# 10 Home environment

| Strategic areas for action |
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| Governance, leadership and culture |  | Early child development |  | Education and training |  | Healthy lives |  | Economic participation |  | Home environment |  | Safe and supportive communities |
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| 10.1 Overcrowding in housing10.2 Rates of disease associated with poor environmental health10.3 Access to clean water and functional sewerage and electricity services |
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Environmental conditions in the home are key to the wellbeing of Aboriginal and Torres Strait Islander people. Environmental health relates to physical, chemical and biological factors external to a person which potentially affect their health (WHO 2020). Better environmental health can have positive outcomes for Aboriginal and Torres Strait Islander people, and is especially beneficial for children’s physical and emotional wellbeing.

The following indicators (included in this chapter) cover some factors that can affect the home environments and environmental health of Aboriginal and Torres Strait Islander people.

* Overcrowding in housing (section 10.1) — reducing overcrowding is associated with positive effects on health, family relationships and children’s education.
* Rates of disease associated with poor environmental health outcomes (section 10.2) — improvements in environmental health can help reduce the spread of diseases that are linked to environmental causes.
* Access to clean water and functional sewerage and electricity services (section 10.3) — clean water and functional sewerage and electricity services, and housing of an acceptable standard, enable practices that lead to good health.

The home environment can influence outcomes in several headline indicators, including:

* life expectancy (section 4.1)
* young child mortality (section 4.2)
* disability and chronic disease (section 4.9)
* family and community violence (section 4.12).

Conversely, other headline indicators can directly influence the home environment:

* employment (section 4.7)
* household and individual income (section 4.10).

Outcomes in the home environment area can influence, or be influenced by, outcomes in other strategic areas:

* early child development (chapter 6)
* education and training (chapter 7)
* healthy lives (chapter 8)
* economic participation (chapter 9).

Attachment tables for this chapter are identified in references throughout this chapter by an ‘A’ suffix (for example, ‘table 10A.1.1’). These tables can be found on the web page (http://www.pc.gov.au/oid2020).

### References

WHO (World Health Organization) 2020, *Environmental Health*, http://www.searo.who.int/ topics/environmental\_health/en/ (accessed 18 June 2020).

10.1 Overcrowding in housing[[1]](#footnote-1)

| Box 10.1.1 Key messages |
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| * Safe and secure housing is essential for people’s wellbeing. Overcrowded housing affects health, education and social outcomes, including by jeopardising personal safety and security.
* However, there are cultural and social factors that influence the way housing is used by different Aboriginal and Torres Strait Islander people. On average, Aboriginal and Torres Strait Islander people have larger household sizes. This difference is likely to be motivated by a strong connection to family and a culture of sharing accommodation, and so some people might prefer living with more people in a household.
* Overcrowding in Australia is measured using the Canadian National Occupancy Standard, which will reflect the culture and preferences of some, but not all, Aboriginal and Torres Strait Islander people.
* Around one in five Aboriginal and Torres Strait Islander people in Australia live in overcrowded housing, although in remote areas it is around two in five.
* Overcrowding rates for Aboriginal and Torres Strait Islander people have decreased over time, and the gap to non-Indigenous people has narrowed.
* Nationally, overcrowding is most common for Aboriginal and Torres Strait Islander people in social housing. However, the rates of overcrowding by tenure type vary across jurisdictions.
* Some of the key housing practices that may contribute to reducing overcrowding for Aboriginal and Torres Strait Islander people include increasing the stock of available social housing, addressing housing affordability for other forms of housing tenures, and ensuring that social housing design is culturally appropriate and suited to the local Aboriginal and Torres Strait community needs by involving the local community in the design process.
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| Box 10.1.2 Measures of overcrowding in housing |
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| There is one main measure for this indicator. *Overcrowding in housing* is defined as the proportion of Aboriginal and Torres Strait Islander people, of all ages, who live in overcrowded houses. Overcrowding is calculated according to the Canadian National Occupancy Standard for housing appropriateness (more detail can be found in box 10.1.3). The main data sources for this measure are the ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS) and the National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), with the most recent available data for 2018‑19 (all jurisdictions and remoteness). Supplementary data are also available from the ABS Census of Population and Housing, with the most recent data for 2016 (all jurisdictions by remoteness). Survey and Census data are not directly comparable. Supplementary information is also provided for Aboriginal and Torres Strait Islander people aged 15 years or over (for comparable time series back to 2002) and for overcrowding as a stressor. |
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Safe and secure housing is essential for people’s wellbeing. Overcrowded housing can have detrimental effects on health, education and social outcomes, including by jeopardising personal safety and security.

* Overcrowded housing is an environmental factor that contributes to higher rates of preventable and infectious diseases[[2]](#footnote-2) (Hall et al. 2020; Harford-Mills, MacRae and Drew 2019; Lowell et al. 2018; The Royal Australian College of General Practitioners and NACCHO 2018) and can exacerbate the severity of illnesses and need for hospitalisation (Quilty et al. 2019).
* Overcrowding is associated with poor cognitive development and poorer reading test performance among elementary and middle school children (Brackertz 2016). Overcrowded housing is also linked to lower levels of school attendance and educational achievement (Lowell et al. 2018; Silburn et al. 2018; Wilson 2013).
* Overcrowding from visitors staying extended periods can occasionally lead to antisocial behaviour, which can result in higher levels of family violence (Moran et al. 2016), and sexual abuse against children can be due to opportunistic behaviour by additional adults in the house (Blagg et al. 2018).

For Aboriginal and Torres Strait Islander people, measured ‘overcrowding’ may occur for cultural and social reasons, and may not necessarily reduce wellbeing in all cases. The housing occupancy standard used for this report (box 10.1.3) will reflect the culture and preferences of some, but not all, Aboriginal and Torres Strait Islander people.[[3]](#footnote-3)

| Box 10.1.3 Housing occupancy standard |
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| The Canadian National Occupancy Standard (CNOS) is sensitive to both household size and composition in determining housing requirements. The measure assesses the bedroom requirements of a household by specifying that:* there should be no more than two persons per bedroom
* a household of one unattached individual may reasonably occupy a bed-sit (i.e. have no bedroom)
* couples and parents should have a separate bedroom
* children less than five years of age, of different sexes, may reasonably share a room
* children five years of age or over, of different sexes, should not share a bedroom
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| Box 10.1.3 (continued) |
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| The Canadian National Occupancy Standard (CNOS) is sensitive to both household size and composition in determining housing requirements. The measure assesses the bedroom requirements of a household by specifying that:* children less than 18 years of age and of the same sex may reasonably share a bedroom
* single household members aged 18 years or over should have a separate bedroom.

Households living in dwellings where this standard cannot be met are considered to be overcrowded. |
| *Source*: ABS (2016). |
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Aboriginal and Torres Strait Islander people have larger household sizes relative to non‑Indigenous people (table 10A.1.7). These larger household sizes are likely to be caused by a strong connection to family and a culture of sharing resources, including accommodation (AIHW 2019; Moran et al. 2016). Research has found wellbeing benefits for Aboriginal and Torres Strait Islander people who live with a supportive network of people (The Royal Australian College of General Practitioners and NACCHO 2018).

Providing accommodation for visiting family or kin is one reason for these larger household sizes (Moran et al. 2016). A case study of four communities found that Aboriginal and Torres Strait Islander people living in overcrowded homes were typically providing accommodation for visiting kinfolk (Memmott, Birdsall-Jones and Greenop 2012). The main reasons for kin visiting included visiting family, accessing services and attending important ceremonies and events. Visits could be relatively short or could last for extended periods of time. Accommodation was also provided for kin while they waited for other housing options to become available. There are social and cultural benefits of accommodating visiting kin; however, long term overcrowding is associated with higher levels of stress for household members (Memmott et al. 2011; Memmott, Birdsall-Jones and Greenop 2012).

Overcrowded housing may also hide the prevalence of homelessness. For example, the authors of a small study in NSW stated that Aboriginal and Torres Strait Islander people ‘rely on their social networks to avoid primary homelessness[[4]](#footnote-4), often living with family and friends for extended periods of time’ (Anderson et al. 2016). The AIHW (2019) found that living in ‘severely crowded’ dwellings[[5]](#footnote-5) was the main type of homelessness experienced by Aboriginal and Torres Strait Islander peoples.

National data on overcrowding are based on the number of bedrooms in houses. However, it is important to acknowledge the importance of other inside and outside living areas for Aboriginal and Torres Strait Islander people. They often utilise backyards and living spaces in the house as sleeping spaces and for social, cultural and climatic reasons (Fien et al. 2011; Memmott, Birdsall-Jones and Greenop 2012; O’Rourke and Nash 2019). Houses with adequate indoor living spaces or backyards may temporarily ease the pressures of overcrowding.

### Around one in five Aboriginal and Torres Strait Islander people live in overcrowded housing, although in remote areas it is around two in five

Around one in five Aboriginal and Torres Strait Islander people live in overcrowded housing. Nationally in 2018-19, the proportion of Aboriginal and Torres Strait Islander people of all ages living in overcrowded households was 18 per cent (table 10A.1.1).

Overcrowding increases with remoteness for Aboriginal and Torres Strait Islander people. In 2018-19, 13 per cent of Aboriginal and Torres Strait Islander people living in non‑remote areas were in overcrowded houses; this increased to 42 per cent in remote areas (table 10A.1.2).

The rate of overcrowding varies considerably across and within jurisdictions; the Northern Territory has the greatest disparity of overcrowding for people living in remote areas compared with non-remote areas (figure 10.1.1).

Overcrowding rates are influenced by, among other things, government housing policies and infrastructure spending. Box 10.1.4 provides a case study of how the Northern Territory Government is working with traditional owners on Groote Eylandt to reduce overcrowding through appropriate housing design.

| Figure 10.1.1 Rates of overcrowding for Aboriginal and Torres Strait Islander people by remoteness area, 2018-19**a,b,c** |
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| Figure 10.1.1 Rates of overcrowding for Aboriginal and Torres Strait Islander people by remoteness area, 2018-19  More details can be found within the text surrounding this image. |
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| a Data are not available for remote areas in Victoria, Tasmania or the ACT. b Error bars represent 95 per cent confidence intervals around each estimate. c See table 10A.1.10 for detailed definitions, footnotes and caveats. |
| *Source*: ABS (unpublished) National Aboriginal and Torres Strait Islander Health Survey 2018-19 and TableBuilder; table 10A.1.10. |
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### Overcrowding rates for Aboriginal and Torres Strait Islander people are decreasing over time, and the gap with non-Indigenous people has narrowed

Overcrowding rates for Aboriginal and Torres Strait Islander people nationally have decreased over time. The decrease has been 10 percentage points (down from 28 per cent in 2008) (table 10A.1.1).

As the proportion of Aboriginal and Torres Strait Islander people living in overcrowded households has declined, so too has the gap with non-Indigenous people (based on Census data to enable comparisons). In 2006, the rate of Aboriginal and Torres Strait Islander people in overcrowded dwellings was almost 5 times the rate for non-Indigenous people; by 2016, this ratio had declined to almost 3:1. This decline was largely due to a decline in the proportion of Aboriginal and Torres Strait Islander people in overcrowded housing (by 5 percentage points) (table 10A.1.8).

The gap has also narrowed across all remoteness areas, but the difference remains considerably higher the more remote the area. In major cities in 2016, the rate of overcrowding for Aboriginal and Torres Strait Islander people was around twice the rate for non-Indigenous people; this discrepancy increased as remoteness increased, with a ratio in very remote areas of 11:1 (table 10A.1.8). However, caution should be used in interpreting these data, as the number of people with Indigenous status not recorded for overcrowding increases as remoteness decreases, which particularly affects results for major cities and inner regional areas (table 10A.1.8).

### Overcrowding is most common for Aboriginal and Torres Strait Islander people in social housing

Overcrowding rates for Aboriginal and Torres Strait Islander people were highest in social housing.[[6]](#footnote-6) Of all Aboriginal and Torres Strait Islander people living in overcrowded housing in 2016, around 60 per cent lived in social housing, with most of the remainder fairly evenly split between houses owned (fully owned and being purchased) and private rental (table 10A.1.9).[[7]](#footnote-7)

Around 40 per cent of all Aboriginal and Torres Strait Islander people living in social housing were overcrowded, compared to 15 per cent in privately rented houses and 10 per cent in houses owned (figure 10.1.2). However, the rates of overcrowding and prevalence by tenure type varied across jurisdictions.

While higher levels of overcrowding also occur for non-Indigenous people in rented properties, the rate of overcrowding in rentals is much lower compared to the rates for Aboriginal and Torres Strait Islander people, and particularly for social housing (figure 10.1.2).

Overcrowding may reflect some people’s preference to live with family and friends — but other people experience overcrowding out of necessity. It is not possible from the available Census data to ascertain what proportion of overcrowding is by choice or by necessity.

| Figure 10.1.2 People living in overcrowded households, by Indigenous status and housing tenure, 2016**a** |
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| Figure 10.1.2 People living in overcrowded households, by Indigenous status and housing tenure, 2016  More details can be found within the text surrounding this image. |
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| a See table 10A.1.9 for detailed definitions, footnotes and caveats.  |
| *Source*: ABS (unpublished) derived from the 2016 Census of Population and Housing; table 10A.1.9. |
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### How to reduce overcrowding for Aboriginal and Torres Strait Islander people when it is causing them stress

Some of the key structural factors thought to contribute towards overcrowding in Aboriginal and Torres Strait Islander households include a lack of affordable and appropriate housing options (Anderson et al. 2016), insufficient housing stock where it is needed (Habibis 2013; Lowell et al. 2018), and a lack of affordable short term accommodation options for visitors (House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs 2001; Memmott, Birdsall-Jones and Greenop 2012). These reasons will differ depending on where people live, both across and within jurisdictions.

Some key housing practices that may contribute to reducing overcrowding for Aboriginal and Torres Strait Islander people include:

* increasing the stock of social housing (Biddle 2008), or addressing housing affordability for other forms of housing in areas with high rates of overcrowding
* ensuring that social housing for Aboriginal and Torres Strait Islander people are governed by people with an understanding of their cultural needs, which is out of step with the shift from Indigenous Community Housing organisations to Community Housing organisations (Moran et al. 2016; PC 2020)
* ensuring that social housing design is culturally appropriate and suited to local Aboriginal and Torres Strait community needs (for example, larger houses for larger families or short-term accommodation facilities for visitors). Involving the local community in the design process alongside governments is key.
* Andersen et al (2016), in their qualitative study in Western Sydney, stated that the information gathered from local Aboriginal people about their housing situation ‘highlights the value of working with Aboriginal communities to identify problems, potential causal pathways and ultimately solutions to the sorts of complex problems with which they are intimately familiar’.
* Box 10.1.4 provides an example of shared decision-making between Aboriginal and Torres Strait Islander people and the government to develop and manage culturally appropriate public housing.

| Box 10.1.4 Transitioning to community housing in the Groote Archipelago |
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| The Agreement between the Anindilyakwa Land Council and the NT Government aims to improve service delivery by transferring decision making power to the local community, with housing identified by the community as its highest priority. In 2018, the NT Government and the Anindilyakwa Land Council (ALC)[[8]](#footnote-8) signed a nine-year Agreement (the Agreement) that transfers over time decision making power to the local Aboriginal people in the Groote Archipelago. Under the Agreement, the Aboriginal people of the Groote Archipelago will determine the service delivery models that work best for their community and region in priority transition areas determined by the ALC and agreed by the NT Government. The most important priority transition area for Aboriginal people is the public housing system in the Groote Archipelago and replacing it with a community housing system that they manage and for which they take responsibility. At the time the Agreement was signed, it was estimated that just over half of the community dwellings in the area were overcrowded and three-quarters of the housing stock was in poor condition. |
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| Box 10.1.4 (continued) |
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| Implementation plans formalise shared decisions by clearly articulating strategies and associated actions, responsibilities, and the desired outcomes Under the Agreement, an implementation plan was agreed by the NT Government, the ALC and the Anindilyakwa Housing Aboriginal Corporation (AHAC) to build a community-controlled housing system. The plan clearly articulates the strategies and associated actions, who is responsible for undertaking specific actions, and the desired outcomes. Initially, the reasons for the poor standard of housing are identified, and actions to address them are agreed and articulated in the implementation plan. The reasons include overcrowding, low quality or malfunctioning health hardware, high costs because of remoteness, a lack of culturally and family responsive housing, and lack of community infrastructure based on substandard town planning and a lack of essential services infrastructure.However, the implementation plan clearly states the ALC’s position that it is the insufficient involvement of community members in controlling and taking responsibility in all aspects of the provision of their housing which is the principal cause of enduring poor outcomesOnce the reasons are identified, actions to address the issues are agreed. One significant action in the implementation plan is supporting AHAC. The AHAC was established to facilitate “decision-making by Anindilyakwa people in respect of the ownership, location, type and occupation of community housing across the Groote Archipelago and to take responsibility for tenancy management, repairs and maintenance and capital upgrades of this housing over time”. The board of the AHAC is made up of Anindilyakwa Traditional Owners, community representatives and independent experts.The implementation plan also envisages that over time the ownership and management of the existing and new houses owned by the NT Government and other providers will be progressively transferred to the AHAC. This is to enable the achievement of the desired outcome, to transition to a “single, sustainable, diverse and culturally appropriate community housing system across all towns and satellite communities in the Groote Archipelago that the Anindilyakwa people control and take responsibility for”. |
| *Sources*: Anindilyakwa Land Council and NT Government (2018, 2019); Coalition of Peaks (unpublished) (2020). |
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### Future directions in data

A more complete picture of overcrowding could be provided if the following data issues were addressed:

* underreporting of persons in a household due to a fear of eviction (AIHW 2019; Greenop and Memmott 2016; Memmott et al. 2012), which may lead to a lower estimate of the prevalence of overcrowding (Anderson et al. 2016; Buergelt et al. 2017)
* responses for the number of persons in a household being capped at 10 or more people (in the NATSIHS), which limits understanding of the severity of overcrowding
* data not being collected on the number of people who reported overcrowding as a stressor in the last 12 months (2018-19 NATSIHS). These data would provide a clearer estimate of what proportion of overcrowding is harmful for Aboriginal and Torres Strait Islander people.

The suitability of the model for estimating overcrowding for Aboriginal and Torres Strait Islander people has been questioned (Greenop and Memmott 2016; Pholeros 2010). The current model of overcrowding used by the ABS, based on the CNOS, is structured around the number of people per bedroom (box 10.1.3). Concepts more suitable for measuring overcrowding for Aboriginal and Torres Strait Islander people need to be investigated. One such concept is reporting on the number of people who felt stressed due to overcrowding, rather than just those living in overcrowded houses (Memmott et al. 2011; Pholeros and Phibbs 2012). A model reporting on people who were negatively affected by overcrowding would likely better account for cultural and individual preferences.

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## 10.2 Rates of disease associated with poor environmental health[[9]](#footnote-9)

| Box 10.2.1 Key messages |
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| * Good environmental health can help promote a better quality of life and prevent diseases such as scabies and rheumatic heart disease.
* Between 2010-11 and 2018-19, hospitalisation rates per 100 000 Aboriginal and Torres Strait Islander people increased for just over half of the measured environmental health diseases — with the highest rates for influenza and pneumonia, intestinal infectious diseases and bacterial diseases.
* While rates continue to be higher for Aboriginal and Torres Strait islander people in remote areas, the gap with Aboriginal and Torres Strait islander people in non-remote areas is narrowing. This narrowing of the gap is driven by decreasing rates in remote areas coupled with increasing rates in non-remote areas (a pattern observed for intestinal infectious diseases and influenza and pneumonia — for bacterial diseases, the rate increased across all areas).
* Hospitalisation rates for Aboriginal and Torres Strait Islander people for environmental health diseases are more than double those of non-Indigenous people, and the gap has widened. The largest gap was in rates of influenza and pneumonia; rates for non-Indigenous people have decreased in recent years, whereas rates for Aboriginal and Torres Strait Islander people have continued to increase.
* Aboriginal and Torres Strait Islander people were also one-and-a-half times more likely to die from environmental health diseases than non-Indigenous people, with rates in 2014–2018 essentially unchanged from the previous five years.
* Improving the quantity and quality of housing, ensuring the availability of functioning health hardware and increasing access to health care services are all strategies to address the risk factors for environmental health diseases for Aboriginal and Torres Strait Islander people.
* Effective strategies that address environmental risk factors require collaboration between governments, Aboriginal Community Controlled Health Organisations, service providers and communities.
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| Box 10.2.2 Measures of rates of disease associated with poor environmental health |
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| There are two main measures for this indicator.* *Hospitalisation rates for selected types of environmentally-based diseases* is defined as the number of people with a disease associated with poor environmental health divided by the population, and is presented as a rate per 100 000 people. Data for this measure are sourced from the AIHW National Hospital Morbidity Database, with the most recent data available for 2018‑19 (all jurisdictions; age; remoteness).[[10]](#footnote-10)

The hospitalisation data used in this section reflect more serious cases of disease but do not necessarily show the overall incidence of disease, as people may not always go to a hospital for treatment.* *Death rates for diseases associated with poor environmental health* is defined as the number of deaths associated with poor environmental health divided by the population, and is presented as a rate per 100 000 people. Data for this measure are sourced from the ABS Causes of Death collection, with the most recent available data for 2014–2018 (NSW, Queensland, WA, SA and the NT; sex). Data are available in five‑year groupings due to the volatility of small numbers in each year.
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The World Health Organization classifies environmental health as:

…addressing the physical, chemical and biological factors external to a person that affect their health, and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments (WHO 2020).

Some of the key environmental factors affecting health are poor air quality, lack of safe drinking water and power, inadequate waste and sanitation facilities (section 10.3 *Access to clean water functional sewerage and electricity services*) and poor housing and overcrowding (section 10.1 *Overcrowding in housing*) (Clifford et al. 2015; Hall 2019; Ware 2013). A small scale study in the Kimberley, WA found that primary health care demand could be reduced by 20 per cent (25 per cent of presentations for Aboriginal children) by addressing environmental factors (McMullen, Eastwood and Ward 2016).

Globally, the rates of many environmental health diseases have decreased over time, mainly due to improvements in socioeconomic circumstances. But this has not been the case for some diseases — and particularly not for the least affluent populations, including Aboriginal and Torres Strait Islander people in Australia (Ralph and Carapetis 2013).

### Hospitalisation rates for many of the environmentally-based diseases are increasing for Aboriginal and Torres Strait Islander people

Hospitalisation rates for the selected environmentally-based diseases have increased by nearly 40 per cent for Aboriginal and Torres Strait Islander people since 2010-11
(table 10A.2.1).

The increase has been driven by increases in the hospitalisation rates for Aboriginal and Torres Strait Islander people for bacterial disease (from 385 to 799 per 100 000 population), intestinal infectious diseases (from 614 to 905 per 100 000 population), and influenza and pneumonia (from 723 to 924 per 100 000 population). In 2018‑19, these three diseases also had the highest environmentally-based disease hospitalisation rates (table 10A.2.1).

Over this period, there were decreases in hospitalisations for some environmentally-based diseases, with the largest decrease in the rate of hospitalisations for scabies (from 208 to 184 per 100 000 population) (table 10A.2.1).

### While hospitalisation rates for Aboriginal and Torres Strait Islander people increase in line with remoteness, this gap has narrowed

Hospitalisation rates in remote areas were 4.1 times the rates in major cities in
2010–2012, decreasing to a ratio of 2.6:1 in 2016–2018. This narrowing was due to a combination of increasing rates in major cities (and regional areas) and decreasing rates in remote areas (a pattern observed for intestinal infectious diseases and influenza and pneumonia — for bacterial diseases, the rate increased across all areas) (table 10A.2.4).

### For Aboriginal and Torres Strait Islander people the rates are more than double those of non-Indigenous people, and the gap is widening…

In 2018‑19, after adjusting for differences in population age structures, hospitalisation rates for diseases associated with poor environmental health were 2.5 times higher for Aboriginal and Torres Strait Islander people than for non‑Indigenous people, up from a rate ratio of 2.0:1 in 2010-11 (table 10A.2.1). While the rate increased for both Aboriginal and Torres Strait Islander people and non-Indigenous people between 2010-11 and 2018-19, the increase was larger for Aboriginal and Torres Strait Islander people (1360 compared to 271 per 100 000 population, respectively, over this period).

The largest gap was in hospitalisation rates for influenza and pneumonia, where rates for non-Indigenous people have decreased in recent years whereas rates for Aboriginal and Torres Strait Islander people have continued to increase (figure 10.2.1).

Acute rheumatic fever and scabies are close to being unknown in the non‑Indigenous population, but remain at relatively high rates for Aboriginal and Torres Strait Islander people (table 10A.2.1). In particular, the age-adjusted hospitalisation rate for Aboriginal and Torres Strait Islander people in remote areas for scabies is almost 120 times the rate for non‑Indigenous people in remote areas (table 10A.2.4), with over 1500 hospitalisations for Aboriginal and Torres Strait Islander people in 2018-19 (table 10A.2.1).

| Figure 10.2.1 Age‑standardised hospitalisation rates for selected diseases, 2010-2011 to 2018-19**a** |
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| Figure 10.2.1 Age-standardised hospitalisation rates for selected diseases, 2010-2011 to 2018-19  Intestinal infectious diseases  More details can be found within the text surrounding this image.Figure 10.2.1 Age-standardised hospitalisation rates for selected diseases, 2010-2011 to 2018-19  Influenza and pneumonia  More details can be found within the text surrounding this image.Figure 10.2.1 Age-standardised hospitalisation rates for selected diseases, 2010-2011 to 2018-19  Bacterial diseases  More details can be found within the text surrounding this image.Figure 10.2.1 Age-standardised hospitalisation rates for selected diseases, 2010-2011 to 2018-19  Acute upper respiratory infections  More details can be found within the text surrounding this image.Figure 10.2.1 Age standardised hospitalisation rates for selected diseases, 2010-2011 to 2018-19  Legend to figures  More details can be found within the text surrounding this image. |
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| a See table 10A.2.1 for detailed definitions, footnotes and caveats. |
| *Source*: AIHW (unpublished) National Hospital Morbidity Database; table 10A.2.1. |
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### …and Aboriginal and Torres Strait Islander people are more likely to die from environmentally-based diseases than non-Indigenous people

Death rates for diseases associated with poor environmental health are higher for Aboriginal and Torres Strait Islander people than for non-Indigenous people. After adjusting for population age structures, the death rate for Aboriginal and Torres Strait Islander people from these diseases was 1.6 times the rate for non‑Indigenous people in 2014–2018 (table 10A.2.5). This ratio (and its associated rates) remains largely unchanged since
2009–2013.

### Overcrowded housing, poor housing quality, insufficient community infrastructure and issues accessing health care services are all risk factors for environmental health diseases…

Overcrowded and poor quality housing (section 10.1 *Overcrowding in housing*), insufficient community infrastructure and issues accessing health care services (section 8.1 *Access to primary health care*) are risk factors associated with certain environmental health diseases that need to be addressed.

Overcrowding and poor housing quality (including poor health hardware[[11]](#footnote-11)) are linked to higher rates of environmental health diseases. Overcrowding can lead to deterioration in housing quality and breakdown in household facilities (such as toilets and washing machines) that are important for maintaining good hygiene (Ali, Foster and Hall 2018). Overcrowded and poor quality housing have been linked with higher rates of gastrointestinal, skin, ear, eye, and respiratory illnesses for Aboriginal and Torres Strait Islander people (Ali, Foster and Hall 2018; May, Bowen and Carapetis 2016). Furthermore, overcrowding can mean that infectious diseases, once present in a community, can circulate more rapidly (May, Bowen and Carapetis 2016).

Insufficient community infrastructure and services can result in higher exposure to environmental health diseases. For example, exposure to dust from unsealed roads and community spaces is a risk factor that leads to higher levels of trachoma and lung infections (Clifford et al. 2015; The Kirby Institute 2015). Similarly, insufficient community facilities and services — such as ablution blocks without running water, a lack of waste disposal facilities and limited animal control measures — are risk factors for environmental health diseases (Department of Health 2014; McDonald, Bailie and Michel 2013; Melody et al. 2016).

Lack of access to health care services for Aboriginal and Torres Strait Islander people also contributes to their higher rates of environmental health diseases. For example, streptococcal infections can lead to rheumatic heart disease if left untreated (May, Bowen and Carapetis 2016). Similarly, untreated infectious skin diseases can also lead to further health complications for Aboriginal and Torres Strait Islander people (Yeoh et al. 2017).

And lack of access to health care services can also affect access to vaccines important in preventing these diseases. Annual influenza vaccinations have been found to reduce the likelihood of hospitalisations due to influenza (Cheng et al. 2017). Stakeholders in an evaluation of the influenza immunisation program identified the following barriers to accessing the vaccine; difficulty getting transport to immunisation services, lack of culturally appropriate services, experiences of systematic discrimination and language barriers (National Centre for Immunisation Research and Surveillance 2018). However, unlike other vaccines on the National Immunisation Program, influenza vaccines do not attract notification payments for immunisation providers — so the relatively low coverage rates are likely to incorporate some level of under-reporting (National Centre for Immunisation Research and Surveillance 2018).

### …and addressing these risk factors is a shared responsibility

Governments, communities, individuals and health practitioners all have a role to play in addressing risk factors for environmental health disparities. Many environmental health factors are modifiable, and reducing their negative impacts will likely reduce the cumulative effects on individuals (Clifford et al. 2015). Effective strategies to address environmental risk factors require collaboration between governments (including across government agencies), Aboriginal Community Controlled Health Organisations, service providers, communities and families (Department of Health 2013; Standen et al. 2020).

Governments have a central role in addressing the risk factors for poor environmental health that are prevalent for Aboriginal and Torres Strait Islander people. Improving the quantity and quality of housing, ensuring the availability of functioning health hardware and increasing access to health care services are all strategies to address these risk factors. Strategies to improve the quantity of appropriate housing to address overcrowding and improve access to health services are discussed in section 10.1 *Overcrowding in housing* and section 8.1 *Access to primary health care* respectively.

* For overcrowding: increasing the stock of social housing, addressing housing affordability issues, and ensuring that social housing for Aboriginal and Torres Strait Islander people is governed and designed by people with an understanding of their cultural needs.
* For access to health services: increasing access to Aboriginal Community Controlled Health Services, employing culturally competent health professionals, and improving access to telehealth services.

Enhancing the quality of housing is also important in improving environmental health and reducing the rates of associated diseases. This includes installing good quality health hardware and ensuring regular maintenance of housing and health hardware (Standen et al. 2020).

Once someone does become ill, it is important that early treatment is effective to reduce the severity and length of their illness. Research indicates that collaboration focused in areas like reducing and preventing antimicrobial resistance[[12]](#footnote-12) and treating scabies, will be important to reduce the rates of environmental health diseases for Aboriginal and Torres Strait Islander people, particularly in remote communities (Bowen et al. 2019).

* Antimicrobial resistance exists where these medicines become ineffective and infections persist in the body, increasing the risk of spread to others (World Health Organization nd). Establishing stewardship for antimicrobial resistance is an important step in working with the community and health services providers to reduce and prevent resistance (Bowen et al. 2019).
* Collaboration between Aboriginal researchers and the University of Canberra have developed a treatment for scabies that utilises both Aboriginal bush medicine and Western medicine. The new treatment is easier to use than previous treatments and is hoped to encourage proper and consistent application which is vital in the treatment of scabies (Lazaroo 2019).

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## 10.3 Access to clean water and functional sewerage and electricity services[[13]](#footnote-13)

| Box 10.3.1 Key messages |
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| * The provision and maintenance of clean drinking water, sewerage treatment and electricity services is important for all people, but is mainly an issue for people living in remote areas. Poor provision and maintenance can affect these remote communities and the wellbeing of people living in them.
* Data have not been available since 2006 for the main measure for this section — access to common/community water, sewerage and electricity services — but more recent research indicates that the standard of water, sewerage and electricity services provided to Aboriginal and Torres Strait Islander people varies depending on where they live.
* In 2018-19, about one in five Aboriginal and Torres Strait Islander households lived in housing of an unacceptable standard, a figure that has remained unchanged since 2008.
* Most Aboriginal and Torres Strait Islander households reported working facilities to support their key household needs. Aboriginal and Torres Strait Islander households in non-remote areas reported better access to working household facilities across all categories than those in remote areas.
* But one in three Aboriginal and Torres Strait Islander households reported living in dwellings with major structural problems, an increase of seven percentage points since 2014-15.
* The quality of housing can be improved for Aboriginal and Torres Strait Islander households by investing in suitable design and construction, reducing overcrowding and ensuring regular repairs and maintenance.
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| Box 10.3.2 Measures of access to clean water, functional sewerage and electricity services |
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| There are two main measures for this indicator.* *Access to common/community water, sewerage and electricity services* is defined as the proportion of discrete Indigenous communities with access to common/community water, sewerage and electricity services. There is no current data source available for this measure (the most recent available data are for 2006 — tables 10A.3.9–14).
* *Aboriginal and Torres Strait Islander households living in housing of an acceptable standard* is defined as the proportion of households with four working facilities and not more than two major structural problems. The data source for this measure is the ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS)/National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), with the most recent data for 2018‑19.

The data from the NATSIHS are ‘self‑reported’ and are based on the respondent’s view of their house and its functionality. |
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People in Australia have the right to an adequate standard of living; this includes access to clean water, functional sewerage and electricity services and an acceptable level of housing standards (Australian Government 2020; Australian Human Rights Commission 2013). These all support healthy living practices (AHMAC 2017) and help prevent diseases associated with poor environmental health.

The provision and maintenance of clean drinking water, sewerage treatment and electricity services is important for all people, but is mainly an issue for people living in remote areas. Poor provision and maintenance can affect the viability of remote communities and the wellbeing of people living in these communities (ABS 2003; Remote Services Reform Unit 2017). Contaminated water, inadequate sewerage and unreliable electricity are risk factors associated with poor health outcomes for all people (Clifford et al. 2015; Hall 2018; Smith et al. 2013). For more information see section 10.2 *Rates of disease associated with poor environmental health*.

Remote communities may have less access to safe drinking water, functional sewerage and electricity due to the high costs of supply and maintenance (Beal et al. 2019; Lormier 2012). Consequently, in remote areas, there is a greater reliance on local or individual household systems — like generators, septic tanks and drinking water sourced from bores and rainwater tanks — which are often less reliable than systems in highly populated areas (Jackson, Stewart and Beal 2019; Thorburn, O’Neil and Hunt 2019).

### The standard of water, sewerage and electricity services provided to Aboriginal and Torres Strait Islander people varies depending on where they live

Many Aboriginal and Torres Strait Islander people live in non-remote areas where reliable drinking water, sewerage and electricity systems are readily available. The size of the networks and population in non-remote areas generally means that the services can be provided in a more cost‑effective manner (Worthington and Higgs 2014).

However, there are some challenges in supplying these services to Aboriginal and Torres Strait Islander people living in remote communities. These challenges are due to the higher costs of infrastructure (for potable water, waste water, dry waste and electricity) and the relative sparseness of the population (Fien and Charlesworth 2012). Recent qualitative research has found that access to water and functional sewerage services is improving in some remote Aboriginal and Torres Strait Islander communities (Hall 2019). That said, overall, it appears that the quality of drinking water and adequacy of sewerage services is still a problem in some communities (Clifford et al. 2015). For example, an audit of essential services in Western Australia found that the drinking water provided to 80 per cent of Aboriginal and Torres Strait Islander communities was sometimes inadequate (Office of the Auditor General Western Australia 2015).

Some of these challenges for remote communities might have technological solutions. Advancements in technology are enabling more reliable access to electricity services, water and wastewater management through local‑level solutions. Renewable and hybrid energy systems are allowing select remote communities to lower their energy costs and have more secure and reliable supplies of electricity (Arceo, Biswas and John 2019; Australian Renewable Energy Agency 2020). Similarly, new technological advancements are making decentralised water solutions[[14]](#footnote-14) more viable for remote communities (Rajapakse et al. 2014).

Working with remote communities is likely to be an effective way for governments to determine and provide the solutions that best fit local needs. This collaboration and partnership in resource planning and management could benefit both government and the communities (Jackson et al. 2019).[[15]](#footnote-15) Unfortunately, there are limited evaluations of collaborations with remote Aboriginal and Torres Strait Islander communities in water, sewerage or electricity management to provide evidence of its benefits (Jackson et al. 2019). However, international research has found that collaboration with Indigenous populations in the management and governance of water and wastewater systems is important for long-term sustainability (Black and McBean 2017).

### About one in five Aboriginal and Torres Strait Islander households lived in housing of an unacceptable standard, slightly higher than in 2008

The ‘acceptable standard’ measure is made up of two components: working household facilities, and major structural problems.

Nationally in 2018‑19, 20 per cent of Aboriginal and Torres Strait Islander households reported living in houses classified as being of an unacceptable standard — slightly higher than in 2008 (17 per cent) (table 10A.3.1).

### Most Aboriginal and Torres Strait Islander households had working facilities to support their key household needs…

Nationally in 2018‑19, between 96 and 98 per cent of Aboriginal and Torres Strait Islander households reported working facilities for washing people and washing clothes and bedding, and a working sewerage system ─ consistent with or higher than for 2008. For preparing and storing food, the proportion was lower at 91 per cent, which was a decrease since 2008 (table 10A.3.2).

Aboriginal and Torres Strait Islander households in very remote areas reported worse access to working household facilities across all categories (figure 10.3.1).

| Figure 10.3.1 Aboriginal and Torres Strait Islander households with access to working household facilities, by remoteness, 2018‑19**a,b** |
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| Figure 10.3.1 Aboriginal and Torres Strait Islander households with access to working household facilities, by remoteness, 2018-19  More details can be found within the text surrounding this image. |
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| a See table 10A.3.3 for detailed footnotes and caveats. b Error bars represent 95 per cent confidence intervals around the estimate. |
| *Source*: ABS (unpublished) National Aboriginal and Torres Strait Islander Health Survey 2018‑19; table 10A.3.3. |
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### …but one in three Aboriginal and Torres Strait Islander households lived in dwellings with major structural problems

Nationally in 2018‑19, one in three Aboriginal and Torres Strait Islander households lived in a dwelling with major structural problems (33 per cent) (table 10A.3.4). The proportion had increased by seven percentage points, from 26 per cent in 2014-15 (tables 10A.3.4–5). The most commonly reported problem was major cracks in walls or floors (12 per cent) (figure 10.3.2).

Across the ten categories of major structural problems, the proportion of Aboriginal and Torres Strait Islander households reporting problems between 2014-15 and 2018-19:

* increased for four of the categories (walls or windows not straight increased by 4 percentage points, while rising damp, sinking or moving foundations and other major structural problems all increased by 2 percentage points)
* there were no statistically significant changes for the remaining six categories (figure 10.3.2).

| Figure 10.3.2 Aboriginal and Torres Strait Islander households reporting major structural problems, by problem, 2014-15 and 2018-19**a,b** |
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| Figure 10.3.2 Aboriginal and Torres Strait Islander households reporting major structural problems, by problem, 2014-15 and 2018-19   More details can be found within the text surrounding this image. |
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| a Error bars represent 95 per cent confidence intervals around the estimate. b See tables 10A.3.4-5 for detailed footnotes and caveats. |
| *Source*: ABS (unpublished) 2018­19 National Aboriginal and Torres Strait Islander Health Survey and ABS (unpublished) 2014­15 National Aboriginal and Torres Strait Islander Social Survey; tables 10A.3.4-5. |
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### How can the quality of housing be improved for Aboriginal and Torres Strait Islander households?

Poor quality housing can result from initial issues with structure and set up, the impact of overcrowding and a lack of regular repair and maintenance.

Initial investment in suitable housing design, material and construction methods can improve the safety, amenity and durability of remote houses, and reduce recurrent maintenance costs (Australian Government 2017).

Overcrowding in Aboriginal and Torres Strait Islander housing can result in more wear and tear on the housing infrastructure than the infrastructure was built for (AHURI 2017). For example, having more people using an oven will mean more wear and tear on the oven, and so the oven may need to be replaced sooner. Reducing overcrowding will help to maintain houses at an acceptable standard (Australian Government 2017). Overcrowding and ways to reduce overcrowding are addressed in section 10.1 *Overcrowding in housing*.

Regularly repairing and maintaining properties is a direct way to maintain their quality. Repairs and maintenance are more challenging in remote contexts, but it is essential for housing departments and housing service providers to continue working to develop systems and strategies that proactively manage assets (Foster and Hall 2019; Habibis et al. 2016). As well as developing systems and strategies, expanding or engaging a local workforce to undertake the repairs may reduce travel and repair costs and time delays (Habibis et al. 2016; Hunt 2018; Johnston et al. 2013).

### Future directions in data

Recent data on access to water, sewerage and electricity services are not available. The Community Housing and Infrastructure Needs Survey (CHINS) was conducted in 1994, 2001 and 2006. There is currently no date for the next CHINS. New data, whether from the CHINS or a comparable national survey, are critical to enable ongoing reporting on Aboriginal and Torres Strait Islander people’s access to water, sewerage and electricity services.

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1. The Steering Committee notes its appreciation to the Expert Reference Panel on Aboriginal and Torres Strait Islander Environmental Health, which reviewed a draft of this section of the Report. [↑](#footnote-ref-1)
2. Diseases such as childhood kidney disease, eye diseases, childhood hearing impairments, rheumatic fever and heart disease as well as psychological stress. [↑](#footnote-ref-2)
3. See ‘future directions in data’ for more information. [↑](#footnote-ref-3)
4. The ABS define primary homelessness where people do not have conventional accommodation, for example, they are living in the streets, in deserted buildings, improvised dwellings, under bridges, or in parks (ABS 2011) [↑](#footnote-ref-4)
5. Severely crowded dwellings are those that need four or more extra bedrooms. [↑](#footnote-ref-5)
6. ‘Social housing’ includes both public and community housing. ‘Community housing’ incorporates both State owned and managed Indigenous housing and Indigenous community housing respectively. [↑](#footnote-ref-6)
7. Rates of overcrowding vary across jurisdictions and within and across tenure types. For more information see table 10A.1.9. [↑](#footnote-ref-7)
8. The ALC represents all Traditional Owners across the Archipelago. [↑](#footnote-ref-8)
9. The Steering Committee notes its appreciation to the Expert Reference Panel on Aboriginal and Torres Strait Islander Environmental Health, which reviewed a draft of this section of the Report. [↑](#footnote-ref-9)
10. It should be noted that there is no attribution made to the environmental component for these disease types. Essentially, each of these disease types is treated as being 100 per cent attributable to environmental factors. See McMullen, Eastwood and Ward (2016) for more information. [↑](#footnote-ref-10)
11. Health hardware includes safe electrical systems, toilets, showers, taps, kitchen cupboards and benches, stoves, ovens and fridges collectively (DoH 2013). [↑](#footnote-ref-11)
12. The World Health Organization (nd) states that “Antimicrobial resistance happens when microorganisms (such as bacteria, fungi, viruses, and parasites) change when they are exposed to antimicrobial drugs (such as antibiotics).” [↑](#footnote-ref-12)
13. The Steering Committee notes its appreciation to the Expert Reference Panel on Aboriginal and Torres Strait Islander Environmental Health, which reviewed a draft of this section of the Report. [↑](#footnote-ref-13)
14. ‘Decentralised water solutions’ refers to systems that supply water resources that are sourced from the local area. [↑](#footnote-ref-14)
15. These benefits include more robust and long-lasting decisions, relationship-building and trust between government and community members, and capacity building and empowerment for local people. [↑](#footnote-ref-15)