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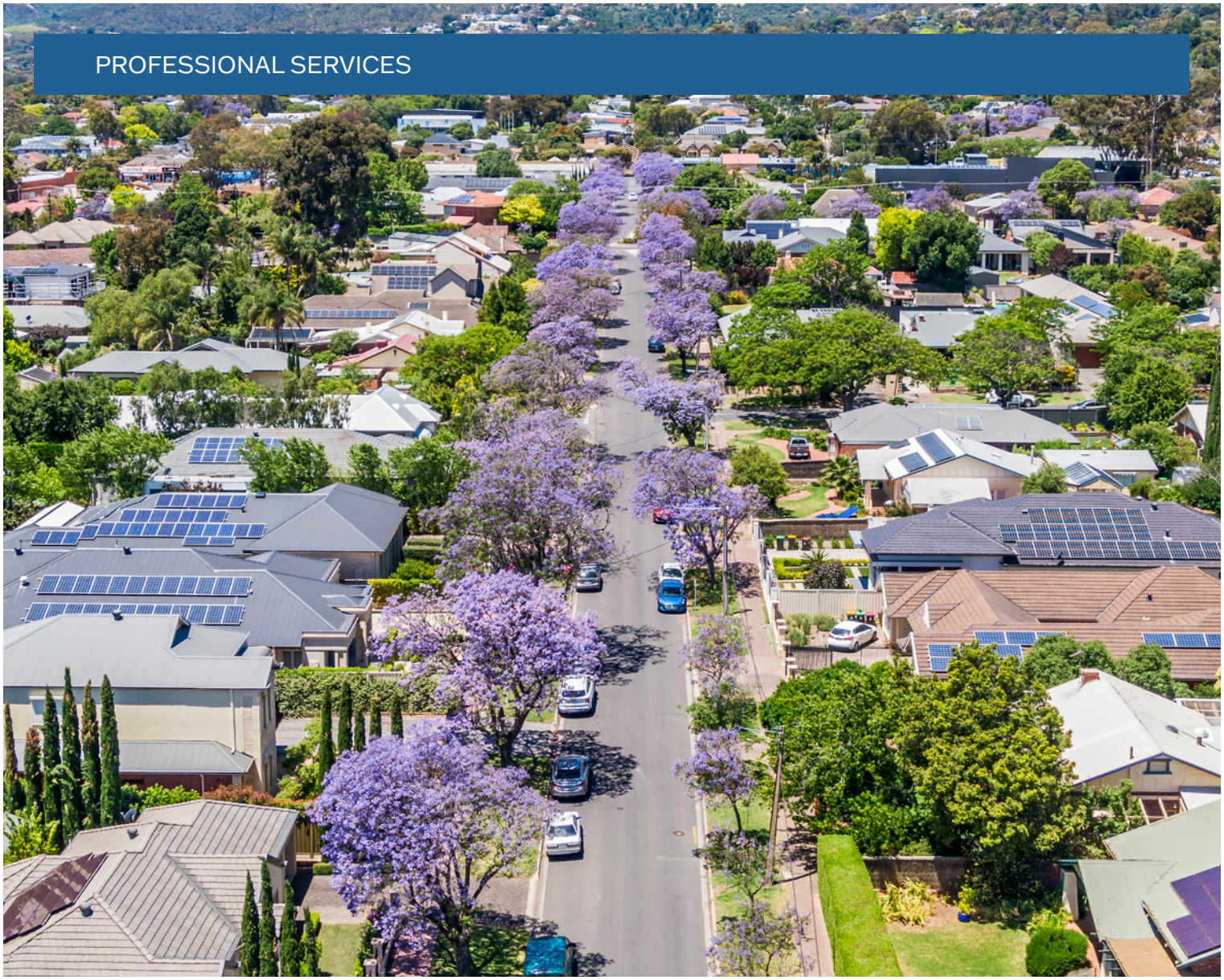

Housing economics analysis
Final Report

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Related reports and documents

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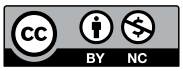

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Acronyms and abbreviations used in this report

AHURI	Australian Housing and Urban Research Institute
BAU	Business as Usual scenario
BHO	Better Housing Outcomes scenario
CBA	Cost-benefit analysis
DFV	Domestic Family Violence
DPC	Department of Premier and Cabinet, South Australia
DTF	Department of Treasury and Finance, South Australia
ISA	Infrastructure South Australia
NatHERS	Nationwide House Energy Rating Scheme
OECD	Organization for Economic Co-operation and Development

Executive summary

Infrastructure South Australia (ISA) commissioned the Australian Housing and Urban Research Institute (AHURI) to analyse the impacts of providing equitable access to secure, affordable, and appropriate housing at a population-wide scale. The objective of the project is to develop an effective impact assessment framework based on evidence of the benefits to inform housing policy and investment decisions.

This Final Report presents findings of an evidence review which synthesises the economic, social, and environmental impacts of housing identified through a global scan of literature. The findings from the global scan were categorised in an Impacts Map. This informed the development of a proposed impact assessment framework which captures a range of benefits that have potential to be selectively applied when conducting a cost-benefit analysis (CBA) of a diversity of housing interventions. These monetised, quantified, and qualitative benefits are designed to be utilised in project evaluation processes. This requires an assessment of the proposed project intervention and applying the relevant parameter values. The framework provides guidance on whether the parameter values are to be applied as an individual instance or an annual basis.

Key findings and outcomes

Hundreds of studies demonstrate the economic, social, and environmental impacts of the provision of secure, affordable, and appropriate housing

- There is extensive literature analysing the economic, social, and environmental impacts of equitable access to secure, affordable, and appropriate housing. The global scan identified several commonly referenced benefit domains categorised as:
    - **economic impacts:** productivity, government expenditure, discretionary spending, and employment
    - **social impacts:** health, mental health, safety, welfare, education, intergenerational equity, and social inclusion
    - **environment:** energy efficiency, urban form, and materials use.
- The benefits of provision of secure, appropriate, and affordable housing can be measured directly, and are more commonly quantified and monetised for some domains. This is particularly the case for government expenditure, discretionary spending, health, mental health, safety, welfare, and energy efficiency. However, for other domains, such as education, employment, intergenerational equity, and social inclusion, housing impacts appear to be less direct, and are more difficult to quantify and monetise.
- In domains where housing benefits have been monetised, generally this is achieved by pricing the cost saving (i.e., avoided costs) due to reduced demand to government-funded services for health, mental health, safety, and welfare. The impacts for individuals have been monetised through household cost savings for health and energy efficiency, and the value of improved wellbeing. The environmental benefit to society is monetised through carbon emissions reduction, climate change mitigation and avoided or delayed infrastructure investment.

There is need for a nationally consistent appraisal method for housing interventions

- A range of decision-making methods have been applied to evaluate housing market interventions in Australia. These have typically been developed for other policy contexts.
- There is recognition economic appraisal is in a formative stage for housing, and an appropriate and consistent valuation framework is needed (Denham, Dodson et al. 2019; IA, 2021).
- Cost-benefit analysis is a suitable valuation method for housing as it is recommended by the OECD, forms a key component of ISA's current assessment approach, and is established and widely used by governments nationally (Chapman, Preval et al. 2017; ISA, 2022; NSW, 2017; DEDJR, n.d).

A proposed impacts framework captures potential benefits applicable for the evaluation of a broad range of housing interventions

- The framework categorises monetised, quantified, and qualitative benefits to individuals, government and society identified through the research.
- It includes a diversity of benefits which can be selectively applied where relevant when conducting CBA for a broad range of housing interventions by whole-of government and housing proponents. The six benefit areas identified in the framework include:
    - **Social (Health)**
        - Health and mental health impacts associated with unaffordable and insecure housing
        - Health impacts associated with poor quality / poorly performing housing
    - **Economic**
        - Productivity impacts associated labour market proximity
        - Discretionary spending impacts associated with labour participation and affordability
    - **Environmental**
        - Climate impacts associated with reduced resource and energy consumption
        - Household benefits associated with improved environmental performance

Further research and development

- The evidence review, impacts map and proposed impacts framework highlighted the value in ongoing research to build upon, refine and complement the approaches for quantifying and monetising a fuller range of impacts of housing.
- There is ongoing need for the establishment of governance structures for monitoring data and updating the framework.

1. Introduction

This report presents a summary of evidence of the economic, social, and environmental benefits that arise when equitable access to secure, affordable, and appropriate housing is facilitated at a population-wide scale. This project maps the full range of housing impacts and proposes an impact assessment framework to guide housing investment and policy decisions.

As housing has become increasingly conceptualised as a form of infrastructure, there has been growing interest integrating this into planning by government and infrastructure bodies. There is recognition that approaches for socio-economic appraisals of housing investment is in a formative stage. This contrasts the established techniques utilised in the transport sector which has benefitted from ongoing development since the 1950s and has a national governing body which provides oversight on consistent guidelines for evaluation and research (Denham, Dodson et al. 2019).

For this project, AHURI has conducted a global scan of the literature, with a focus on the ways in which locational access, affordability, safety, security of tenure and appropriateness, impact economic, social, and environmental outcomes for housing. A range of monetised, quantitative, and qualitative impacts were identified which were categorised according to the benefit provided to individuals, government, and society. The research led to the identification of potential parameter values which could enable consistent socio-economic appraisal of housing interventions.

1.1 Objective

The objective of the project is to develop an effective impact assessment framework, based on evidence of costs and benefits, to inform housing policy and investment decisions by the South Australian government.

The monetised, quantified, and qualitative benefits are designed to be utilised in project evaluation processes, applying the relevant parameter values to the particular housing intervention.

2. Background

The provision of secure, affordable, and appropriate housing has an impact on a range of health, wellbeing, and socio-economic outcomes (Flanagan, Martin et al. 2019a). It is recognised as playing a critical role in providing a foundation for people's lives (Kraatz, Reid et al. 2022), contributing to the ability to safely express identity, connect with others, access services, and thrive (De Campo, Jones et al. 2021). Access to secure, affordable, and appropriate housing is recognised in many countries and by human rights bodies as a fundamental human right (Australian Human Rights Commission 2009). This right is not recognised in Australian law, where property rights are privileged and a 'right to housing' does not exist.

Infrastructure Australia (2021) considers safe, adequate, and affordable housing to be a 'vital component of social infrastructure' (p.533), citing the growing evidence of the substantial direct and indirect social and economic benefits it creates. Social housing enables the achievement of social and economic aspirations and demands, beyond its role of providing a 'safety net' for people in housing need (Lawson, Denham et al. 2019).

Security, affordability, and appropriateness are key characteristics of housing and are interrelated. For example, when housing is unaffordable, this affects the housing security of households and they are more likely to live in housing that is not appropriate, which can result in households being evicted or living in overcrowded conditions (Mansour, Bentley et al. 2022). The provision of secure, affordable, and appropriate housing has a range of economic, social, and environmental impacts, which are framed through several benefit domains explored in this research. These impacts of housing are multi-dimensional and can also influence each other.

Economic analysis of the impact of housing assists with housing investment and policy decisions (Chapman, Preval et al. 2017). These approaches provide a robust way to identify the impacts on society. However, there is recognition that economic appraisal is in a formative stage for housing (Denham, Dodson et al. 2019). Further development and consistent methodologies are needed which capture the range of benefits (IA 2021).

Job creation is an economic uplift which arises directly from housing building and construction activity. The residential building construction industry in Australia generates the second-largest economic multiplier of all industries that make up the economy (NHFIC 2021). The multiplier for residential construction is estimated at approximately 2.9 (NHFIC 2021). Within the literature, several affordable housing projects around the world have been analysed post-construction to understand the economic impact of investment and job creation. For example, an evaluation of the Social Housing Initiative which formed part of the Nation Building Economic Stimulus Plan found that for every AUD$1 invested in the construction of social housing, $1.30 in total turnover was generated. The program was estimated to contribute $1.1 billion to GDP and 9,000 FTE jobs (KPMG 2012). Another study estimated the investment of CAD$1 million in an affordable housing project contributed 1 direct and 2.3 indirect jobs (Hanka, Gilderboom et al. 2015).

While job creation is typically highlighted in infrastructure-related announcements and in post-development appraisal of housing investments, this study attempts to identify a more comprehensive understanding of housing impacts beyond this limited and short-term impact. It is also important to note that in the case of cost-benefit analysis, jobs related to construction and operation are considered a cost due to the labour having an opportunity cost (SGS, 2019). Therefore, only employment which generates jobs for individuals who would otherwise be permanently unemployed or underemployed, are typically considered a benefit (SGS, 2019). Given that the level of this impact correlates closely with the level of investment, it is not usually considered in a CBA.

2.1 Housing affordability

Housing affordability can be defined as the relationship between the cost of housing and household incomes. It can have an impact on households in all types of tenure, including through mortgage payments for home purchasers or rents for households living in rental housing. Housing is often understood to be unaffordable when housing costs absorb too great a proportion of household income, thereby limiting the amount of disposable income, especially for lower- and middle-income households (Mansour, Bentley et al. 2022). If an unreasonable proportion of household income is required to pay housing costs, this can result in housing stress.

There are two common approaches to measuring affordability in Australia: ratio measures and residual measures (Parliament of Australia). The ratio measure compares the housing expenditure to household income'. The '30:40' ratio is a nationally accepted measure of housing stress, where households in the lowest 40 per cent of the income distribution pay more than 30 per cent of income on housing costs, adjusted for household size (AHURI 2019). Research by AHURI, has highlighted the potential for residual measures to complement the ratio approach, responding to limitations that it is less sensitive to varied household circumstances. The residual measure differs by comparing to a benchmark, a household's income after paying housing costs. This measure is more nuanced in assessing the ability of a household to maintain an acceptable level of housing after accounting for housing related costs, and is more sensitive to diverse household composition and income (Henman and Jones, 2012).

The impact of declining housing affordability is a topic widely discussed in Australia and internationally. There is a severe shortfall of affordable and social housing in Australia, (Lawson, Pawson et al. 2018) as well as a decrease in housing affordability overall (Gurran, Hulse et al. 2021). Increasing the overall supply of housing continues to be proposed by some as a solution to alleviate housing affordability (HRSCTR, 2022). This is based on the (false) assumption that a larger housing stock will reduce pressure on the housing market, resulting in reduced prices and rents through a filtering process, whereby households buying new housing free up established housing and increase housing choice for lower income households (Hansson 2019). However, new housing supply is mostly not affordable or available to lower income groups (Gurran, Hulse et al. 2021) and does not result in more affordable housing becoming available. New housing in many cases is being developed in mid-to-high price segments and there is no evidence that so-called filtering processes occur. In practice, the impact on existing stock of new housing production is varied, with new housing stock often replacing older, more affordable housing (Anacker 2019; Ong, Dalton et al. 2017). Increasing new housing supply does not result in more affordable housing becoming available to lower income households (Been, Ellen et al. 2019).

A more direct way to improve the affordability of housing is through a targeted approach of providing housing affordable to lower income households. The reviewed evidence suggests a range of potential government interventions that have the potential to ensure new housing supply impacts affordability positively (Been, Ellen et al. 2019). These include indirect interventions through the planning and regulatory system, such as inclusionary zoning, the direct provision of affordable and social housing by the public sector or by providing subsidies and supports through community housing organisations (Hulse, Reynolds et al. 2019).

2.2 Appropriateness of housing

Appropriate housing is broadly defined in the Australian context as meeting a person's needs. Within housing literature, more commonly used or overlapping terms include suitable / unsuitable housing (Mallett, Bentley et al. 2011). There are a wide range of characteristics that the term encompasses including location (access to employment, services, or green/blue space), dwelling condition and quality, safety, size (and number of residents), layout and suitability for children or youth (Mallett, Bentley et al. 2011). More specific research investigates culturally appropriate housing, including housing that it is appropriate for Indigenous households (Brackertz, Wilkinson et al. 2017), and in the context of accessibility, housing that is appropriate for the needs of people living with a disability, or ageing households (Gusheh, Murphy et al. 2021). The quality and condition of housing is recognised as a driver of health status and wellbeing, affecting both physical and mental health (OECD 2020).

A key consideration in the literature is how the location of housing enables or constrains access to education, employment, public transportation, and other social infrastructure (Dodson, Li et al. 2020; Sarkar, Moylan et al. 2021). The production of new and affordable dwellings in accessible and well-serviced locations is recognised as a key component of an efficient housing market (Gurran, Phibbs et al. 2015). In the Australian context, research has shown that new housing supply in accessible locations is developed targeting the higher end of the housing market (Ong, Dalton et al. 2017), requiring government interventions to assist lower income households to access appropriate housing in those locations (Gurran, Phibbs et al. 2015).

2.3 Housing security

The concept of housing security is understood at the household level. Living in secure housing empowers households to live in their home without fear of a forced move, harassment, or other threats, and provides choice (Mansour, Bentley et al. 2022).

For rental housing in particular, the concept of housing security is closely linked to tenure security. Research by Minnery, Adkins et al. (2003) emphasises that, beyond rental agreements and the condition and costs of housing, tenure security also involves subjective considerations. These can include the renter's feeling of control over their tenancy agreement and having choice about whether they can stay in the rented place and for how long (Minnery, Adkins et al. 2003).

In contrast, insecure housing is a critical component of a household's living arrangement that can cause their housing status to become precarious (Mallet, Bentley et al. 2011). Precarious housing can also involve housing that is unaffordable and / or unsuitable for the household. Housing precarity, and housing insecurity in particular, can place households at risk of becoming homeless (Wood, Batterham et al. 2015; Buckle, Gurran et al. 2020).

3. Method

3.1 Evidence review

The first stage of this project included a global scan of peer reviewed literature and evidence investigating the impacts of the provision of secure, affordable, and appropriate housing for individuals, society, and government.

The evidence review used the following methodology:

- Search of national and international academic and grey literature to identify relevant studies published within the last fifteen years, including:
  - academic journal databases in the housing, homelessness, and related social science fields
  - general internet searching of online policy communities and information clearinghouses (including government departments)
  - follow up of bibliographic references in found studies
- Synthesis of the impacts from the literature
- Examination of the synthesised evidence to draw meaningful conclusions from the analysis and ultimately summarise the current state of understanding about the range of social, economic, and environmental impacts of housing. This analysis investigates:
  - which housing impacts are better understood and researched than others
  - the correlation between certain factors
  - which housing impacts can be quantified and monetised.

3.2 Impacts map

An impact analysis workshop was conducted with ISA and expert advisers from the University of Adelaide and University of South Australia to map out and categorise the full range and distribution of impacts. An impacts map was developed to capture the benefits from secure, affordable, and appropriate housing identified in the global scan, to individuals, society and government.

3.3 Impact assessment framework

An impact assessment framework that can be applied consistently to assess a variety of housing market interventions was developed. This was informed by:

- Desktop research on the applicability of evaluation methods used by government to guide infrastructure investments for housing interventions
- Identification of approaches for the quantification and monetisation of housing impacts and socio-economic impact frameworks for housing investment decision-making
- An evidence application workshop was conducted with ISA, Department of Premier and Cabinet (DPC), Department of Treasury and Finance (DTF), South Australian Housing Authority (SAHA), and experts from the University of Adelaide and University of South Australia. This included identification of benefit streams to be included in the framework based on the strength of the evidence.

4. Global scan of the evidence

This section presents the findings of the global scan of economic, social, and environmental impacts associated with various characteristics of housing. Hundreds of studies were found through the global scan, demonstrating the breadth of research on the impacts of secure, affordable, and appropriate housing. Commonly referenced benefit domains were identified, as outlined in Table 1. Within each of these broad categories, a range of specific impacts and the means of measuring their impact, whether monetary, quantitative, or qualitative, in each study was identified.

The extent of the evidence base for each domain was categorised as emerging / less established, established, or well-established, based on the number of studies, quality of the research, and the strength of findings. There was diversity in the number of studies available for each domain, with health having the most (more than 150), and intergenerational equity having the least (less than 10).

Table 1 provides a summary of the key impacts for each domain and strength of the evidence base. Those that have been monetised are indicated in **bold** text.

The global scan identified that, for some domains, such as productivity, government expenditure, discretionary spending, employment, health, mental health, welfare, safety and energy efficiency, the benefits of secure, affordable, and appropriate housing provision have been monetised. In domains where housing benefits have been monetised, generally this is achieved by pricing the cost saving (i.e., avoided costs) to government-funded services, where these are demonstrated to be utilised less by people who have access to housing. Benefits identified in other domains are less commonly monetised.

The following sections (4.1 Economic impacts, 4.2 Social impacts and 4.3 Environmental impacts) discuss the impacts in further detail. Monetary values in these sections represent the figures and currency cited in the original research and have not been modified to reflect current estimates in Australian dollars. A summary of the strength and extent of the evidence for each domain is provided in Section 4.4 Evidence summary.

Table 1: Evidence on the impacts of secure, affordable, and appropriate housing

Domain	Evidence base	Impacts
Economic		
Government expenditure	Well-established	• **Reduced use of government heath, mental health, justice, and welfare services**
Productivity	Established	• Increased access to labour markets • **Increased earning potential** • **Reduced travel-to-work time**
Discretionary spending	Established	• **Increased household disposable income**
Employment	Emerging	• Reduced risk of job loss • Reduced absenteeism • **Increased earning potential** • Increased ability to seek or participate in employment
Social		
Health	Well-established	• **Reduced use of health services** • Improved health • Reduced health costs for households
Mental health	Established	• **Reduced use of mental health services** • Improved mental health and wellbeing • **Improved life satisfaction**
Safety	Established	• **Reduced domestic and family violence** • **Reduced risk of homelessness** • **Reduced arrests, criminal convictions, recidivism, prison stays and incarceration** • **Reduced use of justice services**
Welfare	Emerging	• **Reduced use for welfare services** • Reduced risk of homelessness
Education	Emerging	• Reduced absenteeism • Improved relationships with teachers / peers • Improved educational engagement, performance, and attainment
Intergenerational equity	Emerging	• Improved family stability • Improved equity • Transfer of assets, contribution to deposits or provision of accommodation
Social inclusion	Emerging	• Improved social participation, community functioning and engagement • Improved social connections and relationships
Environmental		
Energy efficiency	Well-established	• **Reduced energy consumption and costs** • **Reduced carbon emissions** • Improved indoor environmental quality • Improved thermal comfort
Urban form	Established	• Reduced reliance on private transport • Reduced habitat and biodiversity loss • Improved air and water quality
Materials use	Established	• Reduced resource consumption and waste

Note: **Bold** = *monetised.*

Source: Authors.

4.1 Economic impacts

Numerous studies investigate the economic impacts related to the provision of secure, affordable, and appropriate housing. The literature provides a range of measures to both monetise and quantify these economic impacts. There is evidence that government expenditure decreases when people have access to secure, affordable, and appropriate housing due to a reduction in demand for services. Based on empirical evidence published to date, the impact on avoided costs to government is most significant when housing people experiencing or at risk of homelessness. Some studies demonstrate affordable housing increases household disposable income, which in turn, could suggest that lowering housing costs may have a positive impact on non-housing consumption, with associated multiplier effects. While there is literature exploring the relationships between housing and productivity, this tends to highlight the complexity involved in quantifying and monetising the impacts. The empirical evidence base is therefore under-developed at present. However, there is evidence that a lack of access to secure, affordable, and appropriate housing increases absenteeism from work.

4.1.1 Productivity

High housing costs constrain productivity by pushing households with lower incomes to locations which are further from job-rich areas (Maclennan, Long et al. 2021b). The provision of appropriate housing in well-located places is recognised as important in relation to workforce participation (Whelan and Parkinson 2017). This is particularly the case for key workers, who increasingly face difficulties affording housing within reasonable proximity to their work (Gilbert, Nasreen et al. 2021). Recent research indicates that seventeen to twenty per cent of key workers in Melbourne and Sydney are struggling to find appropriate and affordable housing (Gilbert, Nasreen et al. 2021).

Research by Dodson, Li et al. (2020) has investigated the impacts of commuting on the urban productivity of Australian cities. Access to housing is relevant, as the spatial structures of the Australian housing market can result in low-income workers residing in locations that are remote from employment concentrations. The research finds that, in some cases, accessibility for lower-income households needs to be supported by the provision of affordable or social housing (Dodson, Li et al. 2020). Affordable housing that is located near public transport increases access to labour markets and reduces commuting times and congestion (Dodson, Li et al. 2020). However, one study found that while there is a diminishing supply of affordable housing for low-income workers near job rich central city locations in Australia, this did not generate a shortage of workers for businesses due to mitigating factors such as good transport connections (Van den Nouwelant, Crommelin et al. 2016). Economic modelling conducted in Sydney compared the impact of housing location on individual's travel-to-work times, job choice, earning potential and spending, and the broader impacts of these outcomes for individuals (Maclennan, Randolph et al. 2019). The study established a business as usual (BAU) scenario, where current levels and housing investment patterns continue in Sydney, with most housing developed at market prices at low and medium densities in less accessible locations. This was compared to a better housing outcomes scenario (BHO) which aimed to provide more affordable housing within a 30-minute commute of jobs and services. Several of the feasible locations identified in Sydney were over the 30-minute target, however still shorter than the BAU scenario. It was estimated that the annual value of the average reduced travel-to-work time in the BHO scenario was $2,554 to individuals, with approximately 50 per cent of this assumed to be used productively through additional time spent working. They also established that households with greater accessibility to labour markets can access a greater diversity of jobs that align with their skills and preferences. This value is reflected in workers' average increased earning per year of $19,865.

Although there are emerging studies exploring the impacts of housing on productivity, Maclennan, Long et al. (2021b) emphasise that this is not yet providing a rich base of data for research. They argue that there is sufficient evidence that Australian governments should take a strong interest in this relationship.

A lack of access to secure, affordable, and appropriate housing contributes to absenteeism from work, reducing productivity of workplaces, as discussed in Sections 4.2.1 Health, 4.2.2 Mental health, and 4.2.3 Safety.

4.1.2 Government expenditure

Several studies quantify and monetise the impact of affordable, secure, and appropriate housing on avoided costs to government due to a reduction in demand for health, mental health, justice, and welfare services (Parsell, Petersen et al. 2015; Johnson, Kuehnle et al. 2014). However, the costs borne by society decline more significantly when people who are homeless are relocated into stable housing, compared to other households (Carnemolla and Skinner 2021). These impacts are discussed in further detail in sections 4.2.1 Health, 4.2.2 Mental health, 4.2.3 Safety, and 4.2.4 Welfare.

4.1.3 Discretionary spending

At the household level, unaffordable housing limits household spending on items critical to daily life such as food, fuel, and medical care (Pollack, Griffin et al. 2010), with consequences for quality of life which, in turn, can be monetised. Provision of affordable housing enables greater potential for discretionary spending by households (SGS 2022; Zon, Molson et al. 2014). Zon, Molson et al. (2014) estimate that all low-income residents have additional disposable income due to paying reduced rent following moving into social housing of CA$5,169.63 per annum, which is the subsidy per assisted household. Lowering housing costs for households with low incomes can therefore be argued to lead to an increase in non-housing consumption, with associated multiplier effect.

4.1.4 Employment

Several studies investigate the impact of secure, affordable, and appropriate, housing on employment. This is measured at the household level through workforce participation. Research highlights that precarious housing (insecure and / or unaffordable housing) and precarious employment are interrelated (Ong ViforJ, Singh et al. 2022). People from households experiencing insecure employment were five times more likely to also experience housing precariousness (Ong ViforJ, Singh et al. 2022). The researchers highlight that often employment, household composition or income changes are triggers for housing precarity. Studies assessing the impact of housing assistance on employment participation typically find a small or negative impact (Pomeroy and Marquis-Bissonnette 2016; Denham, Dodson et al. 2019; Whelan and Parkinson 2017). This is arguably due to housing assistance criteria which may limit the ability or capability of households to seek employment, or act as a disincentive to increasing household income and threaten eligibility for public housing (Phibbs and Young, 2005). There is literature which examines explicit linkages between the provision of social housing and employment or labour market activation initiatives (Leishman, Cebulla et al. 2018).

Findings from research investigating the impact of housing stability on employment outcomes suggest results are different for people who have experienced long term homelessness compared to others. A study found forced moves increase an individual's chance of losing their job by 22 per cent within a year (Desmond and Gershenson 2016). In contrast, research into the impact of providing stable accommodation to people experiencing homelessness found minimal change to employment circumstances (Zaretzky and Flatau 2013).

The research also discusses the challenges in evaluating the impact of affordable housing on employment outcomes. Social housing in Australia prioritises housing for those with the greatest need, who may have limited opportunity for employment (Denham, Dodson et al 2019; Whelan and Parkinson 2017), and income criteria for the allocation of social housing may impose disincentives to entering employment (Prentice and Scutella 2019). For example, one study found that a higher proportion of tenants were working less after being recently accommodated in social housing (Pawson, Milligan et al. 2015). The authors noted the onset of disability, imminence of birth, or child-minding responsibilities, may have contributed to priority for social housing allocation, whilst impacting employability at the time of the study. The study found that more than 20 per cent of social housing tenants answered positively to a question about the housing helping them feel better able to work or to seek work. This was considered significant, given 45 per cent of respondents were aged over 60, and 39 per cent were medically unable to work. The Productivity Commission (2015), however highlights that in South Australia, employment rates increased for individuals while they were on the public housing waiting list and after relocating into public housing. This suggests that housing security contributes to improved employment outcomes.

Prentice and Scutella (2019) did not find living in social housing to have a significant impact on improved employment outcomes. However, a longitudinal study in the USA, found that additional years that children spent living in public housing or receiving housing assistance increased adult earnings and decreased the likelihood of incarceration (Andersson, Haltiwanger et al. 2016). The study estimated that each additional year a child received voucher housing assistance, earnings at age 26 increased by 4.7 percent for females and 2.6 percent for males. Each additional year of public housing increased these earnings by 4.9 percent and 5.1 percent respectively.

An Australian study found that low- and moderate-income households who received some type of government housing assistance, perceived this to have a positive impact on their or their partner's ability to get a job (Beer, Baker et al. 2011). Groenhart (2014) found that employment outcomes improved for public housing residents when located close to employment rich areas. Residents of social housing have in general less geographic mobility compared to people in private rental housing (Whelan and Parkinson 2017). This may limit ability access to jobs, highlighting the importance of well-located social housing relative to employment opportunities.

Housing quality has an impact on health and mental health outcomes, which contributes to absenteeism from work (Pomeroy and Marquis-Bissonnette 2016), as discussed in 4.2.1 Health and 4.2.2 Mental health.

4.2 Social impacts

There is a significant body of evidence that the provision of secure, affordable, and appropriate housing has a range of social benefits. There are strong and established measures for monetising and quantifying these impacts. Much of the research highlights the avoided costs to government due to reduced demand for health, mental health, safety, and welfare services. The research highlights that individuals benefit from improved health, mental health, and safety. Research on the impact of housing on individual outcomes for education, intergenerational equity, and social inclusion, tend to be more qualitative in nature.

4.2.1 Health

It is well established that housing is a determinant of health (WHO 2018; Howden-Chapman, Fyfe et al. 2021). There is extensive literature on the health impacts of housing, with this having the strongest evidence-base of all impact domains. The provision of stable housing has been shown to reduce dependence on health services, generating cost savings to government. The direct impacts of housing quality on health are well-established and are based on a broad range of evidence (Baker, Lester et al. 2016; Mansour, Bentley et al. 2022; Pomeroy and Marquis-Bissonnette 2016). The impact of affordable housing provision on physical health has been less directly demonstrated, compared to the impact on mental health (as discussed in 4.2.2 Mental health impacts).

There is substantial evidence that the provision of affordable, stable, and appropriate housing reduces demand for health services, generating society-wide cost savings (Parsell, Petersen et al. 2015 and Johnson, Kuehnle et al. 2014). Usage of health-care related services, including access of general and acute health services, and presentations at emergency departments, provide well-established measures (Wood, Flatau et al. 2016; Taylor 2018). Quantifying and monetising the avoided costs to government and society is most significant when households experiencing homelessness are securely housed, with studies finding:

- An 80 per cent decline in the use of emergency hospital services and average number of days hospitalised in general hospitals and psychiatric units, estimated as a cost saving of AUD$19,714 to society and $23,489 to government per person over four years (Johnson, Kuehnle et al. 2014).
- A saving of AUD$4,846 per person per year for National Partnership Agreement on Homelessness (NPAH) program participants due to decrease in frequency and duration of health service use to government. This increased to $13,273 when priority clients (homeless individuals) are excluded, due to reduced health service use by clients of the NPAH Mental Health program (Wood, Flatau, et al. 2016).
- A five per cent decline in the number of admitted patients estimated to save government AUD$591,495 for program participants (n. 30) over 12 months (Parsell, Petersen et al. 2015).

There are many health impacts resulting from housing quality. Housing thermal and ventilation quality has been found to be directly related to mould growth and many respiratory illnesses (Dannemiller, Gent et al. 2016; Keall, Crane et al. 2012), increased instances or severity of allergies (Wargocki, Sundell et al. 2002) and an increased risk of heat related mortality (Loughnan, Carroll et al. 2015; Daniel, Horne et al. 2019). Mansour, Bentley et al. (2022) define healthy housing as '[…] structurally sound, dry, clean, pest-free and contaminant-free, ventilated, safe, thermally controlled, accessible and affordable.' (pp.1-2). Poor quality housing has been estimated to cost England's National Health Service (NHS) £14 billion per year (Nicols, Roys et al. 2012). The costs to the NHS of not improving the thermal performance of dwellings was estimated at £145 million per year due to the care needed for health impacts attributed to exposure to the cold (Mason and Roys 2011). A body of research in New Zealand has monitored the impacts of indoor temperature, humidity, and electricity consumption and the impact on residents' respiratory health, contact with health services, work absences and mortality (Howden-Chapman, Fyfe et al. 2021). In one study of 1,400 homes with residents with respiratory symptoms, households that had insulation retrofitted had significant health improvements (Howden-Chapman, Matheson et al. 2007). This generated a benefit to cost ratio of 2:1 for retrofitting dwellings with improved insulation (Chapman, Howden-Chapman et al. 2009). The impacts of poor health due to housing quality extend to reduced productivity due to increased absenteeism from work (Pomeroy and Marquis-Bissonnette 2016; Chapman, Preval et al. 2017).

In the Australian context, Baker, Lester et al. (2016) emphasises that there is a need to re-examine housing conditions as an important determinant of health, particularly for disadvantaged households. This includes considering the role of housing affordability and living in insecure housing. The research demonstrates that disadvantaged households, many of whom have long-term health conditions and disabilities, are over-represented in housing stock of poor condition, which may further contribute to their poor health (Baker, Lester et al. 2016). Phibbs and Young (2005) found that heavy users of Medicare services experienced a reduction of 22 per cent in average number of services following relocation into public housing. Heavy users are defined as averaging over 3 services per month over 12 months. These households also had a 30 per cent reduction in the average benefits paid per month of $46.16. Tenure has also been found to be associated with housing quality, with rental housing generally 'older, colder, damper and mouldier than owner-occupied housing' (Howden-Chapman, Matheson et al. 2007, pp. 8)

The appropriateness of housing is also related to health outcomes. A commonly applied measure in Australia compares dwelling size with household size and composition to determine housing suitability and identify underutilised or overcrowded dwellings (Australian Institute of Health and Welfare 2020). An Australian study found people with poor physical or mental health were twice as likely to reside in a dwelling in poor condition, and more likely to live in an overcrowded home (Mallett, Bentley et al. 2011). The COVID-19 pandemic has raised concerns about overcrowding, including shared facilities, with recent research demonstrating this increases the risk of infectious diseases (Buckle, Gurran et al. 2020).

A few studies highlight the impacts of unaffordable and insecure housing on the health of households. Households who spend a high proportion of income on housing costs, spend less money on nutritious food (Fernald, 2014) and may forgo essential medicines or medical services (Pollack, Griffin et al. 2010). Phibbs and Young (2005) found that people had more money to buy healthier foods after moving into public housing. In one study, people experiencing insecure housing were twice as likely to self-report poor to fair health but postpone visits to the doctor due to costs (Stahre, VanEenwyk et al. 2015).

4.2.2 Mental health

There is increasing evidence of the impacts of secure, affordable, and appropriate housing on mental health outcomes. The research indicates the bi-directional relationship between mental health and housing, with each acting as a symptom and a source of disadvantage (Mallett, Bentley et al. 2011). Many studies use self-reported mental health and wellbeing scores to quantify the impact. The impact has been quantified and monetised by estimating avoided costs to government due to decrease mental health service usage. More recent research has monetised the impact of poor-quality housing on wellbeing.

Housing can impact a person's mental health, with the evidence showing, on average, that the lower the housing quality, the poorer a person's mental health (Baker, Lester et al. 2016; Mallett, Bentley et al. 2011). Heating and cooling requirements are a key component of housing costs and can contribute to housing becoming unaffordable. Increasing energy costs can disproportionally impact lower-income households that may not be able to afford to keep their home warm or cool and are more likely to live in less energy efficient homes (Dignam 2020). Research has shown that thermal discomfort effects mental wellbeing, with damp, dark or cold housing associated with increased depression (Soebarto, Bennetts et al. 2019; Liddell and Guiney 2015). Access to daylight and an attractive outlook increases overall resident wellbeing, contentment, and satisfaction (Brown and Jacobs 2011). Recent research conducted in 27 countries in Europe found that living in housing with poor indoor environmental quality decreased an individual's life satisfaction (Phillips, Janta et al. 2022). Lower levels of life satisfaction were found for individuals living in dwellings with exposure to damp (1.6 per cent), a lack of daylight (1.1 per cent), exposure to noise (0.6 per cent), and excess cold (3.9 per cent). The impact on life satisfaction of living in a damp dwelling was found to be the equivalent of being separated from a partner, while excess cold in a dwelling was the same level as being disabled and not in a position to work (Phillips, Janta et al. 2022). The study estimated that an individual would need to be compensated EUR 6,288 for being exposed to the four indoor climate hazards to achieve the same level of wellbeing as an individual not exposed, and collectively this would be EUR 258 billion across the 27 countries.

A wellbeing valuation approach has been used to estimate the monetary value of the impact of different housing outcomes on residents in New Zealand (Smith and Davies, 2020; Davies, 2018). This utilises life satisfaction, derived from the New Zealand General Social Survey. The research estimates the following compensating surplus (the portion of household income that an individual is willing to forgo for the outcome, and the surplus they would need to receive to be willing to be exposed to the outcome):

- Living in a house in disrepair is -$16,654 (NZD) for the general population and NZ$-18,123 for public housing tenants. Housing with minor problems is -$6,776 for the general population, and -$12,458 for public housing residents.
- Living in a house that is sometimes cold is -$10,460 (NZD) for the general population, and -$18,210 for public housing residents, with this increasing for living in a house that is always cold to -$14,457 for the general population and -$18,707 for public housing tenants.

The appropriateness of housing also effects mental health. Residents living in overcrowded spaces are more likely to experience instances of depression, anxiety, and stress (Braubach, Jacobs et al. 2011). Inadequate space for socialisation or play for children in relation to other household member's spatial needs, can lead to disturbed sleep patterns with associated accidents and illness with fatigue (Braubach, Jacobs et al. 2011, Reynolds and Robinson 2005; Solari and Mare 2012). Research by Dockery, Ong et al. (2013) also highlights the impact of neighbourhood facilities (such as parks and play facilities) on a child's social health and wellbeing.

A person's security of tenure has also been found to have a direct impact on their mental health. Research by Mallett, Bentley et al. (2011) documented how people precariously housed experienced worse mental health on average than those with secure housing. Forced housing moves have been found to contribute to a decline in wellbeing and mental health as measured by self-assessed mental health scores on the annual 36-item Short Form Survey (SF-36) within the Household, Income and Labour Dynamics in Australia (HILDA) survey (Ong, Singh et al. 2022). Conversely, living in stable housing resulted in an increase in mental health scores over time on the same measure (Li, Baker, et al. 2022; Mason, Baker et al. 2013).

The gap in wellbeing between securely housed and precariously housed people in Australia is widening (Ong, Singh et al. 2022). This supports previous international findings that owner occupier households are healthier than households living in public or private rental tenure, on a range of measures from higher mental wellbeing to reduced mortality risk (Smith, Easterlow et al. 2004). Private rental is the most insecure tenure, without the stability and empowerment for mental wellbeing provided in public rental housing (Windle, Burholt et al. 2006; Mee 2007). Hiscock et al. (2003) associate this pattern not only with homeownership resulting in typically better-quality housing but also the 'protection, autonomy, and prestige' of ownership and secure housing.

Housing tenure and mental health has been found to be bi-directional, in that it is both a source and a symptom of disadvantage, with housing influencing mental health outcomes and poor mental health increasing housing precarity (Mallett, Bentley et al. 2011). The ill-effects of insecure housing were found to be higher generally with young people. Housing insecurity has been associated with higher instances of teen pregnancy, early drug use, psychological distress, and suicide (Braveman, Dekker et al. 2011 and Tsai 2015). Specifically, lone, young mothers experienced high instances of depression and anxiety and felt that their resultant mental wellbeing negatively affected their ability to parent or participate in work and study (Mallett, Bentley et al. 2011). A child's health is also negatively impacted by experiences of insecure housing (Baker, Lester et al. 2019). Conversely, secure, and affordable housing has been found to provide a buffer against the psychological stress associated with unemployment, insecure employment, or disability diagnosis, by reducing the deterioration in mental health by 20 per cent of the total negative effect (Kavanagh, Aitkin et al. 2016; Bentley, Pevalin et al. 2016).

There is more limited research on the impact of housing stress on mental health. One study found that individuals living in low-to-moderate income households experienced a small decrease in their mental health when entering unaffordable housing (Bentley, Baker et al. 2011). More recently, a study found that an individual's self-assessed wellbeing and mental health worsens when living in unaffordable housing (Ong ViforJ, Singh et al. 2022). In a study discussed previously in Section 4.2.1 Health above, people experiencing insecure housing were twice as likely to self-report poor mental health (Stahre, VanEenwyk et al. 2015).

For people experiencing mental illness, access to safe, secure, appropriate, and affordable housing is foundational for their recovery and for being able to access appropriate support services (Brackertz, Borrowman et al. 2020). At a societal level, providing secure housing to people experiencing homelessness has been found to decrease demand for mental health services. One program evaluation estimated a cost saving of $242,540 to government per person per year (Parsell, Petersen et al. 2015). Another program evaluation found a reduction in drug and alcohol addiction service demand following access to secure housing, with this generating a $1,310 cost saving to society and $2391 cost saving to government per participant over a four-year period (Johnson, Kuehnle et al. 2014).

4.2.3 Safety

There are several studies which demonstrate that affordable, secure, and appropriate housing contributes to safety and reduces criminal justice activity. Key findings of this research include a reduction in domestic and family violence, decreased arrests, criminal convictions, recidivism, prison stays and incarceration rates (Carnemolla and Skinner 2021; Equity Economics 2021). Some studies have quantified and monetised these benefits through avoided domestic and family violence and justice costs to society and government (Equity Economics 2021).

Housing and homelessness are key factors in instances of and safety from domestic and family violence. A US study into the effects of long-term housing subsidies documented that the policy had reduced instances of domestic and family violence and psychological distress in adults. By providing housing and removing the risk of homelessness, people were enabled to leave abusive relationships as measured by an increase of couple separation (Gubits, Shinn et al. 2016). In Australia, the provision of housing for safety from domestic and family violence occurs as the last point of housing support through prevention of homelessness. Domestic and family violence is established as a leading cause of homelessness in Australia (Bullen 2015) and has been found to increase housing precariousness for victims in the year after suffering physical abuse. Research by Ong, Singh et al. (2022) found that a quarter of victim survivors move from secure to precarious housing by the following year and, if already precariously housed, three quarters of victim survivors were unable to attain secure housing. Australian government funded homelessness services have reported domestic and family violence as being a focus for their services since the 1970s. The proportion of clients who have experienced domestic and family violence is 'steadily increasing from 32 per cent of all clients in 2012–13 to 40 per cent in 2016–17 (from 77,870 clients to 114,757 nationally)' (Flanagan, Blunden et al. 2019: 8). In Australia, every year more than 7,000 women return to live with perpetrators due to a lack of affordable housing options and 9,000 become homeless escaping domestic and family violence as they are unable to secure long-term housing (Equity Economics 2021a). A report by Equity Economics estimated that providing 16,810 social housing dwellings in Australia would provide housing choices to women escaping domestic and family violence, and would result in avoided costs to government each year of:

- $122.5 million due to women returning to a violent partner
- $275 million due to women experiencing homelessness.

This research estimates there to be $18,241 worth of health and economic gains for every survivor avoiding family violence due to securing housing (Equity Economics 2021a). This estimate includes the impact on lost quality of life (pain, suffering and premature mortality), health services demand, loss of productivity due to absenteeism for health or attending court, and damaged property. Equity Economics (2021b) has also assessed these impacts in New South Wales estimating that providing 5,000 social housing dwellings for women would generate:

- $38.5 million in avoided social and economic costs each year by providing safe housing to 2,402 women currently living with a violent partner
- $68 million in avoiding homelessness costs for an additional 2,410 women.

In Melbourne, Women's Property Initiatives (WPI) provides long-term, safe, high quality and affordable homes for women, with almost 40 percent of their clients stating that escaping family violence was a primary reason for seeking housing support (Think Impact 2016). An evaluation conducted over a period of 12 months of tenants living in 66 affordable long-term homes provided by WPI estimated tenants gain $9.83 million in social value due to improved wellbeing, safety, independence, and positive lifestyle choices (as measured by tenant's ability to spend money in support of this). The report estimated children living in WPI housing, separately benefit from $2.61 million of the value due to improved wellbeing, relationships, and family life. While these benefits are calculated for all WPI tenants, and do not identify specific impacts of reduced domestic and family violence, the evaluation indicates the extent of benefits that secure housing has to victim survivors of family violence and their children.

It is also well evidenced that secure and affordable housing provision can contribute significant savings in crime and justice costs borne by governments and society. People experiencing homelessness have been documented as a high user group of broader non-homelessness services, including justice and institutional services such as prisons, with homeless programs nationally producing a saving of A$2397 per person for the year studied (Zaretzky and Flatau 2013). The reduction in justice service usage has been found to include court appearances, number of days incarcerated, on parole or probation, and minor interactions with police (Parsell, Peterson et al. 2015). The cost savings to government per person per year in a homelessness housing program have been estimated to be $30,844 in corrective services, $10,183 for court appearances, and $81,877 for policing (Parsell, Peterson et al. 2015).

An AHURI report into social housing in the ACT highlights how people experiencing homelessness and with complex needs, particularly young men with drug or alcohol issues, cycled regularly in and out of interactions with the law, which increased their justice service usage (Davison, Brackertz et al. 2021). Conroy, Bower et al. (2014) reported a $1,977AUD decrease per person over a two-year period in justice costs when previously homeless men in Sydney were placed in stable accommodation. A program housing homeless youth reported a greater saving of $8,242 per person per year and recommended early intervention to easily intercept this cohort (MacKenzie, Flatau et al. 2016). A further Australian study found that young people who had been homeless or sleeping rough the previous year resulted in approximately four times mean health and justice costs when compared to those who had not experienced homelessness (Flatau, Zaretzky et al. 2020).

Recent research compared the impact of public housing versus private rental assistance on people exiting prison's interactions with the justice system (Martin, Reeve et al. 2021). They found that people exiting prison had better outcomes compared to those receiving rental assistance across several criminal justice indicators. Those in public housing experienced a reduction of 8.9 percent in police incidents, 7.6 per cent in court appearances, 11.2 per cent in time spent in custody, and 7.8 per cent in time on supervised orders (Martin, Reeve, et al. 2021). This is estimated as reducing justice costs per person by $4,996 initially, and $2,040 for subsequent years (Martin, Reeve, et al. 2021).

4.2.4 Welfare

Several studies investigate the impact of access to secure, affordable, and appropriate housing on demand for welfare services, particularly for homeless households. A handful of reports quantify and monetise the avoided costs to government and society.

For people in housing need, the provision of housing can reduce their reliance on welfare services and income support payments. Housing-related income support payments include rent assistance, rental bond loans and assistance from specialist homelessness service (SHS) providers (Davison, Brackertz et al. 2021).

Research has demonstrated the benefits of providing housing for vulnerable households, particularly for people experiencing homelessness or those at risk of homelessness (Flatau, Seivwright et al. 2018). In their study exploring the effects of homelessness programs on the use of welfare services, Zaretzky and Flatau (2013) find that people accessing support from homelessness services have a reduced use of welfare services, but still rely on welfare payments as their main income source.

In addition, social housing can play a role in preventing people becoming homeless by providing a 'safety net' for people in housing need. Research by Prentice and Scutella (2020) has shown that by placing a vulnerable individual into social housing in Australia means they are less likely, compared to other particularly vulnerable individuals not in social housing, to become homeless.

A handful of studies estimate the avoided costs to government and society when homeless households are securely housed due to reduced demand for a variety of welfare services. One study calculated that society saves A$15,527 and government saves $4,139 across four years due to reduced demand for accommodation and support services (Johnson, Kuehnle, et al. 2014).

Housing can also serve as a form of private 'welfare' amongst families, with homeownership leveraged to support retirement, protect against adverse events, and assisting outcomes for children. Various subsidies have been available to facilitate homeownership, with this supporting reduced state spending on pensions due to households living rent-free living during retirement (Maclennan, Long et al. 2021a). It is suggested that housing assets are increasingly used around retirement to respond to welfare needs such as illness, unemployment or financial shocks from relationship breakdown (Maclennan, Long et al. 2021a). Housing wealth plays a role in protecting families from adverse events, as well as assisting with improved housing outcomes for children (Maclennan, Long et al. 2021a). Increasingly, younger adults are using their parental home as 'safety net' accommodation and are living longer with their parents (Coulter 2018).

Potential indicators to measure the welfare benefits of housing include subjective assessments of residents, such as self-reported quality of life or their sense of empowerment (Denham, Dodson et al. 2019).

4.2.5 Education

Several studies highlight that housing plays an important role in children's educational attendance and participation (Phibbs and Young 2005). However, the research suggests household characteristics, such as parental education, parental stress, and poverty (Dockery, Ong et al. 2013), as well as neighbourhood quality (Brennan, Reed et al. 2014), are more significant. Studies tend to measure the impacts on childhood development, educational outcomes through parent's perceptions of children's learning or engagement, or an individual's ability to participate in education. Evidence of the impact is challenging due to the time scales needed to fully assess educational outcomes (Phibbs and Young 2005). Few studies explore the impact of housing on higher education, and training for adults.

A literature review asserts that the relationship between aspects of housing and child development outcomes is strong, with the extent of impact differing dependent on age (Dockery, Kendall et al 2010). This review found various aspects of housing have an impact on childhood development. This includes opportunities for outdoor play, crowding, housing affordability, frequent residential moves, homelessness, the socio-economic conditions of the neighbourhood, and air quality which impacts health.

Moving house or school has been shown to have a negative impact on students' learning due to absenteeism, stress, and disruption to relationships with peers and teachers. Residential moves are associated with a higher level and frequency of school absenteeism (Cohen and Wardrip 2011) and reduced maths and reading achievement (Voight, Shinn et al. 2012). Student performance is affected by aspects of housing that impact on the ability to foster relationships, including experiencing housing stress, frequent relocation, and insecure tenure (Dockery, Ong et al. 2013). Studies have found that moving homes frequently can impact students' ability to develop relationships with teachers and friends (Dockery, Kendall et al. 2010). A US longitudinal study found that increased residential moves hamper children's cognitive abilities, with preschool age children the most impacted (Fowler, McGrath et al. 2015).

Several studies have explored the impact of different forms of housing assistance on student achievement, demonstrating the contribution of inter-relating factors, such as the quality of home life. A survey found recipients of housing assistance perceived this had a modest impact on children's educational attainment, as well as their or their partner's ability to engage in further education (Beer, Baker et al. 2011). However, a longitudinal qualitative study conducted in Australia found that children's educational performance at school had improved significantly six months following relocation into social housing (Phibbs and Young 2005). Three main issues were identified as contributing to improved educational performance, including the quality of the school and peers, increased happiness at home and decreased parental stress, and adequate space to do homework.

Another study surveyed families who had recently moved into social housing and found 49 per cent of parents perceived their children to be more motivated and 46 per cent to be performing better at school (Pawson, Milligan et al. 2015). Dockery, Ong et al. (2013) found modest associations between housing and early childhood outcomes, with crowding having the largest negative impact on learning performance.

Few studies explore the impact of appropriate housing on educational outcomes. There is some research that poor quality housing can contribute to poor health (as outlined in Section 4.2.1 Health), resulting in higher rates of absenteeism or poor concentration in the classroom, which decreases educational performance. (Cunningham and MacDonald 2012). A US study which evaluated longitudinal data found that household crowding had a negative impact on educational attainment (Lopoo and London 2016). The researchers found that individuals who lived in a crowded household at any time prior to turning 19 have a lower educational attainment at age 25.

Several limitations have been identified regarding the research on the impacts of housing on education. Much of the research focuses on the negative consequences of a lack of housing on children's education (Cunningham and MacDonald 2012). Additionally, few studies focus on higher education. Brackertz (2016) found that there is a gap in research on the relationship between housing and educational outcomes for Indigenous children and youth in Australia. Indigenous Australian children are more likely to experience precarious housing, homelessness, and high housing mobility. They also have a greater likelihood of living in overcrowded housing and poor-quality housing. These factors have a negative effect on learning.

There are limited studies which quantify and monetise the impacts of housing on educational outcomes. The research includes discussion of the societal benefits which stem from increased educational attainment, including increased tax revenue and increased household incomes reducing reliance on welfare programs (Diamond 2020). The literature also highlights the disruption that homelessness causes to educational attainment, and long-term impacts on employment levels, loss of earnings and reduced tax revenue (Diamond 2020). In the absence of monetary assessments of these impacts, Ravi and Reinhardt (2011) estimate the improved earning potential of year 12 students who complete year 12 compared to those achieving a year 10 certificate or below as a potential proxy. This measure has been used in a recent report evaluating the economic benefits of social housing (Nygaard, 2019). Chapman, Howden-Chapman et al. (2009) estimate that young people have increased school absenteeism due to respiratory illnesses which can be attributed to poor thermal comfort. They highlight that school absenteeism is linked with reduced academic achievement, which impacts future earnings. They conservatively estimate the value of a day off school for a teenager (13-18) to be NZ$30 which is half the youth minimum wage as a proxy for this impact. Other potential measures for evaluating the effects of housing on education, identified in the literature, include data from the Longitudinal Study of Australian Children (LSAC) and Longitudinal Study of Indigenous Children (LSIC) (Dockery, Kendall et al. 2010).

4.2.6 Intergenerational equity

The evidence of the impacts of housing on intergenerational equity tends to be qualitative, including both studies assessing household behaviours and aspirations, and measures of housing wealth transfer at a societal level. Issues discussed in the literature include providing shelter to family members and enabling younger generations' access to secure housing, most notably home ownership (Coulter 2018; Ronald and Lennartz 2018). Housing wealth accumulated through property acquisition is central to the intergenerational wealth transfer (Ronald and Lennartz 2019). In contrast, unaffordable and insecure housing is an increasing factor in entrenching poverty and driving societal inequity (Coulter 2018).

In Australia and internationally, family support has become increasingly important for first home buyers to be able to purchase a house (Maclennan, Long et al. 2021b; Ronald and Lennartz 2019). An important factor in intergenerational wealth transfer is parental property wealth, which has become a strong predictor for younger families to obtain home ownership (Maclennan, Long et al. 2021b). A study by Coulter (2018), investigating longitudinal data in the UK, demonstrates a strong link between the parents' housing situation and their children's housing outcomes two decades later. Children of parents living in rental housing are significantly less likely to become homeowners compared to those whose parents were homeowners (Coulter 2018).

However, the capacity for families to support younger generations is uneven across social and income classes. Pre-existing housing wealth is central to these intergenerational inequalities and can lead to reduced social mobility (Ronald and Lennartz 2019). In addition to the immediate effect of accessing home ownership, the accumulation of housing-related wealth also impacts future consumption patterns and retirement outcomes in Australia (Maclennan, Long et al. 2021b).

Access to secure housing also has a positive association with family stability (Pomeroy and Marquis-Bissonnette 2016). A review by Pomeroy and Marquis-Bissonnette (2016) identifies several intergenerational impacts of housing security upon family stability, including children achieving better education outcomes, and better cognitive, behavioural, and emotional development. Family stability is also linked to the affordability of housing, which enables parents to have more disposable income to spend on meeting their children's needs and reduces housing stress, which leads to better health and mental health outcomes of children (Pomeroy and Marquis-Bissonnette 2016).

Researchers note that housing in most cases is one of several factors which can lead to family instability, and it needs to be considered alongside other challenges (Clark 2010). Research by Dockery, Ong et al. (2013) highlights that the most important housing-related factor impacting a child's development is the neighbourhood. This 'neighbourhood effect' is the result of living in a liveable neighbourhood that is safe and has a higher socio-economic status (Dockery, Ong et al. 2013).

4.2.7 Social inclusion

A handful of studies investigate how affordable, secure, and appropriate housing contribute to social inclusion and community participation. However, there is limited research which quantifies or monetises these impacts.

The relationship between housing and social inclusion is multi-dimensional (Stone, Reynolds et al. 2013). Hulse, Jacobs et al. (2011) highlight the role of housing in contributing to social inclusion by enabling members of society to participate in economic, social, cultural, and political life. The research emphasises the importance of home for people's identity and their social connections to friends, neighbours, and the wider community. In contrast, housing that is unsafe or inappropriate can lead to reduced social participation or even social exclusion, impacting a resident's ability to establish and maintain social ties and friendship (Hulse, Jacobs et al. 2011).

For people who have experienced long term homelessness the findings are more mixed. A review of the literature which examines the impacts of securely housing people experiencing homelessness identified little to no change in community participation among the participants in several qualitative studies (Carnemolla and Skinner, 2021).

Some forms of residential development, such as co-housing, utilise deliberative approaches to foster community connections. Whilst the evidence is inconclusive on how more socially connected communities are created, research does indicate that residents in these contexts develop a stronger sense of community (Williams 2005). At a precinct-scale, larger housing developments impact the demographic composition of a neighbourhood. Concentrations of social housing, for example, can contribute to the disadvantage of neighbourhoods, and stigmatisation of residents (Pawson, Milligan et al. 2015). In some cases, a stated objective of residential development, such as in the renewal of public housing estates, is to create a social mix of residents and reduce socio-spatial disadvantage (Nygaard, Pinnegar et al. 2021).

Mansour, Bentley et al. (2021) discuss the importance of universal housing design in enabling a diversity of the population to live comfortably, highlighting that this contributes to an individual's wellbeing and life satisfaction. Housing that does not incorporate design features that support accessibility for people with disability can limit their social participation (Mansour, Bentley et al. 2021). The authors also discuss the impact of housing displacement on a loss of social networks.

There is a relationship between housing tenure and social connectedness (Stone and Hulse, 2007). Research by Stone and Hulse (2007) found that owners and purchasers were more engaged in social activities and volunteering compared to renters.

Potential indicators to measure the impact of housing on social inclusion include the rate of tenancy sustainment, residents' satisfaction with their housing, and household mobility (Pawson, Milligan et al. 2015; Stone, Reynolds et al. 2013).

4.3 Environmental impacts

There is strong evidence that appropriate housing, at both the individual dwelling and urban scale, has significant environmental benefits. The impacts of environmental performance relate to resource consumption, climate change mitigation and adaptation, thermal comfort, indoor environment quality, and energy use. These benefits are experienced by both the individual through energy efficiency and thermal comfort, and by society through decarbonisation and resource management. The direct cost savings to households of improved energy efficiency has been monetised through operational costs of housing for consumers (Howden-Chapman and Chapman, 2012), and to society through the impact of carbon emissions (DISER, 2021). Housing that is well-located in proximity to jobs and services reduces car dependency and traffic congestion, and associated environmental impacts, such as carbon emissions, air, and water pollution. There is a gap in literature on the environmental impacts of secure and affordable housing, however there are links between private rental and ability to install environmental upgrades, and housing stress and the ability to afford to heat and cool homes that are poorly designed.

4.3.1 Energy efficiency

Good quality housing, that is well designed and constructed, maintains a liveable indoor environment by passive means. Consequently, this reduces the need to mechanically heat, light or cool the dwelling, impacting energy use and operating costs (Poor, Thorpe et al. 2018). In contrast, poor environmental design of housing increases reliance on mechanical heating and cooling for the residence to be liveable, generating higher energy use, and increased household expenditure. Modelling of raising the minimum level of thermal performance of new homes from 6-stars to 7-stars under the Nationwide House Energy Rating Scheme (NatHERS) generates an average household energy bill saving of $460 per year in South Australia (Climate Council, 2022). Another study found energy efficiency improvements to rental properties and rooftop solar contributed annual savings of $289 for apartments and $1,139 for houses (Australian Council of Social Services and the Brotherhood of St Laurence, 2019). This is estimated to reduce energy expenditure as a percentage of income for the lowest-income households by 2.3 per cent. A greater reliance on energy and mechanical systems to maintain a comfortable internal temperature has a detrimental impact on people with low or very low incomes, who may minimise or forego using heating or cooling as a way to manage or reduce their energy costs, regardless of need and with potential adverse effects on their health (Azpitarte et al. 2015; Thomson et al. 2017). As discussed above in section 4.2.1 Health, without basic thermal comfort, residents have an increased risk of respiratory illness in winter, over-heating related illness in summer, and the mental stress of this discomfort (Giles-Corti, Kleeman et al. 2015; Liddell and Guiney 2015).

Literature highlights that housing tenure plays a role in the environmental sustainability of homes, with energy efficiency in private rental properties typically lower than owner-occupied homes (Lang, Lane et al. 2022). A challenge to improving the environmental performance of rental properties is the 'split incentive', where the landlord is responsible for investments to upgrade dwelling performance, while the tenant is likely to be the beneficiary of potential reduced energy or water bills (Gabriel, Watson et al. 2010). Equally, tenants are unlikely to invest in upgrades to improve energy performance or water consumption due the short-term nature of their tenure. With respect to home ownership, a literature review found that more energy efficient homes typically command a house price premium of five to ten per cent at sale (Daly, Kokogiannakis et al. 2019).

A literature review by Thomas (2017) examined the potential benefits from combining green building approaches with affordable housing. Energy conservation was shown to reduce the risk of energy poverty for lower income households, who on average spend a higher proportion of their income on energy bills (Charron, 2017). However, Thomas (2017) concludes that environmental benefits are not directly attributable to the provision of affordable housing.

The construction, operation, and maintenance of all buildings account for approximately 11 per cent of Australia's greenhouse gas emissions (DISER, 2021). Residential buildings contribute approximately half of these. Modelling by the Climate Council (2022) shows that designing new homes with 7-Stars saves 7.7 million tonnes in emissions associated with heating and cooling by 2030. This represents a 12 per cent reduction on Australia's 2019 residential emissions. Economists estimate the economic benefits of these avoided emissions over 10 years to be at least $90 million. Modelling of opportunities to improve the energy efficiency requirements of the National Construction Code was estimated to save $1.2 billion to 2050 in avoided and deferred electricity network investments (Australian Sustainable Built Environment Council and Climate Works 2018). This research also calculated a single household reducing their peak demand by one kilowatt would generate a saving of almost $1,000 in electricity infrastructure investment and reduce electricity prices for all households (ASBEC and Climate Works 2018). Research by Chapman, Preval et al. (2017) found that homes which had been retrofitted with insulation, had reductions in energy consumption of 13 per cent. The value of the reduced carbon emissions was estimated at around NZ$100 per household per year in 2002 dollars, assuming a value of NZ$30 per tonne of carbon. However, the study also highlights that this is a conservative estimate compared to the social cost of carbon, as measured by the global damage resulting from an increase in carbon emissions. This values the social cost of a tonne of carbon at NZ$88 in 2017 dollars using data from the U.S. Government's Interagency working group.

4.3.2 Urban form

There is a significant body of evidence that addresses the spatial and built form impacts of housing at an urban or metropolitan scale. Sustainable urban development is linked to well-located housing, in which employment, active and public transport and other social infrastructure is easily accessible. This can encourage walking, cycling and public transportation usage, and generate environmental benefits such as reduced carbon emissions and improved air quality due to reduced reliance on private cars (Dodson, Curtis et al. 2021; Thomas 2017). Research highlights the interrelationships between the environmental and financial implications of car dependency. Households living in neighbourhoods which are car dependent are more vulnerable to higher petrol prices and mortgage interest rate rises (Sipe and Dodson, 2008). An evaluation of affordable housing in Canada estimated that the difference between the cost of transit and owning and maintaining a car to be CAD$7,808 per year (Miller and Ofrim, 2016). They also estimate the time and carbon emissions associated with car travel which is saved per year for each household to be CAD$1,222 (Miller and Ofrim, 2016).

Higher density patterns of development decelerate urban sprawl, which changes land use, vegetation cover, and ground permeability. Urban sprawl has flow-on and quantifiable effects on habitat and biodiversity loss (Vijayan, Maina et al. 2021; Xu, Xie et al. 2018; Martinuzzi, Withey et al. 2015) and urban heat island affects (Miner, Taylor et al. 2017; Taylor, Wilkinson et al. 2015). Lower density residential development and large home sizes contribute to the loss of vegetation and biodiversity.

4.3.3 Materials use

Residential development generates environmental impacts through use of materials. The environmental impact of housing can be reduced through selection of materials with low embodied emissions, increasing recycling and minimising waste, and considering the longevity across the lifecycle of the building. There is emerging research on the embodied emissions of building materials, and the role this plays in reducing the overall carbon footprint of housing, however, there has been a greater focus on reducing operational energy (Anderson, Wedawatta et al. 2022). There are several ways that embodied emissions can be reduced, including more efficient use of space, extending the building life cycle, reducing use of materials or materials with lower energy consumption to produce, waste reduction, recycling, and re-use (Anderson, Wedawatta et al. 2022). The authors highlight the importance of reducing demolition, which in one study was found to be attributed to poor design in one-third of cases (Anderson, Wedawatta et al. 2022).

5. Impacts analysis

The provision of secure, affordable, and appropriate housing has a range of social, economic, and environmental impacts. Section 5.1 Evidence summary provides an overview of the extent of the evidence, how well the impact is understood and how it has been measured for each domain. Section 5.2 Impacts map categorises each of the impacts identified through the research and the beneficiary of these outcomes.

5.1 Evidence summary

5.1.1 Economic impacts evidence

There is strong evidence that the provision of affordable, secure, and appropriate housing generates numerous economic benefits to households, governments, and society, demonstrated by a range of measures. A range of measures to monetise the impacts are included in the literature, including avoided costs to government due to reduced demand for services, increased household disposable income, and earning potential. There are also demonstrable gaps in the empirical evidence such that some potential economic impacts of secure, affordable, and appropriate housing remain theoretical and require further study.

Productivity

There is recognition that housing plays a significant role in the performance of the labour market, however few studies directly demonstrate how housing impacts productivity. There is evidence that secure, affordable, and appropriate housing contributes to reduced absenteeism, with this overlapping with the findings in other domains, including 4.2.1 Health, 4.2.2 Mental health, and 4.2.3 Safety. There is emerging research which monetises the impact of this, as well as the value of proximity to jobs.

Government expenditure

Several studies highlight the avoided costs to government, with this overlapping with the findings in other domains, including 4.2.1 Health, 4.2.2 Mental health, 4.2.3 Safety, and 4.2.4 Welfare.

Discretionary spending

A few studies highlight the impact of the provision of affordable housing on discretionary spending particularly for essential items. There is potential for these impacts to be further researched. Some of the relationships are likely to be particularly complex. Given that lowering housing costs is essentially redistributive, it is not straightforward to predict the economic impact. For example, redistributing income from a retired investor living on rental income and without superannuation to a low-income tenant might have a different impact compared to redistributing income from a higher income investor still engaged in the workforce to that landlord's tenant.

Employment

The evidence for the impact of housing on improved employment participation outcomes for households is emerging, with varied findings. This reflects the complexity of interrelationships between housing and employment, as well as the impact of criteria to access housing assistance. Avoided costs to government attributed with employment and reduced absenteeism, overlap with the findings in other domains, including 4.2.1 Health, 4.2.2 Mental health, 4.2.3 Safety, and 4.2.4 Welfare.

5.1.2 Social impacts evidence

Health

There is extremely strong evidence that affordable, secure, and appropriate housing is a determinant of health, with the evidence-base the most extensive of the domains. Several studies quantify and monetise the avoided costs to government due to a significant decline in demand for health services when households, particularly those experiencing homelessness, gain access to stable, affordable, and appropriate housing. There is also a well-established link between poor quality housing and physical health. There is greater potential to investigate the impacts of housing on absenteeism from work and school due to poor health.

Mental health

There is established evidence demonstrating the impact of unaffordable, insecure, and unsuitable housing on mental health, and this is becoming increasingly researched. These studies typically quantify the impact through self-reported evaluation through surveys. The monetised impacts include avoided cost to government due to a reduction in demand for mental health services. There is greater potential to research the impact at a societal level due to loss of productivity due to absenteeism and reduced participation in employment or education.

Safety

There is established evidence that affordable, secure, and appropriate housing improves safety, and reduces criminal activity and engagement with the justice system. These impacts have been quantified by measuring the journeys of survivors of domestic and family violence to secure housing, as well as reductions in interactions of previously homeless individuals with police, courts, and stays in prison. Several studies have monetised this through avoided costs to government due to reduced demand for justice-related services.

Welfare

There is emerging evidence demonstrating that affordable, secure, and appropriate housing reduces the need for welfare support. A handful quantify and monetise the avoided costs to government and society. The research also identifies potential measures to further the quantification and monetary analysis of impacts. There is also evidence that documents the welfare impacts of homeownership.

Education

There is emerging evidence suggesting that the provision of affordable, secure, and appropriate housing contributes to educational outcomes in terms of both participation and achievement. While studies indicate residential mobility negatively impacts learning outcomes, there is limited literature which quantifies and monetises this. Reports assessing the costs and benefits of housing initiatives have used potential improved earnings as a measure to monetise education impacts. The research suggests that housing plays an important role in children's education, however, other factors are more significant. There is also limited research on the impact of housing for participation in higher education and retraining.

Intergenerational equity

An impact of housing on intergenerational equity is the wealth transfer of assets generated through homeownership. Given the time requirement for intergenerational transfers of housing wealth to occur, these impacts are not commonly measured on a household level, with only a few longitudinal studies documenting housing outcomes between generations. Several other housing impacts on intergenerational equity are closely correlated with other domains, such as education.

Social inclusion

The evidence for the impact of housing on social inclusion is emerging, however there is limited research that quantifies or monetises these impacts. The research identifies potential measures to assist the quantification and monetary analysis of impacts.

5.1.3 Environmental impacts evidence

The environmental impacts of appropriate housing are well established at the scale of the individual dwelling and in the wider urban context.

Energy efficiency

There is strong evidence that improved energy efficiency reduces household operating costs and improves comfort. Recent research monetises the societal impact of a reduction in carbon emissions due to improved housing performance. A reduction in household energy demand also contributes to avoided electricity infrastructure investment.

Urban form

There is evidence that housing that is well-located in relationship to employment, education and other services reduces car dependency. This has financial benefits to households and reduces emissions. Additionally, patterns of residential development have an impact on habitat and biodiversity, permeability, and the urban heat island.

Materials use

There is emerging research on the embodied emissions of the materials used in housing construction.

5.2 Impacts map

The findings from the evidence review were categorised into an Impacts map (Table 2). The Impacts map categorises the impacts that stem from the provision of secure, affordable and/or appropriate housing for each domain.

It identifies whether the beneficiary of these impacts is individuals (***i***), society (***s***) or government (***g***). Where homeless individuals are the beneficiary, this is denoted by an ***h***. The impacts map also highlights research gaps and opportunities for each domain. The numbered references are included in Appendix 2.

Table 2: Impacts map

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Economic impacts	**Productivity**							
	Evidence	Reduced absenteeism due to poor mental health / wellbeing[1] *i* Greater access to labour markets[2] *i s* Greater economic activity overall due to low-income housing construction jobs created[3] *s*	Reduced absenteeism due to stress[4] *s i*			Reduced congestion and emissions where affordable housing located near public transport[5] *i s* Greater access to labour markets[6] *i s* Increased workforce participation[7] *i s*	Increased workforce participation[8] *i s* Reduced absenteeism from work[9] *i s*	
	Further research	Improved retention of key workers *i s* Improved property prices, tourism, and business outcomes *s g*	Reduced absenteeism due to moving house *i s*	Improved productivity when working from home *i s*		Reduced time commuting *i* Greater access to labour market *s* Total housing stock supply matches population growth targets and skilled migrant targets *g s i*	Total housing stock is responds to population needs *g s i*	Improved workforce participation for people with a disability *i s*
Economic impacts	**Government expenditure**							
	Evidence	Reduced use of health services[10] *g* Reduced use of mental health services[11] *g* Reduced use of justice services by ex-offenders[12] *g* Reduced demand for crisis accommodation by DFV victims[13] Reduced child protection service costs for children of DFV victims[14] *g s i* Reduced welfare service use[15] *g* Reduced demand for crisis accommodation and support services[16] *g*						
	Further research					Reduced infrastructure investment due to improved accessibility to jobs, education, and other services Reduced infrastructure servicing costs to government due to increased density		

Beneficiary: *i* = individuals, *s* = society, *g* = government, *h* = homeless individuals

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Economic impacts	**Discretionary spending**							
	Evidence	Increased disposable income due to local construction jobs[17] ***s*** Increased income due to housing support/earning potential[18] ***i*** Increased discretionary spending and ability to afford essentials[19] ***i s***				Reduced travel cost due to reliance on cars though improved proximity to public transport[20] ***i***	Reduced operating costs of heating, cooling, and lighting due to improved efficiency[21] ***i***	Flow-on effect of housing construction investment[22] ***s***
	Further research	Ability to afford adequate levels of home insurance and finance recovery from natural disasters ***g s i*** Impacts on consumption of high debt levels due to high cost of housing ***s*** Improved financial security ***i***	Reduced moving costs ***i***					High debt exposure for homeowners during economic downturns can accelerate contraction due to lower consumer spending and hurt macro-financial stability ***g s i***
Economic impacts	**Employment**							
	Evidence	Improved ability to get a job[23] ***i*** Increased earnings[24] ***i*** Improved workforce re-entry for DFV survivors[25] ***g*** Improved access to employment when located near job rich areas[26] ***i s***	Greater job stability ***i***, reduced absenteeism ***i s*** and lower cost of recruitment ***s*** with fewer forced moves[27]		Decreased absenteeism and increased ability to re/join workforce for DFV survivors[28] ***i s***	Improved access to employment when affordable housing located near job rich areas[29] ***i s***	Reduced work absenteeism due to improved health[30] ***i s***	
	Further research	Improved employment participation ***i s g*** and reducing barriers to meet criteria for entering affordable housing Increased workforce participation due to ability to afford childcare ***g s i*** Improved job security ***i*** Improved tax revenue due to increased workforce participation ***g*** Improved employment outcomes and transition to employment ***i s h***		Greater ability to participate in work from home employment opportunities ***i s***		Improved workforce participation due to proximity to jobs ***i s*** Greater regional development with key worker housing ***g s i***		

Beneficiary: ***i*** = individuals, ***s*** = society, ***g*** = government, ***h*** = homeless individuals

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Social impacts	**Health**							
	Evidence	Improved ability to afford fresh food and preventative healthcare[31] *i* Reduced health service use and duration[32] *g h*	Reduced use of health services[33] *g h* Improved health[34] *i* Reduced risk of postponing visits to doctors[35] *i*	Decreased risk of infectious diseases[36] *g s i*	Reduced health services usage[37] *g s h* Reduced drug and alcohol service use[38] *s h* Increased safety from violence [39] *i h*	Reduction in sedentary lifestyles due to proximity to public and active transport, and recreational spaces[40] *g i*	Reduced illness and mortality risk[41] *i s* Reduced absenteeism from work[42] *i s* Reduced use of health services[43]	
	Further research	Reduced health services use due to improved diet and access to preventative healthcare *g* Increased life expectancy *i* Improved access to health services *i h* Changes in behaviour regarding drug or alcohol use *i h* Greater ability to treat chronic illness or drivers of illness as able to be followed up by GP and support services *i s h*		Reduced transmission of COVID *i g* Greater ability to isolate if unwell or work from home *g s i* Reduced Aboriginal health service use *g s*	Improved health/ wellbeing from residing in safe neighbourhoods *i*	Improved health/wellbeing from residing in areas free of climate hazards *g s i* Reduced loss of life from climate hazards *g s i*	Reduced risk of energy poverty *i* Reduced transmission of COVID *i g*	Reduced health service usage for people living with disabilities or overcoming substance abuse *i g* Reduced flow on effects of beds occupied by people without appropriate accommodation, such as delayed health outcomes for others who are waiting *i g*
Social impacts	**Mental health**							
	Evidence	Reduced use of mental health services[44] *g* Improved mental health[45] *i* Decreased demand for mental health services[46] *s h* Improved quality of life[47] *i h*	Improved mental health[48] *i* Decreased risk of teen pregnancy, early drug use, psychological distress, and suicide[49] *i* Decreased demand for mental health services[50] *g*	Reduced risk of depression, anxiety, and stress[51] *i*		Improved wellbeing due to access to green space[52] *i*	Improved mental health[53] *i* Reduced depression[54] *i* Improved wellbeing[55] *i* Decreased disturbed sleep, accidents, and illness[56] *i* Decreased stress due to discomfort or energy costs[57] *i*	
	Further research	Improved quality of life and social capital due to reduced reliance on welfare *i*		Reduced instances of family breakdowns and stress *i*	Reduced risk of resident reclusion or self-confinement due to feeling unsafe *i*	Improved social connection with the community *i* Improved wellbeing due to less sedentary lifestyle *i*	Reduced absenteeism *s* Increased participation in education and employment *s* Decreased stress due to discomfort or energy costs *i* Greater social connection with neighbours *i*	Improved connection to community *i*

Beneficiary: *i* = individuals, *s* = society, *g* = government, *h* = homeless individuals

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Social impacts	**Safety**							
	Evidence	Decreased risk of incarceration[58] *i s* Reduced recidivism and reincarceration of ex-offenders[59] *g s i* Reduced use of justice services by ex-offenders[60] *g* Reduced instances of DVF and psychological distress[61] *i* Reduced homelessness risk for DFV survivors[62] *i s g* Improved quality of life, reduced health services demand, and improved productivity for DFV survivors[63] *g* Improved wellbeing, safety, relationships, and independence for DFV violence survivors[64] *i* Reduced justice service demand for DFV survivors[65] *g* Reduced pain and suffering for DFV survivors[66] *i g* Reduced health service use by DFV survivors[67] *g* Reduced demand for justice services including prisons, courts, police, and other legal services[68] *g h* Improved early intervention for youth to reduce interaction with and demand of justice system[69] *g h*			Reduced child protection service costs for children of DFV victims[70] *g s i* Reduced homelessness services use for DFV survivor and children[71] *g*			Reduced demand for crisis accommodation by DFV victims[72] *g*
	Further research	Reconnection with children through child protection services *i h*	Reduced anti-social or criminal behaviour *g s i*	Reduced Aboriginal interactions with justice system *g s i*	Improved health/ wellbeing for DFV survivor *i* Reduced use of justice services[73] *g s i h*	Reduced graffiti, vandalism, anti-social behaviour, and other criminal activity *s g* Reduced costs of crime services *g* Victim actual costs and individual perpetrator lost opportunity cost *i*	Reduced graffiti, vandalism, anti-social behaviour, and other criminal activity *s g* Increased house prices due to reduced criminal activity *i*	Reduced youth justice service costs, e.g., reliance on remand due to lack of supported housing *g i*

Beneficiary: *i* = individuals, *s* = society, *g* = government, *h* = homeless individuals

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Social impacts	**Welfare**							
	Evidence	Reduced welfare service use[74] *g* Reduced risk of homelessness for vulnerable individuals[75] *g* Reduced accommodation and welfare support services demand[76] *g h*	Reduced risk of child neglect[77] *i g* Reduced welfare service use[78] *g*					Reduced demand for crisis accommodation and support services[79] *g*
	Further research	Reduced Commonwealth Government welfare and grants expenditure with increasing and earlier home ownership (including into retirement *g*	Reduced social housing waiting lists *i s g*			Reduced emergency accommodation services use due to climate hazard damage to homes *g*		Reduced support and health services from co-housing for ageing in place *g i*
Social impacts	**Education**							
	Evidence	Improved educational engagement, performance, and attainment[80] *i*	Children supported in studies increase lifetime earnings[81] *i* Higher university completion rate[82] *i* Reduced absenteeism[83] *i* Improved school performance[84] *i* Reduced disruption to children's relationships with teachers and peers[85] *i* Improved cognitive abilities for children of all ages[86] *i*	Improved school performance, educational attainment and earning potential[87] *i* Improved learning performance of young children[88] *i*				Improved early child development[89] *i* Reduced absenteeism and increased concentration[90] *i*	
	Further research	Improved ability to afford upskilling increases workforce participation *g s i* Increased tax revenue due to higher educational attainment and employment prospects *g* Reduced reliance on welfare programs *g* Improved engagement in reskilling and university participation *i*	Increase in skilled worker pool *g s* Increased taxable income of individuals who complete secondary or tertiary education *g*				Reduced absenteeism *i s*	

Beneficiary: *i* = individuals, *s* = society, *g* = government, *h* = homeless individuals

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Social impacts	**Intergenerational equity**							
	Evidence	Improved health and mental health outcomes for children due to increased disposable income to meet children's needs[91] *i*	Improved homeownership due to transfer of wealth and family support[92] *i* Improved family stability and outcomes for children[93] *i*					
	Further research	Secure retirement *i* Increased ability to save for a deposit *i*						
Social impacts	**Social inclusion**							
	Evidence	Ability to maintain social connections due to longer time frame in one location[94] *i*	Ability to maintain social connections and networks due to reduced displacement[95] ***i s*** Increased engagement in social activities and civic participation[96]		Improved social inclusion, participation, social networks, and life satisfaction[97] ***i s***	Reduced stigma and disadvantage ***i s***	Improved social inclusion, participation, social networks, and life satisfaction due to accessible and culturally appropriate housing[98] ***i s***	
	Further research	Improved social cohesion and access to informal networks for childcare, health support, shared transport, and safety due to reduced residential mobility ***i s*** Increase in community participation ***s h***		Increased ability to socialise in the home due to reduced overcrowding *i*				

Beneficiary: ***i*** = individuals, ***s*** = society, ***g*** = government, ***h*** = homeless individuals

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Environment impacts	**Energy efficiency**							
	Evidence		Improved ability to upgrade environmental performance[99] *i*	Reduced mechanical heating, cooling, and lighting[100] *i*			Improved thermal comfort[101] *i* Reduced mechanical heating, cooling, and lighting[102] *i* Reduced operating costs[103] *i* Reduced carbon emissions and climate change mitigation[104] Avoided electricity infrastructure investment[105] *s g* Improved house re-sale[106] *i*	
	Further research	Improved ability to afford to upgrade environmental performance *i*	Reduced waste *i s*				Improved rental value *i*	
Environment impacts	**Urban form**							
	Evidence			Reduced loss of biodiversity and urban heat island effect[107] *s*		Reduced car dependency and attributed emissions / pollution[108] *i* Reduced transport costs[109] *i* Increased sustainable and active transport[110] *i s*	Reduced loss of biodiversity and urban heat island effect[111] *s*	
	Further research					Reduced congestion *i s*		

Beneficiary: *i* = individuals, *s* = society, *g* = government, *h* = homeless individuals

		Affordable	Secure	Appropriate				
				Size / layout	Safe	Well-located	Design and build quality	Supported housing and other
Environment impacts	**Materials**							
	Evidence						Reduced embodied emissions and waste ***s***[112]	
	Further research	Housing cost due to low embodied emissions materials						

Beneficiary: ***i*** = individuals, ***s*** = society, ***g*** = government, ***h*** = homeless individuals

5.3 Findings and limitations

The provision of equitable access to secure, affordable, and appropriate housing has multiple social, economic, and environmental impacts, many of which have been quantified and monetised.

There is a very strong and established body of research on social impacts demonstrating the effects of housing on health, mental health, safety, and welfare. These include benefits to individuals through improved outcomes across these areas, avoided costs to government due to decreased demand for services, and the societal impact of increased ability to participate in work, education, and community life. Several of these studies estimate the considerable avoided health, mental health, and justice service costs to government, as measured by changes in demand. Within the literature, the quantification and monetisation of avoided costs is more significant for households experiencing homelessness. However, it is important to note that the total number of households experiencing homelessness may represent a small cohort within the population.

There is strong evidence of the environmental impacts of housing, however, these have mostly been quantified and monetised with respect to improved energy efficiency. The benefits to individuals include reduced housing operating costs, while longer term benefits accrue to society through reduced carbon emissions, climate change mitigation, and avoided or delayed electricity infrastructure investment by government. Other economic impacts that have been quantified and monetised include increased discretionary spending by households, the value of proximity to jobs for reduced commute times and increased earning potential.

For other domains, the literature proposes more indirect, qualitative, or potential measures. It is accepted that housing plays a role in productivity and employment, however, greater research into opportunities to quantify and monetise this is needed. Research on the impacts on employment highlights mixed outcomes, as this depends on a range of other factors. Access or retaining employment, for example, can be difficult for people living in social housing due to criteria for eligibility. For education, studies highlight that children's learning is perceived to have improved as a result of housing assistance, however, other factors, such as parental education, parental stress and poverty have a stronger relationship. The available research focuses on qualitative assessments of children's learning rather than quantitative outcomes.

6. Impact assessment framework

A range of decision-making frameworks are used by governments to evaluate the societal benefits of infrastructure investment. Some of these approaches have been applied to evaluate housing market interventions, however these have typically been developed for other policy contexts and have subsequently been applied to housing market interventions.

An AHURI report identified that a small number of economic appraisals of social housing have been conducted in Australia (Denham, Dodson et al. 2019). The examples employed a range of methods, which highlights a lack of consistency and practice guidelines by national authorities (Denham, Dodson et al. 2019). The authors suggest economic appraisal is in a formative stage for social housing, compared to the methods for major transport infrastructure investment, and further methodological development is needed (Denham, Dodson et al. 2019). Transport infrastructure evaluation has had ongoing development since the 1950s, with a strong commitment to research and innovation in methodologies, as well as a national governing body which publishes consistent guidelines (Denham, Dodson et al. 2019). There is recognition by Infrastructure Australia, that an appropriate valuation framework is needed for affordable housing which provides a nationally consistent methodology that captures the quadruple bottom-line benefits (IA 2021). It is important to note that housing has a more complex range of benefits and target cohorts relevant when conducting an appraisal compared to transport infrastructure (Denham, Dodson et al. 2019).

This section discusses some of the evaluation methods which have been used for housing, their applicability and proposes a potential impacts framework.

6.1 Valuation methods

The following section provides an overview of some of the valuation methods which have been employed for housing interventions, with applicability to housing summarised in Table 3.

The methods are broadly categorised as:

- Financial analysis – an estimate of the whole-of-government savings resulting from housing provision
- Economic analysis – uses experimental or abstract approaches to monetise the benefits of housing

6.1.1 Cost-benefit analysis (CBA)

CBA monetises the costs and benefits of a proposed policy or investment to society as a whole. It evaluates both monetary and non-monetary impacts of a program across the spectrum of environmental, social, and economic factors over time. It is used when the key benefits of a program are reasonable to quantify. This approach identifies whether the program will provide a net benefit to the community through a ratio of costs versus benefits. A project is generally considered worthwhile if there is a Benefit Cost Ratio greater than 1.

CBA is an established and typically preferred method by governments in Australia. However, there can be complexity monetising a range of non-market benefits, particularly social benefits, and non-market impacts are often excluded.

6.1.2 Cost-effective analysis (CEA)

CEA is used to compare the quantifiable monetised costs and outcomes of two or more equivalent programs. It is used when benefits are either difficult to quantify monetarily or they are comparable for different actions. Costs are evaluated against outcomes in natural units (physical units, such as lives saved, or accidents prevented). The steps involved are similar to a CBA, however benefits are not quantified. This approach identifies the most cost-effective option for achieving the outcome i.e., 'cost per unit of outcome'.

A variation is cost utility analysis, often used in health initiatives, which involves costs measured in monetary values and benefits that incorporate a quantitative measure for qualitative attributes.

6.1.3 Break-even analysis (BEA)

BEA identifies when a proposal equals its costs. The approach includes dividing costs by the monetised value of a 'unit' of benefit. This identifies when the proposal would break even. It is used when it is possible to establish a monetary estimate of units of benefits, but the effectiveness or extent of the likely benefits is not certain.

6.1.4 Multi-criteria analysis (MCA)

MCA encompasses a diversity of approaches for assessing the quantitative and qualitative impacts of proposals. A diversity of criteria can be included and measured in the most applicable unit. The method ranks options against multiple criteria (or performance criteria) which are measured in a variety of units. The criteria are often weighted based on importance to create a total score for each proposal, allowing for comparison. It is preferred to be used to complement a CBA or as a last resort method where it is not possible or practical to assess costs or benefits in monetary terms as it has a lack of theoretical foundation in economics.

6.1.5 Social-return-on-investment analysis (SROI)

SROI analyses the social value generated from an investment in a program. This approach provides a framework for measuring a broader notion of value, including intangible benefits that are difficult to quantify, rather than financial return alone. The approach involves developing financial proxies for indicators and impacts that generate a monetised value. This approach identifies a ratio of benefits to cost of social value. Qualitative, quantitative, and participatory research methods are combined in this approach.

SROI is a newer method, and there is not yet a standard approach for measurement in Australia. The UK Cabinet Office has a six-stage framework for using SROI.

6.1.6 Wellbeing valuation

This approach involves establishing financial proxies for improved individual wellbeing.

Denham, Dodson, et al (2019) identify the publicly available tool for benefit analyses of Australian social programs called the Australian Social Values Bank (ASVB) developed by the Alliance Social Enterprises. The ASVB uses a wellbeing valuation methodology, capturing 62 social measures across health, home, education, social and community, drugs and alcohol, crime, and employment. It captures subjective changes in peoples' circumstances and monetises this as increased income. Denham, Dodson et al. (2019) suggest that this is a step in the development of a potential standardisation of parameters for the evaluation of social programs, similar to that which has been achieved nationally for the valuation of transport infrastructure.

Table 3: Overview of valuation methods

Purpose	Advantages	Limitations
CBA		
Monetises costs and benefits to society as a whole to identify if program provides a net community benefit through a ratio of costs versus benefits	• Preferred by Treasury • Consistent comparison of options • Useful for assessing alternative options	• Difficult to monetise intangible / social impacts • Does not consider equity impacts and does not differentiate between different groups
CEE		
Compares the quantifiable monetised costs and outcomes of two or more equivalent programs **Costs are evaluated against outcomes in natural units**	• Used when benefits are difficult to quantity monetarily	• Does not assess if proposal provides net benefit to society. A preferred option could generate a net loss
BEA		
Identifies when proposals break even.	• Used when benefits can be monetised but there is uncertainty of extent	• Not useful for comparing effectiveness of different options
MCA		
Ranks options against a range of criteria which can be weighted.	• Includes a diversity of criteria, such as environmental and social impacts, measured in the most appropriate unit (qualitative or quantitative) rather than monetary values.	• Emphasis on the subjective judgement of decision makers in both development and evaluation, creating challenges in consistency and comparability.
SROI		
Analyses social value generated from investment, providing a framework to measure intangible benefits which may be difficult to quantify, rather than financial return alone	• Appropriate for assessing less tangible factors relevant to housing	• No standard approach for measurement in Australia
Wellbeing valuation		
Establishes financial proxies for improved individual wellbeing	• Attempts to monetise intangible benefits • Potential to standardise	• Difficult valuing intangibles and availability of data

6.2 Proposed impacts framework

6.2.1 Purpose

The framework is intended to enable consistent assessment of a diversity of housing interventions to guide investment decision-making.

6.2.2 Appraisal method

Cost-benefit analysis (CBA) forms a key component of ISA's current assessment approach (ISA 2022). Through a review of literature and discussion at the evidence application workshop, CBA was identified as being the most suitable method for the appraisal of housing.

CBA is an established, widely used, and preferred approach by other government jurisdictions nationally (NSW, 2017; DEDJR, n.d). Additionally, there is strong capability for undertaking CBAs within government. Although few housing interventions have been specifically evaluated using CBA (Denham, Dodson et al. 2019), it provides 'powerful evidence for policy adoption (or otherwise) and is advocated in the housing domain by organisations such as the Organization for Economic Co-operation and Development (OECD)' (Chapman, Preval et al. 2017, pp. 1). CBA enables government to compare current and future benefits and costs in a consistent way through discounting (Chapman, Preval et al. 2017). Additionally, it is independent of scale, with small investments able to demonstrate a high benefit to cost ratio, even though the impact of benefits may be limited (Chapman, Preval et al. 2017).

ISA's Impact Guide: Cost-Benefit Analysis provides thorough guidance on key considerations for undertaking a CBA, and applying the proposed impacts framework.

6.2.3 Impacts framework

The framework was developed to be applied for the assessment of the broadest possible range of housing interventions, with a view of being used by whole-of-government, as well as the potential for proponents such as private developers, and housing providers. The framework therefore provides a diversity of benefits which stem from different types of housing impacts, which can be applied where relevant to the proposed intervention.

The impacts framework encompasses the following three spreadsheets:

1. **Monetised housing benefits:** Benefits which have a corresponding dollar value attached to it and could be used in CBA and integrated analysis
2. **Quantified housing benefits:** Benefits which have a unit of measure (numbers or statistics) but have not yet been monetised and can be used parallel to CBA in an integrated analysis
3. **Qualitative housing benefits:** Benefits which are descriptive and do not rely on quantitative or monetised information and can be used parallel to CBA in an integrated analysis.

The following six benefit areas were identified at the evidence application framework for inclusion in the framework:

- **Social (Health)**
  - Health and mental health impacts associated with unaffordable and insecure housing
  - Health impacts associated with poor quality / poorly performing housing
- **Economic**
  - Productivity impacts associated labour market proximity
  - Discretionary spending impacts associated with labour participation and affordability
- **Environmental**
  - Climate impacts associated with reduced resource and energy consumption
  - Household benefits associated with improved environmental performance

6.3 Application

The monetised, quantified, and qualitative benefits are designed to be utilised in project evaluation processes. This requires an assessment of the proposed project intervention and applying the parameter values which are relevant. The framework provides guidance on whether the parameter values are to be applied as an individual instance or an annual basis. The values have been calculated in Australian dollars to 2021 inflation, however this should be updated over time to reflect current values.

6.4 Implementation considerations

As the framework is applied to housing interventions, key considerations for implementation include:

- Monitoring and identifying relevant data
- Establishment of appropriate governance structures to share and update the framework and data (Denham, Dodson et al. 2019)
- Continuing to build capacity and expertise within government to communicate costs and benefits for housing initiatives and conduct evaluation (Flanagan, Martin, et al. 2019; Chapman, Preval et al. 2017)
- Development of an appraisal toolkit (Denham, Dodson, et al. 2019)
- Inclusion of the perspectives of social or affordable tenants (Flanagan, Martin et al. 2019).

6.5 Opportunities for further development and evidence

The evidence review, impacts map and proposed impacts framework highlighted the value in ongoing research to build upon, refine and complement the approaches for quantifying and monetising a fuller range of impacts of housing.

Table 4 provides a summary of the key opportunities for further research to address key gaps in the literature, and support further development of quantified and monetised impacts. To assist with the focus of future research, it identifies the potential beneficiary of these impacts as individuals (I), society (S) or government (G). Additional detail is included in the impacts map (Section 5.2) and the proposed impacts framework (link at Section 6.2.3).

Table 4: Opportunities for further development and evidence

Domain	Opportunity for development and evidence
Economic	
Government expenditure	• Avoided costs to government due to freed up hospital beds attributed to housing and reduced hospital overcrowding ***g*** • Avoided costs to government due to reduction in average medical service cost or hospitalisation risk due to improved housing quality ***g*** • Development of measure on hospitalisation rates and costs to government for a variety of health conditions linked with housing (i.e. housing stress and mental health; walkability and obesity/diabetes) ***g*** • Development of a measure linking decline in mental health scores attributed to housing with decreased demand for mental health services ***g*** • Development of a measure calculating avoided prison costs to government due to reduced recidivism attributed to ex-prisoners accessing secure and affordable housing ***g***
Productivity	• Impact of poor health, mental health, and safety attributed to housing on the ability to work and absenteeism ***i s*** • Impact of housing and location on labour market function, access to jobs, commute times, and key worker retention ***i s*** • Impact of housing on labour pool, particularly in regional areas ***i s*** • Impact of housing quality on productivity when working from home ***i s***
Discretionary spending	• Impact of cost savings from housing on discretionary spending and ability to meet daily essential needs ***i*** • Impact of high housing costs on households forgoing essentials such as medication, health visits, food, heating, transport, recreational activities, housing quality and educational investment ***i s*** • Impact of housing affordability on ability to buy nutritious food and benefit for health outcomes ***i s***

KEY: ***i*** = individuals, ***s*** = society, ***g*** = government, ***h*** = homeless individuals

Domain	Opportunity for development and evidence
Employment	• Impact of poor health, mental health, and safety attributed to housing on the ability to work *i s* • Impact of housing location on access to jobs, income and earning potential *i* • Impact of social housing criteria on employment participation *i s* • Impact of well-located secure housing on short- and long-term employment outcomes *i s* • Impact of housing instability and relocation on risk of job loss *i* • Impact of affordable and secure housing on children's employment outcomes and earning potential *i* • Impact of housing investment on employing people who would otherwise be unemployed *i s*
Social	
Health	• Impact of poor health attributed to housing on the ability to work, study and socialise *i s* • Avoided costs to government due to reduction in average medical service cost or hospitalisation risk due to improved housing quality *g* • Improved quality of life due to improved health attributed to housing quality *i s* • Comprehensive measure of the value of health impacts of housing to households *i* • COVID and infectious disease risks from overcrowding and poor ventilation *i s* • Development of measure on hospitalisation rates and costs to government for a variety of health conditions linked with housing (i.e. housing stress and mental health; walkability and obesity/diabetes) *g* • Avoided costs to government due to freed up hospital beds attributed to housing and reduced hospital overcrowding *g* • Value of reduced mortality risk attributed to improved quality of housing *i s* • Value of delayed health visits due to unaffordable housing *s* • Impact of housing on children's health *i*
Mental health	• Impact of poor mental health attributed to housing on the ability to work, study and socialise *i s* • Impact of decreased mental health attributed to housing stress and forced moves on absenteeism from work or school *i s* • Development of a measure linking decline in mental health scores attributed to housing with decreased demand for mental health services *g* • Development of a measure linking increase in mental health scores attributed to housing with value of life satisfaction *i s* • Impact of insecure housing on mental health *i s* • Impact of housing on children's mental health *i*
Safety	• Impact of safety attributed to housing on the ability to work, study and socialise *i s* • Development of a measure of reduced criminal activity due to access to housing *s g* • Development of a measure calculating avoided prison costs to government due to reduced recidivism attributed to ex-prisoners accessing secure and affordable housing *g* • Value of workforce re-entry/reduced risk of leaving workforce due to health and disruption effects of insecure and affordable housing attributed to DFV *i s*
Welfare	• Impact of affordable and secure housing on earlier home ownership
Education	• Impact of housing on participation in tertiary education, re-skilling, and higher educational attainment • Impact of housing on children's education • Impact of housing quality and housing stress on absenteeism from school and education/ employment outcomes and earning potential
Intergenerational equity	• Development of a measure calculating the impact of housing on retirement outcomes *i s* • Development of a measure calculating the impact of affordable and secure housing on the ability to enter home ownership *i s*
Social inclusion	• Impact of housing on community cohesion and connections for informal support networks *i s*

KEY: *i* = individuals, *s* = society, *g* = government, *h* = homeless individuals

Domain	Opportunity for development and evidence
Environmental	
Energy efficiency	• Development of consistent measure of the social cost of carbon that can be factored into assessment *i s g* • Development of a measure calculating the willingness to pay for improved energy efficiency *i s*
Urban form	• Implementation of data from transport economics on value of reduced emissions attributed to reduced average commutes due to housing location *i s* • Development of measure of value of proximity of housing to jobs on time saved commuting to work and congestion *i s*
Materials use	• Impact of low embodied emissions on housing costs *i*

KEY: *i* = individuals, *s* = society, *g* = government, *h* = homelessness individuals

7. Conclusions

There is extensive evidence highlighting the economic, social, and environmental impacts of the provision of affordable, appropriate, and secure housing. The evidence review identified 15 domains, which are impacted by housing outcomes. For some domains, such as government expenditure, discretionary spending, health, mental health, welfare and safety, the societal economic benefits of secure housing provision have been quantified and monetised. The impacts of housing have typically been monetised by estimating the cost savings to government due to reduced demand for services. In some examples, the monetary benefit to individuals has been demonstrated through household cost savings.

The benefits of provision of secure, appropriate, and affordable housing can be measured directly, and are more commonly quantified and monetised for some domains, particularly government expenditure, discretionary spending, health, mental health, safety, welfare, and energy efficiency. However, for other domains, such as education, employment, intergenerational equity, and social inclusion, housing impacts appear to be less direct, and are more difficult to quantify and monetise. The impacts map categorises the impacts for each domain and highlights opportunities for further research.

The research highlights a range of indicators that enable measurement of the impacts of each domain. Some of these impacts have been monetised, which provide a basis for the economic appraisal of housing interventions. However, the literature cautions that other important values, aspirations, and qualities relevant to housing cannot be easily monetised (Lawson, Denham et al. 2019), and quantitative and qualitative indicators are important.

Economic analysis of housing interventions is important to guide government decision making. However, a range of approaches have been used with little consistency. As an established and preferred method of government, CBA offers a robust approach for evaluating housing interventions. The proposed impacts framework categorises the monetised, quantified, and qualitative benefits for a range of social, economic, and environmental impacts. These can be selectively applied as relevant when conducting a CBA of a range of housing interventions.

The framework offers a starting point for the consistent evaluation of housing interventions with a whole of government perspective. Ongoing monitoring, review and development of measures will ensure that the framework supports government housing investment and policy decision making.

References

ACIL Allen (2022) National Construction Code 2022: Decision Regulation Impact Statement for a proposal to increase residential building energy efficiency requirements.

AHURI (2019) 'Understanding the 30:40 indicator of housing affordability stress', Brief, Australian Housing and Urban Research Institute Limited, Melbourne, accessed 14 July 2022, https://www.ahuri.edu.au/research/brief/understanding-3040-indicator-housing-affordability-stress

Fernald, M. (ed) (2014) *The state of the nation's housing,* Join Center for Housing Studies of Harvard University, Cambridge.

Anacker, K. (2019) 'Introduction: housing affordability and affordable housing', *International Journal of Housing Policy*, vol. 19, no. 1: 1-16.

Anderson, F., Wedawatta, G., Rathnayake, I., Domingo, N. and Azizi, Z. (2022) 'Embodied energy consumption in the residential sector: case study of affordable housing', *Sustainability*, Vol. 14, no. 5051: 1-18. doi.org/10.3390/su14095051.

Anderssen, F., Haltiwanger, J.C., Palloni, G.E., Pollakowski, H.O., Wienberg, D. (2016) 'Childhood housing and adult earnings: A between-siblings analysis of housing vouchers and public housing.' *NBER,* Working Paper No. 22721.

Australian Council of Social Services and Brotherhood of St Laurence (2019) *Affordable, clean energy for people on low income,* Australian Council of Social Service, Sydney.

Australian Human Rights Commission (2009) *Housing, homelessness and human rights*, Australian Government, accessed 1 August 2022, https://humanrights.gov.au/our-work/rights-and-freedoms/projects/housing-homelessness-and-human-rights.

Australian Sustainable Built Environment Council and Climate Works (2018) *The bottom line: The household impacts of delaying improved energy requirements in the Building Code*, ASBEC, Sydney.

Australian Sustainable Built Environment Council (2016) *Low carbon, high performance: how buildings can make a major contribution to Australia's emissions and productivity goals*, ASBEC, accessed 30 June 2022, https://apo.org.au/node/64127.

Australian Institute of Health and Welfare (2020) Housing Assistance in Australia 2020, accessed 16 June 2022, https://www.aihw.gov.au/reports/housing-assistance/housing-assistance-in-australia-2020/contents/suitability-of-dwelling-size.

Azpitarte, F., Johnson, V., and Sullivan, D. (2015) Fuel Poverty, Household Income and Energy Spending: An Empirical Analysis for Australia Using HILDA Data, Melbourne, VIC: Brotherhood of St. Laurence.

Baker, E., Lester, L., Beer, A. and Bentley, R. (2019) An Australian geography of unhealthy housing, *Geographical Research,* vol. 57: 40-51.

Baker, E., Lester, L. H., Bentley, R. and Beer, A. (2016) Poor housing quality: Prevalence and health effects, *Journal of Prevention & Intervention in the Community*, vol. 44, no. 4: 219–232.

Been, V., Ellen, I. and O'Regan, K. (2019) 'Supply scepticism: housing supply and affordability', *Housing Policy Debate*, vol. 29, no. 1: 25-40.

Beer, A., Baker, E., Wood, G. and Raftery, P. (2011) 'Housing policy, housing assistance and the wellbeing dividend: Developing an evidence base for post-GFC economies', *Housing Studies*, vol. 7-8, no. 6: 1171-1192.

Bentley, R., Baker, E., Mason, K., Subramanian, S.V. and Kavanagh, A.M. (2011) 'Association between housing affordability and mental health: A longitudinal analysis of a nationally representative household survey in Australia', *American Journal of Epidemiology,* vol. 174: 753-760.

Bentley, R.J., Pevalin, D., Baker, E., Mason, K., Reeves, A. and Beer, A. (2016) 'Housing Affordability, Tenure and Mental Health in Australia and the United Kingdom: A Comparative Panel Analysis', *Housing Studies*, vol. 31: 208-222.

Brackertz, N. (2016) *Indigenous housing and education inquiry,* Discussion Paper, Australian Housing and Urban Research Institute Limited, Melbourne.

Brackertz, N., Borrowman, L., Roggenbuck, C. Pollock, S. and Davis, E. (2020) *Trajectories: the interplay between mental health and housing pathways*, Final research report, Australian Housing and Urban Research Institute Limited and Mind Australia, Melbourne, https://www.ahuri.edu.au/research/trajectories.

Brackertz, N., Wilkinson, A. and Davison, J. (2017) *How can Aboriginal housing in NSW and the Aboriginal Housing Office provide the best opportunity for Aboriginal people?* Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/research-papers/how-can-aboriginal-housing-in-nsw-and-the-aboriginal-housing-office-provide-the-best-opportunity-for-aboriginal-people.

Braubach, M., Jacobs, D. and Ormandy D. (2011) *Environmental burden of disease associated with inadequate housing*, WHO Europe, Copenhagen.

Braveman, P., Dekker, M., Egerter, S., Sadegh-Nobari, T. and Pollack, C. (2011) *Housing and Health*, The Robert Wood Johnson Foundation Commission to Build a Healthier America, 7.

Brennan, M., Reed, P. and Sturtevant, L. (2014) *The Impacts of Affordable Housing on Education: A Research Summary, Centre for Urban Policy*, Washington.

Brown, M. J. and Jacobs, D.E. (2011) 'Residential light and risk for depression and falls: Results from the LARES study of eight European cities, *Public Health Reports,* vol. 126: 131-140.

Buckle, C., Gurran, N., Phibbs, P., Harris, P., Lea, T., and Shrivastava, R. (2020) *Marginal Housing during COVID-1*. AHURI Final Report NO. 348 (2020), https://ssrn.com/abstract=3741010.

Bullen, J. (2015) 'Governing homelessness: the discursive and institutional construction of homelessness in Australia', *Housing, Theory and Society*, vol. 32, no. 2: 218–239.

Carnemolla, P. and Skinner, V. (2021) 'Outcomes associated with providing secure, stable, and permanent housing for people who have been homeless: An international scoping review', *Journal of Planning Literature,* vol. 34, no. 4: 508-525, doi:10.1177/08854122211012911.

Chapman, R., Howden-Chapman, P., Viggers, H., O'Dea, D., and Kennedy, M. (2009) 'Retrofitting houses with insulation: a cost-benefit analysis of a randomised community trial', *Journal of Epidemiology and Community Health,* vol . 63: 271-277, doi:10.1136/jech.2007.070037.

Chapman, R., Preval, N., and Howden-Chapman, P. (2017) 'How economic analysis can contribute to understanding the links between housing and health', International Journal of Environmental Research and Public Health, vol. 14, no. 996.

Charron, R. (2017) Passive approaches to low-energy affordable housing projects: Literature review and annotated bibliography, Canada Mortgage and Housing Corporation (CMHC), Ottowa.

Clark, S.L. (2010) *Housing instability: Toward a better understanding of frequent residential mobility among America's urban poor*, Final Report, submitted to the Center for Housing Policy.

Climate Council (2022) T*ents to castles: Building energy efficient, cost-saving aussie homes*, Climate Council, Sydney.

Cohen, R., Wardrip, K., Williams, L. and Hague, S. (2011). The Economic and Fiscal Benefits of Affordable Housing, *Planning commissioners journal*, *83.*

Conroy, E., Bower, M., Flatau, P., Zaretsky, K., Eardley, T. and Burns, L. (2014) *The MISHA Project*, Mission Australia, Sydney.

Coulter, R. (2018) 'Parental background and housing outcomes in young adulthood', Housing Studies, vol. 32, no. 2: 201-223.

Cunningham, M. and MacDonald, G. (2012) *Housing as a platform for improving education outcomes among low-income children*, Urban Institute, Washington, DC, https://www.urban.org/sites/default/files/publication/25331/412554-Housing-as-a-Platform-for-Improving-Education-Outcomes-among-Low-Income-Children.PDF.

Daly, D., Kokogiannakis, G., Zagerman, M., Burton, C., Cooper, P. and Lagisz, M. (2019) *What are the effects of residential building energy performance disclosure policies on property values?* Sustainable buildings Research Centre, University of Woolongong.

Dannemiller, K.C., Gent, J.F., Leaderer, B.P. and Peccia, J. (2016) 'Influence of housing characteristics on bacterial and fungal communities in homes of asthmatic children', *Indoor Air*, vol. 26:179–92.

Daniel, L., Moore, T., Baker, E., Beer, A., Willand, N., Horne, R. and Hamilton, C. (2020) Warm, cool and energy affordable housing policy solutions for low-income renters, AHURI Final Report No. 338, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/338, doi: 10.18408/ahuri-3122801.

Davies, C. (2018) *Wellbeing valuation of social housing provision New Zealand.*

Davison, J., Brackertz, N. and Alves, T. (2021) *Return on investment for social housing in the ACT: stage 2 report*, prepared for ACT Shelter, Australian Housing and Urban Research Institute Limited, Melbourne.

De Campo, J., Jones, K., McPhee, L., O'Brien, B. and Vanstone, C. (2021) The Future of Home. The Australian Centre for Social Innovation, Adelaide, https://www.tacsi.org.au/file/ll3v20v2o/TACSI_Future%20of%20Home_ebook_2021.pdf.

Denham, T., Dodson, J. and Lawson, J. (2019) *The business case for social housing as infrastructure,* AHURI Final Report No. 312, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/312, doi:10.18408/ahuri-5314201.

Department of Economic Development, Jobs, Transport and Resources (no date) Guidance on undertaking economic assessment, Victorian Government, Melbourne.

Department of Industry, Science, Energy and Resources (DISER), 2021c, National inventory by economic sector: annual emissions, https://www.industry.gov.au/data-and-publications/nationalgreenhouse-accounts-2019/national-inventory-byeconomic-sector-annual-emissions.

Desmond, M., and Gersheson, C. (2016) 'Housing and employment insecurity among the working poor', *Social Problems,* 0: 1-22, doi: 10.1093/socpro/spv025.

Diamond, M. (2020) 'The costs and benefits of affordable housing: A partial solution to the conflict of competing goods', *Georgetown Journal on Poverty Law and Policy,* vol. 27:231-260.

Dignam, J. (2020) 'Children's health threatened by cold rental homes', in E. Baker and L. Daniel (eds) *Rental Insight's: A COVID-19 collection*, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/research-papers/rental-insights-a-covid-19-collection, doi: 10.18408/ahuri3125402.

Dockery, A.M., Kendall, G., Li, Jianghong, L., Mahendran, A., Ong, R. and Strazdins, L. (2010) *Housing and children's wellbeing: A scoping study,* AHURI Final Report No. 149, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/sites/default/files/migration/documents/AHURI_Final_Report_No149_Housing-and-childrens-development-and-wellbeing-a-scoping-study.pdf.

Dockery, A. M., Ong, R., Colquhoun, S., Li, J. and Kendall, G. (2013) *Housing and children's development and wellbeing: evidence from Australian data*, AHURI Final Report No. 201, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/201.

Dodson, J., Curtis, C., Ashmore, D., Woodcock, I. and Kovacs, S. (2021) *Innovative responses to urban transportation: current practice in Australian cities*, AHURI Final Report No. 360, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/360, doi:10.18408/ahuri5323101.

Dodson, J., Li, T. Taylor, E. and Goldie, X. (2020) *Community burden and housing affordability for low-income renters*, AHURI Final Report No. 335, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/335, doi: 10.18408/ahuri5320201.

Drabo, E., Eckel, G., Ross, S., Brozic, M., Carlton, C., Warren, T., Kleb, G., Laird, A., Porter, K. and Pollack, C. (2021) 'A social-return-on-investment analysis of Bon Secours hospital's 'Housing for Health' affordable housing program', *Health Affairs*, vol. 40, no. 3:513-520.

Equity Economics (2021a) *Nowhere to go: The benefits of providing long-term social housing to women that have experienced domestic and family violence*, Everybody's Home, https://everybodyshome.com.au/wp-content/uploads/2022/03/EE_Women-Housing_Domestic-Violence_WEB_SINGLES-2-compressed.pdf.

Equity Economics (2021b) *Rebuilding for women's economic security: Investing in social housing in New South Wales,* Sydney, https://static1.squarespace.com/static/61b14c4abbc81a1543f55180/t/621877f946766907c2481dd6/1645770760311/EE_Women_Social%2BHousing_SPREADS_WEB.pdf.

Flanagan, K., Martin, C., Jacobs, K. and Lawson, J. (2019) *A conceptual analysis of social housing as infrastructure*, AHURI Final Report No. 309, Australian Housing and Urban Research Institute Limited, Melbourne, http://www.ahuri.edu.au/research/final-reports/309, doi: 10.18408/ahuri-4114101.

Flanagan, K., Blunden, H., Valentine, K. and Henriette, J. (2019) *Housing outcomes after domestic and family violence*, AHURI Final Report 311, Australian Housing and Urban Research Institute Limited, Melbourne, http://www.ahuri.edu.au/research/final-reports/311, doi: 10.18408/ahuri-4116101.

Flatau, P. Zaretzky, K, Crane, E, Carson, G, Steen, A. Thielking, M. and MacKenzie, D. (2020) 'The drivers of high health and justice costs among a cohort of young homeless people in Australia, *Housing Studies*, vol. 35, no. 4: 648–678.

Flatau, P., Seivwright, A., Callis, Z., Thielking, M., Mackelprang, J. Taylor, K. and La Sala, L. (2018) *Journey to Social inclusion: Chronic homelessness in Melbourne: First year outcomes of Journey to Social Inclusion phase 2 study participants*, Sacred Heart Mission, St Kilda.

Fowler, P., McGrath, L., Henry, D., Schoeny, M, Chavira, D., Taylor, J. and Day, O. (2015) 'Housing mobility and cognitive development: change in verbal and nonverbal abilities', *Child Abuse and Neglect*, vol. 48: 104-118.

Gabriel, M. Watson, Ong, R., Wood, G. and Wulff, M. (2010) *The environmental sustainability of Australia's private rental housing stock*, AHURI Positioning Paper No.125. Melbourne: Australian Housing and Urban Research Institute.

Gibb, K. and Marsh, A. (2019) *Housing and systems thinking: Working paper.* UK Collaborative Centre for Housing Evidence, Glasgow.

Gilbert, C., Nasreen, Z. and Gurran, N. (2021) *Housing key workers: scoping challenges, aspirations, and policy responses for Australian cities*, AHURI Final Report No. 355, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/355, doi: 10.18408/ahuri7323901.

Giles-Corti, B., Kleeman, A., and Foster, S. (2015) Better Apartments Health and Wellbeing Study. Melbourne, VIC: The University of Melbourne.

Groenhardt, L. (2014) 'Employment of public housing residents in Australian cities', *Urban Policy and Research,* vol. 33, no. 3: 291-305, doi:10.1080/08111146.2014.975340

Gubits, D., Shinn, M., Wood, M., Bell, S., Dastrup, S., Solari, C., Brown, S., McInnis, D., McCall, T. and Kattel, U. (2016) 'Family Options Study: 3-Year Impacts of Housing and Services Interventions for Homeless Families', *SSRN Electronic Journal*.

Gurran, N., Hulse, K., Dodson, J., Pill, M., Dowling, R., Reynolds, M. and Maalsen, S. (2021) *Urban productivity and affordable rental housing supply in Australian cities and regions*, AHURI Final Report No. 353, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/353, doi:10.18408/ahuri5323001.

Gurran, N., Phibbs, P., Yates, J., Gilbert, C., Whitehead, C., Norris, M., McClure, K., Berry, M., Maginn, P. and Goodman, R. (2015) *Housing markets, economic productivity, and risk: international evidence and policy implications for Australia - Volume 1: Outcomes of an Investigative Panel*, AHURI Final Report No. 254, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/254.

Gusheh, M., Murphy, C., Valenta, L., Bertram, N. and Maxwell, D. (2021) *Adaptable housing for people with disability in Australia: A scoping study*, Australian Human Rights Commission, Sydney.

Hanka, M., Gilderboom, J., Meares, W., Khan, M., and Wresinksi, K. (2015) 'Measuring job creation for HOPE VI: a success story for community development efforts', Community Development, vol. 46, no. 2: 133-148.

Hansson, A. (2019) 'City strategies for affordable housing: the approaches of Berlin, Hamburg, Stockholm, and Gothenburg', *International Journal of Housing Policy*, vol. 19, no. 1: 95-119.

Henman, P., and Jones, A. (2012) *Exploring the use of residual measures of housing affordability in Australia: methodologies and concepts,* AHURI Final Report No. 180, Australian Housing and Urban Research Institute, https://www.ahuri.edu.au/sites/default/files/migration/documents/AHURI_Final_Report_No180_Exploring_the_use_of_residual_measures_of_housing_affordability_in_Australia_methodologies_and_concepts.pdf.

Hiscock, R., Macintyre, S., Kearns, A. and Ellaway, A. (2003) 'Residence and residents: Factors Predicting the health disadvantage of social renters compared to owner-occupiers', *Journal of Social Issues*, vol. 59, no. 3: 527-46.

House of Representatives Standing Committee on Tax and Revenue (2022) *The Australian dream: Inquiry into housing affordability and supply in Australia*, HRSCTR, Parliament of the Commonwealth of Australia, Canberra, https://parlinfo.aph.gov.au/parlInfo/download/committees/reportrep/024864/toc_pdf/TheAustralianDream.pdf;fileType=application%2Fpdf.

Howden-Chapman, P. and Chapman, R. (2012) 'Health co-benefits from housing related policies', *Current Opinion in Environmental Sustainability,* vol. 4: 414-419.

Howden-Chapman, P., Fyfe, C., Nathan, K., Keall, M., Riggs, L., and Pierse, N. (2021) 'The effects of housing on health and well-being in Aotearoa New Zealand', *New Zealand Population Review,* vol. 47: 16-32.

Howden-Chapman, P., Matheson, A., Crane, J., Viggers, H., Cunningham, M., Blakely, T., Cunningham, C., Woodward, A., Saville-Smith, K., O'Dea., D., Kennedy, M., Baker, M., Waipara, N., Chapman, R. and Davie, G. (2007) 'Effect of insulating existing houses on health inequality: cluster randomised study in the community', *BMJ,* vol. 334, doi. org/10.1136/bmj.39070.573032.80.

Hulse, K., Jacobs, K., Arthurson, K. and Spinney, A. (2011) *At home and in place? The role of housing in social inclusion*, AHURI Final Report No. 177, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/177.

Hulse, K., Reynolds, M., Nygaard, C., Parkinson, S. and Yates, J. (2019) *The supply of affordable private rental housing in Australian cities: short-term and longer-term changes*, AHURI Final Report No. 323, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/323, doi:10.18408/ahuri-5120101.

Infrastructure Australia (2021) *Reforms to meet Australia's future infrastructure needs: 2021 Australian Infrastructure Plan,* IA, Canberra.

Infrastructure SA (2022) Impact Guide Cost-Benefit Analysis, ISA, Adelaide.

Johnson, G., Kuehnle, D., Parkinson, S., Sesa, S., and Tseng, Y. (2014) *Sustaining exits from long-term homelessness: A randomised controlled trial examining the 48-month social outcomes from the Journey to Social Inclusion pilot program.* Sacred Heart Mission, St Kilda.

Kavanagh A.M., Aitken, Z., Baker, E., LaMontagne, A.D., Milner, A., Bentley, R. (2016) 'Housing tenure and affordability and mental health following disability acquisition in adulthood', *Soc Sci Med*, vol. 151: 225-232.

Keall, M.D., Crane, J., Baker, M.G., Wickens, K., Howden-Chapman, P. and Cunningham, M.A. (2012) 'Measure for quantifying the impact of housing quality on respiratory health: a cross-sectional study', *Environ Health,* vol. 11: 33.

KPMG (2012) *Social housing initiative review*, report commissioned by the Housing Ministers' Advisory Committee, accessed 9 June 2022, http://www.nwhn.net.au/admin/file/content101/c6/social_housing_initiative_review.pdf.

Kraatz, J., Reid, S., Rowlinson, L. and Caldera, S. (2022) 'Housing as critical social and economic infrastructure: A decision-making framework', *CIB World Building* Congress.

Lang, M., Lane, R., Zhao, K. and Raven, R. (2022) 'Energy efficiency in the private rental sector in Victoria, Australia: When and why do small-scale private landlords retrofit?' *Energy Research & Social Science*, 88, 102533, https://doi.org/10.1016/j.erss.2022.102533.

Lawson, J., Denham, T., Dodson, D., Flanagan, K., Jacobs, K., Martin, C., Van den Nouwelant, R., Pawson, H. and Troy, L. (2019) *Social housing as infrastructure: rationale, prioritisation and investment pathway*, AHURI Final Report No. 315, Australian Housing and Urban Research Institute Limited, Melbourne, http://www.ahuri.edu.au/research/final-reports/315, doi: 10.18408/ahuri-5314001.

Lawson, J., Pawson, H., Troy, L., van den Nouwelant, R. and Hamilton, C. (2018) *Social housing as infrastructure: an investment pathway,* AHURI Final Report No. 306, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/306, doi:10.18408/ahuri-5314301.

Leishman, C., Cebulla, A., and Petrou, K. (2018) Supporting people in social housing gain and maintain employment: an evidence check rapid review brokered by the Sax Institute for NSW Family and Community Services.

Li, A., Baker, E. and Bentley, R. (2022) 'Understanding the mental health effects of instability in the private rental sector: A longitudinal analysis of a national cohort', *Social Science and Medicine*, vol. 296,

Liddell, C. and Guiney, C. (2015) 'Living in a cold and damp home: frameworks for understanding impacts on mental well-being', *Public Health*, vol. 129, no. 3: 191–199.

Lopoo, L. and London, A. (2016) 'Household crowding during childhood and long-term education outcomes', *Demography,* vol. 53: 699-721.

Loughnan, M., Carroll, M. and Tapper, N.J. (2015) 'The relationship between housing and heat wave resilience in older people', *Int J Biometeorol*, vol. 59: 1291–1298.

MacKenzie, D., Flatau, P., Steen, A. and Thielking, M. (2016) 'The cost of youth homelessness in Australia', Research Brief, *Australian Policy Online*, Australia.

Maclennan, D., Long, J., and Leishman, C. (2021a) *Housing wealth and the economy: All that glitters is not gold,* UNSW City Futures Research Centre, Sydney, https://cityfutures.ada.unsw.edu.au/documents/661/Wealth_Final.pdf.

Maclennan, D., Long, J., Pawson, H., Randolph, B., Aminpour, F. and Leishman, C. (2021b) *Housing: taming the elephant in the economy*, UNSW City Futures Research Centre, Sydney.

Maclennan, D., Ong, R., and Wood, G. (2015) *Making connections: housing, productivity and economic development*, AHURI Final Report No 251, Australian Housing and Urban Research Institute, Melbourne, https://www.ahuri.edu.au/research/final-reports/251.

Maclennan, D., Randolph, B., Crommelin, L., Witte, E., Klestov, P., Scealy, B. and Brown, S. (2019) *Strengthening economic cases for housing policies,* City Futures Research Centres UNSW, UNSW, Sydney.

Maqpool, Habihah, Janet Viveiros and Mindy Ault (2015) The Impacts of Affordable Housing on Health: A Research Summary, Insights from Housing Policy Research, Center for Housing Policy, April.

Mallett, S., Bentley, R., Baker, E., Mason, K., Keys, D., Kolar, V. and Krnjacki, L. (2011) *Precarious housing and health inequalities: What are the links?*, Hanover Welfare Services, University of Melbourne, University of Adelaide, Melbourne City Mission, Australia.

Mansour, A., Bentley, R., Baker, E., Li, A., Martino, E., Clair, A., Daniel, L., Mishra, S.R., Howard, N.J., Phibbs, P. and Jacobs, D.E. (2022) 'Housing and health: an updated glossary', *Journal of Epidemiology and Community Health*: 1-6.

Mason, K., Baker, E., Blakely, T. and Bentley, R. (2013) 'Housing affordability and mental health: does the relationship differ for renters and home purchasers?' *Social Science and Medicine,* vol. 94: 91-97.

Martin, C., Reeve, R., McCausland, R., Baldry, E., Burton, P., White, R. and Thomas, S. (2021) *Exiting prison with complex support needs: The role of housing assistance*, AHURI Final Report No. 361, 1–105, https://doi.org/10.18408/AHURI7124801.

Martinuzzi, S., Withey, J.C., Pidgeon, A.M., Plantinga, A.J., McKerrow, A.J., Williams, S.G., Helmers, D.P. and Radeloff, V.C. (2015) 'Future land-use scenarios and the loss of wildlife habitats in the southeastern United States', *Ecological Applications*, vol. 25, no. 1, pp. 160–171.

Mason, V. and Roys, M. (2011) *The health costs of cold dwellings*, Building Research Establishment Ltd (BRE), United Kingdom.

Mee, K. (2007) 'I ain't been to heaven yet? Living here, this is heaven to me': Public housing and the making of home in Inner Newcastle, *Housing, Theory & Society*, vol. 24, no. 3: 207–228.

Miller, A. and Ofrim, J. (2016) Social Return on Investment (SROI) of Affordable Housing Development Supported through the BC Housing Community Partnership Initiative, Calgary, AB: Constellation Consulting Group.

Miner, M.J., Taylor, R.A., Jones, C. and Phelan, P.E. (2017) 'Efficiency, economics, and the urban heat island', *Environment & Urbanization*, vol. 29, no. 1, pp. 183–194.

Minnery, J., Adkins, B., Grimbeek, P., Summerville, J., Mead, E. and Guthrie, D. (2003) *Tenure security and its impact on private renters in Queensland*, AHURI Final Report No. 27, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/27.

National Construction Code (2022), NCC, accessed 12 July 2022, https://ncc.abcb.gov.au/.

National Housing Finance and Investment Corporation (2020) *Building Jobs: How Residential Construction Drives the Economy*, NHFIC, Canberra.

Nicols, S., Roys, M. and Garrett, H. (2012) The Cost of Poor Housing to the NHS, Briefing Paper, Building Research Establishment Ltd (BRE), United Kingdom.

New South Wales Government (2016) NSW Government program evaluation guidelines, NSW Government, Sydney.

New South Wales Government (2017) NSW Government Guide to Cost-Benefit Analysis, NSW Government, Sydney.

Nygaard, C. (2019) Social and affordable housing as social infrastructure: a literature review for the Community Housing Industry Association, Centre for Urban Transitions, Swinburne University of Technology, Melbourne.

Nygaard, C., Pinnegar, S., Taylor, L., Levin, I. and Maguire, R. (2021) *Evaluation and learning in public housing urban renewal*, AHURI Final Report No. 358, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/358, doi: 10.18408/ahuri51226.

OECD (2020) *How's Life? 2020: Measuring Well-being*, OECD publishing, Paris, https://doi.org/10.1787/9870c393-en.

Ong, R., Dalton, T., Gurran, N., Phelps, C., Rowley, S. and Wood, G. (2017) *Housing supply responsiveness in Australia: distribution, drivers and institutional settings*, AHURI Final Report No. 281, Australian Housing and Urban Research Institute Limited, Melbourne, http://www.ahuri.edu.au/research/final-reports/281, doi:10.18408/ahuri-8107301.

Ong ViforJ, R., Singh, R., Baker, E., Bentley, R. and Hewton, J. (2022) *Precarious housing and wellbeing: a multidimensional investigation*, AHURI Final Report No. 373, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/finalreports/373, doi: 10.18408/ahuri8123801.

Parliament of Australia (no date) *Housing affordability in Australia,* Commonwealth of Australia, https://www.aph.gov.au/about_parliament/parliamentary_departments/parliamentary_library/pubs/briefingbook45p/housingaffordability#:~:text=Housing%20affordability%20in%20Australia%20has,increase%20between%201980%20and%202015.

Parsell, C., Petersen, M., Moutou, O., Culhane, D., Lucio, E. and Dick, A. (2015) *Brisbane Common Ground Evaluation: Final Report*, prepared for the Queensland State Government Department of Housing and Public Works, Institute for Social Science Research, Brisbane, https://issr.uq.edu.au/files/4003/BrisbaneCommonGroundFinalReport.pdf.

Pawson, H., Milligan, V., Liu, E., Phibbs, P. and Rowley, S. (2015) *Assessing management costs and tenant outcomes in social housing: recommended methods and future directions*, AHURI Final Report No. 257, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/257.

Phibbs, P. and Young, P. (2005) *Housing assistance and non-shelter outcomes*, AHURI Final Report No. 74, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/40.

Phillips, W., Janta, B., Gehrt, D., Flemons, L., Gkousis, E., Cole, S., Smith, P., and Hafner, M. (2022) *Poor indoor climate: its impact on health and life satisfaction, as well as its wider socio-economic costs,* RAND Europe.

Pollack, C.E., Griffin, B.A., and Lynch, J. (2010) 'Housing affordability and health among homeowners and renters', *American Journal of Preventive Medicine,* vol. 39, no. 6: 515-521.

Pomeroy and Marquis-Bissonnette (2016) *Non-housing outcomes of affordable housing: Update review of empirical research evidence linking affordable adequate and stable housing to a range of outcomes*, Focus Consulting Inc. and Carleton University Centre for Urban Research and Education (CURE) for the Canada Mortgage and Housing Corporation.

Poor, J. A., Thorpe, D. and Goh, Y. (2018) 'The key-components of sustainable housing design for Australian small size housing', *Int. J. GEOMATE* 15, 23–29, doi: 10.21660/2018.49.3583.

Prentice, D. and Scutella, R. (2020) 'What are the impacts of living in social housing? New evidence from Australia', *Housing Studies*, vol. 35, no. 4: 612-647.

Productivity Commission (2015) *Housing assistance and employment in Australia: Productivity Commission Research Paper,* Commission Research Paper, Canberra.

Ravi, A. and Reinhardt, C. (2011) *The social value of community housing in Australia,* Net Balance.

Reynolds, L. and Robinson, N. (2005) *Full House*, Shelter, London.

Ronald, R. and Lennartz, C. (2019) *Housing careers, intergenerational support and family relations*, Routledge, London and New York.

Ronald, Rz and Lennartz, C. (2018) 'Housing careers, intergenerational support and family relations', *Housing Studies*, vol. 33, no. 2: 147-159.

Sarkar, S., Moylan, E., Wu, H., Shrivastava, R., Gurran, N. and Levinson, D. (2021) *New housing supply, population growth and access to social infrastructure*, AHURI Final Report No. 356, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/356, doi:10.18408/ahuri73233.

Sarkar, S., Moylan, E., Wu, H., Shrivastava, R., Gurran, N. and Levinson, D. (2021) *New housing supply, population growth, and access to social infrastructure*, AHURI Final Report No. 356, Australian Housing and Urban Research Institute, Melbourne.

SGS Economics and Planning (2019) City of Melbourne *Housing Needs Analysis,* prepared for City of Melbourne, Melbourne.

SGS Economics and Planning. (2022) *Give me shelter: the long-term costs of underproviding public, social and affordable housing*, prepared for Housing All Australians, Melbourne, https://housingallaustralians.org.au/whatwedo/give-me-shelter/.

Sipe and Dodson (2008) *Unsettling suburbia: the new landscape of oil and mortgage vulnerability in Australian cities*, Urban Research Program Research Paper No. 17, Griffith University.

Smith, C. and Davies, C. (2020) *Valuing wellbeing outcomes: Cost-wellbeing analysis of housing outcomes in the New Zealand General Social Survey.*

Smith, S., Easterlow, D. and Munro, M. (2004) 'Housing for health: Does the market work?', *Environment and Planning A*, vol. 36, no. 4: 579–600.

Soebarto, V., Bennetts, H., Hansen, A., Zuo, J., Williamson, T., Pisaniello, D., et al. (2019) 'Living environment, heating-cooling behaviours and well-being: survey of older South Australians', *Build Environ*, vol. 157: 215–216.

Solari, C. D. and Mare, R. D. (2012) 'Housing crowding effects on children's wellbeing', *Social Science Research*, vol. 41, no. 2: 464–476.

SROI Network (2012) *A guide to social return on investment,* Social Value UK, Liverpool.

Stahre, M., VanEenwyk, J., Siegel, P. and Njai, R. (2015) Housing insecurity and the association with health outcomes and unhealthy behaviors, Washington State, 2011, Preventing Chronic Disease, 12(7), https://doi.org/10.5888/pcd12.140511.

Stone, W., and Hulse, K. (2007) *Housing and social cohesion: an empirical exploration,* AHURI Final Report No. 100, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/sites/default/files/migration/documents/AHURI_Final_Report_No100_Housing_and_social_cohesion_an_empirical_exploration.pdf

Stone, W., Reynolds, M. and Hulse, K. (2013) *Housing and social inclusion: a household and local area analysis*, AHURI Final Report No. 207, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/207.

Taylor, J., Wilkinson, P., Davies, M., Armstrong, B., Chalabi, Z., Mavrogianni, A., Symonds, P., Oikonomou, E. and Bohnenstengel, S.I. (2015) 'Mapping the effects of urban heat island, housing, and age on excess heat-related mortality in London', Urban Climate, vol. 14, pp. 517–528.

Taylor, L. (2018) 'Housing and health: An overview of the literature', *Health Affairs Health Policy Brief*, June 7.

Think Impact (2016) *Visible changes: social return on investment evaluation of women's property initiatives – summary report*, Women's Property Initiatives, Melbourne.

Thomas, M.A. (2017) *On the benefits of affordable housing: An assessment of recent literature for municipalities*, Table de Quarter Sud, Pointe-Claire.

Thomson, H., Snell, C. and Bouzarovski, S. (2017) 'Health, well-being and energy poverty in europe: a comparative study of 32 European Countries', *Int. J. Environ. Res. Public Health*, 14:584. doi: 10.3390/ijerph14060584

Tsai, A. C. (2015) 'Home foreclosure, health, and mental health: a systematic review of individual, aggregate, and contextual associations', *PloS one*, vol. 10, no. 4.

Van Den Nouwelant, R., Crommelin, L., Herath, S. and Randolph, B. (2016) *Housing affordability, central city economic productivity and the lower income labour market*. AHURI Final Report No. 261, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/261.

Vijayan, A., Maina, J.M., Lawson, R., Chang, H-C., Beaumont, L.J. and Davies, P.J. (2021) 'Land use planning to support climate change adaptation in threatened plant communities', Journal of Environmental Management, vol. 298.

Voight, A., Shinn, M. and Nation, M. (2012) 'The Longitudinal Effects of Residential Mobility on the Academic Achievement of Urban Elementary and Middle School Students', *Educational Researcher, 41(9)*, 385–392, https://doi.org/10.3102/0013189X12442239.

Wargocki, P., Sundell, J., Bischof, W., Brundrett, G., Fanger, P. O., Gyntelberg, F., Hanssen, S. O., Harrison, P., Pickering, A., Seppänen, O. and Wouters, P (2002), 'Ventilation and health in non-industrial indoor environments: report from a European multidisciplinary scientific consensus meeting (EUROVEN)', *Indoor Air*, vol. 12, no. 2: 113–128.

Whelan, S. and Parkinson, S. (2017) *Housing tenure, mobility and labour market behaviour*, AHURI Final Report No. 280, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/280.

World Health Organisation (2018) *Housing and health guidelines*, WHO: Geneva.

Williams, J. (2005) 'Designing neighbourhoods for social interactions: The case for cohousing', *Journal of Urban Design*, vol. 10, no. 2: 195-227.

Windle, G., Burholt, V., Edwards, R. (2006) 'Health related difficulties, housing tenure and variations in health status: evidence from older people in Wales', *Health and Place*, vol. 12: 267-78.

Wood, L., Flatau, P., Zaretzky, K., Foster, S., Vallesi, S. and Miscenko, D. (2016) *What are the health, social and economic benefits of providing public housing and support to formerly homeless people?*, AHURI Final Report No. 265, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/sites/default/files/migration/documents/AHURI_Final_Report_No265_What-are-the-health%2C-social-and-economic-benefits-of-providing-public-housing-and-support-to-formerly-homeless-people.pdf.

Wood, G., Batterham, D., Cigdem, M, and Mallet, S. (2015) *The structural drivers of homelessness in Australia 2011-11,* AHURI Final Report No. 238, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/sites/default/files/migration/documents/AHURI_Final_Report_No238_The-structural-drivers-of-homelessness-in-Australia-2001-11.pdf.

Xu, X., Xie, Y., Qi, K., Luo, Z. and Wang, X. (2018) 'Detecting the response of bird communities and biodiversity to habitat loss and fragmentation due to urbanization', *Science of the Total Environment*, vol. 624, pp. 1561–1576.

Zaretzky, K. and Flatau, P. (2013) *The cost of homelessness and the net benefit of homelessness programs: a national study*, AHURI Final Report No. 218, Australian Housing and Urban Research Institute Limited, Melbourne, https://www.ahuri.edu.au/research/final-reports/218.

Zon, N., Molson, M., and Oschinski, M. (2014) *Building blocks: the case for federal investment in social and affordable housing in Ontario,* Mowat Research #98, University of Toronto, Toronto.

Appendix 1: Evidence summary – monetised and quantified impacts

		Impact category			
Impacts	Measurement	Quantitative	Monetised	Beneficiary	Reference
Economic					
Economic turnover	per dollar invested		A$1.3	society	KPMG, 2012
Job creation	local job creation from every $1 invested for a $42mil project	1.02 direct and 2.3 indirect jobs	$25.5mil CA	society	Hanka, Gilderbloom et al. 2015.
Job creation	proportion of those jobs that would be lower income earners	81% local jobs		society	Hanka, Gilderbloom et al. 2015.
Tax contributions	additional tax revenue per year from $42mil invested		$1.7mil CA	government	Hanka, Gilderbloom et al. 2015.
Job creation	jobs created by $1milCA invested	8.49 total jobs (5.66 direct and 2.83 indirect)		society	Zon, Molson, et al. 2014.
Disposable income increase	additional disposable income per household per year		$5169.63 CA	individual	Zon, Molson, et al. 2014.
Job creation	local employment impact of a typical 100-unit project	175 new jobs	$10mil CA income	society	HR&A Advisors, Inc. 2012.
Job creation	an affordable housing project making 12,000 homes per year	19,000 jobs	€2.6B economic output	society	Shelter Scotland. 2015.
Job creation	$180milUSD project creates additional employment	1429 direct /1015 indirect	$74mil USD	society	MaineHousing. 2017.
Employment stability	increased risk of job loss within a year of a forced move	22 per cent point		individual	Desmond and Gershenson. 2016
Improved access to jobs	value of reduced travel-to-work per worker per year		$2,544	individual	Maclennan, Randolph et al. 2019
Improved access to jobs	increased earning potential per worker per year		$19,865	individual	Maclennan, Randolph et al. 2019
Health					
Health service use	cost saving per participant over 4-year period		$19,714	society	Johnson, Kuehnle, et al. 2014
Health service use	cost saving per participant over 4-year period		$23,489	government	Johnson, Kuehnle, et al. 2014
Drug and alcohol services	cost saving per participant over 4-year period		$1,301	society	Johnson, Kuehnle, et al. 2014
Drug and alcohol services	cost saving per participant over 4-year period		$2,391	government	Johnson, Kuehnle, et al. 2014
Admitted patients	cost saving for cohort (n. 30) comparing 12 months prior to 12 months after being in the program		$591,495	government	Parsell, Petersen, et al. 2015

		Impact category			
Impacts	Measurement	Quantitative	Monetised	Beneficiary	Reference
Emergency	cost for cohort (n. 33) comparing 12 months prior to 12 months after being in the program		-$2,350	government	Parsell, Petersen, et al. 2015
Ambulance	cost saving for cohort (n. 27) comparing 12 months prior to 12 months after being in the program		$650	government	Parsell, Petersen, et al. 2015
Health service use	cost saving per person per year		$4,846	government	Wood, L., Flatau, et al. 2016
Reduced health system costs	cost saving per person per year in avoiding homelessness due to DFV		$11,000	government	DHHS, 2018
Social return on investment	per year for every dollar of annual operating expense		$1.30 to $1.92	society	Drabo, Eckel, et al. 2021
Disposable income for more nutritious food and preventative health care	difference in discretionary spending on health care in affordable housing as opposed to those spending 50% income on housing	20%		individual	Maqbool et al. 2015
Improved health	likelihood of 14 days or more of poor mental health or poor health limiting activity in last 30 days when in insecure housing	2 times as likely		individual	Stahre, VanEenwyk et al. 2015
Mental health					
Mental health service use	cost saving for cohort (n.23) comparing 12 months prior to 12 months after being in the program		$242,540	government	Parsell, Petersen et al. 2015
Reduced pain and suffering	cost saving per person per year in avoiding homelessness due to DFV		$10,000	individual	DHHS 2018
Wellbeing	self-assessed mental health and wellbeing of people living in unaffordable housing	0.8 per cent decrease in wellbeing and 0.5 per cent decrease in mental health indexes		individual	Ong ViforJ, Singh, et al. 2022
Wellbeing	self-assessed mental health and wellbeing of people experiencing a forced move	1.6 per cent decline in wellbeing and 1.7 per cent decline in mental health indexes		individual	Ong ViforJ, Singh, et al. 2022
Life satisfaction	compensation due to reduced life satisfaction caused by poor quality housing per person per year		EUR 6,288	individual	Phillips, Janta et al. 2022

		Impact category			
Impacts	Measurement	Quantitative	Monetised	Beneficiary	Reference
Safety					
Contact with justice system	costs per participant over 4-year period		-$17,903	government	Johnson, Kuehnle, et al. (2014)
Corrective Services	cost saving for cohort (n. 2) comparing 12 months prior to 12 months after being in the program		$30,844	government	Parsell, Petersen, et al. 2015
Court	cost saving for cohort (n. 17) comparing 12 months prior to 12 months after being in the program		$10,183	government	Parsell, Petersen, et al. 2015
Total cost of police	cost saving for cohort (n. 37) comparing 12 months prior to 12 months after being in the program		$81,877	government	Parsell, Petersen, et al. 2015
Justice service use	per person per year		$2,397	government	Zaretzky, and Flatau, 2013
Court appearances	providing public housing to ex-offenders as opposed to rental assistance, decrease per year	7.60%			Martin, Reeve et al. 2021
Proven offences	providing public housing to ex-offenders as opposed to rental assistance, decrease per year	7.60%			Martin, Reeve et al. 2021
Time in custody	providing public housing to ex-offenders as opposed to rental assistance, decrease per year	11.20%			Martin, Reeve et al. 2021
Time on supervised orders	providing public housing to ex-offenders as opposed to rental assistance, decrease per year	7.80%			Martin, Reeve et al. 2021
Justice costs per person	providing public housing to ex-offenders as opposed to rental assistance, initial cost saving per person in first year		$4,996	government	Martin, Reeve et al. 2021
Justice costs per person	providing public housing to ex-offenders as opposed to rental assistance, cost saving per person for per year from second year onwards		$2,040	government	Martin, Reeve et al. 2021
Reduced justice system costs	cost saving per person per year in avoiding homelessness due to DFV		$2,000	government	DHHS 2018
Reduced child protection related costs	cost saving per person per year in avoiding homelessness due to DFV		$700	government	DHHS 2018
Decreased likelihood of returning to violent partner	economic gains per individual avoiding DFV		$18,241	individual, government and society	Equity Economics, 2022

		Impact category			
Impacts	Measurement	Quantitative	Monetised	Beneficiary	Reference
Justice service use	providing stable accommodation to homeless people per participant over 2-year period		$1,977	government	Conroy, Bower et al. 2014
Contact with justice system	costs per homeless youth		$8,242	government	MacKenzie, Flatau, 2016
Workforce re-entry	cost saving per person per year in avoiding homelessness due to DFV		$4,000	government	DHHS. 2018
Welfare					
Median welfare offsets	Provision of secure housing for chronically homeless in ACT and resultant offset costs of reduced health, justice, and welfare service usage.	0.57 CBA ratio	$15,300AUD per person per year saving	government	Davison, Brackertz, et al. 2021
Accommodation and support services	cost saving per participant over 4-year period		$15,527	society	
Accommodation and support services	cost saving per participant over 4-year period		$4,139	government	Johnson, Kuehnle, et al. 2014
Reduced costs of crisis care	cost saving per person per year in avoiding homelessness due to DFV		$29,500	government	DHHS. 2018
Reduced specialist homelessness costs	cost saving per person per year in avoiding homelessness due to DFV		$5,000	government	DHHS. 2018
Education					
Earnings	increase per person per year in lifetime earnings higher education vs those who do not		$5000 CA	individual	Suttor, G.L.F., and W. Bettencourt-McCarthy. 2015. Affordable housing as economic development: how housing can spark growth in northern and southwestern Ontario. Ontario Non-Profit Housing Association.
Employment					
job creation from affordable housing project construction	per project constructed	number of new jobs created directly and indirectly	Amount of income revenue gained	society	
workforce re-entry	cost saving per person per year in avoiding homelessness due to DFV		$4,000	government	Department of Health and Human Services (DHHS), 2018, Family Violence Housing Blitz Package evaluation, Victorian Government, Melbourne.

Appendix 2: Impact mapping references

1 Ong, Singh 2022
2 Maclennan, Long et al. 2021
3 Hank, Gilderbloom 2015
4 Diamond 2020
5 Dodson, Li, et al 2020
6 Maclennan, Long et al. 2021; Dodson, Li et al. 2020
7 Whelan, Parkinson 2017
8 Whelan, Parkinson 2017
9 Pomeroy and Marquis-Bissonnette 2016; Chapman, Howden-Chapman et al. 2009
10 Wood, Flatau, et al. 2016; Taylor, 2018; Johnson, Kuehnle et al. 2014; Parsell, Petersen et al. 2015; Chapman, Howden-Chapman et al. 2009
11 Ong, Singh 2022; Parsell, Petersen et al. 2015; Johnson, Kuehnle et al 2014
12 Martin, Reeve et al. 2021; Think Impact 2016; Equity Economics 2021
13 DHHS 2018
14 DHHS 2018
15 Davison, Brackertz et al. 2021
16 Johnson, Kuehnle et al. 2014
17 Zon, Molson 2014
18 Hank, Gilderbloom 2015
19 SGS 2022; Zon, Molson et al. 2014; Pollack, Griffin et al. 2010
20 Boarnet, Bostic et al. 2017
21 Poor, Thorpe et al. 2018
22 Maclennan, Long 2021
23 Beer, Baker et al. 2011
24 Andersson, Haltiwanger et al. 2016
25 DHHS 2018
26 Groenhart 2014
27 Desmond and Gershenson 2016
28 Equity Economics 2021
29 Groenhart 2014
30 Pomeroy and Marquis-Bissonnette 2016; Chapman, Howden-Chapman et al. 2009
31 Maqbool, Viveros 2016; Pollack, Griffin et al. 2010
32 Johnson, Kuehnle et al. 2014; Parsell, Petersen et al. 2015; Wood, Flatau et al. 2016
33 Wood, Flatau, et al. 2016; Taylor, 2018; Johnson, Kuehnle et al. 2014; Parsell, Petersen et al. 2015.
34 Stahre, VanEenwyk et al. 2015
35 Stahre, VanEenwyk et al. 2015
36 Buckle, Gurran et al. 2020
37 Johnson, Kuehnle 2014; Parsell, Petersen 2014; Wood, Fatau 2016
38 Johnson, Kuehnle 2014
39 Johnson, Kuehnle 2014; Parsell, Petersen 2014; Wood, Fatau 2016
40 Dodson, Curtis et al. 2021; Thomas 2017
41 Dannemiller, Gent et al. 2016; Kealle, Crane et al. 2012; Wargocki, Sundell et al. 2002; Loughnan, Carroll et al. 2015; Daniel, Horne et al. 2019; Giles-Corti, Kleeman, A., et al. 2015; Liddel and Guiney 2015; Chapman, Howden-Chapman et al. 2009

42 Pomeroy and Marquis-Bissonnette 2016; Chapman, Howden-Chapman et al. 2009
43 Nichols, Roys, et al. 2012
44 Ong, Singh 2022
45 Kavanagh, Aitkin et al. 2016; Bentley, Pevalin et al 2016
46 Parsell, Petersen et al. 2015; Johnson, Kuehnle et al. 2014
47 Zaretzky and Flatau 2013
48 Li, Baker et al. 2022; Mason, Baker, et al. 2013; Ong, Singh et al. 2022; Mallett, Bentley et al. 2011; Kavanagh, Aitkin et al. 2016; Bentley, Pevalin et al. 2016; Stahre, VanEenwyk et al. 2015
49 Braubach, Jacobs et al. 2011
50 Parsell, Petersen et al. 2015; Johnson, Kuehnle et al 2014
51 Braubach, Jacobs et al. 2011
52 Dockery, Ong et al. 2013
53 Baker, Lester et al. 2016; Mallett, Bentley et al. 2011
54 Soebarto, Bennetts et al. 2019; Liddell and Guiney 2015
55 Brown and Jacobs 2011
56 Braubach, Jacobs et al. 2011; Reynolds and Robinson 2005; Solari and Mare 2012
57 Giles-Corti, Kleeman et al. 2015; Liddel and Guiney 2015
58 Andersson, Haltiwanger et al 2016
59 Martin, Reeve 2021
60 Martin, Reeve et al. 2021
61 Equity economics 2021; Gubits, Shinn et al. 2016
62 Equity Economics 2021
63 Equity Economics 2021
64 Think Impact 2016
65 Think Impact 2016; Equity Economics 2021
66 DHHS 2018
67 DHHS 2018
68 Zaretzky and Flatau 2013; Parsell, Peterson et al. 2015; Conroy, Bower et al. 2014
69 MacKenzie, Flatau et al. 2016; Flatau, Zaretzky et al. 2020
70 DHHS 2018
71 DHHS 2018
72 DHHS 2018
73 Martin, Reeve 2021
74 Davison, Brackertz et al. 2021
75 Prentice and Scutella 2020
76 Johnson, Kuehnle et al. 2014
77 Warren, Font et al. 2015
78 Davison, Brackertz et al. 2021
79 Johnson, Kuehnle et al. 2014
80 Dockery, Ong et al. 2013; Beer, Baker et al. 2011; Pawson, Milligan et al. 2015; Phibbs and Young 2005
81 Suttor, Bettencourt-McCarty 2012
82 Silvia 2017
83 Cohen and Wardrip 2011
84 Voight, Shinn et al. 2012; Dockery, Ong et al. 2013
85 Dockery, Kendall et al. 2010
86 Fowler, McGrath et al. 2015
87 Ravi, Reinhardt 2011; Phibbs and Young 2005; Lopoo and London 2016
88 Dockery, Ong et al. 2013
89 Dockery, Kendall et al. 2010
90 Cunningham and MacDonald 2012
91 Pomeroy and Marquis-Bissonnette 2016
92 Maclennan, Long et al. 2021; Ronald and Lennartz 2019; Coulter 2018
93 Pomeroy and Marquis-Bissonnette 2016
94 Pawson, Milligan et al. 2015
95 Mansour, Bentley et al. 2021
96 Stone, Hulse et al. 2007
97 Hulse, Jacobs et al. 2011; Mansour, Bentley et al. 2021
98 Hulse, Jacobs et al. 2011; Mansour, Bentley et al. 2021

99 Gabriel, Watson et al. 2010
100 Climate Council 2022
101 Climate Council 2022
102 Climate Council 2022
103 Climate Council 2022
104 Climate Council 2022
105 ASBEC and Climate Works 2018
106 Daly, Kokogiannakis, 2019
107 Vijayan, Maina et al. 2021; Miner, Taylor et al. 2017
108 Sipe and Dodson, 2008
109 Miller and Ofrim, 2016
110 Dodson, Curtis et al. 2021; Thomas 2017
111 Vijayan, Maina et al. 2021; Miner, Taylor et al. 2017
112 Anderson, Wedawatta et al. 2022
113 Ong, Singh 2022
114 Maclennan, Long et al. 2021
115 Hank, Gilderbloom 2015
116 Diamond 2020
117 Dodson, Li, et al 2020
118 Maclennan, Long et al. 2021; Dodson, Li et al. 2020
119 Whelan, Parkinson 2017
120 Whelan, Parkinson 2017
121 Pomeroy and Marquis-Bissonnette 2016; Chapman, Howden-Chapman et al. 2009
122 Wood, Flatau, et al. 2016; Taylor, 2018; Johnson, Kuehnle et al. 2014; Parsell, Petersen et al. 2015; Chapman, Howden-Chapman et al. 2009
123 Ong, Singh 2022; Parsell, Petersen et al. 2015; Johnson, Kuehnle et al 2014
124 Martin, Reeve et al. 2021; Think Impact 2016; Equity Economics 2021
125 DHHS 2018
126 DHHS 2018
127 Davison, Brackertz et al. 2021
128 Johnson, Kuehnle et al. 2014

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