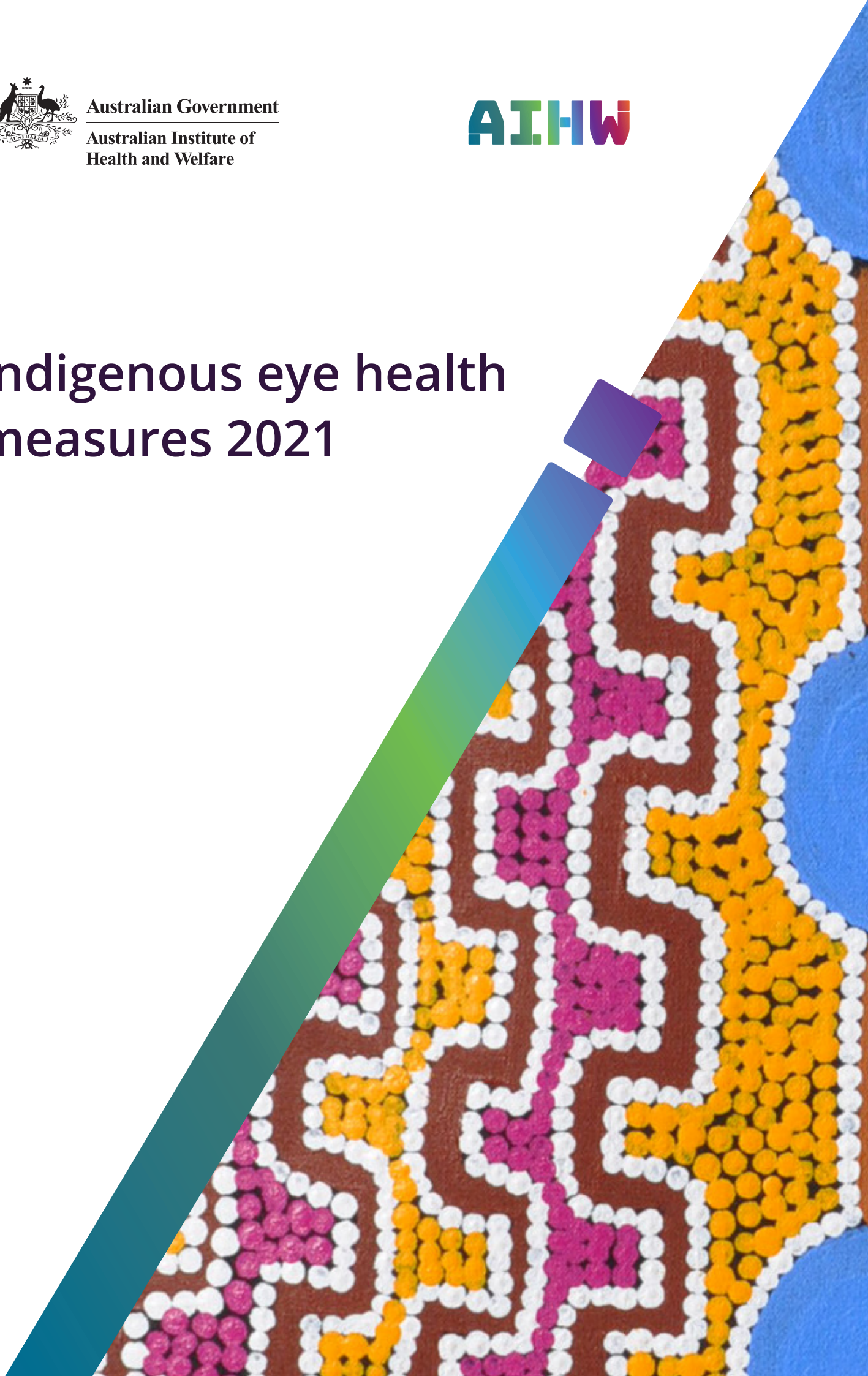




Australian Government  
Australian Institute of  
Health and Welfare



# Indigenous eye health measures 2021






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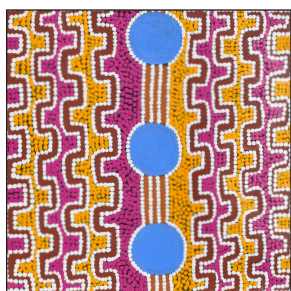
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### **A message from the Indigenous Eye Health Data Report Advisory Group**

Since it was first published in 2017, the Australian Institute of Health and Welfare's (AIHW's) annual Indigenous eye health measures report has been a valuable tool to monitor progress in driving down rates of preventable vision loss for Aboriginal and Torres Strait Islander people and in improving their eye health.

The report's evidence-based insights help to maintain a strong focus on the gains made and on areas where improvement is still needed, either nationally or in specific regions.

The reporting has evolved over time to provide further information at local levels. This helps communities and services to plan and monitor pathways of care and improved eye health outcomes.

The need is ongoing for strong data collections and reporting not only to monitor changes in the eye health of Aboriginal and Torres Strait Islander people over time and their access to and use of eye health services, but also to identify gaps in service delivery.

### **Indigenous Eye Health Data Report Advisory Group**

The Indigenous Eye Health Data Report Advisory Group was established to provide expert advice to the AIHW on the national Indigenous eye health data report series. Members of this multi-disciplinary group are familiar with eye health conditions, the policy environment and programs aimed at improving eye health, eye health service providers, and data and indicators relevant to monitoring and reporting on eye health.



## Summary

This report is part of a series of annual reports that update the Indigenous eye health measures. These measures were developed to provide an evidence base to monitor changes in eye health among Aboriginal and Torres Strait Islander people over time and their use of eye health services. Summary results for changes in key eye health measures since the previous reporting period are shown in Table 1.

### Prevalence

- Trachoma is a highly infectious disease of the eye which—if left untreated—can result in scarring, in-turned eyelashes (trichiasis) and blindness. The overall prevalence of active trachoma among children aged 5–9 in at-risk communities fell from 15% in 2009 to 4.8% in 2012 and has since plateaued at around this level (4.5% in 2019).

### Diagnosis and screening

- Between 2010–11 and 2019–20, the proportion of Indigenous Australians who had an eye health check as part of a health assessment increased from 11% to 28% (based on age-standardised rates).
- In 2019–20, 12% of Indigenous Australians (around 104,300) had an eye examination by an optometrist or ophthalmologist.
- Diabetic retinopathy is a complication of diabetes which can result in vision loss if not detected and treated early. Among Indigenous Australians who had a diabetes test, the age-standardised proportion who were screened for diabetic retinopathy rose from an estimated 30% in 2008–09 to 34% in 2019–20.

### Treatment

- In 2018–19, the age-standardised cataract surgery rate for Indigenous Australians was about 8,519 hospitalisations per 1,000,000 population—an increase of 43% since 2011–12.
- In 2019, the overall treatment coverage of active trachoma cases in at-risk communities was 89%—that is, 4,419 community members identified as having trachoma received treatment. This included children with active trachoma, along with their household contacts and other community members.
- In 2019–20, 15,436 pairs of spectacles were dispensed to Indigenous Australians under state spectacle schemes by New South Wales, Victoria, Queensland, South Australia and Tasmania (the states and territories able to provide data). Of these, Victoria (2,490 spectacles, 41 per 1,000 population) came closest to meeting the estimated number of spectacles needed (3,923)—63% of the population-based need met.





## Workforce and outreach

- The number of occasions of service provided under the Visiting Optometrists Scheme—which provides specialist eye health services to Indigenous Australians in mainly regional and remote areas—have fluctuated, but overall services more than tripled between 2010–11 (around 8,300 occasions of service) and 2018–19 (around 25,850) before declining in 2019–20 (around 22,089).

## Comparison with non-Indigenous Australians

- Between 2009–10 to 2018–19, the total age-standardised proportion of Indigenous Australians tested for diabetes who had an eye examination increased from 29% to 36% before decreasing to 34% in 2019–20, while for non-Indigenous Australians it rose from 35% to 44% before declining to 42%.
- In 2018–19, age-standardised hospitalisation rates for Indigenous Australians for cataract surgery (8,519 per 1,000,000) were lower than for non-Indigenous Australians (9,102 per 1,000,000).
- In 2018–19, the proportion of Indigenous Australians who had elective cataract surgery and were treated within 90 days was lower than the proportion of non-Indigenous Australians who were treated within this time (42% and 53%, respectively).

**Table 1: Summary results for the key Indigenous eye health measures**

Measures	Reporting period	Indigenous rate	Indigenous trends
<b>Prevalence</b>			
1.1 Prevalence of			
(i) Vision impairment (% aged 40 and over) (n=1,738)	2016	10.4	#
(ii) Blindness (% aged 40 and over) (n=1,738)	2016	0.3	#
1.2 Main causes of vision impairment and blindness			
(i) Refractive error (% of those with vision impairment) (n=183)	2016	60.8	#
(ii) Cataract (% of those with vision impairment) (n=183)	2016	20.1	#
(iii) Diabetic retinopathy (% of those with vision impairment) (n=183)	2016	5.2	#
1.3 Prevalence of			
(i) Trachoma (% aged 5–9, Qld, WA, SA and NT)	2019	4.5	↑
(ii) Trichiasis (% aged 40 and over, WA, SA and NT)	2019	0.1	↓
<b>Diagnosis and screening services</b>			
2.1 Annual health assessments (%)	2019–20	28	↓
2.2 Eye examinations undertaken by an eye care professional (%)	2019–20	12	↔
2.3 Target population screened for diabetic retinopathy (%)	2019–20	42	↔
2.4 Screening coverage			
(i) Trachoma (% aged 5–9, Queensland, WA, SA and NT)	2019	92	↑
(ii) Trichiasis (% aged 40 and over, WA, SA and NT)	2019	43	↓
2.5 Undiagnosed eye conditions (% aged 40 and over) (n=1,783)	2016	57	#
2.6 Eye health problems managed by GPs	2010–15		#
<b>Treatment services</b>			
3.1 Hospitalisations for diseases of the eye (number per 1,000)	2017–19	5.8	↑
3.2 Hospitalisations for injuries to the eye (number per 1,000)	2017–19	1.2	↓
3.3 Hospitalisations for eye procedures (number per 1,000)	2017–19	5.7	↑
3.4 Cataract surgery rate (number per 1,000,000)	2017–19	3,655	↑

*continued*

Table 1 (continued): Summary results for the key Indigenous eye health measures

Measures	Reporting period	Indigenous rate	Indigenous trends
<b>Treatment services</b>			
3.5 Cataract surgical coverage rate (% aged 40 and over) (n=183)	2016	59	#
3.6 Waiting times for elective cataract surgery (median waiting time in days)	2018–19	124	↓
3.7 Target population treated for diabetic retinopathy (% screened for diabetes)	2019–20	1.6	↑
3.8 Treatment coverage			
(i) Trachoma (% community members treated, all ages, Qld, WA, SA and NT)	2019	89	↑
(ii) Trichiasis (% with trichiasis treated number aged 40 and over, Qld, WA, SA and NT)	2019	52	↓
3.9 Treatment of refractive error	2016	94	#
3.10 Spectacles dispensed under state schemes	2019–20	#	#
<b>Workforce and outreach services</b>			
4.1 Number and rate of optometrists (FTE per 100,000)	2019	19	↑
4.2 Number and rate of ophthalmologists (FTE per 100,000)	2019	4	↔
4.3 Number and rate of allied ophthalmic personnel			
(i) optical dispensers (FTE per 100,000)	2016	15	#
(i) orthoptists (FTE per 100,000)	2016	4.6	#
4.4 Occasions of eye health services provided under outreach and other programs			
(i) Visiting Optometrists Scheme (VOS) (number)	2019–20	22,089	↓
(ii) Rural Health Outreach Fund (RHOF) (number)	2019–20	5,910	↓
(iii) Medical Outreach Indigenous Chronic Disease Program (MOICDP) (number)	2019–20	4,819	↑
(iv) Combined outreach (number)	2019–20	32,818	#
(v) Eye and Ear Surgical Support Services program (EESS) (number)	2019–20	664	#

Not updated since previous reporting period

Discontinued data

↑ = increased from the preceding reporting period, ↓ = decreased from the preceding reporting period, ↔ = no change over time or no clear trend since the preceding reporting period, # data not available, FTE = full-time equivalent.

Note: Measures 4.1 and 4.2 are total rates and not Indigenous rates.

Source: See chapters 1, 2, 3 and 4 and the supplementary tables for detailed results.





# Introduction

This publication and the accompanying web report are part of a series of annual reports that update the Indigenous eye health measures. This report includes comprehensive eye health data at the national, state and regional levels. The report covers the prevalence of vision impairment and blindness; diagnosis and screening; treatment; workforce; and outreach programs. The report provides an evidence base for monitoring changes in Aboriginal and Torres Strait Islander eye health over time, access to and use of eye health services, and for identifying gaps in service delivery.

Eye health has a profound impact on a person's quality of life and ability to perform everyday activities. Eye diseases and vision problems are the most common long-term health conditions reported by Aboriginal and Torres Strait Islander Australians, with over one-third of Indigenous Australians (38%) self-reporting eye or sight problems (ABS 2018–19).

Vision loss may limit opportunities for physical mobility, work, education and social engagement. Those with vision loss may also be more dependent on services and other people and can also face an increased risk of injury or death and have reduced life expectancy (Razavi et al. 2018).

While Aboriginal and Torres Strait Islander children have a lower incidence of poor vision than other Australian children, the prevalence of vision impairment increases markedly with age and Aboriginal and Torres Strait Islander people over the age of 40 have nearly 3 times the rate of vision loss of other Australians (Foreman et al. 2016). There is however evidence of some improvement in recent years—with findings of the 2016 National Eye Health Survey indicating that the prevalence of blindness among Indigenous adults has declined, possibly related to improvements in prevention and treatment services.

Most of the blindness and vision impairment experienced by Indigenous Australians is caused by conditions that are preventable or amenable to treatment—that is, vision loss due to refractive error, cataract and diabetic retinopathy (see Box 1 for main eye conditions). For example, use of glasses (spectacles) and cataract surgery are 2 relatively low-cost, effective interventions for treating the main causes of vision loss (Foreman et al. 2016).

### Box 1: Main eye health conditions affecting Indigenous Australians

**Refractive error** refers to problems with the focusing of light and occurs when the shape of the eye prevents light from focusing directly on the retina. It causes long- or short- sightedness and is a frequent cause of reduced visual acuity. The error can generally be corrected with the use of spectacles and contact lenses, or through laser surgery (National Eye Institute 2010).

A **cataract** is a mostly degenerative condition in which the lens of the eye clouds over, obstructing the passage of light to the retina and causing vision impairment and, potentially, blindness. Cataracts usually develop slowly and at different rates in each eye, and most cataracts are due to ageing. Other risk factors include smoking, exposure to the sun, diabetes, and injury to the eye. Cataracts can be treated with surgery which involves replacing the clouded lens with 1 made from plastic (Taylor et al. 2012). Surgery can be necessary when the cataract begins to interfere with daily activities.

**Diabetic retinopathy** is a complication of diabetes and refers to damage to the blood vessels in the retina. People with diabetes are at risk of developing diabetic retinopathy, but factors that increase the risk include poor control of diabetes, having diabetes for a long period of time, high blood pressure, high cholesterol, and smoking (Biotext 2008). Initially, the condition may cause no symptoms or only mild vision problems, but if poor diabetes management continues it can result in blindness—so early diagnosis is important. At any stage of severity, it can be associated with diabetic macular edema, a swelling of the macular area of the retina, that impacts on vision. A retinal camera is used by eye specialists to screen for diabetic retinopathy. Treatment includes laser surgery to repair leaking blood vessels, injections to decrease inflammation and, in more severe cases, surgery (Healthinfonet 2016).

**Trachoma** is an infectious disease of the eye caused by *Chlamydia trachomatis*. If left untreated, it can result in scarring, in-turned eyelashes (trichiasis) and blindness. The early stage of trachoma usually occurs in young children aged 2–3, but can also occur in older children. Trachoma is highly infectious and easily spread; it is generally found in dry and dusty environments where people live in overcrowded conditions and where personal and community hygiene are hard to maintain. The 'SAFE' strategy—surgery to prevent blindness by correcting inverted eyelashes; antibiotics to treat active infection; face washing to stop eye-seeking flies that spread infection; and improving environmental access to water and improved sanitation—is the approach recommended by the World Health Organization (WHO) to control trachoma (Kirby Institute 2015). Antibiotics (azithromycin) are used to treat trachoma, while surgery is required to prevent blindness for people who have trichiasis. Facial cleanliness and environmental improvements are required to stop the spread of the condition (Healthinfonet 2016).

## Protective and risk factors for eye health problems

The factors that contribute to poorer eye health for Aboriginal and Torres Strait Islander Australians are complex and may be related to a range of social and cultural determinants of health (Kirby Institute 2019; Razavi et al. 2018; Taylor 2012).

### Health risk factors

Factors contributing to poorer eye health include those that affect health more generally such as age, high blood pressure, obesity, diabetes, low birth weight and malnutrition. These, in turn, are linked to health behaviours such as diet, and alcohol and tobacco use.

In addition, past eye health, including increased incidence of eye injuries or repeated eye infections, for example trachoma, can increase the risk of poorer eye health.

## Environmental and socioeconomic factors

Eye health is associated with broader socioeconomic factors such as education, employment and income. In addition, environmental conditions such as exposure to dust, ultra-violet (UV) exposure and access to nutritional food all impact eye health. Living conditions such as housing standards and the extent of overcrowding and how these affect hygiene practices, such as face washing and sanitation, also influence the quality of eye health.

## Access to services

Despite higher rates of vision loss, research consistently shows that Indigenous Australians use eye health services at lower rates than non-Indigenous Australians (see for example AIHW 2019; Turner et al. 2011).

Eye health is influenced by accessibility and availability of eye health services, including their cost, location, and availability of transport and outreach services. These factors mean living in a remote area is a risk factor for eye health.

Aboriginal and Torres Strait Islander Australians face many barriers to accessing eye health services—financial, cultural, social and locational barriers. Access is also influenced by the complexity of the eye health system and continuity of care—between general practitioners (GPs), optometrists, ophthalmologists, Aboriginal Health Workers and other health care providers. For example, treatment of eye conditions, such as diabetic retinopathy and cataract, involve complex clinical pathways and a series of visits to different providers (Taylor et al. 2012). This complexity means that people may not complete treatment.

A perceived lack of cultural safety in health care services, as defined with reference to the experience of Aboriginal and Torres Strait Islander people, may also act as a barrier to accessing eye care services. Improving cultural safety has been shown to increase Indigenous Australians access to health care. For example, patients are more likely to attend ophthalmology appointments if eye clinic staff take a sensitive, patient-centred approach and provide encouragement, reminders and transport (Razavi et al. 2018).

Primary health care has an important role in providing primary eye care, as well as facilitating access to culturally competent eye care services, improving the monitoring of eye health and adopting needs-based planning for eye care. Improvements in eye care monitoring and access to eye care services by primary health care services will, in turn, contribute to improvements in Indigenous eye health (Boudville et al. 2013).



## Eye health policy context, services and programs

Across a continuum of care, eye health services cover prevention, screening, diagnosis and treatment services. Services are provided by a range of different health-care providers including GPs, optometrists, ophthalmologists, nurses and Aboriginal Health Workers. A broad overview of these services is provided in Table 2.

The Medicare Benefits Schedule (MBS) provides for general consultations with GPs. All Aboriginal and Torres Strait Islander people are also eligible for an annual Indigenous-specific health check (which incorporates a basic eye health check). The MBS also provides for a comprehensive optometric consultation every 3 years (formerly every 2 years), as well as for consultations for people with existing conditions or significant changes in vision.

**Table 2: Overview of eye health services—continuum of eye care**

<b>Primary</b>	<b>Secondary</b>	<b>Tertiary</b>
<i>Services</i>	<i>Services</i>	<i>Services</i>
Eye health promotion Screening for eye health and vision; basic eye checks Treatment of minor eye conditions (e.g. conjunctivitis, removal of foreign bodies) Diagnosis and referral of more complex cases (e.g. diabetes) Coordination of care Follow-up, post-operative care	Eye examinations Diagnosis and treatment of refractive error Diagnosis and referral for more complex conditions (e.g. cataracts, treatment for diabetic retinopathy) Prescription and supply of visual aids	Medical treatment of eye conditions Cataract surgery, laser treatment and other eye surgery Prescription of all eye care medications
<i>Providers</i>	<i>Providers</i>	<i>Providers</i>
GPs Nurses Aboriginal Health Workers Aboriginal Community Controlled Health Organisation	Optometrists Ophthalmologists Eye health support staff	Ophthalmologists Ophthalmic nurses Hospital staff
<i>Settings</i>	<i>Settings</i>	<i>Settings</i>
Private general medical practices Indigenous primary health-care services Community clinics and health centres	Private practices and clinics Sessional services in Indigenous primary health care and community health centres Outreach services in various settings (e.g. Indigenous primary health-care services; private rooms)	Public and private hospitals Private clinics Outreach services in various settings (e.g. regional hospitals; Indigenous primary health-care services)
<i>Access</i>	<i>Access</i>	<i>Access</i>
No referral required, but optometrists may refer clients	No referral required, but GPs can refer clients	Referral required if claiming Medicare GPs and optometrists can refer clients

Responsibility for eye health services in Australia is shared across different levels of government, the private sector, health-care professions and non-government organisations. Their respective initiatives to prevent and treat vision loss for Aboriginal and Torres Strait Islander people are having a positive impact on Indigenous Australians' access to eye health services.

The Australian Government, through Medicare, funds eye health services provided by GPs, optometrists and ophthalmologists, as well as procedures for private patients in public hospitals. It also funds some targeted eye health programs designed to improve access to eye care services for Aboriginal and Torres Strait Islander Australians. Public hospitals are funded by state, territory and Australian governments, are managed by state and territory governments, and provide services to public and some private patients. States and territories also provide funding for various other eye health services, including outreach programs and spectacle schemes.

## Australian Government initiatives

The Australian Government has committed to ending avoidable blindness in Aboriginal and Torres Strait Islander communities by 2025 (see Box 2). Accordingly, the government is funding a range of initiatives to prevent and treat vision loss, including:

- delivery of health outreach services—funding agreed to 2024
- provision of eye health equipment and associated training for health professionals—the Provision of Eye Health Equipment and Training project was extended to mid-2021
- the Aboriginal and Torres Strait Islander National Subsidised Spectacles Scheme— initiative extended to 2021
- trachoma control, surveillance and reporting—in the May 2021 budget the Government provided around \$19 million to support the goal of trachoma elimination by 2022.
- coordination and integration of eye health services to enhance the patient experience across the continuum of eye care, and activities to improve access to eye-surgery through surgical support
- better data to inform eye health research, monitoring and need
- Medical Benefits Schedule (MBS) items for screening and treatment of eye conditions.

### **Box 2: Ending avoidable blindness in Indigenous communities by 2025**

As part of Australia's Long Term National Health Plan—to build the world's best health system (August 2019)—the Australian Government will develop and implement a 10-year National Preventive Health Strategy, including an Indigenous Preventive Health Plan.

One of the key targets for improved health outcomes under the Indigenous Preventive Health Plan, is ending avoidable blindness in Indigenous communities by 2025 (Department of Health 2019).

Other initiatives include:

- a new National Agreement on Closing the Gap. This has been undertaken in genuine partnership between Australian governments and the Coalition of Aboriginal and Torres Strait Islander Peak Organisations (see Box 3).
- Strong Eyes, Strong Communities—a five year plan for Aboriginal and Torres Strait Islander eye health and vision 2019–2024, to close the gap for vision and achieve a world class system of eye health and vision care for Indigenous Australians (Vision 2020 Australia 2018).

- consolidation of outreach program service delivery standards by the Department of Health working with key stakeholders. These reforms maximise funding flexibility, reduce practical barriers to local access, minimise duplication and support innovation. The need for these reforms was noted by contributors to the Strong Eyes, Strong Communities report (Vision 2020 Australia 2018). In their response to the Revised Outreach Service Delivery Standards and Reporting template, Vision 2020 Australia and its members noted the need for a broader policy review of outreach programs to address these issues.
- the second National Eye Health Survey now scheduled for completion in 2022 will obtain updated data on the incidence of vision loss, blindness and eye disease in Australia. The previous survey was conducted in 2016.
- development of promotional materials by the University of Melbourne's Indigenous Eye Health Unit (IEHU) and its partners, aimed at eliminating trachoma and other infectious diseases. Existing messages around hand washing and good hygiene have been expanded to prevent the spread of COVID-19 (IEHU 2020).
- the co-sponsorship by the Australian Government of the United Nations (UN) General Assembly Resolution '*Vision for Everyone: accelerating action to achieve the Sustainable Development Goals*'. This commits the international community to ensure access to eye care for people living with preventable sight loss by 2030 (General Assembly resolution 2021).
- co-sponsorship by the Australian Government of the World Health Assembly resolution to reinforce the importance of continued investment in eye care, and to integrate eye health into broader health systems and subsequent support for 2 new global eye health measures, cataract surgery coverage and refractive error coverage.
- release of WHO's 2019 *World report on vision* and the subsequent release of the Lancet Global Health Commission's report *Vision beyond 2020*, which emphasises the critical link between vision and broader health.

### **Box 3: National Agreement on Closing the Gap**

The new national agreement on closing the gap has been built around 4 priority reforms that have been directly informed by Aboriginal and Torres Strait Islander people. Each priority reform includes a target and an outcome. These focus on measuring the changes governments are making in the way they work with Aboriginal and Torres Strait Islander people. Indicators have also been developed to support reporting against the Priority reforms. These are:

- formal partnerships and shared decision making
- building the community-controlled sector
- transforming Government organisations
- shared access to data and information at a regional level.

The agreement provides for more shared accountability and ability to demonstrate progress than before. For the first time, the Commonwealth, states and territories, local government and the Coalition of Peaks are jointly accountable for implementation of targets under the National Agreement. Checks on progress toward achieving commitments in the Agreement will be managed through ongoing monitoring by the Joint Council on Closing the Gap and through the Productivity Commission and Indigenous-led reviews every 3 years (see, <http://www.closingthegap.pmc.gov.au>).

## State-based programs and services

All jurisdictions have subsidised spectacle schemes which provide eye care and visual aids to clients at low or no cost. These schemes have varying eligibility criteria and different levels of entitlements. The schemes generally provide access for those eligible for pensioner or benefit concessions, through participating optometrists and ophthalmologists. Some states also provide access for Indigenous people through Aboriginal Community Controlled Health Services. These programs are currently being updated to enhance Indigenous identification and improve access. Recently some states have broadened their spectacle schemes by expanding eligibility requirements to Aboriginal and Torres Strait Islander customers.

## Outreach programs

Outreach programs aim to improve access to medical specialists, to GPs, and to allied and other health providers for people living in rural, regional and remote areas where these services are generally not available. Outreach services for eye health exist in all states and territories, though the models of service delivery vary. These services are provided through a mix of funding from the Australian Government, from state and territory governments, and from philanthropic and educational organisations.

## The measures and the data sources

The framework for this report groups the 23 eye health measures into 4 categories as shown in Table 3.

**Table 3: The Indigenous eye health measures**

Measures	Main data source	Latest year of reporting
<b>Prevalence</b>		
1.1 Prevalence of vision impairment and blindness	NEHS	2016
1.2 Main causes of vision impairment and blindness	NEHS	2016
1.3 Prevalence of trachoma and trichiasis	ATSR	2019
<b>Diagnosis and screening services</b>		
2.1 Annual health assessments	MBS	2019–20
2.2 Eye examinations undertaken by an eye care professional	MBS	2019–20
2.3 Target population screened for diabetic retinopathy	MBS	2019–20
2.4 Trachoma and trichiasis screening coverage	ATSR	2019
2.5 Undiagnosed eye conditions	NEHS	2016
2.6 Eye health problems managed by GPs	Discontinued*	2010–15
<b>Treatment services</b>		
3.1 Hospitalisations for diseases of the eye	NHMD	2017–19
3.2 Hospitalisations for injuries to the eye	NHMD	2017–19
3.3 Hospitalisations for eye procedures	NHMD	2017–19
3.4 Cataract surgery rate	NHMD	2017–19
3.5 Cataract surgical coverage rate	NEHS	2016
3.6 Waiting times for elective cataract surgery	NHMD	2017–19
3.7 Target population treated for diabetic retinopathy	MBS	2019–20
3.8 Trachoma and trichiasis treatment coverage	ATSR	2019
3.9 Treatment of refractive error	NEHS	2016
3.10 Spectacles dispensed under state schemes	State admin	2019–20
<b>Workforce and outreach services</b>		
4.1 Number and rate of optometrists	NHWDS	2019
4.2 Number and rate of ophthalmologists	NHWDS	2019
4.3 Number and rate of allied ophthalmic personnel	ABS	2016
4.4 Occasions of eye health services provided under outreach and other programs	DoH admin data	2019–20

\* Data for this measure were previously sourced from the Bettering the Evaluation and Care of Health (BEACH) data which ceased collection in 2015. ABS = Australian Bureau of Statistics, ATSR = Australian Trachoma Surveillance reports, DoH = Department of Health, GP = general practitioner, MBS = Medicare Benefits Schedule, NEHS = National Eye Health Survey, NHMD = National Hospital Morbidity Database, NHWDS = National Health Workforce Data Set.

Measures in the first category provide information about the extent of Aboriginal and Torres Strait Islander vision problems. The next 2 categories focus on the continuum of eye care services, starting with diagnosis and screening of vision problems and then treatment of eye diseases and vision problems. The final category has measures on workforce and outreach programs which aim to increase Indigenous access to eye health services.

Where possible, the data for each of the measures are presented:

- for both Indigenous and other Australians
- by age and sex
- by state/territory
- by remoteness areas
- over time
- and/or primary health network (PHN) and/or Roadmap region.

Where available, the report presents data against the measures disaggregated by ten year age groupings. However, data limitations constrain the disaggregations that can be presented for older age groups across the report, as rates become unreliable and volatile due to small numbers. Therefore data are presented to:

- age 75 and over for ABS survey data, MBS Indigenous health checks and hospitalisation rates. However, numbers of patients treated and population denominators for age groups 75–84 and 85 and over for hospitalisation rates are now reported separately in the supplementary tables for this report.
- age 65 and over for MBS measures relying on the Voluntary Indigenous Identifier (VII)

The main data sources used to report on the measures were:

- National Eye Health Survey, Centre for Eye Research and Vision 2020 Australia
- National Hospital Morbidity Database (NHMD), AIHW
- Australian Trachoma Surveillance reports (ATSR), Kirby Institute
- Medical Benefits Schedule (MBS) data, Department of Health
- National Health Workforce Data Set (NHWDS), Department of Health
- Department of Health administrative data on outreach programs
- State government administrative data on the spectacle subsidy schemes.

More details about the data sources and the quality of the Indigenous data reported, are provided in the following chapters under each measure and in Appendix A. Details of how the different population rates presented in the report are calculated are presented in Box 4.

#### **Box 4: Population rates**

There are 3 types of population rates used to present data in this report:

- Crude rates are the number of events divided by the total population.
- Age-specific rates are the number of events for a specified age group divided by the population in that age group.
- Age-standardised rates are the crude rates for different groups, such as Indigenous and non-Indigenous Australians, applied to a standard population to produce a summary rate.

Crude rates are used to look at differences within a population, such as the Aboriginal and Torres Strait Islander population. These can be misleading, however, when making comparisons between populations with different age structures, such as Indigenous and non-Indigenous Australians. It is important to take into account these differences, particularly when looking at conditions that are age related, such as refractive error and cataracts.

Age-specific rates allow for comparisons between populations with different age structures. These provide information about the measures of interest for different age groups, but are difficult to summarise and present. Age-standardised rates control for the effects of age and provide a summary rate for each of the populations of interest. The resulting rates, however, are not the 'real' or reported rates that occur in the population.

## **Regional data**

The data for some of the measures are reported for smaller regional units, including PHNs and Roadmap regions.

- PHNs are 31 geographic areas covering Australia, with boundaries defined by the Department of Health. They vary in relation to the size of the Aboriginal and Torres Strait Islander populations that live there, and by the proportion of the total population that is Indigenous (for example the Northern Territory, the Australian Capital Territory and Tasmania each constitute a whole PHN). In this report, PHNs were classified as either metropolitan (if at least 85% of the population was in an area classified as Major cities) or regional (AIHW 2016b). The data relate to services provided to those living in these areas, and not to whether the PHNs provided the services.
- Roadmap to Close the Gap for Vision regions evolved as an outcome of the University of Melbourne's IEHU Roadmap to Close the Gap for Vision project to review health service provision for Indigenous Australians and develop a model to improve their eye care. There are 64 regions each of which has an identified 'surgical hub'—a hospital with an operating theatre where cataract surgery can be performed and a network of stakeholders who contribute to improved pathways of care and outcomes. Each Roadmap region is contained within a single state or territory. A list of the Roadmap regions are available in the supplementary tables and the locations are shown in Appendix B. Data for some Roadmap regions have been combined for reporting purposes, including across state and territory boundaries. This has been done due to data quality issues associated with deriving reliable Roadmap estimates from the available geographic areas in the underlying data sets.

## Needs estimates

The IEHU at the University of Melbourne developed a 'Calculator for the delivery and coordination of eye care services', based on the 2008 National Indigenous Eye Health Survey and models of service delivery developed in the Roadmap to Close the Gap for Vision (IEHU 2017). This calculator uses the Aboriginal and Torres Strait Islander population for a community or region to estimate the annual need for eye care services in that area. The results for the following 3 eye health measures in this report were comparable to these needs estimates and are reported in chapters 2 and 3: 2.2 Eye examinations by an eye care professional; 3.4 Cataract surgery rate; and 3.10 Spectacles dispensed under state schemes.

## Structure of the report

- **Chapter 1** presents detailed results on the prevalence of vision impairment and blindness
- **Chapter 2** provides detailed results on diagnosis and screening services
- **Chapter 3** presents detailed results on the treatment of eye health conditions
- **Chapter 4** provides information on workforce and outreach programs
- **Appendix A** Data sources
- **Appendix B** provides locations of Roadmap regions.
- **Appendix C** provides technical specifications for the measures reported, including information on relevant classification codes.

## Data gaps and limitations

### Primary health care:

Primary health care is the entry level to the health system and, as such, is usually a person's first encounter with the health system. It includes a broad range of activities and services, from health promotion and prevention, to treatment and management of acute and chronic conditions.

Currently there is no national primary health care data collection in Australia. Bettering the Evaluation and Care of Health (BEACH) data provided an indication of problems managed by GPs in Australia including eye health related problems; however, this collection ceased in 2015. The AIHW is working to establish a primary health care data collection.

Primary health care data collection relevant to Aboriginal and Torres Strait Islander people are collected from Indigenous Specific Primary Health Care services, the majority of which are delivered by Aboriginal Community controlled Health Organisations. The data collected from these services do not currently include any eye health related measures.

Through Medicare, Aboriginal and Torres Strait Islander people can receive primary health care through regular Indigenous-specific health checks. The requirements of an Indigenous-specific health check, which are set out in the relevant sections of the MBS, include an assessment of the patient's eye health related problems. The MBS data covers the total number and proportion of Indigenous Australians for whom a health check was undertaken and not the specific conditions examined during each health check.



## Medicare benefits schedule data

MBS data reflect MBS claims and not necessarily all the services that are received. A person may be provided with equivalent care from a health-care provider who is not eligible to bill Medicare. The data are based on the date of processing of claims. While the data have been used to measure the level of specific activities, changes in the use of an MBS item over time can reflect changes in billing and claiming practices or the introduction of new items, and not necessarily changes in the health care provided.

The identification of Indigenous Australians in Medicare data is not complete. Since 2002, individuals who choose to identify as being of Aboriginal and/or Torres Strait Islander descent have been able to have this information recorded on the Medicare database through the Voluntary Indigenous Identifier (VII). VII enrolment is through either a VII enrolment form or a tick-box on a Medicare Australia enrolment form. Both methods of enrolment indicate that identifying as Indigenous is optional.

As at March 2016, an estimated 65% of the Indigenous population had identified as being of Aboriginal and/or Torres Strait Islander origin through the VII process. VII coverage varies by age group and state and territory. The MBS data presented in this report have been adjusted for under-identification, except for data on MBS item 715 health assessments and the new item 12325 for diabetic retinopathy screening, which is Indigenous specific.

MBS data presented for treatment for diabetic retinopathy may underestimate rates. The denominator for this measure, includes the total population who undergo a diabetes test regardless of whether they are diagnosed with diabetes.

## National Hospital Morbidity Database

The NHMD is a count of hospital separations (episodes of admitted patient care, which can be a total hospital stay, or a portion of a hospital stay that begins or ends in a change of type of care) and not of patients. Patients who separated from hospital more than once in the year will be counted more than once in the data set. The number and pattern of hospitalisations can be affected by differing admission practices among the jurisdictions and from year to year, and differing levels and patterns of service delivery.

There is some under-identification of Indigenous Australians in the NHMD, but NHMD data for all states and territories are considered to have adequate Indigenous identification from 2010–11 onwards (AIHW 2013). An AIHW study found that, in 2011–12, the number of hospitalisations nationally for Indigenous Australians was about 9% higher than reported (AIHW 2013). In 2013–14, about 408,000 hospitalisations were recorded as being for Indigenous Australians. Based on the level of under-identification suggested by the AIHW study, the number of hospitalisations for Indigenous Australians in 2013–14 was estimated to have been about 445,000 (AIHW 2015). NHMD data presented in this report have not been adjusted for under-identification, so are likely to underestimate the level of Indigenous hospitalisations.

Changes in the accuracy of Indigenous identification in hospital records will result in changes in the reported number and rates of hospitalisations for Indigenous Australians. Caution should be used when interpreting changes over time, as it is not possible to ascertain whether a change in reported hospitalisations is due to changes in the accuracy of Indigenous identification and/or real changes in the rates at which Indigenous Australians were hospitalised. An increase in hospitalisation rates for a particular population might also reflect higher use of admitted patient hospital services rather than a worsening of health. Likewise, a decrease in hospitalisation rates might not necessarily indicate better health. It should also be noted that the levels of under-identification vary with state and remoteness and it is not known whether they also vary by reason for hospitalisation.

With the exception of data from hospitals in Western Australia, hospitalisations where the person's Indigenous status was not stated were excluded from analyses that compare Indigenous and non-Indigenous rates. In 2011–14, there were about 618,000 hospitalisations for which Indigenous status was not stated, representing 2% of all hospitalisations in that period. For hospitals in Western Australia, records with an unknown Indigenous status are reported as non-Indigenous, so these are included in the 'non-Indigenous' data in these analyses.

There are complexities and inconsistencies in the methodology of waiting time data capture and reporting. The number of people and waiting times for non-urgent outpatient appointments are not publicly reported in some jurisdictions (e.g. NSW, WA, ACT and NT). Where data are available, the reporting methods (measures and time periods) are inconsistent across the states and territories so comparisons should be interpreted with caution. A need exists for greater transparency and uniformity in reporting wait times for patients seeking care in public hospitals, potentially with standardised national reporting.

### Australian Trachoma Surveillance Report (ATSR)

Interpretation of coverage data is limited by the accuracy of community population estimates, the school-based approach to screening and the designation of communities as at-risk. Community population estimates are based upon projections from the Census data. Although this approach is current best practice, the estimates may not accurately reflect populations at the time of screening, given the small size and mobility of some communities. Caution must be taken when interpreting trachoma prevalence, as screening took place in predominantly *Remote* and *Very remote* communities designated as being at-risk of endemic trachoma (AIHW 2017). Designation of at-risk status does not appear to have been systematically reviewed in any jurisdiction.

## Workforce data

Eye health workforce data give a broad indication of access to specialists and eye services. However, current data provide an incomplete picture of the extent of Indigenous eye health services. For example, data do not capture many ophthalmological services—for example, eye examinations undertaken by salaried ophthalmologists in public hospitals. In addition, the extent to which Indigenous patients are serviced by eye health professionals is not clear from the optometrist, ophthalmologist or allied ophthalmic personnel data. The data on allied ophthalmic personnel come from census data so is updated infrequently. Data on outreach eye health services included in this report do not include those services funded by state governments or other providers.

There is also a need for more detailed information on the training pathways for Aboriginal and Torres Strait Islander Australians entering the eye health workforce, the extent to which the eye health workforce provides services in or near Indigenous communities and partnerships with Indigenous communities. Further information is needed on the cultural safety of the eye health care provided to Indigenous Australians and the referral pathways of Indigenous patients from health service providers to optometrists and ophthalmologists.





# 1

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**Prevalence—  
what is the  
extent of  
eye health  
problems?**

Eye diseases and vision problems are the most common long-term health conditions reported by Aboriginal and Torres Strait Islander people. In 2016, it was estimated that about 15,000 Indigenous Australians over the age of 40 suffered from vision loss (Foreman et al. 2017). After adjusting for age and sex, Indigenous Australians over the age of 40 had almost 3 times the rate of vision loss of non-Indigenous Australians (Foreman et al. 2017).

Trachoma is not commonly found in high-income countries, but is endemic in some remote Aboriginal and Torres Strait Islander communities in Queensland, Western Australia, South Australia and the Northern Territory. Australia is a signatory to the World Health Organization's Alliance for the Global Elimination of Trachoma by 2020. Accordingly, the Australian Government funds comprehensive and systematic trachoma and trichiasis screening and treatment programs in communities where these conditions are prevalent, or where communities are assessed as being 'at-risk'.

### **Prevalence—measures and data sources**

There are 3 measures reported on prevalence in this chapter.

**Measure 1.1: Prevalence of vision impairment and blindness**—the number of Aboriginal and Torres Strait Islander Australians with vision impairment and blindness (vision loss), proportion of the population and age-standardised rates.

**Measure 1.2: Main causes of vision impairment and blindness**—main causes of vision impairment and blindness (vision loss) for Aboriginal and Torres Strait Islander Australians, as a proportion of those with vision loss.

The data for both of these measures come from sample surveys. The 2016 National Eye Health Survey included a sample of 1,738 Indigenous Australians aged 40 years over and included ophthalmologic examinations to assess vision impairment and blindness. Indigenous participants in the survey were aged 40 and over while non-Indigenous participants were aged 50 and over. Self-reported data on prevalence of eye and sight problems are also available from the National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) 2018–19.

**Measure 1.3: Prevalence of trachoma and trichiasis**—the estimated number, and proportion of: Indigenous children in at-risk communities with active trachoma, Indigenous adults in at-risk communities with trichiasis.

Data for this measure were collected through state and territory screening programs and collated by the Trachoma Surveillance and Reporting Unit at the University of New South Wales Kirby Institute (Kirby Institute 2019).

## Measure 1.1: Prevalence of vision impairment and blindness

**Key finding:** In 2016, around 15,000 Indigenous Australians over the age of 40 suffered from vision loss, almost 3 times the rate of non-Indigenous Australians (Foreman et al. 2017).

### 1.1.1 Prevalence of vision impairment and blindness

**Overall:** The 2016 National Eye Health Survey (NEHS) found that the sampling weighted prevalence of bilateral vision impairment for Indigenous Australians aged 40 and over was 1 in 10 (10.4%) and the prevalence of bilateral blindness was 1 in 330 (0.3%) (Figure 1.1.1a).

After standardising for age and sex, the estimated prevalence of bilateral vision loss (vision impairment and blindness combined) for Indigenous Australians was 2.8 times the rate for non-Indigenous Australians (17.7%, confidence interval (CI) 14.5–21.1; 4%, CI 5.2–7.6, respectively). Based on the age-standardised data, it was estimated that up to 15,000 Indigenous Australians aged 40 and over suffer from vision impairment and blindness combined (Foreman et al. 2017).

**Age and sex:** The prevalence of vision loss for both Indigenous and non-Indigenous survey participants in 2016 increased markedly with age. For Indigenous Australians, the prevalence of vision loss was 1 in 14 (7.2%) among those aged 40–49, compared with more than 1 in 2 (56%) among those aged 80 to 89. Indigenous rates were higher than non-Indigenous rates for all age groups (non-Indigenous Australians aged 40–49 were not sampled) (Figure 1.1.1b).

There was no significant difference between Indigenous males and females in the rates of vision loss (Figure 1.1.1c).

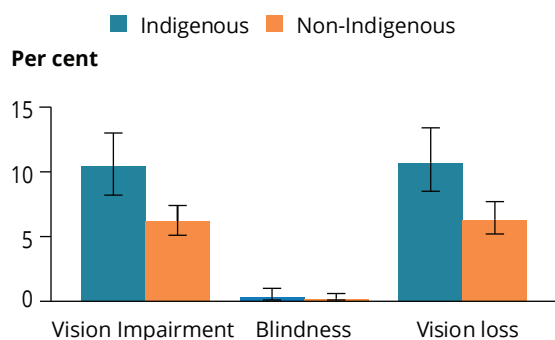
**Remoteness:** In 2016, the age-standardised prevalence of vision loss for Indigenous Australians in Outer regional and Very remote areas was significantly higher than for non-Indigenous Australians (Figure 1.1.1d).

#### Things to consider

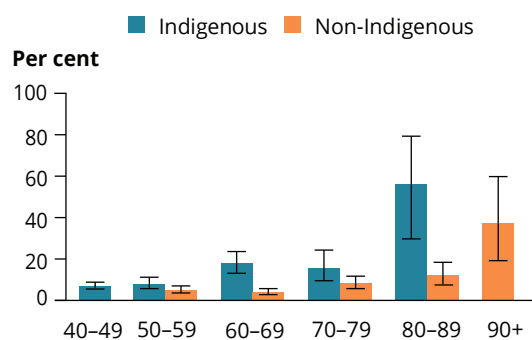
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey weighted to account for the sampling protocol. These results are subject to sampling errors, so the 95% CIs are provided to indicate the reliability of the estimates reported.
- Vision loss refers to vision impairment and blindness combined.
- Vision impairment does not include corrected refractive error.

**Figure 1.1.1: Prevalence of vision impairment and blindness (vision loss), by various characteristics**

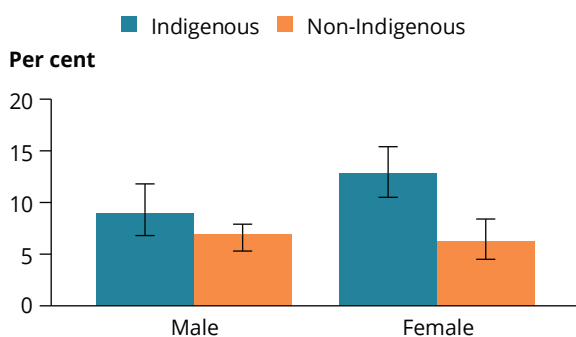
**a) Overall prevalence, 2016**



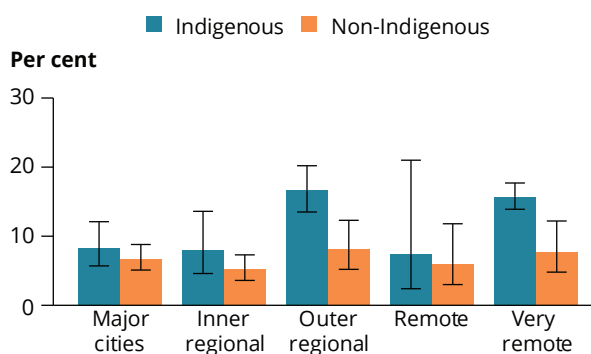
**b) Vision loss, by age, 2016**



**c) Vision loss, by sex, 2016**



**d) Vision loss, by region, 2016**



*Notes*

1. Data have been survey weighted to account for sampling protocol.
2. Error bars show 95% confidence intervals.
3. Data for these figures are available in the online supplementary tables.

*Sources:* NEHS data 2016; Taylor et al. 2010; Foreman et al. 2017.



## 1.1.2 Self-reported eye or sight problems

**Overall:** In 2018–19, nearly 4 in 10 Aboriginal and Torres Strait Islander Australians (38%, or 307,300 people) reported long-term eye or sight problems (ABS 2019) (Figure 1.1.2a).

**Age and sex:** In 2018–19, the prevalence of self-reported eye or sight problems was higher for Indigenous females than Indigenous males (Figure 1.1.2b). Self-reported eye or sight problems was highest for Indigenous Australians aged 55–64 and 65 and over (around 93%), compared to 10% for Indigenous Australians aged 0–14 (Figure 1.1.2c).

**Remoteness:** In 2018–19, the proportion of Indigenous Australians who self-reported eye or sight problems decreased as remoteness increased, from 42% in *Major cities* to 27% in *Very remote* areas (Figure 1.1.2d).

**Jurisdiction:** In 2018–19, the prevalence of self-reported eye or sight problems for Indigenous Australians was highest in South Australia (49%) and lowest in the Northern Territory (29%) (Figure 1.1.2e).

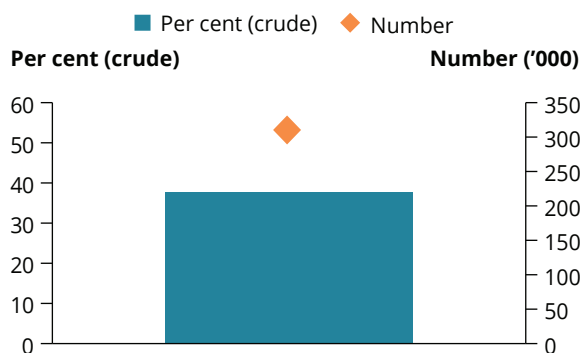
**Time trend:** Since 2001, the age-standardised proportion of Indigenous Australians who had an eye or sight problem increased from 47% to 49% in 2018–19, whereas for non-Indigenous Australians it remained stable at around 52% across this period (Figure 1.1.2f). After adjusting for age, the proportion of Indigenous Australians with an eye or sight problem was similar to the proportion of non-Indigenous Australians (49% and 52%, respectively).

### Things to consider

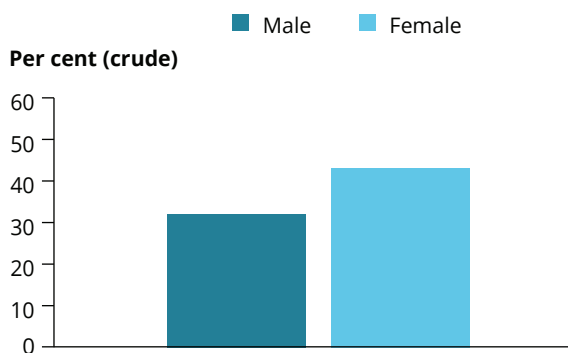
- The 2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) collected self-reported data on various health conditions, including diseases of the eye/adnexa—referred to as ‘eye or sight problems’ in this report. These data are self-reported and have not necessarily been diagnosed by a health professional. They do not include eye conditions that respondents are unaware that they have.
- The 2018–19 NATSIHS included 10,579 Aboriginal and Torres Strait Islander people in Australia (ABS 2019). Survey results are subject to sampling errors as only a proportion of the population is used to produce estimates that represent the whole population.
- Eye or sight problems include corrected refractive error.

Figure 1.1.2: Self-reported eye/sight problems, by various characteristics

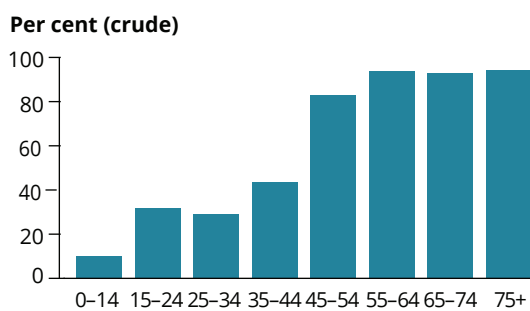
**a) Indigenous, 2018–19**



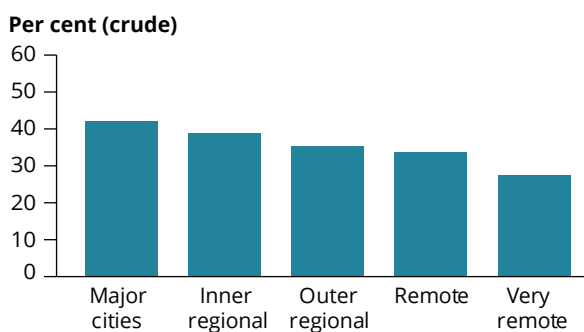
**b) Indigenous, by sex, 2018–19**



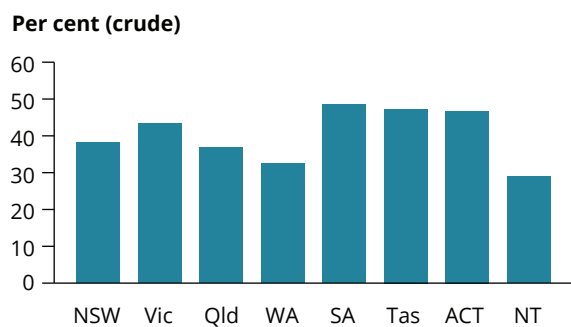
**c) Indigenous, by age, 2018–19**



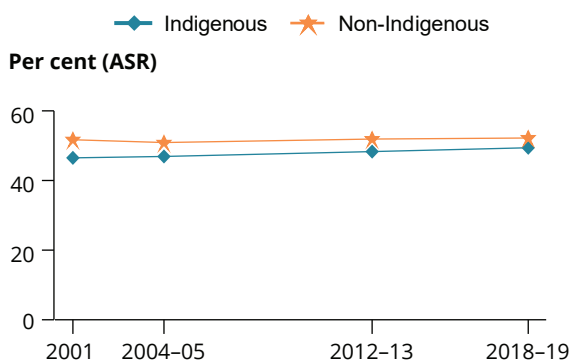
**d) Indigenous, by remoteness, 2018–19**



**e) Indigenous, by jurisdiction, 2018–19**



**f) Time trend, 2001 to 2018–19**



Notes

1. Age-standardised rates (ASR) are shown in Figure (f). All other figures show crude rates.

2. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of ABS 2018–19 NATSIHS, ABS 2017–18 National Health Survey, ABS 2012–13 AATSIHS.

## Measure 1.2: Main causes of vision impairment and blindness

**Key finding:** In 2016, the 3 main causes of vision loss for Indigenous Australians aged 40 and over were refractive error 116 (61%), cataract 39 (20%) and diabetic retinopathy 11 (5.2%).

### 1.2.1 Main causes of vision impairment and blindness

**Overall:** Results of the 2016 NEHS showed that the 3 main causes of vision loss for Indigenous Australians aged 40 and over were refractive error (61%), cataract (20%) and diabetic retinopathy (5.2%) (Figure 1.2.1a). For non-Indigenous Australians with vision loss, the main causes were refractive error (61%), cataract (13%) and age-related macular degeneration (10%) (Figure 1.2.1b).

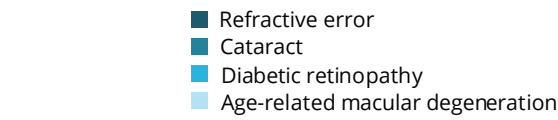
**Age and sex:** In 2016, a higher proportion of Indigenous and non-Indigenous males had refractive error than Indigenous and non-Indigenous females (Figure 1.2.1c and Figure 1.2.1d).

#### Things to consider

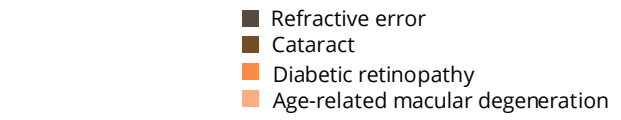
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey weighted to account for the sampling protocol. These results are subject to sampling errors, so where available, the 95% CIs are provided to indicate the reliability of the estimates reported.
- Vision loss does not include corrected refractive error.

**Figure 1.2.1: Main causes of vision impairment and blindness (vision loss), by Indigenous status and sex**

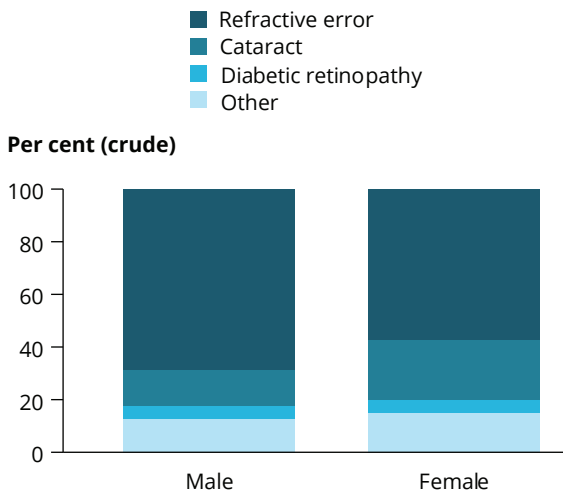
**a) Indigenous, by main cause, 2016**



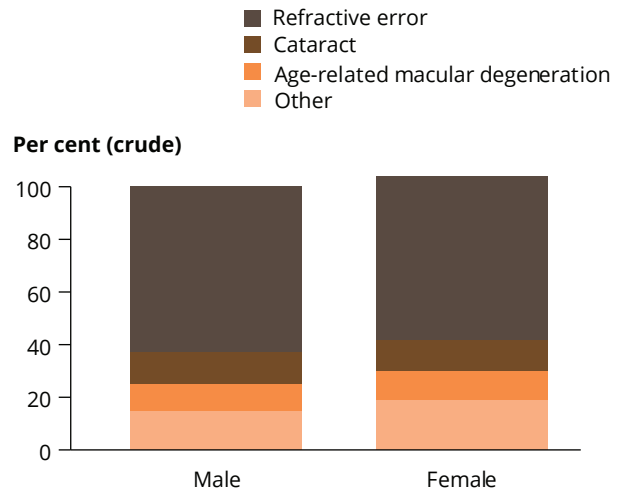
**b) Non-Indigenous, by main cause, 2016**



**c) Indigenous, by sex, 2016**



**d) Non-Indigenous, by sex, 2016**



*Notes*

1. Data have been survey weighted to account for sampling protocol.
2. Error bars show 95% confidence intervals.
3. Data for this figure is available in the online supplementary tables.

Sources: NEHS data 2016; AIHW analysis of Foreman et al. 2017 data.

## 1.2.2 Self-reported causes of eye or sight problems

**Overall:** In 2018–19, the main causes of eye or sight problems reported by Aboriginal and Torres Strait Islander Australians were long-sightedness (31%), short-sightedness (20%), and cataract (2.4%) (Figure 1.2.2a).

Adjusting for age, Indigenous Australians were more likely than non-Indigenous Australians to report blindness (2.4 times as likely) or having a cataract (1.7 times as likely) as a cause of sight problems (Figure 1.2.2b).

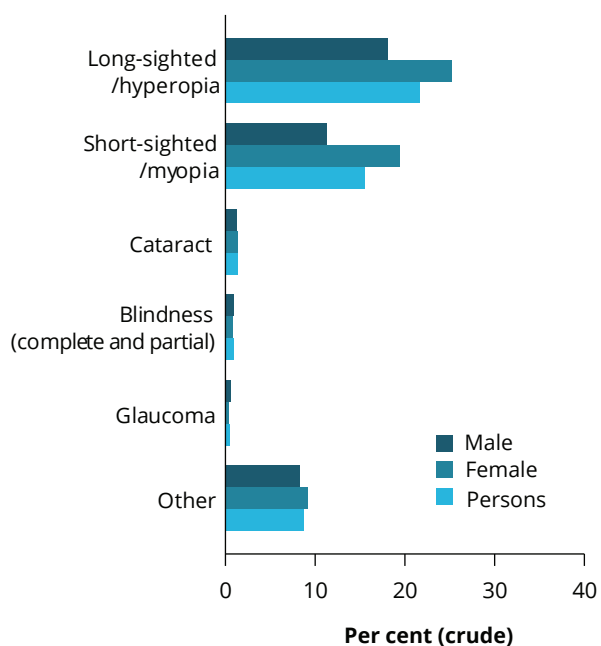
**Age and sex:** The prevalence of long-sightedness and short-sightedness was higher for Indigenous females (25% and 20%, respectively) than for Indigenous males (18% and 11%, respectively) (Figure 1.2.2a).

### Things to consider

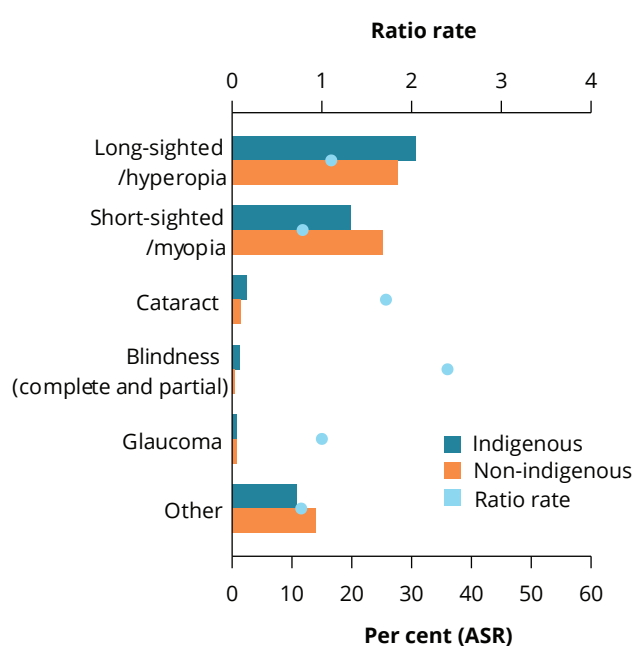
- The 2018–19 NATSIHS collected self-reported data on various health conditions, including diseases of the eye/adnexa—referred to as ‘eye or sight problems’ in this report. These data are self-reported and have not necessarily been diagnosed by a health professional. They do not include eye conditions that respondents are unaware that they have.
- The 2018–19 NATSIHS included 10,579 Aboriginal and Torres Strait Islander people in Australia (ABS 2019). Survey results are subject to sampling errors as only a proportion of the population is used to produce estimates that represent the whole population.
- Eye or sight problems include corrected refractive error.

Figure 1.2.2: Self-reported eye/sight problems, by main cause, by various characteristics

a) Indigenous, by sex, 2018–19



b) By Indigenous status, 2018–19



Notes

1. Age standardised rates (ASR) are shown in Figure (b), whereas Figure (a) shows crude rates.
2. The estimate for Glaucoma for Indigenous males, females and persons and the estimate for blindness for Indigenous females have a relative standard error between 25% and 50% and should be used with caution. Multiple responses are allowed for this questions, so proportions may add to more than 100%.
3. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of ABS 2018–19 NATSIHS and 2017–18 National Health Survey.

## Measure 1.3: Prevalence of trachoma and trichiasis

**Key finding:** In 2019, 4.5% of children aged 5–9 were found to have active trachoma in the 111 communities that were screened for trachoma (based on overall prevalence). In 2019, among Indigenous Australians aged 15 and over examined in at-risk communities, 11 (0.08%) were found to have trichiasis.

### 1.3.1 Trachoma

**Overall:** In 2019, there were 253 children aged 5–9 with active trachoma in the 111 communities that were screened for trachoma. This meant the observed prevalence of active trachoma was 8.3% of 5–9 year olds in the screened communities and the overall prevalence was 4.5% (Figure 1.3.1a).

**Jurisdiction:** In 2019, the observed prevalence of active trachoma in children aged 5–9 in screened communities was 15% in Western Australian (82 children), 8.2% in the Northern Territory (168 children) and 1.7% in Queensland (3 children). In South Australia, no children were found with active trachoma (Figure 1.3.1a).

**Time trend:** Based on overall prevalence, from 2009 to 2019, the rate of active trachoma in children aged 5–9 screened in all at-risk communities fell from 15% to 4.5%. The overall prevalence has been below 5% since 2012 (Figure 1.3.1b).

#### Things to consider

- In 2019, trachoma screening was undertaken in 111 at-risk communities in 4 jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) (Kirby Institute 2019).
- The Communicable Diseases Network Australia (CDNA) guidelines for trachoma control were revised in 2014 so that at-risk communities were not required to be screened each year. The *observed* prevalence of active trachoma was calculated using only data from screening activities undertaken during the reporting year. The *overall* prevalence of active trachoma was calculated by combining data from at-risk communities screened during 2019, the most recent prevalence data from communities that did not screen in 2019 and the most recent prevalence carried forward from communities that were judged by jurisdictions to have eliminated trachoma (Kirby Institute 2019, p.16).
- In line with CDNA guidelines, the 5–9 age group is the target group for screening programs in all regions, with variable screening undertaken for other age groups.
- At-risk communities are identified by prevalence of active trachoma of more than 5% in Aboriginal and Torres Strait Islander children aged 5–9 years in the last five years; or current data showing more than 5% prevalence but less than 5% prevalence recorded in the last five years; or, where no data are available, historical evidence of endemic trachoma (National Aboriginal Community Controlled Health Organisation and The Royal Australian College of General Practitioners 2018).

### 1.3.2 Trichiasis

**Overall:** In 2019, among Indigenous Australians aged 40 and over examined in at-risk communities, there were 9 people with trichiasis, a prevalence rate of 0.14%. There were an additional 2 people aged under 40 with trichiasis in these communities. Altogether, 11 people (a rate of 0.08%) of Indigenous Australians aged 15 and over had trichiasis (Figure 1.3.2a).

**Jurisdiction:** Of the 4 jurisdictions that undertook screening in 2019, the prevalence of trichiasis in Indigenous Australians was 1.4% in Queensland, 0.8% in Western Australia and 0.5% in South Australia. In the Northern Territory, no adults aged 40 and over who were screened were found to have trichiasis (Figure 1.3.2b).

**Time trend:** The proportion of Indigenous Australians aged 40 and over with trichiasis fell from 2.1% in 2012 to 0.1% in 2019 (Figure 1.3.2c).

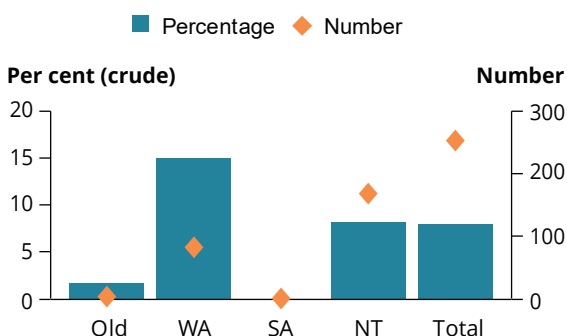
#### Things to consider

- In 2019, trichiasis screening was undertaken in 127 at-risk communities in 4 jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) (Kirby Institute 2019).
- Screening for trichiasis is undertaken opportunistically, such as during adult health checks.



Figure 1.3.1: Prevalence of active trachoma in at-risk Indigenous communities

a) Children aged 5–9, by jurisdiction, 2019



b) Children aged 5–9, by jurisdiction, 2009 to 2019

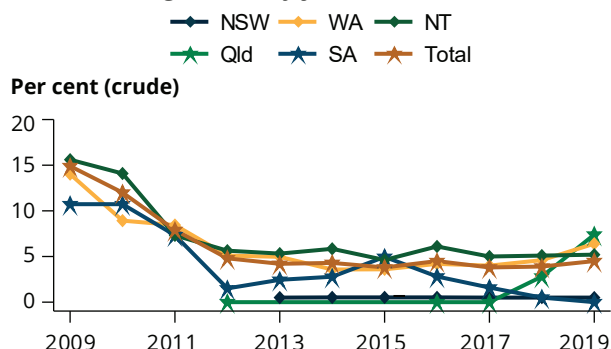
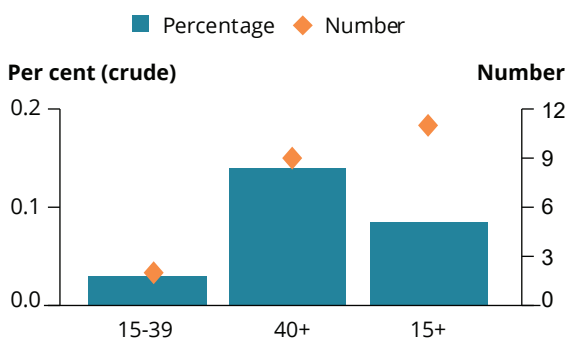
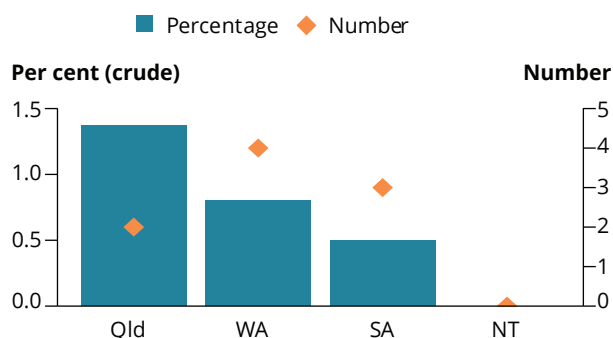


Figure 1.3.2: Prevalence of trichiasis in at-risk Indigenous communities

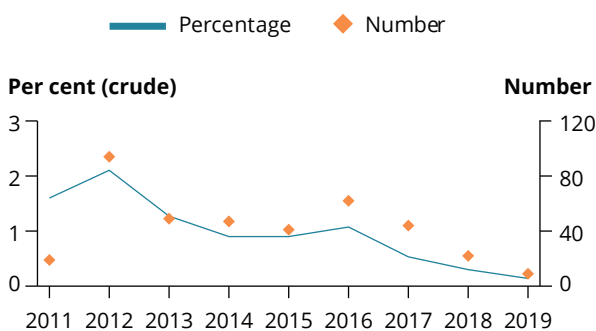
a) By age, 2019



b) By state, 2019



c) Aged 40 and over, 2011 to 2019



Notes

1. All figures show crude rates.
2. The data cover 111 communities and 3,154 children (55 communities and 2,049 children in the NT; 5 communities and 175 children in Qld; 15 communities and 385 children in SA; 36 communities and 545 children in WA) screened for trachoma and 127 communities (71 in the NT, 5 in Qld, 15 in SA and 36 in WA) screened for trichiasis in 2019.
3. The rates shown in Figure 1.3.1b are based on the most recent estimates carried forward in all communities that were considered at risk at some time.
4. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of Australian Trachoma Surveillance report 2019 (Kirby Institute 2019).





# 2

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## Diagnosis and screening— how are eye health problems identified?

Primary health-care providers play a key role in detecting problems, treating minor eye conditions and referring patients to more specialised care. Optometrists and ophthalmologists provide more specialised eye health screening services. Various types of eye examinations are rebated through the MBS.

All Aboriginal and Torres Strait Islander Australians, regardless of age, are eligible for an Indigenous-specific health assessment which includes an eye health check. There are 2 Indigenous-specific health assessment items listed on the MBS:

- MBS item 715 provided by a GP, available from 1 May 2010
- MBS item 228 provided by a medical practitioner (excluding specialists or consultant physicians) available from 1 July 2018.

In response to the COVID-19 pandemic, temporary telehealth items for Indigenous-specific health assessments have been made available from March 2020 (through to March 2021) provided via videoconference or teleconference (MBS items 92004, 92011, 92016, 92023).

## Diagnosis and screening—measures and data sources

There are 5 measures reported for diagnosis and screening. The MBS database was the data source for 3 of the measures in this category.

**Measure 2.1: Annual health assessments**—the number of people who had an Indigenous health assessment (MBS item 715 or 228) including a health assessment provided via videoconference or teleconference (MBS item 92004, 92011, 92016, 92023), proportion of the population and age-standardised rates.

**Measure 2.2: Eye examinations by an eye care professional**—the number of Indigenous Australians who had an eye examination by an optometrist or ophthalmologist in the last 12 months, proportion of the population.

**Measure 2.3: Target population screened for diabetic retinopathy.** There are 3 submeasures reported:

- **2.3.1 (MBS data):** The number of Indigenous Australians screened for diabetic retinopathy in the 12-month period who had also had a diabetes test in the previous 2 years, as a proportion of those who had a diabetes test. The diabetes test is the HbA1c test used to diagnose diabetes and to monitor blood glucose levels in diabetics.
- **2.3.2 (Survey data):** The number of Indigenous Australians screened for diabetic retinopathy with a retinal camera as a proportion of those with diabetes.
- **2.3.3 (MBS data):** The number of Indigenous Australians diagnosed with diabetes who were screened for diabetic retinopathy with a retinal camera.

Trachoma and trichiasis surveillance is undertaken in 'at-risk' communities in remote areas in Australia and the following measure is reported:

**Measure 2.4: Trachoma and trichiasis screening coverage**—the estimated number, and proportion of:

- Indigenous children in at-risk communities screened for trachoma
- Indigenous adults screened for trichiasis.

Diagnosis and screening also includes a measure related to undiagnosed conditions. This measure aims to provide some indication of the number of Indigenous Australians with vision impairment or blindness who had not had their condition formally diagnosed:

**Measure 2.5: Undiagnosed eye conditions**—the number of Indigenous Australians with vision impairment or blindness attributed to 1 of the 5 main causes (refractive error, cataract, diabetic retinopathy, age-related macular degeneration and glaucoma) who had not had their condition diagnosed, as a proportion of those with vision impairment or blindness attributed to 1 of the 5 main causes.

## Measure 2.1: Annual health assessments

**Key finding:** In 2019–20, just under one-third (238,700) of Indigenous Australians had an Indigenous-specific health assessment.

**Overall:** In 2019–20, over one quarter (238,700 or 28%) of Indigenous Australians had an Indigenous-specific health assessment. This included over 9,300 health assessments provided via videoconference or teleconference (see *Tracking progress against the Implementation Plan goals for the Aboriginal and Torres Strait Islander Health Plan 2013–2023*, supplementary tables).

**Age and sex:** In 2019–20, the number and proportion of Indigenous males aged 0–14 who had a health assessment was slightly higher than the number and proportion of females—39,082 (27%) and 35,641 (26%), respectively. For all other age groups, health assessments for Indigenous females outnumbered those for Indigenous males (Figure 2.1a).

**Remoteness:** In 2019–20, the proportion of Indigenous Australians who had a health assessment was the same in *Inner regional* and *Very remote* areas (27%) and in *Outer regional* and *Remote* areas (34%). The proportion was lowest in *Major cities* (24%) (Figure 2.1b).

**Jurisdiction:** In 2019–20, the proportion of Indigenous Australians who had a health assessment was highest in Queensland (35%) and the Northern Territory (34%), and was lowest in Victoria and Tasmania (15%) (Figure 2.1c).

**Time trend:** The age-specific proportion of Indigenous Australians who had a health assessment increased from around 10% in 2010–11 for all age groups under 44 years to around 26% in 2019–20. The proportion of Indigenous Australians in all age groups aged 55 and over who had a health assessment increased from around 17% in 2010–11 to around 38% in 2019–20 (Figure 2.1d).

Between 2010–11 and 2018–19, the age-standardised proportion of Indigenous Australians who had a health assessment (including a telehealth assessment) increased from 11% to over 30% before slightly declining in 2019–20 (Figure 2.1e).

**PHN:** In 2019–20, the PHNs with the lowest proportion of Indigenous Australians who had a health assessment were Northern Sydney (5.2%) and South Eastern Melbourne (8.4%), while those with the highest rates were in Western Queensland (39%) and Western NSW (37.1%) (Figure 2.1.f and Figure 2.1i).

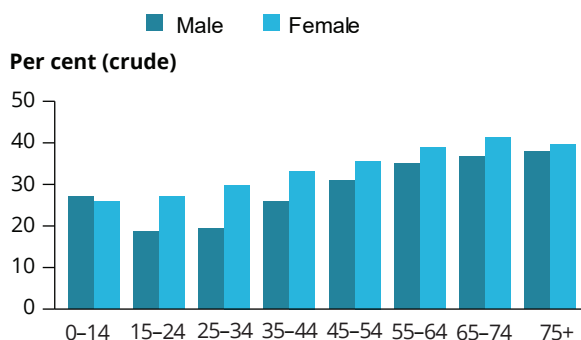
**Roadmap region:** In 2019–20, the Roadmap region with the highest proportion of Indigenous Australians who had an MBS health assessment was *South West Queensland* (52.4 per 100) (Figure 2.1.g and Figure 2.1h).

### Things to consider

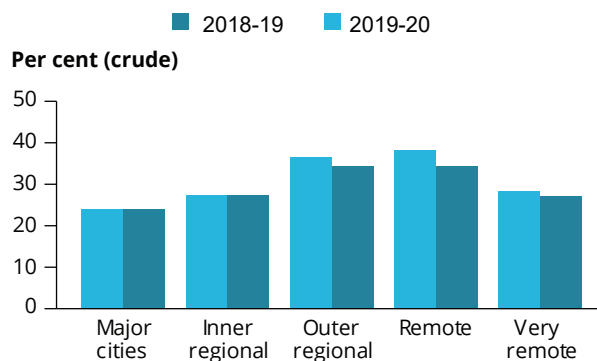
- A basic eye check is a mandatory component of the MBS health assessments.
- MBS data reflect billing practices and do not necessarily reflect all services received. For example, MBS data do not generally capture equivalent services provided by state and territory funded primary health care or by public hospitals. Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).

Figure 2.1: MBS health assessments, by various characteristics

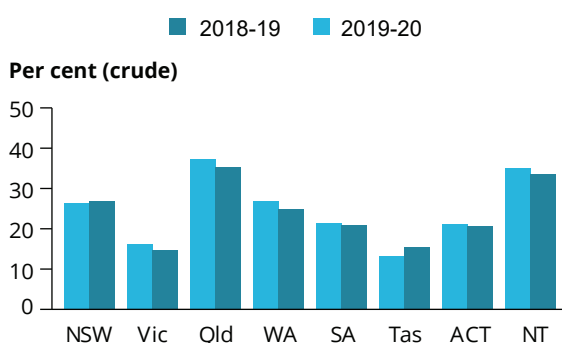
a) By age and sex, 2019–20



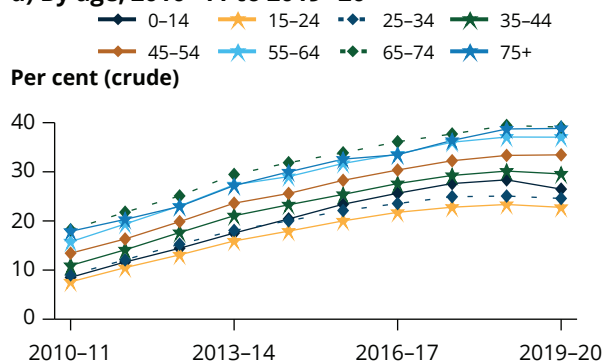
b) By region, 2018–19 to 2019–20



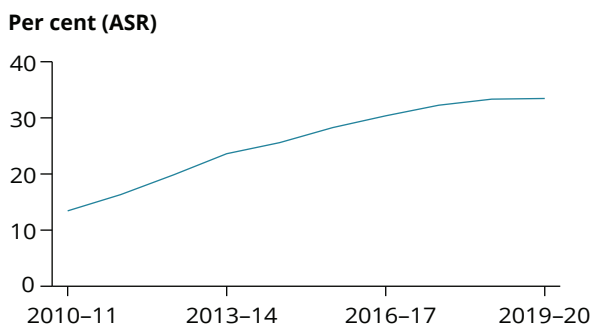
c) By jurisdiction, 2018–19 and 2019–20



d) By age, 2010–11 to 2019–20



e) By age (ASR), 2010–11 and 2019–20

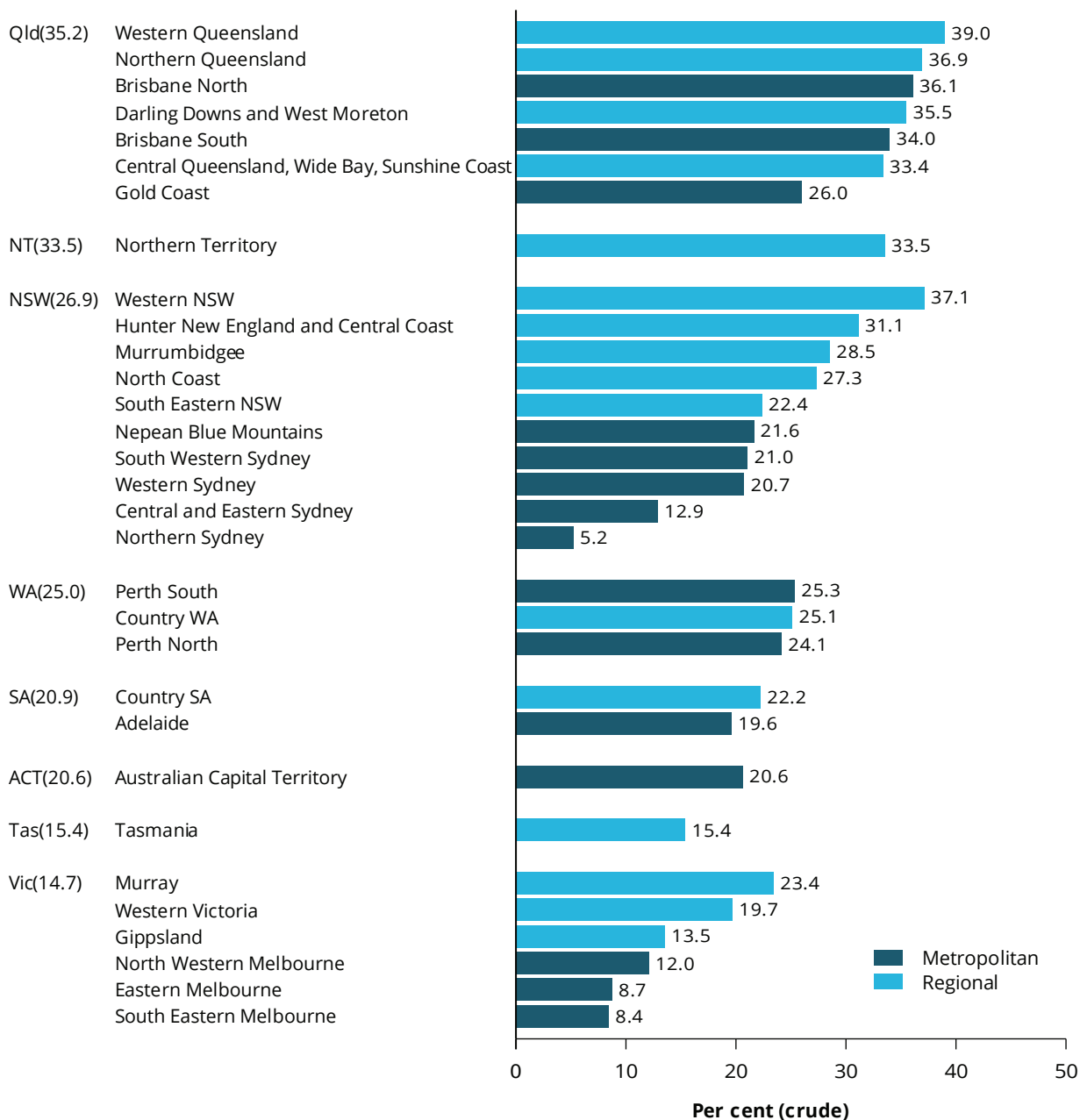


Notes

1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of MBS data.

**Figure 2.1f: MBS health assessments, by PHN, 2019–20**



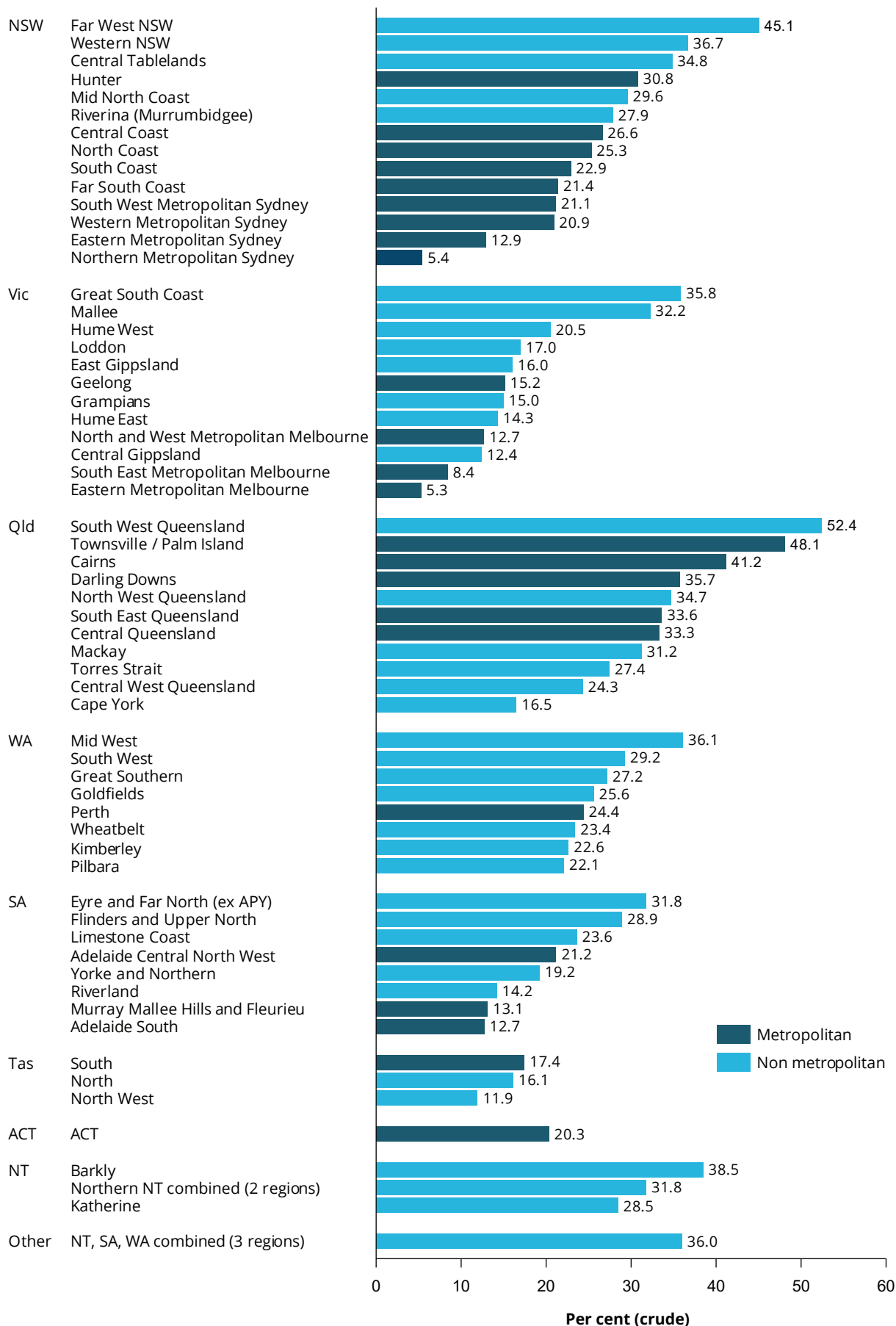
*Notes*

1. Data are crude rates.
2. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of MBS data.



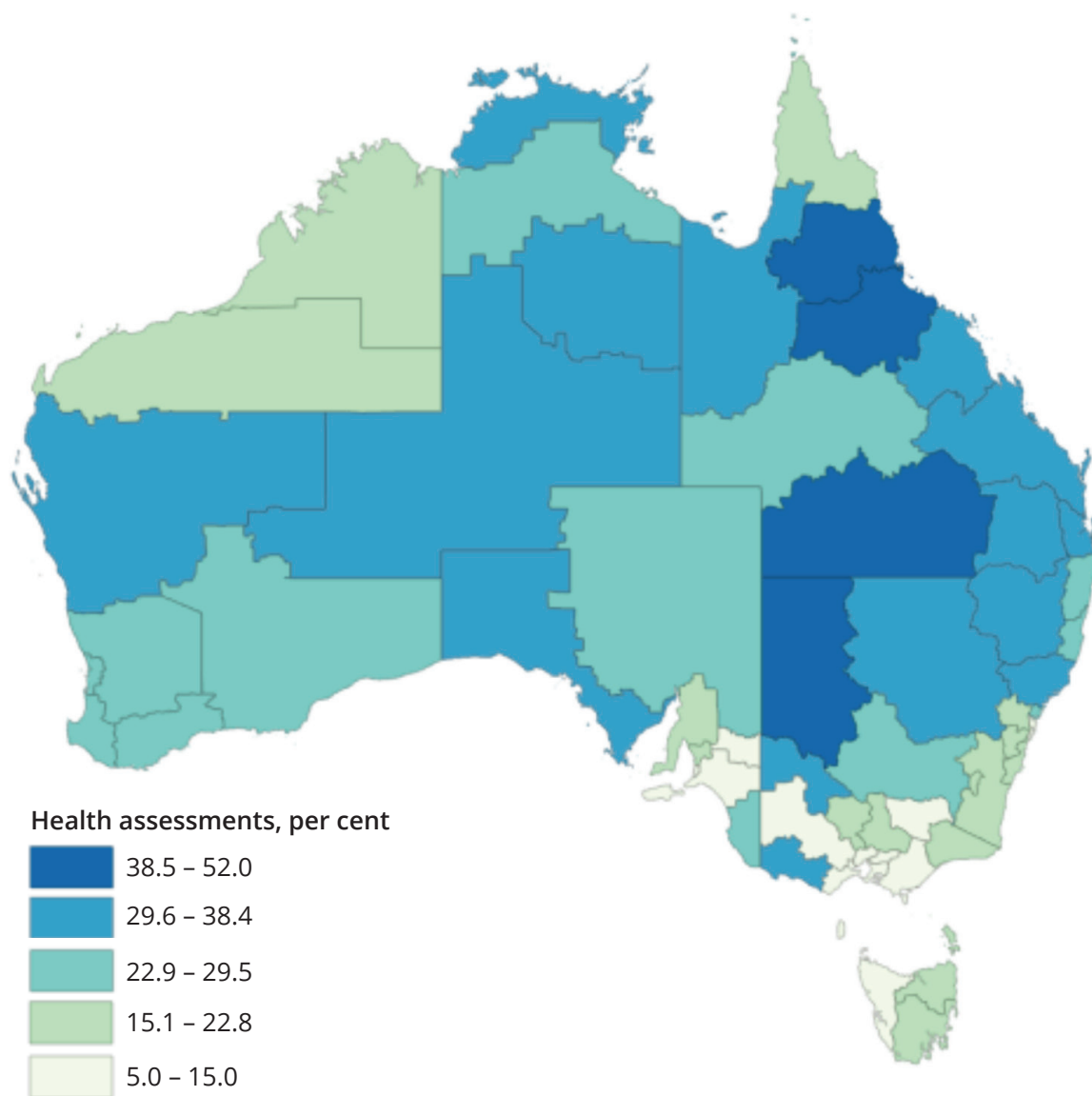
Figure 2.1g: MBS health assessments, by Roadmap region, 2019–20



Notes: 1. Data are crude rates; 2. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of MBS data.

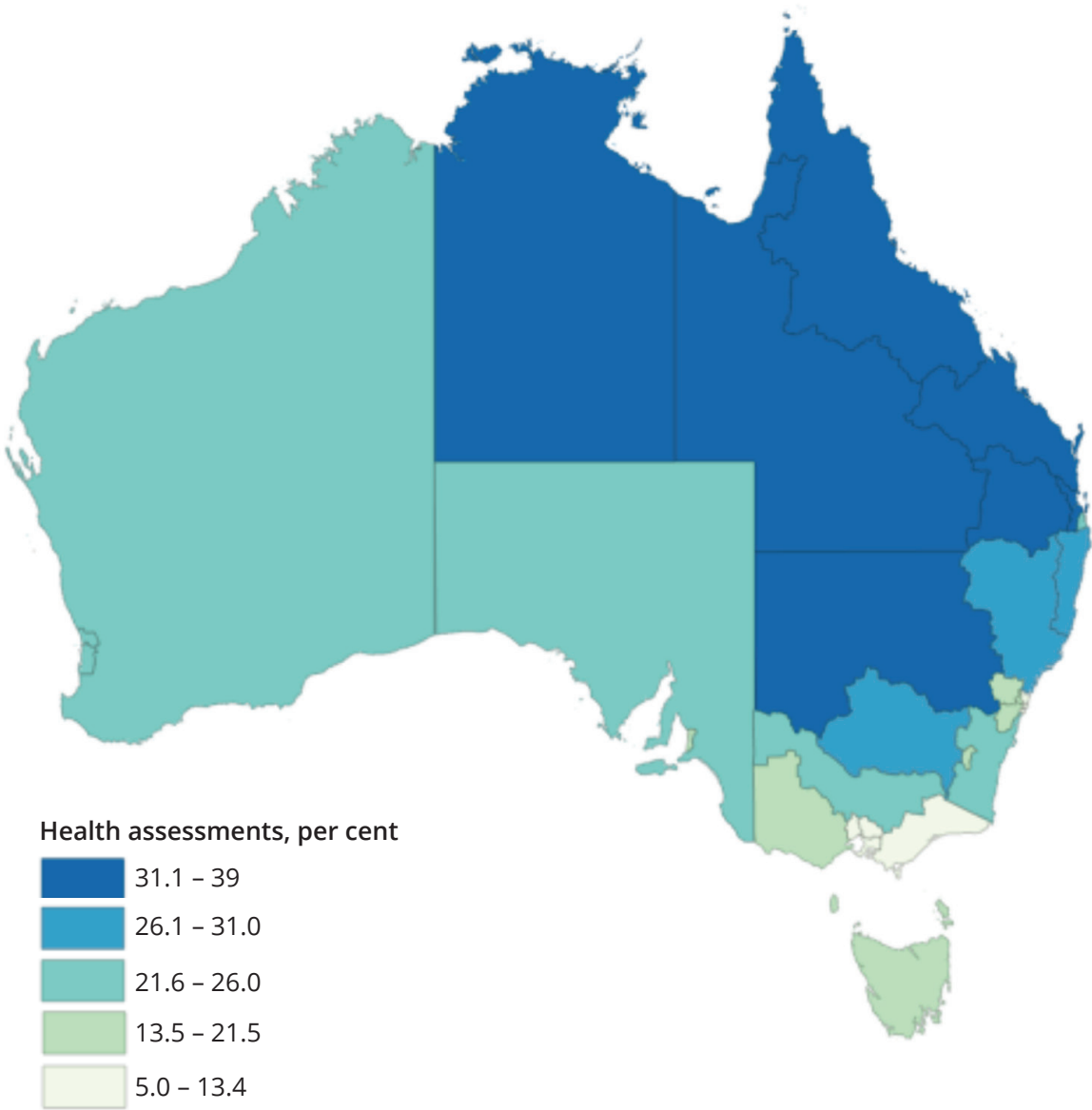
Figure 2.1h: MBS health assessments, by Roadmap region, 2019–20



Note: The Roadmap region data for this map are available in the online supplementary tables.

Source: AIHW analysis of the NHMD.

Figure 2.1i: MBS health assessments, by PHN, 2019–20



Note: The PHN data for this map are available in the online supplementary tables.

Source: AIHW analysis of the NHMD.

## Measure 2.2: Eye examinations by an eye care professional

**Key finding:** In 2019–20 around 104,300 (12%) Indigenous Australians had an eye examination by an optometrist or ophthalmologist in the preceding 12 months. Between 2007–08 and 2019–20, the total age-standardised proportion of Indigenous Australians that had an eye examination increased from 14% to 17%, while the proportion for non-Indigenous Australians increased from 19% to 24%.

**Overall:** In 2019–20, there were around 104,300 Indigenous Australians who had an eye examination undertaken by an optometrist or ophthalmologist in the preceding 12 months—12% of the population (Figure 2.2a). Of these, around 104,200 examinations were conducted by optometrists and around 130 were conducted by ophthalmologists. This was less than the estimated number of eye examinations needed for Indigenous Australians each year (145,469) (IEHU 2017).

**Remoteness:** In 2019–20, the proportion of Indigenous Australians who had an eye examination in the preceding 12 months decreased with remoteness, with the lowest proportion in those living in *Very remote* areas (6.7%) (Figure 2.2b).

**Jurisdiction:** In 2019–20, the proportion of Indigenous Australians who had an eye examination in the preceding 12 months was lowest in Western Australia and the Northern Territory (8.2%) followed by South Australia (12.0%) and was highest in Tasmania (15%) (Figure 2.2c).

**Time trend:** Age-specific rates of eye examinations by an optometrist or ophthalmologist in the preceding 12 months increased between 2009–10 and 2017–18 for Indigenous Australians, before declining between 2017–18 and 2019–20, across all age groups. In those aged 65 and over rates increased from 26.6% to 35% before declining to 31% over this period (Figure 2.2d). Rates for non-Indigenous Australians aged 65 and over increased from 32% to 48% before declining to 45% over the same period (Figure 2.2e). Across all age groups, rates of eye examinations were higher for non-Indigenous Australians than Indigenous Australians of the same age group.

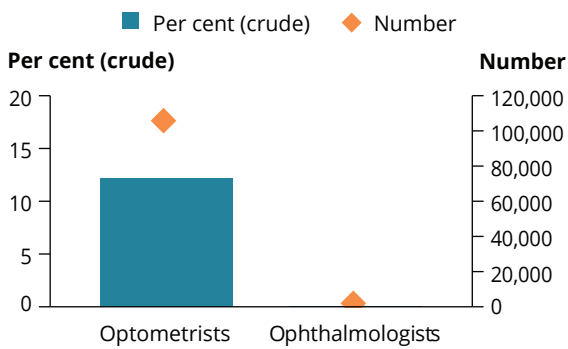
Between 2007–08 and 2019–20, the total age-standardised proportion of the Indigenous population that had an eye examination increased from 14% to 17% (Figure 2.2f).

### Things to consider

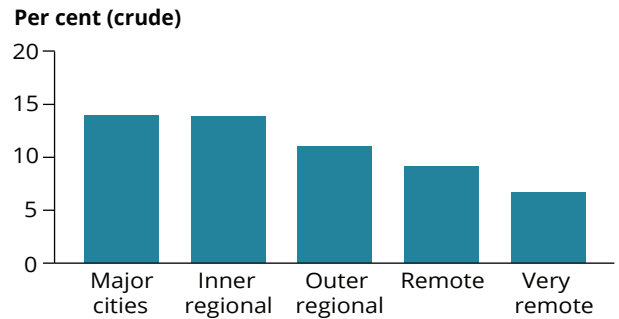
- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals—for example, eye examinations undertaken by salaried ophthalmologists in public hospitals.
- Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).
- MBS data shown for this measure were adjusted for Indigenous under-identification.
- The estimated annual number of Indigenous people needing an eye examination was derived from the calculator for the delivery and coordination of eye care services developed by the Indigenous Eye Health Unit at the University of Melbourne (see <http://dr-grading.iehu.unimelb.edu.au/ecwc/>). The calculations are first-order estimates based on condition prevalence rates from the National Indigenous Eye Health Survey (2009) and models of service delivery developed in *The Roadmap to Close the Gap for Vision* (Taylor, Anjou, Boudville & McNeil 2012) and should be interpreted with caution.
- Age-standardised and age-specific rates are both presented (see Box 4—Population rates).

Figure 2.2: Proportion of the population that had an eye examination by an eye care professional in the last 12 months, by various characteristics

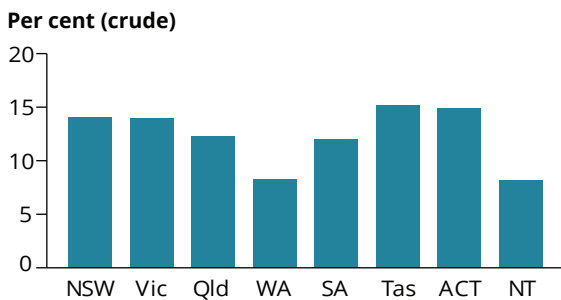
**a) Indigenous, by profession, 2019–20**



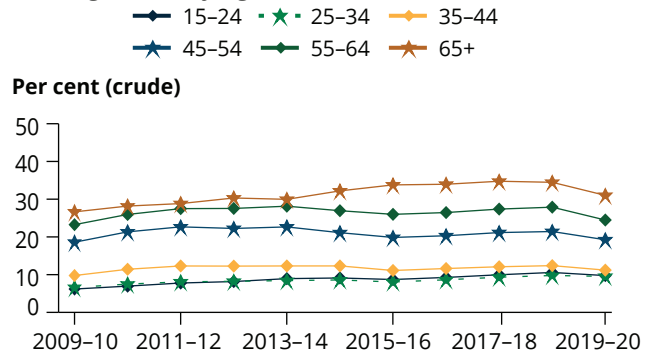
**b) Indigenous, by region, 2019–20**



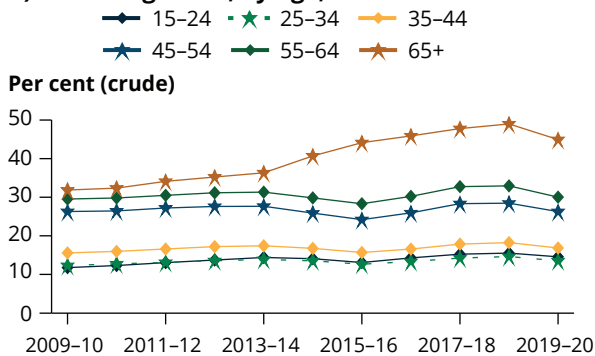
**c) Indigenous, by jurisdiction, 2019–20**



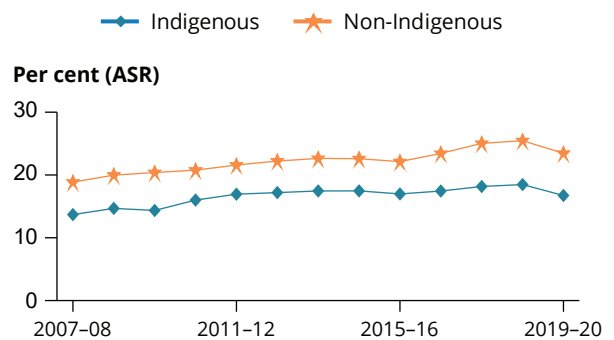
**d) Indigenous, by age, 2009–10 to 2019–20**



**e) Non-Indigenous, by age, 2009–10 to 2019–20**



**f) Time trend, 2007–08 to 2019–20**



Notes

1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of MBS data.

## Measure 2.3: Target population screened for diabetic retinopathy

**Key finding:** An estimated 32,000 Indigenous Australians had a diabetes test in the previous 2 years, with 13,358 (42%) also screened for diabetic retinopathy at least once in 2019–20. Between 2009–10 and 2018–19, the total age-standardised proportion of Indigenous Australians tested for diabetes who had an eye examination increased from 29% to 36% before decreasing to 34% in 2019–20.

### 2.3.1 Target population screened for diabetic retinopathy (MBS data)

**Overall:** An estimated 32,000 Indigenous people had a diabetes test in the previous 2 years, with 13,358 (42%) also screened for diabetic retinopathy at least once in 2019–20. Most of the screenings were performed by optometrists (12,700), with smaller numbers by ophthalmologists (1,005) and GPs (452) (Figure 2.3.1a).

**Remoteness:** In 2019–20, the proportion of Indigenous Australians screened for diabetic retinopathy was highest in *Inner regional* areas and *Major cities* (47% and 46%, respectively), and then decreased with increasing remoteness (Figure 2.3.1b).

**Jurisdiction:** In 2019–20, the proportion of Indigenous Australians screened for diabetic retinopathy was highest in Victoria (48%), and lowest in the Northern Territory (29%) (Figure 2.3.1c).

**Time trend:** Looking at age-specific rates, the estimated proportion of Indigenous Australians tested for diabetes who had an eye examination increased across all age groups, with the greatest increase in those aged 65 and over where rates rose from 48% in 2009–10 to 60% in 2019–20 before declining to 56% in 2019–20 (Figure 2.3.1d). For non-Indigenous Australians, the greatest increase was also in those aged 65 and over (Figure 2.3.1e). In 2019–20 higher proportions of non-Indigenous Australians than Indigenous Australians were screened across all age groups.

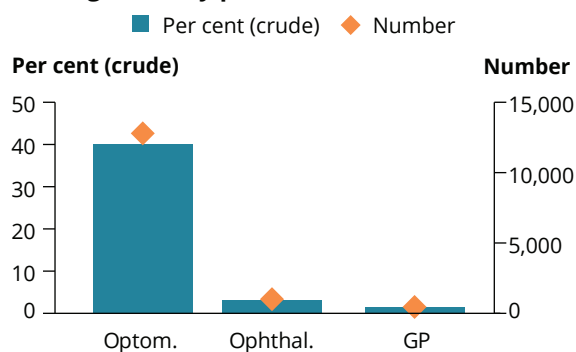
Between 2009–10 and 2018–19, the total age-standardised proportion of Indigenous Australians tested for diabetes who had an eye examination increased from 29% to 36% before decreasing to 34% in 2019–20, while for non-Indigenous Australians it rose from 35% to 44% before decreasing to 42% (Figure 2.3.1f).

#### Things to consider

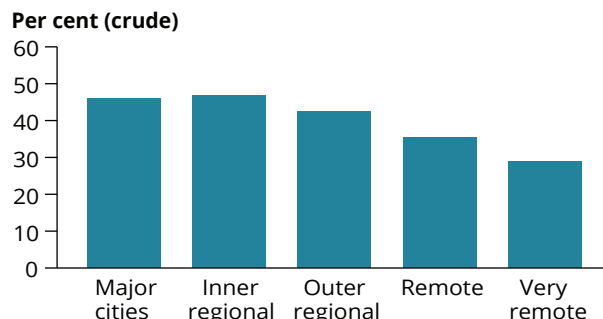
- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals—for example, eye examinations undertaken by salaried ophthalmologists in public hospitals.
- Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).
- MBS data shown for this measure were adjusted for Indigenous under-identification.
- Age-standardised and age-specific rates are both presented (see Box 4—Population rates).
- Indigenous Australians who had a diabetes test may not have been found to have diabetes. For this reason the rate of those screened for diabetic retinopathy may be an underestimate.

Figure 2.3.1: Proportion of those screened for diabetes who had an eye examination, by various characteristics

**a) Indigenous, by profession, 2019–20**



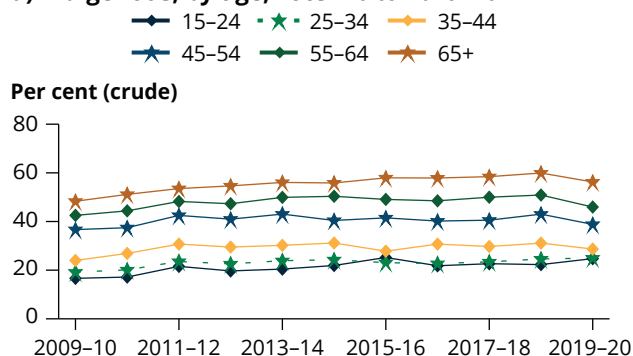
**b) Indigenous, by region, 2019–20**



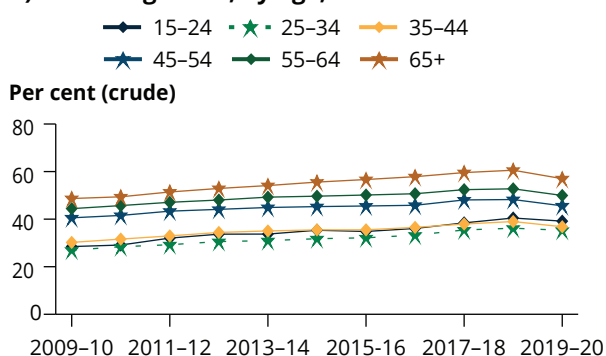
**c) Indigenous, by jurisdiction, 2019–20**



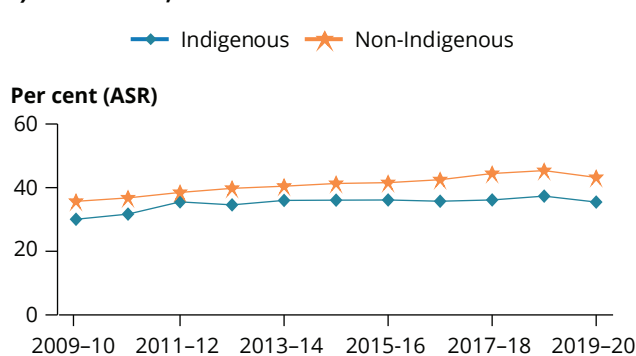
**d) Indigenous, by age, 2009–10 to 2019–20**



**e) Non-Indigenous, by age, 2009–10 to 2019–20**



**f) Time trend, 2009–10 to 2019–20**



**Notes**

1. Profession types in Figure (a): Optom. = Optometrist; Ophthal. = Ophthalmologist, GP = General Practitioner.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of MBS data.

### 2.3.2 Target population screened for diabetic retinopathy (survey data)

**Overall:** In 2016, just over half (53%) of Indigenous participants in the eye health survey aged 40 and over with self-reported diabetes had a diabetic eye examination in the preceding 12 months, the period recommended in the National Health and Medical Research Council (NHMRC) guidelines. For non-Indigenous participants with diabetes aged 50 and over, more than three-quarters (78%) had a diabetic eye examination in the preceding 2 years, the period recommended in the NHMRC guidelines for non-Indigenous Australians (Figure 2.3.2a).

**Remoteness:** The proportion of Indigenous participants in the NEHS with self-reported diabetes who had a diabetic eye examination in the preceding 12 months varied by remoteness, with participants in *Very remote* areas having the lowest rate (35%). Proportions of non-Indigenous participants who had an eye examination in the preceding 12 months were also lowest in *Very remote* areas, but were higher than Indigenous rates in each remoteness category (Figure 2.3.2b).

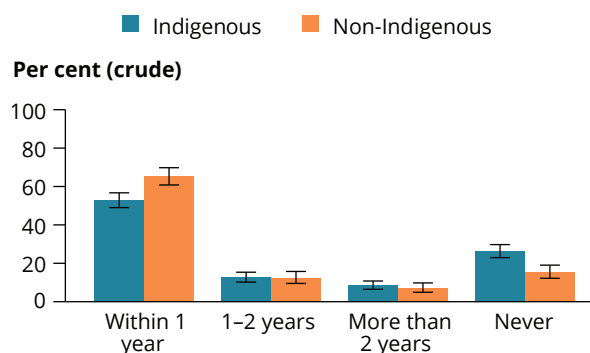
#### Things to consider

- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The survey results reported are crude unadjusted sample proportions. These results are subject to sampling errors, so the 95% confidence intervals are provided to indicate the reliability of the estimates reported.
- Current NHMRC guidelines recommend a diabetic eye examination annually for Indigenous Australians with diabetes, and at least every 2 years for non-Indigenous Australians with diabetes.

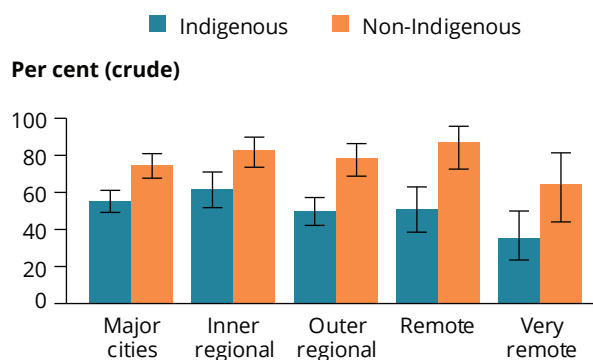


**Figure 2.3.2: Proportion of those with diabetes who had an eye examination in the recommended time frame, by various characteristics**

**a) By time since last eye examination, 2016**



**b) Eye examinations in recommended timeframe, by region, 2016**



*Notes*

1. All figures show crude unadjusted sample proportions.
2. Error bars show 95% confidence intervals.
3. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of NEHS data 2016.

### 2.3.3 Screening for diabetic retinopathy with a retinal camera

**Overall:** In 2019–20, an estimated 1,213 (1.4 per 1,000 Indigenous population) Indigenous Australians diagnosed with diabetes, were screened for diabetic retinopathy with a retinal camera (Figure 2.3.3a).

**Age and sex:** The number and rate of screening tests for diabetic retinopathy with a retinal camera for Indigenous males and females diagnosed with diabetes declined between 2018–19 and 2019–20. More Indigenous females than Indigenous males received screening tests for diabetic retinopathy with a retinal camera in both 2018–19 and 2019–20 (Figure 2.3.3a).

**Remoteness:** In 2018–19 and 2019–20, the rate of screening tests for diabetic retinopathy with a retinal camera for Indigenous Australians was lowest in *Major cities* (0.9 and 0.8 per 1,000, respectively) and highest in *Remote* and *Very remote* areas (4.3 and 3.1, respectively) (Figure 2.3.3b).

**Jurisdiction:** In 2018–19 and 2019–20, the rate of screening tests for diabetic retinopathy with a retinal camera for Indigenous Australians was highest in Western Australia (4.8 and 3.7 per 1,000, respectively), and was lowest in New South Wales (0.3 in both years). Data were not available or not publishable in Tasmania or the Australian Capital Territory (Figure 2.3.3c).

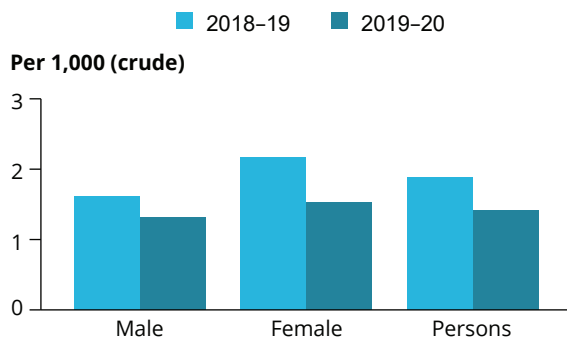
**Time trend:** From 2016–17 to 2019–20, age-specific rates of screening tests for diabetic retinopathy with a retinal camera for Indigenous Australians for all age groups, apart from 75 and over, peaked in 2018–19 before declining in 2019–20. For those aged 75 and over, the rate peaked in 2017–18 and then declined in 2018–19 and again in 2019–20. In each year the highest rates of screening tests for diabetic retinopathy with a retinal camera were seen in those aged 60–74 or 75 and over (Figure 2.3.3d).

#### Things to consider

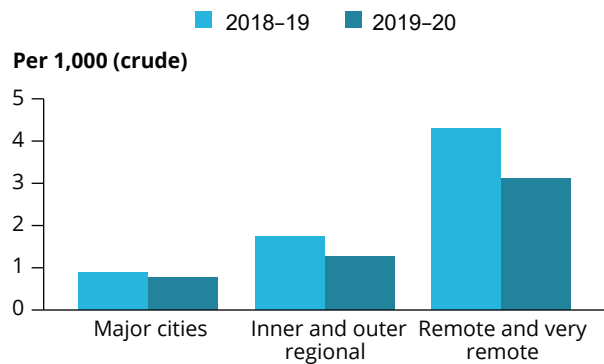
- Screening for diabetic retinopathy can be provided in a number of ways including direct observations by a health professional during eye examinations or by using a retinal camera.
- MBS data reflect billing practices, and not necessarily all services received. For example, the MBS data for this measure do not capture equivalent services provided by eye care practitioners, optometrists and ophthalmologists, jurisdiction-funded primary health care, public hospitals or where retinal cameras are used without billing MBS.
- Age-specific rates are presented (see Box 4—Population rates).

**Figure 2.3.3: Proportion of Indigenous Australians who were screened for diabetic retinopathy with a retinal camera, by various characteristics**

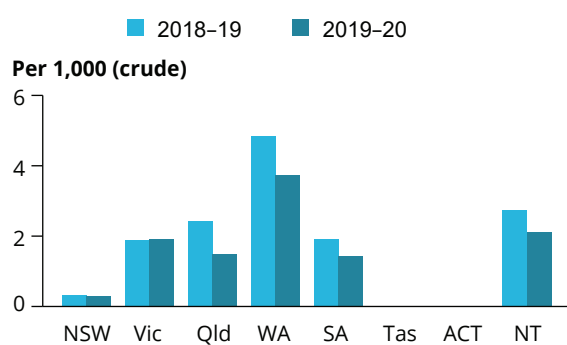
**a) By sex, 2018–19 and 2019–20**



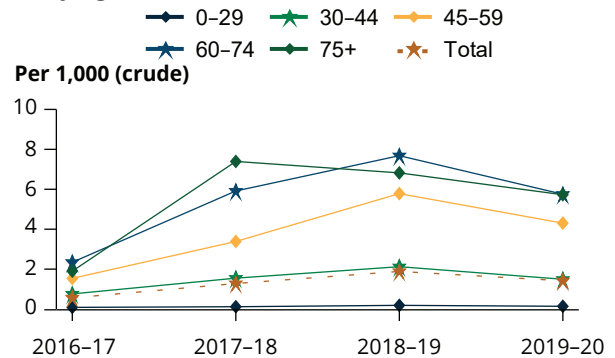
**b) By region, 2018–19 to 2019–20**



**c) By jurisdiction, 2018–19 and 2019–20**



**d) By age, 2016–17 to 2019–20**



Note: Data for these figures are available in the supplementary tables.

Source: AIHW analysis of MBS data.

## Measure 2.4: Trachoma and trichiasis screening coverage

**Key finding:** In 2019, in the 111 communities that undertook screening, there were a total of 3,154 (92%) children aged 5–9 screened for trachoma, an increase from 70% in 2012. In 2019, in the 127 jurisdictions that undertook screening for trichiasis, 12,977 (33%) Indigenous Australians aged 15 and over were screened.

### 2.4.1 Trachoma

**Overall:** In 2019, in the 111 communities that undertook screening, there were a total of 3,154 (92%) children aged 5–9 screened for trachoma (Figure 2.4.1a).

**Jurisdiction:** In 2019, the proportion of children aged 5–9 in at-risk communities screened for trachoma was 75% in Queensland (175 children), 93% in Western Australian (545 children), 88% in South Australia (385 children), and 94% in the Northern Territory (2,049 children) (Figure 2.4.1a).

**Time trend:** Between 2012 and 2019, the proportion of children aged 5–9 screened for trachoma in at-risk communities rose from 70% in 2012 to 92% in 2016. The proportion screened dropped slightly in 2017 to 83% then returned to 92% in 2019 (Figure 2.4.1b).

#### Things to consider

- In 2019, trachoma screening was undertaken in 111 at-risk communities in 4 jurisdictions (Queensland, Western Australia, South Australia and Queensland) (Kirby Institute 2019).
- The CDNA guidelines for trachoma control were revised in 2014 so that at-risk communities were not required to be screened each year. The screening and treatment frequency for trachoma in at-risk communities is based on the trachoma prevalence rate.
- In line with CDNA guidelines, the 5–9 age group is the target group for screening programs in all regions, with variable screening undertaken for other age groups.

### 2.4.2 Trichiasis

**Overall:** In 2019, 6,733 Indigenous Australians aged 15–39 (a rate of 27%) and 6,244 Indigenous adults aged 40 and over (a rate of 43%) were screened for trichiasis. Altogether, 12,977 (a rate of 33%) of Indigenous Australians aged 15 and over were screened for trichiasis (Figure 2.4.2a).

**Jurisdiction:** In 2019, the proportion of Indigenous adults aged 40 and over screened for trichiasis was highest in the Northern Territory (4,962 adults, a rate of 57%) and lowest in Western Australia (474 adults, a rate of 14%) (Figure 2.4.2b).

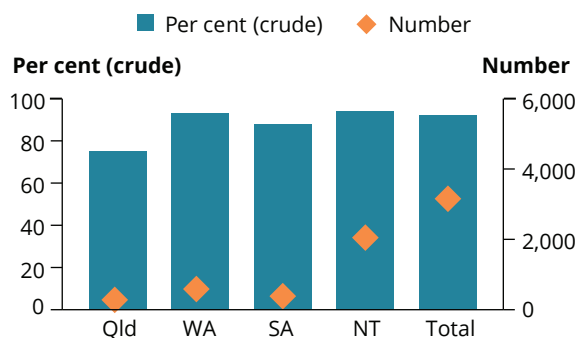
**Time trend:** In jurisdictions that undertook screening, the proportion of Indigenous adults aged 40 and over screened for trichiasis rose from 1,179 (9%) in 2011 to 6,244 (43%) in 2019. The number of Indigenous adults aged 40 and over screened for trichiasis was highest in 2017 (8,270, 24%), while the proportion was highest in 2018 (7,993, 45%) (Figure 2.4.2c).

#### Things to consider

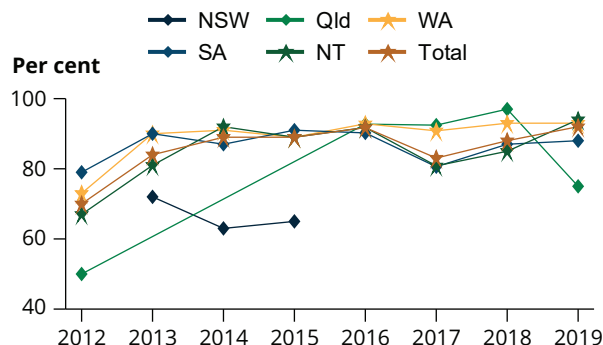
- In 2019, trichiasis screening was undertaken in 127 at-risk communities in 4 jurisdictions (Queensland, Western Australia, South Australia and Queensland) (Kirby Institute 2019).
- Screening for trichiasis is undertaken opportunistically, such as during adult health checks.

**Figure 2.4.1: Trachoma screening coverage in Indigenous communities, by various characteristics**

**a) By state, 2019**

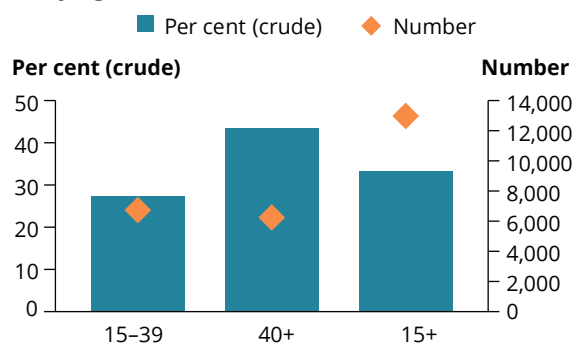


**b) Children aged 5–9, 2012 to 2019**

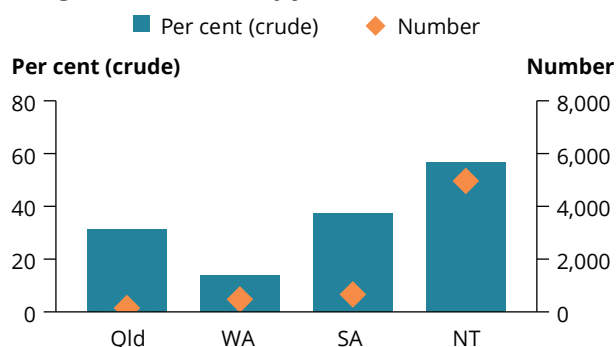


**Figure 2.4.2: Trichiasis screening coverage in Indigenous communities, by various characteristics**

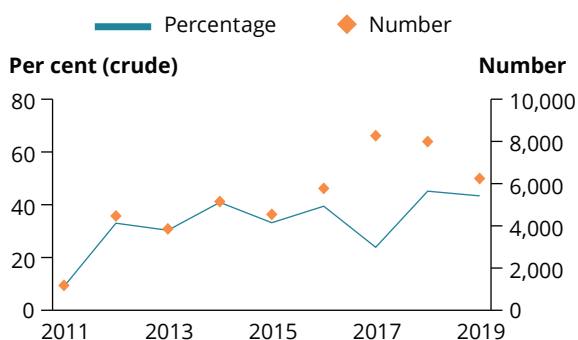
**a) By age, 2019**



**b) Aged 40 and over, by jurisdiction, 2019**



**c) Aged 40 and over, 2011 to 2019**



**Notes**

1. All figures show crude rates.
2. 2019 trachoma data cover 111 communities screened (55 in the NT, 5 in Qld, 15 in SA and 36 in WA).
3. 2019 trichiasis data cover 127 communities screened (71 in the NT, 5 in Qld, 15 in SA and 36 in WA).
4. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of Australian Trachoma Surveillance reports (Kirby Institute 2013, 2014, 2015, 2016, 2017, 2018, 2019).

## Measure 2.5: Undiagnosed eye conditions

**Key finding:** In 2016, 57% of Indigenous participants in the NEHS had vision impairment or blindness identified and had not previously had their condition diagnosed.

**Overall:** In 2016, around 57% of Indigenous participants in the NEHS had vision impairment or blindness attributed to 1 of 5 main causes (refractive error, cataract, diabetic retinopathy, age-related macular degeneration and glaucoma), and had not previously had their condition diagnosed.

The rates varied by condition (Figure 2.5a), with the highest rate being for undiagnosed cataract:

- 64 of 116 (55%) Indigenous participants tested had undiagnosed refractive error
- 27 of 39 (69%) Indigenous participants tested had undiagnosed cataract
- 4 of 11 (36%) Indigenous participants tested had undiagnosed diabetic retinopathy.

For non-Indigenous participants, 52% had vision impairment or blindness and had not previously had their condition diagnosed. The rates for non-Indigenous participants were highest for refractive error, with 79 out of 124 (64%) having undiagnosed refractive error (Figure 2.5b).

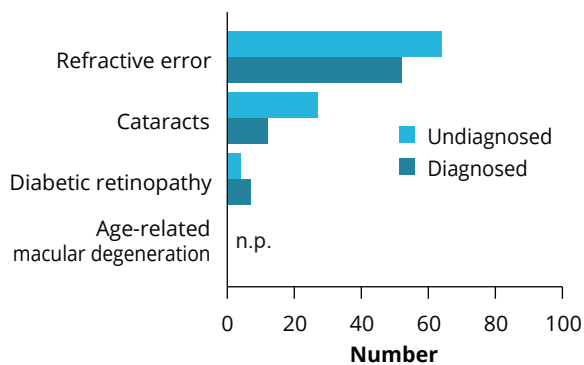
Rates of undiagnosed eye diseases were higher for Indigenous than for non-Indigenous Australians for cataract and diabetic retinopathy, and lower for refractive error and age related macular degeneration (Figure 2.5c).

### Things to consider

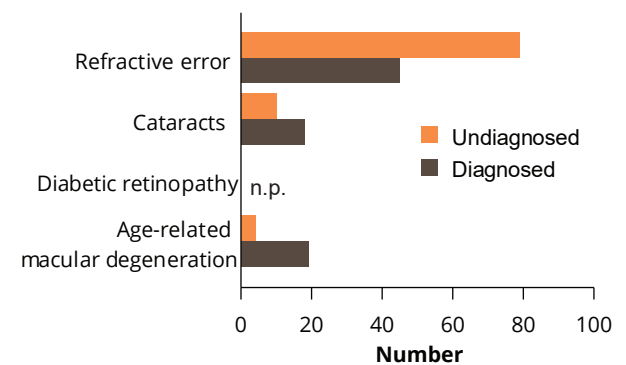
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The survey results reported are crude unadjusted sample proportions. These results are subject to sampling errors.
- 'Undiagnosed major eye condition or disease' was identified as the main attributed cause of vision impairment in participants who reported 'No' or 'Unsure' to the question 'Have you ever been told by a doctor that you have the following condition?'

Figure 2.5: Diagnosis rates for top 3 eye diseases and refractive error, by various characteristics

a) Indigenous number, 2016

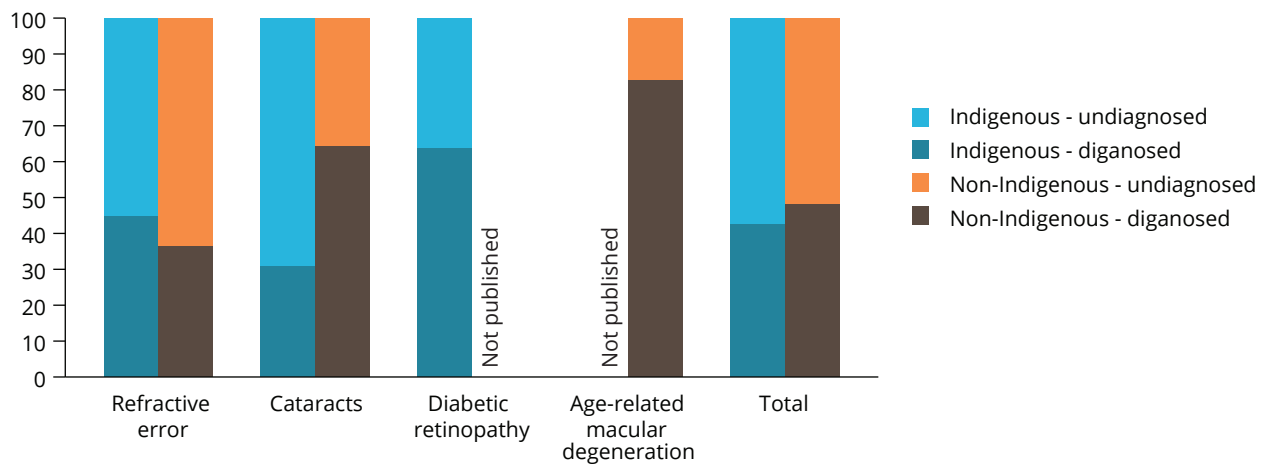


b) Non-Indigenous number, 2016



c) Percentage, by Indigenous status, 2016

Per cent (crude)



Notes

1. Percentages are crude unadjusted sample proportions.
2. Some numbers and rates are not presented, due to small numbers.
3. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of NEHS data 2016.







# 3

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## Treatment— how are eye problems treated?

According to the 2016 NEHS, refractive error, cataract and diabetic retinopathy are the leading causes of vision loss among Aboriginal and Torres Strait Islander Australians. Information on Indigenous Australians' hospitalisations for cataract surgery, treatment for diabetic retinopathy and provision of spectacles (a low-cost effective treatment for refractive error), for example, reflect the prevalence of particular conditions in the population as well as the use of health services. Reporting the use of eye health treatment services allows for ongoing monitoring and for identification of particular services, regions or groups within the Indigenous population, where access to and use of services could be improved.

### **Treatment—measures and data sources**

There are 4 measures reported in this chapter against treatment in admitted patient care:

**Measure 3.1: Hospitalisations for diseases of the eye**—the number of hospitalisations for diseases of the eye, per 1,000 Indigenous Australians.

**Measure 3.2: Hospitalisations for injuries to the eye**—the number of hospitalisations for injuries to the eye, per 1,000 Indigenous Australians, age-standardised rate and rate ratio.

**Measure 3.3: Hospitalisations for eye procedures**—the number of hospital separations with a procedure on the eye, per 1,000 Indigenous Australians.

**Measure 3.4: Cataract surgery rate**—the number of hospital separations with a procedure for cataract surgery, per 1,000,000 Indigenous Australians.

**Measure 3.5: Cataract surgical coverage rate**—expressed as:

- **NEHS definition:** number of Indigenous Australians who have had cataract surgery, as a proportion of those who have had cataract surgery plus those who have vision loss (visual acuity worse than 6/12) and cataracts in 1 or both eyes.
- **World Health Organization (WHO) definition:** number of Indigenous Australians who have had cataract surgery, as a proportion of those who have had cataract surgery plus those with vision loss (visual acuity worse than 6/18) and cataracts in both eyes.

The data come from the 2016 NEHS, the only source of data that includes an estimate of surgery rates for persons who have been identified as having cataracts.

**Measure 3.6: Waiting times for elective cataract surgery**—expressed as:

- median waiting time (or the number of days within which 50% of patients who completed their wait were admitted for cataract surgery) and the 90th percentile waiting time (or the number of days within which 90% of patients who completed their wait were admitted for cataract surgery).
- proportion of patients who completed their wait who had cataract surgery within 90 days and within 365 days.

*continued*

### **Treatment—measures and data sources (continued)**

These hospitalisation measures are based on admitted patient care data from the NHMD. Hospitalisation numbers and rates are based on episodes of care and not the number of people who are hospitalised. These data are provided by state and territory health departments to the AIHW, which manages the national data collection. With the exception of time trend data, 2 financial years of data were aggregated to allow for analyses by Indigenous status and other characteristics, including PHN and Roadmap Region.

#### **Measure 3.7: Target population treated for diabetic retinopathy—expressed as:**

- the number of Indigenous Australians who had a retinal laser procedure or an intra-vitreous injection who had also had a diabetes test as a proportion of those screened for diabetic retinopathy.
- the number of Indigenous Australians who had a retinal laser procedure or an intra-vitreous injection who had also had a diabetes test as a proportion of those who had a diabetes test.

The data for this measure is based on MBS data.

#### **Measure 3.8: Trachoma and trichiasis treatment coverage—the estimated number, and proportion of:**

- community members who were treated in communities where active trachoma was identified
- Indigenous adults with trichiasis who were treated

This measure captures data on treatment provided in at-risk communities. For trachoma, treatment data are provided on the community members treated in communities where active trachoma was identified who received treatment. For trichiasis, data are for treatment for those who have been identified as having the condition (Kirby Institute 2018).

#### **Measure 3.9: Treatment of refractive error—the number of Indigenous Australians who had spectacle or contact lens correction for refractive error, as a proportion of those who had refractive error (whether or not they had spectacle or contact lens correction).**

#### **Measure 3.10: Spectacles dispensed under state schemes—the number of spectacles dispensed to Aboriginal and Torres Strait Islander Australians under state-subsidised spectacles programs, per 1,000 population.**

These final 2 measures relate to refractive error, a major cause of vision impairment which can generally be corrected easily by providing spectacles. *Treatment of refractive error* comes from the 2016 NEHS and compares treatment rates for refractive error for non-Indigenous and Indigenous Australians. All state governments have subsidised spectacle schemes targeted to low income people. The measure *Spectacles dispensed under state schemes*, captures data on Indigenous Australians' use of these schemes, although only 5 jurisdictions (New South Wales, Victoria, Queensland, South Australia, and Tasmania) could provide data.

## Measure 3.1: Hospitalisations for diseases of the eye

**Key finding:** In the 2-year period 2017–19, there were around 9,700 (5.8 per 1,000 population) hospitalisations for Indigenous Australians for diseases of the eye. Between 2011–12 and 2018–19, the age-standardised hospitalisation rate for diseases of the eye for Indigenous Australians increased from 8.3 to 12.2 per 1,000 population.

**Overall:** In the 2-year period 2017–19, there were around 9,700 hospitalisations for Indigenous Australians for diseases of the eye—a crude rate of 5.8 per 1,000 population.

In 2018–19, age-standardised hospitalisation rates for Indigenous Australians for diseases of the eye (12.2 per 1,000) were lower than for non-Indigenous Australians (14.8 per 1,000) (Figure 3.1a).

In 2017–19, for Indigenous Australians, the most common principal diagnosis for hospitalisations for diseases of the eye was disorders of the lens (5,826 hospitalisations or 3.5 per 1,000) followed by disorders of the choroid and retina (1,260 hospitalisations or 0.8 per 1,000), disorders of the conjunctiva (0.4 per 1,000) and disorders of the eyelid, lacrimal system and orbit (0.4 per 1,000) (Figure 3.1b).

**Age and sex:** In 2017–19, hospitalisation rates for eye diseases increased with age and were greatest for those aged 75 and over. Hospitalisation rates were higher among non-Indigenous Australians aged 75 and over (110.8 per 1,000) than Indigenous Australians (75.8 per 1,000) (Figure 3.1c).

**Remoteness:** In 2017–19, age-standardised hospitalisation rates for eye diseases increased with remoteness, so that hospitalisation rates for Indigenous Australians in *Remote and very remote* areas were higher than those in *Major cities* (13.4 and 9.5 per 1,000, respectively) (Figure 3.1d).

**Jurisdiction:** In 2017–19, age-standardised hospitalisation rates for Indigenous Australians for diseases of the eye were lowest in the Australian Capital Territory (7.1 per 1,000), followed by Tasmania (7.4 per 1,000). Western Australia had the highest hospitalisation rates (12.6 per 1,000) (Figure 3.1e).

**Time trend:** Between 2011–12 and 2018–19, age-specific hospitalisation rates for Indigenous Australians for diseases of the eye increased for all age groups over 45. The largest increase was for those aged 75 and over, where the rate increased from 49 per 1,000 in 2011–12 to 76 per 1,000 in 2018–19 (Figure 3.1f). Hospitalisation rates for non-Indigenous Australians also increased across all age groups over the same period (Figure 3.1g). Hospitalisation rates were higher among Indigenous Australians than non-Indigenous Australians in 2018–19 for those aged 45 to 54 (7.2 and 6.2 per 1,000, respectively) and 55 to 64 (22.7 and 20.5 per 1,000, respectively) (Figure 3.1f and g).

Between 2011–12 and 2018–19, the age-standardised hospitalisation rate for diseases of the eye for Indigenous Australians increased from 8.3 to 12.2 per 1,000, while the rate for non-Indigenous Australians increased from 13.2 to 14.8 per 1,000 (Figure 3.1h).

**PHN:** In 2017–19, the PHNs with the lowest hospitalisation rates for Indigenous Australians for diseases of the eye were Western Sydney, Northern Sydney and Nepean Blue Mountains (all under 2.5 per 1,000) (Figure 3.1i).

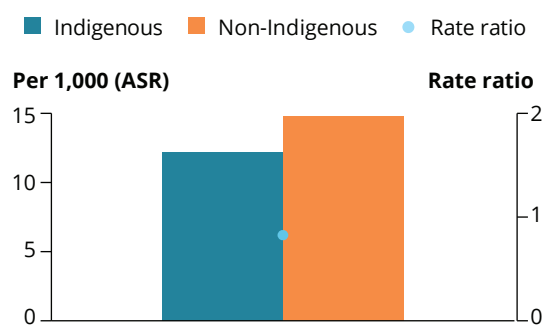
**Roadmap region:** In 2017–19, the Roadmap regions with the highest hospitalisation rates for Indigenous Australians for eye diseases were *Pilbara* (12.3 per 1,000), *South West Queensland* (11.5 per 1,000) and *NG Lands* (11.1 per 1,000) (Figure 3.1j).

### Things to consider

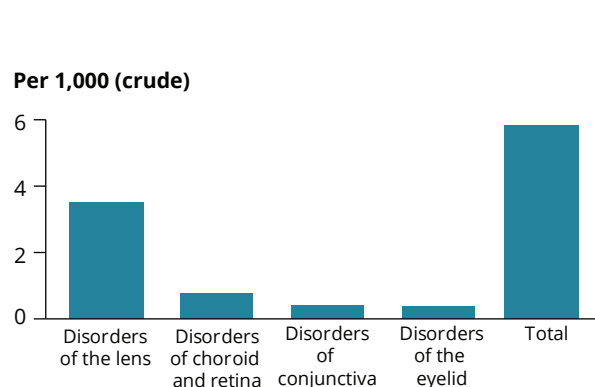
- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.
- Data by state and territory, PHN and Roadmap region should be interpreted with caution due to variations in admission practices; and because patients may be hospitalised outside the area where they reside.
- Age-standardised and age-specific rates are both presented (see Box 4—Population Rates).

**Figure 3.1: Hospitalisation rates for diseases of the eye, by various characteristics**

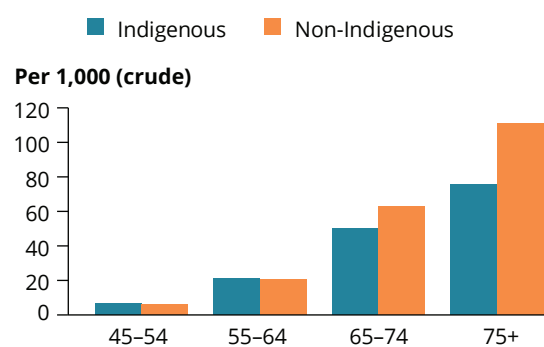
#### a) By Indigenous status, 2018–19



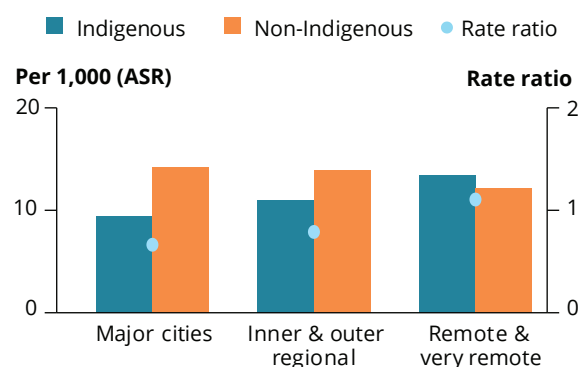
#### b) Indigenous, by principal diagnosis, 2017–19



#### c) By Indigenous status and age, 2017–19



#### d) By region, 2017–19



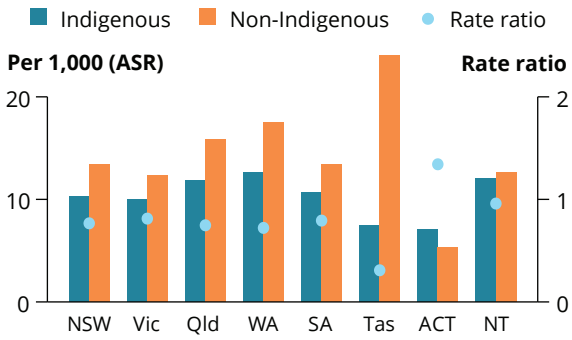
#### Notes

1. Figure (b) shows the top 4 principal diagnoses for Indigenous Australians.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the supplementary tables.

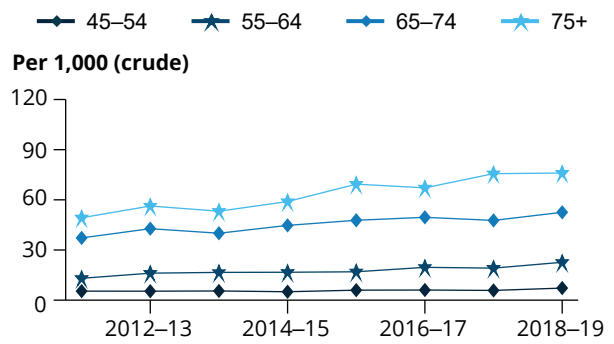
Source: AIHW analysis of NHMD.

Figure 3.1: Hospitalisation rates for diseases of the eye, by various characteristics

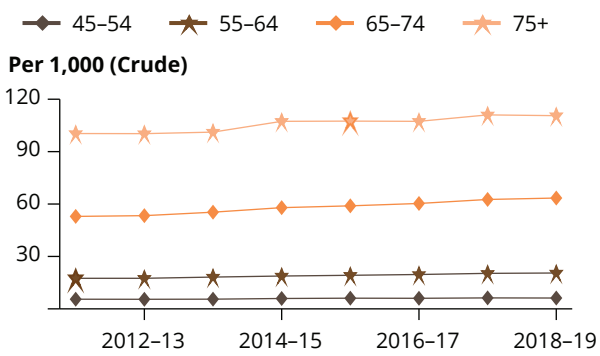
e) By jurisdiction, 2017–19



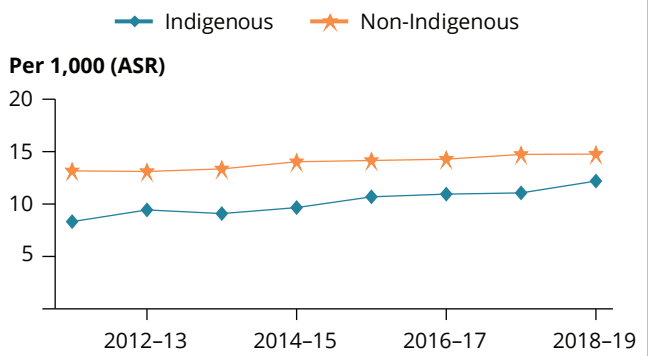
f) Indigenous, by age, 2011–12 to 2018–19



g) Non-Indigenous, by age, 2011–12 to 2018–19



h) Time trend, 2011–12 to 2018–19

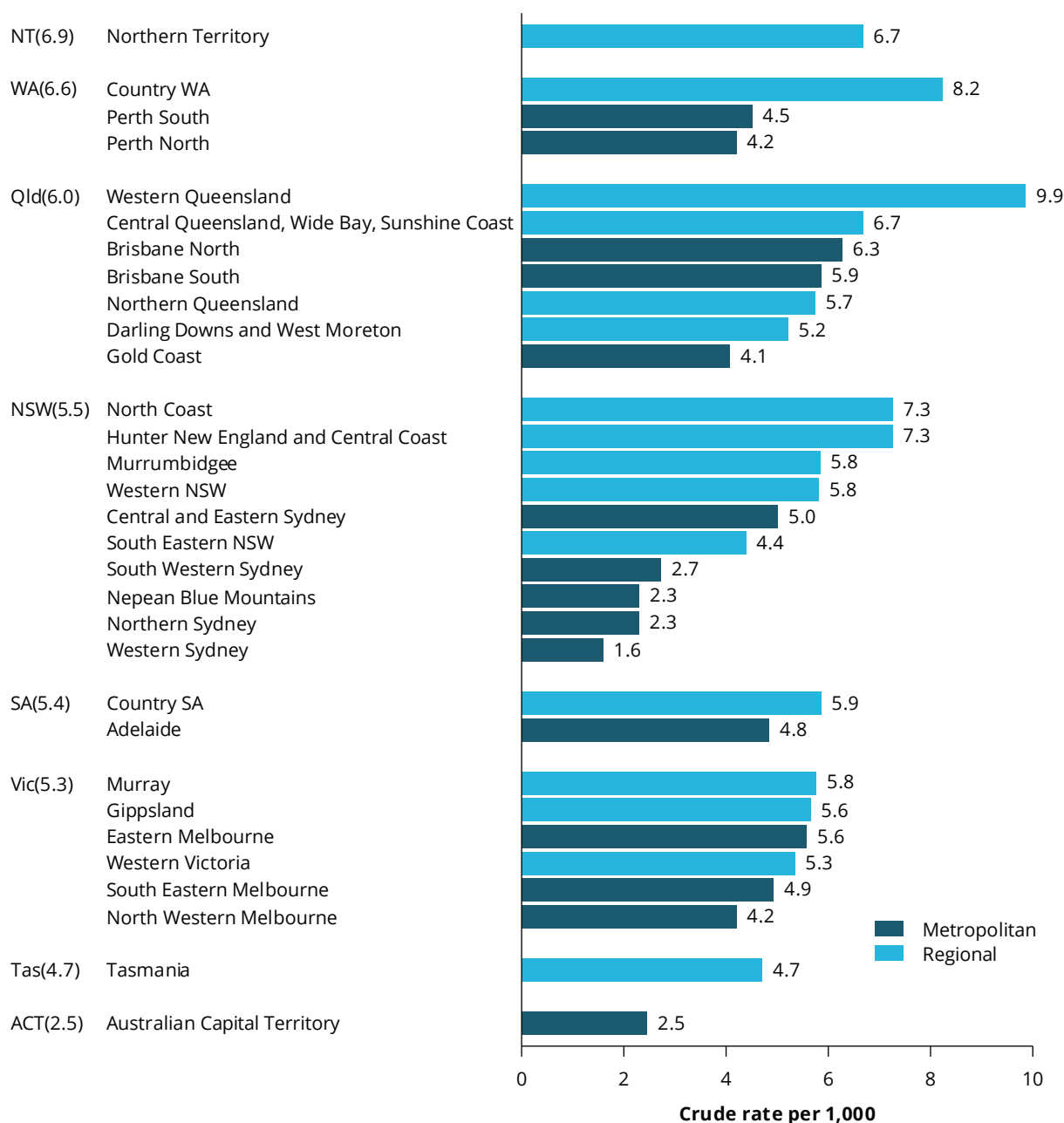


Notes

1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.1i: Hospitalisation rates for diseases of the eye for Indigenous Australians, by PHN, 2017–19**

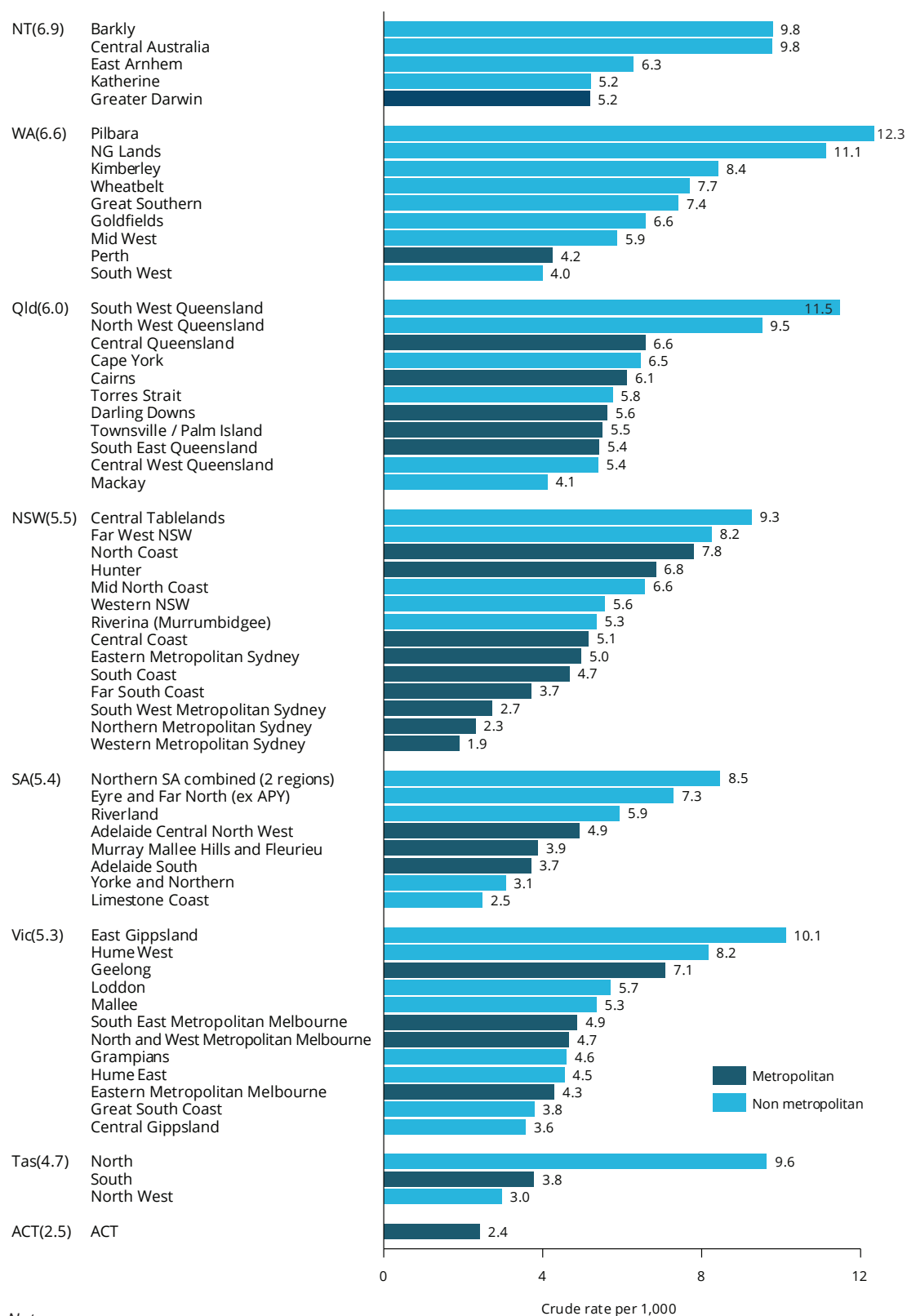


**Notes**

1. The percentages in brackets beside the state/territory labels relate to the overall crude rate of hospitalisation for eye diseases in that state/territory.
2. The rates beside the bars are the crude rate of hospitalisations for eye diseases in the relevant PHN.
2. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.1j: Hospitalisation rates for diseases of the eye for Indigenous Australians, by Roadmap region, 2017–19**



**Notes**

1. The percentages in brackets beside the state/territory labels relate to the overall crude rate of hospitalisation for eye diseases in that state/territory.
2. The rates beside the bars are the crude rate of hospitalisations for eye diseases in the relevant Roadmap region.
3. Data for this figure is available in the supplementary tables.

Source: AIHW analysis of NHMD.



## Measure 3.2: Hospitalisations for injuries to the eye

**Key finding:** In the 2-year period from 2017–19, there were around 2,000 (1.2 per 1,000 population) hospitalisations of Indigenous Australians for injuries to the eye. Between 2011–12 and 2018–19, the age-standardised hospitalisation rate for eye injuries for Indigenous Australians was fairly constant.

**Overall:** In the 2-year period from 2017–19, there were around 2,000 hospitalisations of Indigenous Australians for injuries to the eye—1.2 per 1,000 population.

In 2018–19, age-standardised hospitalisation rates for Indigenous Australians for injuries to the eye (1.4 per 1,000) were higher than for non-Indigenous Australians (0.5 per 1,000) (Figure 3.2a).

In 2017–19, for Indigenous Australians, the most common principal diagnosis for hospitalisations for injury to the eye was an open wound of eyelid and periocular area (0.4 per 1,000) (Figure 3.2b).

**Age and sex:** In 2017–19, hospitalisation rates for eye injuries were higher for Indigenous Australians than for non-Indigenous Australians in all age groups apart from those aged 75 and over where rates were higher for non-Indigenous Australians. Hospitalisation rates for eye injuries were highest for Indigenous Australians aged 35–44 and were highest for non-Indigenous Australians aged 75 and over (Figure 3.2c).

For Indigenous Australians in 2017–19, age-specific hospitalisation rates for eye injuries were highest for males in the 35–44 age group (2.5 per 1,000) and highest for females in the 25–34 and 35–44 age groups (both 2.2 per 1,000) (Figure 3.2d).

**Remoteness:** In 2017–19, age-standardised rates of hospitalisation for Indigenous Australians were highest in *Remote and very remote* areas (3.0 per 1,000). This is more than double the rate in *Inner and outer regional* areas (1.1 per 1,000) and more than triple the rate in *Major cities* (0.7 per 1,000). Rates were higher for Indigenous than non-Indigenous Australians in all regions (Figure 3.2e).

**Jurisdiction:** In 2017–19, age-standardised hospitalisation rates for Indigenous Australians for eye injuries were highest in the Northern Territory and Western Australia (3.8 and 1.8 per 1,000, respectively). (Figure 3.2f).

**Time trend:** Between 2011–12 and 2018–19, age-specific hospitalisation rates for injuries to the eye for Indigenous Australians remained fairly constant within each age group over time (Figures 3.2g–m). Over the same period, the rates for non-Indigenous Australians were also fairly constant within each age group. (Figure 3.2g–m). In 2018–19, the age-specific hospitalisation rate for Indigenous Australians aged 35–44 (2.4 per 1,000) was 8 times the rate for non-Indigenous Australians of the same age (0.3 per 1,000) (Figure 3.2i).

Between 2011–12 and 2018–19, the age-standardised hospitalisation rate for eye injuries for Indigenous Australians and non-Indigenous Australians was fairly constant (Figure 3.2n).

**PHN:** In 2017–19, the PHNs with the highest hospitalisation rate for Indigenous Australians for injury to the eye were the Northern Territory and Western Queensland (over 2.9 per 1,000) (Figure 3.2o).

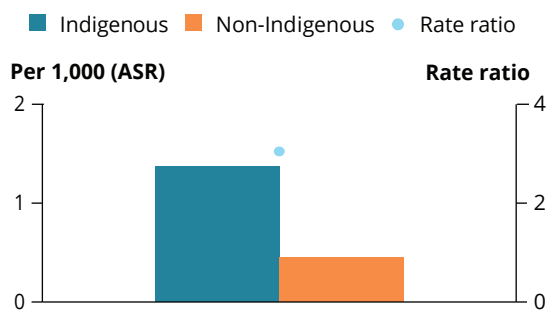
**Roadmap region:** In 2017–19, the Roadmap regions with the highest hospitalisation rates for Indigenous Australians for injuries to the eye were *Barkly* (5.8 per 1,000) and *Central Australia* (4.9 per 1,000) (Figure 3.2p).

## Things to consider

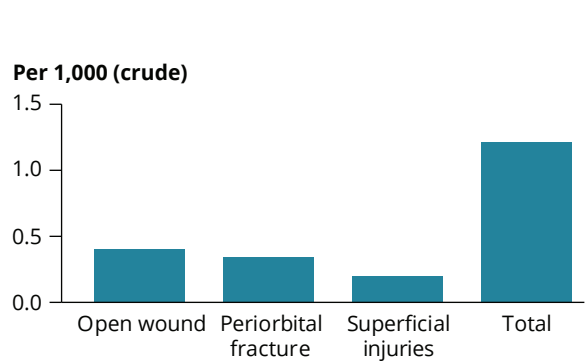
- This measure is a count of hospitalisations for injury, not of occurrence of injury—as some injuries would result in more than 1 hospitalisation.
- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.
- Data by state and territory, PHN and Roadmap region should be interpreted with caution, due to variations in admission practices and because patients may be hospitalised outside the area where they reside.
- Age-standardised and age-specific rates are presented (see Box 4—Population Rates).

**Figure 3.2: Hospitalisation rates for injuries to the eye, by various characteristics**

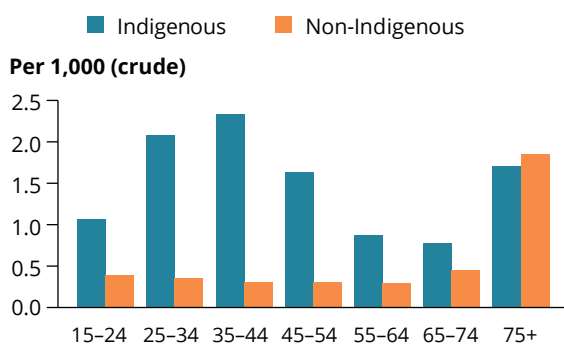
**a) By Indigenous status, 2018–19**



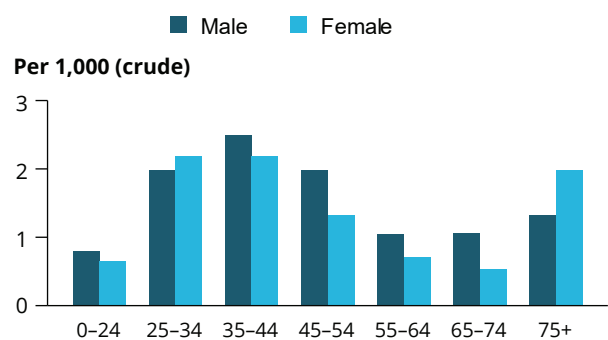
**b) Indigenous, by principal diagnosis, 2017–19**



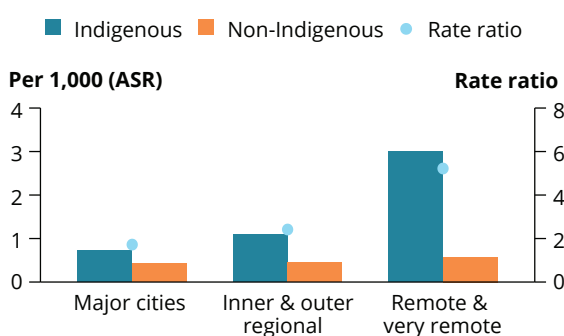
**c) By Indigenous status and age, 2017–19**



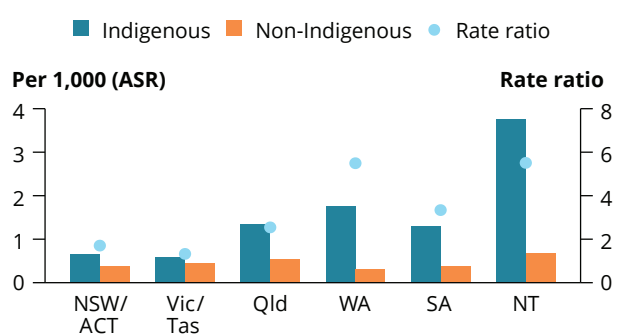
**d) By age and sex, 2017–19**



**e) By region, 2017–19**



**f) By jurisdiction, 2017–19**



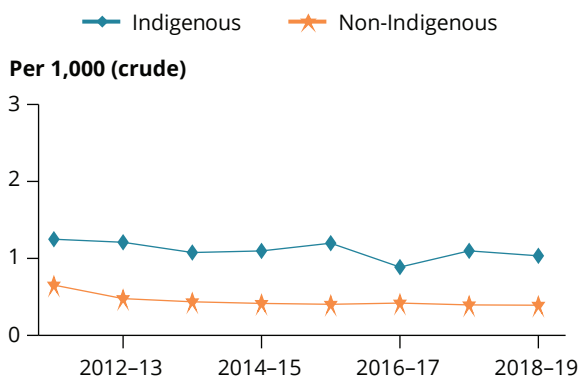
**Notes**

1. Figure (b) shows the top 4 principal diagnoses for Indigenous Australians.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the supplementary tables.

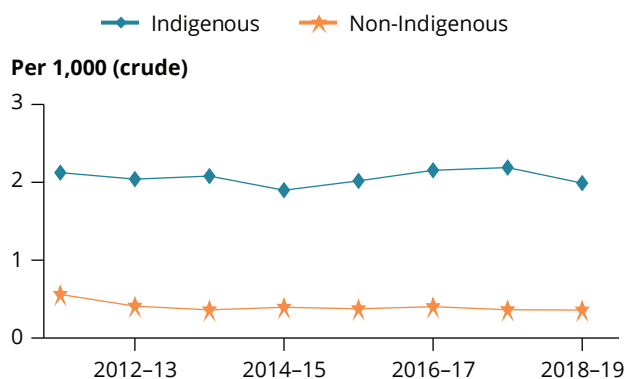
Source: AIHW analysis of NHMD.

Figure 3.2: Trends in hospitalisation rates for injuries to the eye, by Indigenous status

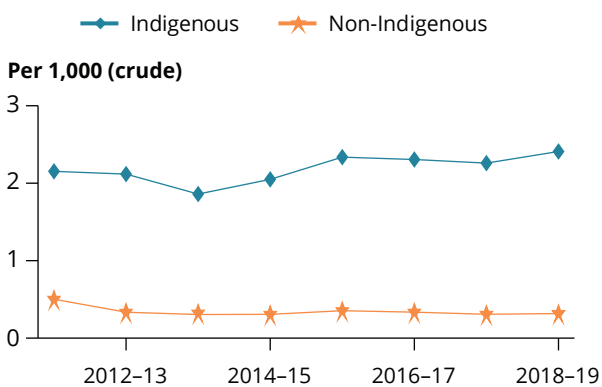
g) 15 to 24 years, 2011–12 to 2018–19



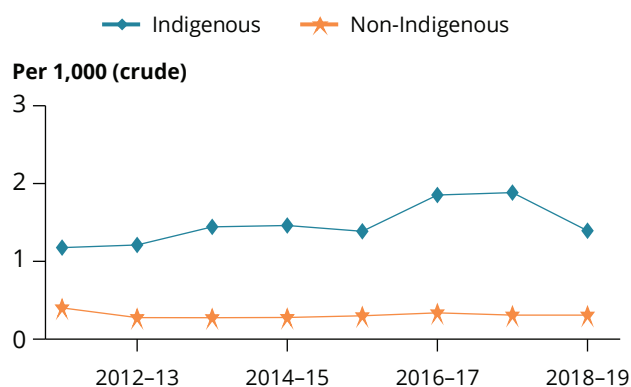
h) 25 to 34 years, 2011–12 to 2018–19



i) 35 to 44 years, 2011–12 to 2018–19



j) 45 to 54 years, 2011–12 to 2018–19



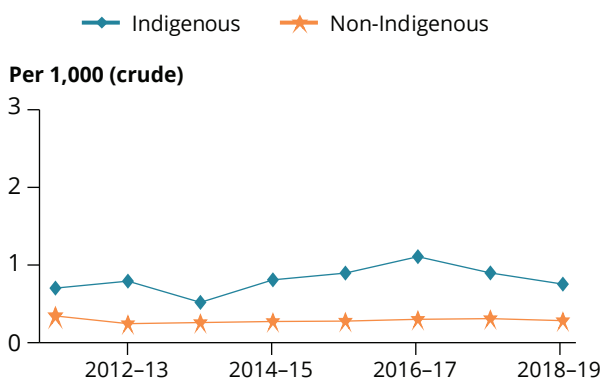
Notes

1. Figure (b) shows the top 4 principal diagnoses for Indigenous Australians.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the supplementary tables.

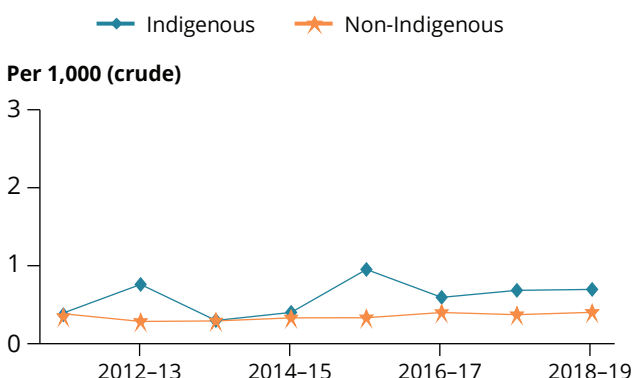
Source: AIHW analysis of NHMD.

Figure 3.2: Trends in hospitalisation rates for injuries to the eye, by Indigenous status

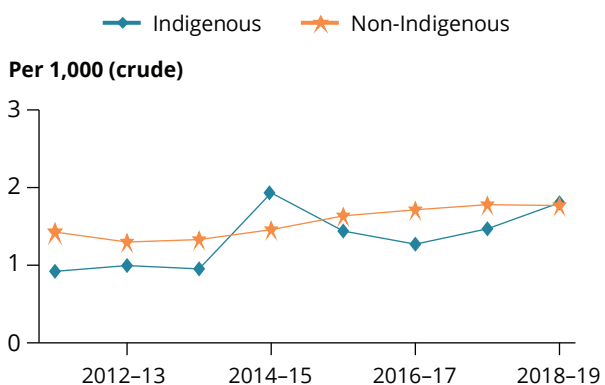
k) 55 to 64 years, 2011–12 to 2018–19



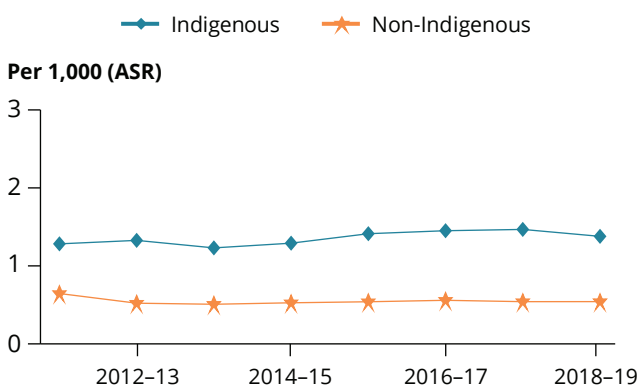
l) 65 to 74 years, 2011–12 to 2018–19



m) 75 years and over, 2011–12 to 2018–19



n) Time trend, 2011–12 to 2018–19

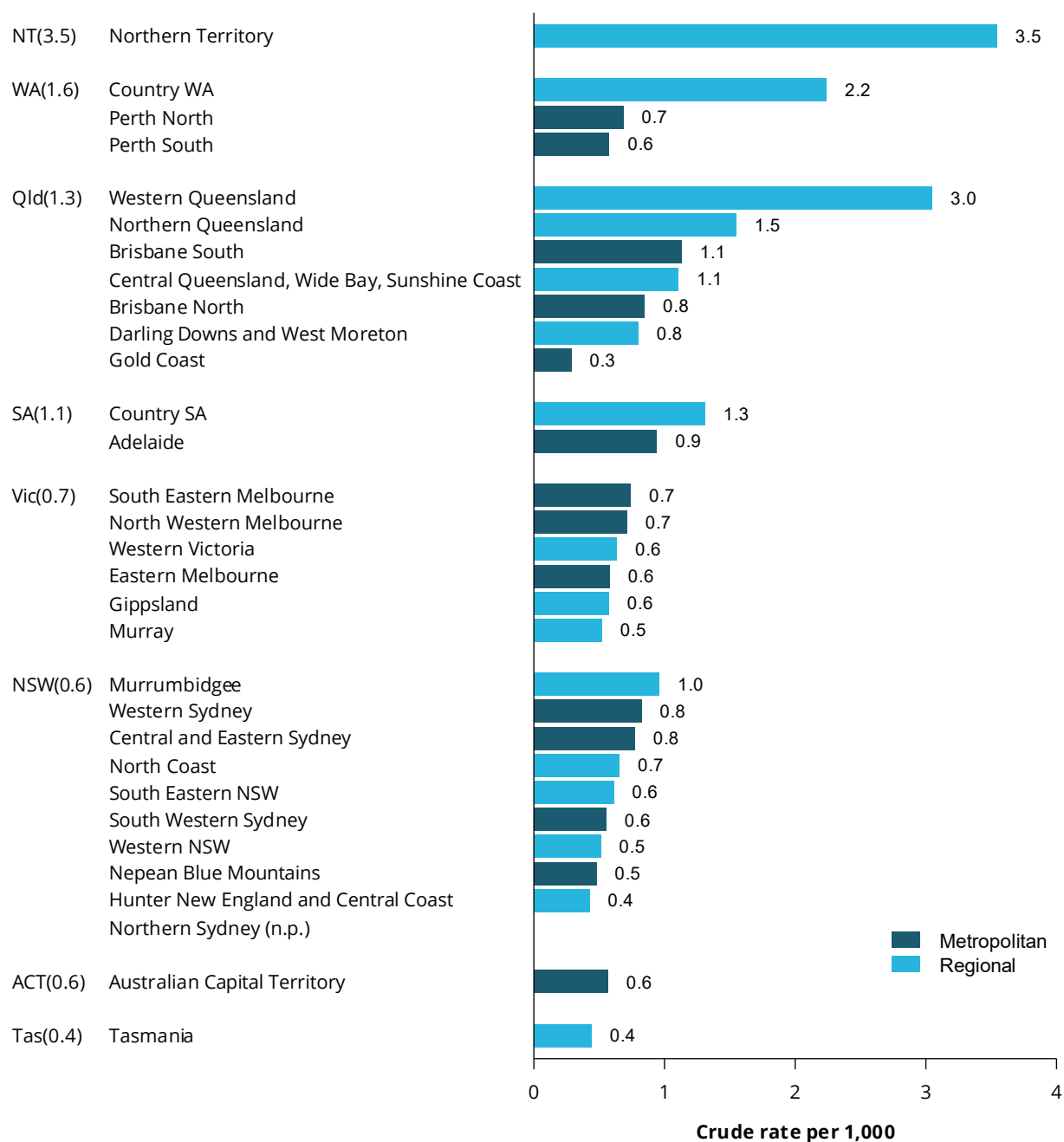


Notes

1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.2o: Hospitalisation rates for injuries to the eye for Indigenous Australians, by PHN, 2017–19**

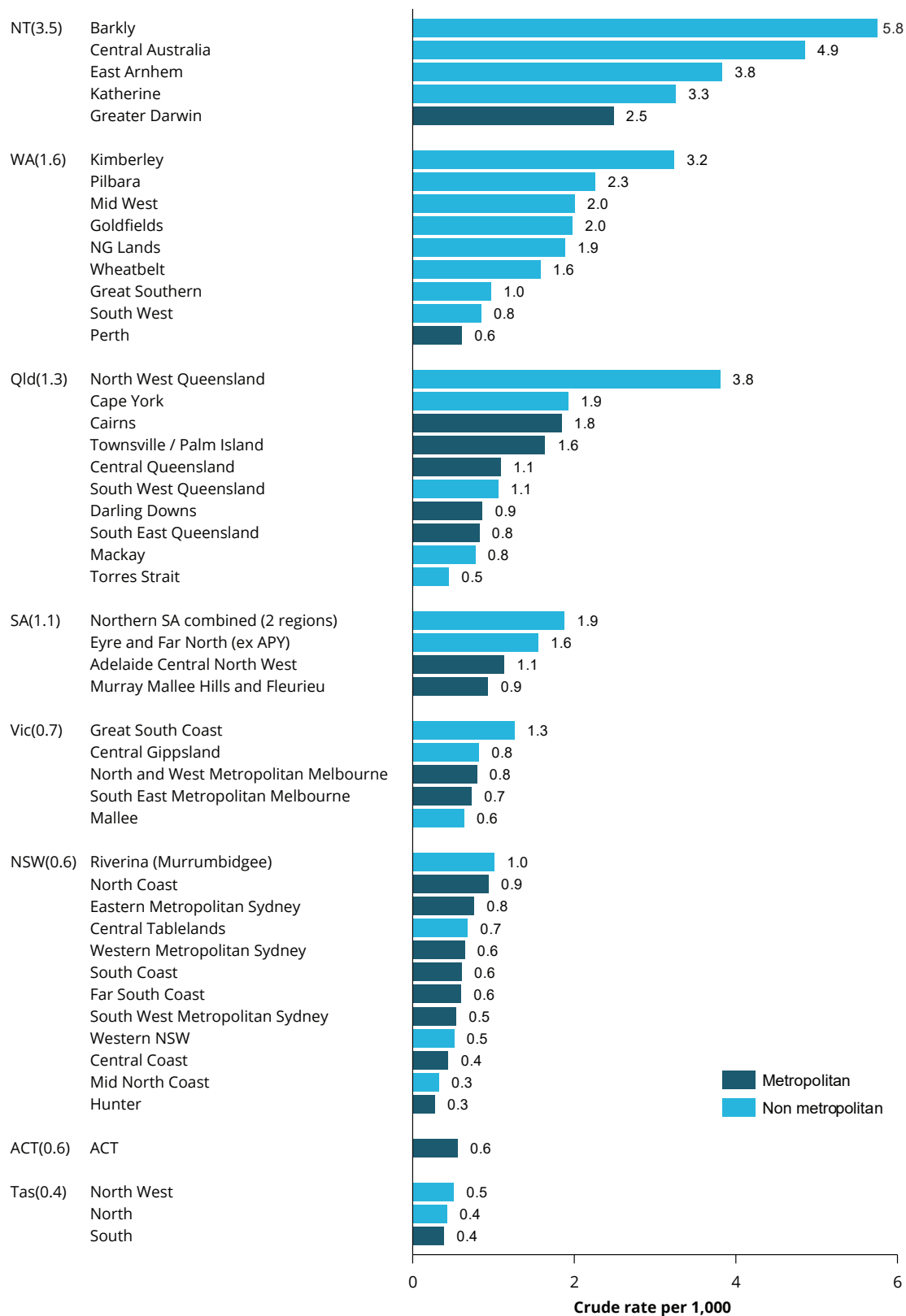


**Notes**

1. The percentages in brackets beside the state/territory labels relate to the overall crude rate of hospitalisation for eye injuries in that state/territory.
2. The rates beside the bars are the crude rate of hospitalisations for eye diseases in the relevant PHN.
3. Data for this figure is available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.2p: Hospitalisation rates for injuries to the eye for Indigenous Australians, by Roadmap region, 2017–19**



**Notes**

1. The percentages in brackets beside the state/territory labels relate to the overall crude rate of hospitalisation for eye injuries in that state/territory.
2. The rates beside the bars are the crude rate of hospitalisations for eye injuries in the relevant Roadmap region.
3. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of NHMD.

## Measure 3.3: Hospitalisations for eye procedures

**Key finding:** In the 2-year period 2017–19, there were around 9,400 (5.7 per 1,000 population) hospitalisations of Indigenous people for eye procedures. Between 2011–12 and 2018–19, the age-standardised hospitalisation rate for eye procedures for Indigenous Australians increased from 8.2 to 11.9 per 1,000 population.

**Overall:** In the 2-year period 2017–19, there were around 9,400 hospitalisations of Indigenous people for eye procedures—a crude rate of 5.7 per 1,000 population.

In 2018–19, age-standardised hospitalisation rates for Indigenous Australians for eye procedures (11.9 per 1,000) were lower than for non-Indigenous Australians (14.4 per 1,000) (Figure 3.3a).

In 2017–19, for Indigenous Australians, the most common hospitalisations for an eye procedure were lens procedures (3.3 per 1,000) followed by retinal procedures (1.1 per 1,000) (Figure 3.3b).

**Age and sex:** In 2017–19, the rate of hospitalisations for eye procedures for Indigenous and non-Indigenous Australians increased with age. Rates were similar for Indigenous and non-Indigenous Australians at younger ages (45–54 and 55–64) but were higher for non-Indigenous than Indigenous Australians at older ages (65–74 and 75 and over) (Figure 3.3c)

**Remoteness:** In 2017–19, age-standardised rates of hospitalisation for Indigenous Australians for eye procedures were highest in *Remote and very remote* areas combined (12.8 per 1,000), and lowest in *Major cities* (9.3 per 1,000) (Figure 3.3d).

**Jurisdiction:** In 2017–19, age-standardised hospitalisation rates for Indigenous Australians for eye procedures were highest in Western Australia (12.7 per 1,000), followed by the Northern Territory (10.9 per 1,000) (Figure 3.3e).

**Time trend:** Between 2011–12 and 2018–19, age-specific hospitalisation rates for eye procedures for Indigenous Australians remained fairly constant for those aged 45–54, but increased by 10 per 1,000 for those aged 55–64, by 15 per 1,000 for those aged 65–74 and 28 per 1,000 for those aged 75 and over (Figure 3.3f). Hospitalisation rates for non-Indigenous Australians remained fairly constant for those aged from 45 to 64, but for those aged 65–74 and 75–84 the rate of eye procedures increased by 10 per 1,000 in each age group over this time (Figure 3.3g). Hospitalisations rates for Indigenous Australians aged 65–74 and 75 and over were lower than for non-Indigenous Australians of the same age.

Between 2011–12 and 2018–19, the age-standardised hospitalisation rate for eye procedures for Indigenous Australians increased from 8.2 to 11.9 per 1,000, while the rate for non-Indigenous Australians increased from 13.0 to 14.4 per 1,000 (Figure 3.3h).

**PHN:** In 2017–19, the PHNs with the highest reported rates of hospitalisations for Indigenous Australians for eye procedures were Western Queensland and Country WA (10.0 and 8.3 per 1,000, respectively) (Figure 3.3i).

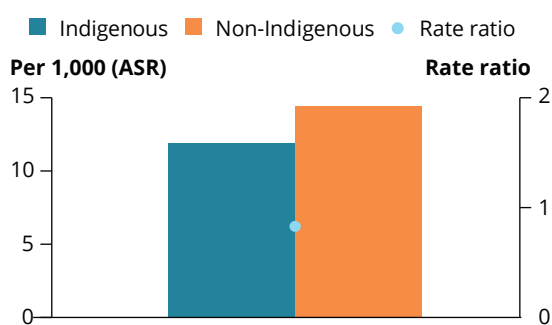
**Roadmap region:** In 2017–19, the Roadmap regions with the highest hospitalisation rates for Indigenous Australians for eye procedures were *Pilbara* (12.6 per 1,000), *South West Queensland* (11.3 per 1,000) and *North* (10.2 per 1,000) (Figure 3.3j).

## Things to consider

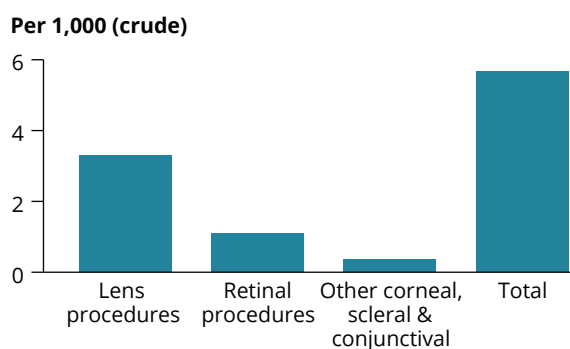
- The Australian Refined Diagnosis Related Group (AR-DRG) was used to disaggregate this measure into types of eye procedures. Each AR-DRG represents a class of patients with similar clinical conditions requiring similar hospital resources.
- The data may underestimate the number of procedures provided, as they do not include those undertaken on an outpatient basis.
- Data by state and territory, PHN and Roadmap region should be interpreted with caution due to variations in admission practices and because patients may be hospitalised outside the area where they reside.
- The quality of data provided for Indigenous status varies. Time series analyses may also be affected by changes in the quality of Indigenous identification over time.
- Age-standardised and age-specific rates are both presented (see Box 4—Population Rates).

**Figure 3.3: Hospitalisation rates for eye procedures, by various characteristics**

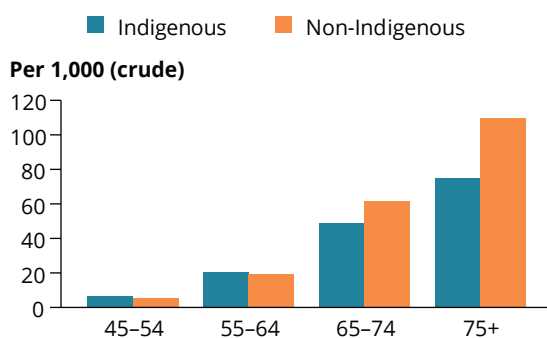
### a) By Indigenous status, 2018–19



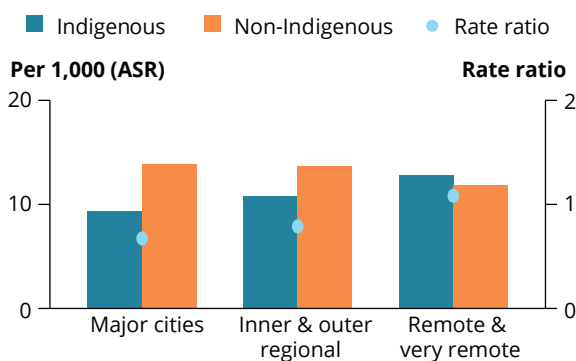
### b) Indigenous, by procedure type, 2017–19



### c) By Indigenous status and age, 2017–19



### d) By region, 2017–19



#### Notes

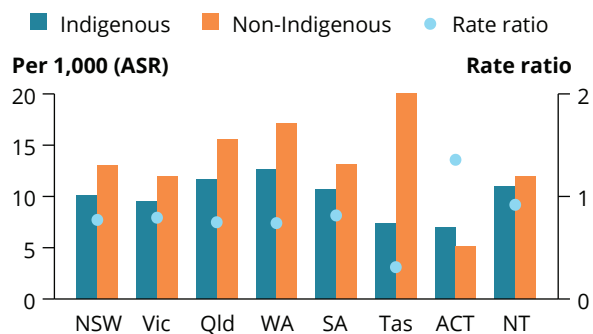
1. Figure (b) shows the top 4 principal diagnoses for Indigenous Australians.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of NHMD.

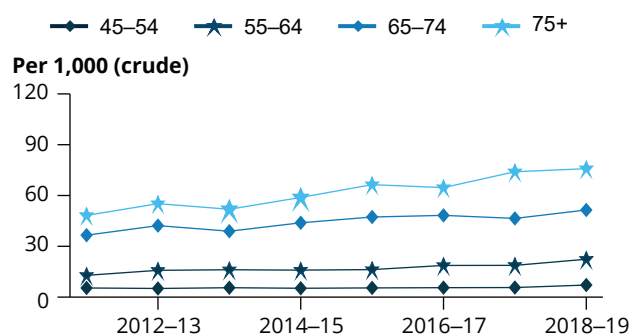


Figure 3.3: Trends in hospitalisation rates for eye procedures

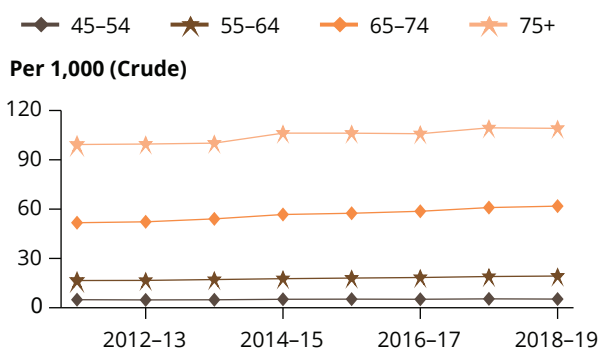
e) By jurisdiction, 2017–19



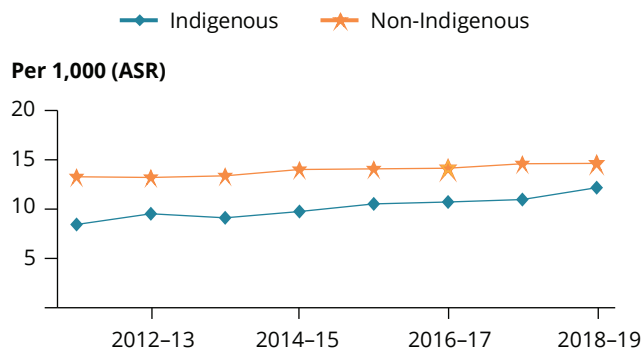
f) Indigenous by age, 2011–12 to 2018–19



g) Non-Indigenous by age, 2011–12 to 2018–19



h) Time trend, 2011–12 to 2018–19

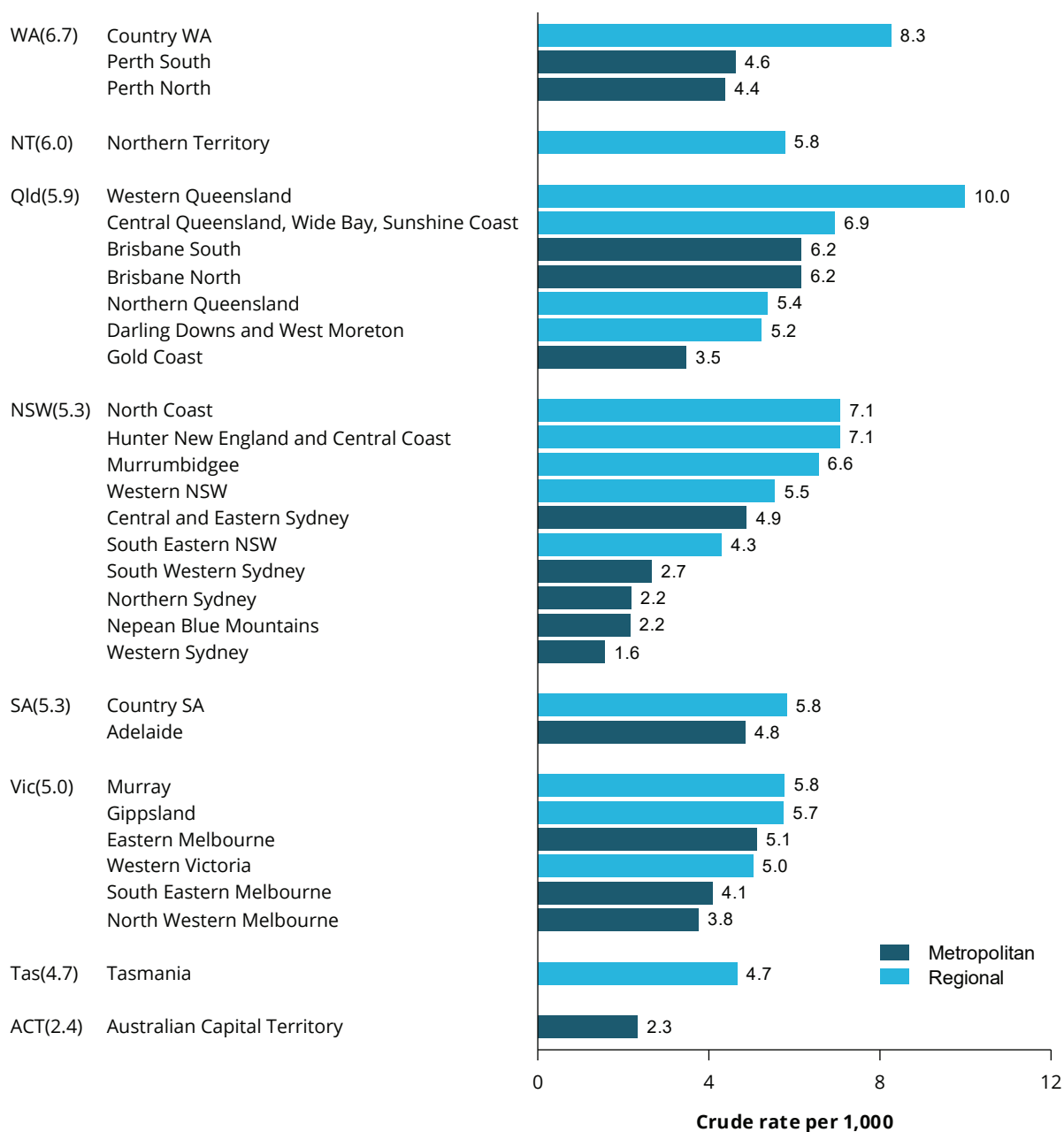


Notes

1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.3i: Hospitalisation rates for eye procedures for Indigenous Australians, by PHN, 2017–19**

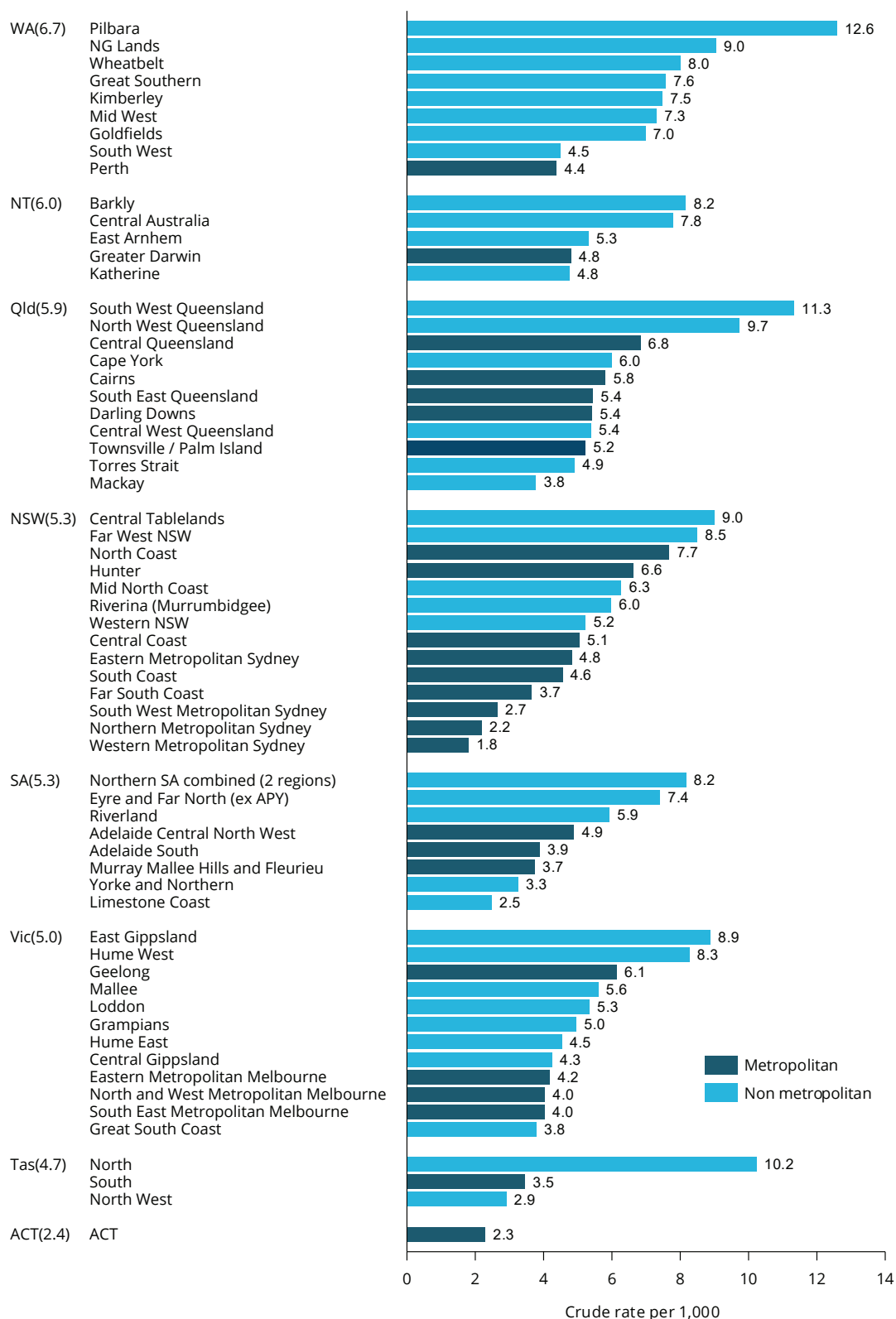


*Notes*

1. The percentages in brackets beside the state/territory labels relate to the overall crude rate of hospitalisation for eye procedures in that state/territory.
2. The rates beside the bars are the crude rate of hospitalisations for eye procedures in the relevant PHN.
3. Data for this figure is available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.3j: Hospitalisation rates for eye procedures for Indigenous Australians, by Roadmap region, 2017–19**



**Notes**

1. The percentages in brackets beside the state/territory labels relate to the overall crude rate of hospitalisation for eye procedures in that state/territory.
2. The rates beside the bars are the crude rate of hospitalisations for eye procedures in the relevant Roadmap region.
3. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of NHMD.

## Measure 3.4: Cataract surgery rate

**Key finding:** In the 2-year period from 2017–19, there were around 6,100 (3,655 per 1,000,000 population) hospitalisations for Indigenous Australians for cataract surgery. Between 2011–12 and 2018–19, the age-standardised rate for cataract surgery for Indigenous Australians increased from 5,964 to 8,519 per 1,000,000.

**Overall:** In the 2-year period from 2017–19, there were around 6,100 hospitalisations for Indigenous Australians for cataract surgery—a rate of 3,655 per 1,000,000 population. The number of hospitalisations over the 2-year period 2017–19 was below the estimated annual number of Indigenous people needing cataract surgery (14,243) (IEHU 2017).

In 2018–19, age-standardised hospitalisation rates for Indigenous Australians for cataract surgery (8,519 per 1,000,000) were lower than for non-Indigenous Australians (9,102 per 1,000,000) (Figure 3.1a).

**Age and sex:** In 2017–19, rates of cataract surgery increased with age and were highest for those aged 75 and over. The difference in Indigenous and non-Indigenous rates of cataract surgery was greatest for those aged 75 and over, (57,027 per 1,000,000 and 67,099 per 1,000,000, respectively) (Figure 3.4b).

**Remoteness:** In 2017–19, age-standardised rates of hospitalisations for Indigenous Australians for cataract surgery were lowest in *Major cities* (6,285 per 1,000,000) and highest in *Remote and very remote* areas combined (9,012 per 1,000,000) (Figure 3.4c).

**Jurisdiction:** In 2017–19, age-standardised hospitalisation rates for cataract surgery for Indigenous Australians were highest in South Australia (8,671 per 1,000,000) and lowest in Tasmania (4,844 per 1,000,000) (Figure 3.4d).

**Time trend:** Between 2011–12 and 2018–19, the age-specific hospitalisation rate for Indigenous Australians for cataract surgery increased for all age groups over time, particularly for those aged 65–74 and 75 and over (Figure 3.4e–h). The rate for non-Indigenous Australians remained relatively constant for the 45–54 and 55–64 age groups, increased for the 65–74 age group and declined for the 75 and over age group (Figure 3.4e–h). In 2018–19, the rate of hospitalisations was higher for Indigenous Australians aged 45–54 and 55–64 than for non-Indigenous Australians of the same age. However, at older ages, rates were higher for non-Indigenous Australians than Indigenous Australians.

Between 2011–12 and 2018–19, the age-standardised rate for cataract surgery for Indigenous Australians increased from 5,964 to 8,519 per 1,000,000, while the rate for non-Indigenous Australians increased from 8,654 to 9,102 per 1,000,000 (Figure 3.4i).

**PHN:** In 2017–19, the PHNs with the highest reported rates of hospitalisations for Indigenous Australians for cataract surgery were Western Queensland (7,749 per 1,000,000), North Coast (4,994 per 1,000,000) and Hunter New England and Central Coast (4,925 per 1,000,000) (Figure 3.4j).

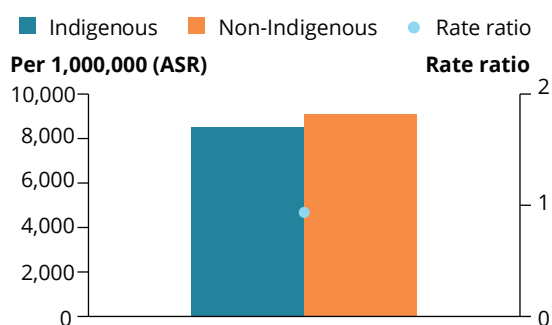
**Roadmap region:** In 2017–19, the number of hospitalisations for Indigenous Australians came closest to meeting estimated need in the Roadmap region of *South West Queensland* (58 hospitalisations, with 92% of the need met) (Figure 3.4k). The highest hospitalisation rates for Indigenous Australians for cataract surgery were in *South West Queensland* (8,761 per 1,000,000) (Figure 3.4l and 3.4m).

## Things to consider

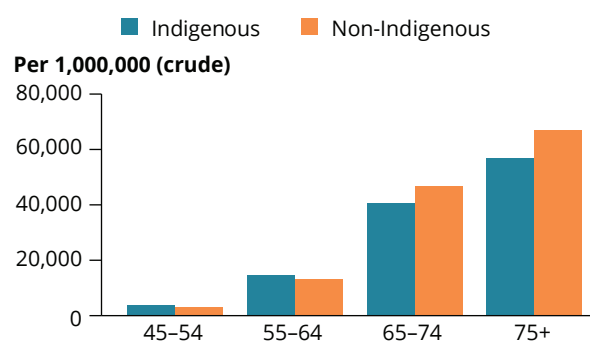
- The cataract surgery rate was calculated per 1,000,000 to align with international standards (WHO 2013).
- Almost all (96%) cataract surgery in Australia is undertaken on a same-day basis. The data do not include outpatient surgery and may underestimate the number of procedures.
- Data by state and territory, PHN and Roadmap region should be interpreted with caution, due to variations in admission practices; and because patients may be hospitalised outside the area where they reside.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.
- The estimated annual number of Indigenous people needing cataract surgery was derived from the calculator for the delivery and coordination of eye care services developed by the IEHU at the University of Melbourne (see <http://dr-grading.iehu.unimelb.edu.au/ecwc/>). The calculations are first-order estimates based on condition prevalence rates from the National Indigenous Eye Health Survey (2009) and models of service delivery developed in the Roadmap to Close the Gap for Vision (2012) and should be interpreted with caution.
- Figures present age-standardised and age-specific rates (see Box 4—Population Rates).

**Figure 3.4: Hospitalisation rates for cataract surgery, by Indigenous status by various characteristics**

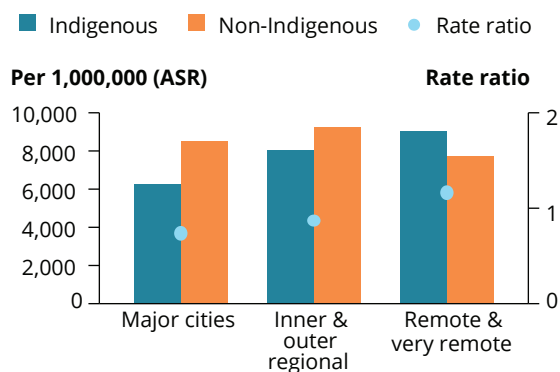
### a) By Indigenous status, 2018–19



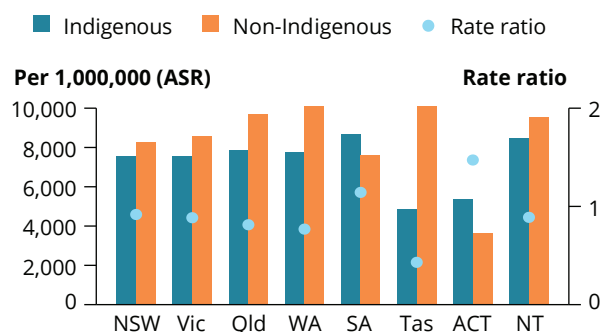
### b) Indigenous status and age, 2017–19



### c) By region, 2017–19



### d) By jurisdiction, 2017–19



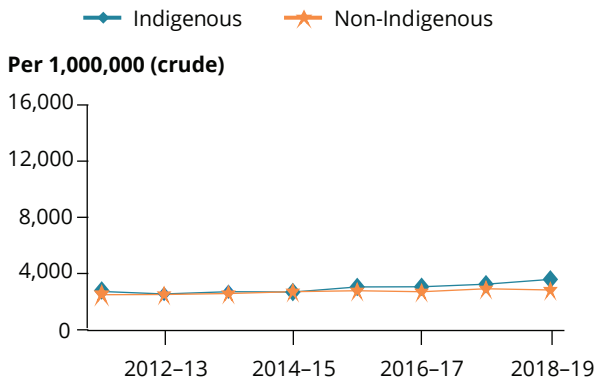
#### Notes

1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the supplementary tables.

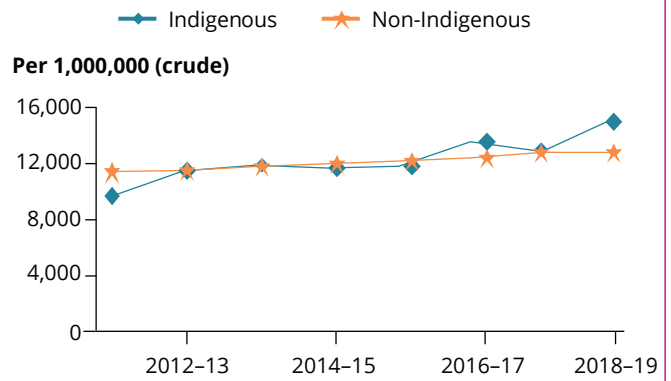
Source: AIHW analysis of NHMD.

Figure 3.4: Trends in hospitalisation rates for cataract surgery, by Indigenous status

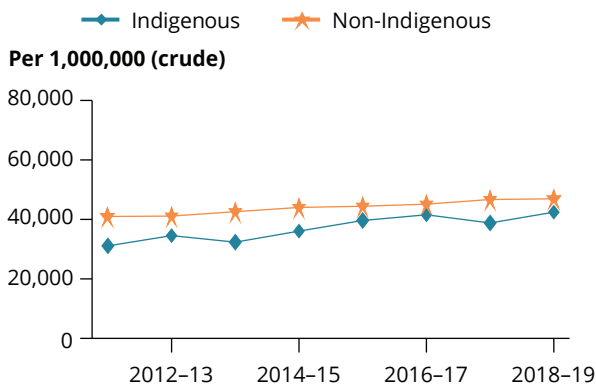
e) 45 to 54 years, 2011–12 to 2018–19



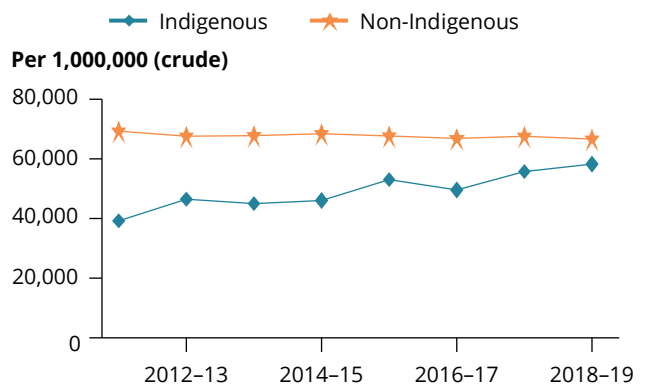
f) 55 to 64 years, 2011–12 to 2018–19



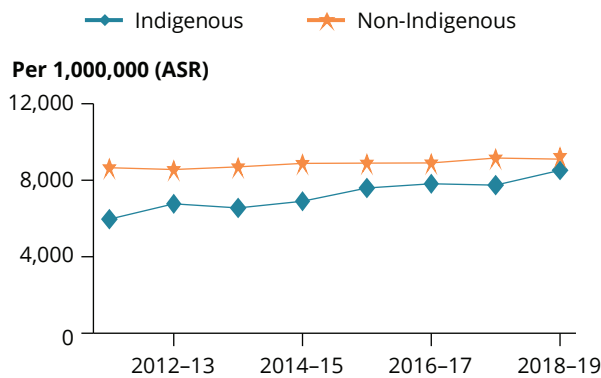
g) 65 to 74 years, 2011–12 to 2018–19



h) 75 years and over, 2011–12 to 2018–19



i) Time trend, 2011–12 to 2018–19

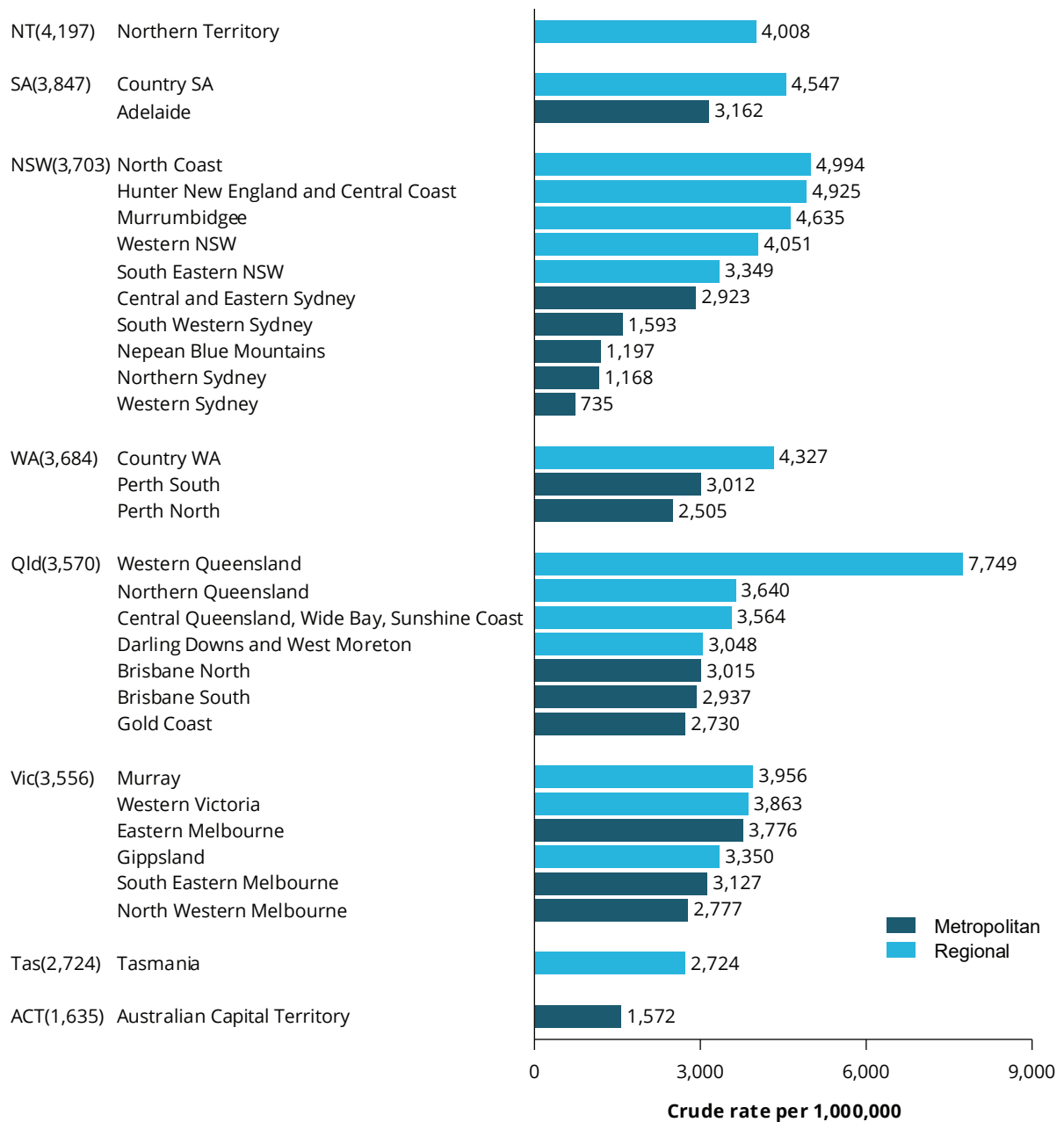


Notes

1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.4j: Hospitalisation rates for cataract surgery for Indigenous Australians, by PHN, 2017–19**

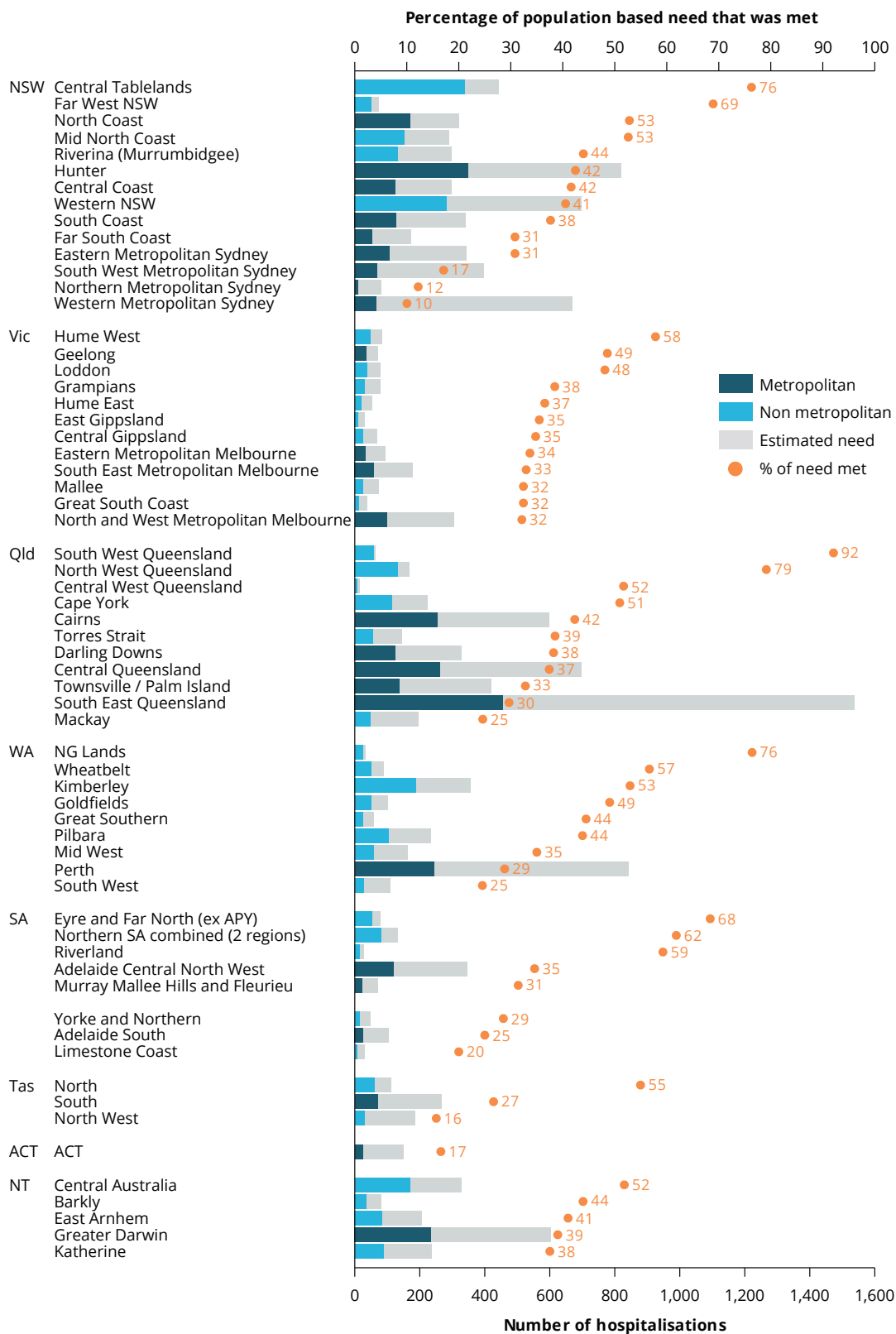


**Notes**

1. The percentages in brackets beside the state/territory labels relate to the overall crude rate of hospitalisation for eye procedures in that state/territory.
2. The rates beside the bars are the crude rate of hospitalisations for eye procedures in the relevant PHN.
3. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of NHMD.

**Figure 3.4k: Number of hospitalisations and estimated population-based need for cataract surgery, Indigenous Australians, by Roadmap region, 2017–19**



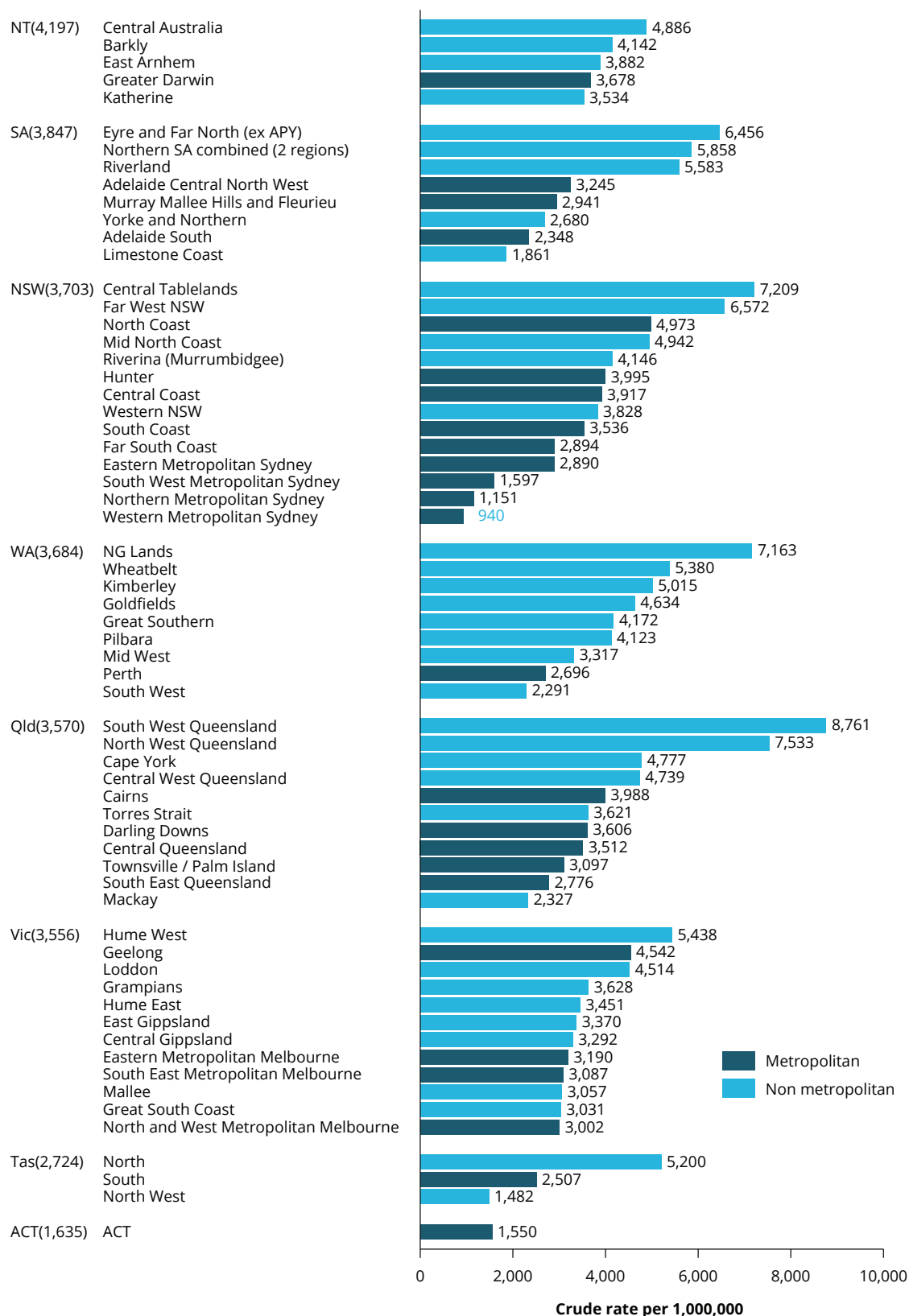
**Notes**

1. South coast region includes Jervis Bay.
2. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of NHMD and AIHW analysis of calculator for the delivery and coordination of eye care services.



**Figure 3.4I: Hospitalisation rates for cataract surgery for Indigenous Australians, by Roadmap region, 2017–19**

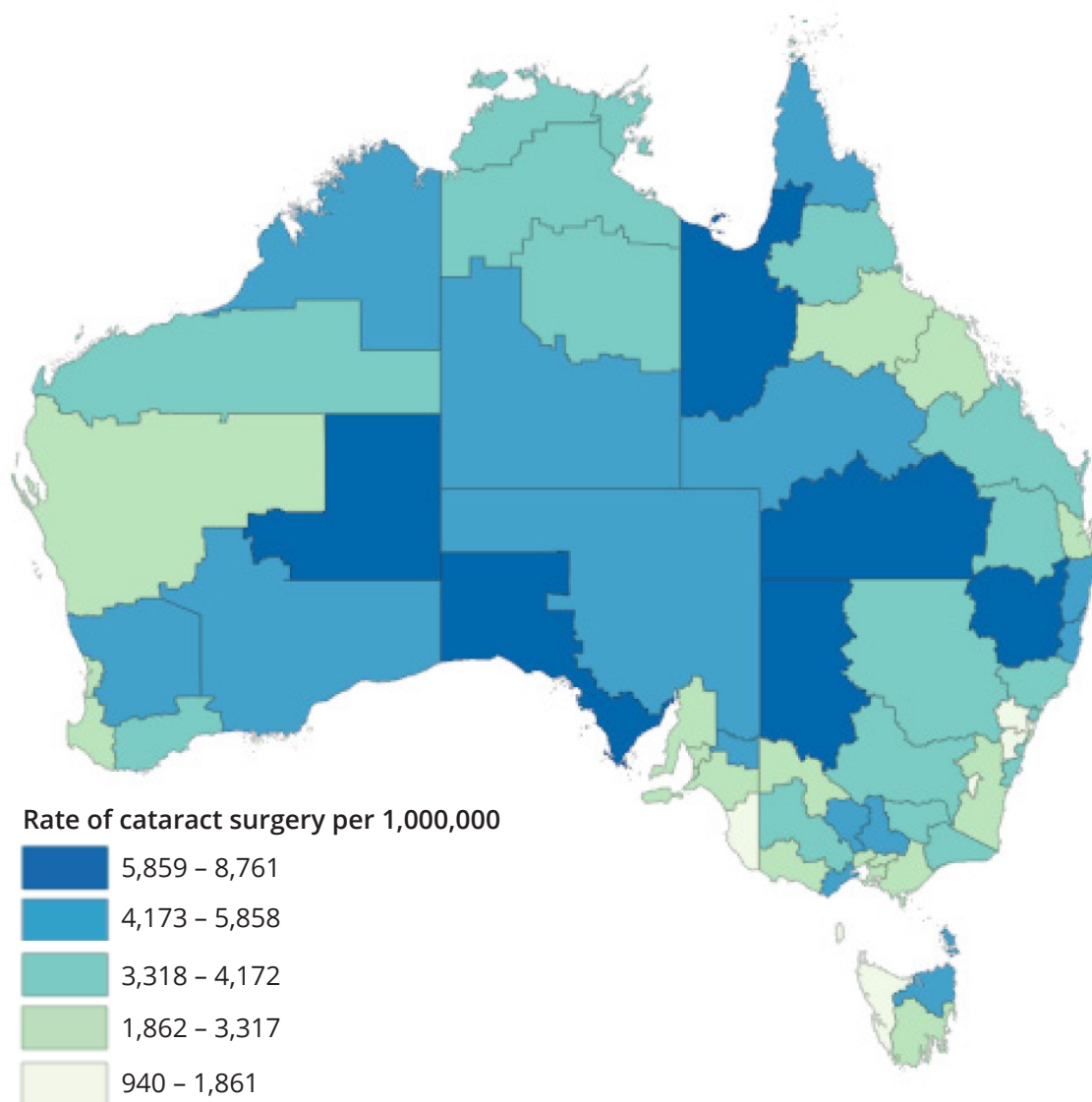


**Notes**

1. Data are crude rates.
2. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of NHMD.

Figure 3.4m: Hospitalisation rates for cataract surgery for Indigenous Australians, by Roadmap region, 2017–19



Note: The Roadmap region data for this map are available in the online supplementary tables.

Source: AIHW analysis of NHMD.

## Measure 3.5: Cataract surgical coverage rate

**Key finding:** In 2016, the NEHS cataract surgical coverage rate for Indigenous Australians was 59%. This was significantly lower than the rate for non-Indigenous Australians (89%).

### 3.5.1 NEHS coverage rate

**Overall:** In 2016, the NEHS cataract surgical coverage rate for Indigenous Australians was 59%. This was significantly lower than the rate for non-Indigenous Australians (89%) (Figure 3.5.1a).

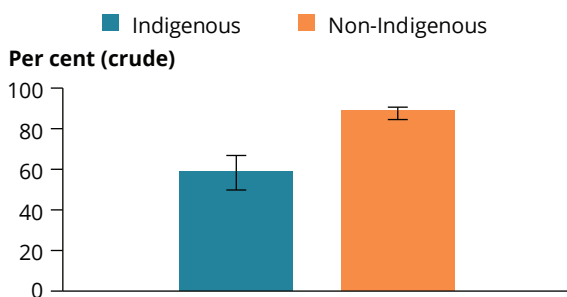
**Age and sex:** In 2016, the estimated cataract surgical coverage rate for Indigenous Australians was lowest for those aged 40–49 (43%) and highest for those aged 70–79 (73%). The surgical coverage rate for non-Indigenous Australians was significantly higher than for Indigenous Australians, for those aged 60–69 (88%, CI 83%–92%; and 50%, CI 39%–61%, respectively) and for those aged 80 or over (92%, CI 88%–95%; and 63%, CI 43%–79%, respectively) (Figure 3.5.1b).

Cataract surgical coverage rates for Indigenous Australians did not differ significantly by sex (Figure 3.5.1c).

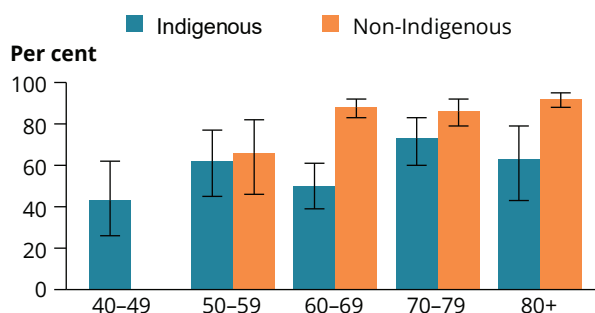
**Remoteness:** Cataract surgical coverage rates for Indigenous participants did not differ significantly by remoteness (Figure 3.5.1d).

Figure 3.5.1: Cataract surgery coverage, NEHS definition, by various characteristics

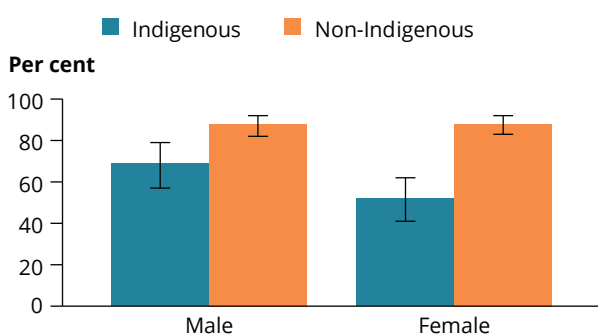
**a) By Indigenous status, 2016**



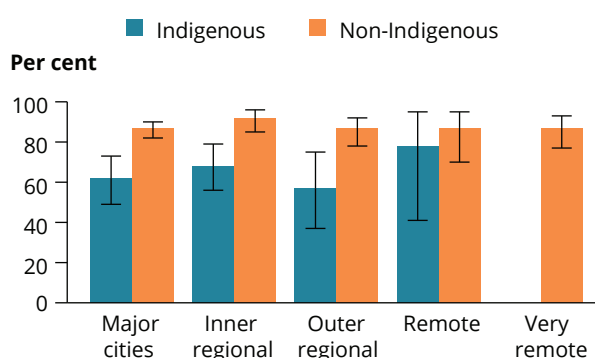
**b) By age, 2016**



**c) By sex, 2016**



**d) By region, 2016**



*Notes*

1. Cataract surgery coverage using the NEHS definition was calculated as the number who have had cataract surgery, as a proportion of those who have had cataract surgery, plus the number with bilateral presenting visual acuity worse than 6/12 with cataract in 1 or both eyes.
2. Data have been survey weighted to account for sampling protocol.
3. Error bars show 95% confidence intervals.
4. Data for non-Indigenous Australians were not collected for those aged 40-49 years.
5. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of NEHS data 2016, Foreman et al. 2017.

### 3.5.2 WHO coverage rate

**Overall:** In 2016, the cataract surgical coverage rate for Indigenous Australians was 93% (CI 75%–98%). This was lower than the estimated rate for non-Indigenous Australians of 99% (CI 97%–100%), although not statistically significant (Figure 3.5.2a).

**Age and sex:** In 2016, cataract surgical coverage rates did not differ significantly by age or sex, for Indigenous or for non-Indigenous Australians (Figure 3.5.2b and Figure 3.5.2c).

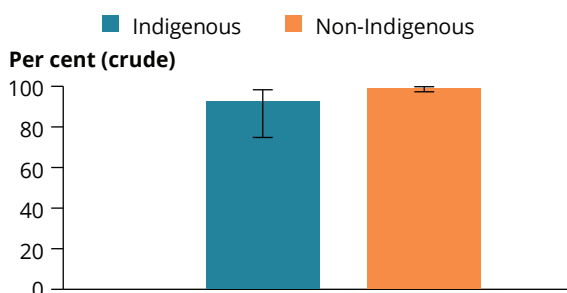
**Remoteness:** In 2016, cataract surgical coverage rates did not differ significantly by remoteness, for Indigenous or for non-Indigenous Australians (Figure 3.5.2d).

#### Things to consider

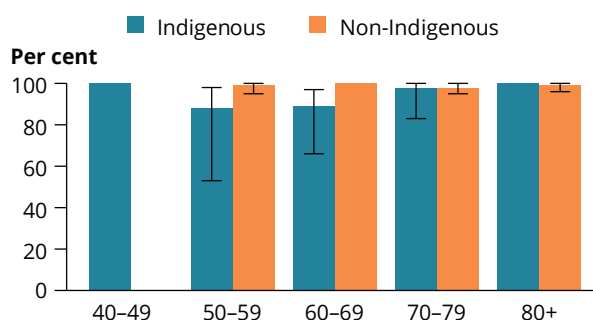
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey weighted to account for the sampling protocol. These results are subject to sampling errors, so the 95% CIs are provided to indicate the reliability of the estimates reported.
- Under the WHO definition, the sample size for eligible patients with unoperated cataracts was very small (9 non-Indigenous and 16 Indigenous Australians).

Figure 3.5.2: Cataract surgery coverage, WHO definition, by various characteristics

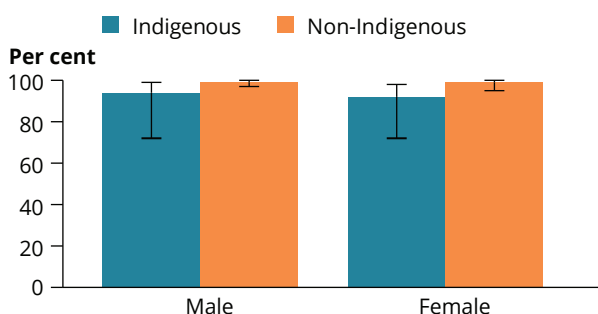
a) By Indigenous status, 2016



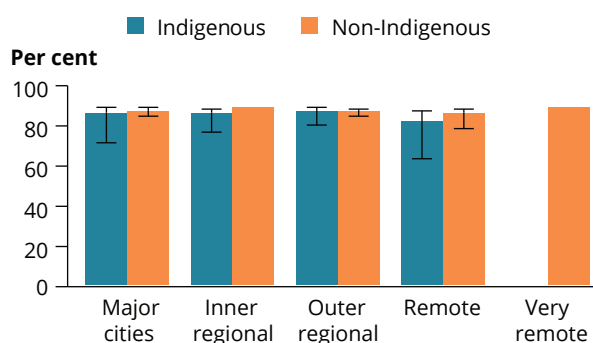
b) By age, 2016



c) By sex, 2016



d) By region, 2016



Notes

1. Cataract surgery coverage using the WHO definition was calculated as the number who have had cataract surgery, as a proportion of the number who have had cataract surgery, plus the number of participants with best corrected visual acuity worse than 6/18 with cataracts in both eyes.
2. Data have been survey weighted to account for sampling protocol.
3. Error bars show 95% confidence intervals.
4. Data for non-Indigenous Australians were not collected for those aged 40-49 years.
5. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of NEHS data 2016, Foreman et al. 2017.

## Measure 3.6: Waiting times for elective cataract surgery

**Key finding:** In 2018–19, the median waiting time for elective cataract surgery for Indigenous Australians was longer than for non-Indigenous Australians (124 days and 82 days, respectively). From 2012–13 to 2018–19, the median waiting time for elective cataract surgery for Indigenous Australians rose from 140 days to 152 days (in 2015–16), and then dropped to 124 days in 2018–19.

### 3.6.1 Median and 90th percentile waiting times

**Overall:** In 2018–19, there were 2,024 admissions for Indigenous Australians from public hospitals waiting lists for elective cataract surgery. The median waiting time for elective cataract surgery for Indigenous Australians was longer than that for non-Indigenous Australians (124 days and 82 days, respectively). The time waited before 90% of Indigenous Australians were admitted for cataract surgery was also longer than that for non-Indigenous Australians, though the difference between the 2 groups was not as large (344 days and 337 days, respectively).

**Remoteness:** In 2017–19, the median number of days waited by Indigenous and non-Indigenous Australians was longest in *Inner regional* areas, at 195 and 137 days, respectively. By comparison, both Indigenous and non-Indigenous Australians in *Major cities* had the shortest waiting times, at 83 and 68 days, respectively (Figure 3.6.1a).

The amount of time within which 90% of patients were admitted for elective cataract surgery was longest for Indigenous Australians in *Inner regional* and *Very remote* areas (349 days) and shortest for those in *Remote* areas (328 days). For non-Indigenous Australians, waiting times were longest in *Inner regional* areas (343 days) and shortest in *Very remote* areas (287 days) (Figure 3.6.1b).

**Jurisdiction:** In 2017–19, median waiting times were longest for Indigenous and non-Indigenous Australians in New South Wales (214 days and 230 days, respectively). Median waiting times were shortest for Indigenous and non-Indigenous Australians in Victoria (37 days in each case) (Figure 3.6.1c).

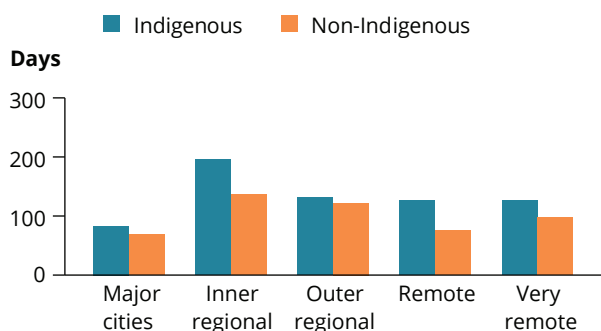
At the 90th percentile, waiting times were longest for Indigenous Australians in the Northern Territory (353 days) and for non-Indigenous Australians in Tasmania (407 days). Waiting times at the 90th percentile for Indigenous and non-Indigenous Australians were shortest in Victoria (119 and 121 days, respectively) (Figure 3.6.1d).

**Time trend:** From 2012–13 to 2018–19, the median waiting time for elective cataract surgery for Indigenous Australians rose from 140 days to 152 days (in 2015–16), and then dropped to 124 days in 2018–19. Over the same period, the median waiting time for non-Indigenous Australians rose from 88 days to 93 days, then declined to 82 days (Figure 3.6.1e).

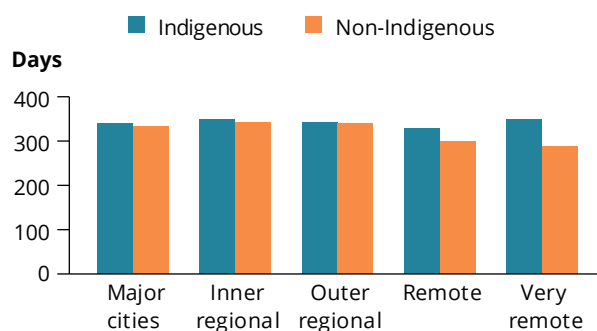
From 2012–13 to 2018–19, the number of days waited at the 90th percentile was similar for Indigenous and non-Indigenous Australians and remained relatively stable for both groups (Figure 3.6.1f).

Figure 3.6.1: Waiting times for elective cataract surgery (days waited at 50th and 90th percentiles), by various characteristics

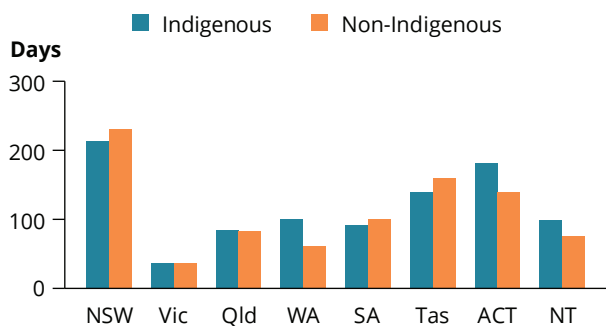
a) By region, days waited, 50th percentile, 2017–19



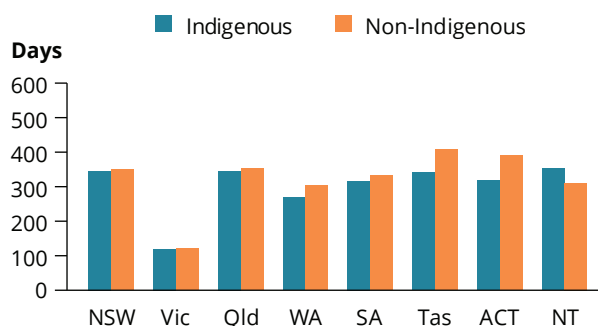
b) By region, days waited, 90th percentile, 2017–19



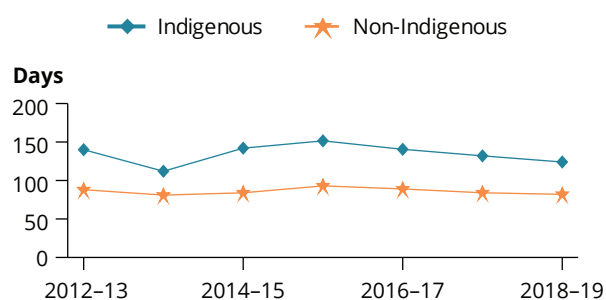
c) By jurisdiction, days waited, 50th percentile, 2017–19



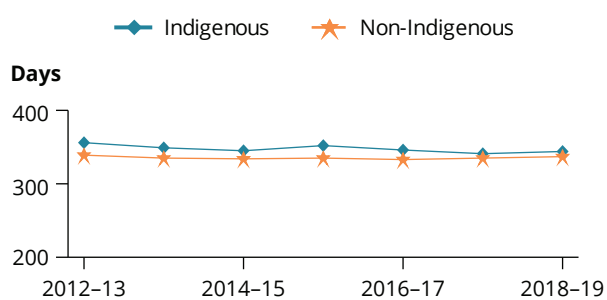
d) By jurisdiction, days waited, 90th percentile, 2017–19



e) Time trend, days waited, 50th percentile, 2012–13 to 2018–19



f) Time trend, days waited, 90th percentile, 2012–13 to 2018–19



Note: Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of NHMD.



### 3.6.2 Proportion of patients treated within 90 days, and within 365 days

**Overall:** In 2018–19, the proportion of Indigenous Australians who had elective cataract surgery and were treated within 90 days was lower than the proportion of non-Indigenous Australians who were treated within this time (42% and 53%, respectively).

The proportion of Indigenous Australians treated within 365 days for cataract surgery was similar to the proportion of non-Indigenous Australians who were treated within this time (97% and 98%, respectively).

**Remoteness:** In 2017–19, the proportion of Indigenous and non-Indigenous Australians who were treated within 90 days for elective cataract surgery was highest in Major cities (54% and 59%, respectively) and lowest in *Inner regional areas* (28% and 39%, respectively) (Figure 3.6.2a).

The proportion of Indigenous Australians treated within 365 days was lowest in *Very remote areas* (95%) and highest in *Inner regional areas* (99%). For non-Indigenous Australians the proportion was lowest in *Outer regional areas* (98%) and highest in *Remote areas* (99%) (Figure 3.6.2b).

**Jurisdiction:** In 2017–19, the proportion of Indigenous and non-Indigenous Australians who were treated within 90 days for elective cataract surgery was highest in Victoria (80% and 83%, respectively) and lowest in New South Wales (27% and 25%, respectively) (Figure 3.6.2c).

Over 96% of Indigenous Australians were treated within 365 days in New South Wales, Victoria, Queensland, Western Australia and South Australia. The proportion of Indigenous Australians treated within 365 days was lowest in the Australian Capital Territory (92%) (Figure 3.6.2d).

**Time trend:** Between 2012–13 and 2018–19, the proportion of both Indigenous and non-Indigenous Australians who were treated within 90 days for elective cataract surgery remained relatively stable over this period (Figure 3.6.2e).

The proportion of Indigenous and non-Indigenous Australians treated within 365 days was also relatively stable over this period (Figure 3.6.2f).

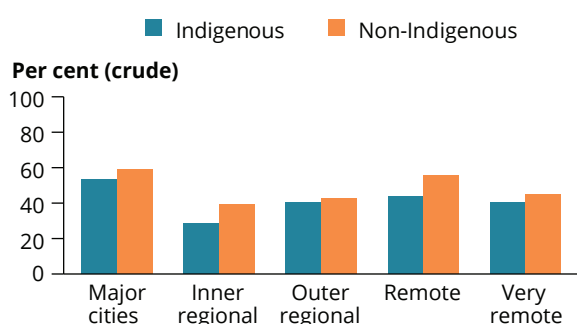
#### Things to consider

- This measure includes data for waiting lists managed by public hospitals—and may include public patients admitted to private hospitals from public hospital waiting lists.
- There are no nationally agreed benchmarks for waiting times for cataract surgery, and there are significant variations across jurisdictions. Waiting times are dependent on the urgency of the referral and specific functional indicators (for example, 1 functional eye).
- The Queensland Health Clinical Prioritisation Criteria for cataract referrals provides 3 categories of appointment times for cataract surgery: within 30, 90 or 365 days depending on the severity of the cataract and the impact on the patient’s daily living activities (<https://cpc.health.qld.gov.au/Condition/132/cataracts>).
- The number of days waited does not include the time waited for the initial appointment with the specialist (from the time of referral by the patient’s GP), because this information is not currently available.
- Under the National Elective Surgery Urgency Categorisation Guidelines, cataract surgery is elective (clinical urgency category 3) so that the procedure is clinically indicated within 365 days (AHMAC 2015).

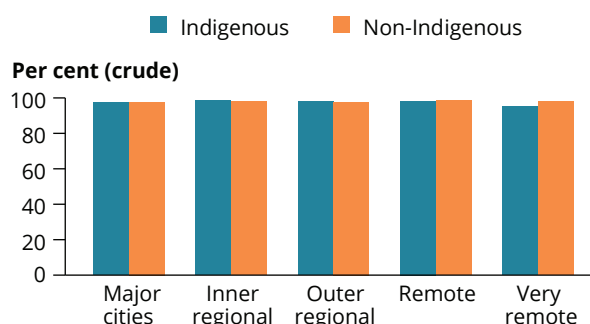
- The data may underestimate the number of procedures provided, as they do not include those undertaken on an outpatient basis.
- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.

**Figure 3.6.2: Waiting times for elective cataract surgery (percentage of patients treated within 90 days and within 365 days), by various characteristics**

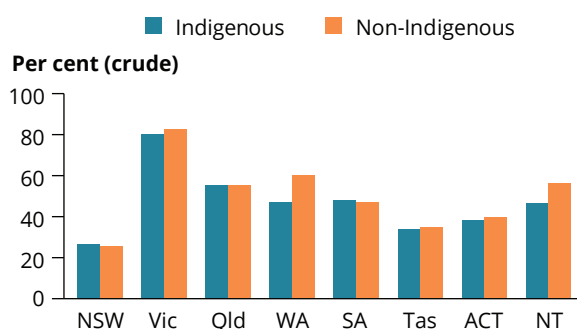
**a) By region, treated within 90 days, 2017–19**



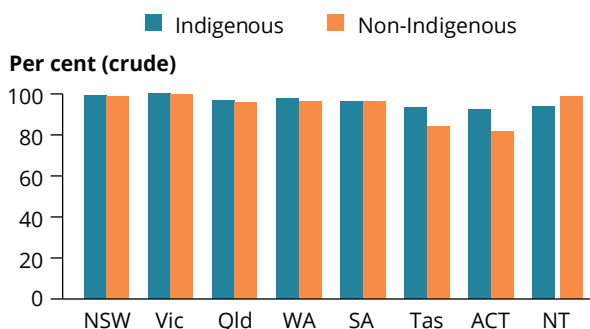
**b) By region, treated within 365 days, 2017–19**



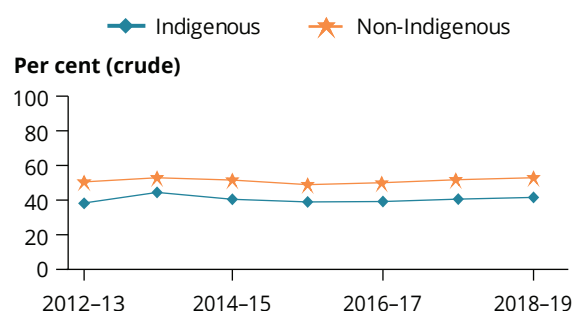
**c) By jurisdiction, treated within 90 days, 2017–19**



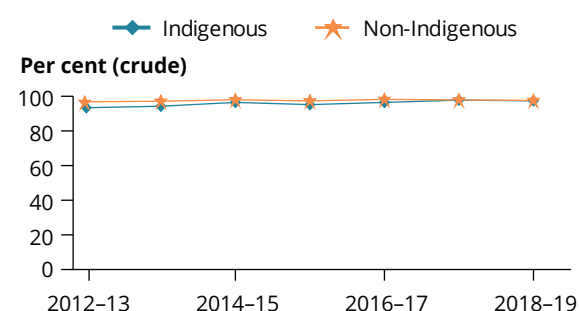
**d) By jurisdiction, treated within 365 days, 2017–19**



**e) Time trend, treated within 90 days, 2012–13 to 2018–19**



**f) Time trend, treated within 365 days, 2012–13 to 2018–19**



Note: Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of NHMD.

## Measure 3.7: Target population treated for diabetic retinopathy

**Key finding:** In 2019–20, there were 506 (3.8%) Indigenous Australians screened for diabetic retinopathy who underwent treatment, increasing slightly from 3.5% in 2010–11.

### 3.7.1 Population screened for diabetic retinopathy treated for diabetic retinopathy

**Overall:** In 2019–20, there were 506 Indigenous Australians screened for diabetic retinopathy who underwent treatment. This was 3.8% of those screened for diabetic retinopathy. In 2019–20, the age-standardised proportion treated was similar for Indigenous and non-Indigenous Australians (2.6% and 2.9%, respectively). (Figure 3.7.1a).

**Age and sex:** In 2019–20, the number and proportion of Indigenous males and females treated for diabetic retinopathy increased steadily with age, to a peak of 4.0% (79 people) and 4.8% (106 people), respectively, in those aged 65 years and over. Across all age groups except those 65 and over, a higher proportion of males than females underwent treatment (Figure 3.7.1b).

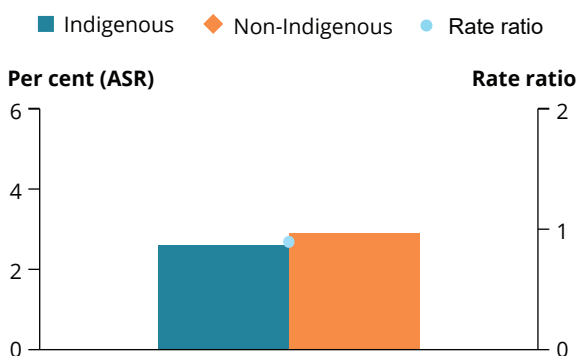
**Remoteness:** In 2019–20, the proportion of Indigenous Australians who received treatment for diabetic retinopathy was highest in *Major cities* and *Outer regional* areas (4.2%). The rate was lowest in *Very remote* areas (2.0%) (Figure 3.7.1c).

**Jurisdiction:** In 2019–20, the proportion of Indigenous Australians who received treatment for diabetic retinopathy was lowest in the Northern Territory (0.8%) followed by South Australia (2.3%) and was highest in the Australian Capital Territory (5.8%) followed by Western Australia (5.7%) (Figure 3.7.1d).

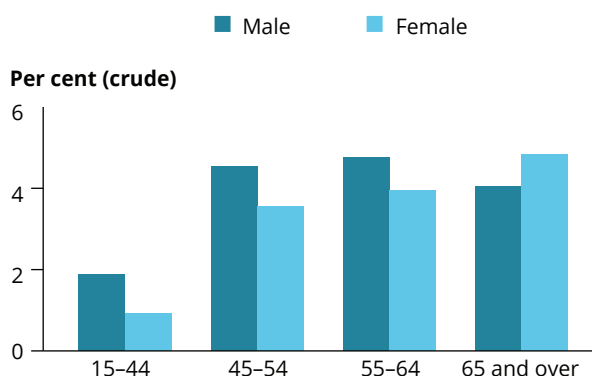
**Time trend:** Between 2010–11 and 2019–20, the number of Indigenous Australians screened for diabetic retinopathy who underwent treatment increased from 351 in 2010–11 to 506 in 2019–20. The proportion who underwent treatment declined from 3.5% in 2010–11 to 3.2% in 2014–15, 2015–16 and 2016–17 before rising slightly to 3.8% in 2019–20 (Figure 3.7.1e).

Figure 3.7.1: Population treated for diabetic retinopathy as a proportion of those screened, by various characteristics

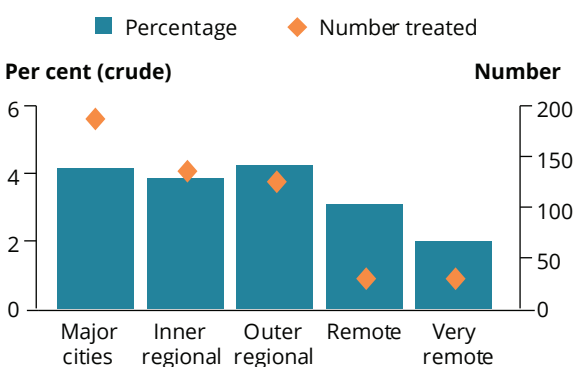
**a) By Indigenous status, 2019–20**



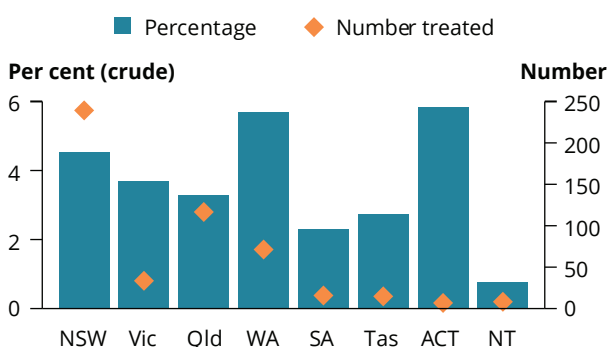
**b) Indigenous, by age and sex, 2019–20**



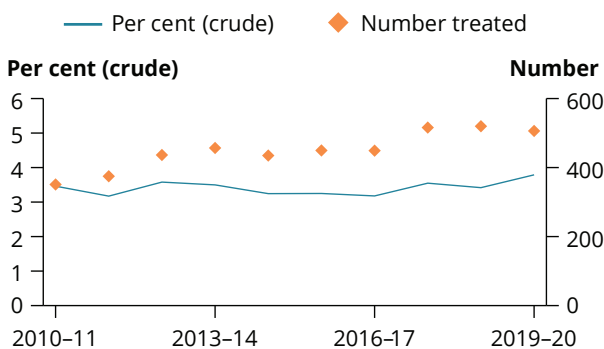
**c) By remoteness, 2019–20**



**d) By jurisdiction, 2019–20**



**e) Indigenous, time trend, 2010–11 to 2019–20**



Notes

1. All figures, except (a), show crude rates.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the supplementary tables.
4. The population screened for diabetic retinopathy comes from measure 2.3.

Source: AIHW analysis of MBS data.

### 3.7.2 Population screened for diabetes treated for diabetic retinopathy

**Overall:** In 2019–20, there were 506 Aboriginal and Torres Strait Islander Australians screened for diabetes who underwent treatment for diabetic retinopathy. This was 1.6% of those screened for diabetes. The age-standardised proportion of those treated was lower for Indigenous (1.1%) than for non-Indigenous Australians (1.3%) (Figure 3.7.2a).

**Age and sex:** In 2019–20, the number and proportion of Indigenous males and females treated for diabetic retinopathy increased steadily with age, to a peak of 2.3% (79 people) and 2.7% (106 people), respectively, in those aged 65 years and over. Across all age groups except those aged 65 and over, a higher proportion of males than females underwent treatment (Figure 3.7.2b).

**Remoteness:** In 2019–20, the proportion of Indigenous Australians screened for diabetes who received treatment for diabetic retinopathy was highest in *Major cities* (1.9%), followed by *Outer regional* and *Inner regional* areas (1.8%). The rate was lowest in *Very remote* areas (0.6%) (Figure 3.7.2c).

**Jurisdiction:** In 2019–20, the proportion of Indigenous Australians screened for diabetes who received treatment for diabetic retinopathy was lowest in the Northern Territory (0.2%) followed by South Australia (1.0%) and was highest in the Australian Capital Territory (2.2%) followed by New South Wales (2.0%) (Figure 3.7.2d).

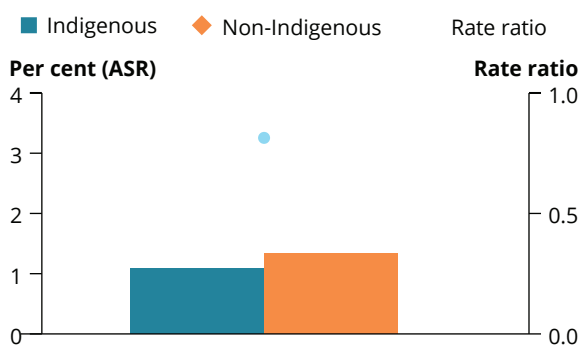
**Time trend:** Between 2010–11 and 2019–20, the estimated proportion of Indigenous Australians screened for diabetes who underwent treatment rose from 1.3% in 2010–11 to 1.6% in 2019–20 (Figure 3.7.2e). The number screened increased from 26,713 to 32,000 over this same time-period.

#### Things to consider

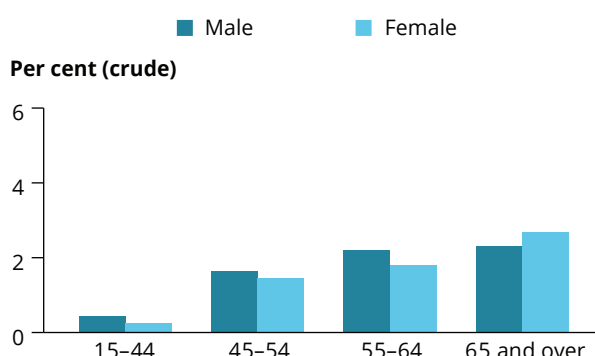
- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals—for example, eye examinations undertaken by salaried ophthalmologists in public hospitals or intra-vitreous or laser procedures in out-patient settings or state facilities. Notably, in the Northern Territory, almost all treatment of diabetic retinopathy is done in public hospitals so most treatment services provided in the territory will not be captured.
- Indigenous Australians screened for diabetes or diabetic retinopathy may not be found to have diabetes or diabetic retinopathy so treatment rates for diabetic retinopathy may be an underestimate.
- Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).
- MBS data shown for this measure were adjusted for Indigenous under-identification.

Figure 3.7.2: Population treated for diabetic retinopathy as a proportion of those screened for diabetes, by various characteristics

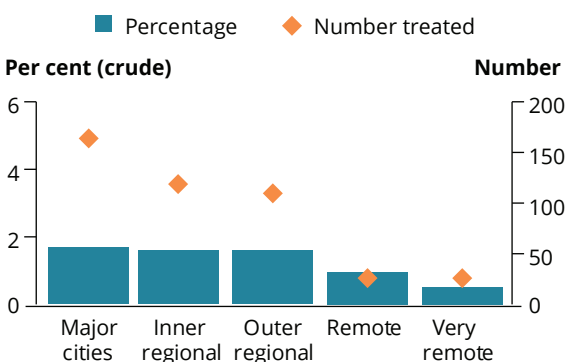
**a) Indigenous status, 2019–20**



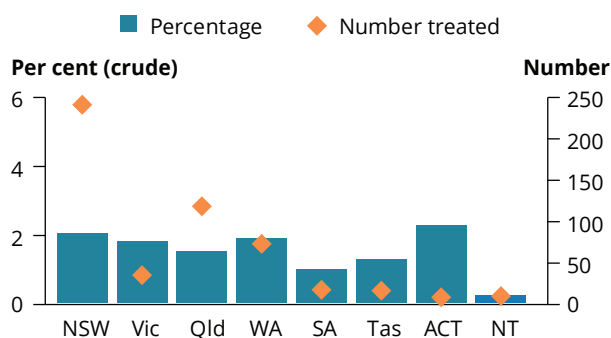
**b) Indigenous, by and sex, 2019–20**



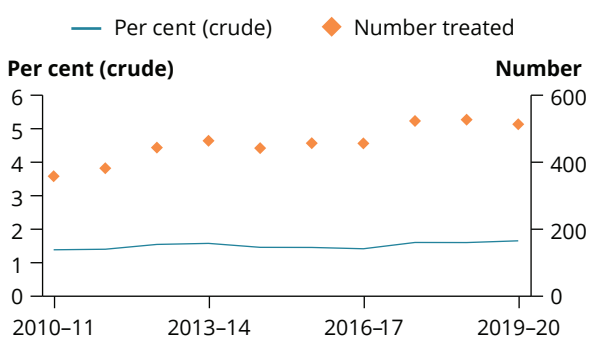
**c) By remoteness, 2019–20**



**d) By jurisdiction, 2019–20**



**e) Indigenous, time trend, 2010–11 to 2019–20**



Notes

1. All figures, except (a), show crude rates.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the supplementary tables.
4. The population screened for diabetes was calculated as the number who had a diabetes test within the past 2 years.

Source: AIHW analysis of MBS data.

## Measure 3.8: Trachoma and trichiasis treatment coverage

**Key finding:** In 2019, in communities where active trachoma was identified, a total of 4,419 (89%) community members received treatment, increasing from 65% in 2011. In 2019, in the 4 jurisdictions with at-risk communities, 6 of the 9 (67%) Indigenous adults aged 40 and over with trichiasis had surgery in the past 12 months.

### 3.8.1 Trachoma

**Overall:** In 2019, in communities where active trachoma was identified, a total of 4,419 community members received treatment, a rate of 89% (Figure 3.8.1b). This included 492 children aged 0–4 (91%), 593 aged 5–9 (97%), 515 aged 10–14 (94%) and 2,819 (86%) community members aged 15 and over (Figure 3.8.1a)

**Jurisdiction:** In 2019, in communities where active trachoma was identified, the proportion of community members who received treatment was 100% in Queensland (25 community members treated), 98% in Western Australian (890), 100% in South Australia (35) and 87% in the Northern Territory (3,472) (Figure 3.8.1b).

**Time trend:** Between 2011 and 2019, in communities where active trachoma was identified, the proportion of community members who received treatment rose from 65% in 2011 to 90% in 2014, declined to 79% in 2018 and then rose again to 89% in 2019 (Figure 3.8.1c).

#### Things to consider

- Trachoma treatment strategies were applied in 66 communities. Treatment was delivered to active cases and households in 50 communities and to the whole of the community in 16 communities.
- There was 1 community in the Northern Territory that did not deliver treatment in line with CDNA guidelines, due to staffing shortages (Kirby Institute 2019).
- The 5–9 age group is the target group for screening programs in all regions.

### 3.8.2 Trichiasis

**Overall:** In 2019, in the 4 jurisdictions with at-risk communities, 6 of the 9 (67%) Indigenous adults aged 40 and over with trichiasis had surgery in the past 12 months. Four of the 6 surgeries took place in the Northern Territory (Figure 3.8.2a).

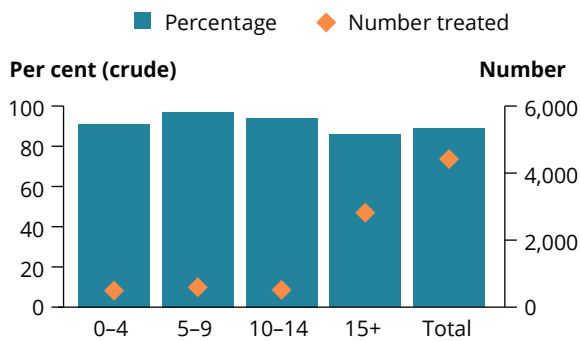
**Time trend:** Between 2012 and 2019, the number of Indigenous adults aged 40 and over who had surgery for trichiasis rose from 16 adults in 2012 to 31 in 2013. The number of surgeries has generally declined over time since then, to 6 in 2019 (Figure 3.8.2b).

#### Things to consider

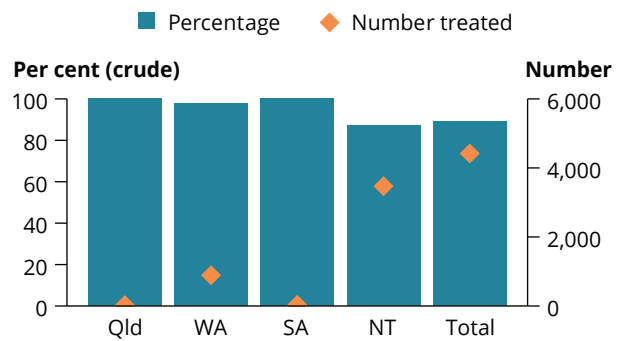
- Screening for trichiasis is undertaken opportunistically, such as during adult health checks.
- The reporting of trichiasis data on referral and surgery undertaken is limited due to incomplete data collection and compilation. In 2019, no data on ophthalmic consultations were provided.

Figure 3.8.1: Community members who were treated in communities where active trachoma was identified, by various characteristics

a) By age, 2019



b) All ages, by jurisdiction, 2019



c) All ages, 2011 to 2019

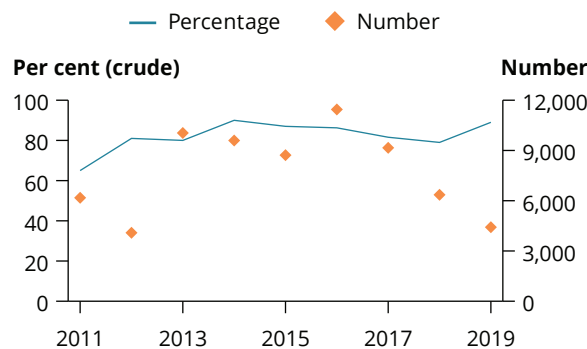
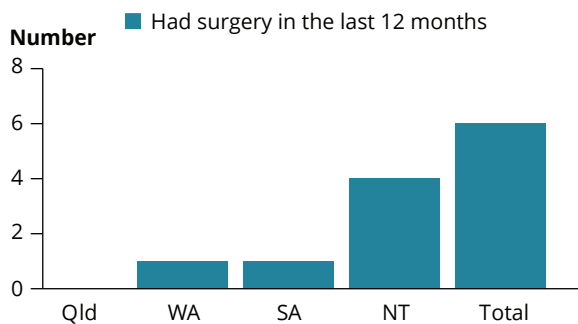
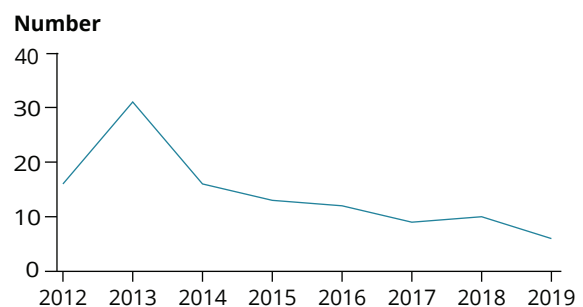


Figure 3.8.2: Trichiasis treatment coverage, by various characteristics

a) Aged 40 and over, by jurisdiction, 2019



b) Aged 40 and over, 2012 to 2019



Notes

1. All figures show crude rates. 'Per cent' relates to percentage of community members treated in communities where active trachoma was identified.
2. Figures 3.8.1 a-c include data from the 66 communities that required treatment for trachoma.
3. Figures 3.8.2 a-b include data from the 115 at-risk communities that screened for trichiasis, though data may be incomplete.
4. Data for these figures are available in the online supplementary tables.

Sources: Australian Trachoma Surveillance reports (Kirby Institute 2013, 2014, 2015, 2016, 2017, 2018, 2019).



## Measure 3.9: Treatment of refractive error

**Key finding:** In 2016, 82% of Indigenous participants in the NEHS had refractive error.

**Overall:** In 2016, treatment rates for refractive error were higher for non-Indigenous than Indigenous Australians, at 94% and 82%, respectively (Figure 3.9a).

**Age and sex:** In 2016, treatment rates for refractive error for Indigenous Australians did not differ significantly by age group. The treatment rate for those aged 60–69 years was significantly higher for non-Indigenous Australians than Indigenous Australians (95%, CI 93%–97%; and 80%, CI 67%–88%, respectively) (Figure 3.9b).

Treatment rates for Indigenous Australians did not differ significantly by sex (Figure 3.9c).

**Remoteness:** In 2016, treatment rates for refractive error for Indigenous Australians in *Outer regional* (70%) and *Very remote* (75%) areas were significantly lower than in *Major cities* (87%), the reference region. The treatment rate for non-Indigenous Australians was significantly higher than for Indigenous Australians in *Inner regional*, *Outer regional* and *Very remote* areas (Figure 3.9d).

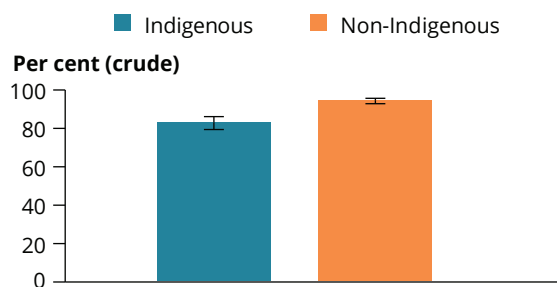
**Time since last eye exam:** In 2016, treatment rates for refractive error for Indigenous Australians did not differ significantly by time since last eye exam (Figure 3.9e).

### Things to consider

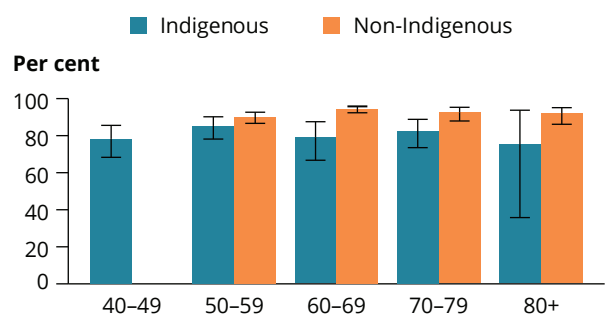
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over, and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey weighted to account for the sampling protocol. These results are subject to sampling errors, so the 95% CIs are provided to indicate the reliability of the estimates reported.
- These proportions were estimates only as refractive error was not measured as part of the survey-testing protocol in participants without vision impairment or blindness.

Figure 3.9: Treatment of refractive error, by various characteristics

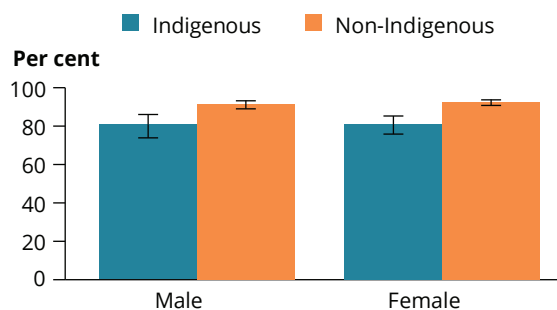
a) By indigenous state, 2016



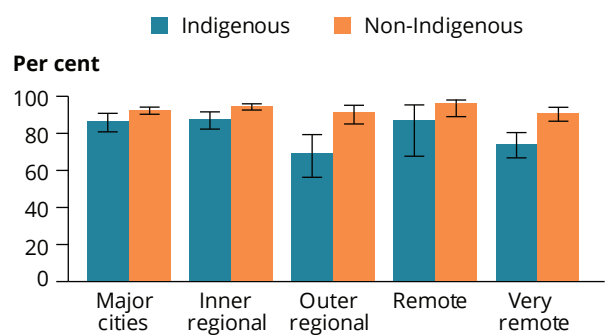
b) By age, 2016



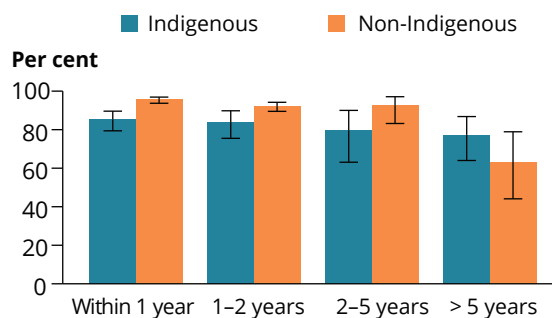
c) By sex, 2016



d) By region, 2016



e) By time since last eye exam, 2016



Notes

1. Data have been survey weighted to account for sampling protocol.
2. Error bars show 95% confidence intervals.
3. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of NEHS data 2016; Foreman et al. 2017.

## Measure 3.10: Spectacles dispensed under state schemes

**Key finding:** In 2019–20, across the 5 jurisdictions that were able to provide data (New South Wales, Victoria, Queensland, South Australia and Tasmania) 15,436 spectacles were provided to Indigenous Australians.

**Overall:** In 2019–20, there were around 6,443 spectacles provided to Indigenous Australians in the New South Wales scheme (23 per 1,000), 5,832 provided under the Queensland scheme (25 per 1,000), 2,490 provided under the Victorian scheme (41 per 1,000), 518 provided under the Tasmanian scheme (17 per 1,000) and 153 provided under the South Australian scheme (3 per 1,000) (Figure 3.10a).

Comparison of the number of spectacles dispensed with the estimated need for those aged over 40 showed that Victoria was closest to meeting the estimated number of glasses needed for Indigenous people aged over 40 (2,490 dispensed compared with 3,923 needed). In the other jurisdictions the estimated number needed was considerably greater than the number dispensed—17,810 needed compared with 6,443 dispensed in New South Wales; 14,932 needed compared with 5,832 dispensed in Queensland; 1,907 needed compared with 518 dispensed in Tasmania; and 2,847 needed compared with 153 dispensed in South Australia (Figure 3.10b).

**Age and sex:** In New South Wales in 2019–20, there were higher rates of glasses dispensed under the spectacle programs to Indigenous females than males in all age groups. The highest rates were for Indigenous males and females aged 65 and over (100 per 1,000 and 104 per 1,000, respectively) (Figure 3.10c).

In Victoria in 2019–20, there were 794 glasses dispensed by the Australian College of Optometry mainly in metropolitan areas, and 1,696 by a network of rural providers. Among those dispensed by the Australian College of Optometry, the largest number and highest rate was for Indigenous Australians aged 61 and over (204, 45 per 1,000) (Figure 3.10d).

In Queensland in 2019–20, there were 5,832 glasses dispensed to Indigenous clients. The largest number was for Indigenous Australians aged 50–64 (1777, 68 per 1,000) while the highest rate was for those aged 65 and over (1,572, 151.3 per 1,000) (Figure 3.10e).

In South Australia, the number of glasses dispensed to Indigenous Australians was highest in people aged 45–64 (63), while the rate was highest among Indigenous males and females aged 65 and over (15 per 1,000 and 18 per 1,000, respectively) (Figure 3.10f).

In Tasmania, there were 518 glasses dispensed to Indigenous clients. The number of glasses dispensed to Indigenous Australians was highest in people aged 45–64 (224), while the rate was highest for Indigenous males and females aged 65 and over (50 per 1,000 and 153 per 1,000, respectively) (Figure 3.10g).

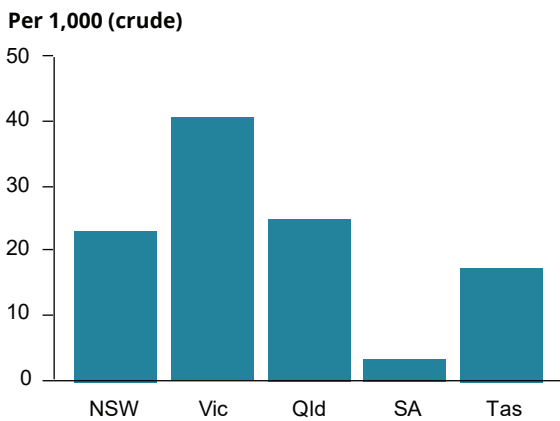
### Things to consider

- The eligibility criteria and entitlements provided by the state schemes vary across jurisdictions.
- The estimated annual number of Indigenous people needing spectacles was derived from the calculator for the delivery and coordination of eye care services developed by the IEHU at the University of Melbourne (see <http://dr-grading.iehu.unimelb.edu.au/ecwc/>). The calculations are first-order estimates based on condition prevalence rates from the National Indigenous Eye Health Survey (2009) and models of service delivery developed in The Roadmap to Close the Gap for Vision (Taylor, Anjou, Boudville & McNeil 2012) and should be interpreted with caution.

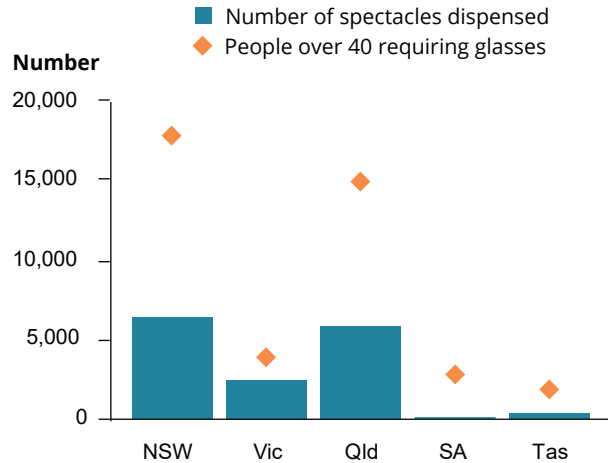
- The estimated number of people needing spectacles related to those aged over 40, while the data on spectacles dispensed provided by jurisdictions cover all age groups.
- Data analysed in this report underestimate the number of spectacles provided to Indigenous Australians. For example, jurisdictions such as Western Australia, the Northern Territory and the Australian Capital Territory currently do not routinely collect Indigenous identification data so data on the spectacles dispensed to Indigenous Australians in these jurisdictions cannot be reported.

**Figure 3.10: State spectacles schemes, by various characteristics**

**a) Indigenous, by jurisdiction, 2019–20**



**b) Indigenous need by jurisdiction, 2019–20**



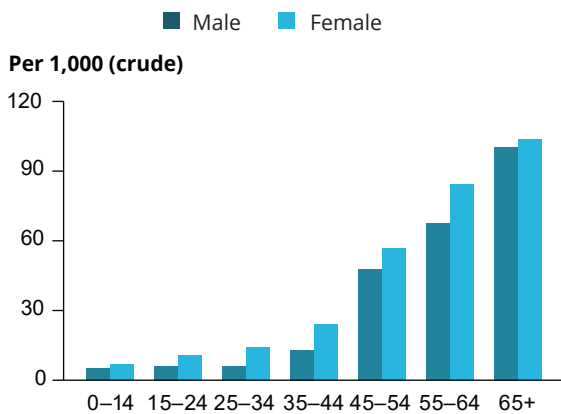
*Notes*

1. All figures show crude rates.
2. The estimated number of people needing spectacles was derived from the calculator for the coordination and delivery of eye care services.
3. Age groups vary by jurisdiction due to differences in the data provided.
4. Data for these figures are available in the supplementary tables.

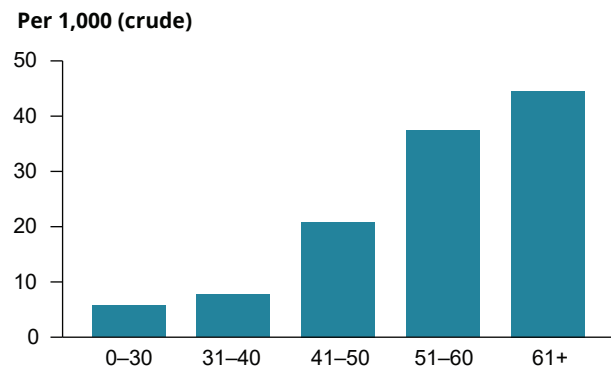
*Sources:* AIHW analysis of NSW Department of Family and Community Services data (unpublished); Australian College of Optometry Victorian data (unpublished); Queensland Health data (unpublished); SA Department of Human Services (unpublished); Tasmania Health Service data (unpublished); and calculator for the delivery and coordination of eye care services (IEHU).

Figure 3.10: State spectacles schemes, by various characteristics

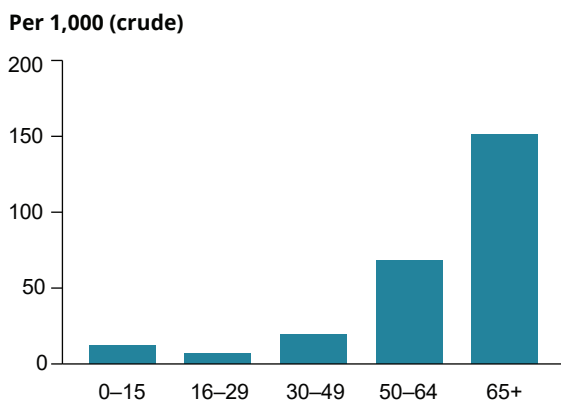
c) Indigenous by age and sex, NSW, 2019–20



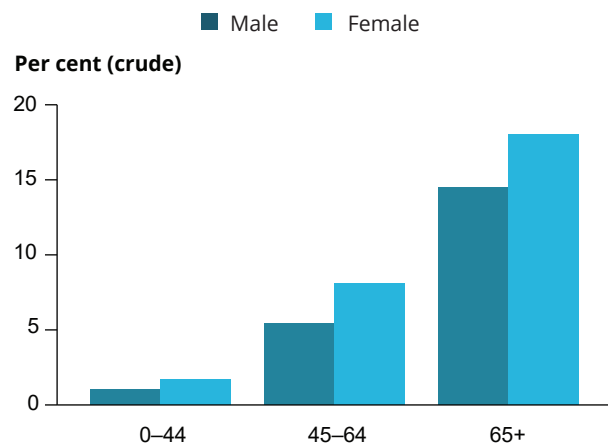
d) Indigenous by age, VIC, 2019–20



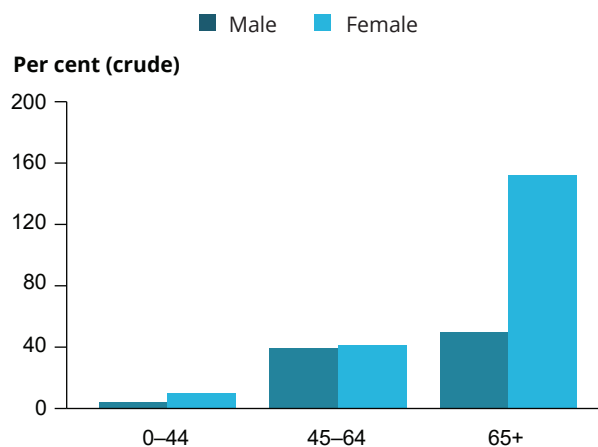
e) Indigenous by age, QLD, 2019–20



f) Indigenous by age and sex, SA, 2019–20



g) Indigenous, by age and sex, Tas, 2019–20



Notes

1. All figures show crude rates.
2. Age groups vary by jurisdiction due to differences in the data provided.
3. Data for Figure (d) only include spectacles dispensed by the Australian College of Optometry, mainly in metropolitan areas.
4. Data for these figures are available in the supplementary tables.

Sources: AIHW analysis of NSW Department of Family and Community Services data (unpublished); Australian College of Optometry Victorian data (unpublished); Queensland Health data (unpublished); SA Department of Human Services (unpublished); Tasmania Health Service data (unpublished); and calculator for the delivery and coordination of eye care services (IEHU).





# 4

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## Workforce and outreach services

The size and location of the eye health workforce (see Box 4.1) gives a broad indication of access to specialists and eye services. Specialist eye health practitioners, such as optometrists and ophthalmologists, are required to treat more serious eye problems and to undertake the more complex procedures, such as cataract surgery.

- **Optometrists** are eye care professionals who provide primary vision care and who perform eye examinations and vision tests to determine the presence of visual, eye and other abnormalities; eye diseases; and other bodily diseases that may affect the eye. They also prescribe lenses, other optical aids, therapy and medication to correct and manage vision problems and eye diseases.
- **Ophthalmologists** are medical doctors who specialise in providing diagnostic, preventive and surgical treatment for diseases, injuries and deficiencies of the eye.

Australian Government outreach programs play an important role in eye health for Indigenous Australians. Outreach services are primarily provided in regional and remote areas where there are low numbers of registered optometrists and ophthalmologists. These services are intended to compensate for the uneven distribution of the health workforce and to improve access to health services across Australia. Several Australian Government outreach programs provide specialist eye health services (see Box 4.2).

#### **Workforce and outreach services—measures and data sources**

There are 3 measures reported on workforce and outreach services in this chapter.

**Measure 4.1: Number and rate of optometrists**—the number of employed optometrists, full-time equivalent (FTE) per 100,000 Australian population.

**Measure 4.2: Number and rate of ophthalmologists**—the number of employed ophthalmologists, FTE per 100,000 Australian population.

The data for both of these measures come from the NHWDS. These data are derived from the annual registration process required for health workforce professionals and are available annually.

**Measure 4.3: Number and rate of allied ophthalmic personnel**—the number and rate of allied ophthalmic personnel, FTE per 100,000 Australian population.

The data for this measure comes from the ABS 2016 Census of Population and Housing

The final measure in this chapter relates to occasions of eye health services provided under outreach programs:

**Measure 4.4: Occasions of eye health services provided under outreach and other programs**—the number of occasions of service for Indigenous Australians with eye health professionals, per 1,000 population, under the:

- Visiting Optometrists Scheme (VOS)
- Rural Health Outreach Fund (RHOF)
- Medical Outreach Indigenous Chronic Disease Program (MOICDP)
- Eye and Ear Surgical Support Services (EESS).

The measures of occasions of eye health services were provided under the Australian Government outreach programs—VOS, RHOF, MOICDP and EESS (see Box 4.2). The data for this measure was provided to the Department of Health by the fund holders for these programs in each jurisdiction. The outreach data does not include outreach services funded by state governments or other sources.



#### **Box 4.1: The eye health workforce**

- **Optometrists** perform eye examinations and vision tests to determine the presence of visual, ocular and other abnormalities; ocular diseases; and systemic diseases with ocular manifestations. They also prescribe lenses, other optical aids, therapy and medication to correct and manage vision problems and eye diseases.
- **Ophthalmologists** provide diagnostic, treatment and preventive medical services related to diseases, injuries and deficiencies of the human eye and associated structures.
- **Optical dispensers** fit and service optical appliances such as spectacle frames and lenses.
- **Orthoptists** diagnose and manage eye movement disorders and associated sensory deficiencies.
- **Optical mechanics** operate machines to grind, polish and surface optical lenses to meet prescription requirements and to fit lenses to spectacle frames.
- **Orientation and mobility specialists** assist people who are experiencing difficulties in moving about due to vision loss.
- **Occupational therapists** who specialise in eye health assess the functional limitations of people resulting from eye illnesses and disabilities, and provide therapy to enable them to perform their daily activities and occupations.
- **Ophthalmic nurses** have completed general nurse training as well as specialist training in the nursing care of patients with eye problems, whether in hospital, clinics or the community. These nurses test vision and perform other eye tests under medical direction.

*Source:* AIHW 2016a.

#### **Box 4.2: Australian Government Outreach programs**

**The Visiting Optometrists Scheme (VOS)** supports optometrists to deliver outreach services in *Remote* and *Very remote* locations and in rural communities with an identified need for optometric services. From July 2015, new guidelines expanded the program to include urban locations for Indigenous Australian patients. Many of the services for Indigenous Australians are delivered by visiting optometrists in Aboriginal and Torres Strait Islander primary health-care organisations.

**The Rural Health Outreach Fund (RHOF)** supports the delivery of medical specialities, GPs and allied and other health outreach services in rural, regional and remote areas. These include eye health services.

**The Medical Outreach Indigenous Chronic Disease Program (MOICDP)** improves access to medical specialists, GPs, allied health and other health professionals for Indigenous Australians living with chronic disease. As part of this program, eye health services can be provided to those suffering from chronic conditions such as diabetes.

**The Eye and Ear Surgical Support Services (EESS)** program expedites access to surgery for Indigenous Australians who require eye surgery. The program facilitates a culturally safe surgical support pathway, access to hospital theatre time and access to bulk-billing surgeons. The program also arranges travel and accommodation for the surgical patient and carer (where needed).

## Measure 4.1: Number and rate of optometrists

**Key finding:** In 2019, there were around 5,330 (19 FTE per 100,000) optometrists employed in Australia. Of these, 10 identified as Indigenous Australians.

**Overall:** In 2019, there were around 5,330 optometrists employed in Australia (19 FTE per 100,000). Of these, 10 identified as Indigenous Australians.

**Remoteness:** In 2019, *Major cities* had the highest number (4,221) and rate (21 FTE per 100,000) of employed optometrists. This was followed by *Inner regional* areas (811, or 17 FTE per 100,000) and *Outer regional* areas (252, or 12 FTE per 100,000). The numbers and rates of optometrists were lowest in *Remote* and *Very remote* areas (Figure 4.1a).

**Jurisdiction:** In 2019, the Northern Territory had the lowest number (32) of employed optometrists. New South Wales had the highest number (1,797) and rate (20 FTE per 100,000) of employed optometrists (Figure 4.1b).

**Time trend:** Between 2013 and 2019, the number and rate of optometrists increased from 4,034 (17 FTE per 100,000) to 5,330 (19 FTE per 100,000) (Figure 4.1c).

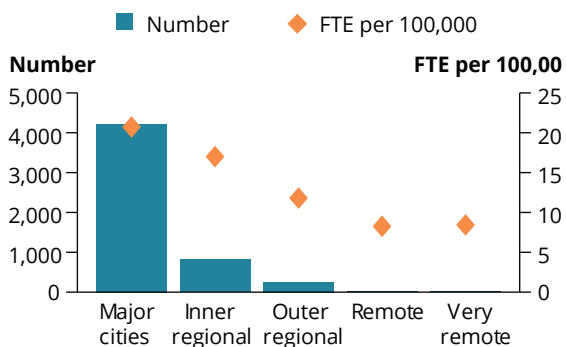
**PHN:** In 2019, the highest numbers and rates of optometrists were in metropolitan areas. The PHN with the highest number and rate of employed optometrists was Central and Eastern Sydney (552, or 30 FTE per 100,000). Country WA had the lowest rate of optometrists (11 FTE per 100,000). Western Queensland had fewer than 10 optometrists, so FTE rates were not calculated (Figure 4.1d).

### Things to consider

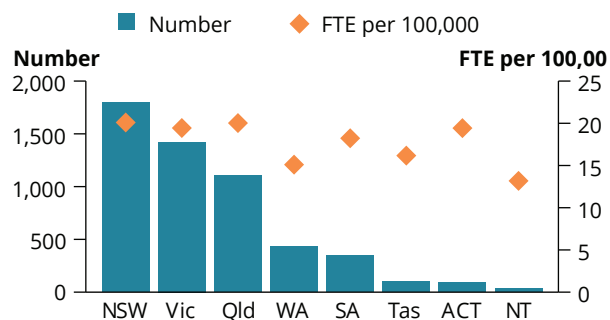
- The data come from the Department of Health's NHWDS. It includes optometrists who register with their respective health practitioner board via the National Registration and Accreditation Scheme and are employed in Australia.
- Optometrists can only include details of 1 site in their registration, so multiple sites are not captured in the data.
- The FTE rate takes into account both the number of practitioners and the hours they work. It is based on the hours worked in a standard working week (38 hours for all practitioners except medical practitioners where it is 40 hours), which is equivalent to 1 FTE. The FTE is calculated as the number of FTE practitioners divided by the relevant population count, multiplied by 100,000.

Figure 4.1: Optometrists, by various characteristics

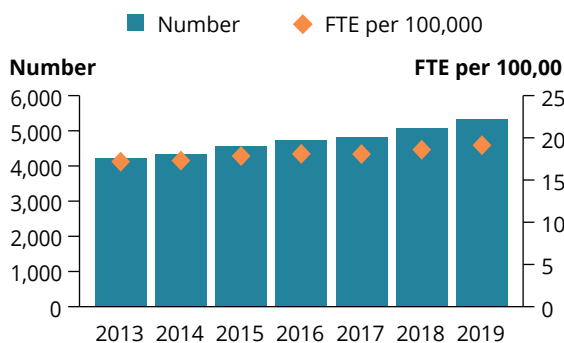
**a) Optometrists, by region, 2019**



**b) Optometrists, by jurisdiction, 2019**



**c) Optometrists, 2013 to 2019**

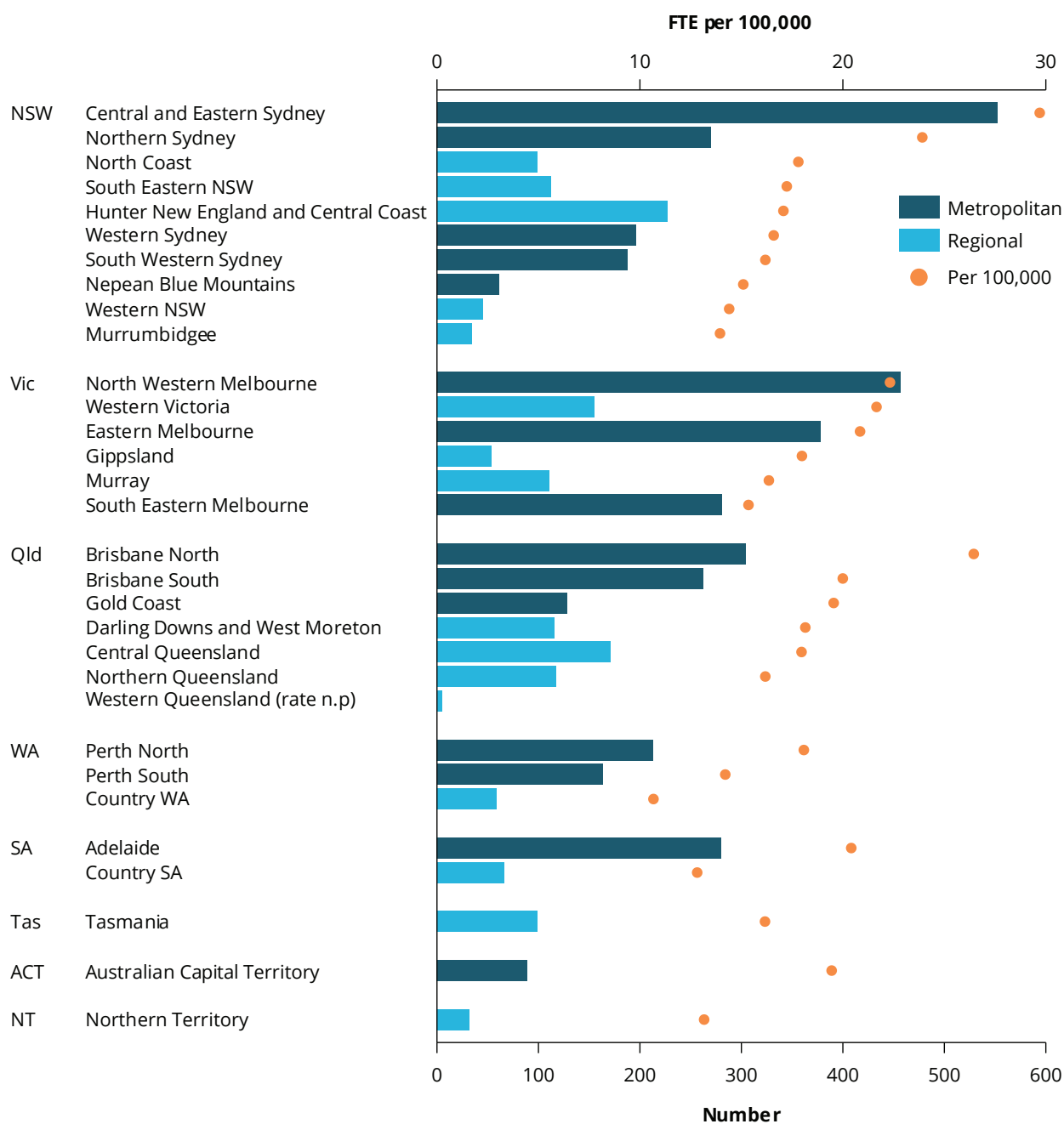


*Notes*

1. Data are based on optometrists employed in Australia working in their registered profession.
2. FTE per 100,000 population are based on a 38-hour work week.
3. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of National Health Workforce Dataset.

Figure 4.1d Optometrists, by PHN, 2019



Notes

1. Data are based on optometrists employed in Australia working in their registered profession.
2. FTE per 100,000 population are based on a 38-hour work week.
3. Rates have not been published where the number employed for any occupation was fewer than 10 people.
4. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of National Health Workforce Dataset.

## Measure 4.2: Number and rate of ophthalmologists

**Key finding:** In 2019, there were 965 (4.0 FTE per 100,000 population) ophthalmologists employed in Australia.

**Overall:** In 2019, there were 965 ophthalmologists employed in Australia (4.0 FTE per 100,000).

**Remoteness:** In 2019, *Major cities* had the highest number (818) and rate (4.9 FTE per 100,000) of employed ophthalmologists, followed by *Inner regional* areas (121, 2.9 FTE per 100,000) and *Outer regional* areas (23, or 1.3 FTE per 100,000). There were insufficient numbers of ophthalmologists to calculate rates in other areas (Figure 4.2a).

**Jurisdiction:** In 2019, New South Wales had the highest number (361) and rate (4.6 FTE per 100,000) of employed ophthalmologists followed by Victoria (244, or 3.7 FTE per 100,000). Western Australia had the lowest rate (3.4 FTE per 100,000). There were insufficient numbers of ophthalmologists in the Northern Territory to report rates (Figure 4.2b).

**Time trend:** Between 2013 and 2019, the number of ophthalmologists increased slightly, while the rate remained fairly constant. In 2013 there were 846 employed ophthalmologists (3.9 FTE per 100,000). By 2019, the number and rate of employed ophthalmologists had increased to 965 (4.0 FTE per 100,000) (Figure 4.2c).

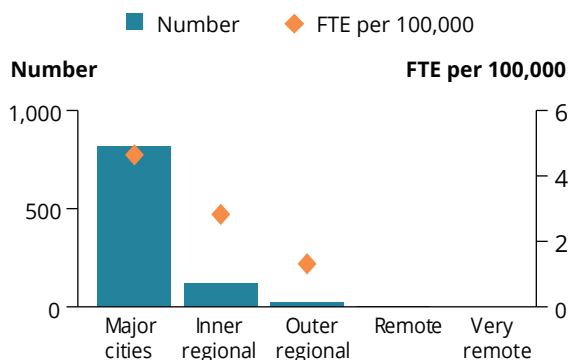
**PHN:** Central and Eastern Sydney had the highest number (137) and rate (8.5 FTE per 100,000) of employed ophthalmologists. The PHNs with the next highest rates were Northern Sydney (68, or 7.4 FTE per 100,000) and Brisbane North (62, or 6.2 FTE per 100,000). The number of ophthalmologists was too low to calculate FTE rates in 8 PHNs, but of those areas where rates could be published, they were lowest in South Eastern New South Wales and Murray (both 1.7 FTE per 100,000) (Figure 4.2d).

### Things to consider

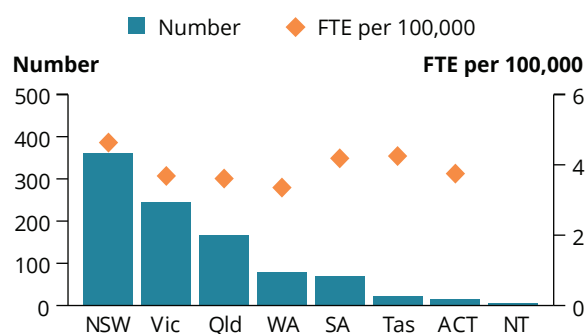
- The data come from the Department of Health's NHWDS. It includes ophthalmologists who register with their respective health practitioner board via the National Registration and Accreditation Scheme and are employed in Australia.
- Ophthalmologists can only include details of 1 site in their registration, so multiple sites are not captured in the data.
- FTE is a measure calculated by dividing an estimate of the total hours worked by employees in an occupation in a week by an estimate of the standard hours worked for ophthalmologists (40 hours per week). The number of FTE is then compared with the size of relevant population to get the FTE per 100,000 population.

Figure 4.2: Ophthalmologists, by various characteristics

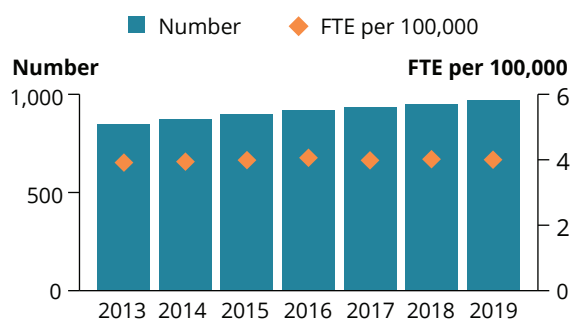
a) Ophthalmologists, by region, 2019



b) Ophthalmologists, by state, 2019



c) Ophthalmologists, 2013 to 2019

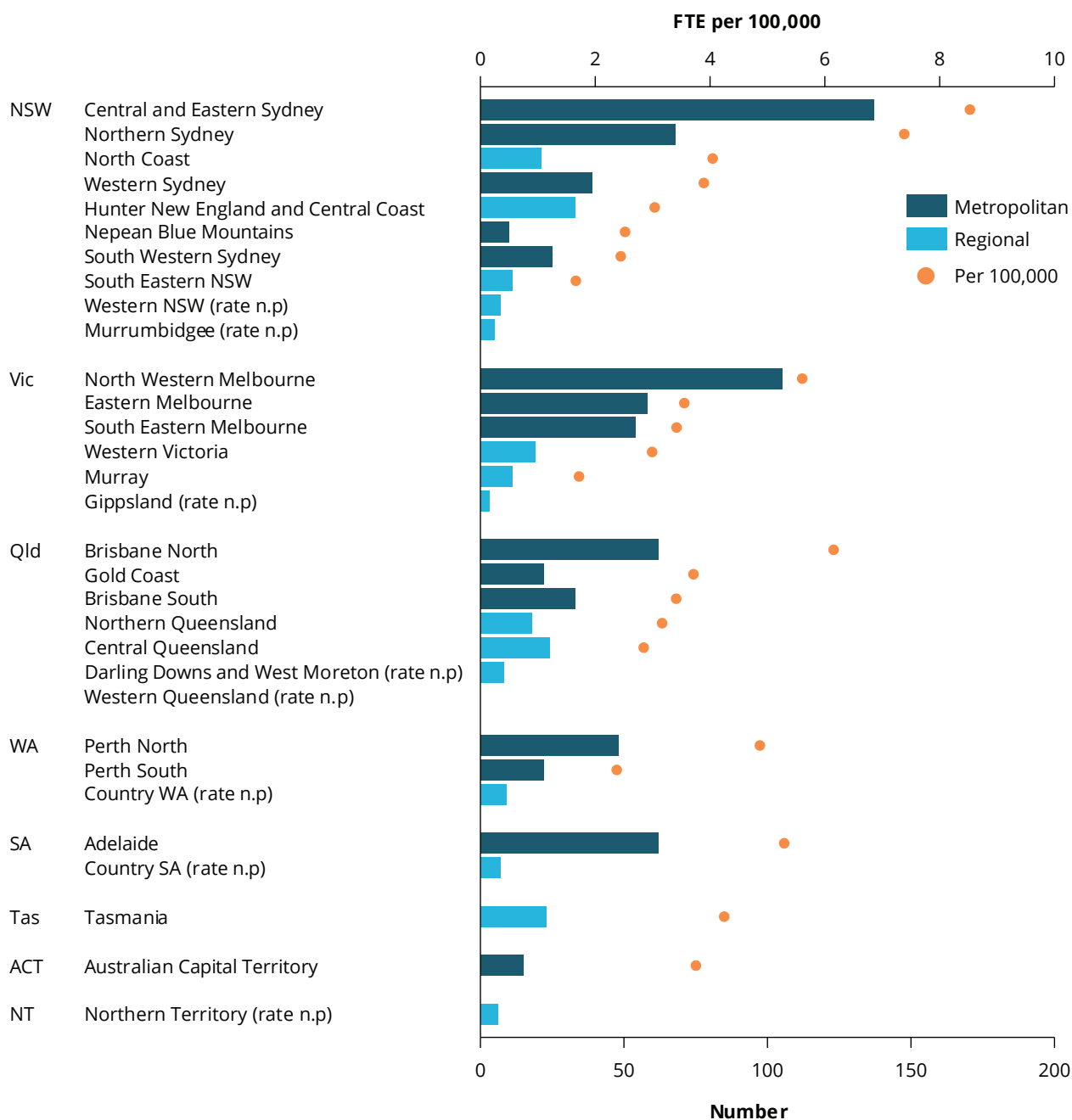


Notes

1. Data are based on ophthalmologists employed in Australia working in their registered profession.
2. FTE per 100,000 population are based on a 40-hour work week.
3. Rates have not been published where the number employed for any occupation was fewer than 10 people.
4. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of National Health Workforce Dataset.

Figure 4.2d Ophthalmologists, by PHN, 2019



Notes

1. Data are based on ophthalmologists employed in Australia working in their registered profession.
2. FTE per 100,000 population are based on a 40-hour work week.
3. Rates have not been published (n.p.) where the number employed for any occupation was fewer than 10 people.
4. Data for this figure are available in the supplementary tables.

Source: AIHW analysis of National Health Workforce Dataset.



## Measure 4.3: Number and rate of allied ophthalmic personnel

**Key finding:** In 2016, there were around 4,855 optical dispensers (15 FTE per 100,000), 472 optical mechanics (1.9 FTE per 100,000) and 834 orthoptists (2.7 FTE per 100,000) in Australia.

**Overall:** The biggest category of allied ophthalmic personnel in Australia is optical dispensers. In 2016, there were around 4,855 optical dispensers (15 FTE per 100,000), 472 optical mechanics (1.9 FTE per 100,000) and 834 orthoptists (2.7 FTE per 100,000) in Australia (Figure 4.3a).

**Time trend:** From 2010 to 2016, the number of optical dispensers and orthoptists increased slightly, while the number of optical mechanics fell. The FTE rate of all allied ophthalmic personnel decreased, from 19 to 15 FTE per 100,000 for optical dispensers, and from 6.2 to 4.6 FTE per 100,000 for optical mechanics and orthoptists combined (Figure 4.3b).

**Remoteness:** *Major cities* had the highest number (3,609) and rate (16 FTE per 100,000) of optical dispensers as well as other allied ophthalmic personnel (1,134, or 5.6 FTE per 100,000). This was followed by *Inner regional* areas with 919 optical dispensers (17 FTE per 100,000) and 138 other allied ophthalmic personnel (2.5 FTE per 100,000). There were insufficient numbers of optical dispensers and other allied ophthalmic personnel in *Remote* and *Very remote* areas to calculate rates (Figure 4.3c).

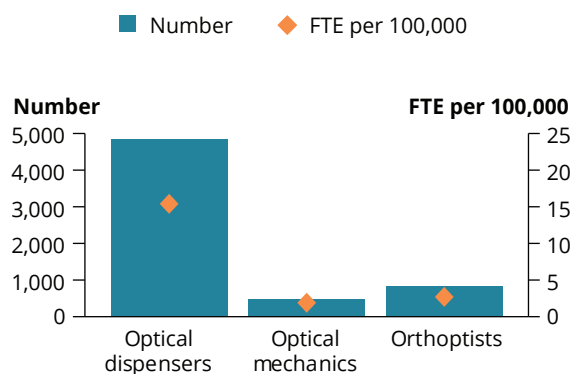
**Jurisdiction:** New South Wales had the highest number (1,469) of optical dispensers and of other allied ophthalmic personnel (512). The Australian Capital Territory had the highest rate of optical dispensers (20 FTE per 100,000), and Victoria had the highest rate of optical mechanics and orthoptists (6.5 FTE per 100,000) (Figure 4.3d). There were insufficient numbers of optical dispensers in the Northern Territory, and optical mechanics and orthoptists in the Northern Territory, Tasmania and the Australian Capital Territory to report rates.

### Things to consider

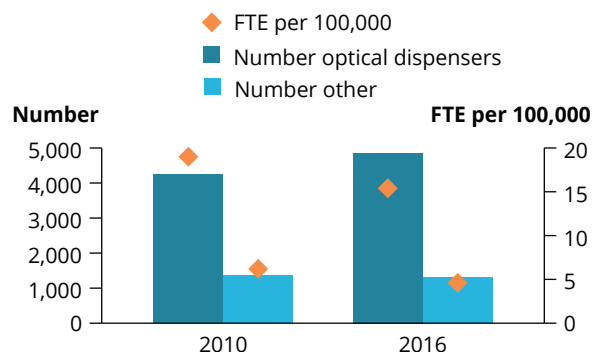
See Box 4.1 for information on the eye health workforce and the roles of various allied ophthalmic personnel.

Figure 4.3: Allied ophthalmic personnel, by various characteristics

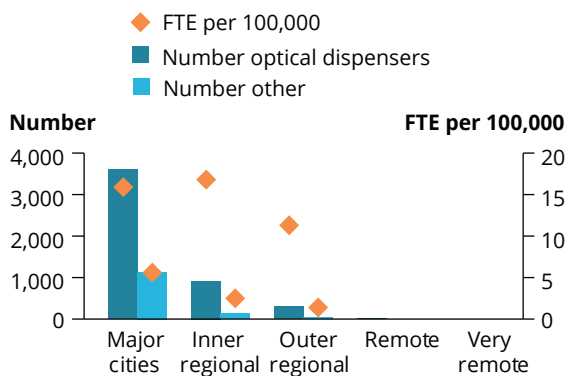
a) By profession, 2016



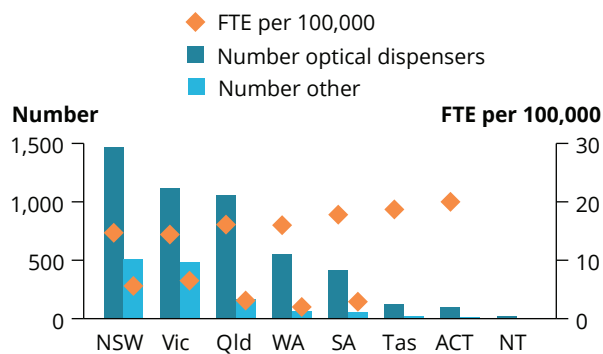
b) By profession, 2010 and 2016



c) By profession, by region, 2016



d) By profession, by jurisdiction, 2016



Notes

1. 'Other' includes Orthoptists and Optical mechanics.
2. FTE per 100,000 population are based on a 38-hour week.
3. Rates have not been published where the number employed for any occupation was fewer than 30 people.
4. Data for these figures are available in the online supplementary tables.

Sources: AIHW analysis of 2016 Census.

## Measure 4.4: Occasions of eye health services provided under outreach and other programs

**Key finding:** In 2019–20 around 32,800 occasions of service for Indigenous patients were provided by eye health professionals under combined outreach services (VOS, RHOF and MOICDP)

### 4.4.1 Visiting Optometrists Scheme (VOS)

**Overall:** In 2019–20, there were 22,089 occasions of service for Indigenous patients and 18,299 for other patients under the VOS.

**Remoteness:** Reflecting the nature of the scheme, the rate of Indigenous occasions of service under the VOS in 2019–20 was highest in *Very remote* areas (83 per 1,000) followed by *Remote* areas (65 per 1,000) (Figure 4.4.1a).

**Jurisdiction:** In 2019–20, the rate of Indigenous occasions of service was highest in the Northern Territory (56 per 1,000), followed by Western Australia (38 per 1,000) (Figure 4.4.1b). The number of Indigenous occasions of service under the VOS was lowest for Indigenous Australians in Tasmania (163), followed by Victoria (906), while the highest number was in Queensland (6,397), followed by New South Wales (5,071) (Figure 4.4.1c).

**Time trend:** In 2010–11, there were around 8,298 occasions of service for Indigenous patients under the VOS. This increased to 29,161 in 2017–18 before declining to 22,089 in 2019–20 (Figure 4.4.1d). In 2019–20 Indigenous Australians had nearly 4,800 more VOS occasions of service than non-Indigenous Australian patients.

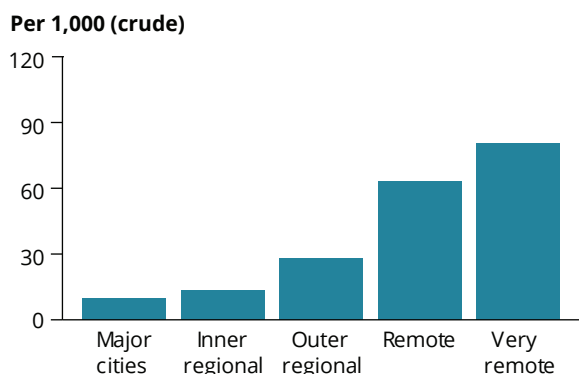
**PHN:** The PHNs with the highest reported number of occasions of service for Indigenous patients under the VOS were the Northern Territory (4,376) followed by Country WA (4,049). The rate of Indigenous occasions of service was highest in Western Queensland (82 per 1,000), Country WA (65 per 1,000) and the Northern Territory (56 per 1,000) (Figure 4.4.1e).

#### Things to consider

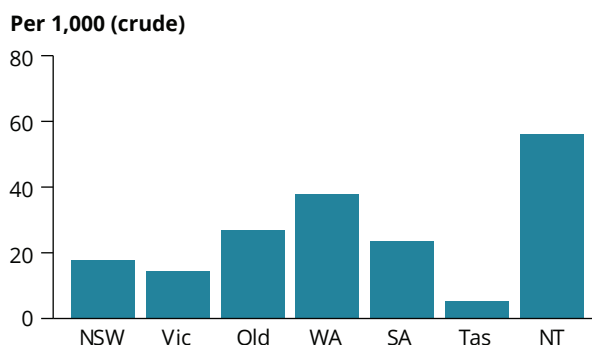
- Patients may have more than 1 occasion of service.
- The identification of Indigenous patients varies between practitioners, so the number of occasions of service for Indigenous patients may be understated.
- The rates by PHN should be interpreted with caution, as these services are predominantly provided in non-metropolitan areas. Rates were calculated for some metropolitan areas for comparison purposes, as these areas were only included in the program from 2014–15, and only a small number of services were provided there.
- These data include Australian Government-funded outreach services and not those funded by state governments or other providers.

Figure 4.4.1: VOS occasions of service, by various characteristics

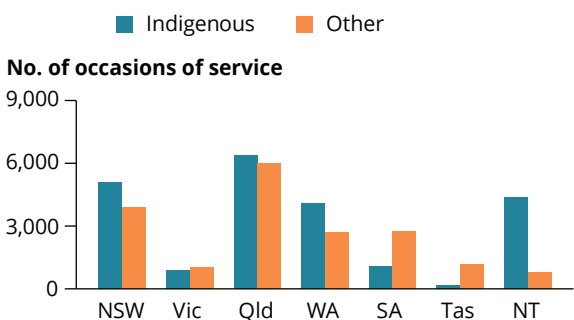
**a) Indigenous, by region, 2019–20**



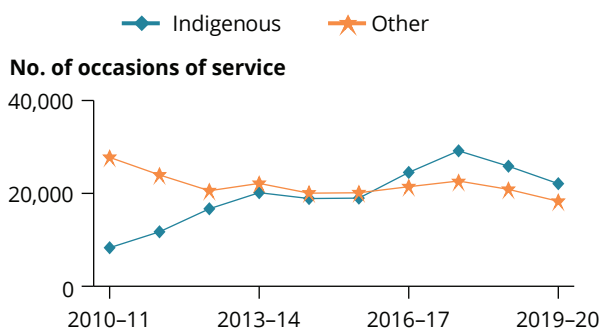
**b) Indigenous, by jurisdiction, 2019–20**



**c) By jurisdiction, 2019–20**



**d) Time trend, 2010–11 to 2019–20**

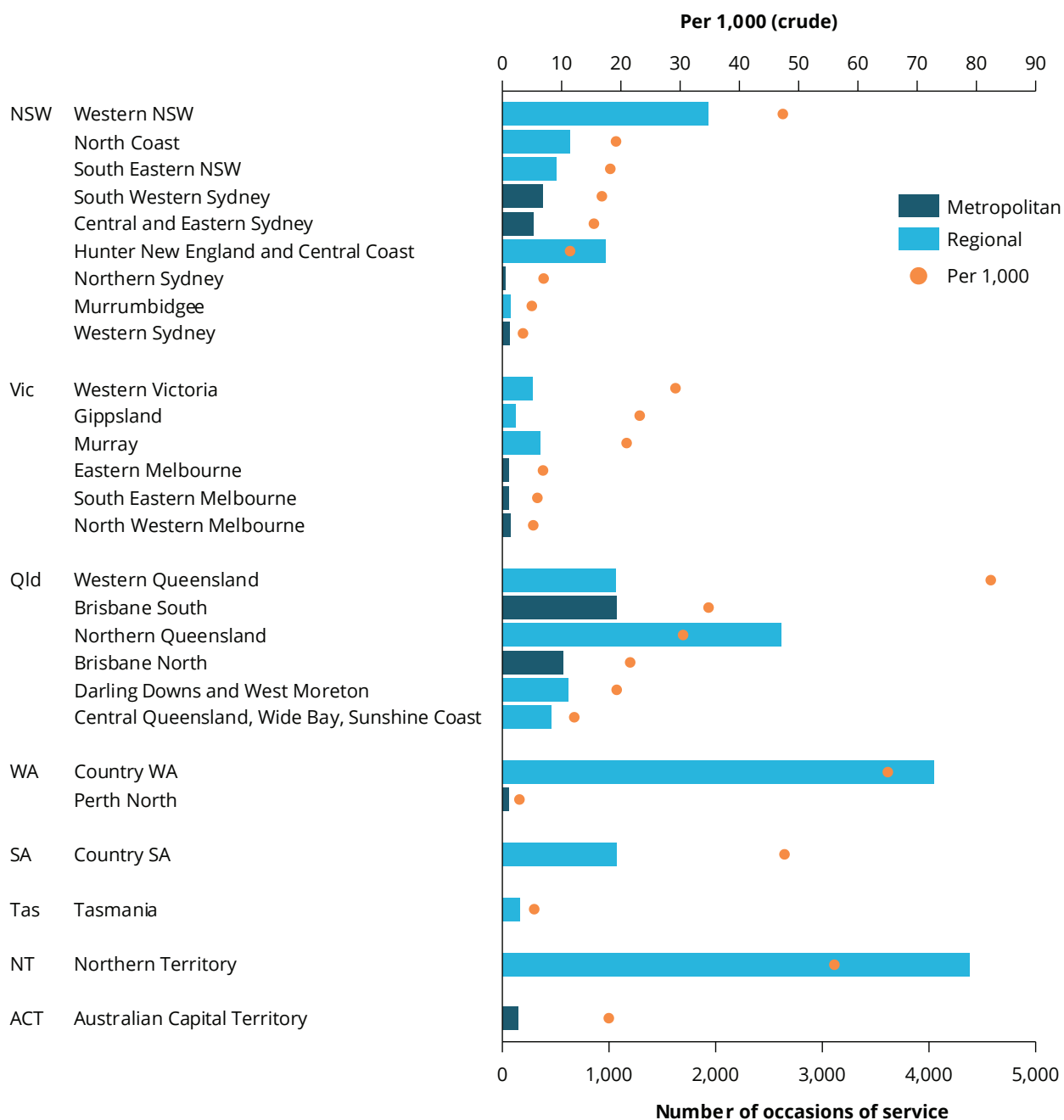


*Notes*

1. 'Other' includes occasions of service for non-Indigenous patients and patients with 'not stated' Indigenous status.
2. Data for these figures are available in the supplementary tables.

Source: AIHW analysis of Department of Health data (unpublished).

Figure 4.4.1e: VOS occasions of service, by PHN, 2019–20



Notes

1. These services are mainly provided in non-metropolitan areas so not delivered in all PHNs.
2. Data for this figure are available in the online supplementary tables.

Source: AIHW analysis of Department of Health data (unpublished).

## 4.4.2 Rural Health Outreach Fund (RHOF)

**Overall:** In 2019–20, a total of 5,910 occasions of eye health services for Indigenous patients were provided under the RHOF.

**Remoteness:** In 2019–20, the number of Indigenous occasions of eye health services under the RHOF was highest in *Very remote* areas (1,644) and lowest in *Inner regional* areas (984). The rate was highest in *Remote* areas (31 per 1,000) followed by *Very remote* areas (17 per 1,000), and was lowest in *Inner regional* areas (4.8 per 1,000) (Figure 4.4.2a).

**Jurisdiction:** In 2019–20, the number and rate of Indigenous eye health occasions of service under the RHOF was highest in the Northern Territory (2,361, or 30 per 1,000), followed by Western Australia (1,936, or 31 per 1,000) (Figure 4.4.2b).

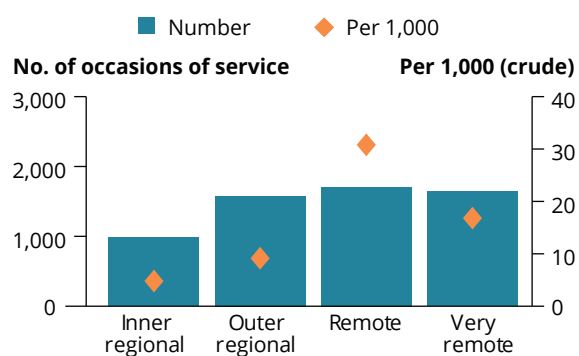
**Time trend:** In 2011–12, there were around 4,977 Indigenous eye health occasions of service under the RHOF. This number increased each year to reach 8,652 in 2015–16, before declining to 5,910 in 2019–20 (Figure 4.4.2c).

### Things to consider

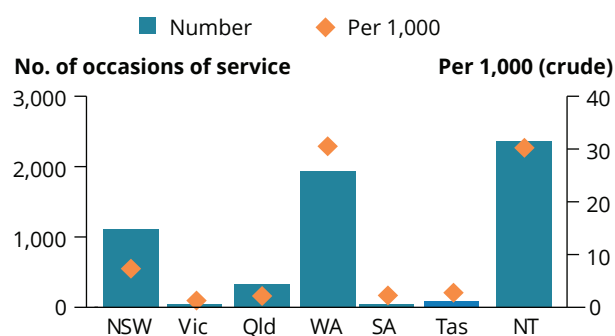
- Patients may have more than 1 occasion of service.
- Numbers reflect Indigenous RHOF patient contacts with all health professionals in relation to their eye health and include those seen by ophthalmologists, optometrists, orthoptists, retinal photographers, ophthalmic assistants, ophthalmic nurses and Aboriginal Health Workers.
- RHOF services are provided only in non-metropolitan areas.
- These data include Australian Government-funded outreach services and not those funded by state governments or other providers.

Figure 4.4.2: RHOFS occasions of eye health services for Indigenous Australians, by various characteristics

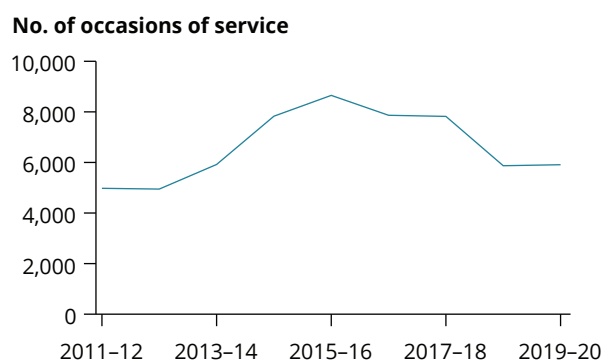
**a) By region, 2019–20**



**b) By jurisdiction, 2019–20**



**c) Time trend, 2011–12 to 2019–20**



*Notes*

1. RHOFS services are provided in Inner regional, Outer regional, Remote and Very remote areas only.
2. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of Department of Health data (unpublished).

### 4.4.3 Medical Outreach Indigenous Chronic Disease Program (MOICDP)

**Overall:** In 2019–20, a total of 4,819 occasions of service for Indigenous patients were provided by eye health professionals under the MOICDP.

**Jurisdiction:** Services were provided to Indigenous patients in 7 jurisdictions. The highest number and rate of Indigenous occasions of service provided by an eye health professional under the MOICDP was in Western Australia (1,821, or 169 per 10,000) (Figure 4.4.3a).

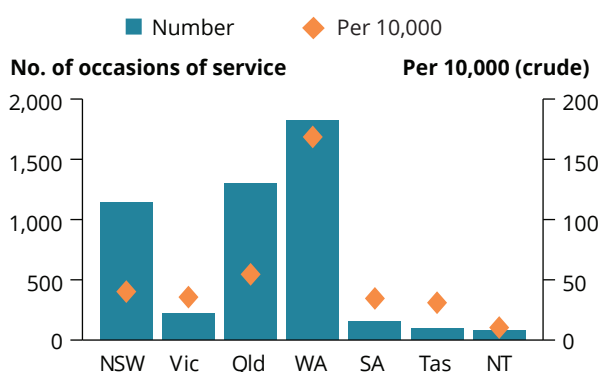
**Time trend:** In 2014–15, there were around 550 Indigenous occasions of service provided by health professionals in relation to eye health under the MOICDP. This number increased to 4,819 in 2019–20 (Figure 4.4.3b).

#### Things to consider

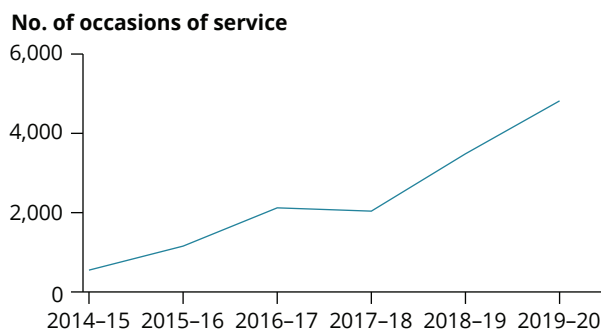
- Patients may have more than 1 occasion of service.
- The numbers show occasions of service provided to Indigenous patients by all health professionals in relation to eye health, including ophthalmologists, ophthalmic assistants, ophthalmic nurses and Aboriginal health workers.
- These data include Australian Government-funded outreach services and not those funded by state governments or other providers.

**Figure 4.4.3: MOICDP, occasions of eye health services for Indigenous Australians, by various characteristics**

#### a) By jurisdiction, 2019–20



#### b) Time trend, 2014–15 to 2019–20



#### Notes

1. Data include patients seen by the following types of health professionals: Aboriginal health worker—Eye Health, Optometry, Physician—Ophthalmology, and surgery—retinal.
2. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of Department of Health data (unpublished).



#### 4.4.4 Combined outreach programs

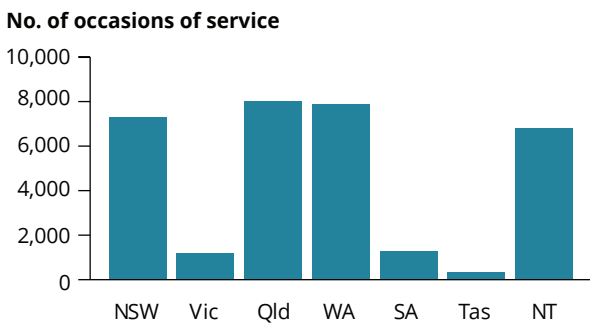
**Overall:** In 2019–20, a total of 32,818 occasions of service for Indigenous patients were provided by eye health professionals under all the outreach programs combined (VOS, RHOF and MOICDP).

**Jurisdiction:** In 2019–20, the highest number of Indigenous occasions of service provided by an eye health professional under the combined outreach programs was in Queensland (8,032) followed by Western Australia (7,865) (Figure 4.4.4a).

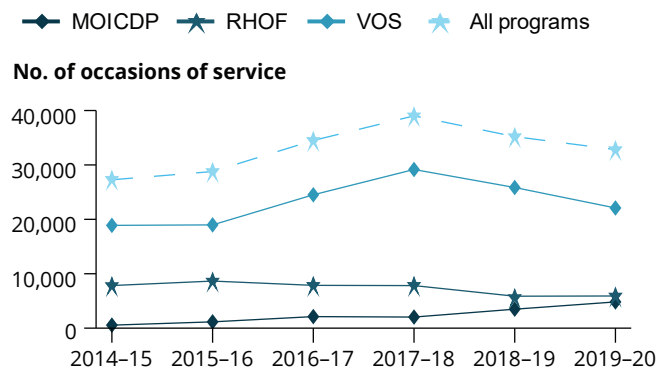
**Time trend:** In 2014–15, there were around 27,269 Indigenous occasions of services provided by health professionals in relation to eye health under the combined outreach programs. This number increased to 32,818 in 2019–20 (Figure 4.4.4b).

Figure 4.4.4 Combined outreach programs, number of occasions of service

**a) By jurisdiction, 2019–20**



**b) Time trend, 2014–15 to 2019–20**



Note: Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of Department of Health data (unpublished).

#### 4.4.5 Eye and Ear Surgical Support Services (EESS)

**Overall:** In 2019–20 a total of 664 occasions of service for Indigenous patients were provided by eye health professionals under the EESS.

**Jurisdiction:** In 2019–20, the highest number of Indigenous occasions of service provided by an eye health professional under the EESS was in Western Australia (231) followed by Queensland (182) (Figure 4.4.5a)

##### Things to consider

- Patients may have more than 1 occasion of service.
- The identification of Indigenous patients varies between practitioners, so the number of occasions of service for Indigenous patients may be understated.

**Figure 4.4.5: EESS, occasions of eye health services for Indigenous Australians by jurisdiction**

**a) By jurisdiction, 2019–20**

**No. of occasions of service**



*Note:* Data for these figures are available in the online supplementary tables.

*Source:* AIHW analysis of Department of Health data (unpublished).

# Appendix A: Data sources

## ABS population data

ABS estimates of the population, based on the 2016 Census were used to calculate the most recent rates reported (generally 2018–19) (ABS 2018). For trends data, however, the rates were based on ABS population projections from the 2011 Census, for both Indigenous Australians (ABS 2014) and non-Indigenous Australians (ABS 2017).

The size of the Indigenous population varies substantially by state and territory. In 2016, the Indigenous population ranged from about 7,500 in the Australian Capital Territory to 265,700 in New South Wales. The proportion of the total population who are Indigenous also varies by state and territory. In 2016, this proportion ranged from 1% in Victoria to 30% in the Northern Territory.

## Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) 2012–13

The Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) 2018–19 was conducted by the Australian Bureau of Statistics (ABS) to report on the health of Aboriginal and Torres Strait Islander peoples in Australia. It provides information on long-term health conditions: health risk factors: selected social and emotional wellbeing indicators: health measurements: and health related actions for Indigenous Australians.

The AATSIHS forms part of the broader Australian Health Survey and is based on a nationally representative sample of around 10,600 Aboriginal and Torres Strait Islander people across the nation. It was conducted in remote and non-remote areas throughout Australia.

The AATSIHS is made up of three components:

- a National Aboriginal and Torres Strait Islander health survey
- a National Aboriginal and Torres Strait Islander nutrition and physical activity survey
- a National Aboriginal and Torres Strait Islander health measures survey that includes biomedical data.

## Australian Trachoma Surveillance reports (ATSR)

The National Trachoma Surveillance and Reporting Unit (NTSRU) of the Kirby Institute is funded by the Department of Health to undertake data collation, analysis and reporting related to the ongoing evaluation of trachoma control strategies in Australia. The Australian Trachoma Surveillance reports (ATSR) are released annually (Kirby Institute 2015).

The primary focus of reporting by the NTSRU from 2006–2011 was on trachoma levels and trends in the 3 jurisdictions funded by the Australian Government to undertake trachoma control activities. In 2013, 2014 and 2015, the NSW Ministry of Health was funded to undertake a baseline screening of selected remote communities to establish whether trachoma was a public health concern in NSW. These data are included in the 2013, 2014 and 2015 reports, along with data from the Northern Territory, Western Australia and South Australia (Kirby Institute 2015).

Each jurisdiction undertakes its own screening and treatment for trachoma according to their respective protocols, and in the context of the CDNA National Guidelines for the Public Health Management of Trachoma in Australia. Prior to January 2014, these recommended that screening for trachoma be undertaken for all communities designated as being 'at-risk', or where there was anecdotal information suggesting the presence of active trachoma.

The revised guidelines state that not all 'at-risk' communities are required to screen for trachoma each year, as prevalence levels don't vary greatly from year to year. Instead, if trachoma is present in the community, communities are to focus their efforts on treatment. The frequency of screening recommended varies according to the prevalence and spread of active trachoma in the community (CDNA 2014).

The Northern Territory introduced this new approach in 2014 and the other jurisdictions in 2015. This means that, in order to calculate prevalence rates for communities that did not screen in the current year, the most recent prevalence data for that community is carried forward and added to the current year data. This is likely to overestimate current levels of trachoma.

WHO trachoma grading criteria were used to diagnose and classify individual cases of trachoma in all jurisdictions. The forms for data collection at the community level were developed by the National Trachoma Surveillance and Control Reference Group, based on the CDNA guidelines. Completed forms are provided by jurisdictional coordinators to the NTSRU for checking and analysis. While data may be collected for Aboriginal children aged 0–14, the focus age group in all regions is those aged 5–9 years, as required by state and territory project agreements (Kirby Institute 2016).

Interpretation of coverage data is limited by the accuracy of community population estimates, the school-based approach to screening and the designation of communities as at-risk. Community population estimates are based upon projections from the Census data. Although this approach is current best practice, the estimates may not accurately reflect populations at the time of screening, given the small size and mobility of some communities. Caution must be taken when quoting trachoma prevalence, as screening took place in predominantly *Remote* and *Very remote* communities designated as being at-risk of endemic trachoma. Designation of at-risk status does not appear to have been systematically reviewed in any jurisdiction (AIHW 2015).

## Medicare Benefits Schedule data

The MBS is a listing of Medicare services that are subsidised by the Australian Government. It is part of the Medicare program, managed by the Department of Health and administered by the Department of Human Services. Through the Medicare program, all Australian residents and certain categories of visitors to Australia are entitled to benefits for medical and hospital services, based on fees determined for each service provided. These services are itemised, forming the schedule of fees. Statistics on each item are collected when benefits are claimed.

MBS data reflect MBS claims and not necessarily all the services that are received. A person may be provided with equivalent care from a health-care provider who is not eligible to bill Medicare. The data are based on the date of processing of claims. While the data have been used to measure the level of specific activities, changes in the use of an MBS item over time can reflect changes in billing and claiming practices or the introduction of new items, and not necessarily changes in the health care provided.

Data presented by state and territory and by remoteness area are based on the address information recorded in the patient's Medicare record. Data presented by remoteness area were classified according to the Australian Standard Geographical Classification.

## Indigenous identification

The identification of Indigenous Australians in Medicare data is not complete. Since 2002, individuals who choose to identify as being of Aboriginal and/or Torres Strait Islander descent have been able to have this information recorded on the Medicare database through the Voluntary Indigenous Identifier (VII). VII enrolment is through either a VII enrolment form or a tick-box on a Medicare Australia enrolment form. Both methods of enrolment indicate that identifying as Indigenous is optional.

As at March 2016, an estimated 65% of the Indigenous population had identified as being of Aboriginal and/or Torres Strait Islander origin through the VII process. VII coverage varies by age group and state and territory. The MBS data presented in this report have been adjusted for under-identification, except for data on MBS item 715 health assessments and the new item 12325 for diabetic retinopathy screening, which is Indigenous specific.

## National Eye Health Survey

The 2016 NEHS was a nationwide population-based study designed to provide estimates of the prevalence and causes of vision impairment and blindness in Indigenous and non-Indigenous Australians by gender, age, and geographical area; and to measure the treatment and coverage rate of major conditions and diseases. It used a multistage, random-cluster sampling methodology to select 30 geographic areas stratified by remoteness, to provide a representative target population of 3,000 non-Indigenous Australians aged 50 and older and 1,400 Indigenous Australians aged 40 and older. Participants were primarily recruited by door-to-door knocking, with adjustments as required to adapt to local circumstances within diverse Indigenous communities.

Over 85% of those eligible to enrol in the study did so. In total, the NEHS examined 3,098 non-Indigenous Australians aged 50 or older, and 1,738 Indigenous Australians aged 40 or older. The survey achieved a response rate of 85%, with 72% having an eye examination. The testing protocol involved a general questionnaire, vision testing, anterior segment examination, visual field testing, fundus photography and intraocular pressure testing. Where possible sampling adjusted rates were provided, though some of the survey results presented are crude unadjusted sample proportions. These results are subject to sampling error so 95% confidence intervals were provided to indicate the reliability of all estimates reported. Some of the estimates should be treated with caution due to large confidence intervals.

## National Health Workforce Data Set

The Australian Health Practitioner Regulation Agency (AHPRA), in conjunction with the national health professional registration boards, is responsible for the national registration process for 14 health professions. The data from the annual registration process, together with data from a workforce survey that is voluntarily completed at the time of registration, forms the Department of Health's National Health Workforce Data Set (NHWDS). Data in the NHWDS includes demographic and employment information (for example, labour force status, location of main job, area of practice, work setting) for registered health professionals. In this report, the data on optometrists and ophthalmologists come from the NHWDS as reported by AIHW.

## National Hospital Morbidity Database

Data about hospitalisations were extracted from the AIHW NHMD, which is a compilation of episode-level records from admitted patient care data collection systems in Australian hospitals in each state and territory. Information on the characteristics, diagnoses and care of admitted patients in public and private hospitals is provided annually to the AIHW by state and territory health departments. Data are based on financial years.

Data are a count of hospital separations (episodes of admitted patient care, which can be a total hospital stay, or a portion of a hospital stay that begins or ends in a change of type of care) and not of patients. Patients who separated from hospital more than once in the year will be counted more than once in the data set. The number and pattern of hospitalisations can be affected by differing admission practices among the jurisdictions and from year to year, and differing levels and patterns of service delivery.

Data on diagnoses are recorded using the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM, 8th edition). Information on procedures was recorded using the Australian Classification of Health Interventions. The relevant diagnosis and procedure codes used in this report are outlined in the Supplementary Tables Group 3.

NHMD data presented by state and territory and remoteness area in this report are based on the patient's place of usual residence. For some analyses by state and territory, data for the Australian Capital Territory were combined with those for New South Wales, and data for Tasmania were combined with those for Victoria, due to small numbers.

For analyses by remoteness area, the NHMD data for 2012–13 onwards were classified according to the Australian Statistical Geography Standard, while earlier years were classified according to the Australian Standard Geographical Classification.

A data quality statement for the NHMD is available at <http://meteor.aihw.gov.au/content/index.phtml/itemId/611030>.

## Indigenous identification

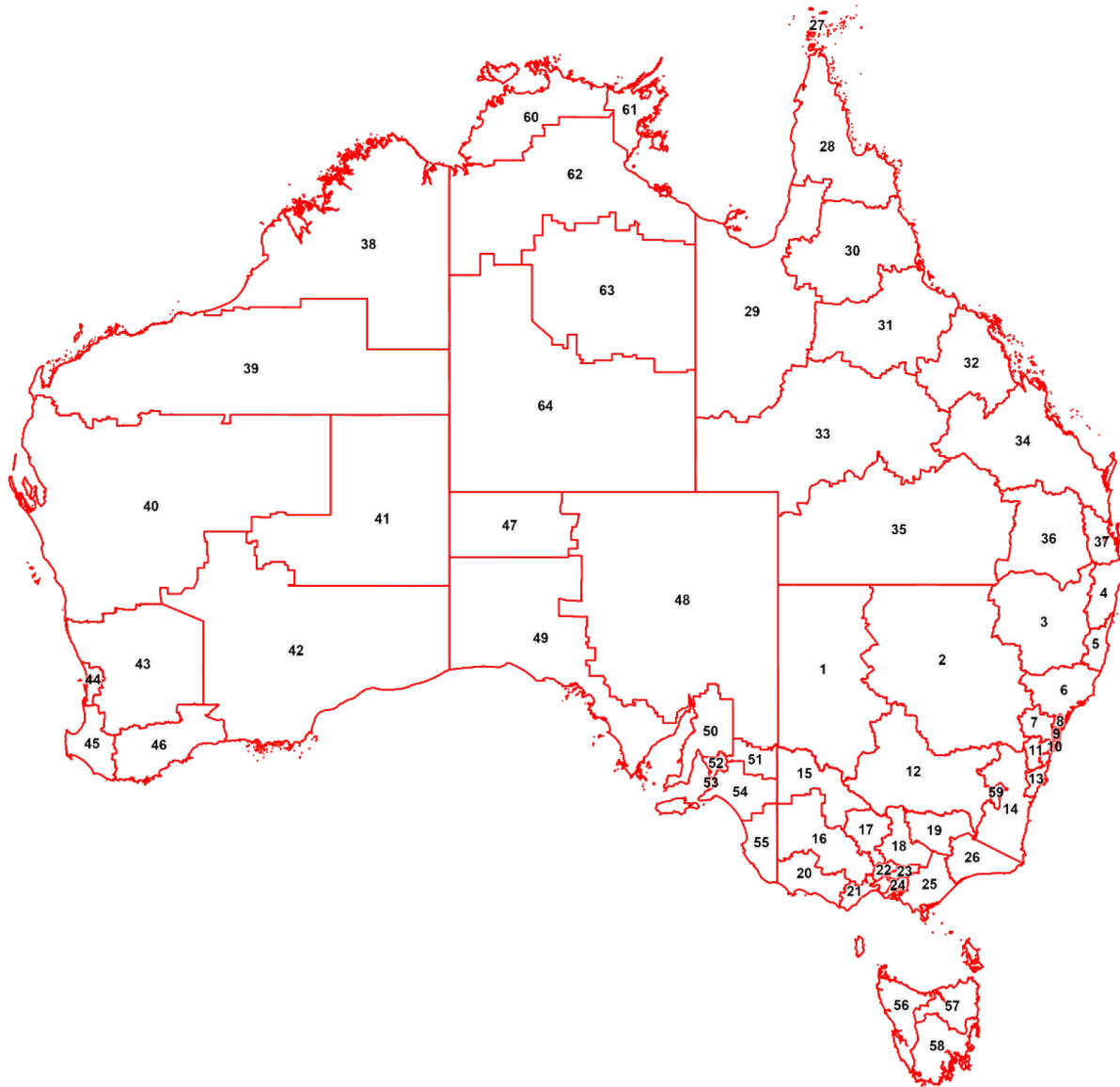
There is some under-identification of Indigenous Australians in the NHMD, but NHMD data for all states and territories are considered to have adequate Indigenous identification from 2010–11 onwards (AIHW 2013). An AIHW study found that, in 2011–12, the number of hospitalisations nationally for Indigenous Australians was about 9% higher than reported (AIHW 2013). In 2013–14, about 408,000 hospitalisations were recorded as being for Indigenous Australians. Based on the level of under-identification suggested by the AIHW study, the number of hospitalisations for Indigenous Australians in 2013–14 was estimated to have been about 445,000 (AIHW 2015). NHMD data presented in this report have not been adjusted for under-identification, so are likely to underestimate the level of Indigenous hospitalisations.

Changes in the accuracy of Indigenous identification in hospital records will result in changes in the reported number of hospitalisations for Indigenous Australians. Caution should be used when interpreting changes over time, as it is not possible to ascertain whether a change in reported hospitalisations is due to changes in the accuracy of Indigenous identification and/or real changes in the rates at which Indigenous Australians were hospitalised. An increase in hospitalisation rates for a particular population might also reflect higher use of admitted patient hospital services—as opposed to other forms of health care—rather than a worsening of health. Likewise, a decrease in hospitalisation rates might not necessarily indicate better health. It should also be noted that the levels of under-identification vary with state and remoteness and it is not known whether they also vary by reason for hospitalisation.

With the exception of data from hospitals in Western Australia, hospitalisations where the person's Indigenous status was not stated were excluded from analyses that compare Indigenous and non-Indigenous rates. In 2011–14, there were about 618,000 hospitalisations for which Indigenous status was not stated, representing 2% of all hospitalisations in that period. For hospitals in Western Australia, records with an unknown Indigenous status are reported as non-Indigenous, so are included in the 'non-Indigenous' data in these analyses.

# Appendix B: Roadmap regions

Figure 1: Roadmap regions—locations



*continued*



Figure 1 (continued): Roadmap regions—locations

No.	State	Roadmap region	No.	State	Roadmap region	No.	State	Roadmap region
1	NSW	Far West NSW	23	VIC	Eastern Metropolitan Melbourne	45	WA	South West
2	NSW	Western NSW	24	VIC	South East Metropolitan Melbourne	46	WA	Great Southern
3	NSW	Central Tablelands	25	VIC	Central Gippsland	47	SA	APY Lands
4	NSW	North Coast	26	VIC	East Gippsland	48	SA	Flinders and Upper North
5	NSW	Mid North Coast	27	QLD	Torres Strait	49	SA	Eyre and Far North (ex APY)
6	NSW	Hunter	28	QLD	Cape York	50	SA	Yorke and Northern
7	NSW	Western Metropolitan Sydney	29	QLD	North West Queensland	51	SA	Riverland
8	NSW	Central Coast	30	QLD	Cairns	52	SA	Adelaide Central North West
9	NSW	Northern Metropolitan Sydney	31	QLD	Townsville / Palm Island	53	SA	Adelaide South
10	NSW	Eastern Metropolitan Sydney	32	QLD	Mackay	54	SA	Murray Mallee Hills and Fleurieu
11	NSW	South West Metropolitan Sydney	33	QLD	Central West Queensland	55	SA	Limestone Coast
12	NSW	Riverina (Murrumbidgee)	34	QLD	Central Queensland	56	Tas	North West
13	NSW	South Coast	35	QLD	South West Queensland	57	Tas	North
14	NSW	Far South Coast	36	QLD	Darling Downs	58	Tas	South
15	VIC	Mallee	37	QLD	South East Queensland	59	ACT	Australian Capital Territory
16	VIC	Grampians	38	WA	Kimberley	60	NT	Greater Darwin
17	VIC	Loddon	39	WA	Pilbara	61	NT	East Arnhem
18	VIC	Hume West	40	WA	Mid West	62	NT	Katherine
19	VIC	Hume East	41	WA	NG Lands	63	NT	Barkly
20	VIC	Great South Coast	42	WA	Goldfields	64	NT	Central Australia
21	VIC	Geelong	43	WA	Wheatbelt			
22	VIC	North and West Metropolitan Melbourne	44	WA	Perth			

# Appendix C: Technical specifications

Table C1: Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
1.1.1	Prevalence of vision impairment and blindness	Crude rate: Numerator ÷ denominator x 100 Age-standardised rate (ASR): $ASR = \frac{\sum_i N_i p_i}{\sum_i N_i}$ where: $p_i$ is the age specific rate for age group $i$ in the population being studied $N_i$ is the population of age group $i$ in the standard population	Number of participants with: i) bilateral vision impairment (<6/12-6/60) ii) bilateral blindness (<6/60)	Number of participants responding to NEHS		NEHS
1.1.2	Proportion of target population with self-reported eye or sight problems	Numerator ÷ denominator x 100	Number of participants who reported that they had an eye or sight problem	Number of participants responding to AATSIHS		AATSIHS
1.2.1	Main cause of vision impairment and blindness	Numerator ÷ denominator x 100	Number of participants with bilateral vision impairment caused by: a) refractive error b) cataract c) age-related macular degeneration d) diabetic retinopathy e) glaucoma f) combined mechanisms g) other h) not determinable	Number of participants with bilateral vision impairment (<6/12-6/60)	Numbers were too small to present for main causes of blindness	NEHS

continued

Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
1.2.2	Self reported causes of eye or sight problems	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of participants who reported that they had an eye or sight problem caused by: a) cataract b) short-sightedness/myopia c) long-sightedness/hyperopia d) blindness (complete and partial) e) glaucoma f) macular degeneration g) other	Number of participants who reported that they had an eye or sight problem		AATS/HS
1.3.1	Prevalence of trachoma	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of children aged 5-9 with active trachoma	Number of children aged 5-9 screened for trachoma	Target age group is children aged 5-9	Trachoma Surveillance Report
1.3.2	Prevalence of trichiasis	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of adults aged 40 and over with trichiasis	Number of adults aged 40 and over screened for trichiasis	Target age group is those aged 40 and over, but data for those aged 15 and over are shown by age group	Trachoma Surveillance Report
2.1	Annual health assessments	$\frac{\text{Numerator}}{\text{denominator}} \times 100$ See calculation for measure 1.1 for age-standardised rate	Number of Indigenous people who had a face to face health assessment (MBS items 715,228) or a Telehealth assessment (MBS items 92004, 92011, 92016, 92023) claimed in the financial year	Indigenous population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year		MBS and ABS population data
2.2	Proportion of the population that had an eye examination by an eye care professional	$\frac{\text{Numerator}}{\text{denominator}} \times 100$ See calculation for measure 1.1 for age-standardised rate	Number of people who had an eye examination (MBS items 11215, 11218, 10910-10916 or 10918 within the reference period) claimed in the financial year	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year		MBS, VII and ABS population data

continued

**Table C1 (continued): Technical specifications for the Indigenous eye health measures**

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
2.3.1	Proportion of the target population screened for diabetic retinopathy	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of people who claimed MBS item 66551 in the financial year or year before, and who had an eye examination in the financial year: i) MBS group A10, Optometrical Services (except items 10921 – 10930) and/or ii) MBS group D1 subgroup 2: Miscellaneous Diagnostic Procedures and Investigations, Ophthalmology	Number of people who claimed MBS item 66551 (Quantitation of glycosylated haemoglobin performed in the management of established diabetes) in the financial year or year before		MBS and VII
2.3.2	Proportion of the target population screened for diabetic retinopathy (survey data)	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of participants responding to the NEHS with diabetes mellitus who have had a diabetic eye examination within the specified time categories	Number of participants responding to NEHS with diabetes mellitus		NEHS
2.3.3	Number and rate per 1,000 of the target population who were screened for diabetic retinopathy with a retinal camera	$\frac{\text{Numerator}}{\text{denominator}} \times 1,000$	Number of people who claimed MBS item 12325 in the financial year or year before	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year		MBS and ABS population data
2.4.1	Screening coverage for: trachoma	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of children aged 5–9 screened for trachoma	Estimated number of Indigenous children aged 5–9 in at-risk communities that were screened for trachoma		Trachoma Surveillance Report
2.4.2	Screening coverage for: trachoma trichiasis	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of adults aged 40 and over screened for trichiasis	Estimated number of adults aged 40 and over in trachoma endemic region	Target age group is those aged 40 and over, but data for those aged 15 and over are shown by age group	Trachoma Surveillance Report

*continued*

Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
2.5	Undiagnosed eye conditions	Numerator ÷ denominator x 100	Number of participants with vision impairment or blindness attributed to each main cause who self-reported 'No' or 'Unsure' to the question 'Have you ever been told by a doctor that you have the following condition?' for that condition	Number of participants with vision impairment or blindness attributed to each main cause		National Eye Health Survey
3.1	Hospitalisation rates for diseases of the eye	Numerator ÷ denominator x 1,000 (See calculation for Measure 1.1 for ASR)	Number of hospitalisations with a principal diagnosis of diseases of the eye and adnexa (International Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) codes H00-H59) and care type not 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year	Includes hospitalisations in public and private hospitals	NHMD and ABS population data
3.2	Hospitalisation rates for injuries to the eye	Numerator ÷ denominator x 1,000 (See calculation for Measure 1.1 for ASR)	Number of hospitalisations with a principal diagnosis of injuries to the eye and adnexa (ICD-10-AM codes S001, S002, S011, S021, S023, S028, S040-S042, S044, S050-S059, T150, T151, T158, T159, T260-T264, T495, T904) and care type not 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year	Includes hospitalisations in public and private hospitals	NHMD and ABS population data

continued

**Table C1 (continued): Technical specifications for the Indigenous eye health measures**

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.3	Hospitalisation rates for eye procedures	Numerator ÷ denominator x 1,000 (See calculation for Measure 1.1 for ASR)	Number of hospitalisations, that had a procedure on the eye or adnexa (Australian Classification of Health Interventions (ACHI) block codes 160–256) and care type not 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder' (For some analysis, the numerator is disaggregated by AR-DRG version 7.0)	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year	Includes hospitalisations in public and private hospitals Only includes patients who received acute care	NHMD and ABS population data
3.4	Cataract surgery rate	Numerator ÷ denominator x 1,000,000 Numerator ÷ estimated need x 100 (for analysis by roadmap region only) (See calculation for Measure 1.1 for ASR)	Number of hospitalisations that had a procedure related to cataract surgery (ACHI procedure blocks 193–203) and care type not 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year	Includes hospitalisations in public and private hospitals The estimated number of people requiring cataract surgery was derived from the Calculator for the co-ordination and delivery of eye care services developed by the IEHU at the University of Melbourne	NHMD and ABS population data

*continued*

Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.5.1	Cataract surgical coverage rate (NEH definition)	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of participants in the NEHS who have had cataract surgery	Number of participants in the NEHS who have cataracts and vision impairment or blindness + number of participants who have had cataract surgery	Cataract surgery coverage using the NEHS definition was calculated as the number who have had cataract surgery, as a proportion of those who have had cataract surgery, plus the number with bilateral presenting visual acuity worse than 6/12 with cataract in 1 or both eyes Data are weighted to account for sampling rate in each remoteness stratum	NEHS
3.5.2	Cataract surgical coverage rate (WHO definition)	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of participants in the NEHS who have had cataract surgery	Number of participants in the NEHS who have cataracts and vision impairment or blindness + number of participants who have had cataract surgery	Cataract surgery coverage using the WHO definition was calculated as the number who have had cataract surgery, as a proportion of the number who have had cataract surgery, plus the number of participants with best corrected visual acuity worse than 6/18 with cataracts in both eyes Data are weighted to account for sampling rate in each remoteness stratum	NEHS

continued

Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.6.1	Waiting times for elective cataract surgery	<p>i) 50th and 90th percentile: The 50th percentile (median waiting time) represents the number of days within which 50% of patients were admitted for elective cataract surgery (The 90th percentile data represent the number of days within which 90% of patients were admitted for elective cataract surgery)</p>	<p>The time elapsed in days for a patient on the public hospital elective surgery waiting list, from the date they were added to the waiting list for the procedure to the date they were removed from the waiting list for hospitalisations, that had a procedure related to cataract surgery (indicator procedure '01') and care type not 'new born—unqualified days only' or 'organ procurement—postthumous' or 'hospital boarder' (Based on first indicator procedure waiting time)</p>	<p>Number of hospitalisations for a patient on the public hospital elective surgery waiting list that had a procedure related to cataract surgery (indicator procedure '01') and care type not 'new born—unqualified days only' or 'organ procurement—postthumous' or 'hospital boarder'</p>		NHMD
3.6.2	Proportion of hospitalisations for cataract surgery treated within 90 days, and within 365 days	<p>ii) The proportion of patients: a) treated within 90 days b) treated within 365 days for elective cataract surgery: <math display="block">\frac{\text{Numerator}}{\text{denominator}} \times 100</math></p>	<p>Number of hospitalisations for a patient on the public hospital elective surgery waiting list that had a procedure related to cataract surgery (indicator procedure '01') and care type not 'new born—unqualified days only' or 'organ procurement—postthumous' or 'hospital boarder' for which the waiting time was: a) less than or equal to 90 days b) less than or equal to 365 days (Based on first indicator procedure waiting time)</p>	<p>Number of hospitalisations for a patient on the public hospital elective surgery waiting list that had a procedure related to cataract surgery (indicator procedure '01') and care type not 'new born—unqualified days only' or 'organ procurement—postthumous' or 'hospital boarder'</p>		NHMD

continued



Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.7.1	Target population treated for diabetic retinopathy who underwent treatment for diabetic retinopathy	i) Numerator ÷ denominator x 100 (See calculation for Measure 1.1 for ASR)	Number of people who had a laser eye procedure (MBS item 42809) and/or Intra-vitreous injection (MBS items 42738 and 42739), and who claimed MBS item 66551 in the financial year or year before	Number of people who claimed MBS item 66551 in the financial year or year before, and who had an eye examination in the financial year: i) MBS group A10, Optometrical Services (except items 10921 – 10930) and/or ii) MBS group D1 subgroup 2, Miscellaneous Diagnostic Procedures and Investigations, Ophthalmology iii) Medical practitioner MBS item 12325		MBS and VII
3.7.2	Target population treated for diabetes who underwent treatment for diabetic retinopathy	ii) Numerator ÷ denominator x 100 (See calculation for Measure 1.1 for ASR)	Number of people who had a laser eye procedure (MBS item 42809) and/or Intra-vitreous injection (MBS items 42738 and 42739), and who claimed MBS item 66551 in the financial year or year before	Number of people who claimed MBS item 66551 in the financial year or year before		MBS and VII
3.8.1	Trachoma treatment coverage	Numerator ÷ denominator x 100	Number of community members treated in communities where active trachoma was identified	Estimated number of community members requiring treatment in communities with active trachoma		Trachoma Surveillance Report
3.8.2	Trichiasis treatment coverage	Numerator ÷ denominator x 100	Number of community members over 40 in at risk communities screened for trichiasis who had surgery in the past 12 months.	Estimated number of community members requiring treatment in communities with active trachoma		Trachoma Surveillance Report

continued

Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.9	Treatment of refractory error	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	Number of participants who reported distance spectacle or contact lens correction and had visual acuity (VA) $\geq 6/12$	Number of participants who reported distance spectacle or contact lens correction and had VA $\geq 6/12$ + participants who had refractive error as their main cause of vision impairment or blindness	Data are weighted to account for sampling rate in each remoteness stratum	National Eye Health Survey
3.10	Number and rate of glasses dispensed under state spectacle schemes	$\frac{\text{Numerator}}{\text{denominator}} \times 1,000$	Data are number of spectacles provided to Indigenous people	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year	Only 5 jurisdictions could provide data The estimated number of people requiring spectacles was derived from the Calculator for the co-ordination and delivery of eye care services developed by the IEHU at the University of Melbourne	NSW Depart of Family & Community Services; Australian College of Optometry Victorian; Queensland Health, SA Dept of Human Services, Tasmanian Health Service data (unpublished) and ABS population data
4.1	Number and rate of optometrists	Number FTE rate: $\frac{\text{Numerator (FTE)}}{\text{denominator}} \times 100,000$	Number of registered optometrists employed in Australia working in registered profession FTE of registered optometrists employed in Australia working in registered profession	Population at 30 June	FTE based on a 38-hour work week	NHWDS and ABS population data

continued

Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
4.2	Number and rate of ophthalmologists	Number FTE rate: Numerator (FTE) ÷ denominator x 100,000	Number of registered ophthalmologists employed in Australia working in registered profession FTE of registered ophthalmologists employed in Australia working in registered profession	Population at 30 June	FTE based on a 40-hour work week	NHWDS and ABS population data
4.3	Number and rate of allied ophthalmic personnel	Number FTE rate: Numerator (FTE) ÷ denominator x 100,000	Number of allied ophthalmic personnel employed in the workforce FTE of allied ophthalmic personnel employed in the workforce	Population at 30 June	FTE based on a 38-hour work week	Census; professional associations and employer organisations; and ABS population data
4.4.1	Occurrences of eye health services provided under Visiting Optometrist Scheme (VOS) outreach programs	Crude rate: Numerator ÷ denominator x 1,000	The number of occasions of service by eye health professionals under the VOS	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year		Department of Health and ABS population data
4.4.2	Occurrences of eye health services provided under Rural Health Outreach Fund (RHOF) outreach programs	Crude rate: Numerator ÷ denominator x 1,000	The number of Indigenous occasions of service by eye health professionals under the RHOF	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year (Note that RHOF services are provided in <i>Inner regional, Outer regional, Remote</i> and <i>Very remote</i> areas only. Therefore populations used to calculate the rates for RHOF did not include <i>Major cities</i> )		Department of Health and ABS population data

continued

Table C1 (continued): Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
4.4.3	Occurrences of eye health services provided under Medical Outreach Indigenous Chronic Disease Program (MOICDP) outreach programs	Crude rate: Numerator ÷ denominator x 10,000	The number of Indigenous occasions of service by eye health professionals under the MOICDP	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year		Department of Health and ABS population data
4.4.4	Combined outreach programs		The number of Indigenous occasions of service by eye health professionals under the VOS, RHOF and MOICDP			Department of Health and ABS population data
4.4.5	Eye and Ear Surgical Support Services (EESS)		The number of Indigenous occasions of service that received support from the EESS.			Department of Health and ABS population data

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# Abbreviations

AATSIHS	Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
AHPRA	Australian Health Practitioner Regulation Agency
AIHW	Australian Institute of Health and Welfare
APY	Anangu Pitjantjatjara Yankunytjatjara
AR-DRG	Australian Refined Diagnosis Related Group
ASR	age-standardised rate
ATSR	Australian Trachoma Surveillance reports
BEACH	Bettering the Evaluation and Care of Health
CDNA	Communicable Diseases Network Australia
CI	confidence interval
DoH	Department of Health
EESS	Eye and Ear Surgical Support Services
FTE	full-time equivalent
GP	general practitioner
ICD-10-AM	International Classification of Diseases and Related Health Problems, 10 <sup>th</sup> Revision, Australian Modification
IEHU	Indigenous Eye Health Unit
MBS	Medicare Benefits Schedule
MOICDP	Medical Outreach Indigenous Chronic Disease Program
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NEHS	National Eye Health Survey
NHMD	National Hospital Morbidity Database
NHMRC	National Health and Medical Research Council
NHWDS	National Health Workforce Data Set
NSW	New South Wales
NG	Ngaanyatjarra
NT	Northern Territory
NTSRU	National Trachoma Surveillance and Reporting Unit
PHN	Primary Health Network
Qld	Queensland
RHOF	Rural Health Outreach Fund
SA	South Australia
SAFE	surgery, antibiotics, facial cleanliness and environmental improvement
Tas	Tasmania

VASS	Victorian Aboriginal Spectacles Subsidy Scheme
Vic	Victoria
VII	Voluntary Indigenous Identifier
VOS	Visiting Optometrists Scheme
WA	Western Australia
WHO	World Health Organization

## Symbols

n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data
<	less than

## Glossary

**Aboriginal and Torres Strait Islander:** A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also **Indigenous Australians**.

**admitted patient:** A patient who undergoes a hospital's admission process to receive treatment and/or care. This treatment and/or care can occur in hospital and/or in the person's home (for hospital-in-the-home patients). METeOR identifier: 268957.

**age-standardisation:** A set of statistical techniques used to remove, as far as possible, the effects of differences in age when comparing 2 or more populations.

**at-risk community (trachoma):** Communities classified by jurisdictions as being at higher risk of trachoma based on 1) no recent data, but historical evidence of endemicity; 2) data of active trachoma prevalence of 5% or more in children aged 5–9 years in the last 5 years; or 3) data of less than 5% active trachoma prevalence but with a recorded prevalence of active trachoma of 5% or above in the past 5 years.

**Australian Refined Diagnosis Related Groups (AR-DRGs):** An Australian system of diagnosis related groups (DRGs). DRGs provide a clinically meaningful way of relating the number and type of patients treated in a hospital (that is, its casemix) to the resources required by the hospital. Each AR-DRG represents a class of patients with similar clinical conditions requiring similar hospital services.

**blindness:** Presenting visual acuity of <6/60 in the better eye.

**community-wide treatment (trachoma):** The antibiotic treatment of all people in the community who weigh more than 3 kg living in houses with children under 15 years of age (Kirby Institute 2019).

**hospitalisation (separation):** An episode of care for an admitted patient that can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay beginning or ending in a change of care type (for example, from acute care to palliative care).

**Indigenous Australians:** Used interchangeably with **Aboriginal and Torres Strait Islander people** in this report.

**non-Indigenous Australians:** People who indicated that they are not of Aboriginal or Torres Strait Islander descent. Compare with **other Australians**.

**other Australians:** Includes both non-Indigenous people and those whose Indigenous status is not known. Compare with **non-Indigenous Australians**.

**principal diagnosis:** The diagnosis established, after study, to be chiefly responsible for occasioning an episode of admitted patient care, an episode of residential care or an attendance at the health-care establishment. METeOR identifier: 514273.

**procedure:** A clinical intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, requires specialised training and/or requires special facilities or equipment available only in an acute care setting. METeOR identifier: 514040.

**rate difference:** The literal, or absolute, gap between 2 population rates; for this report, it was calculated as the rate for Indigenous Australians minus the rate for non-Indigenous Australians.

**rate ratio:** The relative difference between populations taking scale into account; for this report, it was calculated as the rate for Indigenous Australians divided by the rate for non-Indigenous Australians, and is interpreted as follows:

1. a rate ratio of 1 indicates there is no difference between the rates
2. a ratio less than 1 indicates the rate is lower in the Indigenous population
3. a ratio greater than 1 indicates the rate is higher in the Indigenous population.

**separation:** See **hospitalisation**.

**vision loss:** Vision impairment plus blindness.

**vision impairment:** presenting distance visual acuity of <6/12 in the better eye.

**Trachoma treatment coverage:** The proportion of Indigenous Australians in an **at-risk community** who weigh more than 3 kg and live in a house with 1 or more children aged below 15 years who were treated for trachoma during an episode of **community-wide treatment** (Kirby Institute 2019).



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Eye diseases and vision problems are the most common long-term health conditions reported by Aboriginal and Torres Strait Islander Australians. This report shows that Indigenous Australians over the age of 40 had almost 3 times the rate of vision loss of non-Indigenous Australians, after adjusting for age and sex. Prevalence of trachoma among Indigenous children aged 5–9 fell from 2009 to 2012, but has since plateaued, 4.5% in 2019

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