Housing experiences and suitability as determinants of health:

Population patterns of housing and correlated health risk factors and outcomes

July 2019

PHIDU TORRENS UNIVERSITY AUSTRALIA

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This report was produced by PHIDU, the Public Health Information Development Unit at Torrens University Australia. The work was funded under a grant from the Australian Government Department of Health. The views expressed in this report are solely those of the authors and should not be attributed to the Department of Health, or the Minister for Health.

Suggested citation

Public Health Information Development Unit (PHIDU). *Housing experiences and suitability as determinants of health: population patterns of housing experiences and correlated health risk factors and outcomes*. Adelaide: PHIDU, 2019.

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Contents

Tables

Figures

Acknowledgements

This report was written by Lucy Farrell at the Public Health Information Development Unit (PHIDU). The accompanying online maps and graphs were produced by Kristin Brombal; and John Glover edited the final report.

Data were sourced from the

- Australian Bureau of Statistics;
- Australian Childhood Immunisation Register, Medicare Australia;
- Australian Coordinating Registry and the Victorian Department of Justice;
- Australian Early Development Census, Australian Government;
- Australian Institute of Health and Welfare;
- Department of Social Services;
- Perinatal data collection agencies in the following States and Territories (New South Wales Department of Health; Consultative Council on Obstetric and Paediatric Mortality and Morbidity, Victoria; Perinatal Data Collection, Department of Health, Queensland; Department of Health and Ageing South Australia; Western Australian Department of Health; Tasmanian Perinatal Database; Northern Territory Department of Health; Australian Capital Territory Health).

Views expressed in this report are those of the authors, and responsibility for the content rests wholly with PHIDU.

Executive summary

Adequate and affordable housing is an important determinant of health. This report explores the housing circumstances of different population groups, drawing on small area geographic data from the 2016 Census of Population and Housing, health surveys, income support payment datasets, and administrative health datasets (e.g., perinatal statistics, potentially preventable hospitalisations, mortality) to examine area-level associations between the housing circumstances of different population groups and between housing circumstances and health outcomes.

Certain population groups are overrepresented among those living in poor quality dwellings, in unaffordable housing, or in precarious tenure arrangements, and may therefore be at higher risk of housing-related health impacts. Data reveal differences in housing circumstances among people living with a disability, older people, Aboriginal and Torres Strait Islander (hereafter 'Aboriginal') people, older Aboriginal people, people born in predominantly non-English speaking countries, recent migrants from predominantly non-English speaking countries, families with children aged under 15 years, and single parent families. The housing circumstances of these different population groups also vary widely between states and territories.

By exploring national data about housing circumstances and health at small geographic area levels, this report provides an evidence base for understanding the many and diverse ways in which housing may influence—and be influenced by—health and health inequalities. In particular, data suggest that housing-related factors such as housing affordability may be an important mediator of the relationship between socioeconomic disadvantage and health.

Key findings for **Housing circumstances** include:

- Older people were most likely to live in an owned home.
- Aboriginal and Torres Strait Islander people were more than twice as likely as the national average to live in a rented home; and were more than eight times as likely to live in social housing.
- Single parent families comprised almost two thirds (64.5%) of all families in social housing dwellings.
- People living in almost one fifth (17.5 per cent) of rented dwellings and close to half (43.9% per cent) of social housing dwellings did not access the Internet access, providing another example of the concentration of inequalities in these households.
- Close to one-quarter of migrants arriving in Australia in the last ten years from non-English speaking countries were living in a crowded dwelling; they also were more than twice as likely as the national average to live in a rented house.
- Homelessness also varied between states and territories and by population group, being ten times more common among Aboriginal people in the Northern Territory than nationally.
- Young people, people with a disability, older people, Aboriginal people, and those born overseas in non-English speaking countries were all more likely than average to be homeless.
- In the Northern Territory, the proportion of the population living in social housing was over three times the national proportion (39.8 per cent compared with 11.9 per cent), with above-average proportions also in Tasmania (18.1 per cent) and South Australia (17.8 per cent). The extent of concentration of people in certain housing types and locations can result in significant access and equity issues due to high levels of social and economic disadvantage. These can include access to educational opportunities; employment opportunities; material resources; leisure and recreation facilities and opportunities; and so on.

Key findings for **Housing and health** include:

- Housing tenure was often associated with poor self-assessed health; for example, areas with a higher proportion of social housing tended to have more people reporting fair or poor health (the strongest associations were seen for Tasmania, South Australia and the Northern Territory (although the data on which this result was based were not as robust as other data in the analysis for the Northern Territory or for other jurisdictions).
- In addition, in some states there was an elevated prevalence of non-communicable diseases and behavioural risk factors, with those living in areas with a high density of social housing most likely to be smokers. These associations were strongest in Tasmania and South Australia.
- In Tasmania and South Australia there were strong associations between mortgage stress and risk factors including obesity and smoking.
- Child health and development was linked to household crowding in some jurisdictions, with strong associations with low birth weight babies in the Northern Territory and Western Australia; and very strong associations with children assessed in their first year of school as developmentally vulnerable in two or more domains under the Australian Early Development Census in Western Australia, the Northern Territory and South Australia.

Introduction

The daily conditions in which people live—including the quality and affordability of housing—are key influences on health (1–3). Housing is more than just shelter. It represents a set of important social conditions that influence people's everyday lives, including space for security, stability, privacy, safety and socialising; a reflection of material resources; accessibility to employment or education; and inclusion in a neighbourhood environment and local community.

A substantial body of literature has demonstrated the many and diverse ways in which housing factors such as dwelling condition, tenure, crowding, unaffordability, and the local neighbourhood impact adversely on health and wellbeing. Living in a dwelling of poor quality or condition, or in precarious housing circumstances, has been shown to be associated with stress, social isolation, and an increased risk of injury and disease (3).

Well-established causal pathways exist between the overall quality and condition of dwellings and health outcomes. Factors including damp (4,5), thermal quality (6) and structural soundness (7) have been associated with physical health outcomes including injury (7,8), skin infections (9), respiratory disease (10,11) and cardiovascular diseases (12), along with mental illness (13,14). Evidence suggests that household crowding in particular is associated with increased risk of infectious diseases including influenza (15) and meningococcal disease (16). Crowding has been shown to influence mental health through factors such as high noise levels and lack of privacy, to increase the prevalence of smoking and hazardous drinking (3), and to detrimentally impact on child development (17,18).

Beyond the impact of physical housing characteristics on health, a substantial literature has demonstrated clear health effects of housing tenure arrangements. Those with more secure tenure tend to have better health and longer life expectancy than those with more precarious tenure arrangements (3,19), with those living in social housing and those experiencing homelessness at highest risk of a range of mental and physical health conditions (20,21). The relationship between tenure and health has multiple intersecting explanations: while the health-promoting effects of secure housing tenure may be partially explained through the sense of continuity it provides (22), health status is also an established determinant of housing tenure opportunities. As such, the poorer health status of those living in precarious circumstances may influence the association between tenure and health (23).

Recent research has examined the health impacts of unaffordable housing, over and above the effects of general financial hardship. This work has established that unaffordable housing is associated with poor mental and physical health. For example, clear causal relationships have been established between mental illness and affordability problems including rental insecurity, mortgage arrears, and foreclosure (24–26). Importantly, there appears to be an interaction between housing tenure and affordability, with renters more vulnerable than home purchasers to the health impacts of unaffordable housing (24).

In addition to these individual-household factors mediating the relationship between housing and health, neighbourhood factors are also important. Connection to social networks, access to transport and services, proximity to education and work, and a perceived sense of safety and security are important for physical and mental health, particularly for certain population groups such as young single mothers (19). Moreover, housing markets play a key role in structuring spatial patterns of social disadvantage in Australia through factors including housing affordability, social housing density, and rental housing availability (27). Housing is therefore a direct influence on health—through etiological exposures—and is also a factor of broader socioeconomic inequalities influencing health inequities (13).

The well-established relationship between housing and health underscores the possibility of improving health outcomes for vulnerable populations through the integration of housing and health policy and service delivery. Certain population groups are more susceptible to precarious or unsuitable housing than the general population, including: single parents; people living alone; young people; older renters; Aboriginal people; and those born overseas (19). Many of these groups are also acknowledged to experience heightened vulnerability to ill-health due to structural socioeconomic factors and various forms of discrimination and marginalisation (28). In light of the challenges of health promotion and disease prevention within current Australian public health policy contexts (28), cross-sectoral action on housing improvement may be a viable mechanism for improving population health, particularly among vulnerable and hard-to-reach groups, and thereby for improving health equity (2,13).

This report aims to:

- describe variations in housing circumstances across Australia, with an emphasis on exploring the experiences of vulnerable groups including those living with a disability; older people; Aboriginal and Torres Strait Islander peoples; recent migrants; and single parent families.
- provide a resource through which to explore housing and health correlates at the small area level.
- identify inequalities in housing experiences and health outcomes, as a foundation for action to support those communities and groups most in need.

The report is accompanied by a series of online/interactive atlases and graphics, data sets and metadata (referred to as 'associated products').

The atlases map data at various levels – Population Health Areas, Population Health Networks and Local Government Areas. These are available at:

http://phidu.torrens.edu.au/social-health-atlases/topic-atlas/housing-atlas#housing-atlas-maps

The graphics show the data by Remoteness Area and groupings of socioeconomic disadvantage and are available at.

http://phidu.torrens.edu.au/social-health-atlases/topic-atlas/housing-atlas#housing-atlas-graphs

The data on which the atlases are based can be found in the MS Excel workbooks at

http://phidu.torrens.edu.au/social-health-atlases/topic-atlas/housing-atlas#housing-atlas-data-workbooks

Detailed notes on the data (definitions, sources, etc.) can be found at

http://phidu.torrens.edu.au/current/data/sha-topics/notes/phidu_housing_atlas_notes.pdf

The report provides a broad picture of housing and health in Australia. It combines data on housing tenure and composition, homelessness, financial stress due to housing costs, and household Internet access with data for a range of key health indicators. It aims to assist communities, policy-makers and service planners to better understand the interactions between housing and health across Australia. By looking at housing outcomes and health correlates at a small area level, decision-makers are better equipped to tailor and direct services, programs and policy to those most at risk of adverse outcomes.

Methods

Data

Data reported from the 2016 Census of Population and Housing are for private dwellings/people/families residing in private dwellings at the place of enumeration on Census night; they exclude those in visitor-only and other non-classifiable households.

Key information to aid interpretation of certain data is presented below. Further information about all indicators and data sources is available in the associated *Housing Experiences and Suitability as determinants of health: Notes on the Data* publication.

Housing circumstances

Housing data were drawn from the 2016 Census of Population and Housing. Data were collected at the dwelling level. For some indicators, dwelling characteristics have been allocated to people and families within dwellings to create people and families as counting units. These counting units enable personal characteristics and family composition to be reported for analysis in relation to housing experiences. Person and family level data presented in this report and associated products therefore reflect familial or group household tenure. For example, children living with their parents in mortgaged dwellings are counted as living in a dwelling that is owned, although they are not the mortgage holder. See *Counting units* in the *Notes on the Data* publication for further information.

Homelessness data have been drawn from the 2016 Census of Population and Housing. These estimates are based on the Australian Bureau of Statistics (ABS) definition of homelessness, under which a person is classified as homeless if they do not have suitable accommodation alternatives and their current living arrangement:

- is in a dwelling that is inadequate;
- has no tenure, or if their initial tenure is short and not extendable; or
- does not allow them to have control of, and access to space for social relations.

For some demographic groups, including homeless youth and Aboriginal and Torres Strait Islander peoples, Census homelessness estimates are likely to underestimate the number of people experiencing homelessness. For further information about homelessness data caveats and estimation methodology, see *Homeless persons* in the associated *Notes on the Data* publication or the Australian Bureau of Statistics *Information Paper - Methodology for Estimating Homelessness from the Census of Population and Housing, 2012 (cat. no. 2049.0.55.001).*

Health risk factors and outcomes

Health risk factor and conditions indicators have been derived as modelled estimates from the 2014-15 National Health Survey and the 2011-12 Australian Health Survey. A modelled estimate can be interpreted as the likely value for a 'typical' area with those characteristics. The model used for predicting small area data is determined by analysing data at a higher geographic level (in this case, for Australia). The relationship observed at the higher geographic level between the characteristic of interest and other known characteristics is assumed to hold also at the small area level. The estimates are made by applying the model to data on those known characteristics that can be reliably estimated at the small area level. See *Modelled estimates* in the *Notes on the Data* publication for further information.

Analysis

Geographical areas

Data were analysed by Population Health Area (PHA), Statistical Area Level 3 (SA3), Primary Health Network (PHN), local government area (LGA), State/Territory and Section of State[1], ABS Remoteness Areas (RAs – see the Appendix for details) and quintiles of socioeconomic disadvantage[2].

The majority of data were concorded to the area types above from Statistical Local Area Level 2 (SA2) or postcode data (as provided by the data custodians) using correspondence files from the ABS. Homelessness data for demographic subgroups, which were only available by SA3, were concorded from SA3 to PHN level data, and to RAs and quintiles of socioeconomic disadvantage.

Housing tenure

In the following analysis, data shown for a 'Rented home' (or persons in these dwellings) include all tenure types – i.e., dwellings rented from a real estate agent or other landlord (of a privately-owned dwelling), a State or territory housing authority or a housing co-operative, community or church group. Data are also shown for 'Social housing', a sub-set of 'Rented home', which includes dwellings rented from a State or territory housing authority or a housing co-operative, community or church group.

Age standardisation

Health risk factor and chronic disease indicators from the 2014-15 NHS and the 2011-12 AHS were indirectly age-standardised as a rate per 100 population, based on the Australian standard.

Rates of hospital admissions in 2014/15 were indirectly age-standardised as a rate per 100,000 population, based on the average of the ABS Estimated Resident Population (ERP), 30 June 2014 and 2015.

Premature mortality data for the five years 2010 to 2014 were indirectly age-standardised as a rate per 100,000 population (aged 0 to 74 years). The population aged 0 to 74 years is the average ERP, 30 June 2010 to 30 June 2014.

Descriptive analysis

Descriptive analyses of the proportion of population groups with differing housing circumstances are presented in this report, along with rate ratios calculated as the percentage for the population group being examined as a ratio of the percentage for the total population. Rate ratios differing significantly from 1.00 are shown with * $p<0.05$; ** $p<0.01$.

For age-standardised data, a standardised ratio (SR) provides a comparison to the Australian rate (which is assigned a value of 100). Ratios below 100 have a rate which is proportionally less than the national rate, while ratios above 100 have a rate which is proportionally higher than the national rate. The SR is the ratio of the observed value to the expected value (the expected value is age-standardised).

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[1] Section of State here refers to the presentation of data for e.g., the Greater Capital City Statistical Area of Sydney and the balance of New South Wales, where the latter is referred to as the 'rest of state'. Note that Canberra does not appear as a GCCSA, with data shown as relating to the Australian Capital Territory

[2] To produce quintiles of socioeconomic disadvantage, SA2s were ranked by their Index of Relative Socio-economic Disadvantage scores and categorised into five population-equivalent groups based on rank

Small geographical area correlation analysis

Associations between housing characteristics and between housing and health status are explored in this report using small geographical area correlation analysis. This is an approach which examines disparities in health status and housing circumstances between groups residing in different small geographic areas.

In the absence of administrative data collections directly measuring the health status of individuals with differing housing circumstances, the socioeconomic characteristics of an area have been used as a proxy measure for the characteristics of the population in that area. That is, the data for an area represents the average of the characteristics or events (for instance, household overcrowding, homelessness, obesity, or low birth weight) for the population of the area. While area-level measures should not be presumed to apply to all individuals living within an area, identification of health and housing distribution patterns can be used as a basis for more detailed investigation of causal pathways and for allocating resources to areas of greatest need.

The analyses presented in this report are presented as scatter charts showing the relationship, or correlation, that exists between two indicators: a health variable, and a housing variable. Each dot on the scatter plot represents a Population Health Area (PHA), with the value of the housing variable (x-axis) plotted against the value of the health variable (y-axis). Pearson's product-moment coefficient (r) is given for each scatter chart to provide a measure of the strength of the linear relationship between the two variables. A correlation coefficient of 0 indicates that there is no relationship between the two variables. A correlation coefficient of +1 indicates that there is a perfect positive relationship between the two variables, while a coefficient of -1 indicates a perfect inverse relationship. In this report, a correlation coefficient of greater than +/-0.70 is described as strong, +/-0.50 to +/-0.70 is described as moderate, and +/-0.3 to +/-0.50 is described as weak.

Housing circumstances

Housing tenure

In 2016, two thirds (66.9 per cent) of the population enumerated on Census night lived in a dwelling owned either outright or with a mortgage. As shown in Table 1, older people (here, those aged 65 years and over) were most likely to live in an owned home (80.7 per cent, 21 per cent above the average for the whole population, of 66.96 per cent), while Aboriginal people were least likely (33.7 per cent, or half the average). Single parent families were 40 per cent less likely to live in an owned home than families overall (38.5 per cent compared with 64.0 per cent). Although the proportions are small, Aboriginal people were by far the biggest occupiers of housing provided by housing co-operatives, community groups and churches. Reflecting demographic variations, patterns of home ownership differed widely across Australia. In Tasmania, which has a relatively older population, 70.6 per cent of the population lived in an owned home. In contrast, 42.1 per cent of people in the Northern Territory, where the population is relatively younger, lived in an owned home.

The proportion of the population living in a rented home varied in inverse correspondence with home ownership rates. Close to two-thirds of Aboriginal people (62.1 per cent) and migrants arriving in Australia in the last ten years from predominantly non-English speaking countries (hereafter 'recent migrants') (60.5 per cent) lived in a rented home; these proportions were more than twice that for the population overall (30.3 per cent). The proportion of the population living in rental housing was lowest among older people, at 13.5 per cent. Nationally, more than half (58.6 per cent) of single parent families lived in a rented house, which was 71% higher than the proportion for all families (34.2 per cent). In the Northern Territory and Tasmania, socioeconomic status was a very strong determinant of rental tenure (r=0.86 and r=0.71, respectively).

As noted, social housing is rental housing provided by government or non-government organisations (including not-for-profit organisations), usually with rents below market rates, to assist people on low incomes, those who are vulnerable due to recent experiences with homelessness or family violence, and those who have other special needs. Overall, 3.6 per cent of the population enumerated on Census night were living in social housing. More than six times as many people rent social housing from a state or territory housing authority (hereafter 'public housing'; 670,373, or 3.1 per cent of all people enumerated on Census night) than from non-government housing providers such as housing co-operatives, community groups, or churches (hereafter 'community housing'; 104,833, or 0.5 per cent).

People with a disability were more than three times as likely as the general population to live in social housing (11.1 per cent), while Aboriginal people and older Aboriginal people were more than eight times as likely to live in social housing (29.3 per cent and 29.4 per cent, respectively; Figure 1). Reflecting citizenship/permanent residency eligibility requirements for public housing, social housing tenure was least common among recent migrants (1.9 per cent).

Patterns of social housing tenure varied widely across Australia and between population groups. For example, social housing was highly concentrated in more remote areas in most states and the Northern Territory; however, the same is not the case in Victoria and Tasmania. In addition, whereas the data show that, nationally, 29.3 per cent of Aboriginal people were living in social housing on Census night, in the Northern Territory outside of Darwin, four-in-five (80.2 per cent) Aboriginal people were living in social housing. This compares with significantly lower rates in Darwin, where around one-quarter (27.2 per cent) of Aboriginal people were living in social housing. These data are available in the data sheets and remoteness graphics package, as noted on page 2 of this report, together with similar data for the other population groups.

Table 1: Tenure type by population characteristics, Australia, 2016

Tenure type	Detail	People							Families	
		People with a disability	Older people[a]	Aboriginal people	Older Aboriginal people[b]	People born in NES[c] countries	Recent migrants born in NES[c] countries	Total people	Single parent families[d]	Total families
1: Owned home	No.	658,997	2,578,675	205,356	33,010	2,395,793	572,045	14,380,389	183,075	1,495,366
	%	64.9	80.7	33.7	46.5	59.1	36.2	66.9	38.5	64.0
	RR	**0.97****	**1.21****	**0.50****	**0.70****	**0.88****	**0.54****	**1.00**	**0.60****	**1.00**
2: All rented homes	No.	311,762	432,060	378,513	33,703	1,529,596	956,866	6,505,348	278,756	799,021
	%	30.7	13.5	62.1	47.5	37.7	60.5	30.3	58.6	34.2
	RR	**1.01****	**0.45****	**2.05****	**1.57****	**1.25****	**2.00****	**1.00**	**1.71****	**1.00**
3: Social housing (includes 4 and 5)	No.	113,030	143,553	178,639	20,892	129,431	30,023	775,206	52,335	81,099
	%	11.1	4.5	29.3	29.4	3.2	1.9	3.6	11.0	3.5
	RR	**3.09****	**1.25****	**8.13****	**8.17****	**0.89****	**0.53****	**1.00**	**3.17****	**1.00**
4: State/territory housing authority	No.	99,595	116,858	153,418	17,448	110,406	21,869	670,373	46,849	71,325
	%	9.8	3.7	25.2	24.6	2.7	1.4	3.1	9.9	3.1
	RR	**3.15****	**1.17****	**8.08****	**7.89****	**0.87****	**0.44****	**1.00**	**3.23****	**1.00**
5: Co-operative/ community group/church	No.	13,435	26,695	25,221	3,444	19,025	8,154	104,833	5,486	9,774
	%	1.3	0.8	4.1	4.9	0.5	0.5	0.5	1.2	0.4
	RR	**2.71****	**1.71****	**8.49****	**9.95****	**0.96****	**1.06****	**1.00**	**2.76****	**1.00**

RR = Rate ratio; the ratio of the rate for the population group of interest to the rate for the total population for the variable. Rate ratios differing significantly from 1.00 are shown with *p<0.05, **p<0.01

Notes: [a] People aged 65 years and over
[b] Aboriginal people aged 55 years and over
[c] Non-English speaking
[d] Families with one parent and at least one child aged less than 15 years

Whereas the states had near-average proportions of people living in homes they owned, the proportion in the Northern Territory (43.9 per cent) was around two thirds of the Australian figure (66.9 per cent) (Table 2). Conversely, the proportion of the population in the Northern Territory living in rented dwellings was well above the average (56.1 per cent in the Northern Territory and 31.1 per cent in Australia. In the Northern Territory, the proportion of the population living in social housing was over three times the national proportion (39.8 per cent and 11.9 per cent, respectively), with above-average proportions also in Tasmania (18.1 per cent) and South Australia (17.8 per cent).

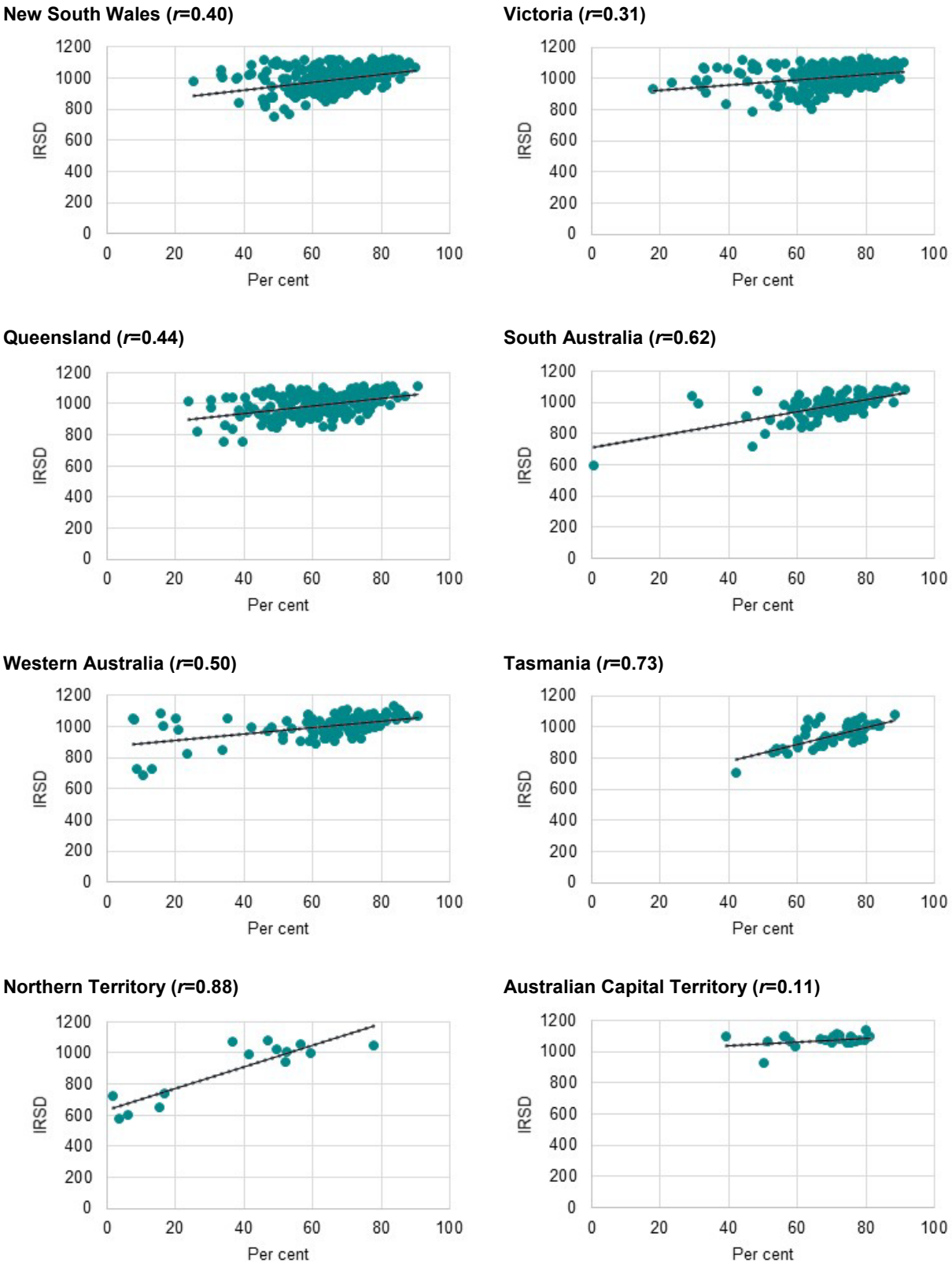
Table 2: Tenure type by state and territory, Australia, 2016

Tenure type		New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory	Australian Capital Territory	Total
1: Owned home	No.	4,578,532	3,816,233	2,705,412	1,077,679	1,548,083	326,041	81,476	245,299	14,378,745
	% (of 3)	68.2	71.7	64.7	71.8	71.1	72.5	43.9	69.1	68.9
2: All rented homes	No.	2,132,253	1,506,409	1,475,993	423,973	627,884	123,382	104,215	109,734	6,503,828
	% (of 3)	31.8	28.3	35.3	28.2	28.9	27.5	56.1	30.9	31.1
3: Owned and rented homes	No.	6,710,785	5,322,642	4,181,405	1,501,652	2,175,967	449,423	185,691	355,033	20,882,573
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
4: Social housing (includes 5 and 6)	No.	257,847	131,060	145,256	75,286	81,363	22,372	41,479	20,071	/
	% (of 2)	12.1	8.7	9.8	17.8	13.0	18.1	39.8	18.3	11.9
5: State housing authority	No.	222,117	112,607	126,980	63,035	72,373	19,261	34,988	18,644	670,002
	% (of 2)	10.4	7.5	8.6	14.9	11.5	15.6	33.6	17.0	10.3
6: Co-operative/ community group/ church	No.	35,730	18,453	18,276	12,251	8,990	3,111	6,491	1,427	104,723
	% (of 2)	1.7	1.2	1.2	2.9	1.4	2.5	6.2	1.3	1.6

Home ownership was associated with area-level socioeconomic status. Nationally, a moderate positive relationship was evident (r=0.45), with those living in more advantaged areas more likely to live in an owned home. However, the strength of the association varied widely between states and territories (Figure 1), with a stronger relationship between home ownership and socioeconomic status evident in those states/territories with lower average socioeconomic status (measured by the *Socioeconomic Index for Areas Index of Relative Socioeconomic Disadvantage* (29)).

In the Northern Territory and Tasmania, socioeconomic status was a very strong determinant of home ownership (r=0.88 and r=0.73, respectively), while in the Australian Capital Territory no-weak association was evident under this measure (r=0.11). The lack of association in the Australian Capital Territory is not surprising, given the strategy to ensure an even placement of social housing across Canberra's suburbs to create cohesive and connected communities. As such, as an area-based measure, the averaging inherent in the IRSD (at the PHA level, at least) is more evident than in other cities.

Figure 1: Home ownership by socioeconomic status, by state/territory, Australia, 2016

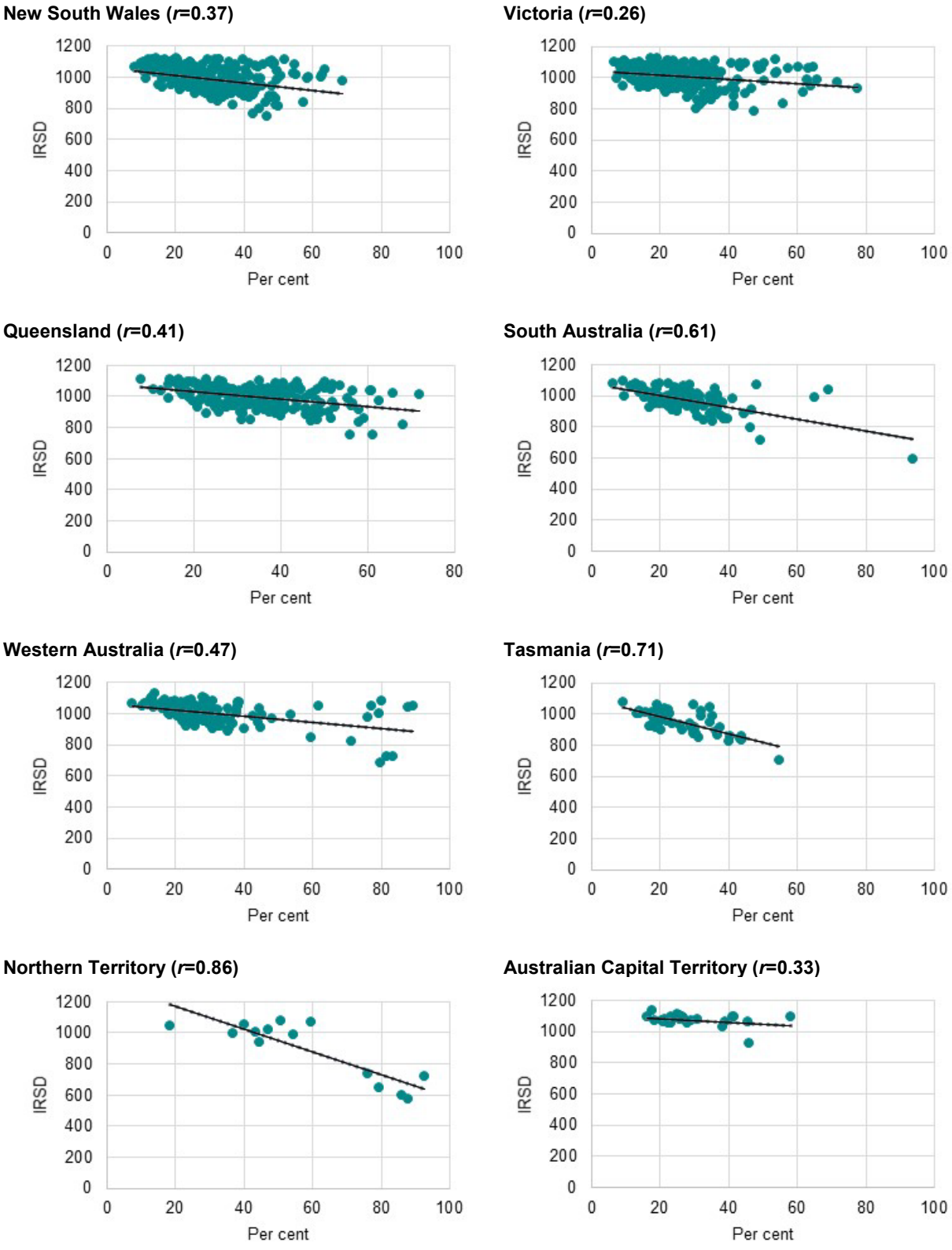


Note: IRSD = Socioeconomic Index for Areas: Index of Relative Socio-economic Disadvantage

A moderate inverse association was evident between rental tenure and the IRSD (that is, a positive association with socioeconomic disadvantage), with a higher proportion of the population in more disadvantaged areas tending to live in a rented home (including social housing)) (r=-0.42).

However, as for home ownership, wide variation in the association was evident across states/territories, ranging from the Northern Territory (r=-0.86), Tasmania (r=-0.71) and South Australia (r=-0.61) to Victoria (r=-0.26) (Figure 2).

Figure 2: Rental tenure (including social housing) by socioeconomic status, by state/territory, Australia, 2016



Note: IRSD = Socioeconomic Index for Areas: Index of Relative Socio-economic Disadvantage

Figure 3: Single parent families living in social housing by state/territory, Australia, 2016

Overall, more than one-in-ten (11.0 per cent) single parent families were enumerated in social housing on Census night, with single-parent families comprising 64.5 per cent of all families living in social housing dwellings.

As shown in Figure 3, the proportion of single parent families living in social housing varied widely between states and territories, from 8.6 per cent in Victoria to 22.6 per cent in the Australian Capital Territory and 43.4 per cent in the Northern Territory.

The proportion of the population living in social housing was moderately-strongly associated with area-level socioeconomic status[3] for Australia as a whole, with more advantaged areas tending to have fewer people living in social housing (r=-0.63) (Figure 4).

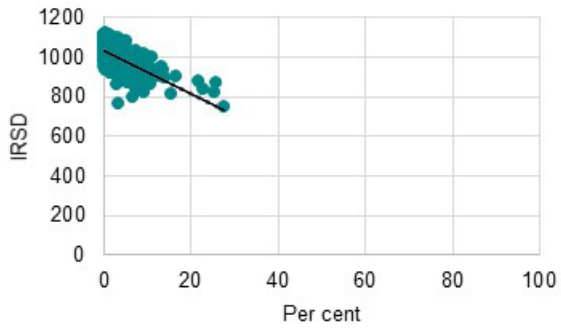
Reflecting differing administration of social housing in different states/territories, there was a near-perfect association between the proportion of the population living in social housing and socioeconomic disadvantage in the Northern Territory (r=-0.99), whereas in Victoria the association was only moderate (r=-0.48). There were also strong associations evident for Tasmania ((r=0.79), Western Australia (r=0.78) and South Australia (r=0.72). The extent of concentration of people in certain housing types and locations, as highlighted by the strong association between the location of social housing and the low Index of Relative Socio-economic Disadvantage scores, can result in significant access and equity issues due to high levels of social and economic disadvantage. These can include access to educational opportunities; employment opportunities; material resources; leisure and recreation facilities and opportunities; and so on.

The Anangu Pitjantjatjara Yankunytjatjara (APY) Lands in Very Remote South Australia had the highest proportion of residents living in social housing nationally, with 85.6 per cent of residents enumerated in social housing on Census night.

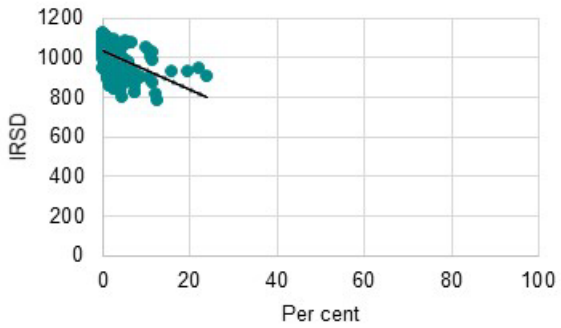
[3] The Socio-Economic Indexes for Areas: Index of Relative Socio-economic Disadvantage (IRSD) produced by the Australian Bureau of Statistics and used in this analysis includes the variable for the proportion of occupied private dwellings paying rent less than $215 per week (excluding $0 per week) as one of 16 variables identified through principal component analysis as indicating relative socioeconomic disadvantage at the small geographic area level. As social housing usually has low rent, collinearity between social housing and area-level disadvantage is to be expected. For further information see: Australian Bureau of Statistics. Technical Paper, Socioeconomic Index for Areas (SEIFA), 2016. Cat. No. 2033.0.55.001. Canberra; 2018.

Figure 4: Social housing tenure by socioeconomic status, by state/territory, Australia, 2016

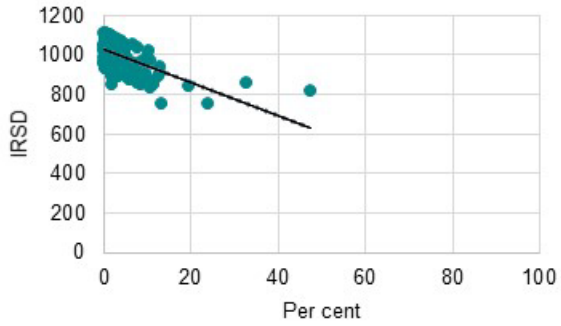
New South Wales (*r*=0.62)



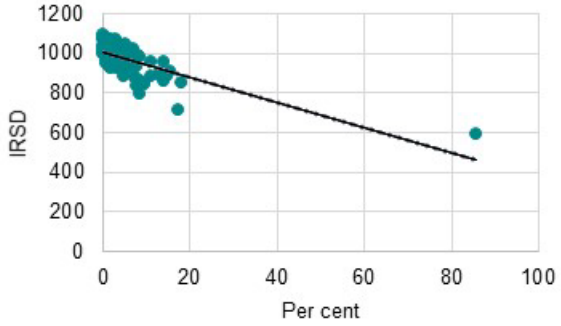
Victoria (*r*=0.48)



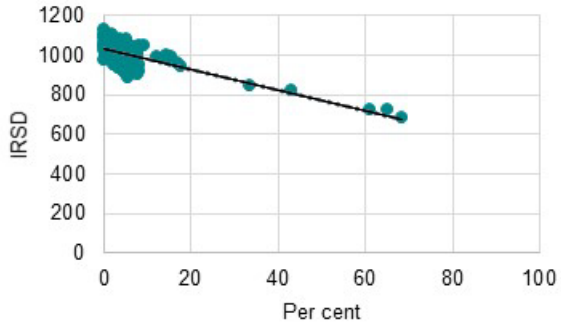
Queensland (*r*=0.59)



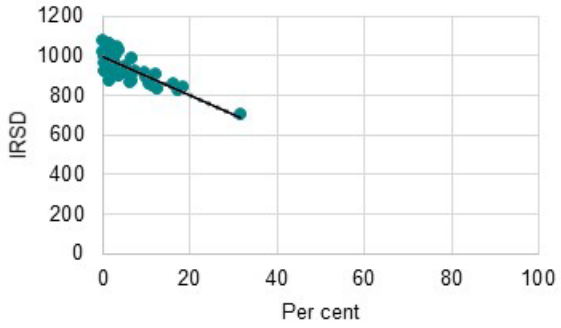
South Australia (*r*=0.72)



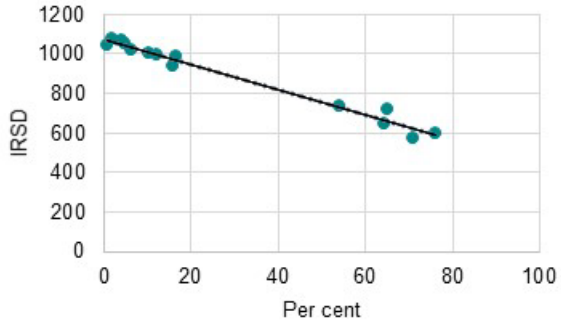
Western Australia (*r*=0.78)



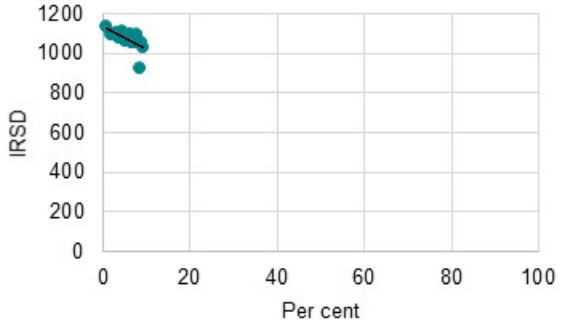
Tasmania (*r*=0.79)



Northern Territory (*r*=0.99)



Australian Capital Territory (*r*=0.68)



Note: IRSD =

Note: Socioeconomic status: Socio-economic Indexes for Areas: Index of Relative Socio-economic Disadvantage

Household size

Living alone has different implications for people in different demographic groups. While in some circumstances it can impact social connection and wellbeing, living alone can also reflect choice and independence in living arrangements and lifestyle. One-in-ten Australians (2,190,783) were living alone on Census nigh (Table 3), with older people (including older Aboriginal people) more than twice as likely than the general population to live alone (26.6 per cent and 23.5 per cent, respectively). Living alone was less common among Aboriginal people in general and those born in non-English speaking countries, with recent migrants least likely to live alone (4.2 per cent).

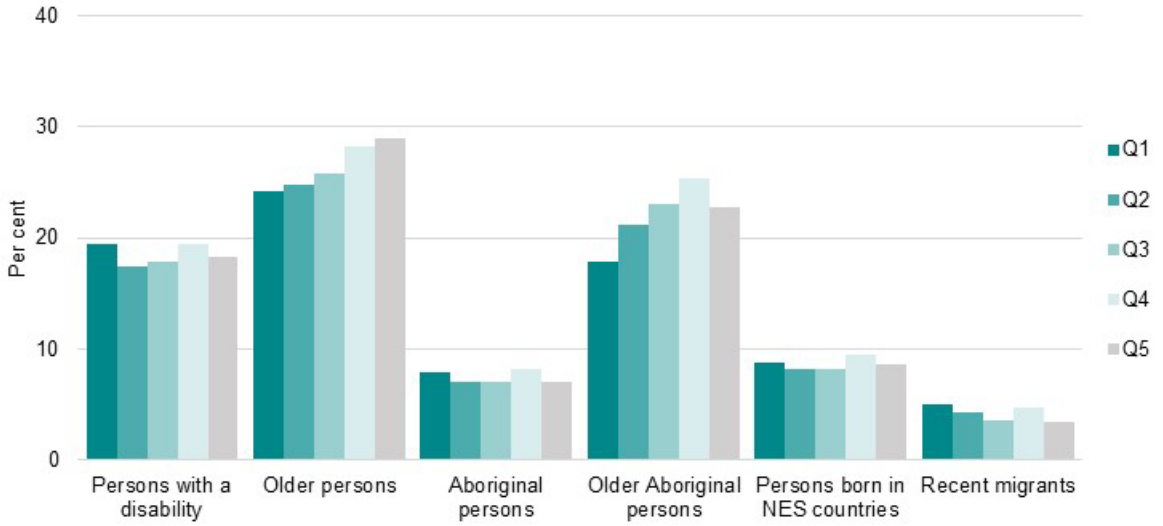
Table 3: Lone person households by population characteristics, Australia, 2016

Population characteristic	Number	%	Rate ratio
People with a disability	187,763	18.5	1.81**
Older people[(a)]	848,620	26.6	2.61**
Aboriginal people	44,908	7.4	0.72**
Older Aboriginal people[(b)]	16,674	23.5	2.31**
People born in NES countries[(c)]	348,580	8.6	0.84**
Recent migrants born in NES countries[(c)]	65,860	4.2	0.41**
Total	**2,190,783**	**10.2**	**1.00**

Rate ratios differing significantly from 1.00 are shown with *p<0.05, **p<0.01
Notes: [(a)] People aged 65 years and over
[(b)] Aboriginal people aged 55 years and over
[(c)] Non-English speaking.

Figure 5 shows the proportion of key populations living in lone person households by quintile of socioeconomic disadvantage. A clear socioeconomic gradient was evident for older people, and older Aboriginal people, with higher proportions living alone in the most disadvantaged areas. Among other key populations there was a weak inverse gradient for recent migrants, with generally higher proportions living alone in more advantaged areas.

Figure 5: Lone person households by population characteristics, by quintile of socioeconomic disadvantage, Australia, 2016



Notes: Socioeconomic Index for Areas: Index of Relative Socio-economic Disadvantage quintiles.
Q1 = Quintile 1 (least disadvantaged); Q5 = Quintile 5 (most disadvantaged)
Older people are those aged 65 years and over
Older Aboriginal people are those aged 55 years and over
NES: Non-English speaking

The distribution of lone person households varied according to region. In most states and territories, a lower proportion of the population living in capital cities lived alone compared with those living outside of capital cities (Figure 6). This difference was most evident in New South Wales, where those living in Sydney were 31 per cent less likely to live alone than those living outside of Sydney. In contrast, people living in Darwin were marginally more likely than those living in other parts of the Northern Territory to live alone.

Figure 6: Lone person households by capital city/rest of state, by state/territory, Australia, 2016

Multi-generation living is a traditional practice in many cultures globally and may also occur due to caring arrangements or limited material resources. Across Australia, 4.1 per cent of the population (889,208) lived in a multi-family household on Census night, with significant variation across demographic groups. As shown in Table 4, Aboriginal people were almost two and a half times as likely than average to live in a multi-family household (10.2 per cent). Migrants from non-English speaking countries were also more likely to live in a multi-family household (7.1 per cent, or 7.9 per cent among recent migrants). Older people were least likely to live in a multi-family household (3.1 per cent nationally).

Table 4: Multi-family households by population characteristics, Australia, 2016

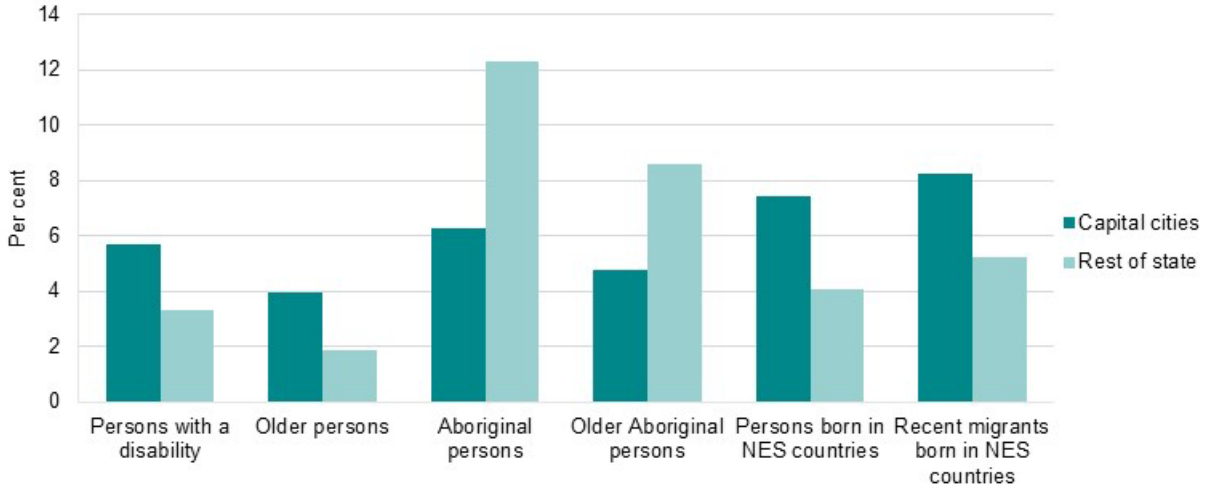
Population characteristic	Number	%	Rate ratio
People with a disability	48,623	4.8	1.16**
Older people	99,526	3.1	0.75**
Aboriginal people	62,257	10.2	2.47**
Older Aboriginal people	5,613	7.9	1.91**
People born in NES countries	286,683	7.1	1.71**
Recent migrants born in NES countries	125,457	7.9	1.92**
Total	**889,208**	**4.1**	**1.00**

Rate ratios differing significantly from 1.00 are shown with *p<0.05, **p<0.01
Notes: [a] People aged 65 years and over
[b] Aboriginal people aged 55 years and over
[c] Non-English speaking.

The geographic distribution of multi-family households differed according to region (the Northern Territory had the highest proportion of multi-family households (13.7 per cent), while Tasmania had the lowest (2.0 per cent)) and population characteristics. These data are available in the data sheets and remoteness graphics package, as noted on page 2 of this report.

For most population groups, those living in capital cities were nearly twice as likely to live in multi-family households than those living outside of capital cities (Figure 7). Aboriginal people presented an exception, with those living in capital cities around half as likely to live in a multi-family household compared with those living outside of capital cities (6.3 per cent compared with 12.3 per cent for Aboriginal people overall, or 4.8 per cent compared with 8.6 per cent for older Aboriginal people).

Figure 7: Multi-family households by capital city/rest of state, by state/territory, Australia, 2016



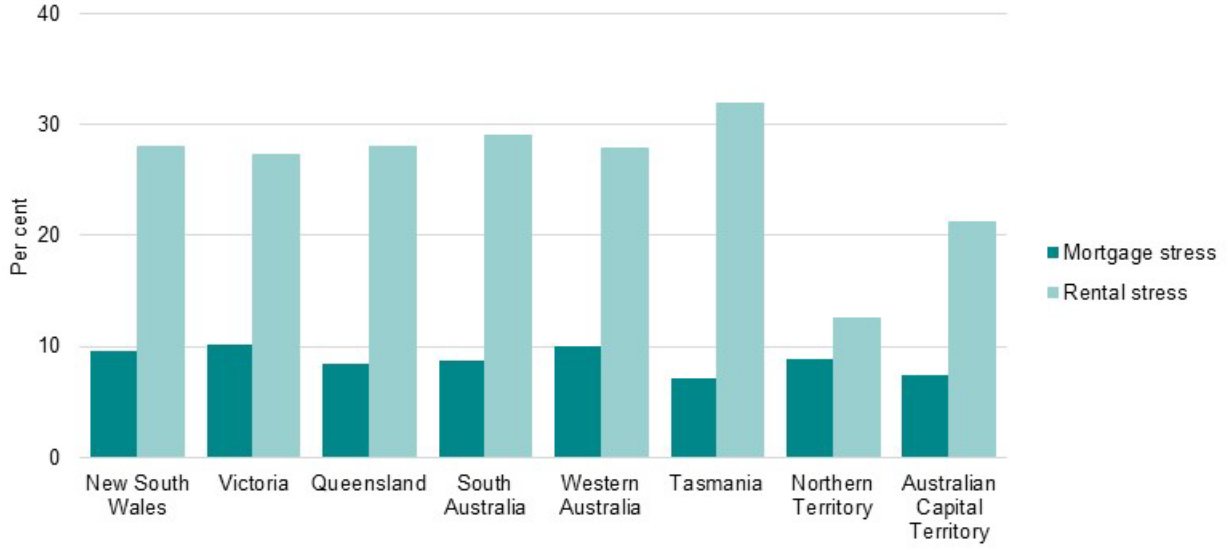
Notes: Older people are those aged 65 years and over
Older Aboriginal people are those aged 55 years and over
NES: Non-English speaking

Housing affordability stress and financial assistance

Financial stress related to housing affordability occurs when the proportion of household income spent on housing is too high, impacting the ability to spend on other essentials including food, education and healthcare. Concern with housing affordability does not relate to housing prices *per se*, but rather the relationship between housing costs and household incomes. Households identified as being in housing affordability stress are those with an income level in the bottom 40 per cent of Australia's income distribution that are paying more than 30 per cent of their income on housing costs. This indicator (the '*30:40 indicator*') is premised on the assumption is that households with higher incomes paying more than 30 percent of household income on housing do so as a choice, and that housing costs have limited impact on those households' ability to spend on other essentials (30).

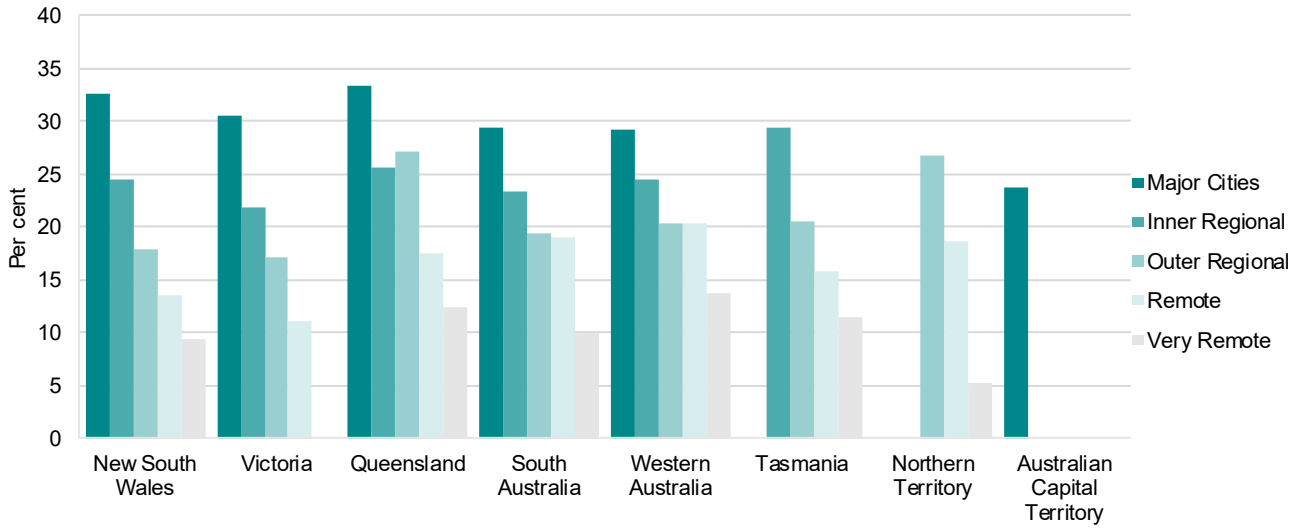
Nationally, housing affordability stress affected rented households (including social housing) more than those with mortgages (27.3 per cent compared with 9.3 per cent): these data are available in the data sheets and remoteness graphics package, as noted on page 2 of this report. As shown in Figure 8, the proportion of households experiencing rental stress varied widely little across the states, but was much lower in the territories, particularly in the Northern Territory. Mortgage stress was less influenced by location. The disparity between rental and mortgage stress was widest in Tasmania, where the proportion of mortgaged households experiencing housing affordability stress was the lowest nationally (7.1 per cent) whereas the proportion of rented households experiencing affordability stress was the highest (31.9 per cent).

Figure 8: Housing affordability stress by state/territory, Australia, 2016



Housing affordability stress tended to be concentrated in Major Cities. As Figure 9 shows, of the jurisdictions with all five remoteness classes[4], the degree of geographic inequality in housing affordability stress was most pronounced in New South Wales, where 32.6 per cent of low income households in the Major Cities areas were experiencing housing affordability stress, compared with 9.4 per cent in Very Remote areas of the state (RR 0.29). Geographic inequality in housing affordability stress was least concentrated (more widespread across the Remoteness Areas) in Western Australia, where the proportion of low income households in the Very Remote areas of the state experiencing mortgage or rental stress (13.7 per cent) was around half (RR 0.47) the level in Major Cities (29.2 per cent).

Figure 9: Low income households under financial stress from mortgage or rent, by state/territory and Remoteness Area, Australia, 2016



Commonwealth Rent Assistance is a non-taxable income supplement payable to eligible people by the Commonwealth government to assist people on low or moderate incomes who receive income support

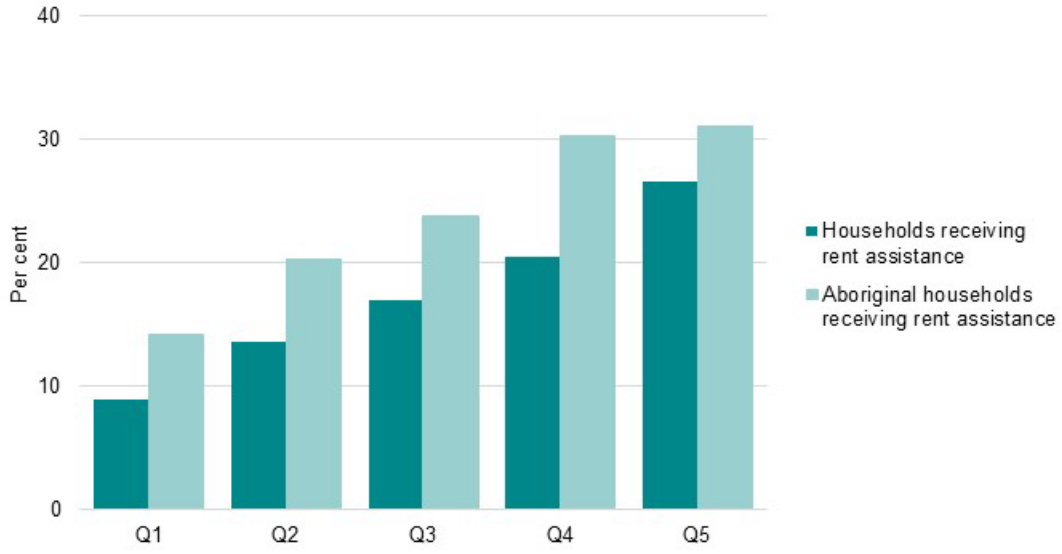
[4] New South Wales, Queensland, South Australia and Western Australia have all five remoteness classes; Victoria does not have any areas classified as Very Remote (and therefore has four remoteness classes), Hobart is classified as Inner Regional (therefore Tasmania also has four remoteness classes) and Darwin is classified as Outer Regional (giving the Northern Territory three remoteness classes)

benefits, and who rent in the private rental market or who are living in community housing. In 2016, 17.3 per cent of households received rent assistance, with the proportion highest in Queensland (22.2 per cent) and lowest in the Australian Capital Territory (8.9 per cent): these data are available in the data sheets and remoteness graphics package, as noted on page 2 of this report. A higher proportion of households outside of capital cities received rent assistance than households in capital cities, both overall and in all jurisdictions other than South Australia and the Northern Territory (Figure 10).

Figure 10: Households receiving rent assistance from the Australian Government, by capital city/rest of state, Australia, 2016

Figure 11 shows there was a clear socioeconomic gradient in the proportion of households receiving rent assistance. Fewer than one-in-ten (8.9 per cent) households in the least disadvantaged quintile received rent assistance, compared with more than one-quarter of those in the most disadvantaged quintile (26.5 per cent, RR=3.00). Among Aboriginal households, 14.2 per cent of in the least disadvantaged quintile received rent assistance, compared with 31.1 per cent in the most disadvantaged quintile (RR=2.19).

Figure 11: Households and Aboriginal households receiving rent assistance from the Australian Government, by quintile of socioeconomic disadvantage, Australia, 2016



Notes: Socioeconomic Index for Areas: Index of Relative Socio-economic Disadvantage quintiles
Q1 = Quintile 1 (least disadvantaged); Q5 = Quintile 5 (most disadvantaged)

Crowding

Household crowding has long been associated with psychological stress (3,15,16). However, while having many people living in one house may be stressful for some, the stress associated with crowding is determined by a range of factors, including culture. For instance, for many Aboriginal or Torres Strait Islander people, maintaining a large, open household is an obligation. As such, as long as people are sharing space in a culturally appropriate way, crowding may not be psychologically stressful (31). In considering the health implications of crowding, it is therefore important to appreciate who is living in crowded households and the circumstances and duration of the arrangement, as well as considering the quality and condition of the dwelling.

Household crowding is defined according to the Canadian National Occupancy Standard (CNOS), a widely-used guideline for assessing whether a household has a sufficient number of bedrooms for household members (see *Notes on the data* for further information). The Australian data show that 7.1 per cent of people were staying in a crowded dwelling on Census night, with wide disparities evident across demographic groups and geographic areas.

As Table 5 shows, there was substantial variability in the demographic characteristics of people living in crowded dwellings. Recent migrants were more than three times (RR=3.29) as likely than the general population to live in a crowded dwelling (23.3 per cent), while Aboriginal people were more than two-and-a-half times (RR=2.72) as likely (19.2 per cent).

People with a disability and older people were less likely than average to live in a crowded dwelling (6.1 per cent and 1.8 per cent, respectively).

Reflecting the geographic distribution of different demographic groups, household crowding varied according to geographic remoteness.

Table 5: People living in crowded dwellings by population characteristics, Australia, 2016

Population characteristic	Number	%	Rate ratio
People with a disability	61,526	6.1	0.86**
Older people	56,673	1.8	0.25**
Aboriginal people	117,090	19.2	2.72**
Older Aboriginal people	7,534	10.6	1.50**
People born in NES countries	583,404	14.4	2.04**
Recent migrants born in NES countries	368,019	23.3	3.29**
Total	**1,518,175**	**7.1**	**1.00**

Rate ratios differing significantly from 1.00 are shown with *p<0.05, **p<0.01
Notes: [a] People aged 65 years and over
[b] Aboriginal people aged 55 years and over
[c] Non-English speaking.

In the Major Cities areas in New South Wales, 10.5 per cent of all people were enumerated in a crowded dwelling; largely driven by the high proportion of recent migrants living in crowded dwellings (30.4 per cent). In Very Remote Northern Territory, 60.0 per cent of people were living in a crowded dwelling; driven by the very high proportion of Aboriginal people living in crowded dwellings (74.5 per cent). The proportion of Aboriginal people living in Very Remote areas living in crowded dwellings was lower in other states (for instance, 40.1 per cent in Queensland and 45.6 per cent in South Australia).

Severe household crowding is defined as dwellings assessed as needing four or more additional bedrooms to accommodate all people currently living in the household, according to the CNOS. Severe crowding is one of the six Homeless Operational Groups developed by the Australian Bureau of Statistics to estimate homelessness. This is because people living in severe crowding are considered to lack control of and access to space for social relations, and are considered not to have accommodation alternatives when remaining in such extreme living arrangements (32).

Nationally, 24.4 people per 10,000 population were enumerated in severely crowded dwellings on Census night. An inverse association was observed between severe household crowding and the IRSD, with those

living in the most disadvantaged areas of Australia more than eight times as likely to live in a severely crowded house than those living in areas of least disadvantage (47.5 per cent compared with 5.4 per cent, RR=8.74).

Of the 52,507 people living in a severely crowded dwelling on Census night, 31.8 per cent identified as Aboriginal and 43.5 percent were migrants born in predominantly non-English speaking countries. The geographic distribution of severe crowding among these demographic groups was starkly different: those living in severely crowded dwellings in Very Remote areas were more than 50 times as likely to identify as Aboriginal compared with those living in severely crowded dwellings in Major Cities (98.2 per cent compared with 1.9 per cent, RR=51.32). In contrast, of people living in severely crowded dwellings who were born in predominantly non-English speaking countries, their proportion in Major Cities was more than 200 times higher than the proportion of people living in severely crowded dwellings in Very Remote areas (66.6 per cent compared with 0.3 per cent, RR=233.57).

Homelessness

Statistics about the geographical distribution and demographic characteristics of people experiencing homelessness are important for targeting intervention programs and for ensuring that services reach those in need. However, collection of homelessness data is complicated by the complexity and diversity of homeless experiences and the practical challenges of enumeration. Certain population groups, including young people, Aboriginal people, and those experiencing domestic violence, are likely to be under-enumerated in homelessness data. Despite this, homelessness estimates from the Census provide an important measure for monitoring how the number of homeless people and their characteristics change over time.

The ABS definition of homelessness is premised on the concept of '*home*'lessness, not rooflessness. The statistical definition of homelessness used by the ABS attempts to capture elements of the meaning of home such as: a sense of security, stability, privacy, safety, and the ability to control living space. Homelessness is defined as a lack of one or more of the elements that represent 'home' (see *Notes on the data* for further information).

On Census night in 2016, 116,427 people—or 49.1 people per 10,000 population (age-standardised)—were estimated to be homeless (Table 6). The geographic distribution of people experiencing homelessness varied widely across Australia, from 34.0 people per 10,000 population in Tasmania to 499.9 per 10,000 in the Northern Territory, the majority of whom were in the Rest of Northern Territory. Proportionally, Perth had the lowest prevalence of homelessness of any capital city (26.9 people per 10,000 population), while Darwin had the highest (108.7 per 10,000).

Table 6: Homeless people by state/territory and capital city/rest of state/territory, Australia, 2016

State and Section of state	Number	ASR	SR
New South Wales	37,562	49.9	102**
Greater Sydney	28,907	57.7	118**
Rest of New South Wales	8,655	34.4	70**
Victoria	24,797	41.3	84**
Greater Melbourne	20,542	44.1	90**
Rest of Victoria	4,255	31.5	64**
Queensland	21,746	45.1	92**
Greater Brisbane	9,337	39.9	81**
Rest of Queensland	12,409	50.0	102**
South Australia	6,201	37.9	77**
Greater Adelaide	4,624	36.1	73**
Rest of South Australia	1,577	44.7	91**
Western Australia	9,022	35.5	72**
Greater Perth	5,301	26.9	55**
Rest of Western Australia	3,721	65.5	133**
Tasmania	1,643	34.0	69**
Greater Hobart	872	40.3	82**
Rest of Tasmania	771	29.0	59**
Northern Territory	13,723	499.9	1,018**
Greater Darwin	1,757	108.7	221**
Rest of Northern Territory	11,966	1,063.4	2,166**
Australian Capital Territory	1,606	38.3	78**
Australia	**116,427**	**49.1**	**100**

Table 7: Homelessness by population characteristics, Australia, 2016

Population characteristic	Number	%	Rate ratio
Young people	9,959	0.51	94.18**
People with a disability	5,730	0.48	87.96**
Older people	7,944	0.22	39.90**
Aboriginal people	23,410	3.61	665.93**
Older Aboriginal people	1,935	2.53	467.82**
People born in NES countries	33,092	0.79	145.81**
Recent migrants born in NES countries	22,910	1.31	241.81**
Total	**116,426**	**0.01**	**1.00**

Rate ratios differing significantly from 1.00 are shown with *p<0.05, **p<0.01
Notes: [a] People aged 65 years and over
[b] Aboriginal people aged 55 years and over
[c] Non-English speaking.

Notes for Table 6
ASR = Age-standardised rate per 10,000 population
SR = Standardised Ratio. SRs differing significantly from 1.00 are shown with *p<0.05, **p<0.01

In Sydney, Melbourne and Hobart, homelessness was more prevalent than in regional areas of those states. In other states and territories, homelessness was less prevalent in capital cities. This disparity was most evident in the Northern Territory, where it was estimated that those living outside of Darwin were almost ten times more likely to be homeless than those living in Darwin (1,063.4 people per 10,000 population compared with 108.7 per 10,000).

Table 7 shows the characteristics of people experiencing homelessness on Census night. Of note is that:

- Aboriginal people and recent migrants were at particular risk of homelessness, with prevalence among these groups more than 660 and 240 times higher, respectively than the national average.
- Young people aged 12 to 18 were more than 90 times more likely to be homeless than the national average, with 9,959 young people homeless on Census night (comprising 8.6 per cent of all homeless people nationally).
- People with a disability were close to 90 times more likely than average to be homeless, while people aged 65 years and over were nearly 40 times more likely.

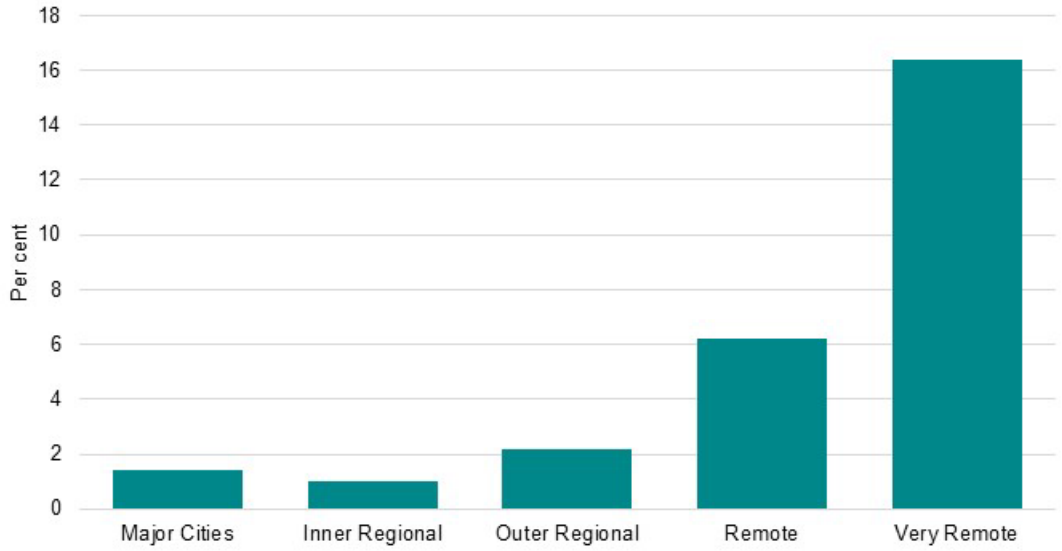
In addition, of the populations of interest shown in Table 7, people born in predominantly non-English speaking countries comprised the largest number of the homeless (33,092 people, or 28.4 per cent of all homeless). Of recent migrants, those in Sydney and regional South Australia were most likely to be

experiencing homelessness (1.8 per cent and 1.9 per cent, respectively). These data are available in the data sheets and remoteness graphics package, as noted on page 2 of this report.

Across Australia, 3.6 per cent of Aboriginal people were homeless on Census night, representing a risk more than 665 times above the national average. The highest proportions of the Aboriginal population who were homeless were in Darwin (6.1% of all Aboriginal people) and regional Northern territory (24.9%).

As Figure 12 shows, Aboriginal people living in Very Remote areas were most likely to be homeless, with 16.4 per cent (13,010 people) estimated to be homeless on Census night compared with 1.4 per cent of Aboriginal people living in Major Cities (3,436 people) (RR=11.61). The proportion in Very Remote areas varied from 2.8% in New South Wales to 30.1% in the Northern Territory.

Figure 12: Homeless Aboriginal people by Remoteness Area, Australia, 2016

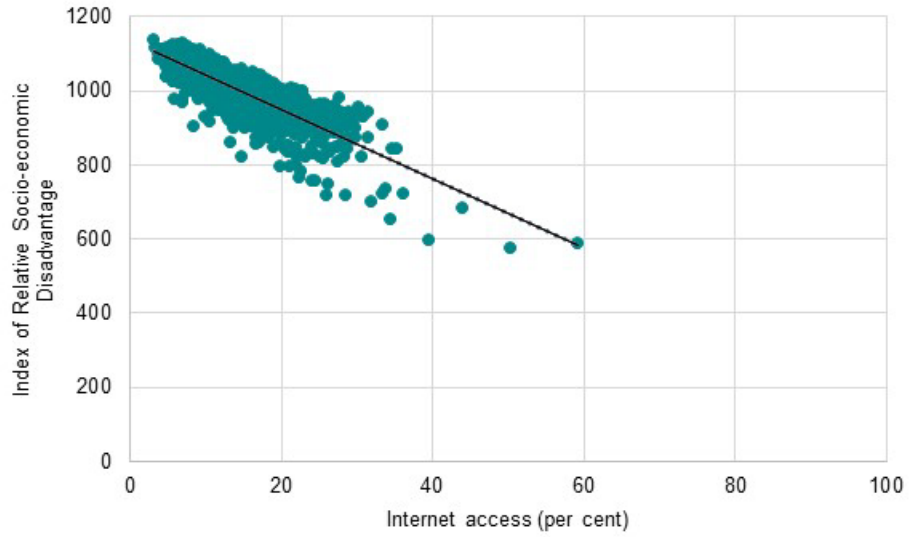


Internet access

Access to the Internet provides social, economic and educational benefits. Technology inequalities are therefore increasingly likely to be a factor in broader socioeconomic inequalities. The 2016Census data show that, nationally, 14.1 percent of households did not have anyone in the household who accessed the Internet through any device, including smart phones, tablets, games consoles, laptops or PCs. It should be noted that having access through a smart phone or tablet is not likely to meet the needs of children and young people engaged in educational activities at a school or university. The overall proportion of 14.1 per cent varied widely across states and territories, from 12.5 per cent in Western Australia to 19.5 per cent in Tasmania.

Internet access was closely associated with area-level socioeconomic status (r=-0.84), with households in more disadvantaged areas more likely to have no Internet access, as shown in Figure 13. The association was also strong in each state and territory, ranging from a low of r=-0.75 in Victoria to a high of r=-0.96 in the Northern Territory: these data are available in the data sheets and remoteness graphics package, as noted on page 2 of this report.

Figure 13: Households without Internet access by socioeconomic status, Australia, 2016



Australia r=0.84

New South Wales r=0.82

Victoria r=0.75

Queensland r=0.86

South Australia r=0.84

Western Australia r=0.90

Tasmania r=0.90

Northern Territory r=0.96

Australian Capital Territory r=0.87

The proportion of households with Internet access varied according to tenure type. As Table 8 shows, dwellings that were owned were least likely to have no one access the Internet (12.5 per cent). In contrast, no one accessed the Internet from 17.5 per cent of rented dwellings (including social housing) and from 43.9 per cent of social housing dwellings, providing another example of the concentration of inequalities in these households.

Table 8: Households without Internet access by tenure type, Australia, 2016

Tenure type	Number	%	Rate ratio
Owned dwellings	677,495	12.5	0.88**
Rented dwellings (incl. social housing)	448,604	17.5	1.24**
Social housing dwellings	151,905	43.9	3.06**
Total	**1,172,415**	**14.2**	**1.00**

Rate ratios differing significantly from 1.00 are shown with *p<0.05, **p<0.01

Overall, the majority of children aged under 15 years lived in households where at least one person accessed the Internet, with only 4.8 per cent of children nationally living in a house from which Internet was not accessed. However, the proportion varied widely according to tenure type (Table 9). For children living in houses that were owned, only 2.0 per cent had no one access the Internet; for rented houses (including social housing) with children, the proportion was 10.1 per cent; and for social housing dwellings with children it was 27.2 per cent. Thus, many children are living in homes without access to this resource.

Table 9: Children aged less than 15 years living in households with no Internet access by tenure type, by state/territory, Australia, 2016

State/territory	Owned			Rented (incl. social housing)			Social housing		
	Number	%	Rate ratio	Number	%	Rate ratio	Number	%	Rate ratio
New South Wales	16,864	2.0	1.01	43,196	9.5	0.93**	11,319	24.0	0.88**
Victoria	13,857	2.0	0.99	23,630	7.8	0.77**	4,940	18.7	0.69**
Queensland	9,208	1.8	0.93**	36,927	10.6	1.05**	9,760	27.5	1.01
South Australia	4,200	2.3	1.14**	10,338	11.5	1.13**	3,166	28.0	1.03
Western Australia	5,478	1.8	0.92**	16,586	11.4	1.13**	6,521	34.0	1.25**
Tasmania	1,760	3.2	1.6**	4,262	14.8	1.46**	1,254	26.0	0.95
Northern Territory	680	4.1	2.06**	7,347	27.8	2.75**	6,145	49.8	1.83**
Australian Capital Territory	428	0.9	0.45**	1,125	5.1	0.50**	581	12.6	0.46**
Total	**52,705**	**2.0**	**1.00**	**144,075**	**10.1**	**1.00**	**43,915**	**27.2**	**1.00**

Rate ratios differing significantly from 1.00 are shown with *p<0.05, **p<0.01

Wide disparities in children's Internet access were evident across states and territories. As Table 9 shows, the proportion of aged less than 15 years living in social housing dwellings—typically the most socioeconomically disadvantaged households—from which the Internet was not accessed was relatively low in the Australian Capital Territory (12.6 per cent) and Victoria (18.7 per cent). In contrast, half (49.8 per cent) of children living in social housing in the Northern Territory were in homes where the Internet was not accessed. In Western Australia, one-third (34.0 per cent) of children lived in social housing where the Internet was not accessed.

The likelihood that households were Internet-free was also relatively high among children living in houses of any rental type (including social housing) in Tasmania, where three in every twenty children living in a rented house had no access, and in the Northern Territory, where more than one-quarter of children living in a rented house had no Internet access. These data are available in the data sheets and remoteness graphics package, as noted on page 2 of this report

Housing and health

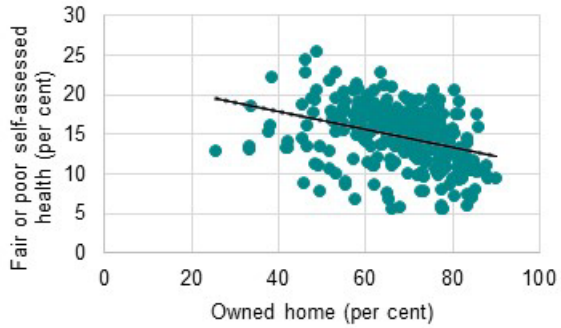
The following section describes the geographic distribution of people with differing housing circumstances in relation to the distribution of health risk factors and outcomes. The analyses presented provide a starting point for examining the intersections between housing health across Australia, in order to delve deeper into the socioeconomic determinants of health across the population and as a basis for action to support those communities and groups most in need.

In many instances, housing tenure was associated with health status. Areas with a high proportion of owned homes tended to have fewer people reporting that their health was fair or poor (Figure 14, an inverse correlation, with r=-0.32), while areas with a higher density of rental housing (including social housing) (Figure 15, r=0.30) and social housing tended to have more people reporting fair or poor health (Figure 16 r=0.52). The strength of these associations varied across Australia. For instance, tenure type was a strong predictor of poor or fair self-assessed health in Tasmania (owned home r=-0.74, rental home r=0.73, social housing r=0.80). In the Northern Territory[5], there is no-weak correlation between home ownership or renting and self-assessed health (owned home r=-0.16; rental home r=0.14), but social housing density was a near-perfect predictor of fair or poor self-assessed health (r=0.90).

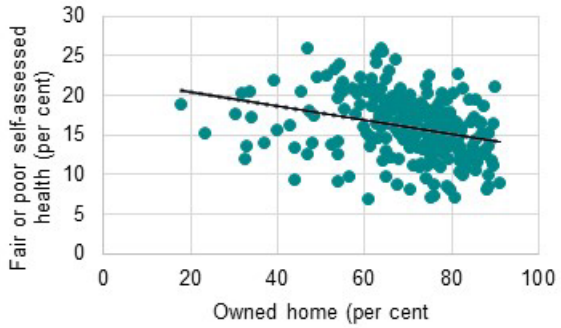
[5] Note that the correlations for the Northern Territory for the modelled estimates of the following indicators: fair or poor self-assessed health (Figures 14 to 16); diabetes (Figure 17); mental health and behavioural disorders (Figure 18); current smoking (Figures 19, 21 and 23); and obesity prevalence (Figures 20 and 22) are based on a small number of data points. Nine of the data points were largely urban PHAs – five of which were in Darwin, one in Palmerston, one in Litchfield and the other two were for Alice Springs and Katherine; and no data were available for the five rural/ remote PHAs). As such the results of the correlation analysis involving these indicators should be treated with caution.

Figure 14: Owned housing by fair or poor self-assessed health, by state/territory, Australia

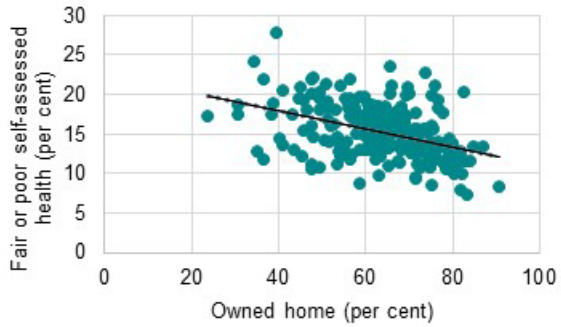
New South Wales (*r*=-0.35)



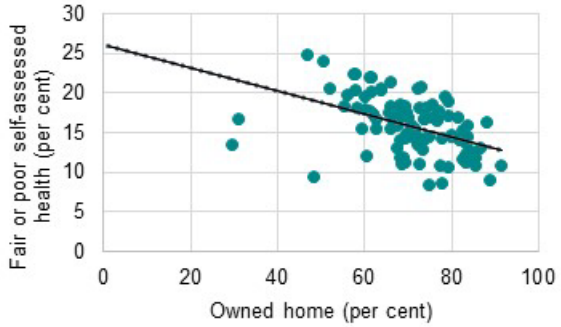
Victoria (*r*=-0.30)



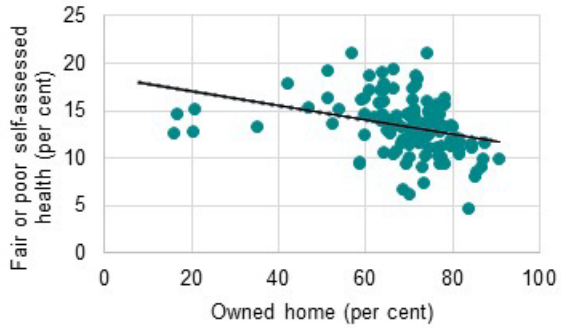
Queensland (*r*=-0.41)



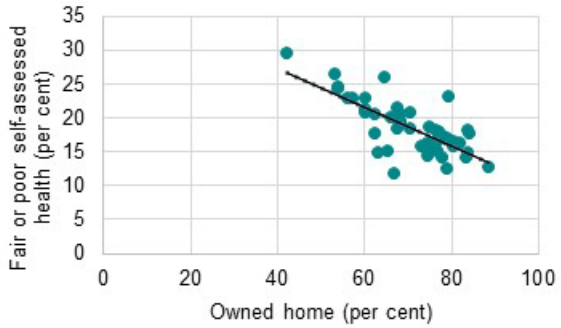
South Australia (*r*=-0.45)



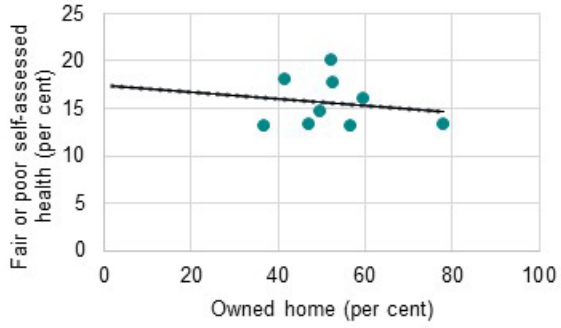
Western Australia (*r*=-0.32)



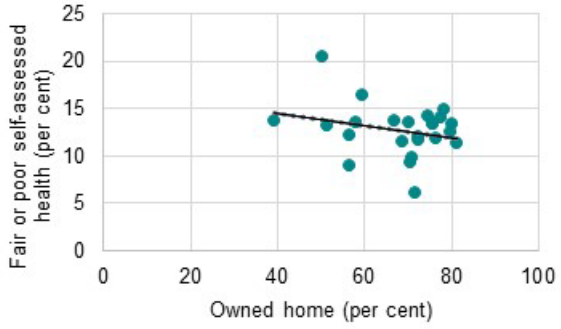
Tasmania (*r*=-0.74)



Northern Territory (*r*=-0.16): see note[5]



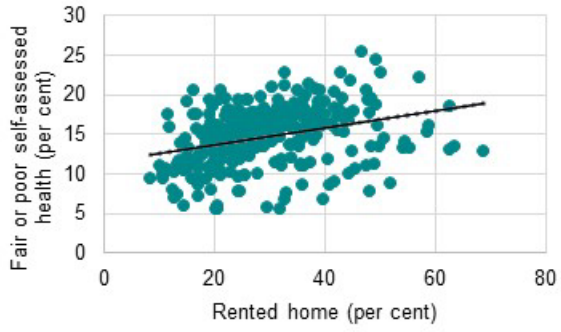
Australian Capital Territory (*r*=-0.26)



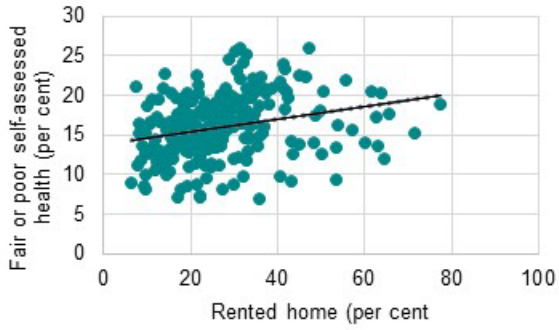
Note: Home ownership, 2016; Self-assessed health, 2014–15

Figure 15: Rental housing (incl. social housing) by fair or poor self-assessed health, by state/territory, Australia

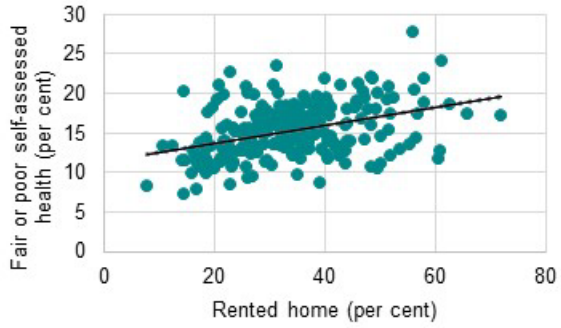
New South Wales (*r*=0.33)



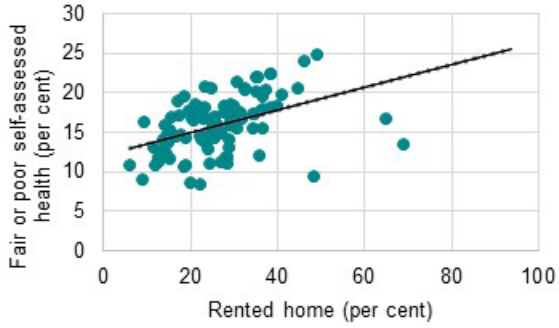
Victoria (*r*=0.27)



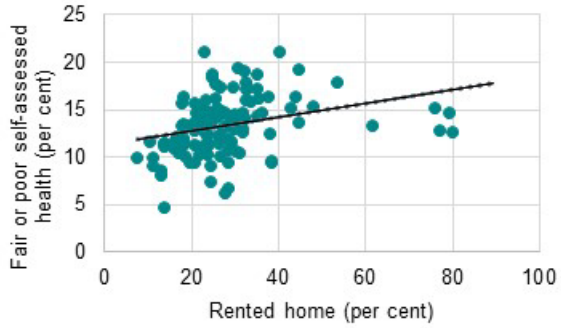
Queensland (*r*=0.39)



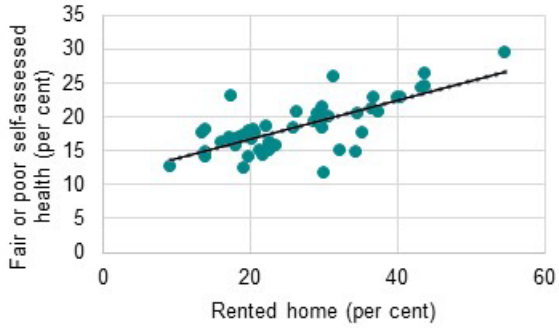
South Australia (*r*=0.44)



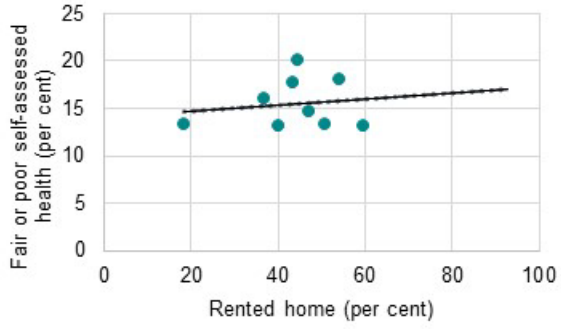
Western Australia (*r*=0.31)



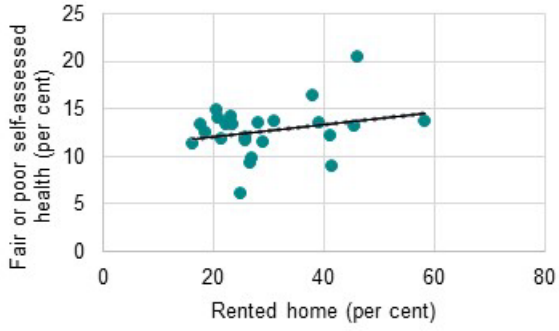
Tasmania (*r*=0.73)



Northern Territory (*r*=0.14): see note[5]

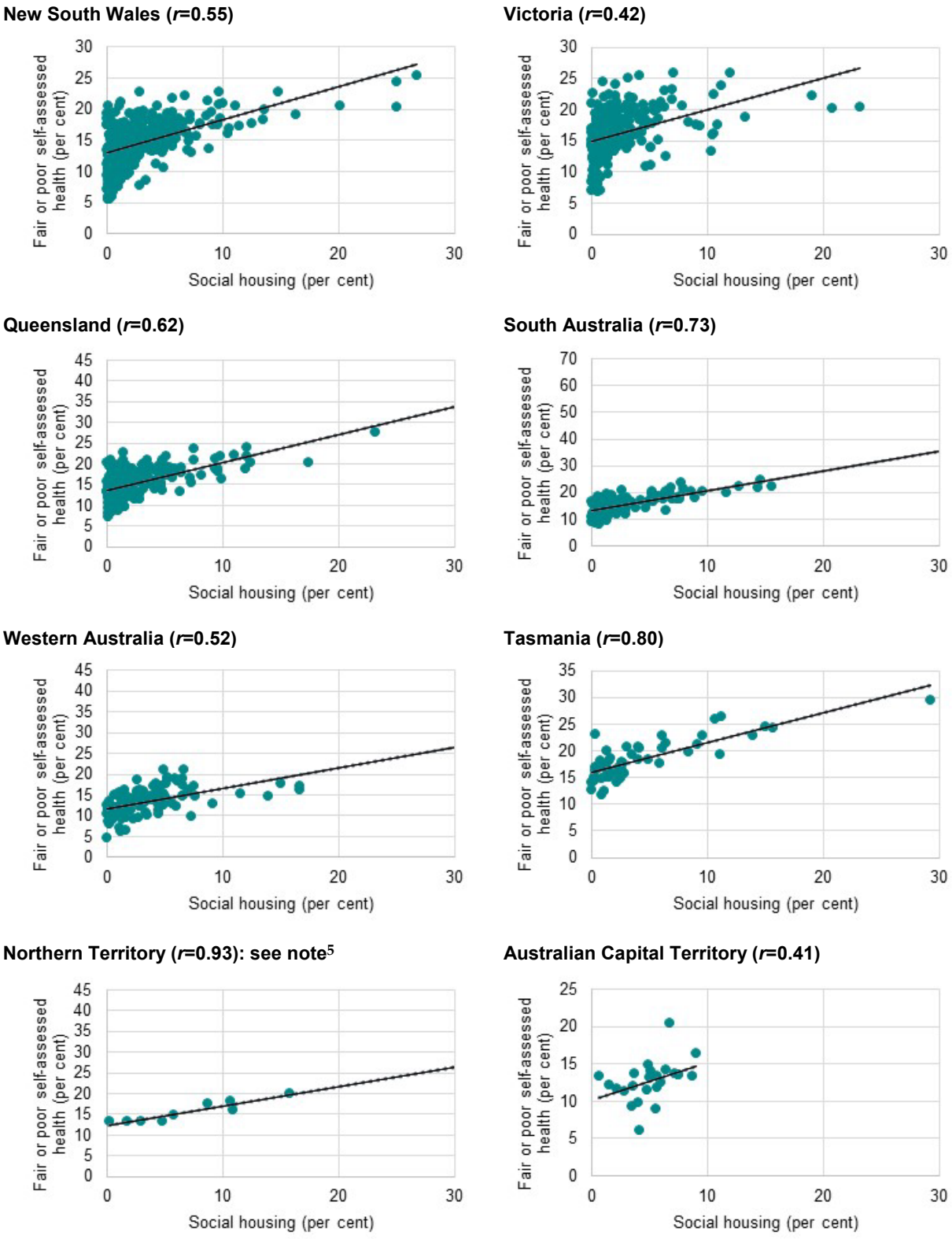


Australian Capital Territory (*r*=0.26)



Note: Rental housing, 2016; Self-assessed health, 2014–15

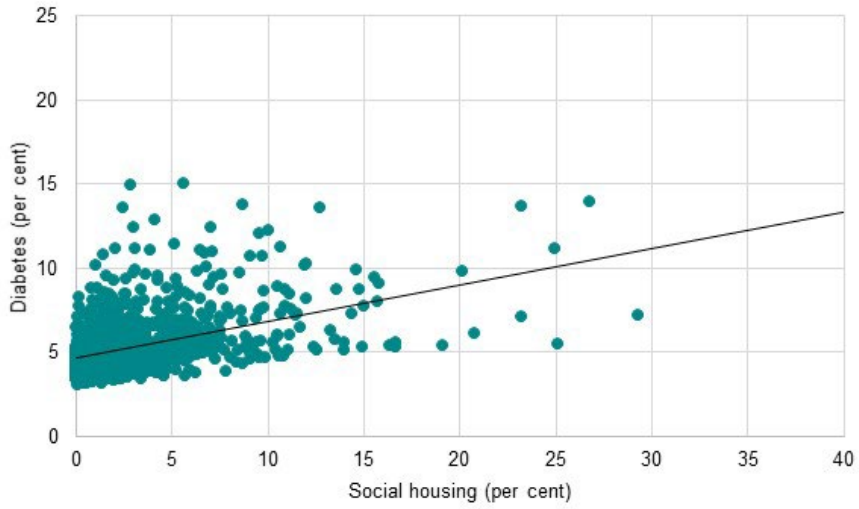
Figure 16: Social housing by fair or poor self-assessed health, by state/territory, Australia



Note: Social housing, 2016; Self-assessed health, 2014–15

Nationally, a moderate correlation was evident between social housing density and the proportion of residents in an area with diabetes (r=0.45; Figure 17) and with mental and behavioural conditions (r=0.42; Figure 18). Areas with a higher proportion of people living in social housing also tended to have a higher proportion of residents who were smokers (r=0.45; Figure 19).

Figure 17: Social housing by diabetes prevalence, Australia



Australia *r*=0.45

New South Wales *r*=0.44

Victoria *r*=0.32

Queensland *r*=0.59

South Australia *r*=0.68

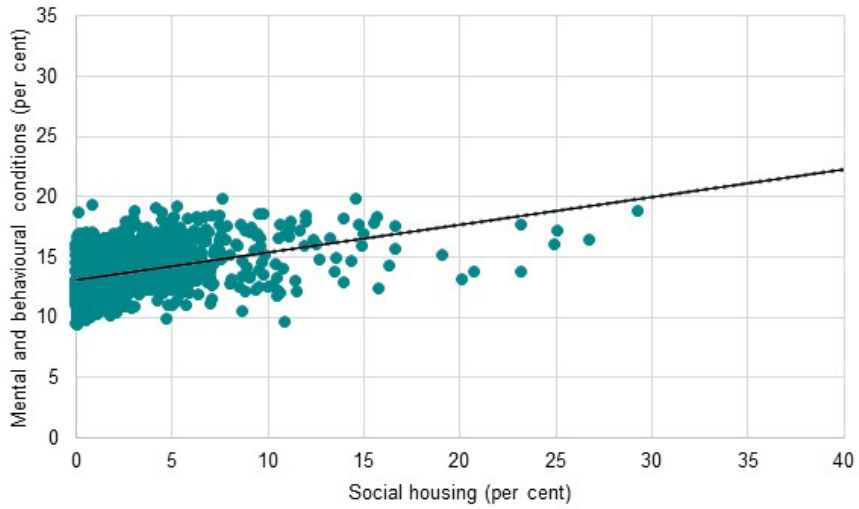
Western Australia *r*=0.25

Tasmania *r*=0.64

Northern Territory *r*=0.89[5]

Australian Capital Territory *r*=-0.01

Figure 18: Social housing by mental and behavioural conditions prevalence, Australia



Australia *r*=0.42

New South Wales *r*=0.36

Victoria *r*=0.41

Queensland *r*=0.49

South Australia *r*=0.58

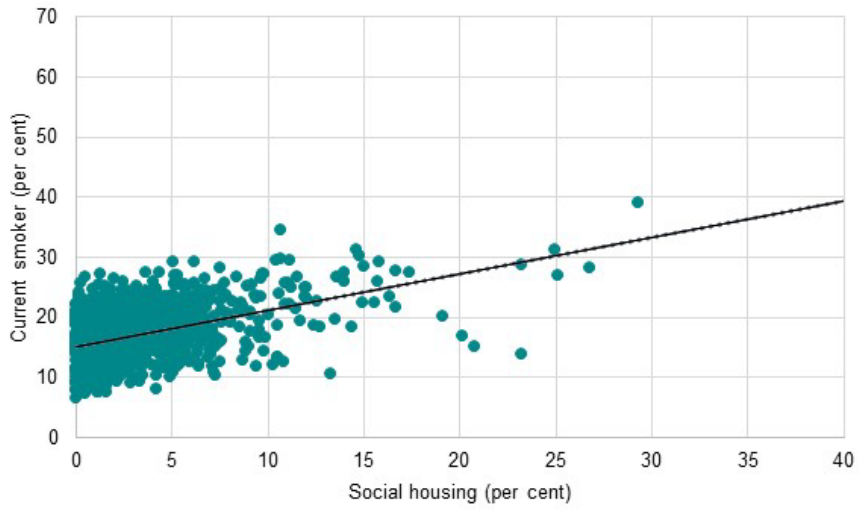
Western Australia *r*=0.41

Tasmania *r*=0.70

Northern Territory *r*=0.63[5]

Australian Capital Territory *r*=0.54

Figure 19: Social housing by current smoking prevalence, Australia



Australia *r*=0.45

New South Wales *r*=0.42

Victoria *r*=0.23

Queensland *r*=0.54

South Australia *r*=0.52

Western Australia *r*=0.61

Tasmania *r*=0.71

Northern Territory *r*=0.68[5]

Australian Capital Territory *r*=0.39

Note: Social housing, 2016; Diabetes, mental and behavioural conditions and smoking, 2014–15

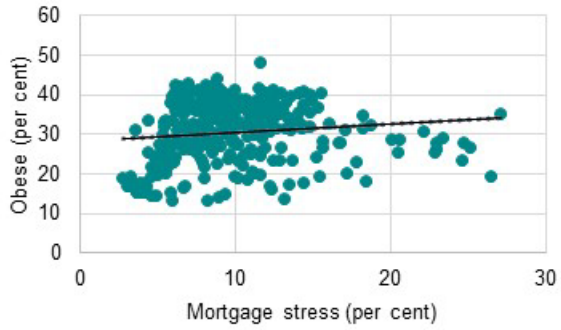
The strength of the association between diabetes and social housing varied considerably across Australia, with a very strong correlation evident in the Northern Territory (r=0.89: see note above[5]) and strong in South Australia (r=0.68), but no association in the Australian Capital Territory (r=0.01). There was also notable variation at the state and territory level in the association between mental and behavioural conditions and social housing across Australia and smoking and social housing; for smoking, the strongest associations were in Tasmania (r=0.71) and the Northern Territory (r=0.68: see note above[5]).

Housing affordability stress was also associated with poor health. In some states/territories there was a moderate-strong association between mortgage stress and risk factors including obesity and smoking (Figure 20, Figure 21,). These associations were strongest in Tasmania (obesity r=0.70; smoking r=0.60) and South Australia (obesity r=0.61; smoking r=0.76), whereas in the Northern Territory no-weak association was evident (obesity r=-0.07, smoking r=0.12).

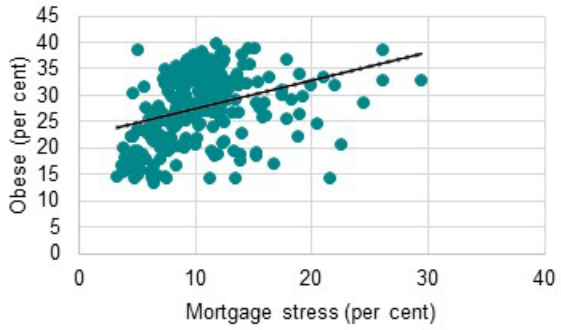
Associations between housing affordability stress and health risk factors tended to be weaker for rental stress than for mortgage stress. As Figure 22 shows, while rental stress was a stronger predictor of obesity than mortgage stress in New South Wales (rental stress r=0.42 compared with mortgage stress r=0.13) and Victoria (rental stress r=0.43 compared with mortgage stress r=0.34), overall the associations between rental stress and obesity tended to be more moderate than for mortgage stress. A similar pattern was evident for smoking (Figure 23).

Figure 20: Mortgage stress by obesity prevalence, by state/territory, Australia

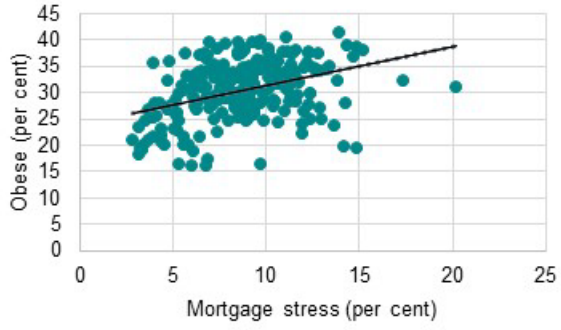
New South Wales (*r*=0.13)



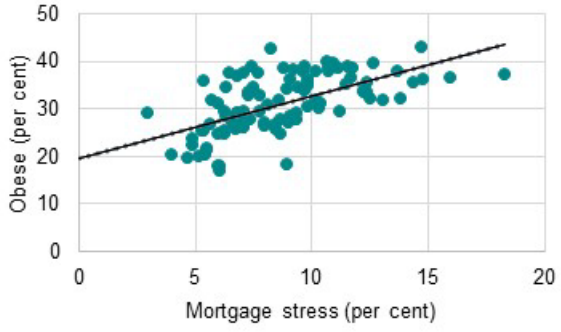
Victoria (*r*=0.34)



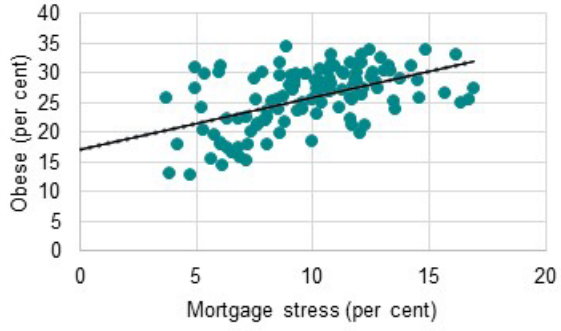
Queensland (*r*=0.39)



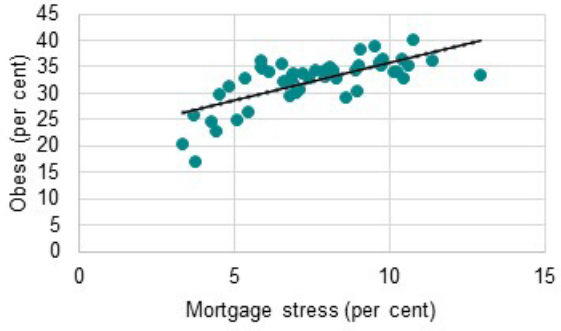
South Australia (*r*=0.61)



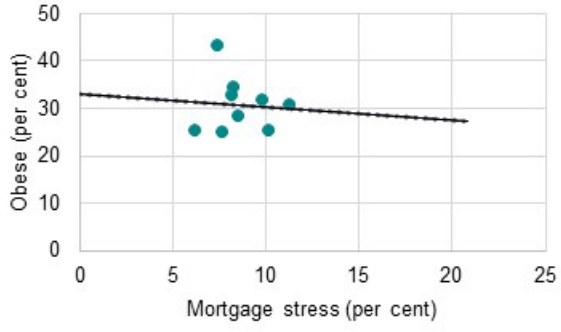
Western Australia (*r*=0.52)



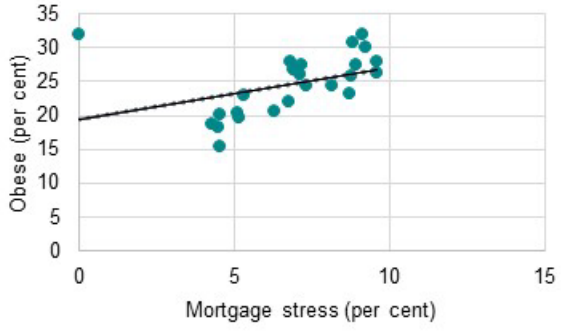
Tasmania (*r*=0.70)



Northern Territory (*r*=-0.07): see note[5]



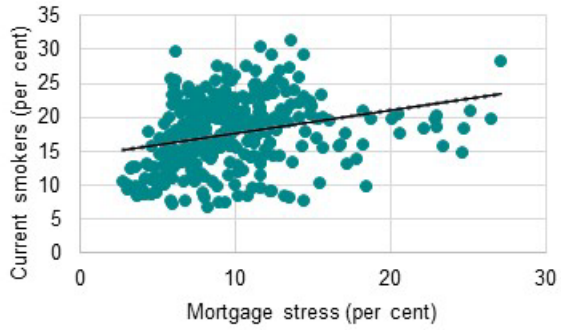
Australian Capital Territory (*r*=0.39)



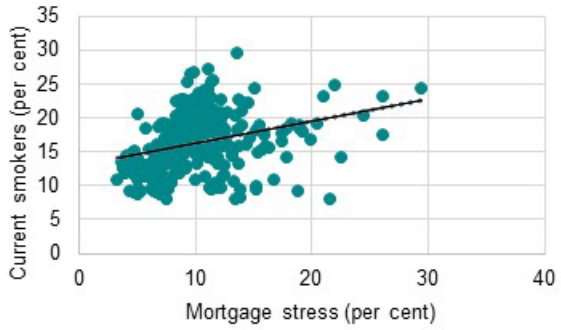
Note: Mortgage stress, 2016; Obesity, 2014–15

Figure 21: Mortgage stress by current smoking prevalence, by state/territory, Australia

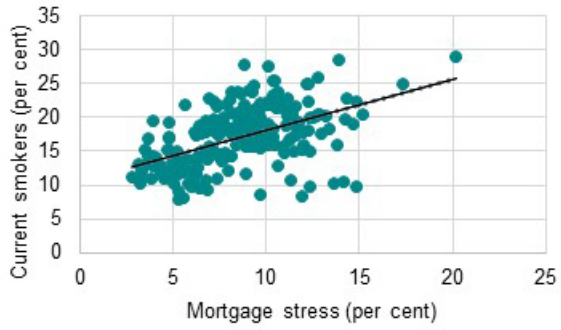
New South Wales (*r*=0.29)



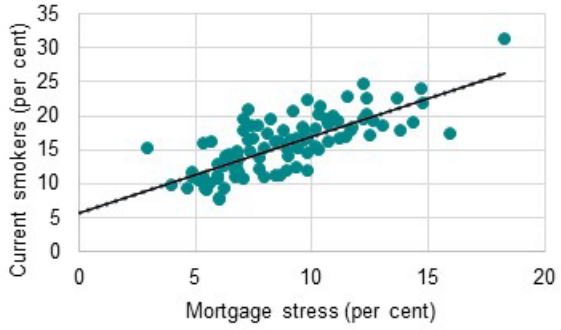
Victoria (*r*=0.31)



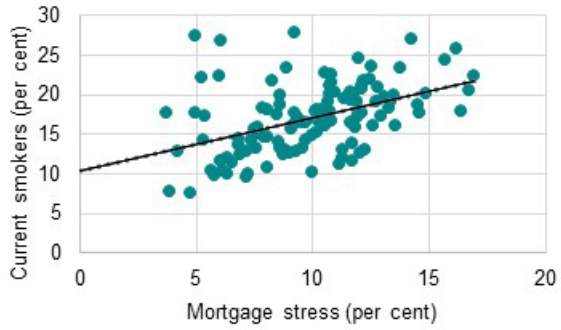
Queensland (*r*=0.51)



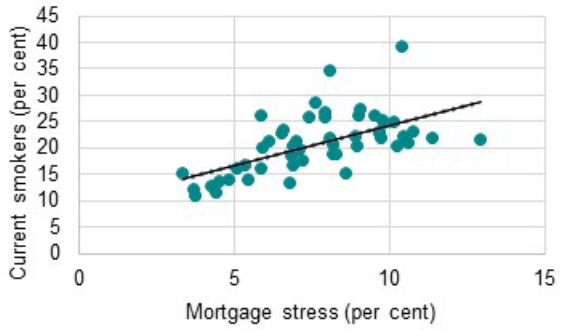
South Australia (*r*=0.76)



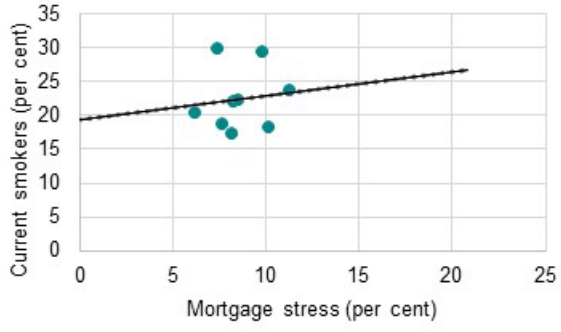
Western Australia (*r*=0.45)



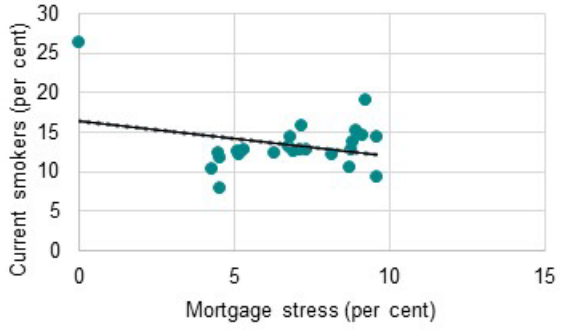
Tasmania (*r*=0.60)



Northern Territory (*r*=0.12): see note[5]



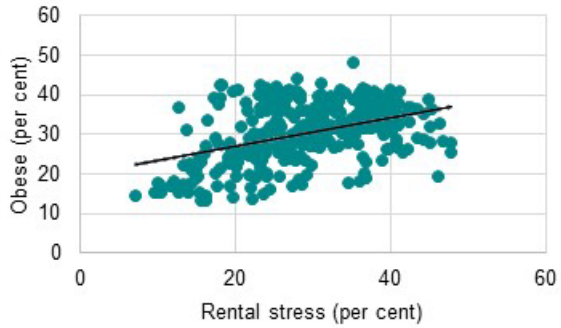
Australian Capital Territory (*r*=-0.28)



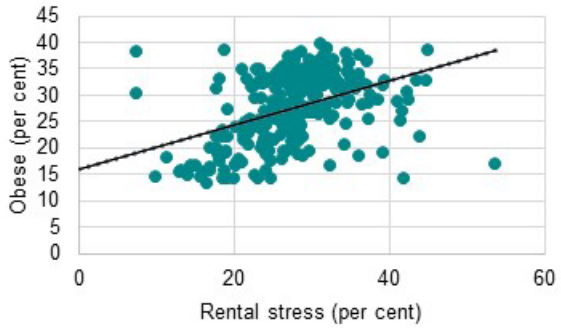
Note: Mortgage stress, 2016; Smoking, 2014–15

Figure 22: Rental stress by obesity prevalence, by state/territory, Australia

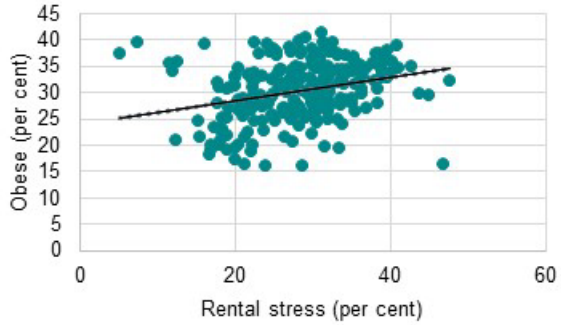
New South Wales (*r*=0.42)



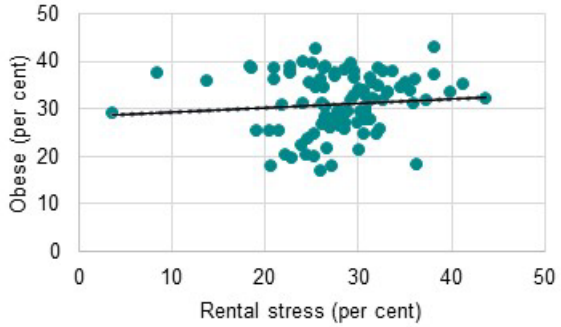
Victoria (*r*=0.43)



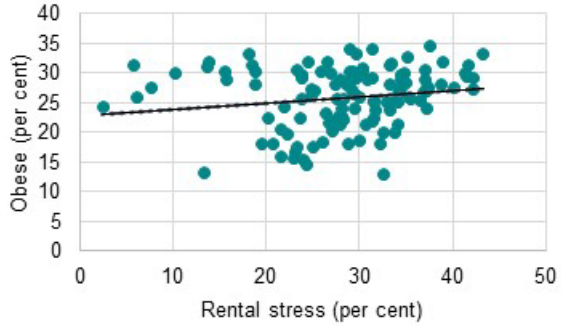
Queensland (*r*=0.28)



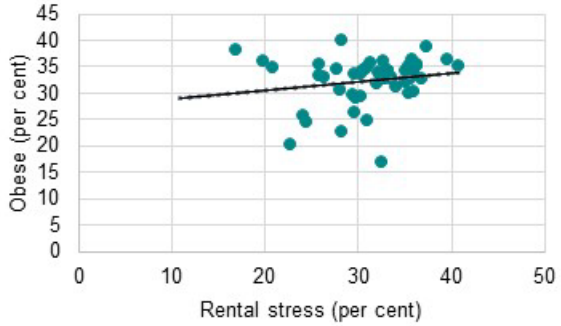
South Australia (*r*=0.09)



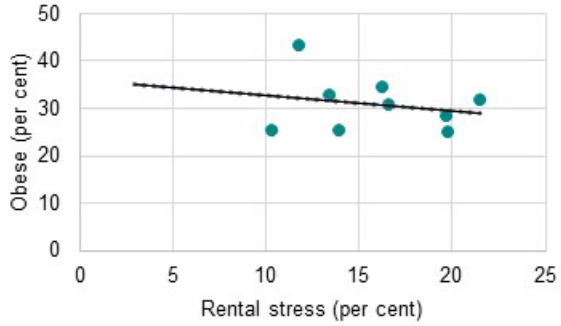
Western Australia (*r*=0.16)



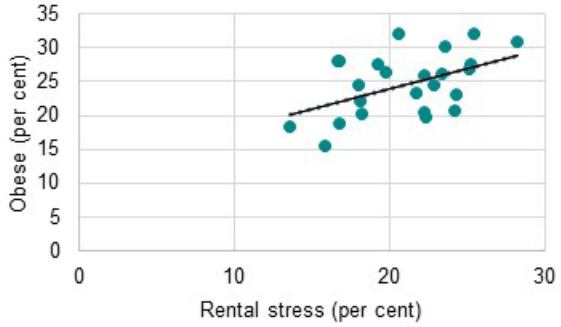
Tasmania (*r*=0.18)



Northern Territory (*r*=-0.22): see note[5]



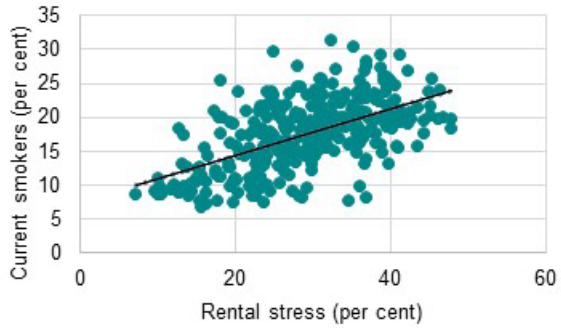
Australian Capital Territory (*r*=0.48)



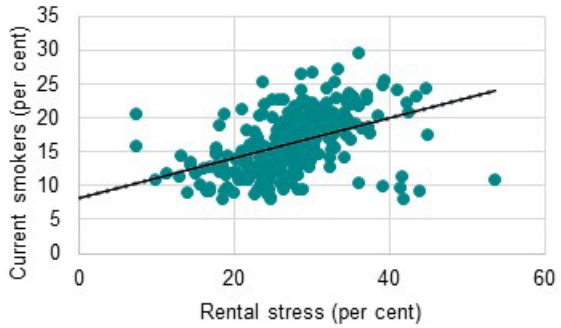
Note: Rental stress, 2016; Obesity, 2014–15

Figure 23: Rental stress by current smoking prevalence, by state/territory, Australia

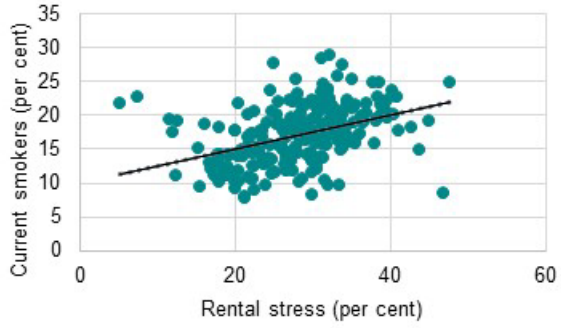
New South Wales (*r*=0.58)



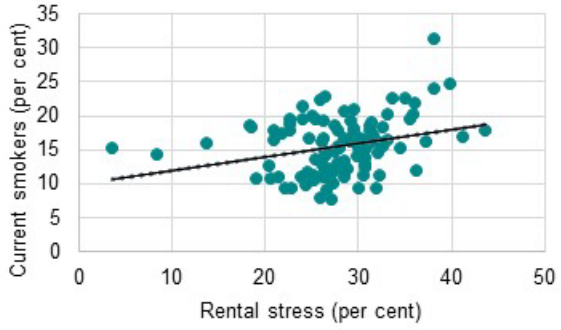
Victoria (*r*=0.45)



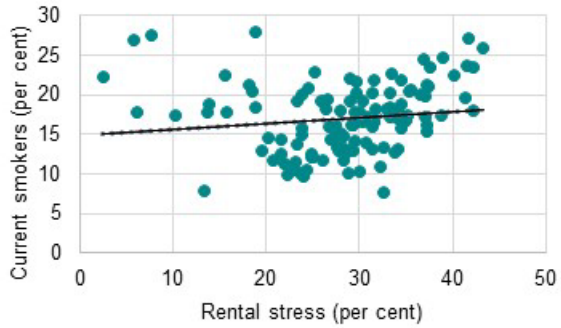
Queensland (*r*=0.42)



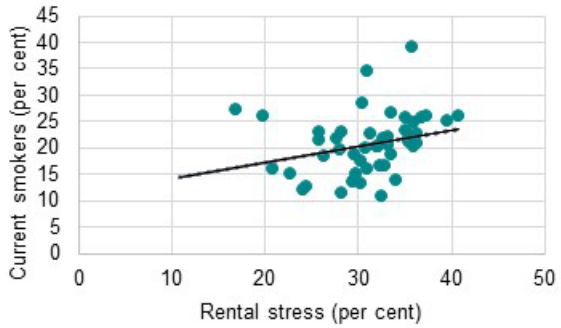
South Australia (*r*=0.29)



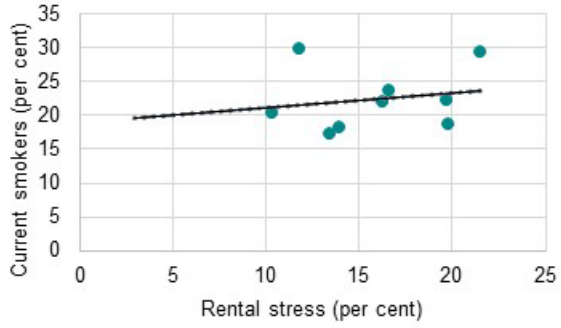
Western Australia (*r*=0.13)



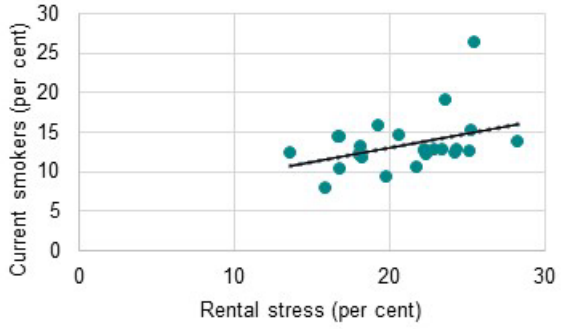
Tasmania (*r*=0.27)



Northern Territory (*r*=0.19): see note[5]



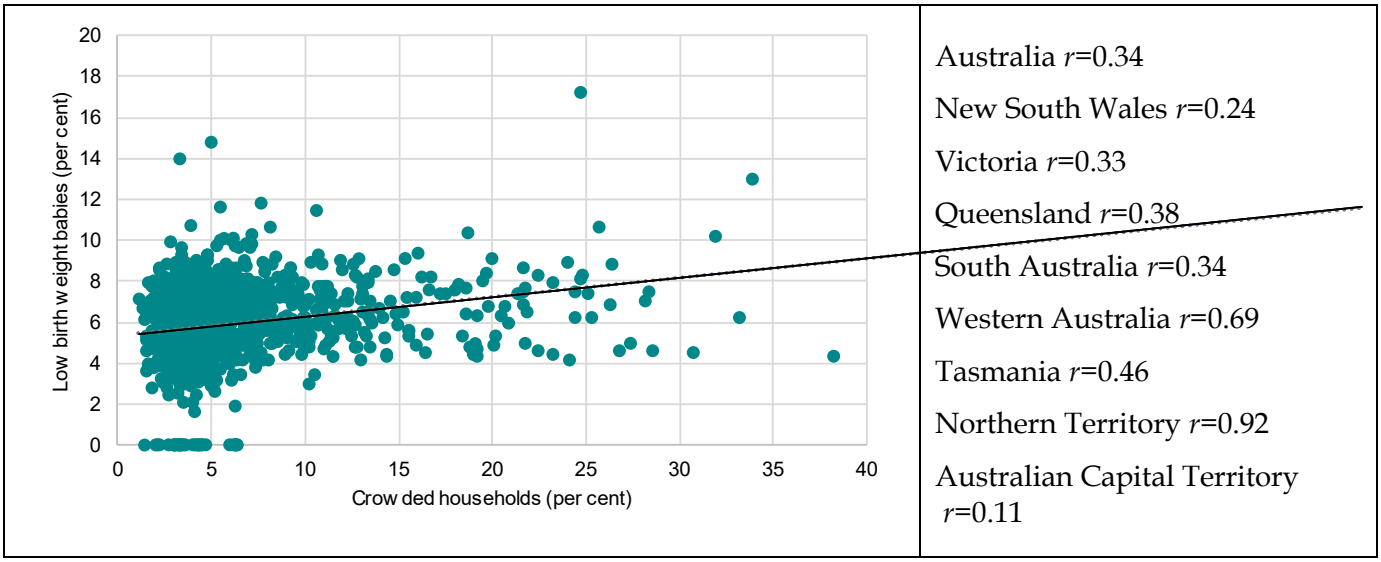
Australian Capital Territory (*r*=0.39)



Note: Rental stress, 2016; Smoking, 2014–15

Household crowding was associated with child health and development. Figure 24 shows the association between crowding and babies born weighing less than 2500 grams (low birth weight babies). Nationally, the association was weak-moderate (r=0.34), however in the Northern Territory[6] and Western Australia, the association was much stronger (r=0.92 and (r=0.69, respectively).

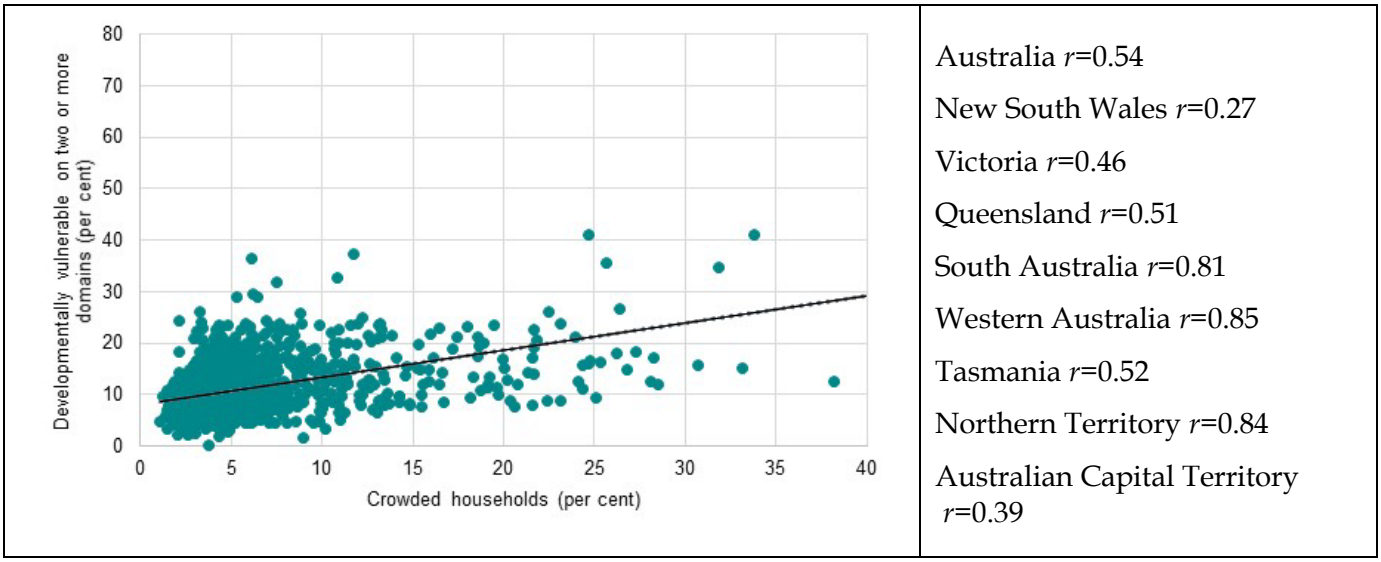
Figure 24: Household crowding by low birth weight incidence, Australia



Note: Household crowding, 2016; Low birth weight babies, 2012–14

Nationally, crowding was also moderately-strongly correlated with child development (r=0.54), with children living in areas with higher levels of household crowding tending to be more likely to be assessed as developmentally vulnerable in two or more domains in their first year of school, as assessed through the Australian Early Development Census (AEDC) (Figure 25). Correlations were much stronger in Western Australia (r=0.85), the Northern Territory (r=0.84) and South Australia (r=0.81).

Figure 25: Household crowding by developmental vulnerability on two or more domains under the AEDC, Australia



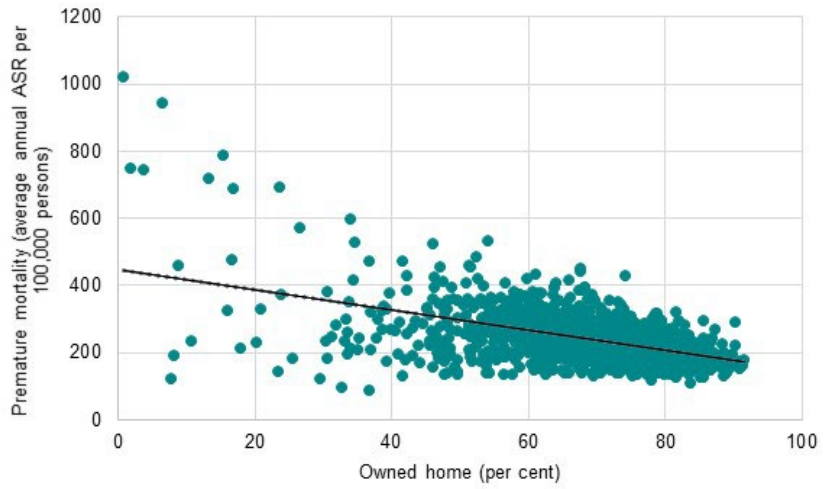
Note: Household crowding, 2016; Developmentally vulnerable, 2015

[6] Note that the correlations for premature mortality in the Northern Territory in Figures 26 to 28 are based on a relatively small number of data points (14 PHAs).

Crowding was a strong predictor of child development in South Australia (r=0.81), Western Australia (r=0.85) and the Northern Territory (r=0.84). As with all associations between housing and health, these patterns are likely to be influenced by a range of factors, including the relatively high proportion of Aboriginal people living in crowded dwellings in some states and territories and varying strength of association between household crowding and socioeconomic status in different housing markets.

The following three charts show associations between the proportion of residents in an area dying before their 75th birthday and housing tenure in those areas. Nationally, a moderate inverse relationship was evident between density of home ownership and premature mortality (Figure 26, r=-0.50). The Northern Territory (r=0.88) and South Australia (r=0.66) had the strongest associations.

Figure 26: Owned homes by premature mortality, Australia



Australia r=0.50

New South Wales r=-0.53

Victoria r=-0.46

Queensland r=-0.70

South Australia r=-0.91

Western Australia r=-0.74

Tasmania r=-0.61

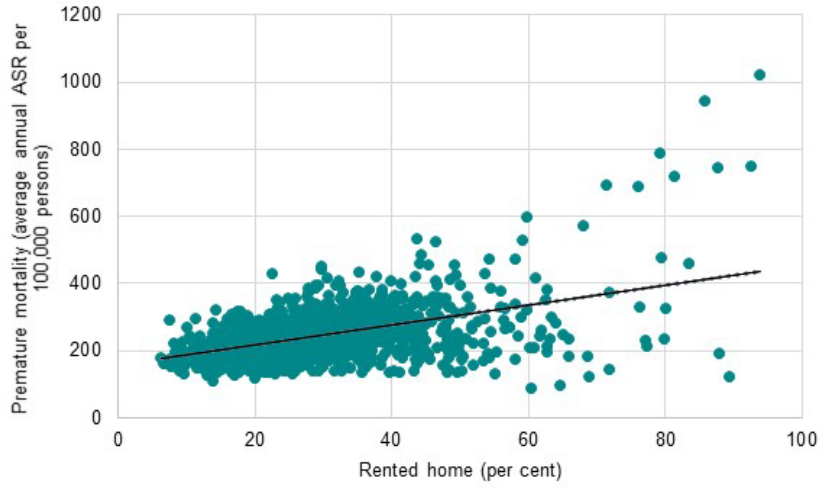
Northern Territory r=-0.96

Australian Capital Territory r=-0.58

Note: Home ownership, 2016; Premature mortality, 2011–16

A moderate positive relationship (r=0.48) was observed with rental tenure density (Figure 27), and a strong positive relationship (r=0.74) was observed with social housing density (Figure 28). For both these tenure types the Northern Territory and South Australia had the strongest associations – for all rental, r=0.87 in the Northern Territory and 0.65 in South Australia; and for social housing, coefficients were even stronger, being 0.96 and 0.91, respectively.

Figure 27: Rental housing (incl. social housing) by premature mortality, Australia



Australia r=0.48

New South Wales r=0.26

Victoria r=0.21

Queensland r=0.51

South Australia r=0.65

Western Australia r=0.55

Tasmania r=0.62

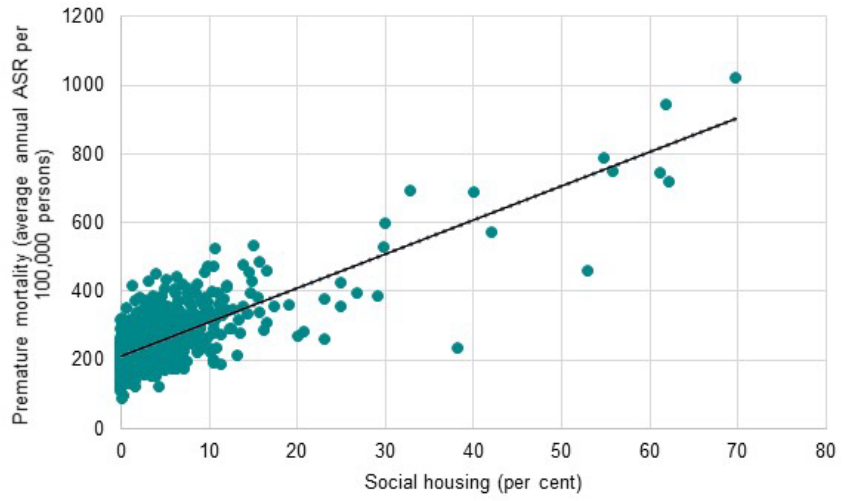
Northern Territory r=0.87

Australian Capital Territory r=0.27

Note: Rental housing, 2016; Premature mortality, 2011–16

As shown for other indicators, the strength of the association between housing tenure and premature mortality differed across states and territories. In South Australia and the Northern Territory, the density of social housing in an area was a near-perfect predictor of premature mortality (r=0.91 and r=0.96, respectively), whereas in Victoria and New South Wales the association was only moderate (r=0.46 and r=0.53, respectively).

Figure 28: Social housing by premature mortality, Australia



Australia r=0.74

New South Wales r=0.53

Victoria r=0.46

Queensland r=0.70

South Australia r=0.91

Western Australia r=0.74

Tasmania r=0.61

Northern Territory r=0.96

Australian Capital Territory r=0.58

Note: Social housing, 2016; Premature mortality, 2011–16

Summary

Housing circumstances differ substantially across Australia and between population groups. Data reveal that Aboriginal people, recent migrants from non-English speaking countries, and single-parent families are over-represented among those living in social housing and those experiencing homelessness. Reflecting demographic variations, housing experiences differed widely between states and territories. Overall, the Northern Territory tended to have both the highest proportion of residents living in adverse circumstances (including crowding or homelessness) nationally and the most pronounced socioeconomic inequalities. In contrast, for most indicators, people living in the Australian Capital Territory were least likely to have adverse housing circumstances, and socioeconomic inequalities were least evident.

As housing is closely associated with broader socioeconomic position (most pertinently, income and wealth), it is likely that the associations presented in this report reflect socioeconomic resources beyond housing to some extent. However, clear differences between states and territories with differing housing markets—which are themselves influenced by demographic factors—suggest that housing may be a mediating factor in socioeconomic inequalities in health. As Baker and colleagues have observed, housing acts alongside and beyond poverty to affect health, particularly for people on low incomes who are especially vulnerable to the health effects of housing (2).

Addressing well-established inequalities in the health of Australians will require attention to the many and diverse ways in which socioeconomic position influences—and is influenced by—health. By examining national data, this report provides a foundation for to delving into the ways in which housing operates as a social determinant of health. In doing so, it provides decision-makers with an evidence base for directing services, programs and policies to those most in need.

Appendix: Remoteness Areas

Remoteness Areas used in this report are the Major Cities of Australia, Inner Regional, Outer Regional, Remote and Very Remote.

- In New South Wales, Major Cities is largely (96 per cent) comprised of the Greater Capital City Statistical Area of Sydney and the Statistical Local Area Level 4's for Newcastle and Wollongong.
- In Victoria, Major Cities is comprised of the Greater Capital City Statistical Area of Melbourne and the Statistical Local Area Level 4 for Geelong.
- In Queensland, Major Cities is comprised of the Greater Capital City Statistical Area of Brisbane and the Statistical Local Area Level 4's for Gold Coast and Sunshine Coast.

Note: New South Wales, Queensland, South Australia and Western Australia have all five remoteness classes; Victoria does not have any areas classified as Very Remote (and therefore has four remoteness classes), Hobart is classified as Inner Regional (and therefore Tasmania also has four remoteness classes) and Darwin is classified as Outer Regional (giving the Northern Territory three remoteness classes)

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