.

*** significantly different from zero at the 1 per cent level ** at 5 per cent level * at 10 per cent level

Source: Author's estimates based on Department of Housing (WA), administrative data (unpublished).

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