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# Eye health measures for Aboriginal and Torres Strait Islander people 2022



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### Australian Institute of Health and Welfare

Board Chair (acting)

Dr Erin Lalor

Chief Executive Officer

Mr Rob Heferen

Any enquiries about or comments on this publication should be directed to:

Australian Institute of Health and Welfare

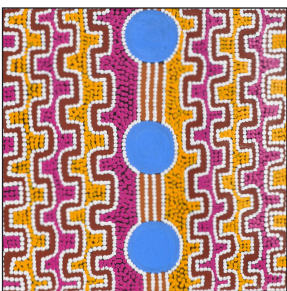
GPO Box 570

Canberra ACT 2601

Tel: (02) 6244 1000

Email: [info@aihw.gov.au](mailto:info@aihw.gov.au)

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### **A message from the Aboriginal and Torres Strait Islander Eye Health Data Report Advisory Group**

Since it was first published in 2017, the Australian Institute of Health and Welfare's (AIHW's) annual Eye health measures for Aboriginal and Torres Strait Islander people 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 Indigenous people over time and their access to and use of eye health services, but also to identify gaps in service delivery.

### **Aboriginal and Torres Strait Islander Eye Health Data Report Advisory Group**

The Eye health measures for Aboriginal and Torres Strait Islander people Advisory Group was established to provide expert advice to the AIHW on the national Eye health measures for Aboriginal and Torres Strait Islander people data report series. Members of this multi-disciplinary group are familiar with not only eye health conditions and the policy environment and programs aimed at improving eye health but also eye health service providers and data and indicators relevant to monitoring and reporting on eye health.



## Summary

This is the sixth annual report to update the Eye health measures for Aboriginal and Torres Strait Islander people. 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. This report includes the latest available data against each measure. Of the 22 measures, with ongoing data collections, 15 have been updated in this report. Table 1 presents a summary of results for key eye health measures. Compared with the last annual report:

- 8 measures or sub-measures appear to be improving
- 8 measures or sub-measures appear to be declining
- 2 sub-measures indicate no change or no clear trend over time
- For 5 measures or sub-measures it cannot be determined whether changes represent an improvement or a decline
- 9 measures or sub-measures have no trend data available.

### Prevalence

- The prevalence of bilateral vision impairment for Indigenous Australians aged 40 and over was 10% and the prevalence of bilateral blindness was 0.3%, based on the latest data available from 2016 (combined vision impairment and blindness affected an estimated 18,300 Indigenous Australians aged 40 and over).
- The 3 leading causes of vision impairment and blindness (vision loss) for Indigenous Australians aged 40 and over in 2016 were refractive error (61%), cataract (20%) and diabetic retinopathy (5.2%).
- Repeated trachoma infections 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 3.3% in 2021.

### Diagnosis and screening

- In 2020–21, 27% (around 236,600) of Indigenous Australians had an annual Indigenous specific health assessment that should have included an eye health check. 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 25% in 2020–21.
- 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. An estimated 32,000 Indigenous people had a diabetes test in the previous 2 years, while around 13,400 (42%) also had an eye examination in 2019–20.

### Treatment

- Over 2018–20, among Indigenous Australians, there were around 6,100 (3,636 per 1,000,000 population) hospitalisations for cataract surgery. Between 2012–13 and 2019–20, the age-standardised rate for cataract surgery for Indigenous Australians increased from 6,681 to 6,884 per 1,000,000.

- In 2018–20, among Indigenous Australians, there were around 10,100 (6.0 per 1,000 population) hospitalisations for diseases of the eye and around 9,800 (5.8 per 1,000) hospitalisations for eye procedures.
- In 2021, the overall treatment coverage of active trachoma cases in at-risk communities was 71% – that is, 1,666 community members identified as having trachoma received treatment. This included children with active trachoma, along with their household contacts and other community members.
- In 2020–21, 18,373 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 (2,454 spectacles, 39 per 1,000 population) came closest to meeting the estimated number of spectacles needed among Indigenous Australians (4,024) – 61% of the population-based need met.

### Workforce and outreach

- In 2020, around 5,440 optometrists were employed in Australia (19 full-time equivalent [FTE] per 100,000 total Australian population). The numbers and rates of optometrists were lowest in *Remote* and *Very remote* areas.
- In 2020, around 980 ophthalmologists were employed in Australia (3.7 FTE per 100,000 total Australian population).
- 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 – has fluctuated; however, overall, services more than tripled between 2010–11 (around 8,300 occasions of service) and 2020–21 (around 26,500 occasions of service).

### Comparison with non-Indigenous Australians

- Between 2007–08 and 2019–20, the total age-standardised proportion of Indigenous Australians who had an eye examination increased from 14% to 17%, while the proportion for non-Indigenous Australians rose from 19% to 24%.
- Between 2005–06 and 2019–20, the total age-standardised proportion of Indigenous Australians tested for diabetes who had an eye examination rose from 27% to 36%; for non-Indigenous Australians, it rose from 31% to 43%.
- In 2019–20, age-standardised hospitalisation rates for Indigenous Australians for cataract surgery (6,884 per 1,000,000 population) were lower than for non-Indigenous Australians (7,413 per 1,000,000).
- In 2019–20, 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 (39% and 48%, respectively).

### Impact of COVID-19

- This report presents information on the impact of COVID-19 on annual health assessments (measures 2.1.1, 2.1.2) and hospitalisations (measures 3.1, 3.2, 3.3 and 3.4).

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

Measures	Latest Reporting period	First reporting period	Indigenous rate (latest reporting period)	Indigenous trends
<b>Prevalence</b>				
1.1 Prevalence of				
(i) Vision impairment (% , aged 40 and over) ( $n^a=1,738$ )	2016*	2016	10.4	#
(ii) Blindness (% , aged 40 and over) ( $n^a=1,738$ )	2016*	2016	0.3	#
1.2 Main causes of vision impairment and blindness				
(i) Refractive error (% of those with vision impairment) ( $n^b=183$ )	2016*	2016	60.8	#
(ii) Cataract (% of those with vision impairment) ( $n^b=183$ )	2016*	2016	20.1	#
(iii) Diabetic retinopathy (% of those with vision impairment) ( $n^b=183$ )	2016*	2016	5.2	#
1.3 Prevalence of				
(i) Trachoma (% , aged 5–9, Qld, WA, SA and NT)	2021	2009	3.3	✓
(ii) Trichiasis (% , aged 40 and over, WA, SA and NT)	2021	2011	0.2	✓
<b>Diagnosis and screening services</b>				
2.1 Annual health assessments (%)	2020–21	2010–11	27	✓
2.2 Eye examinations undertaken by an eye care professional (%)	2019–20**	2009–10	12	↔
2.3 Target population screened for diabetic retinopathy (%)				
(i) Eye examination among those tested with diabetes (%)	2019–20**	2009–10	42	↔
(ii) Screening for diabetic retinopathy among those with self-reported diabetes	2016*	2016	53	
(iii) Screening for diabetic retinopathy with a retinal camera (number per 1,000)	2020–21	2016–17	1.5	✓
2.4 Screening coverage				
(i) Trachoma (% , aged 5–9, Qld, WA, SA and NT)	2021	2012	90	~
(ii) Trichiasis (% , aged 40 and over, Qld, WA, SA and NT)	2021	2011	46	✓
2.5 Undiagnosed eye conditions (% , aged 40 and over) ( $n^a=1,783$ )	2016*	2016	57	#
2.6 Eye health problems managed by GPs*	2010–2015***			#
<b>Treatment services</b>				
3.1 Hospitalisations for diseases of the eye (number per 1,000)	2018–20	2012–13	6.0	~
3.2 Hospitalisations for injuries to the eye (number per 1,000)	2018–20	2012–13	1.2	~
3.3 Hospitalisations for eye procedures (number per 1,000)	2018–20	2012–13	5.9	~
3.4 Cataract surgery rate (number per 1,000,000)	2018–20	2012–13	3,636	~
3.5 Cataract surgical coverage rate (% , aged 40 and over) ( $n^b=183$ )	2016*	2016	59	#
3.6 Waiting times for elective cataract surgery (median waiting time in days)	2019–20	2012–13	130	~

(continued)



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

Measures	Latest Reporting period	First reporting period	Indigenous rate (latest reporting period)	Indigenous trends
<b>Treatment services (continued)</b>				
3.7 Target population treated for diabetic retinopathy (% screened for diabetes)	2019–20**	2010–11	1.6	~
3.8 Treatment coverage				
(i) Trachoma (% community members treated, all ages, Qld, WA, SA and NT)	2021	2011	71	~
(ii) Trichiasis (% with trichiasis treated number aged 40 and over, Qld, WA, SA and NT)	2021	2012	62	✓
3.9 Treatment of refractive error	2016*	2016	82	#
3.10 Spectacles dispensed under state schemes	2020–21		—	#
<b>Workforce and outreach services</b>				
4.1 Number and rate of optometrists (FTE per 100,000)	2020	2014	18.6	↔
4.2 Number and rate of ophthalmologists (FTE per 100,000)	2020	2014	3.7	↔
4.3 Number and rate of allied ophthalmic personnel				
(i) optical dispensers (FTE per 100,000)	2021	2016	14	#
(ii) orthoptists (FTE per 100,000)	2021	2016	3.1	#
4.4 Occasions of eye health services provided under outreach and other programs				
(i) Visiting Optometrists Scheme (number)	2020–21	2011–12	26,459	✓
(ii) Rural Health Outreach Fund (number)	2020–21	2012–13	2,966	✗
(iii) Medical Outreach Indigenous Chronic Disease Program (number)	2020–21	2014–15	9,158	✓
(iv) Combined outreach (number)	2020–21	2014–15	38,613	✓
(v) Eye and Ear Surgical Support Services program (number)	2020–21		1,296	#

Not updated since previous reporting period

Discontinued data

FTE = full-time equivalent, GP = general practitioner, na = number of Indigenous Australians who participated in the National Eye Health Survey 2016, nb = number of Indigenous Australians who participated in the National Eye Health Survey 2016 who had vision impairment.

✓ Measure shows improvement over time.

✗ Measure shows decline over time.

↔ No change or no clear trend over time.

~ Unclear whether the trend represents improvement or decline over time.

# Trend data not available.

\* Due to COVID, the conduct of the next National Eye Health Survey (NEHS) has been delayed. It is being conducted in 2023 and updated NEHS data should be available in 2024.

\*\* Because the updated Medicare Voluntary Indigenous Identifier was not available in time for this report, Medicare Benefits Schedule measures reliant on this identifier have not been updated.

\*\*\* Data for this measure were previously sourced from the Bettering the Evaluation and Care of Health (BEACH) survey, which ceased collection in 2015. This measure was most recently presented in the 2018 edition of this report but is no longer presented since the data collection has ceased.

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

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





# Introduction

This publication and the accompanying web report are part of a series of annual reports that update the Eye health measures for Aboriginal and Torres Strait Islander people report. This is the sixth such annual report.

It includes comprehensive eye health data at the national, state and regional levels, presenting the most recently available data. Of the 22 measures with ongoing data collections, 15 have been updated in this report, which covers:

- the prevalence of vision impairment and blindness
- diagnosis and screening
- treatment
- the workforce
- outreach programs.

The report provides an evidence base to monitor changes in Indigenous eye health over time, access to and use of eye health services, and to identify 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 Indigenous Australians, with over one-third (38%) self-reporting eye or sight problems (ABS 2019).

Vision loss may limit opportunities for physical mobility, work, education and social engagement. As well, those with vision loss may 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).

Indigenous health outcomes, health system performance and the broader determinants of Indigenous health provide an important context for understanding the factors influencing – and the outcomes associated with – eye health. For more information, see the AIHW Aboriginal and Torres Strait Islander Health Performance Framework 2020 summary report (AIHW 2020).

While Indigenous children have a lower incidence of poor vision than other Australian children, the prevalence of vision impairment increases markedly with age, and Indigenous people over the age of 40 have nearly 3 times the rate of vision loss of other Australians (Foreman et al. 2017). There is evidence, however, of some improvement in recent years – with findings of the 2016 National Eye Health Survey (NEHS) 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 the 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 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 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 affects 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 is hard to maintain. The 'SAFE' strategy – namely 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 Indigenous Australians are complex and may be related to a range of social and cultural determinants of health (Kirby Institute 2020; Razavi et al. 2018; Taylor et al. 2012).

The devastating impacts of colonisation on Indigenous communities and culture are recognised as having a fundamental impact on the physical and mental health of the population. Consequential impacts of living conditions and poor nutrition have contributed to the development of eye problems and other chronic conditions such as diabetes, which are a significant risk factor for eye disease (Razavi et al. 2018). Indigenous people, particularly those in remote areas, are more likely to have limited access to culturally safe primary health care, and inadequate access to appropriate living and environmental conditions which further exacerbates eye health problems (Razavi et al. 2018).

In contrast, Indigenous cultural identity and participation in cultural activities, access to traditional lands along with connection to family and kinship are recognised as protective factors and can positively influence overall health and wellbeing (AIHW 2017a).

### Health protective and risk factors

Health factors contributing to poor eye health may include age, high blood pressure, obesity, diabetes, low birthweight, diet, and alcohol and tobacco use. As well, past eye health – including increased incidence of eye injuries or repeated eye infections (for example, trachoma) – can increase the risk of poor eye health in the future (Razavi et al. 2018).

While a range of behavioural and biomedical factors are known to be associated with an increase in the risk of developing eye problems, improvements in these factors can contribute to improvements in eye health. For example, a better nutritional intake among a Central Australian cohort of Aboriginal people was found to protect against chronic diseases including hypertension, diabetes and cardiovascular disease, all of which have known associations with eye health (Razavi et al. 2018). Reductions in tobacco use and hypertension, and improvements in diet can also reduce the risk of eye problems.

### Environmental and socioeconomic factors

Environmental conditions – such as exposure to dust, ultraviolet (UV) exposure and access to nutritional food – all have an impact on 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.

Also important for overall eye health are broader socioeconomic factors such as education, employment and income (Razavi et al. 2018).

### 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 (affordability and cost certainty), their location, and the availability of transport and outreach services. These factors mean that limited access is a risk factor for poor eye health for those living in remote Indigenous communities.

Primary health care is the gateway to the health service and has an important role in providing primary eye care, as well as in facilitating access to culturally safe 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).

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/Practitioners 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.

## Cultural safety

A lack of cultural safety in health care services, with reference to the experience of Indigenous people, may also act as a barrier to accessing eye care services. Improving cultural safety across all levels of care 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). However, even when there is proportionately greater access to culturally safe community-controlled health services, such as in rural and remote areas, these services are not always available in all areas and there is often a need to travel long distances to access care.

## Wellbeing and quality of life

Poor eye health can have a major impact on the health of individuals and communities. One way to combine the fatal and non-fatal effects of diseases in a comparable way is through burden of disease analysis. This measures the impact of different diseases and injuries in terms of the number of years of healthy life lost due to illness or premature death. Burden of disease is measured using a summary metric of disability-adjusted life years (DALY). One DALY is 1 year of healthy life lost to disease and injury. DALY caused by living in poor health (non-fatal burden) are the 'years lived with disability' (YLD) (AIHW 2022).

In 2018, it was estimated that vision disorders were responsible for 699 YLD among Indigenous Australians. Total YLD for Indigenous Australians was estimated to be 126,496 in 2018 – meaning vision disorders were responsible for 0.6% of years of life lost to disability (AIHW Burden of Disease database, unpublished).

An alternative way to quantify this is through the number of years with disability that can be averted by closing the gap for Indigenous eye health and eliminating unnecessary blindness over the 10 years from 2015 to 2024. A 2015 report estimated that, if this occurred, 7,300 years of life lived with a disability would be averted (using the WHO Global Burden of Disease 2004 disability weightings) (University of Melbourne 2015).

## Eye health policy context, services and programs

Across a continuum of care, eye health services cover prevention, screening, diagnosis and treatment services. A range of different health care workers, including GPs, optometrists, ophthalmologists, nurses and Aboriginal Health Workers, provide these services. Table 2 lists a broad overview of these services.

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>
<b>Services</b>	<b>Services</b>	<b>Services</b>
Eye health promotion	Eye examinations	Medical treatment of eye conditions
Screening for eye health and vision; basic eye checks	Diagnosis and treatment of refractive error	Cataract surgery, laser treatment and other eye surgery
Treatment of minor eye conditions (e.g. conjunctivitis, removal of foreign bodies)	Diagnosis and referral for more complex conditions (e.g. cataracts, treatment for diabetic retinopathy)	Prescription of all eye care medications
Diagnosis and referral of more complex cases (e.g. diabetes)	Prescription and supply of visual aids	
Coordination of care		
Follow-up, post-operative care		
<b>Providers</b>	<b>Providers</b>	<b>Providers</b>
GPs	Optometrists	Ophthalmologists
Nurses	Ophthalmologists	Ophthalmic nurses
Aboriginal Health Workers	Eye health support staff	Hospital staff
Aboriginal Community Controlled Health Organisation		
<b>Settings</b>	<b>Settings</b>	<b>Settings</b>
Private general medical practices	Private practices and clinics	Public and private hospitals
Indigenous primary health care	Sessional services in Indigenous primary health care and community health centres	Private clinics
Community clinics and health centres	Outreach services in various settings (e.g. Indigenous primary health care services, private rooms)	Outreach services in various settings (e.g. regional hospitals, Indigenous primary health care services)
<b>Access</b>	<b>Access</b>	<b>Access</b>
No referral required, but optometrists may refer clients	Referral is not required for optometry services but is required for ophthalmology services	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 Indigenous 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 Indigenous 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.

The context in which services are provided to patients can affect access and waiting times. Currently, rates of cataract surgery are lower for Indigenous Australians than for other Australians (see also ACSQHC 2017; Randall et al. 2014). This may be because age-standardised rates of cataract surgery for Indigenous Australians in public hospitals were higher than those for non-Indigenous Australians (927 and 388 per 1,000,000, respectively) in 2019–20 (AIHW analysis of the National Hospital Morbidity Database [NHMD], unpublished). This means delays or interruptions to the public health system will disproportionately affect cataract surgery rates and waiting times for Indigenous Australians.

## Australian Government initiatives

Recent and current high-level policy developments provide an important context for the current state and future of eye health among Indigenous people.

- In May 2022, the Australian Government committed to implement the Uluru Statement from the Heart, promising to conduct a referendum to alter the Australian Constitution to establish an advisory body of First Nations people to Parliament.
- All Australian governments are working with Indigenous people, their communities, organisations and businesses to implement the new National Agreement on Closing the Gap at the national, state and territory, and local levels. This has been undertaken in genuine partnership between Australian governments and the Coalition of Aboriginal and Torres Strait Islander Peak Organisations (hereafter referred to as the Coalition of Peaks) (see Box 2).
- the National Aboriginal and Torres Strait Islander Health Plan (2021–2031) changes the way governments work with Indigenous people to achieve better health outcomes. Developed in real partnership with Indigenous people, it reflects their priorities and embeds a holistic perspective of Indigenous health. This perspective recognises the influence of social determinants, and the strengths of culture as a protective influence on physical, social and emotional wellbeing.

## Box 2: National Agreement on Closing the Gap

The National Agreement on Closing the Gap commits all governments to uphold partnership, self-determination and community-control as the best way to close the gap in health outcomes for Aboriginal and Torres Strait Islander peoples. It does this through 4 Priority Reforms:

- Shared decision-making and partnerships
- 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 Australian, state and territory, and local governments and the Coalition of Peaks are jointly accountable for implementing targets under the National Agreement. Checks on progress toward achieving commitments in the National 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.gov.au>).

The Australian Government has also initiated a number of policies specific to Indigenous eye health, including:

- Strong eyes, strong communities – a 5-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 (developed at the request of the Australian Government and presented in March 2019 to the Council of Australian Governments). This plan is evolving in line with the National Agreement on Closing the Gap (Vision 2020 Australia 2019)
- the Australian Eye and Ear Health Survey – a survey to obtain data on the prevalence and causes of vision and hearing loss, blindness and eye disease in the population to be conducted between 2022 and 2024. It will use methodology similar to the 2016 NEHS so that 2016 data can be compared. It is expected that this survey will provide new information from 2024
- Australia’s Long Term National Health Plan’s actions to support priorities to end avoidable blindness in Indigenous communities by 2025 (Department of Health 2019)
- funding agreed to deliver health outreach services, trachoma control, surveillance and reporting, provision of eye health equipment and training for health professionals, and the National Subsidised Spectacles Scheme.

## State and territory-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 jurisdictions 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 jurisdictions have broadened their spectacle schemes by expanding eligibility requirements to Indigenous 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.

## Eye health 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: 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	2021
<b>Diagnosis and screening services</b>		
2.1 Annual health assessments	MBS	2020–21
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	2021
2.5 Undiagnosed eye conditions	NEHS*	2016
2.6 Eye health problems managed by GPs	BEACH*** [discontinued]	2010–15
<b>Treatment services</b>		
3.1 Hospitalisations for diseases of the eye	NHMD	2018–20
3.2 Hospitalisations for injuries to the eye	NHMD	2018–20
3.3 Hospitalisations for eye procedures	NHMD	2018–20
3.4 Cataract surgery rate	NHMD	2018–20
3.5 Cataract surgical coverage rate	NEHS*	2016
3.6 Waiting times for elective cataract surgery	NHMD	2018–20
3.7 Target population treated for diabetic retinopathy	MBS**	2018–20
3.8 Trachoma and trichiasis treatment coverage	ATSR	2021
3.9 Treatment of refractive error	NEHS*	2016
3.10 Spectacles dispensed under state and territory schemes	State admin	2020–21
<b>Workforce and outreach services</b>		
4.1 Number and rate of optometrists	NHWDS	2020
4.2 Number and rate of ophthalmologists	NHWDS	2020
4.3 Number and rate of allied ophthalmic personnel	Census	2021
4.4 Occasions of eye health services provided under outreach and other programs	Admin data	2020–21

ATSR = Australian Trachoma Surveillance reports, BEACH = Bettering the Evaluation and Care of Health, Census = ABS Census of Population and Housing, GP = general practitioner, MBS = Medicare Benefits Schedule, NEHS = National Eye Health Survey, NHMD = National Hospital Morbidity Database, NHWDS = National Health Workforce Data Set.

\* Due to COVID, the conduct of the next National Eye Health Survey has been delayed. It is being conducted in 2023 and updated NEHS data should be available in 2024.

\*\* Because the updated Medicare Voluntary Indigenous Identifier (VII) was not available in time for this report, MBS measures reliant on the VII have not been updated.

\*\*\* Data for this measure were previously sourced from the BEACH data which ceased collection in 2015. This measure was most recently presented in the 2018 edition of this report. It is no longer presented since the data collection has ceased.

Measures shown in the first category (Prevalence) of Table 3 provide information about the extent of Indigenous 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 that aim to increase Indigenous access to eye health services.

## Data disaggregations

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 by primary health network (PHN) and/or Roadmap region.

Where available, the report presents data against the measures disaggregated by 10-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 Australian Bureau of Statistics (ABS) survey data, Medicare Benefits Schedule (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 data tables for this report
- age 65 and over for MBS measures relying on the Voluntary Indigenous Identifier (VII).

## Key data sources

The main data sources used by the Australian Institute of Health and Welfare (AIHW) to report on the measures were:

- National Eye Health Survey (NEHS), 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 are provided in the following chapters under each measure and in Appendix A.

## Calculating population rates

Details of how the different population rates presented in the report are calculated are presented in Box 3.

### Box 3: 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 Indigenous population. These can be misleading, however, when comparing 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 populations with different age structures to be compared. These comparisons 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.

## Indigenous identification

Improving the accuracy of Indigenous identification in data collections is an important and ongoing issue across administrative data and needs to be considered when interpreting measure results across the report.

The quality of Indigenous identification varies across data sources. The results of the AIHW's examination of the quality of Indigenous identification of patients in hospitals data are presented in Box 4.

### Box 4: Indigenous identification in hospitals data

The AIHW analysed the quality of Indigenous identification in records of hospitalisations in public hospitals in Australia in both 2007–08 and 2011–12.

Overall, an estimated 11% and 12% of Indigenous patients were either not identified or incorrectly identified in the hospital record in 2007–08 and 2011–12, respectively. The weighted completeness of Indigenous identification in public hospitals in different jurisdictions varied, as shown below:

	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>
<b>2007–08</b>	88%	84%	86%	97%	87%	48%	59%	96%
<b>2011–12</b>	80%	78%	87%	96%	91%	64%	58%	98%

Source: AIHW 2013.

## 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 Indigenous 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. A map and list of PHN areas are available in Appendix B.
- Roadmap to Close the Gap for Vision regions evolved as an outcome of the University of Melbourne's Indigenous Eye Health Unit (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 in which local collaborations to improve eye care pathways for Indigenous patients have been initiated. Most of these regions have an identified 'surgical hub' – a hospital with an operating theatre where cataract surgery can be performed – and a network of stakeholders, mostly centred around local Aboriginal Community Controlled Health Services, who contribute to improved pathways of care and outcomes. Each Roadmap region is contained within a single state or territory. A map and list of the Roadmap regions are available in Appendix B. Data for some Roadmap regions have been combined for reporting purposes, including across state and territory boundaries. This was 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 Indigenous 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 with 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
- 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** provides information on the data sources.
- **Appendix B** provides the locations of Roadmap regions.
- **Appendix C** provides technical specifications for the measures reported, including information on relevant classification codes.
- **Appendix D** presents information on data gaps and limitations.

An [in-brief report](http://www.aihw.gov.au/reports/indigenous-australians/indigenous-eye-health-measures-2022), an interactive web report and data tables accompany this report, can be found at <http://www.aihw.gov.au/reports/indigenous-australians/indigenous-eye-health-measures-2022>.







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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 Indigenous communities in Western Australia, South Australia and the Northern Territory.

Australia is a signatory to the new road map for neglected tropical diseases: *Ending the neglect to attain the Sustainable Development Goals: a road map for neglected tropical diseases 2021–2030*. The road map sets global targets and milestones to prevent, control, eliminate or eradicate 20 diseases and disease groups including trachoma (WHO 2020).

### **Prevalence - measures and data sources**

There are 3 prevalence measures reported 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 NEHS included a sample of 1,738 Indigenous Australians aged 40 and 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 2020).

## 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 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) 14.5–21.0; 6.4%, CI 5.2–7.6, respectively). Based on weighted 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 rose 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).

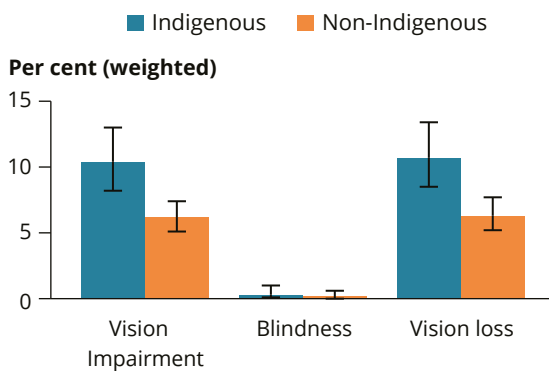
**Remoteness:** In 2016, the age-standardised prevalence of vision loss for Indigenous Australians in *Outer regional* and *Very remote* areas was significantly higher than for non-Indigenous Australians (Figure 1.1.1d).

#### Things to consider

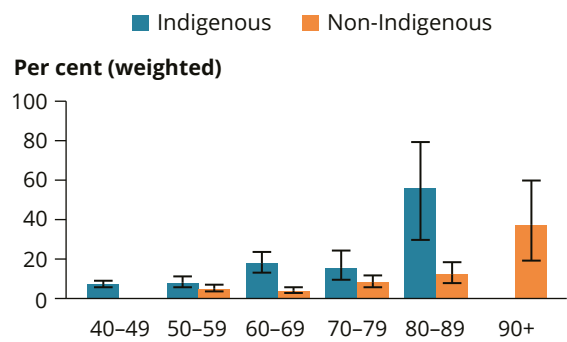
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey weighted to account for the sampling protocol. These results are subject to 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 loss (vision impairment and blindness), by various characteristics**

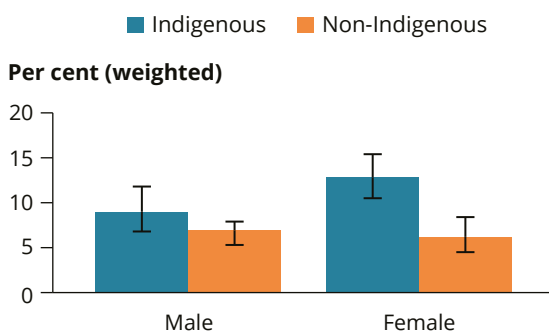
**a) Overall prevalence, 2016**



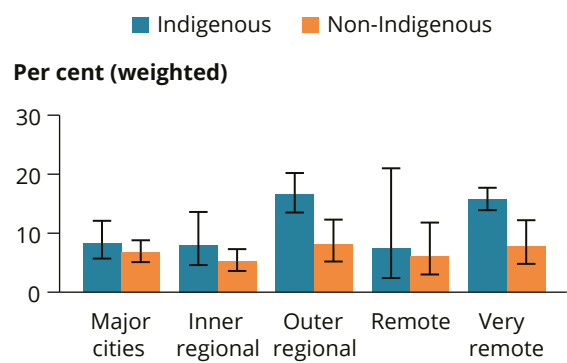
**b) Vision loss, by age, 2016**



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

## 1.1.2 Self-reported eye or sight problems

**Overall:** In 2018–19, nearly 4 in 10 Indigenous 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, 65–74 and 75 and over (around 93%), compared with 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).

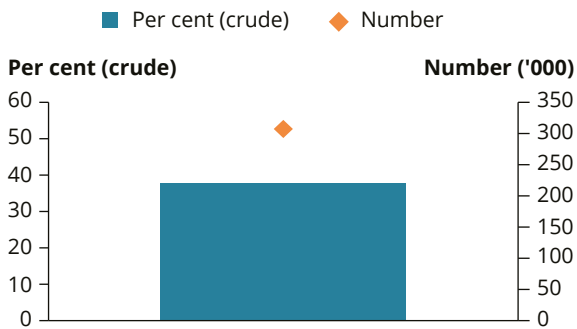
**Time trend:** Since 2001, the age-standardised proportion of Indigenous Australians who had an eye or sight problem rose from 47% to 49% in 2018–19, whereas for non-Indigenous Australians it remained stable at around 52% across this period (Figure 1.1.2f). After adjusting for age, the proportion of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

### Things to consider

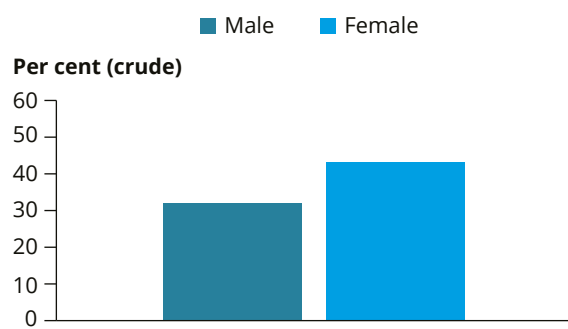
- The 2018–19 NATSIHS collected self-reported data on various health conditions, including diseases of the eye/adnexa – referred to as ‘eye or sight problems’ in this report. These data are self-reported and have not necessarily been diagnosed by a health professional. They do not include eye conditions that respondents are unaware that they have.
- The 2018–19 NATSIHS included 10,579 Indigenous 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**

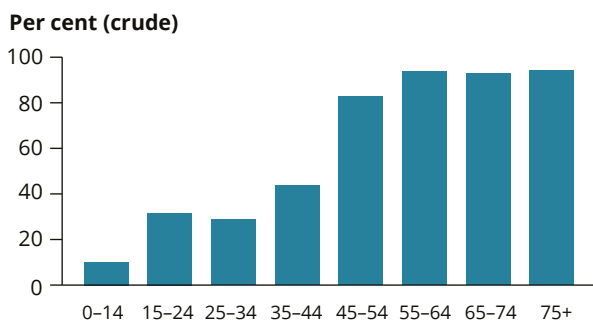
**a) Indigenous, 2018-19**



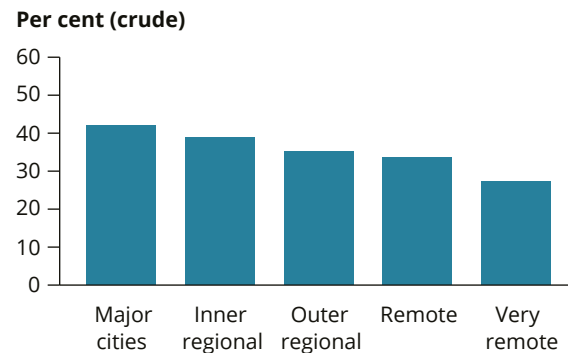
**b) Indigenous, by sex, 2018-19**



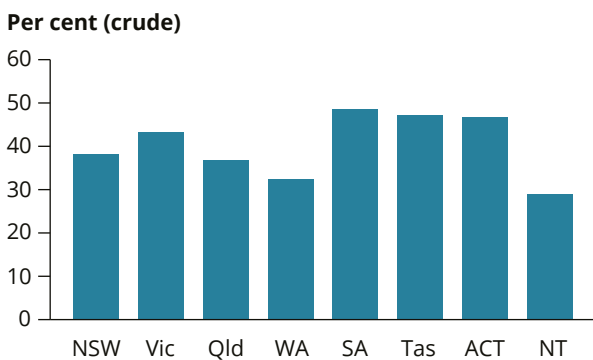
**c) Indigenous, by age, 2018-19**



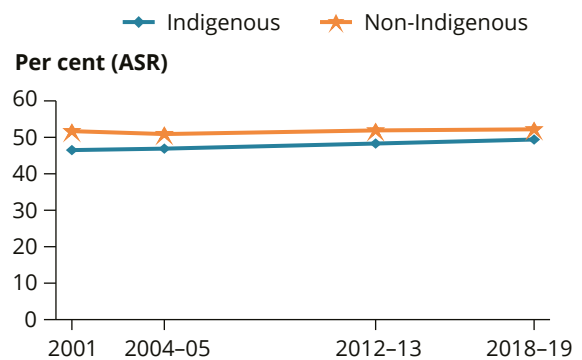
**d) Indigenous, by remoteness, 2018-19**



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



**f) Time trend, 2001 to 2018-19**



**Notes**

1. Age-standardised rates (ASRs) are shown in Figure (f). All other figures show crude rates.
2. Data for these figures are available in the online data tables.

Source: AIHW analysis of ABS 2018-19 NATSIHS, ABS 2017-18 National Health Survey, ABS 2012-13 Aboriginal and Torres Strait Islander Health Survey (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 (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 males had refractive error than Indigenous females while a higher proportion of non-Indigenous females had refractive error than non-Indigenous males (Figure 1.2.1c and Figure 1.2.1d).

#### Things to consider

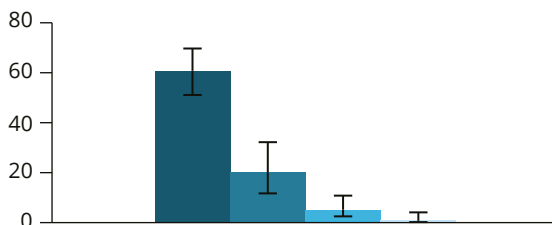
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey weighted to account for the sampling protocol. These results are subject to 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 loss (vision impairment and blindness), by Indigenous status and sex**

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

- Refractive error
- Cataract
- Diabetic retinopathy
- Age-related macular degeneration

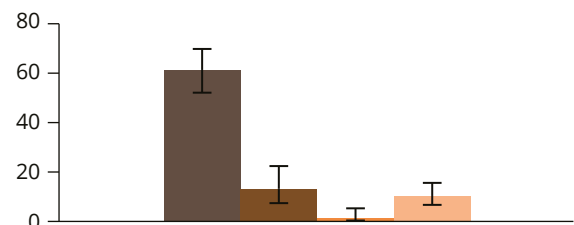
Per cent (weighted)



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

- Refractive error
- Cataract
- Diabetic retinopathy
- Age-related macular degeneration

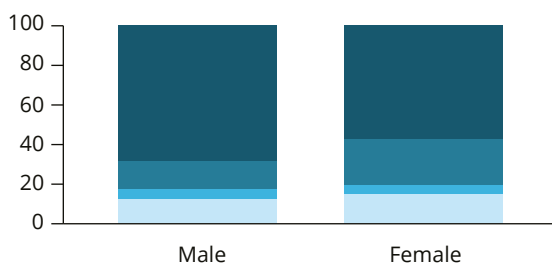
Per cent (weighted)



**c) Indigenous by sex, 2016**

- Refractive error
- Cataract
- Diabetic retinopathy
- Other

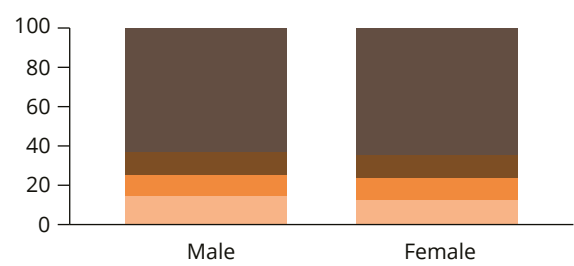
Per cent (weighted)



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

- Refractive error
- Cataract
- Age-related macular degeneration
- Other

Per cent (weighted)



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



## 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 Indigenous Australians were long-sightedness (22%), short-sightedness (16%) and cataract (1.4%) (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).

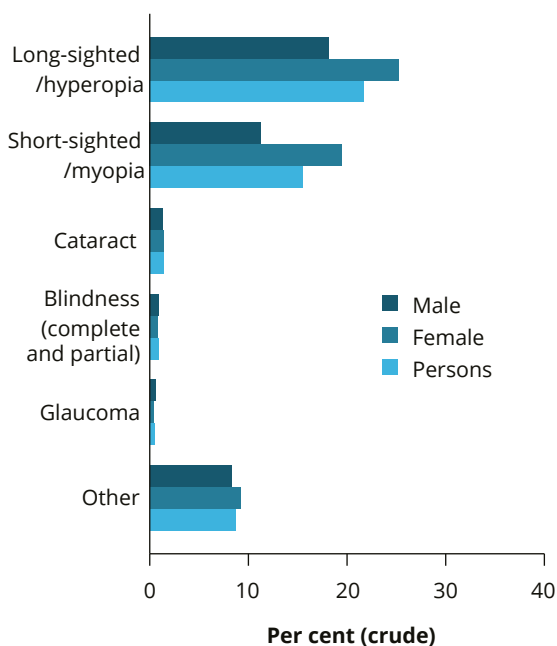
**Age and sex:** The prevalence of long-sightedness and short-sightedness was higher for Indigenous females (25% and 20%, respectively) than for Indigenous males (18% and 11%, respectively) (Figure 1.2.2a).

### Things to consider

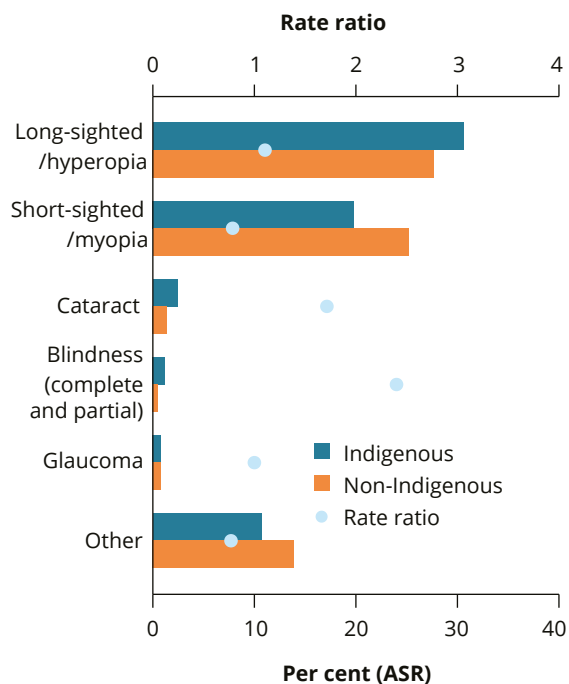
- The 2018–19 NATSIHS collected self-reported data on various health conditions, including diseases of the eye/adnexa – referred to as ‘eye or sight problems’ in this report. These data are self-reported and have not necessarily been diagnosed by a health professional. They do not include eye conditions that respondents are unaware that they have.
- The 2018–19 NATSIHS included 10,579 Indigenous 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 (ASRs) 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 data 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 2021, 3.3% of children aged 5–9 were found to have active trachoma in the 82 communities that were screened for trachoma (based on overall prevalence). In 2021, among Indigenous Australians aged 15 and over examined in at-risk communities, 13 (0.11%) were found to have trichiasis.

### 1.3.1 Trachoma

**Overall:** In 2021, there were 129 children aged 5–9 with active trachoma in the 82 communities that were screened for trachoma. This meant the observed prevalence of active trachoma was 7.0% of 5–9-year-olds in the screened communities and the overall prevalence was 3.3% (Figure 1.3.1a).

**Jurisdiction:** In 2021, the observed prevalence of active trachoma in children aged 5–9 in screened communities was 14% in Western Australian (67 children), 6.3% in the Northern Territory (55 children) and 1.9% in South Australia (7 children). In Queensland, no children were found with active trachoma (Figure 1.3.1a).

**Time trend:** Based on overall prevalence, from 2009 to 2021, the rate of active trachoma in children aged 5–9 screened in all at-risk communities fell from 15% to 3.3%. The overall prevalence has been below 5% since 2012 (Figure 1.3.1b).

#### Things to consider

- In 2021, trachoma screening was undertaken in 82 at-risk communities in 4 jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) (Kirby Institute 2023).
- 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 the year, the most recent prevalence data from communities that did not screen in the year and the most recent prevalence data carried forward from communities that were judged by jurisdictions to have eliminated trachoma (Kirby Institute 2022).
- 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:
  - the prevalence of active trachoma of more than 5% in Indigenous children aged 5–9 in the last 5 years, or
  - current data showing more than 5% prevalence but less than 5% prevalence recorded in the last 5 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 2021, among Indigenous Australians aged 40 and over examined in at-risk communities, there were 13 people with trichiasis, a prevalence rate of 0.2%. There were no people aged under 40 with trichiasis in these communities (Figure 1.3.2a).

**Jurisdiction:** Of the 4 jurisdictions that undertook screening in 2021, the prevalence of trichiasis in Indigenous Australians was 0.2% in the Northern Territory, 0.2% in South Australia and 0.15% in Western Australia. In Queensland, no adults aged 40 and over who were screened were found to have trichiasis (Figure 1.3.2b).

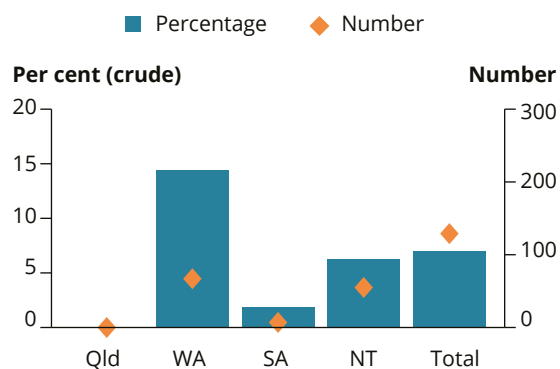
**Time trend:** The proportion of Indigenous Australians aged 40 and over with trichiasis fell from 1.6% in 2011 to 0.2% in 2021 (Figure 1.3.2c).

#### Things to consider

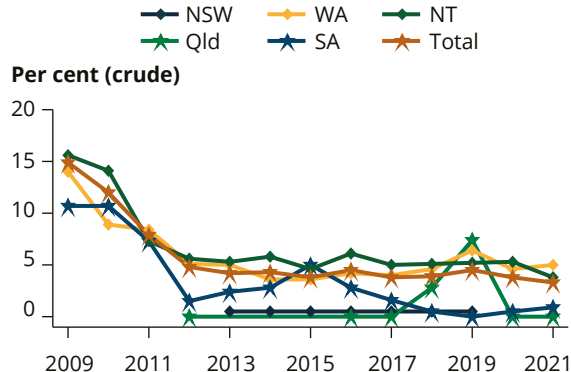
- In 2021, trichiasis screening was undertaken in 122 at-risk communities in 4 jurisdictions (Queensland, Western Australia, South Australia and the Northern Territory) (Kirby Institute 2023).
- Screening for trichiasis is undertaken opportunistically, such as during adult health checks.

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

**a) Children aged 5–9, by jurisdiction, 2021**

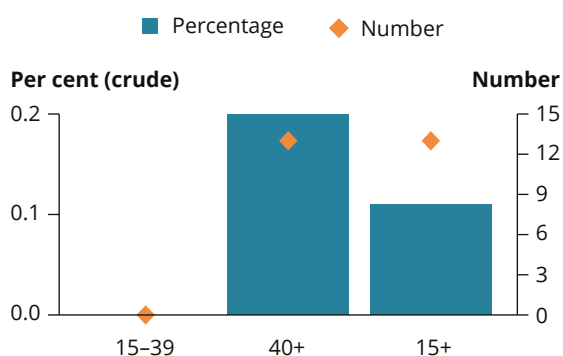


**b) Children aged 5–9, 2009 to 2021**

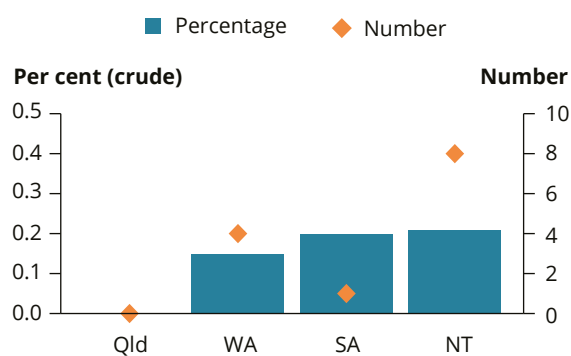


**Figure 1.3.2: Prevalence of trichiasis in at-risk Indigenous communities**

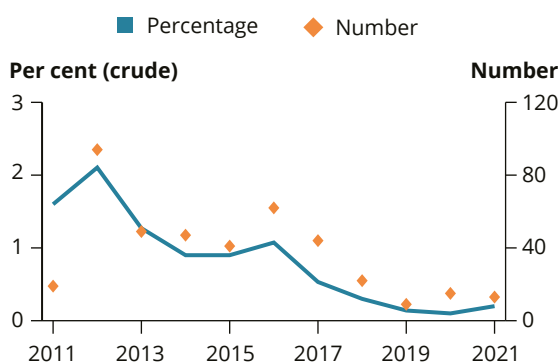
**a) By age, 2021**



**b) By state, 2021**



**c) Aged 40 and over, 2011 to 2021**



**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 data tables.

Source: AIHW analysis of Australian Trachoma Surveillance report 2019 (Kirby Institute 2020).





# 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.

Indigenous-specific health checks relate to MBS items 715 and 228 for health checks undertaken in the community, in addition to the following temporary items introduced in response to the COVID-19 pandemic:

- MBS items 92004, 92011, 92016, 92023 for telehealth checks provided via videoconference or teleconference from March 2020
- MBS items 93470 and 93479 for health checks undertaken in Residential Aged Care facilities, which were available from October 2020.



## Diagnosis and screening – measures and data sources

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

**Measure 2.1.1: Annual health assessments** – the number, proportion and age-standardised rates of people who had an Indigenous health assessment (MBS item 715, 228, 93470 or 93479) including a health assessment provided via videoconference or teleconference (MBS item 92004, 92011, 92016 or 92023).

**Measure 2.1.2: Annual health assessments and initial eye examination by an optometrist** – the number, proportion and age-standardised rates of people who had an Indigenous health assessment (MBS item 715, 228, 93470 or 93479) including a health assessment provided via videoconference or teleconference (MBS item 92004, 92011, 92016 or 92023), who also had an initial eye examination by an optometrist.

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

**Measure 2.3: Screening for diabetic retinopathy among target population.**

Three sub-measures are reported:

- **2.3.1 Eye examinations among those tested for diabetes (MBS data)** – The number and proportion of Indigenous Australians and non-Indigenous Australians who had eye examinations in the 12-month period who were also screened for diabetes in the previous 2 years.
- **2.3.2 Screening for diabetic retinopathy among those with self-reported diabetes (survey data)** – The proportion of Indigenous participants in the NEHS with self reported diabetes who had a diabetic eye examination in the preceding 12 months.
- **2.3.3 Screening for diabetic retinopathy with a retinal camera (MBS data)** – The number and rate per 1,000 of Indigenous Australians screened for diabetic retinopathy with a retinal camera.

**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.

**Measure 2.5: Undiagnosed eye conditions**

The diagnosis and screening chapter 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.

The measure relates to 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 2.1.1: Annual health assessments

**Key finding:** In 2020–21, just under one-third (236,609) of Indigenous Australians had an Indigenous-specific health assessment.

**Overall:** In 2020–21, over one-quarter (236,609 or 27%) of Indigenous Australians had an Indigenous-specific health assessment. This included over 11,000 health assessments provided via videoconference or teleconference.

**Age and sex:** In 2020–21, 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 –38,838 (27%) and 34,241 (25%), respectively. For all other age groups, health assessments for Indigenous females outnumbered those for Indigenous males (Figure 2.1.1a).

**Remoteness:** In 2020–21, the proportion of Indigenous Australians who had a health assessment was the same in *Outer regional* and *Remote* areas (33%); it was 26% in *Inner regional* areas, 25% in *Very Remote* areas and 24% in *Major cities* (Figure 2.1.1b).

**Jurisdiction:** In 2020–21, the proportion of Indigenous Australians who had a health assessment was highest in Queensland (34%) and the Northern Territory (32%), and lowest in Victoria and Tasmania (14% and 16%, respectively) (Figure 2.1.1c).

**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 25% in 2020–21. The proportion of Indigenous Australians in all age groups aged 55 and over who had a health assessment rose from around 17% in 2010–11 to around 39% in 2020–21 (Figure 2.1.1d).

Between 2010–11 and 2018–19, the age-standardised proportion of Indigenous Australians who had a health assessment (including a telehealth assessment) grew from 11% (70,566 patients) in 2010–11 to 30% (241,018 patients) in 2018–19, before declining slightly over the next 2 years to 29% (236,609 patients) in 2020–21 (Figure 2.1.1e).

**PHN:** In 2020–21, the PHNs with the lowest proportion of Indigenous Australians who had a health assessment were Northern Sydney (5.2%) and Eastern Melbourne (7.1%), while those with the highest rates were in Western NSW (36%) and Brisbane North (36%) (Figure 2.1.1f and Figure 2.1.1i).

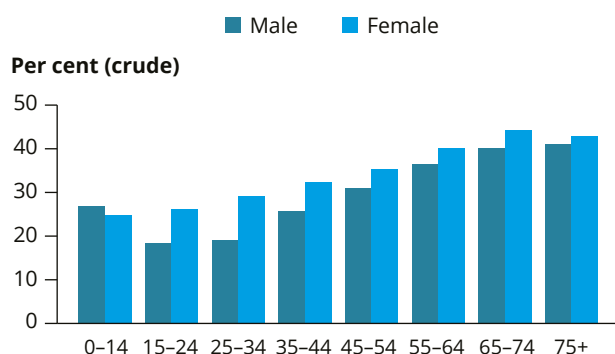
**Roadmap region:** In 2020–21, the Roadmap region with the highest proportion of Indigenous Australians who had an MBS health assessment was *Townsville / Palm Island* (46.7%) (Figure 2.1.1g and Figure 2.1.1h).

### Things to consider

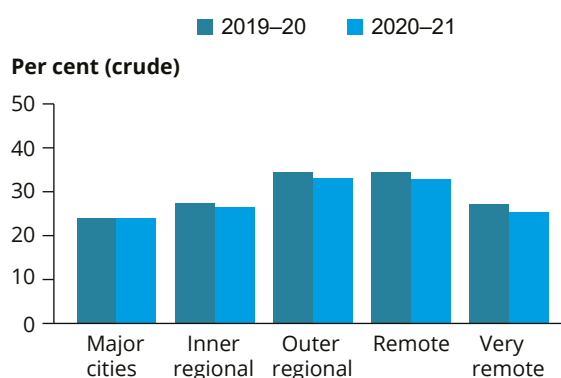
- A basic eye check is a mandatory component of the MBS health assessments. However, while these are required, they are not always conducted, and specific data on the provision of eye health checks as part of health assessments are not available.
- MBS data reflect billing practices and do not necessarily reflect all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction 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 2.1.1: MBS health assessments, Indigenous Australians, by various characteristics**

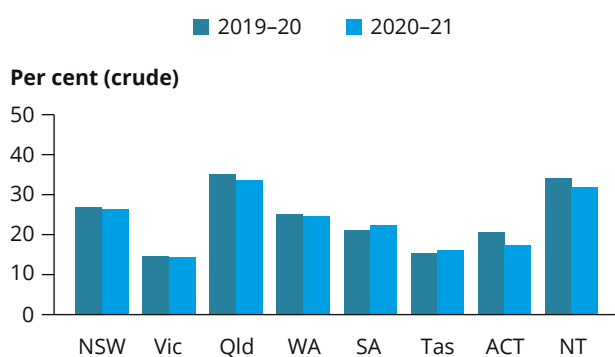
**a) By age and sex 2020-21**



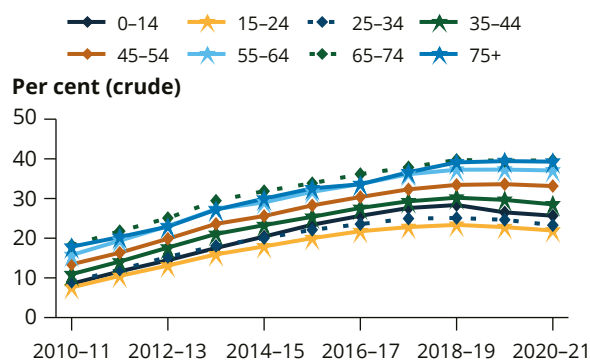
**b) By region 2019-20 and 2020-21**



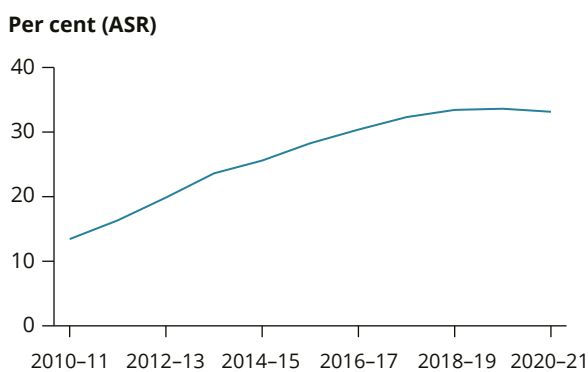
**c) By jurisdiction 2019-20 and 2020-21**



**d) By age, 2010-11 to 2020-21**



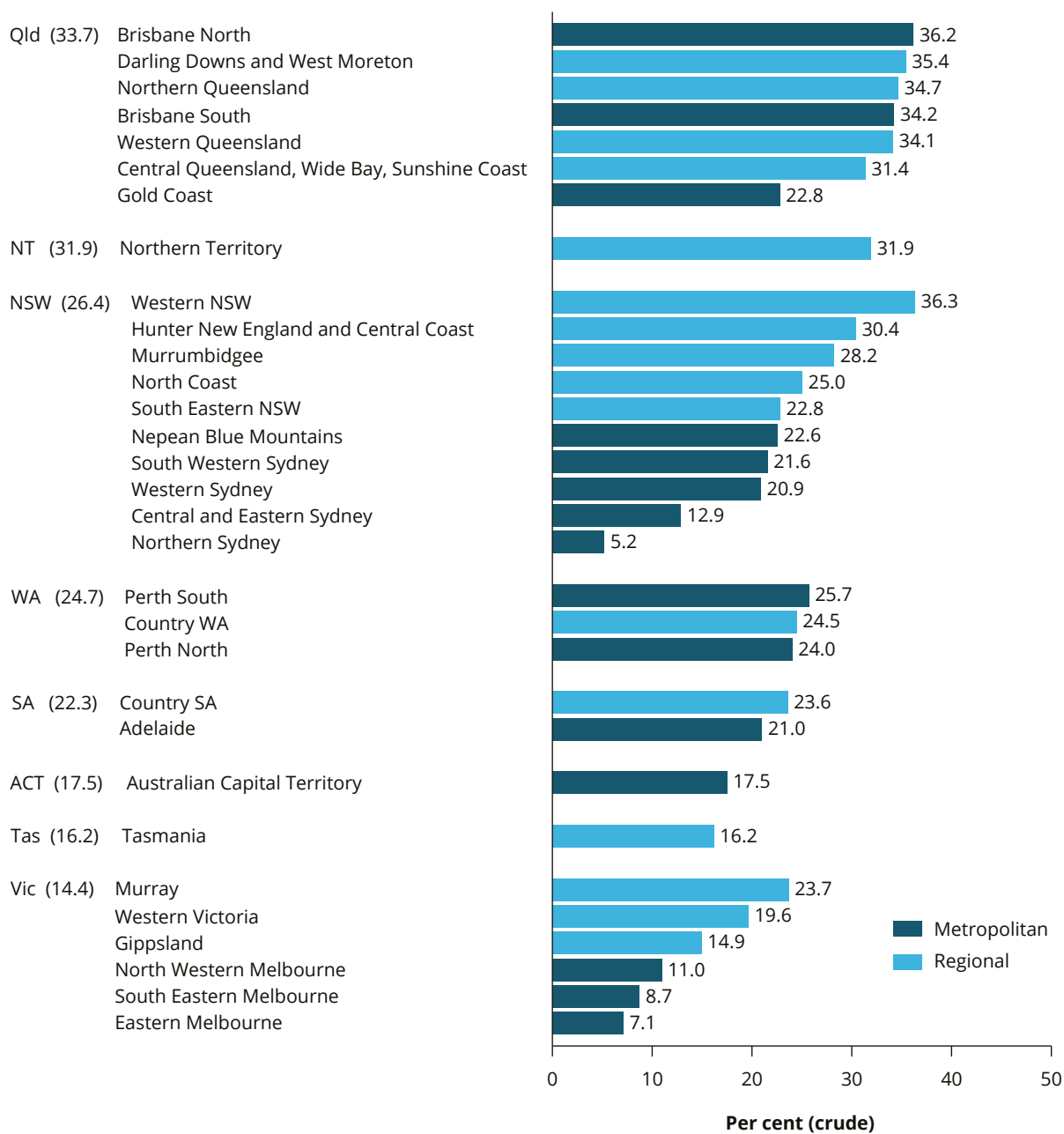
**e) By age (ASR), 2010-11 to 2020-21**



**Notes**

1. ASR refers to the age-standardised rate.
  2. Data for these figures are available in the data tables.
- Source: AIHW analysis of MBS data.

**Figure 2.1.1f: MBS health assessments, Indigenous Australians, by PHN, 2020–21**

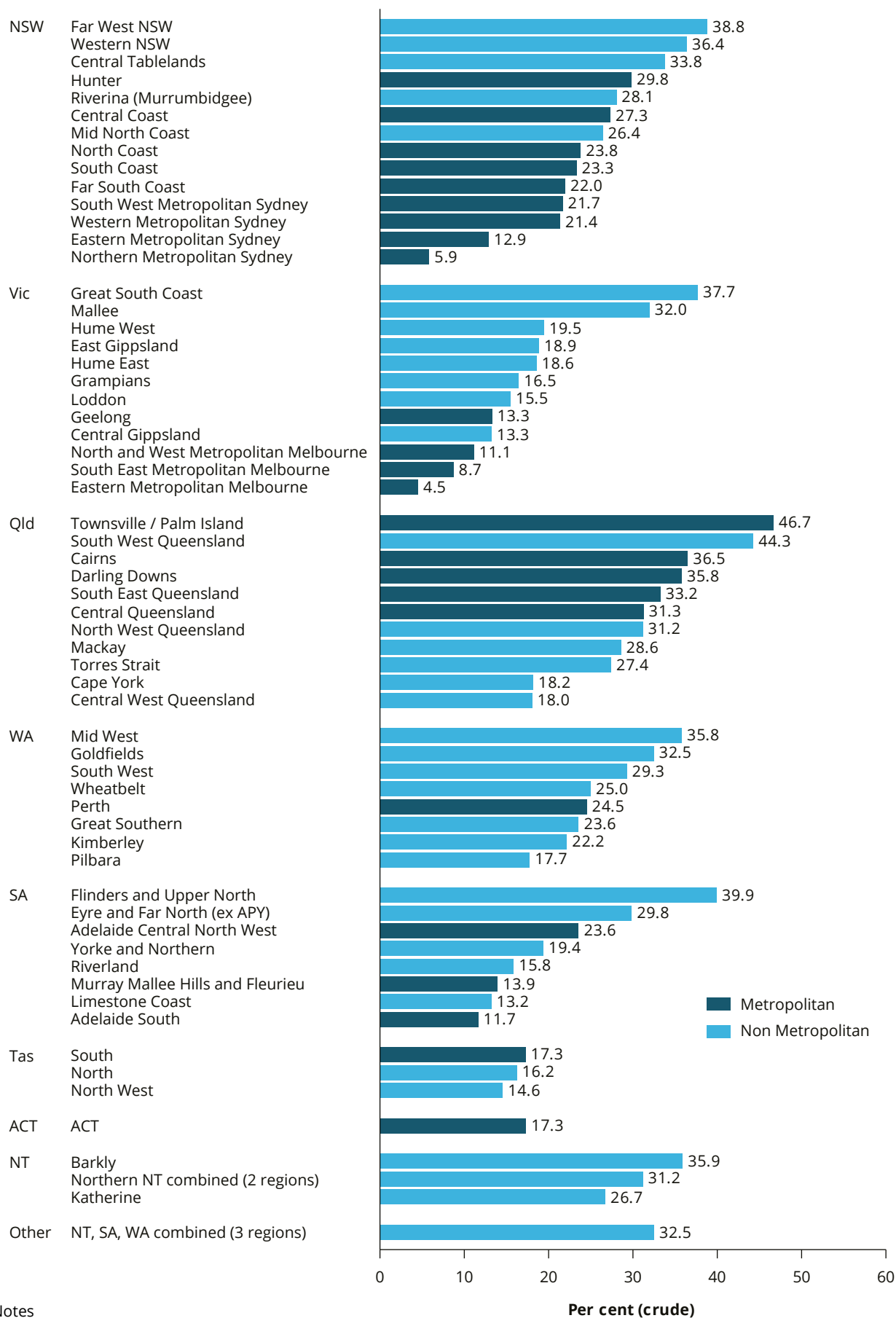


**Notes**

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

Source: AIHW analysis of MBS data.

**Figure 2.1.1g: MBS health assessments, Indigenous Australians, by Roadmap region, 2020–21**

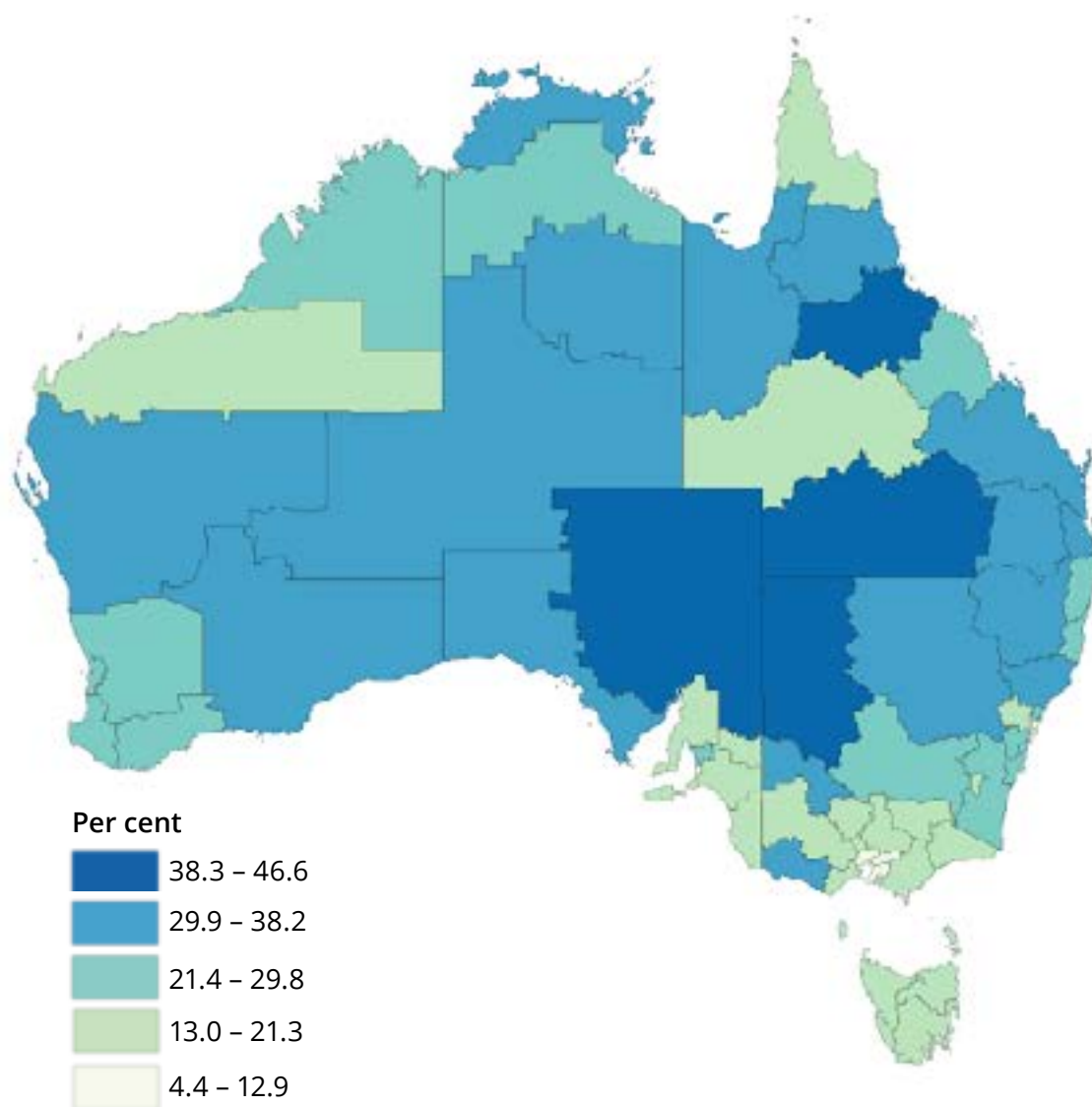


**Notes**

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

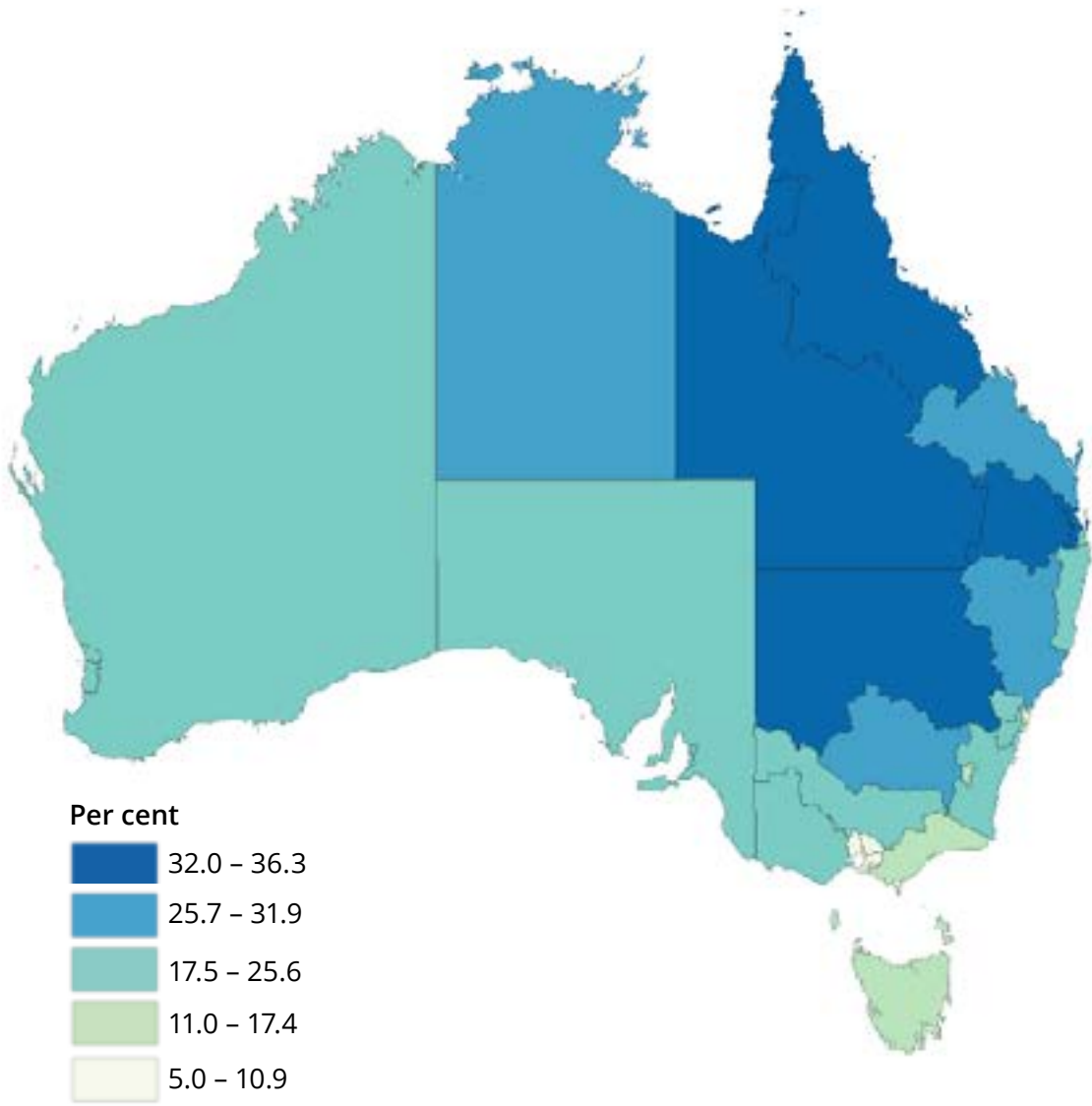
Source: AIHW analysis of MBS data.

Figure 2.1.1h: MBS health assessments, Indigenous Australians, by Roadmap region, 2020–21



Note: The Roadmap region data for this map are available in the online data tables.  
Source: AIHW analysis of the NHMD.

Figure 2.1.1i: MBS health assessments, Indigenous Australians, by PHN, 2020–21



Note: The PHN data for this map are available in the online data tables.  
Source: AIHW analysis of the NHMD.

## Measure 2.1.2: Annual health assessments and initial eye examination by an optometrist

**Key finding:** In 2020–21, 5.5% of Indigenous Australians had an Indigenous-specific health assessment and an initial eye examination by an optometrist.

### Measure interpretation

This measure was originally intended to report on the number of people who had an Indigenous health assessment and then had a follow-up eye examination by an optometrist. A doctor may refer a patient as a result of an Indigenous health assessment to another health care professional for follow-up care, as needed – for example, by an optometrist, physiotherapist or dietitian. For some follow-up services, there are specific codes to indicate that a patient has accessed follow-up services. However, there is no MBS code for follow-up services by an optometrist. Consequently, it is not possible to provide exact estimates of the number of patients who have had an eye examination by an optometrist as a follow-up from a health assessment.

To provide a rough indication of eye health follow-up services, this measure presents the number of people who have an Indigenous health assessment and an initial eye examination in a 12-month period. While the measure will include cases where the eye examination arises out of the health assessment, it will also include cases where the initial eye examination is independent of the health assessment.

**Overall:** In 2020–21, over 1 in 20 (47,492 or 5.5%) Indigenous Australians had an Indigenous-specific health assessment and an initial eye examination by an optometrist.

**Age and sex:** In 2020–21, health assessments for Indigenous females outnumbered those for Indigenous males across all age groups, especially for age groups 45–54 and 65–74 (Figure 2.1.2a).

**Remoteness:** In 2020–21, the proportion of Indigenous Australians who had a health assessment and an initial eye examination by an optometrist was similar in *Inner regional* and *Remote* areas (5.9% and 5.6%, respectively). The proportion was 6.3% in *Outer regional* areas and 5.2% in *Major cities*. It was lowest in *Very remote* areas (3.9%) (Figure 2.1.2b).

**Jurisdiction:** In 2020–21, the proportion of Indigenous Australians who had a health assessment and an initial eye examination by an optometrist was highest in Queensland (6.9%) and New South Wales (5.8%) and lowest in Western Australia (3.4%) (Figure 2.1.2c).

**Time trend:** The age-specific proportion of Indigenous Australians who had a health assessment and an initial eye examination by an optometrist increased from around 1% in 2010–11 for all age groups under 44 years to around 3.5% in 2020–21. The proportion of Indigenous Australians in all age groups aged 55 and over who had a health assessment rose from around 3% in 2010–11 to around 18% in 2020–21 (Figure 2.1.2d).



Between 2010–11 and 2018–19, the age-standardised proportion of Indigenous Australians who had a health assessment (including a telehealth assessment) and an initial eye examination by an optometrist increased from around 1% to over 7%, before slightly declining in 2019–20 (6.5%) and increasing in 2020–21 (7.3%) (Figure 2.1.2e).

**PHN:** In 2020–21, the PHNs with the lowest proportion of Indigenous Australians who had a health assessment and an initial eye examination by an optometrist were Northern Sydney (1.5%) and Eastern Melbourne (1.8%), while those with the highest rates were in Brisbane North (8.8%) and Brisbane South (8.1%) (Figure 2.1.2f).

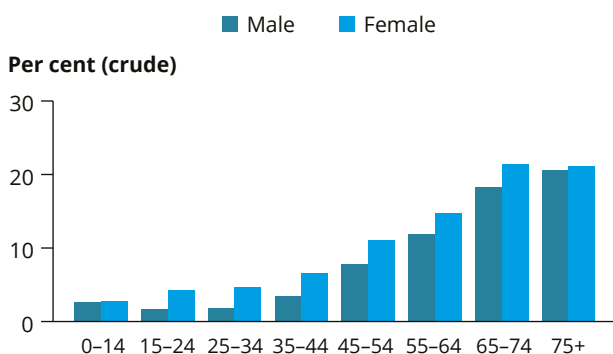
**Roadmap region:** In 2020–21, the Roadmap region with the highest proportion of Indigenous Australians who had an MBS health assessment and an initial eye examination by an optometrist was *Great South Coast* (9.2%) (Figure 2.1.2g).

### Things to consider

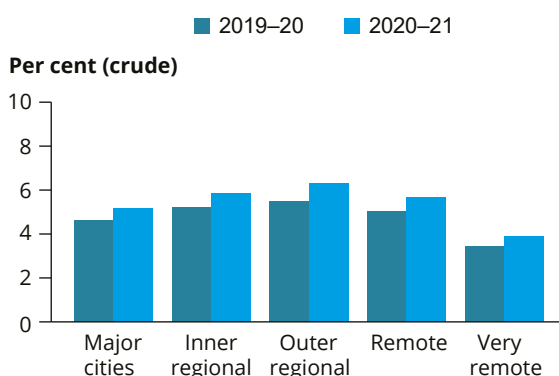
- A basic eye check is a mandatory component of the MBS health assessments.
- MBS data reflect billing practices and do not necessarily reflect all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction funded primary health care or by public hospitals.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

**Figure 2.1.2: MBS health assessments and initial eye examinations, Indigenous Australians, by various characteristics**

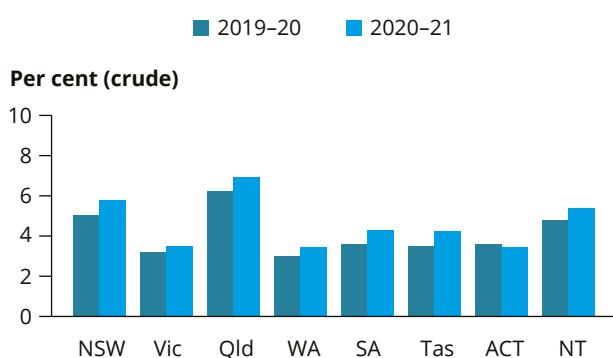
**a) By age and sex 2020-21**



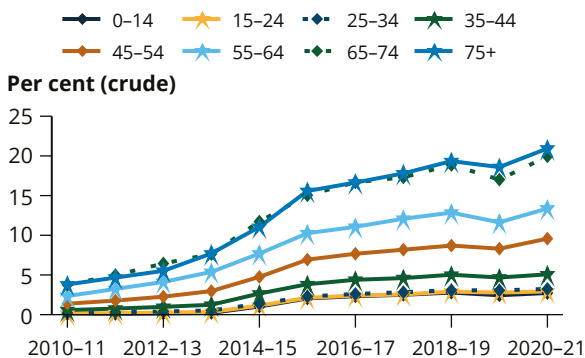
**b) By region 2019-20 and 2020-21**



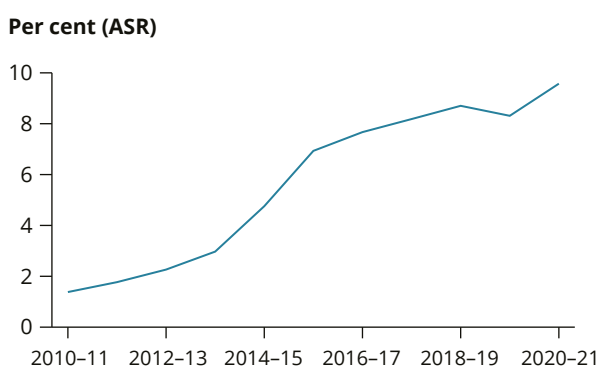
**c) By jurisdiction 2019-20 and 2020-21**



**d) By age, 2010-11 to 2020-21**



**e) By age (ASR), 2010-11 to 2020-21**

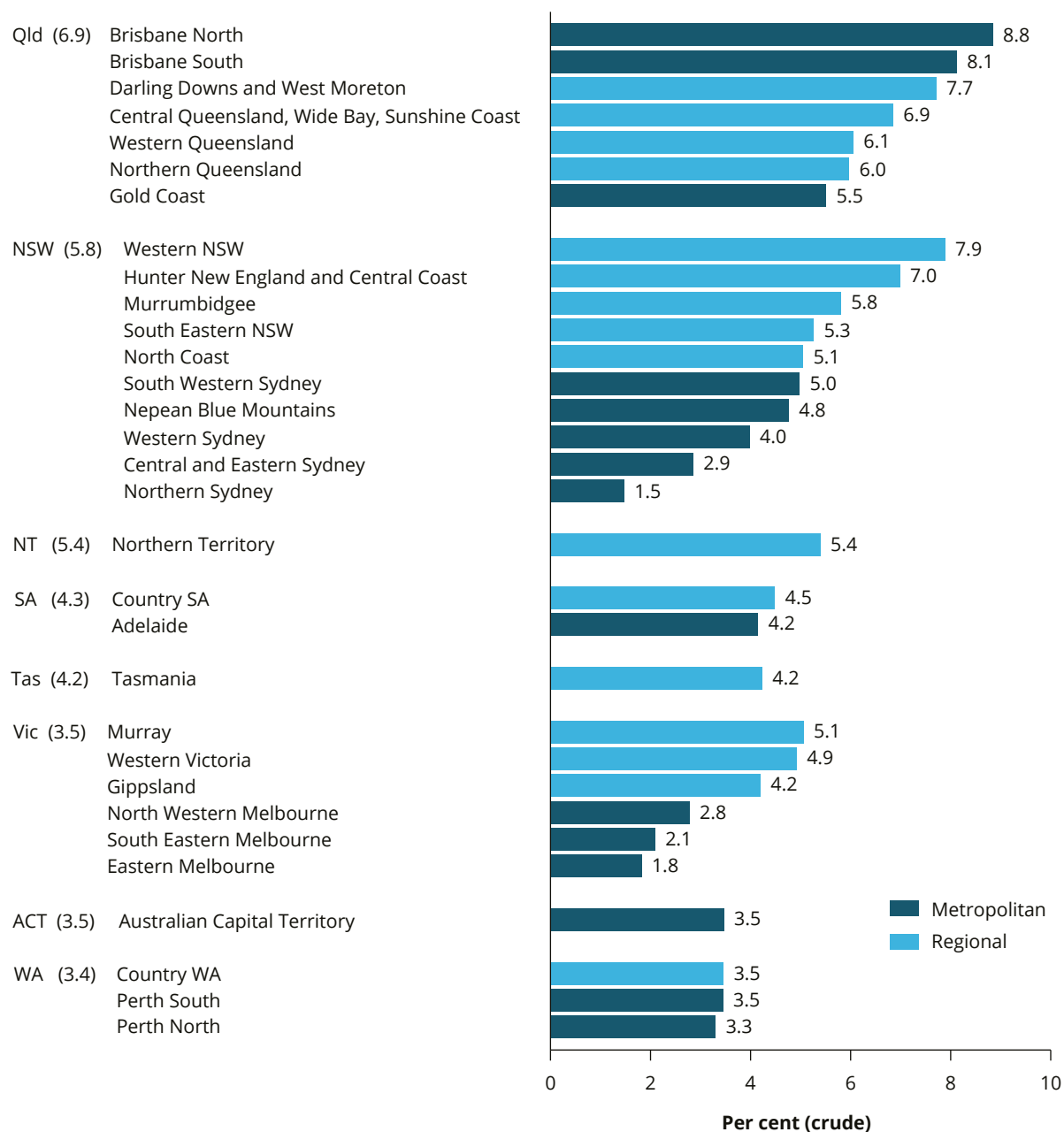


**Notes**

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

Source: AIHW analysis of MBS data.

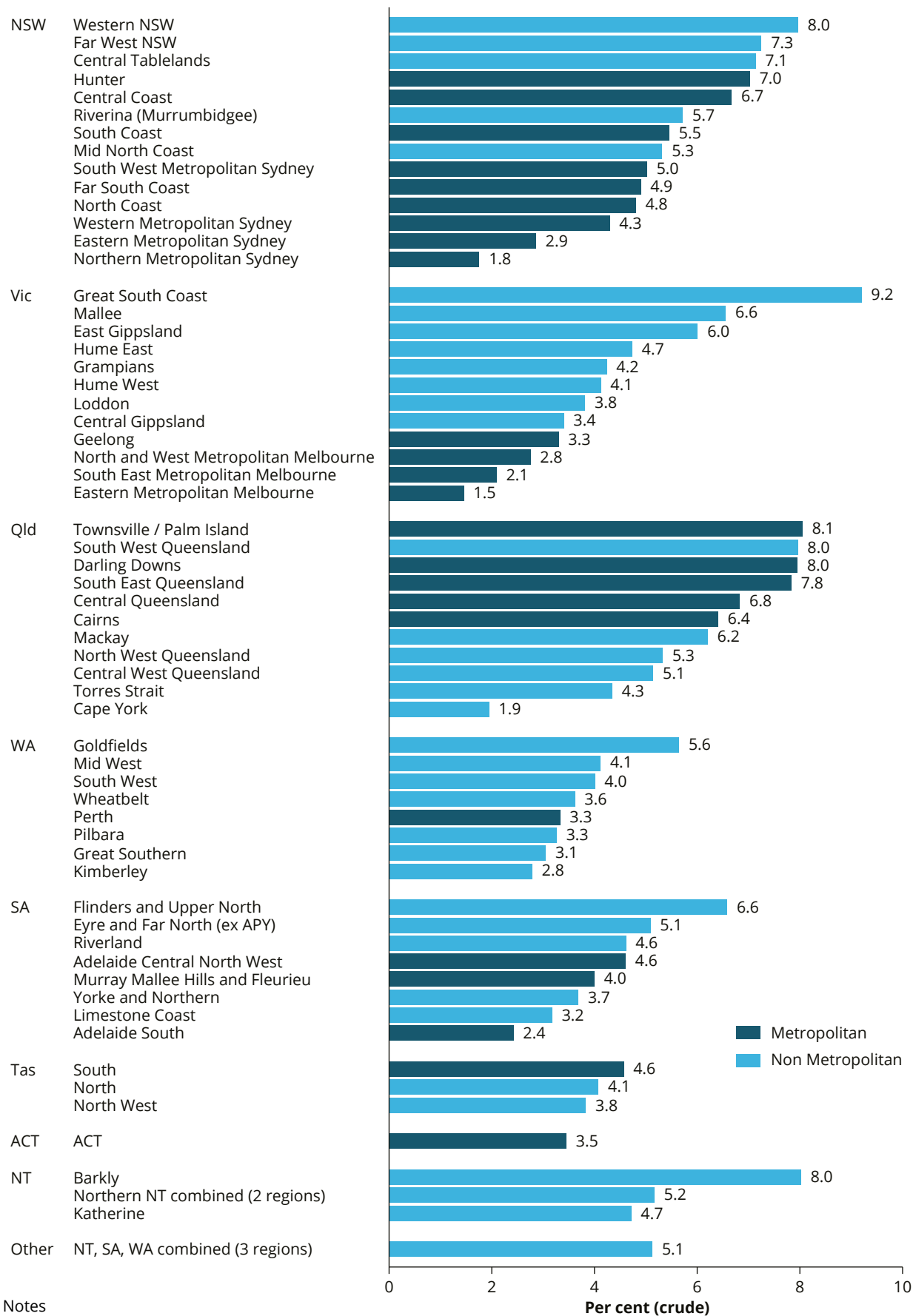
**Figure 2.1.2f: MBS health assessments with initial eye examination, Indigenous Australians, by PHN, 2020–21**



**Notes**

1. Data are crude rates.
  2. Data for this figure are available in the data tables.
- Source: AIHW analysis of MBS data.

**Figure 2.1.2g: MBS health assessments with initial eye exam, Indigenous Australians, by Roadmap region, 2020–21**



Notes

1. Data are crude rates.
  2. Data for this figure are available in the data tables.
- Source: AIHW analysis of MBS data.

### **Impact of COVID-19 on annual health assessments (measures 2.1.1 and 2.1.2)**

Early 2020 saw the emergence of a global pandemic of the novel coronavirus disease COVID-19. Restrictions imposed by the Australian and state and territory governments limited people's movements and activities to curb the spread of the disease. Many people changed their behaviours to protect themselves and others from the risk of exposure.

In 2020–21, claims for Indigenous health checks fell across nearly all age groups. Over the same period, the uptake of telehealth (health assessments provided via videoconference or teleconference) increased. Telehealth accounted for more than 11,000 of nearly 237,000 claims (5%) in 2020–21 compared with just under 9,000 of nearly 239,000 claims (4%) in 2019–20. To be eligible for GP telehealth services, patients must have had a face-to-face consultation with their GP or another GP in the same practice, in the 12 months before the telehealth service.

More details on monthly Indigenous health checks can be found in the AIHW publication *Tracking progress against the Implementation Plan goals for the Aboriginal and Torres Strait Islander Health Plan 2013–2023* (AIHW 2021).

## 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 who had an eye examination increased from 14% to 17%, while the proportion for non-Indigenous Australians increased from 19% to 23%.

**Overall:** In 2019–20, around 104,300 Indigenous Australians had an eye examination by an optometrist or ophthalmologist in the preceding 12 months – 12% of the population (Figure 2.2a). Optometrists conducted around 104,200 of these examinations, and ophthalmologists around 130. This was fewer 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 being for 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 (8.3%) followed by South Australia (12%); the proportion 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 2018–19 for Indigenous Australians, before declining between 2018–19 and 2019–20 across all age groups. In those aged 65 and over, rates rose from 27% in 2009–10 to 34% in 2016–17, remained at 35% in 2017–18 and 2018–19 before falling to 31% in 2019–20 (Figure 2.2d). Rates for non-Indigenous Australians aged 65 and over increased from 32% to 49% from 2009–10 to 2018–19, before declining to 45% in 2019–20 (Figure 2.2e). Across all age groups, rates of eye examinations were higher for non-Indigenous Australians than for Indigenous Australians in the same age group.

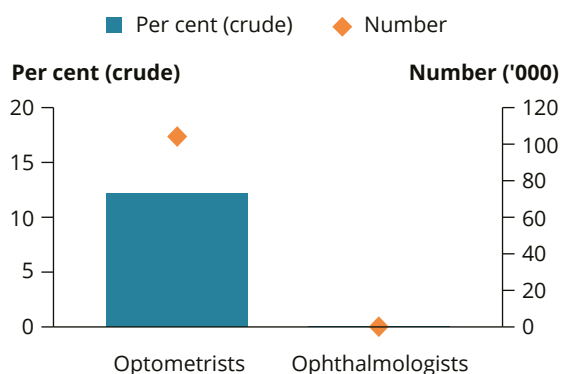
Between 2007–08 and 2019–20, the total age-standardised proportion of the Indigenous population who had an eye examination increased from 14% to 17% (Figure 2.2f).

### Things to consider

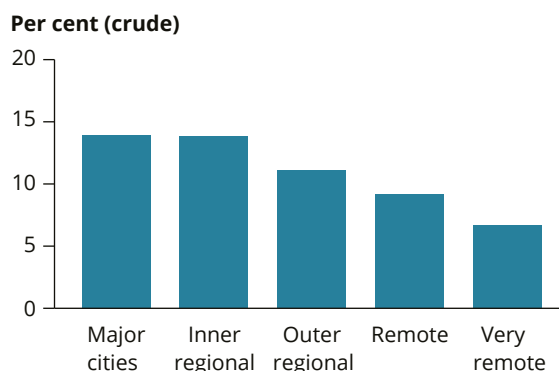
- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals – for example, eye examinations undertaken by salaried ophthalmologists in public 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, which was developed by the IEHU at the University of Melbourne (see <http://drgrading.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 et al. 2012) and should be interpreted with caution.
- Age-standardised and age-specific rates are both presented (see Box 3 – Population rates).

**Figure 2.2: Population who had an eye examination by an eye care professional, by various characteristics**

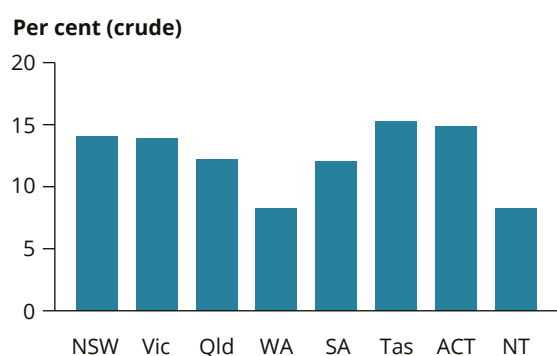
**a) Indigenous, by profession 2019-20**



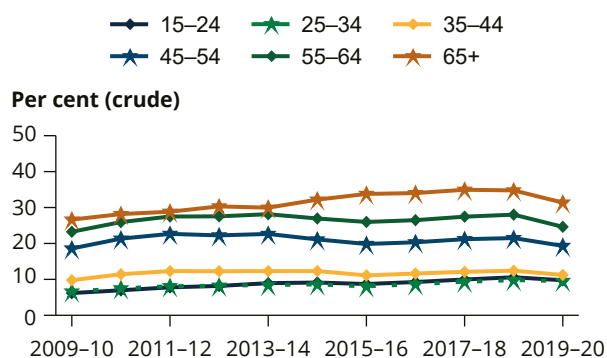
**b) Indigenous, by region, 2019-20**



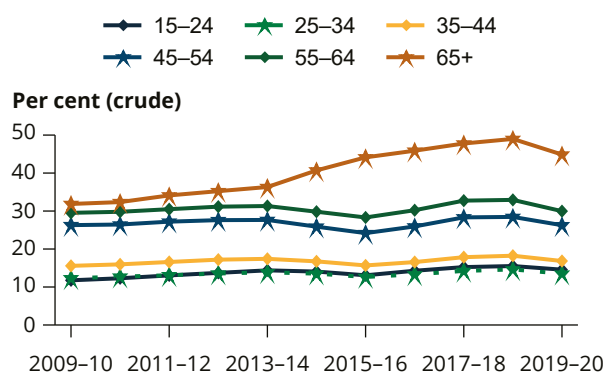
**c) Indigenous, by jurisdiction, 2019-20**



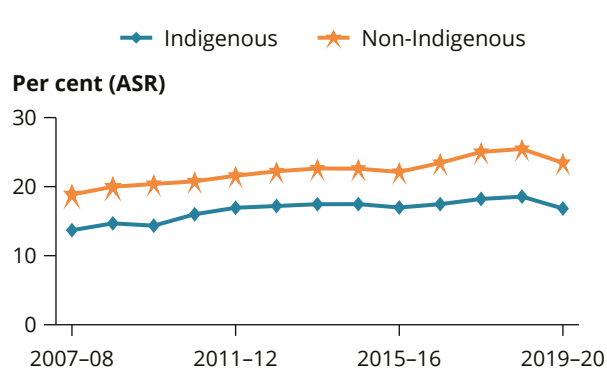
**d) Indigenous, by age, 2009-10 to 2019-20**



**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 data tables.
- Source: AIHW analysis of MBS data.

## Measure 2.3: Screening for diabetic retinopathy among target population

**Key finding:** An estimated 32,000 Indigenous Australians had a diabetes test in the previous 2 years, with 13,358 (42%) also having an eye examination 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 falling to 34% in 2019–20.

### 2.3.1 Eye examinations among those tested for diabetes (MBS data)

**Overall:** An estimated 32,000 Indigenous people had a diabetes test in the previous 2 years, and 13,358 (42%) also had an eye examination at least once in 2019–20. Most of the screenings were performed by optometrists (12,790), with smaller numbers by ophthalmologists (1,005) and GPs (452) (Figure 2.3.1a).

**Remoteness:** In 2019–20, the proportion of Indigenous Australians who had an eye examination 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 who had an eye examination 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. The greatest increase was in those aged 65 and over, where rates rose from 48% in 2009–10 to 60% in 2018–19, before declining to 56% in 2019–20 (Figure 2.3.1d). For non-Indigenous Australians, the greatest increase was in those aged 15–24 (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 30% to 37% before falling to 36% in 2019–20, while for non-Indigenous Australians it rose from 36% to 45% before decreasing to 43% (Figure 2.3.1f).

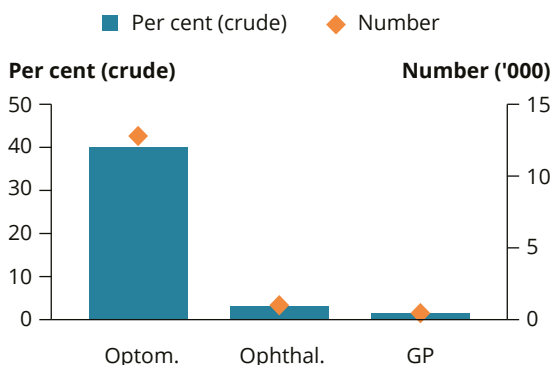
#### Things to consider

- 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).
- Current National Health and Medical Research Council (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.
- MBS data shown for this measure were adjusted for Indigenous under-identification.
- Age-standardised and age-specific rates are both presented (see Box 3 – 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.

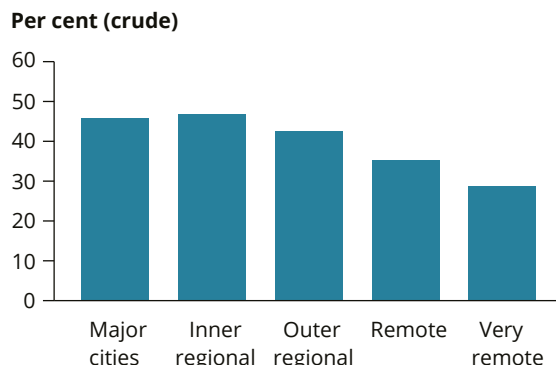


**Figure 2.3.1: Population who had an eye examination among those tested for diabetes, by various characteristics**

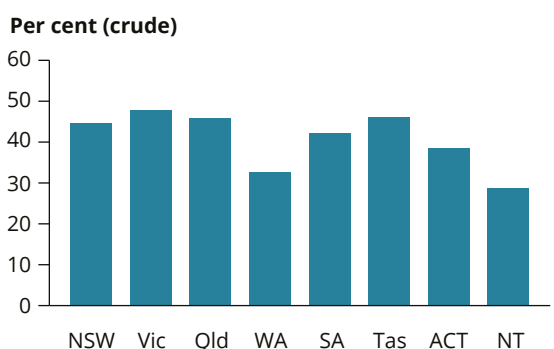
**a) Indigenous, by profession 2019-20**



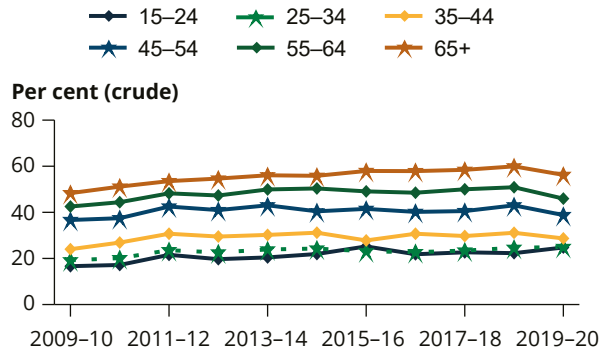
**b) Indigenous, by region, 2019-20**



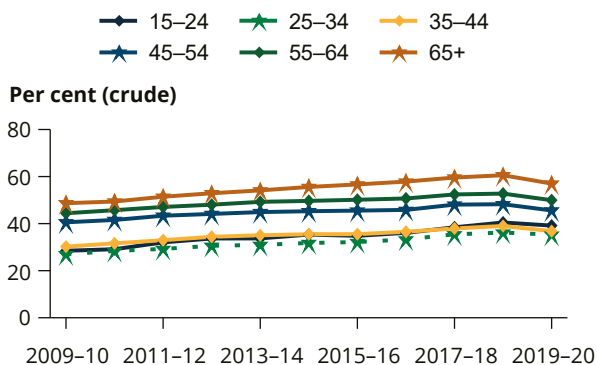
**c) Indigenous, by jurisdiction, 2019-20**



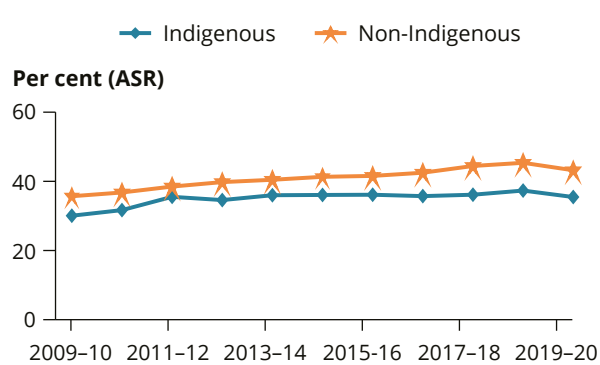
**d) Indigenous, by age, 2009-10 to 2019-20**



**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 data tables.
- Source: AIHW analysis of MBS data.

## 2.3.2 Screening for diabetic retinopathy among those with self-reported diabetes (survey data)

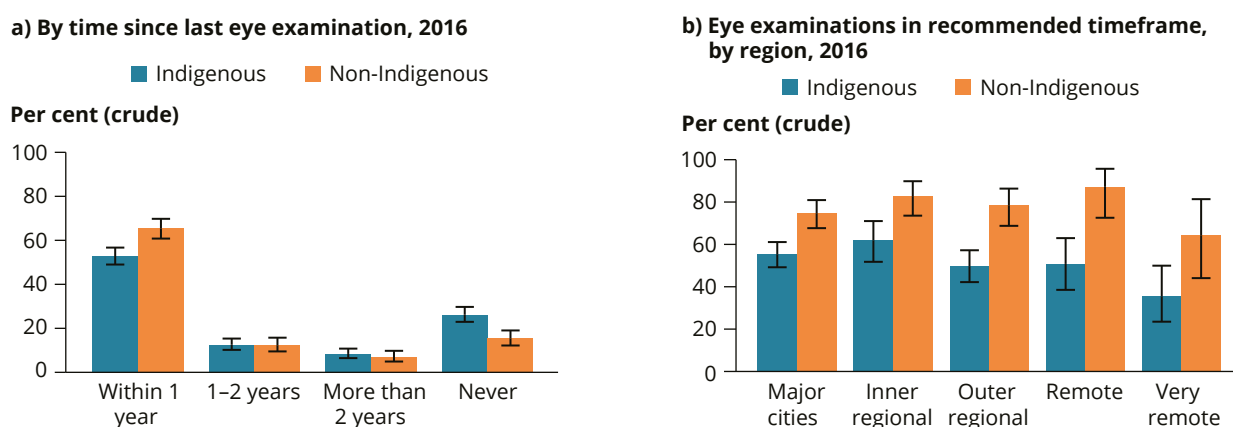
**Overall:** In 2016, just over half (53%) of Indigenous participants in the eye health survey aged 40 and over with self-reported diabetes had a diabetic eye examination in the preceding 12 months, the period recommended in the NHMRC guidelines for Indigenous Australians. For non-Indigenous participants 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: Population screened for diabetic retinopathy among those with self-reported diabetes, by various characteristics**



#### 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 data tables.
- Source: AIHW analysis of NEHS data 2016.

### 2.3.3 Screening for diabetic retinopathy with a retinal camera (MBS data)

**Overall:** In 2020–21, an estimated 1,344 (1.5 per 1,000) Indigenous Australians, 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 increased between 2019–20 and 2020–21. More Indigenous females than Indigenous males received screening tests for diabetic retinopathy with a retinal camera in both 2019–20 and 2020–21 (Figure 2.3.3a).

**Remoteness:** In 2019–20, the rate of screening tests for diabetic retinopathy with a retinal camera for Indigenous Australians was lowest in *Major cities* (0.8 per 1,000) and highest in *Remote areas* (3.7 per 1,000). In 2020–21, the rate of screening Indigenous Australians was lowest in *Inner regional* (0.6 per 1,000) and highest in *Remote areas* (4.4 per 1,000) (Figure 2.3.3b).

**Jurisdiction:** In 2019–20 and 2020–21, the rate of screening tests for diabetic retinopathy with a retinal camera for Indigenous Australians was highest in Western Australia (3.8 and 5.1 per 1,000, respectively) and lowest in New South Wales (0.3 and 0.5, respectively). Data were not available or not publishable in Tasmania or the Australian Capital Territory (Figure 2.3.3c).

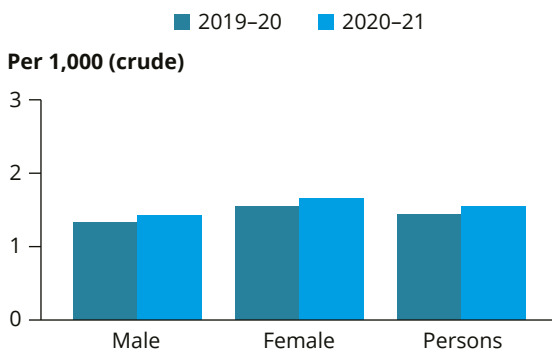
**Time trend:** From 2016–17 to 2020–21, age-specific rates of screening tests for diabetic retinopathy with a retinal camera for Indigenous Australians for all age groups, apart from those aged 75 and over, peaked in 2018–19 before declining in 2019–20 and 2020–21. For those aged 75 and over, the rate peaked in 2017–18 and then declined between 2018–19 to 2020–21. 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

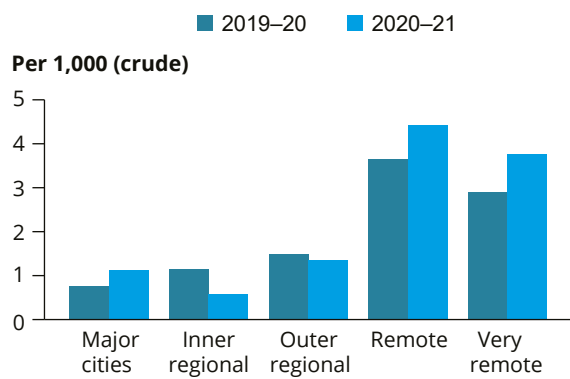
- Screening for diabetic retinopathy can be provided in a number of ways, including direct observations by a health professional during eye examinations or by using a retinal camera.
- MBS data reflect billing practices and not necessarily all services received. For example, the MBS data for this measure 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: Population screened for diabetic retinopathy with a retinal camera among those tested for diabetes, by various characteristics**

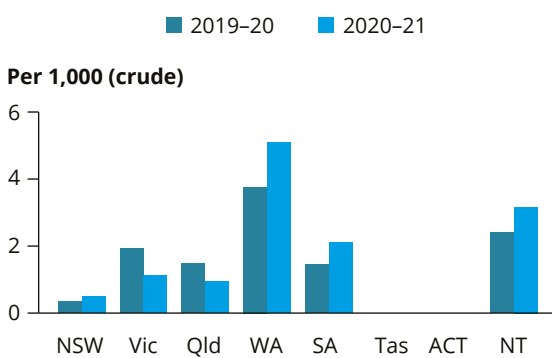
**a) By sex, 2019-20 and 2020-21**



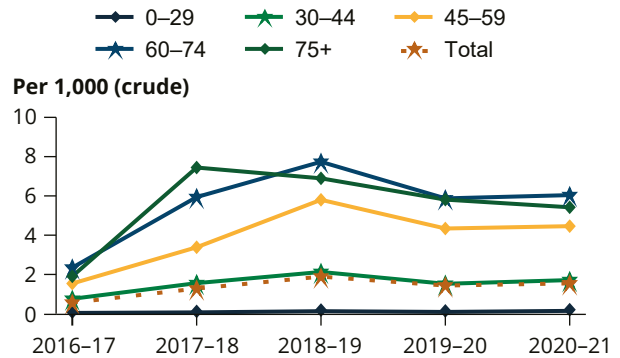
**b) By region 2019-20 and 2020-21**



**c) By jurisdiction 2019-20 and 2020-21**



**d) By age, 2016-17 to 2020-21**



Note: Data for these figures are available in the data tables.  
Source: AIHW analysis of MBS data.

## Measure 2.4: Trachoma and trichiasis screening coverage

**Key finding:** In 2021, in the 82 communities that undertook screening, a total of 1,833 (90%) children aged 5–9 were screened for trachoma, an increase from 70% in 2012. In 2021, in the 122 at-risk communities that undertook screening for trichiasis, 11,435 (29%) Indigenous Australians aged 15 and over were screened.

### 2.4.1 Trachoma

**Overall:** In 2021, in the 82 communities that undertook screening, a total of 1,833 (90%) children aged 5–9 were screened for trachoma (Figure 2.4.1a). This was above the recommended 85% screening coverage for trachoma control.

**Jurisdiction:** In 2021, the proportion of children aged 5–9 in at-risk communities screened for trachoma was 90% in Queensland (118 children), 92% in Western Australian (464 children), 87% in South Australia (371 children) and 90% in the Northern Territory (880 children) (Figure 2.4.1a).

**Time trend:** Between 2012 and 2021, the proportion of children aged 5–9 screened for trachoma in at-risk communities rose from 70% in 2012 to 92% in 2019. The proportion screened dropped slightly in 2020 to 91% then dropped again to 90% in 2021. (Figure 2.4.1b).

#### Things to consider

- In 2021, trachoma screening was undertaken in 82 at-risk communities in 4 jurisdictions (Queensland, Western Australia, South Australia and Queensland) (Kirby Institute 2023).
- 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 2021, 4,467 Indigenous Australians aged 15–39 (18.5%) and 6,968 Indigenous adults aged 40 and over (46%) were screened for trichiasis. Altogether, 11,435 (29%) Indigenous Australians aged 15 and over were screened for trichiasis (Figure 2.4.2a).

**Jurisdiction:** In 2021, the proportion of Indigenous adults aged 40 and over screened for trichiasis was highest in Western Australia (2,671 adults, 91%) and lowest in Queensland (18 adults, 6.4%) (Figure 2.4.2b).

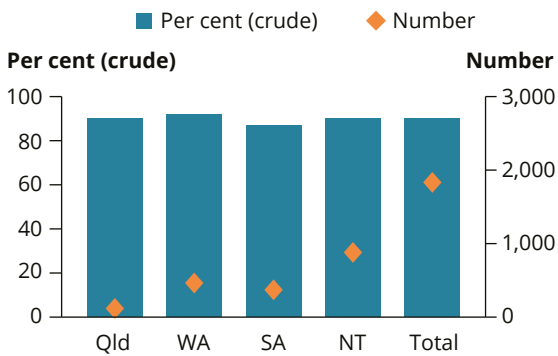
**Time trend:** In jurisdictions that undertook screening, the proportion of Indigenous adults aged 40 and over screened for trichiasis rose from 1,179 (9%) in 2011 to 6,968 (46%) in 2021. The number of Indigenous adults aged 40 and over screened for trichiasis was highest in 2020 (8,607, 45%), while the proportion was highest in 2021 (6,968, 46%) (Figure 2.4.2c).

#### Things to consider

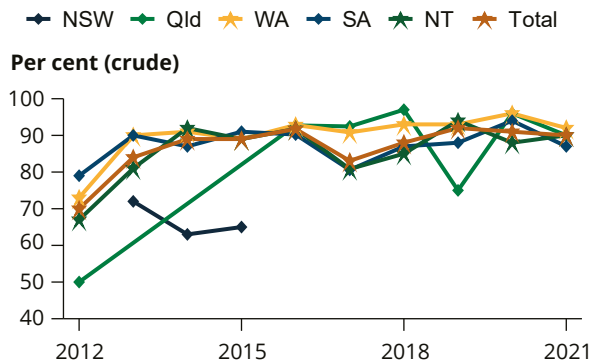
- In 2021, trichiasis screening was undertaken in 122 at-risk communities in 4 jurisdictions (the Northern Territory, Western Australia, South Australia and Queensland) (Kirby Institute 2023).
- Screening for trichiasis is undertaken opportunistically, such as during adult health checks.

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

**a) By state 2021**

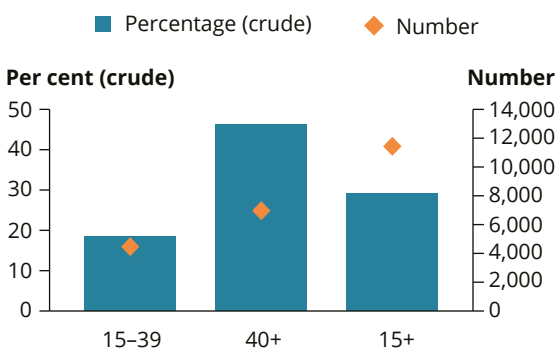


**b) Children aged 5–9, 2012 to 2021**

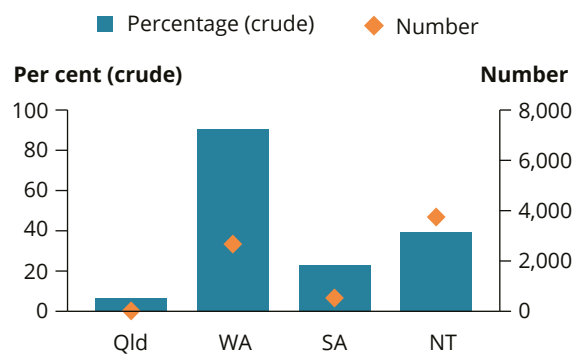


**Figure 2.4.2: Trichiasis screening coverage in Indigenous communities, by various characteristics**

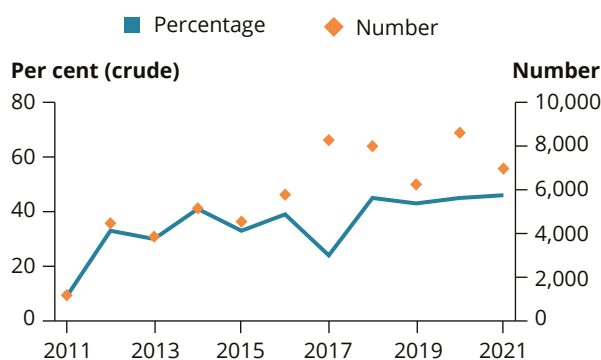
**a) By age, 2021**



**b) Aged 40 and over, by jurisdiction, 2021**



**c) Aged 40 and over, 2011 to 2021**



**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 data tables.
- Source: AIHW analysis of Australian Trachoma Surveillance reports (Kirby Institute 2013, 2014, 2015, 2016, 2018, 2019a, 2019b, 2020, 2022, 2023 (forthcoming)).

## 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.

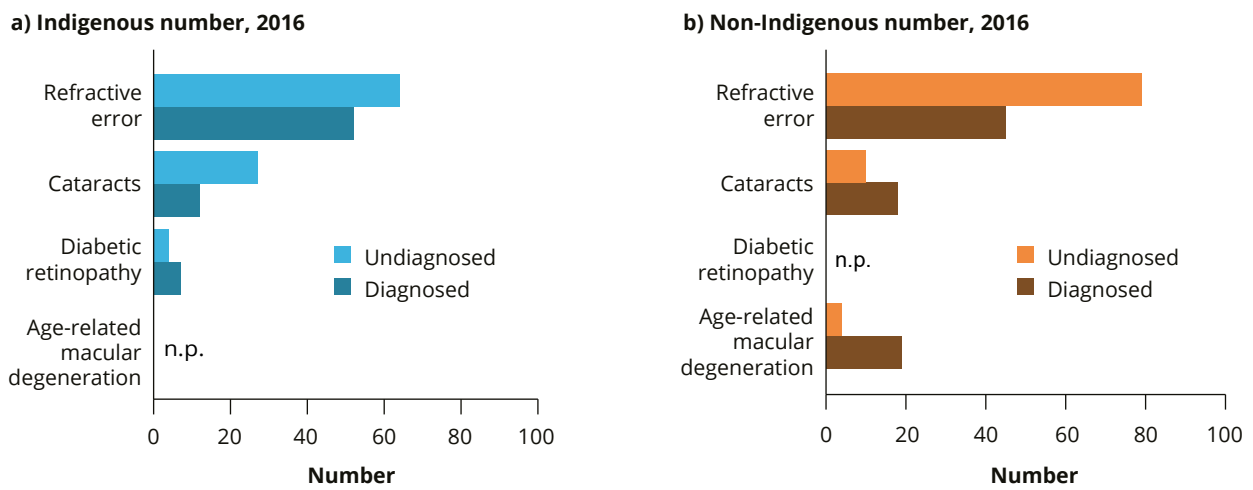
For non-Indigenous participants, 52% had vision impairment or blindness and had not previously had their condition diagnosed. The rates for non-Indigenous participants were highest for refractive error, with 79 out of 124 (64%) having undiagnosed refractive error (Figure 2.5b).

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

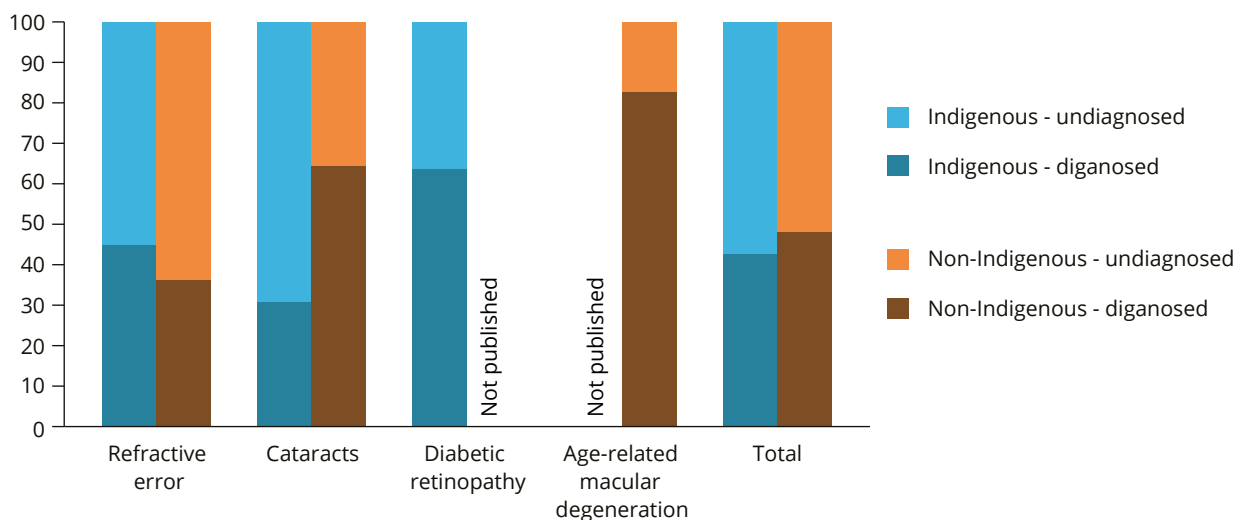
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The survey results reported are crude unadjusted sample proportions. These results are subject to sampling errors.
- '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**



**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 data 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**

The data for measures 3.1–3.4 and measure 3.6 reported in this chapter come from NHMD, reporting 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.

These hospitalisation measures and elective surgery waiting times 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. Except for 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 3.5: 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 for Measure 3.5 come from the 2016 NEHS, the only source of data that includes an estimate of surgery rates for people who have been identified as having cataracts.

*(continued)*

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

### **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.

Data for this measure come from the NHMD.

### **Measure 3.7: Treated for diabetic retinopathy among target population**

There are 2 sub-measures reported:

- **3.7.1 Treated for diabetic retinopathy among those screened for diabetic retinopathy**
- **3.7.2 Treated for diabetic retinopathy using a retinal laser procedure or an intravitreal injection among those tested for diabetes.**

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 2019a).

### **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 and territory 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 2018–20, there were around 10,141 (6 per 1,000 population) hospitalisations for Indigenous Australians for diseases of the eye. Between 2012–13 and 2019–20, the age-standardised hospitalisation rate for diseases of the eye for Indigenous Australians increased from 9.3 to 10.5 per 1,000 population.

**Overall:** In the 2-year period 2018–20, there were around 10,141 hospitalisations for Indigenous Australians for diseases of the eye – a crude rate of 6.0 per 1,000 population.

In 2019–20, age-standardised hospitalisation rates for Indigenous Australians for diseases of the eye (10.5 per 1,000) were lower than for non-Indigenous Australians (12.5 per 1,000) (Figure 3.1a).

In 2018–20, for Indigenous Australians, the most common principal diagnosis for hospitalisations for diseases of the eye was disorders of the lens (5,910 hospitalisations or 3.5 per 1,000) followed by disorders of the choroid and retina (1,513 hospitalisations or 0.9 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 2018–20, 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 (103.5 per 1,000) than among Indigenous Australians (72.9 per 1,000) (Figure 3.1c).

**Remoteness:** In 2018–20, 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* (12.5 and 10.2 per 1,000, respectively) (Figure 3.1d).

**Jurisdiction:** In 2018–20, age-standardised hospitalisation rates for Indigenous Australians for diseases of the eye were lowest in the Australian Capital Territory (4.5 per 1,000), followed by Tasmania (6.4 per 1,000). Queensland had the highest hospitalisation rates (12.6 per 1,000) (Figure 3.1e).

**Time trend:** Between 2012–13 and 2018–19, age-specific hospitalisation rates for Indigenous Australians for diseases of the eye increased for all age groups over 45 before declining from 2018–19 to 2019–20. The largest increase was for those aged 75 and over, where the rate rose from 56 per 1,000 in 2012–13 to 77 per 1,000 in 2018–19 before declining to 69 per 1,000 in 2019–20 (Figure 3.1f). Hospitalisation rates for non-Indigenous Australians also increased across all age groups from 2012–13 to 2018–19 before declining in 2019–20 (Figure 3.1g). Hospitalisation rates were higher among Indigenous Australians than among non-Indigenous Australians in 2019–20 for those aged 45 to 54 (6.4 and 5.5 per 1,000, respectively) and 55 to 64 (19.7 and 18.1 per 1,000, respectively) but were lower for those aged 65 to 74 and 75 and over (figures 3.1 f and g).

Between 2012–13 and 2019–20, the age-standardised hospitalisation rate for diseases of the eye for Indigenous Australians increased from 9.3 to 10.5 per 1,000, while the rate for non-Indigenous Australians fell from 13.0 to 12.5 per 1,000. The trend line shows there has been a slight rise in the age-standardised hospitalisation rate for Indigenous Australians over this time (Figure 3.1h).

**PHN:** In 2018–20, the PHNs with the lowest hospitalisation rates for Indigenous Australians for diseases of the eye were the Australian Capital Territory, Western Sydney and Nepean Blue Mountains (all under 3 per 1,000) (Figure 3.1i).

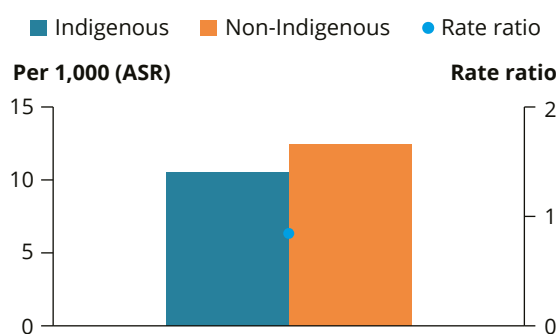
**Roadmap region:** In 2018–20, the Roadmap regions with the highest hospitalisation rates for Indigenous Australians for eye diseases were *Pilbara* (12.9 per 1,000), *East Gippsland* (10.5 per 1,000) and *South West Queensland* (10.4 per 1,000) (Figure 3.1j).

### Things to consider

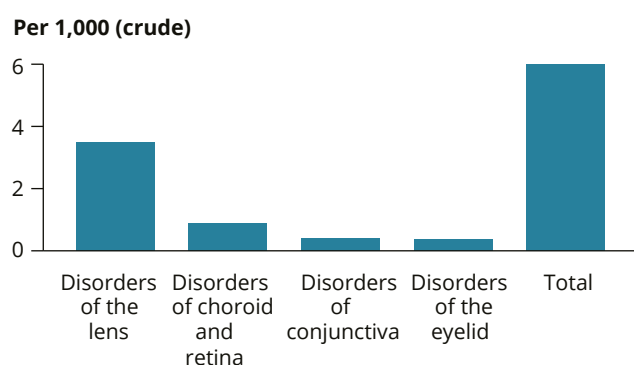
- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.
- Hospitalisations data presented by state and territory and remoteness area in this report are based on the patient’s place of usual residence.
- Age-standardised and age-specific rates are both presented (see Box 3 – Population rates ).

**Figure 3.1: Hospitalisations for diseases of the eye, by Indigenous status, by various characteristics**

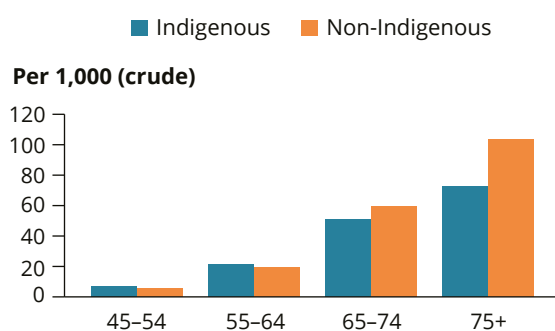
**a) By Indigenous status, 2019–20**



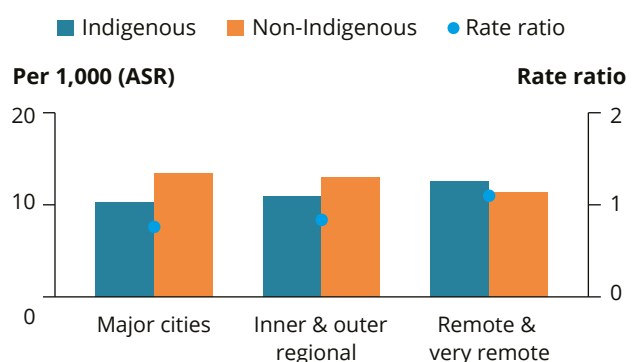
**b) Indigenous, by principal diagnosis, 2018–20**



**c) By Indigenous status and age, 2018–20**



**d) By region, 2018–20**



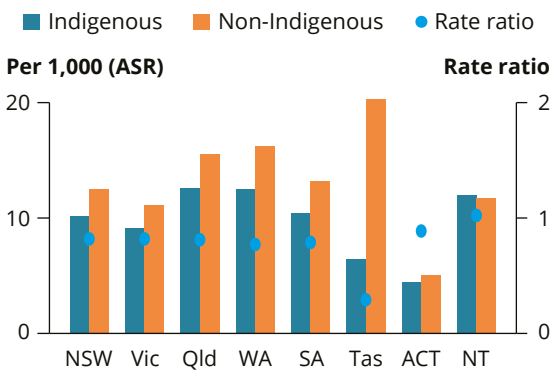
**Notes**

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 data tables.
- Source: AIHW analysis of NHMD.

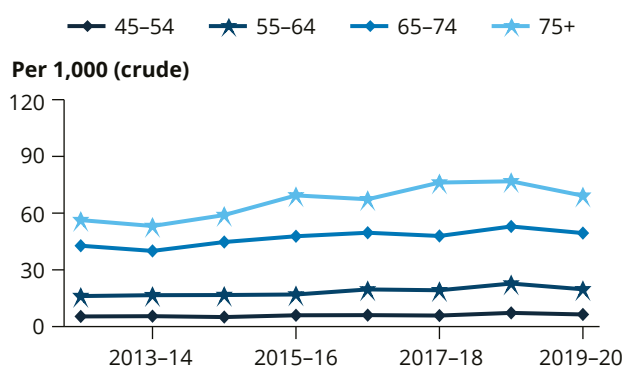
(continued)

**Figure 3.1 (continued): Hospitalisations for diseases of the eye, by Indigenous status, by various characteristics**

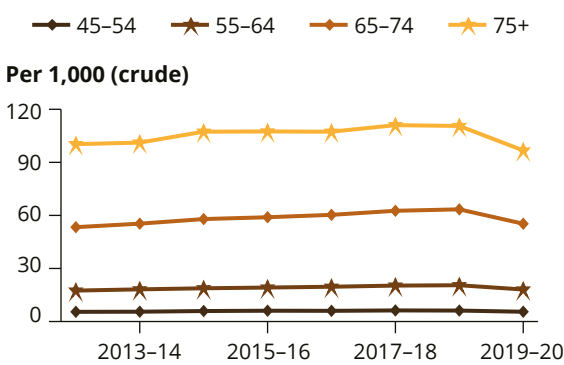
**e) By jurisdiction, 2018-20**



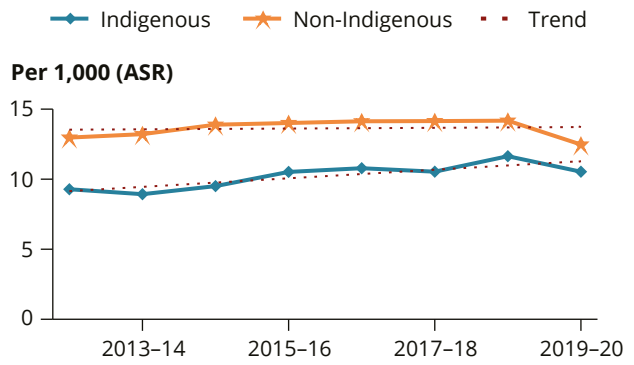
**f) Indigenous, by age, 2012-13 to 2019-20**



**g) Non-Indigenous by age, 2012-13 to 2019-20**



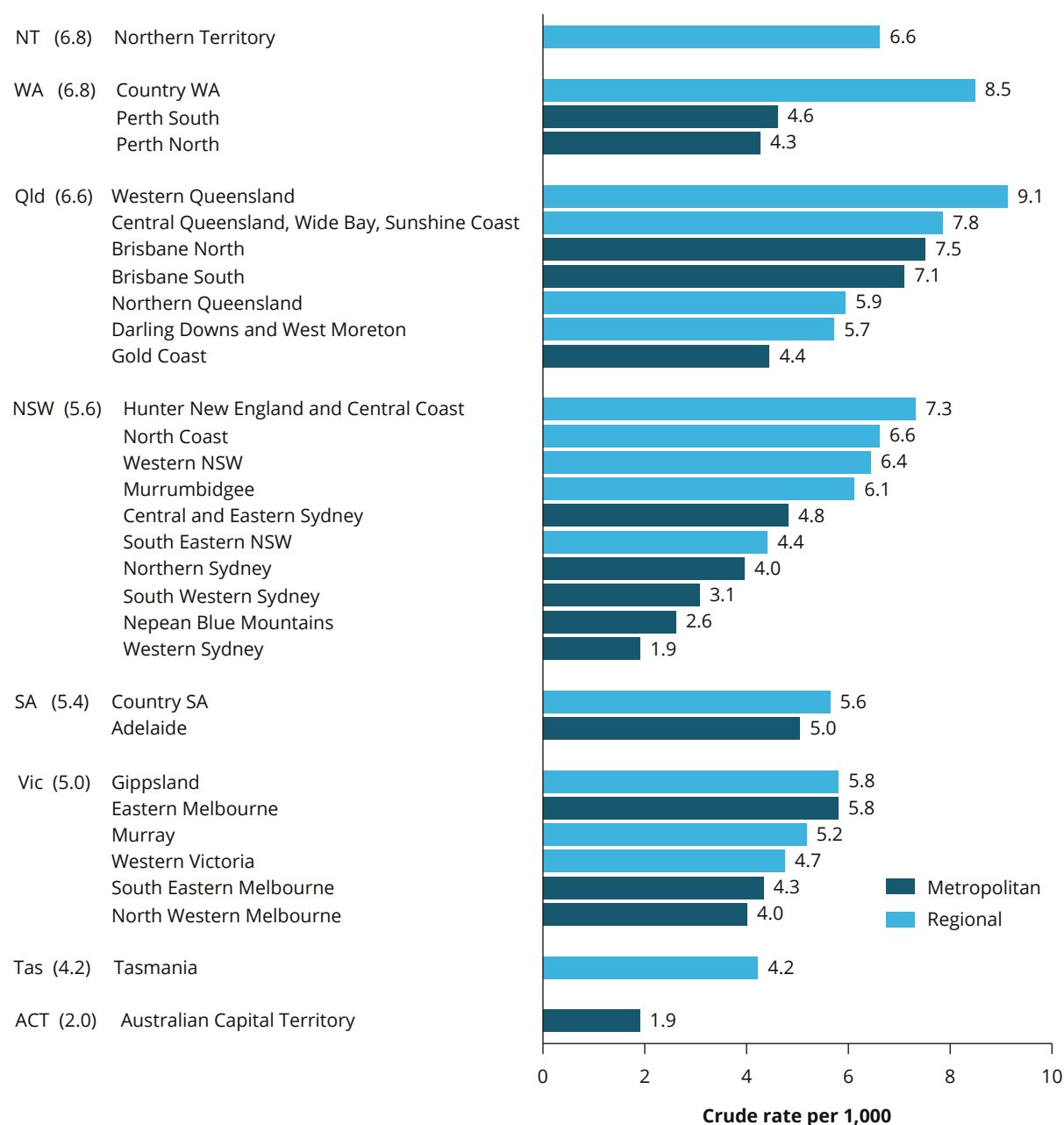
**h) Time trend, 2011-12 to 2019-20**



**Notes**

1. ASR refers to the age-standardised rate.
  2. Data for these figures are available in the data tables.
- Source: AIHW analysis of NHMD.

**Figure 3.1i: Hospitalisations for diseases of the eye, Indigenous Australians, by PHN, 2018–20**

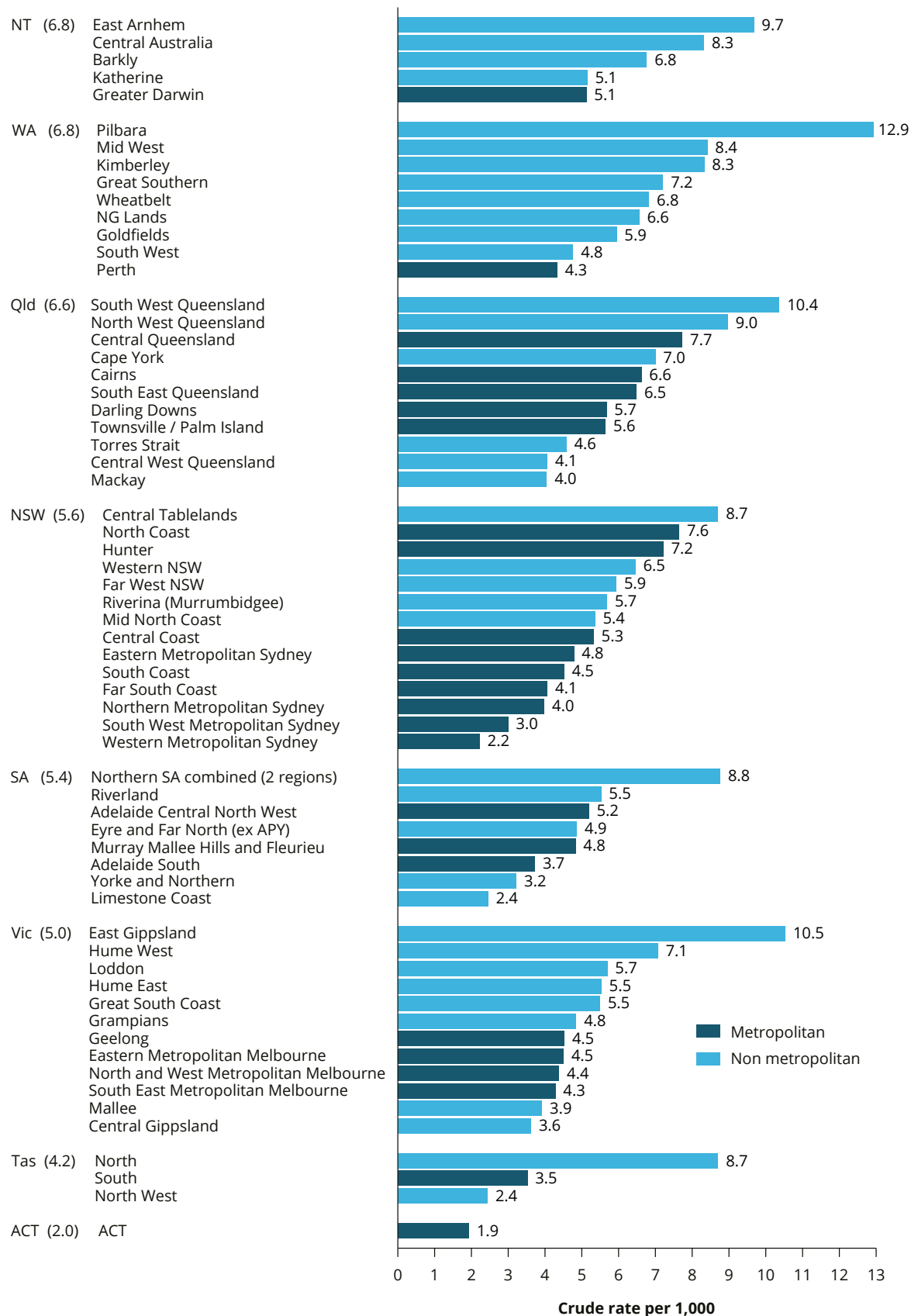


**Notes**

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.
3. Data for this figure are available in the data tables.

Source: AIHW analysis of NHMD.

**Figure 3.1j: Hospitalisations for diseases of the eye, Indigenous Australians, by Roadmap region, 2018–20**



**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 are available in the data tables.
- Source: AIHW analysis of NHMD.

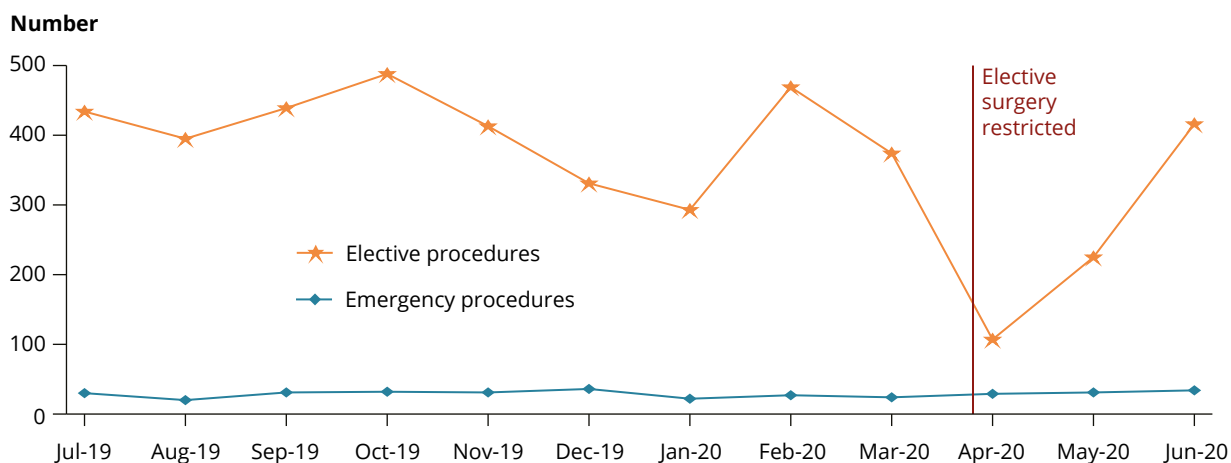


### Impact of COVID-19 on hospitalisations (measures 3.1, 3.2, 3.3 and 3.4)

Early 2020 saw the emergence of a global pandemic of the novel coronavirus disease COVID-19.

In response to the COVID-19 pandemic, all non-urgent elective surgery was temporarily suspended from 25 March 2020 in both public and private hospitals. This resulted in a large drop in elective eye procedures in April 2020. Emergency eye procedures were largely unaffected during this period (Figure a).

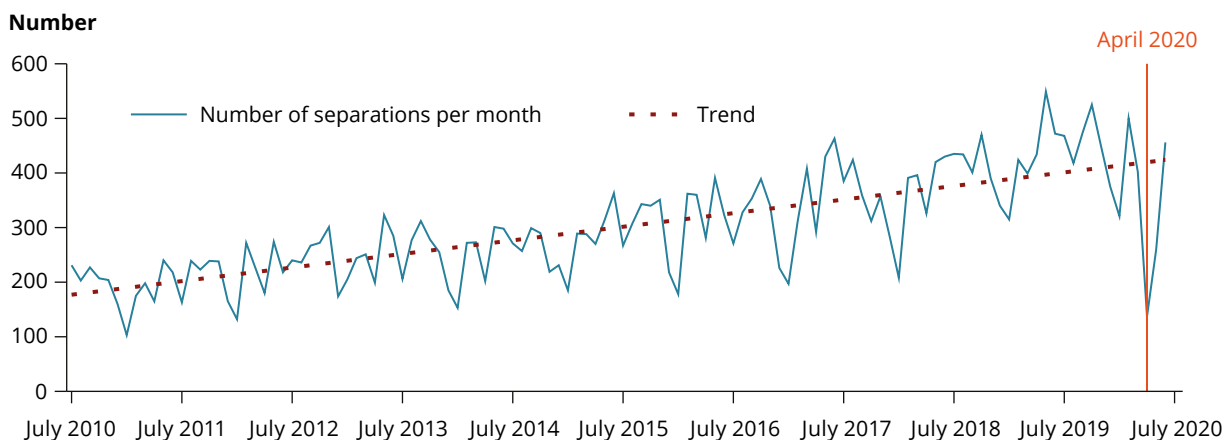
**Figure a: Monthly number of Indigenous hospital separations for eye procedures, 2019–20**



As almost all hospitalisations for eye procedures are elective, total hospitalisations for Indigenous Australians fell by 67 percentage points below the 10-year trend in April 2020. This was the largest monthly percentage point decrease in 10 years (Figure b). However, some of this fall is attributable to seasonal effects associated with Easter public holidays.

Hospitalisations for cataract surgery and eye disease were similarly affected as most of these are elective procedures.

**Figure b: Monthly number of Indigenous hospital separations for eye procedures, July 2010 to July 2020**

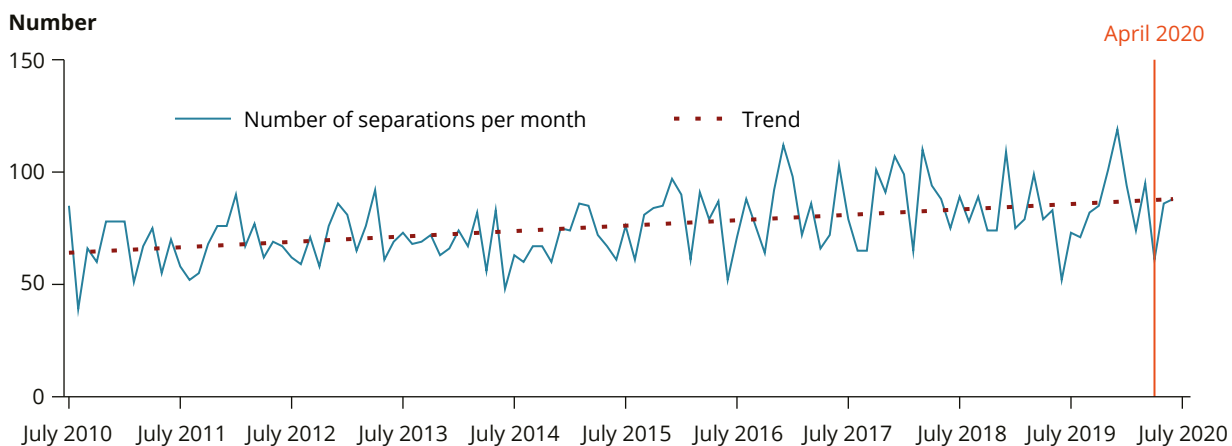


(continued)

### Impact of COVID-19 on hospitalisations (measures 3.1, 3.2, 3.3 and 3.4) (continued)

In April 2020, the number of hospitalisations for eye injuries fell less than the number of hospitalisations for elective procedures such as cataracts, as most of these are emergency procedures (Figure c).

Figure c: Monthly number of Indigenous hospital separations for eye injuries, July 2010 to July 2020



Source: AIHW analysis of the NHMD.

## Measure 3.2: Hospitalisations for injuries to the eye

**Key finding:** In the 2-year period from 2018 to 2020, there were around 2,000 (1.2 per 1,000 population) hospitalisations of Indigenous Australians for injuries to the eye. Between 2012–13 and 2019–20, the age-standardised hospitalisation rate for eye injuries for Indigenous Australians was fairly constant.

**Overall:** In the 2-year period from 2018 to 2020, there were around 2,000 hospitalisations of Indigenous Australians for injuries to the eye – 1.2 per 1,000 population.

In 2019–20, age-standardised hospitalisation rates for Indigenous Australians for injuries to the eye (1.4 per 1,000) were higher than those for non-Indigenous Australians (0.4 per 1,000) (Figure 3.2a).

In 2018–20, 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 2018–20, 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 highest for non-Indigenous Australians aged 75 and over (Figure 3.2c).

For Indigenous Australians in 2018–20, age-specific hospitalisation rates for eye injuries were highest for both males and females in the 35–44 age group (2.5 and 2.2, respectively, per 1,000) (Figure 3.2d).

**Remoteness:** In 2018–20, age-standardised rates of hospitalisation for Indigenous Australians were highest in *Remote and very remote* areas (2.9 per 1,000). This is more than double the rate in *Inner and outer regional* areas (1.0 per 1,000) and more than triple the rate in *Major cities* (0.8 per 1,000). Rates were higher for Indigenous than non-Indigenous Australians in all regions (Figure 3.2e).

**Jurisdiction:** In 2018–20, age-standardised hospitalisation rates for Indigenous Australians for eye injuries were highest in the Northern Territory (3.7 per 1,000) (Figure 3.2f).

**Time trend:** Between 2012–13 and 2019–20, 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 (figures 3.2g–m). In 2019–20, the age-specific hospitalisation rate for Indigenous Australians aged 35–44 (2.3 per 1,000) was more than 7 times the rate for non-Indigenous Australians of the same age (0.3 per 1,000) (Figure 3.2i).

Between 2012–13 and 2019–20, the age-standardised hospitalisation rate for eye injuries for Indigenous Australians and non-Indigenous Australians was fairly constant. The trend line shows that the age-standardised hospitalisation rate for Indigenous Australians has remained relatively constant over this period (Figure 3.2n).

**PHN:** In 2018–20, the PHNs with the highest hospitalisation rate for Indigenous Australians for injury to the eye were the Northern Territory and Western Queensland (over 3.0 per 1,000) (Figure 3.2o).

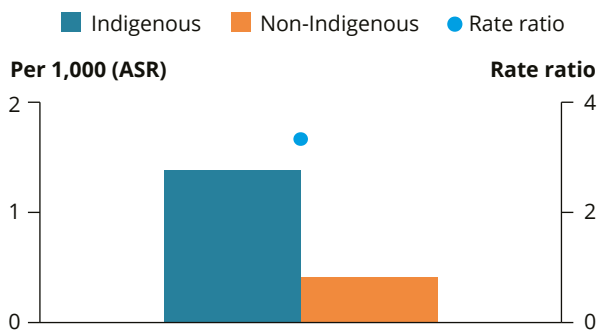
**Roadmap region:** In 2018–20, the Roadmap regions with the highest hospitalisation rates for Indigenous Australians for injuries to the eye were *Barkly* (6.3 per 1,000) and *Central Australia* (4.6 per 1,000) (Figure 3.2p).

### Things to consider

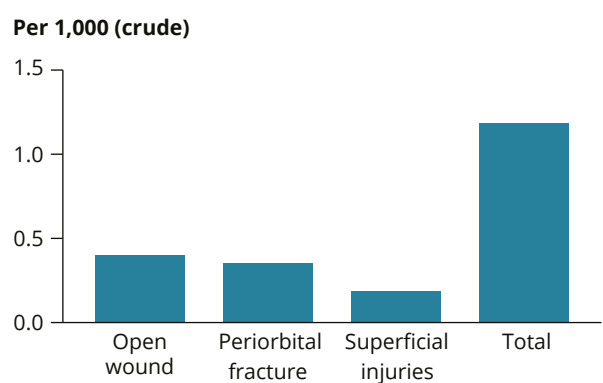
- This measure is a count of hospitalisations for injury, not of occurrence of injury – as some injuries would result in more than 1 hospitalisation.
- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.
- Hospitalisations data presented by state and territory and remoteness area in this report are based on the patient's place of usual residence.
- Age-standardised and age-specific rates are presented (see Box 3 – Population rates).

**Figure 3.2: Hospitalisations for injuries to the eye, by Indigenous status, by various characteristics**

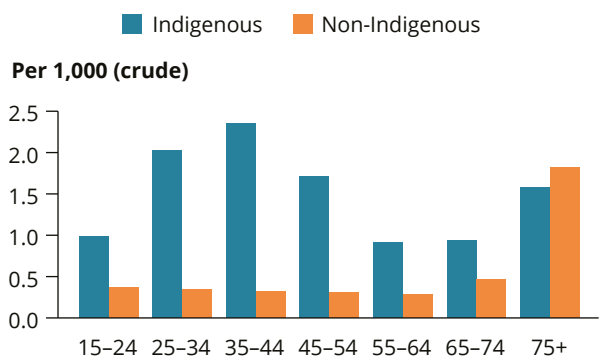
**a) By Indigenous status, 2019–20**



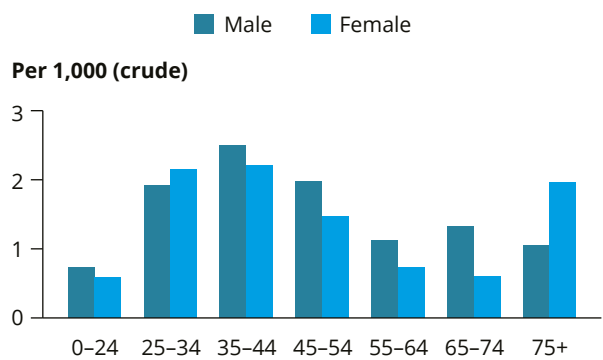
**b) Indigenous, by principal diagnosis, 2018–20**



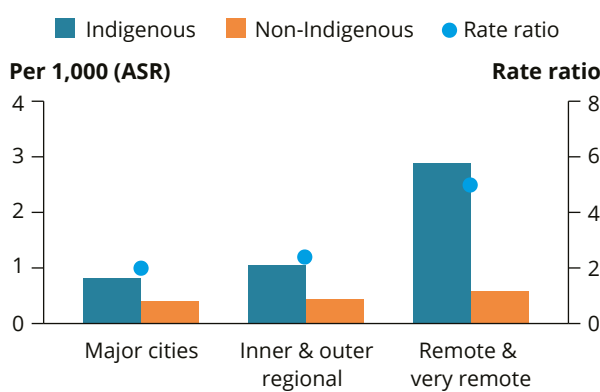
**c) By Indigenous status and age, 2018–20**



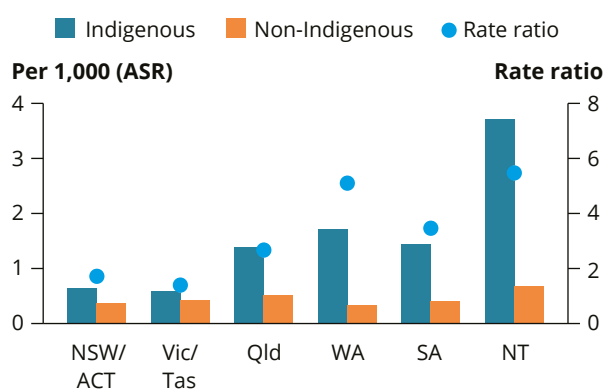
**d) By age and sex, 2018–20**



**e) By region, 2018–20**



**f) By jurisdiction, 2018–20**



**Notes**

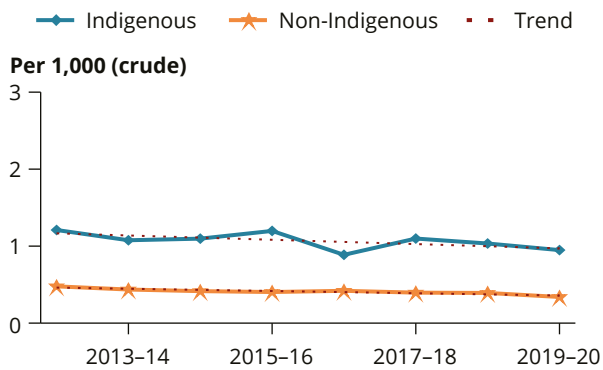
1. Figure (b) shows the top 4 principal diagnoses for Indigenous Australians.
2. ASR refers to the age-standardised rate.
3. Data for these figures are available in the data tables.

Source: AIHW analysis of NHMD.

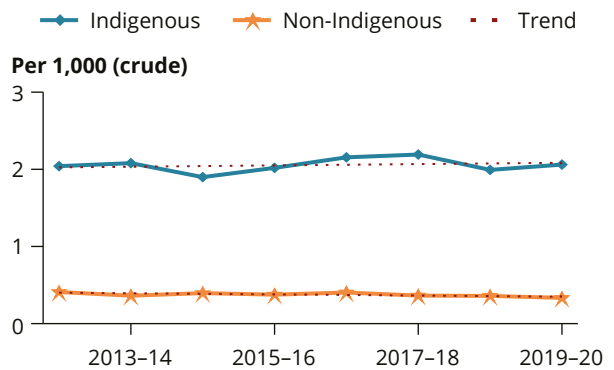
(continued)

**Figure 3.2 (continued): Hospitalisations for injuries to the eye, by Indigenous status, by various characteristics**

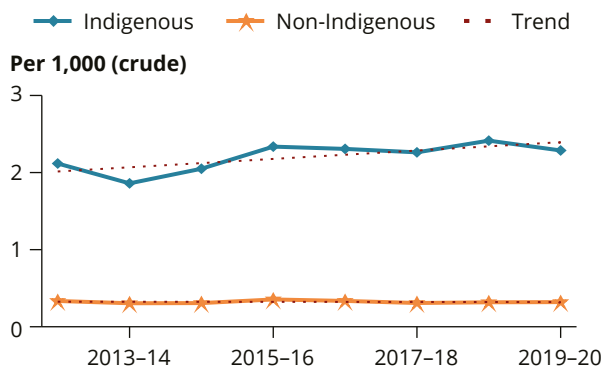
**g) 15 to 24 years, 2012-13 to 2019-20**



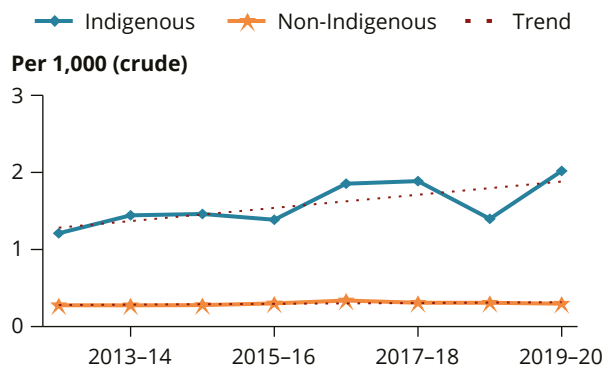
**h) 25 to 34 years, 2012-13 to 2019-20**



**i) 35 to 44 years, 2012-13 to 2019-20**



**j) 45 to 54 years, 2012-13 to 2019-20**



**Notes**

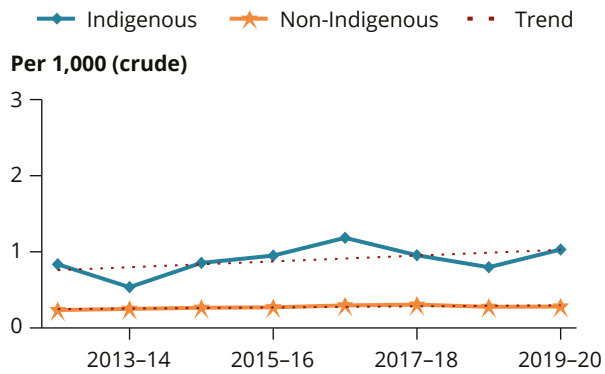
1. ASR refers to the age-standardised rate.
2. Data for these figures are available in the data tables.

Source: AIHW analysis of NHMD.

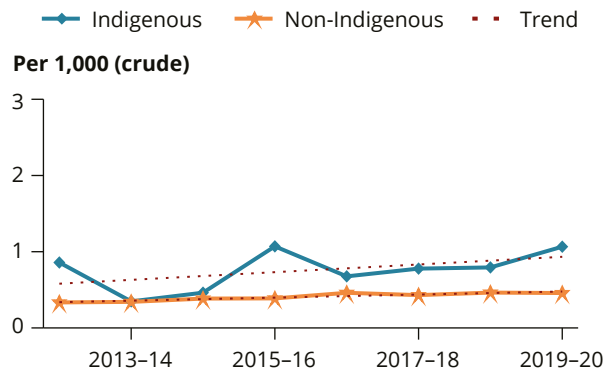
(continued)

**Figure 3.2 (continued): Hospitalisations for injuries to the eye, by Indigenous status, by various characteristics**

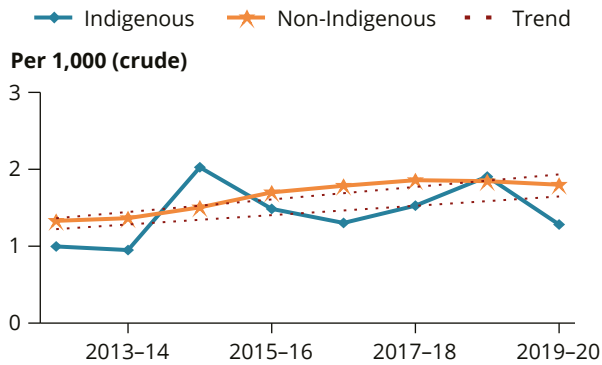
**k) 55 to 64 years, 2012-13 to 2019-20**



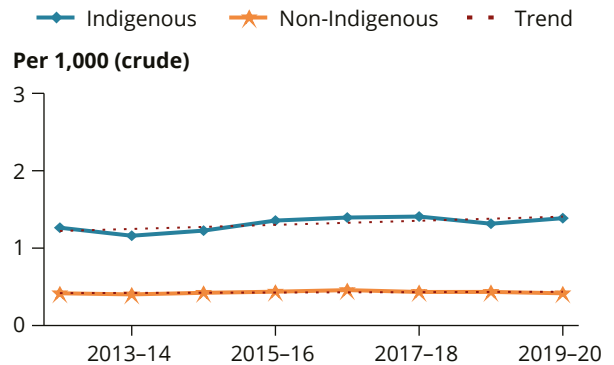
**l) 65 to 74 years, 2012-13 to 2019-20**



**m) 75 years and over, 2012-13 to 2019-20**



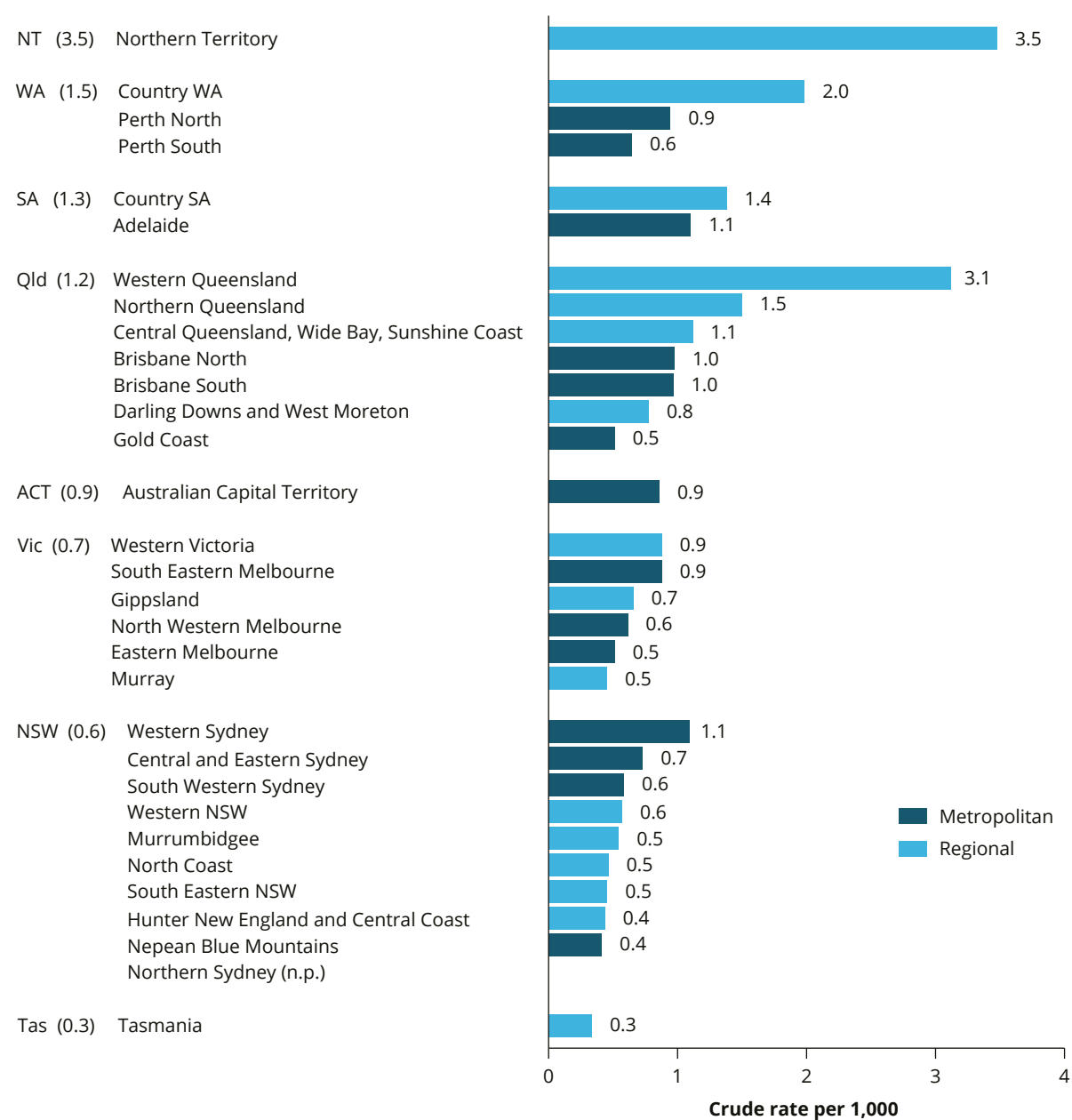
**n) Time trend, 2012-13 to 2019-20**



**Notes**

1. ASR refers to the age-standardised rate.
  2. Data for these figures are available in the data tables.
- Source: AIHW analysis of NHMD.

**Figure 3.2o: Hospitalisations for injuries to the eye, Indigenous Australians, by PHN, 2018–20**



**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.

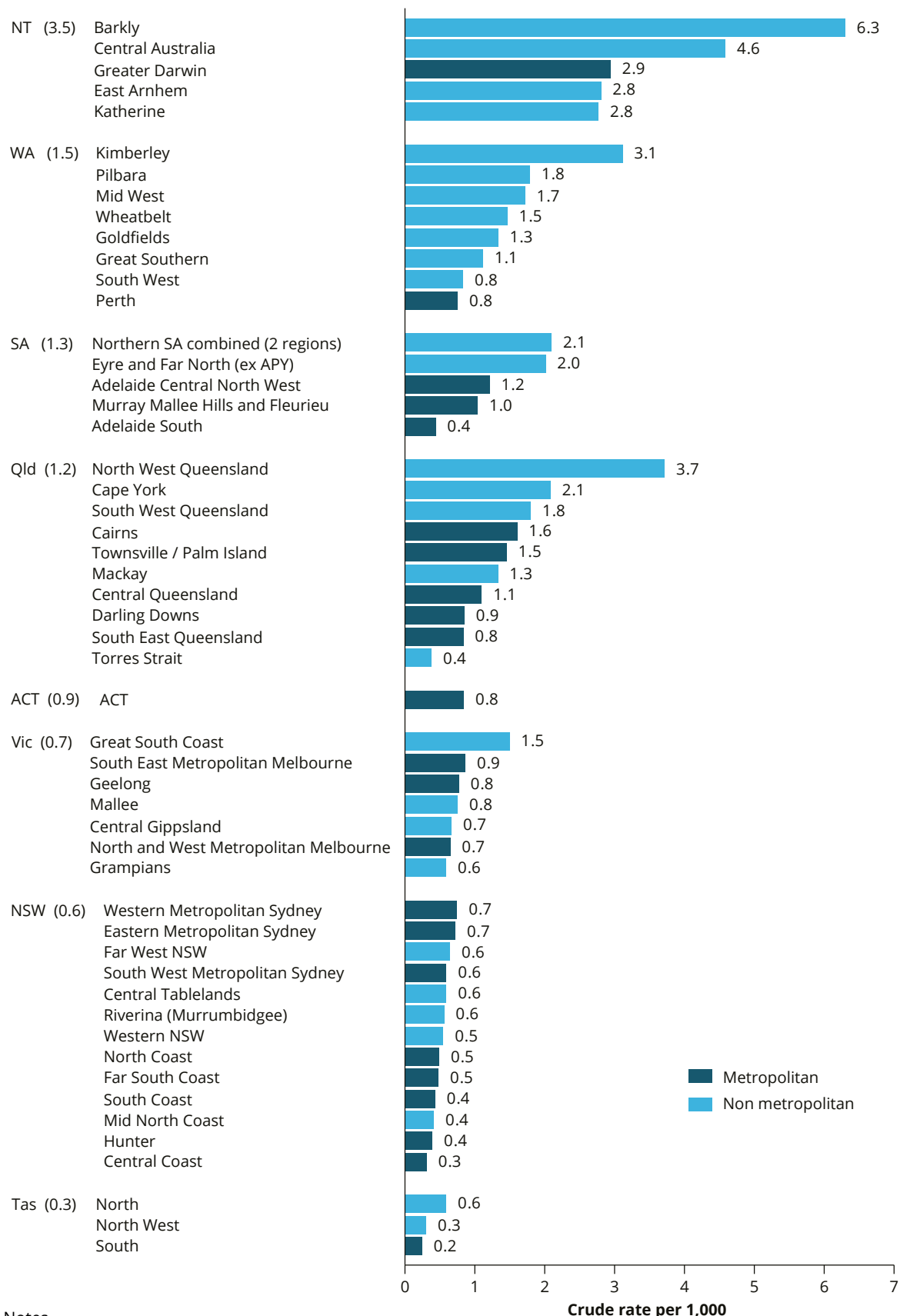
2. The rates beside the bars are the crude rate of hospitalisations for eye diseases in the relevant PHN.

2. Data for this figure are available in the data tables.

Source: AIHW analysis of NHMD.



**Figure 3.2p: Hospitalisations for injuries to the eye, Indigenous Australians, by Roadmap region, 2018–20**



**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 data tables.

Source: AIHW analysis of NHMD.

## Measure 3.3: Hospitalisations for eye procedures

**Key finding:** In the 2-year period 2018–20, there were around 9,900 (5.9 per 1,000 population) hospitalisations of Indigenous people for eye procedures. Between 2012–13 and 2019–20, the age-standardised hospitalisation rate for eye procedures for Indigenous Australians increased from 9.1 to 10.3 per 1,000 population.

**Overall:** In the 2-year period 2018–20, there were around 9,900 hospitalisations of Indigenous people for eye procedures – a crude rate of 5.9 per 1,000 population.

In 2019–20, age-standardised hospitalisation rates for Indigenous Australians for eye procedures (10.3 per 1,000) were lower than those for non-Indigenous Australians (12.2 per 1,000) (Figure 3.3a).

In 2018–20, for Indigenous Australians, the most common hospitalisations for an eye procedure were lens procedures (3.3 per 1,000) followed by retinal procedures (1.3 per 1,000) (Figure 3.3b).

**Age and sex:** In 2018–20, 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 2018–20, age-standardised rates of hospitalisation for Indigenous Australians for eye procedures were highest in *Remote and very remote* areas combined (11.8 per 1,000), and lowest in *Major cities* (10.2 per 1,000) (Figure 3.3d).

**Jurisdiction:** In 2018–20, age-standardised hospitalisation rates for Indigenous Australians for eye procedures were highest in Western Australia (12.9 per 1,000), followed by Queensland (12.2 per 1,000) (Figure 3.3e).

**Time trend:** Between 2012–13 and 2019–20, age-specific hospitalisation rates for eye procedures for Indigenous Australians remained fairly constant for those aged 45–54, but increased from 15.8 to 19.3 per 1,000 for those aged 55–64, from 42.2 to 48.8 per 1,000 for those aged 65–74 and from 55.2 to 67.7 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 from 2012–13 to 2018–19, before declining between 2018–19 and 2019–20 (Figure 3.3g). Hospitalisations rates for Indigenous Australians aged 65–74 and 75 and over were lower than those for non-Indigenous Australians of the same age.

Between 2012–13 and 2019–20, the age-standardised hospitalisation rate for eye procedures for Indigenous Australians increased from 9.1 to 10.3 per 1,000, while the rate for non-Indigenous Australians fell from 12.8 to 12.2 per 1,000. The trend line shows that the age standardised hospitalisation rate for Indigenous Australians has remained relatively constant over this period (Figure 3.3h).

**PHN:** In 2018–20, the PHNs with the highest reported rates of hospitalisations for Indigenous Australians for eye procedures were Western Queensland and Country WA (8.8 and 8.7 per 1,000, respectively) (Figure 3.3i).

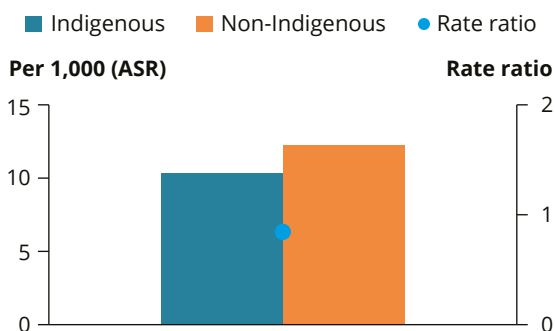
**Roadmap region:** In 2018–20, the Roadmap regions with the highest hospitalisation rates for Indigenous Australians for eye procedures were *Pilbara* (12.9 per 1,000), *Mid West* (10.6 per 1,000) and *South West Queensland* (9.9 per 1,000) (Figure 3.3j).

### Things to consider

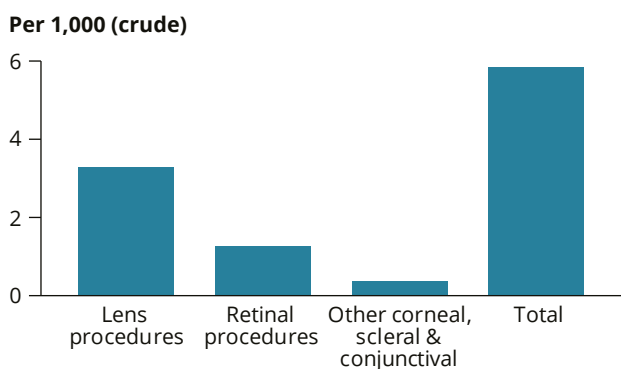
- The Australian Refined Diagnosis Related Group (AR-DRG) was used to disaggregate this measure into types of eye procedures. Each AR-DRG represents a class of patients with similar clinical conditions requiring similar hospital resources.
- The data may underestimate the number of procedures provided, as they do not include those undertaken on an outpatient basis.
- Hospitalisations data presented by state and territory and remoteness area in this report are based on the patient’s place of usual residence.
- 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 3 – Population rates).

**Figure 3.3: Hospitalisations for eye procedures, by various characteristics**

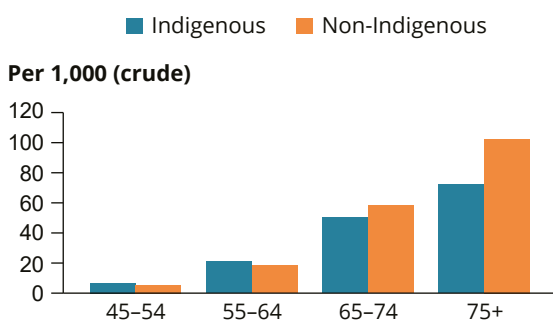
#### a) By Indigenous status, 2019–20



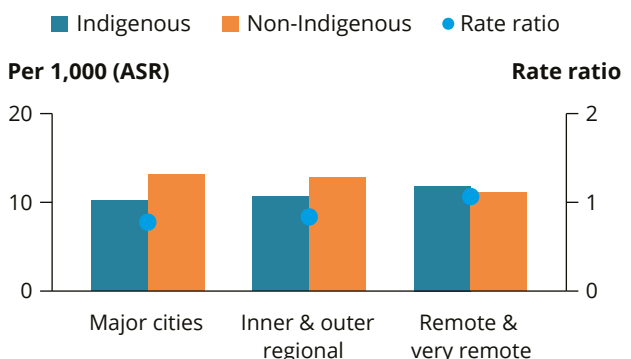
#### b) Indigenous, by procedure type, 2018–20



#### c) By Indigenous status and age, 2018–20



#### d) By region, 2018–20



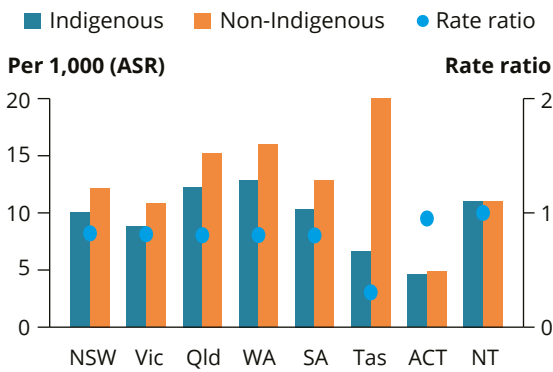
#### Notes

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 data tables.
- Source: AIHW analysis of NHMD.

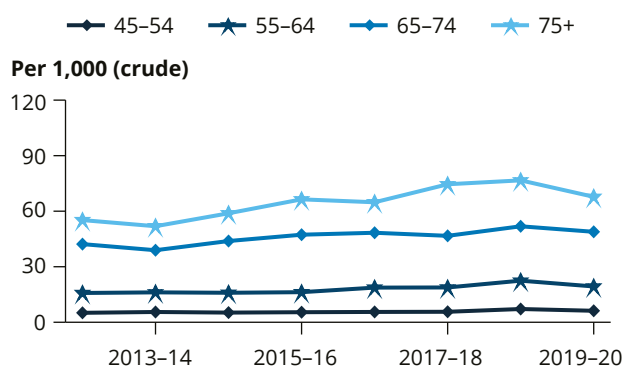
(continued)

Figure 3.3 (continued): Hospitalisations for eye procedures, by Indigenous status, by various characteristics

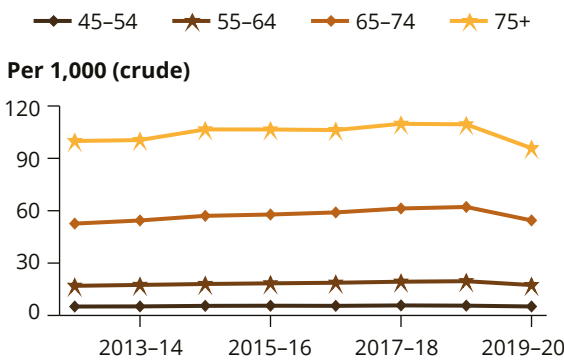
**e) By jurisdiction, 2018-20**



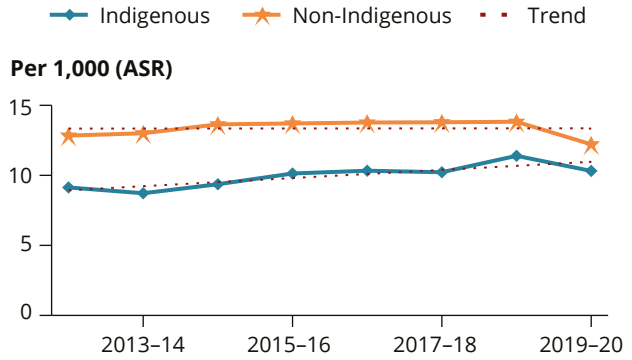
**f) Indigenous, by age, 2012-13 to 2019-20**



**g) Non-Indigenous by age, 2012-13 to 2019-20**



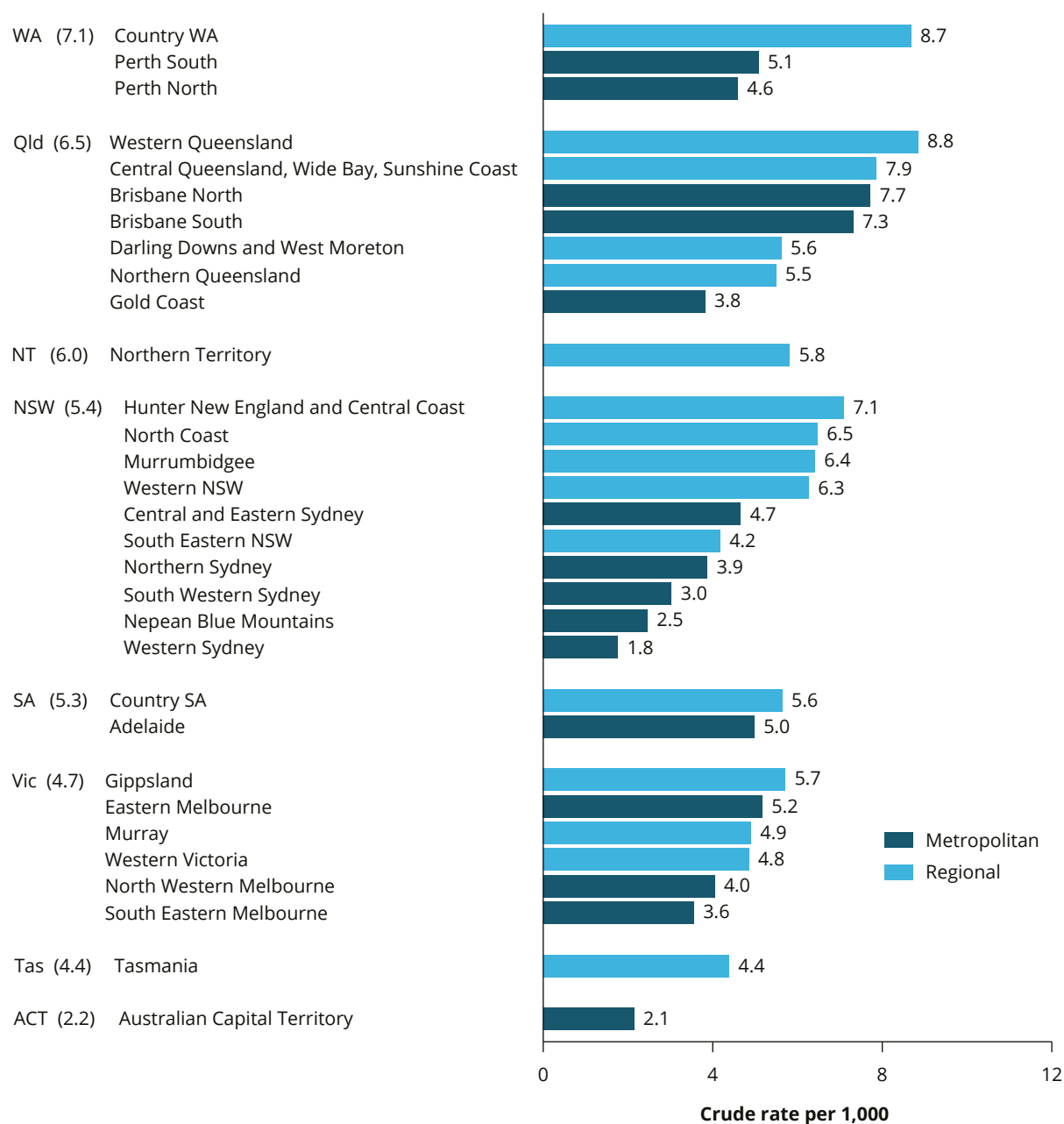
**h) Time trend, 2012-13 to 2019-20**



Notes

1. ASR refers to the age-standardised rate.
  2. Data for these figures are available in the data tables.
- Source: AIHW analysis of NHMD.

**Figure 3.3i: Hospitalisations for eye procedures, Indigenous Australians, by PHN, 2019–20**

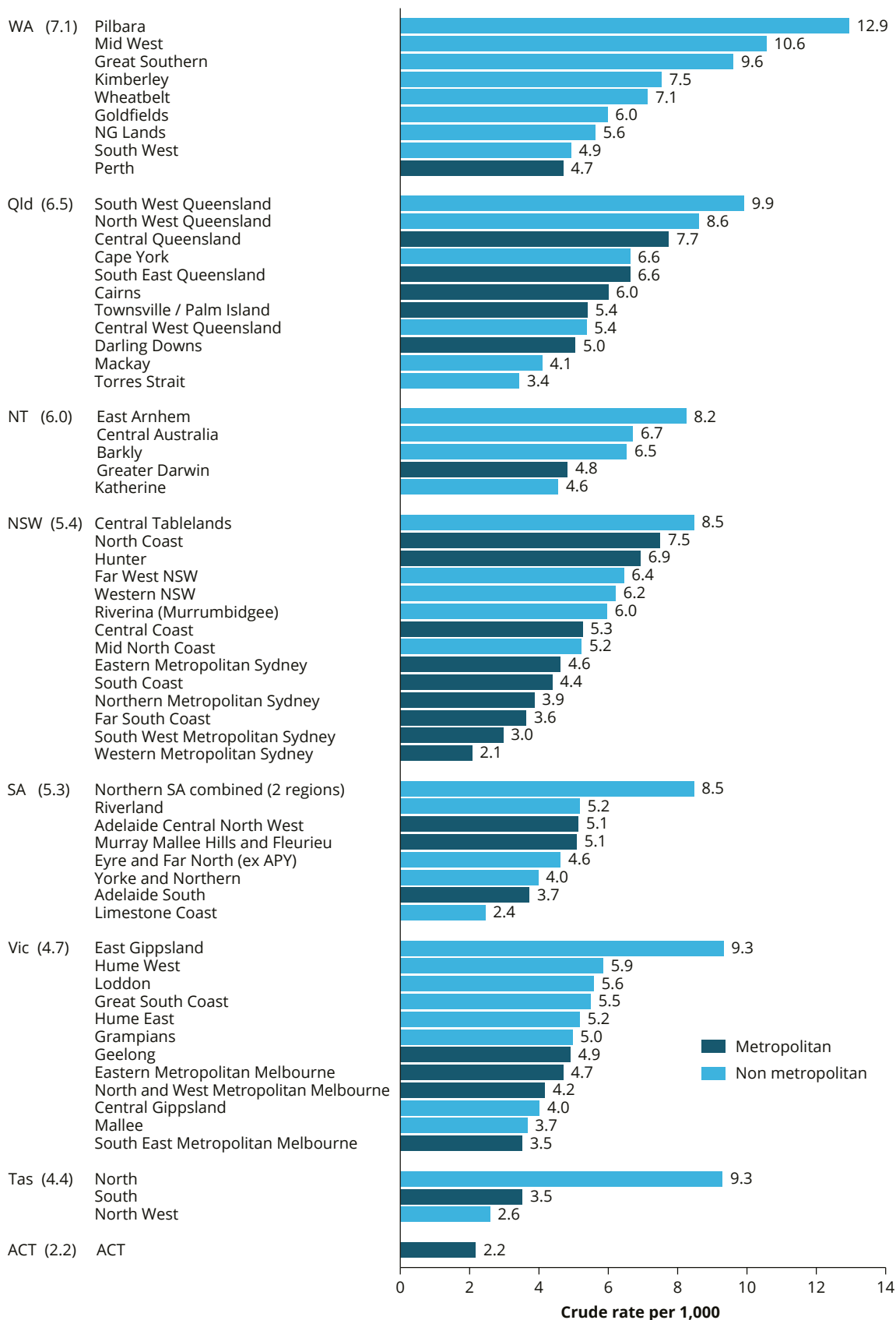


**Notes**

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 data tables.

Source: AIHW analysis of NHMD.

**Figure 3.3j: Hospitalisations for eye procedures, Indigenous Australians, by Roadmap region, 2019–20**



**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 data tables.

Source: AIHW analysis of NHMD.

## Measure 3.4: Cataract surgery rate

**Key finding:** In the 2-year period from 2018–20, there were around 6,200 (3,636 per 1,000,000 population) hospitalisations for Indigenous Australians for cataract surgery. Between 2012–13 and 2019–20, the age-standardised rate for cataract surgery for Indigenous Australians increased from 6,681 to 6,884 per 1,000,000.

**Overall:** In the 2-year period from 2018–20, there were around 6,200 hospitalisations for Indigenous Australians for cataract surgery – a rate of 3,636 per 1,000,000 population. The number of hospitalisations over the 2-year period from 2018–20 was below the estimated annual number of Indigenous people needing cataract surgery (14,656) (IEHU 2017).

In 2019–20, age-standardised hospitalisation rates for Indigenous Australians for cataract surgery (6,884 per 1,000,000) were lower than for non-Indigenous Australians (7,413 per 1,000,000) (Figure 3.4a).

**Age and sex:** In 2018–20, 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 (53,289 and 60,911 per 1,000,000, respectively) (Figure 3.4b).

**Remoteness:** In 2018–20, age-standardised rates of hospitalisations for Indigenous Australians for cataract surgery were lowest in *Major cities* (6,659 per 1,000,000) and highest in *Remote and very remote* areas combined (8,218 per 1,000,000) (Figure 3.4c).

**Jurisdiction:** In 2018–20, age-standardised hospitalisation rates for cataract surgery for Indigenous Australians were highest in the Northern Territory (8,710 per 1,000,000) and lowest in the Australian Capital Territory (3,190 per 1,000,000) (Figure 3.4d).

**Time trend:** Between 2012–13 and 2018–19, the age-specific hospitalisation rate for Indigenous Australians for cataract surgery generally increased for all age groups over time, before declining for all age groups between 2018–19 and 2019–20 (figures 3.4e–h). The rate for non-Indigenous Australians remained relatively constant for the 45–54 and 55–64 age groups; it increased for the 65–74 age group from 2012–13 to 2018–19 before declining between 2018–19 and 2019–20 along with a decline for the 75 and over age group (figures 3.4e–h). In 2019–20, 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 2012–13 and 2018–19, the age-standardised rate for cataract surgery for Indigenous Australians increased from 6,681 to 8,130 per 1,000,000 before declining from 2018–19 to 2019–20 to 6,884, while the rate for non-Indigenous Australians increased from 8,493 to 8,737 before declining to 7,413 over the same period. The trend line shows a slight rise in the age-standardised hospitalisation rate for Indigenous Australians over this time (Figure 3.4i).

**PHN:** In 2018–20, the PHNs with the highest reported rates of hospitalisations for Indigenous Australians for cataract surgery were Western Queensland (6,462), Murrumbidgee (4,951) and Hunter New England and Central Coast (4,781) (Figure 3.4j).

**Roadmap region:** In 2018–20, the number of hospitalisations for Indigenous Australians came closest to meeting estimated need in the Roadmap region of *South West Queensland* (64 hospitalisations, with 72% of the need met) (Figure 3.4k). The highest hospitalisation rates for Indigenous Australians for cataract surgery were in *South West Queensland* (6,911 per 1,000,000) (figures 3.4l and 3.4m).

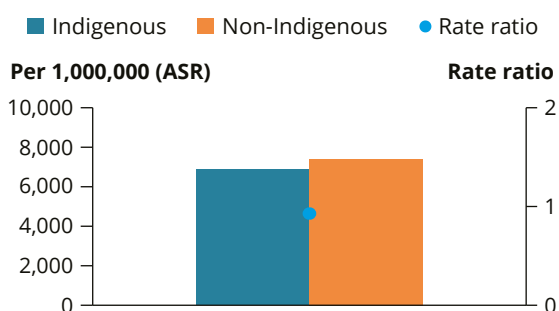
### Things to consider

- 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.
- Hospitalisations data presented by state and territory and remoteness area in this report are based on the patient's place of usual residence.
- 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 3 – Population rates).

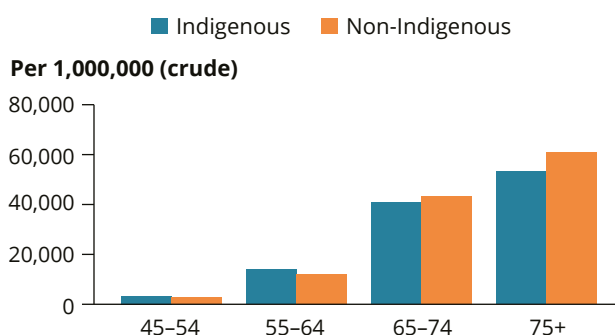


**Figure 3.4: Hospitalisations for cataract surgery, by Indigenous status, by various characteristics**

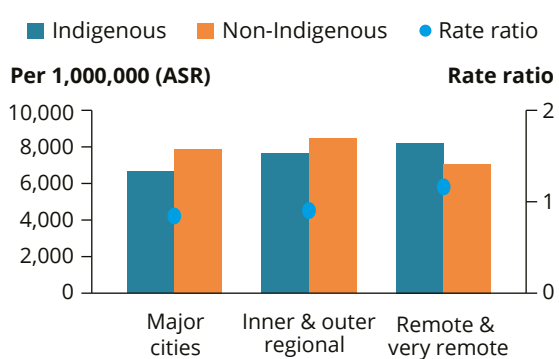
**a) By Indigenous status, 2019–20**



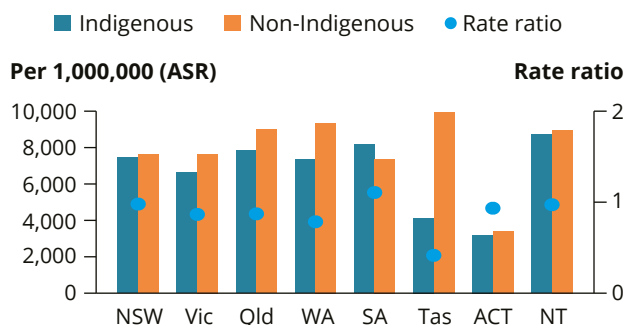
**b) By Indigenous status and age, 2018–20**



**c) By region, 2018–20**



**d) By jurisdiction, 2018–20**



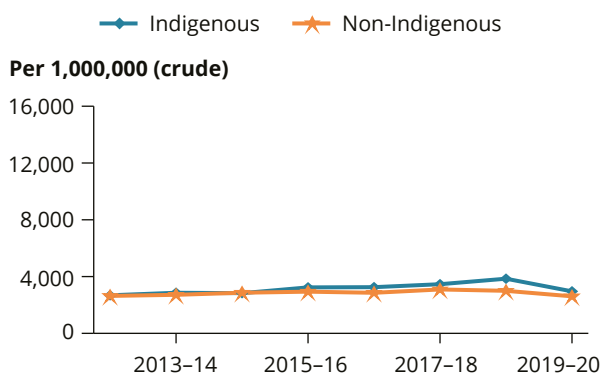
**Notes**

1. ASR refers to the age-standardised rate.
  2. Data for these figures are available in the data tables.
- Source: AIHW analysis of NHMD.

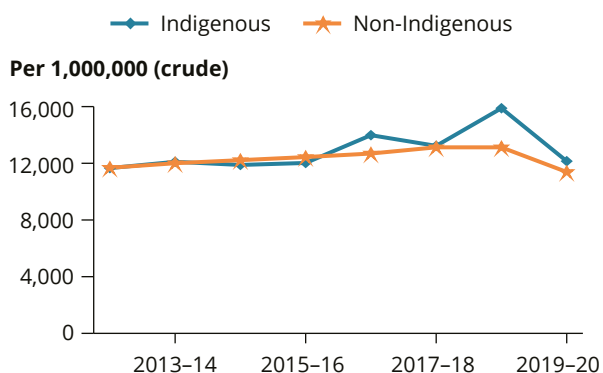
(continued)

**Figure 3.4 (continued): Hospitalisations for cataract surgery, by Indigenous status, by various characteristics**

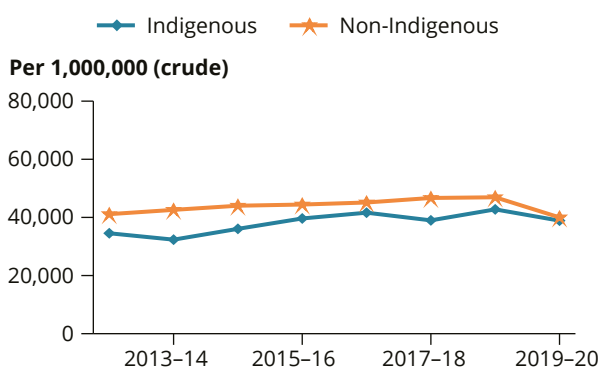
**e) 45 to 54 years, 2012-13 to 2019-20**



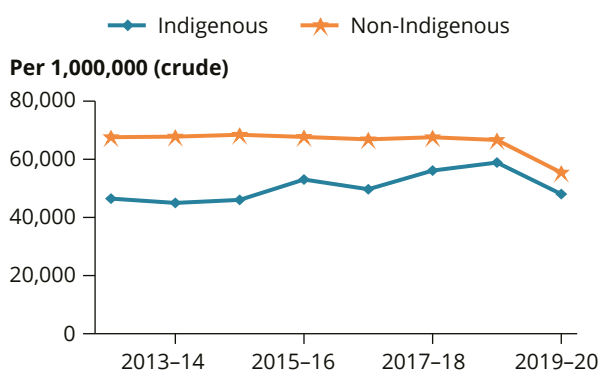
**f) 55 to 64 years, 2012-13 to 2019-20**



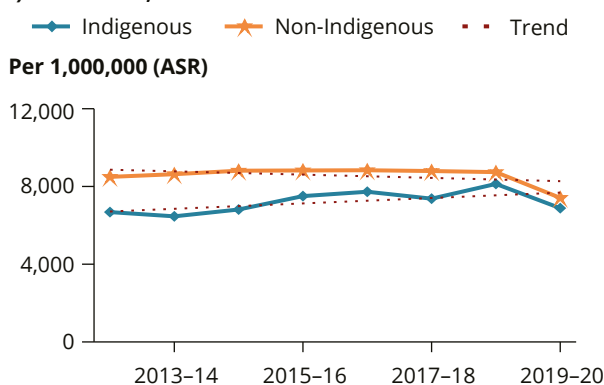
**g) 65 to 74 years, 2012-13 to 2019-20**



**h) 75 years and over, 2012-13 to 2019-20**



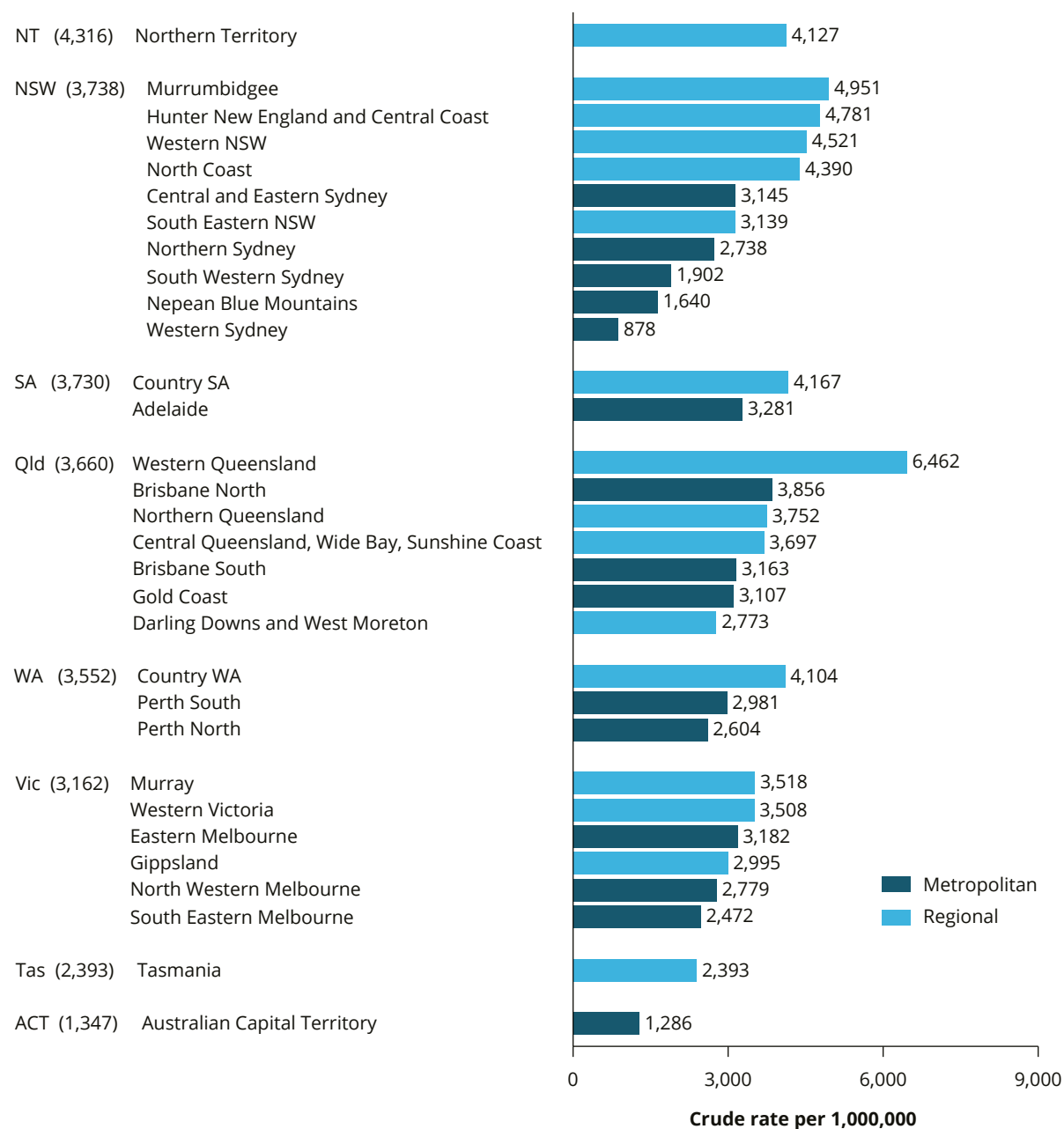
**i) Time trend, 2012-13 to 2019-20**



**Notes**

1. ASR refers to the age-standardised rate.
  2. Data for these figures are available in the data tables.
- Source: AIHW analysis of NHMD.

**Figure 3.4j: Hospitalisations for cataract surgery, Indigenous Australians, by PHN, 2018–20**

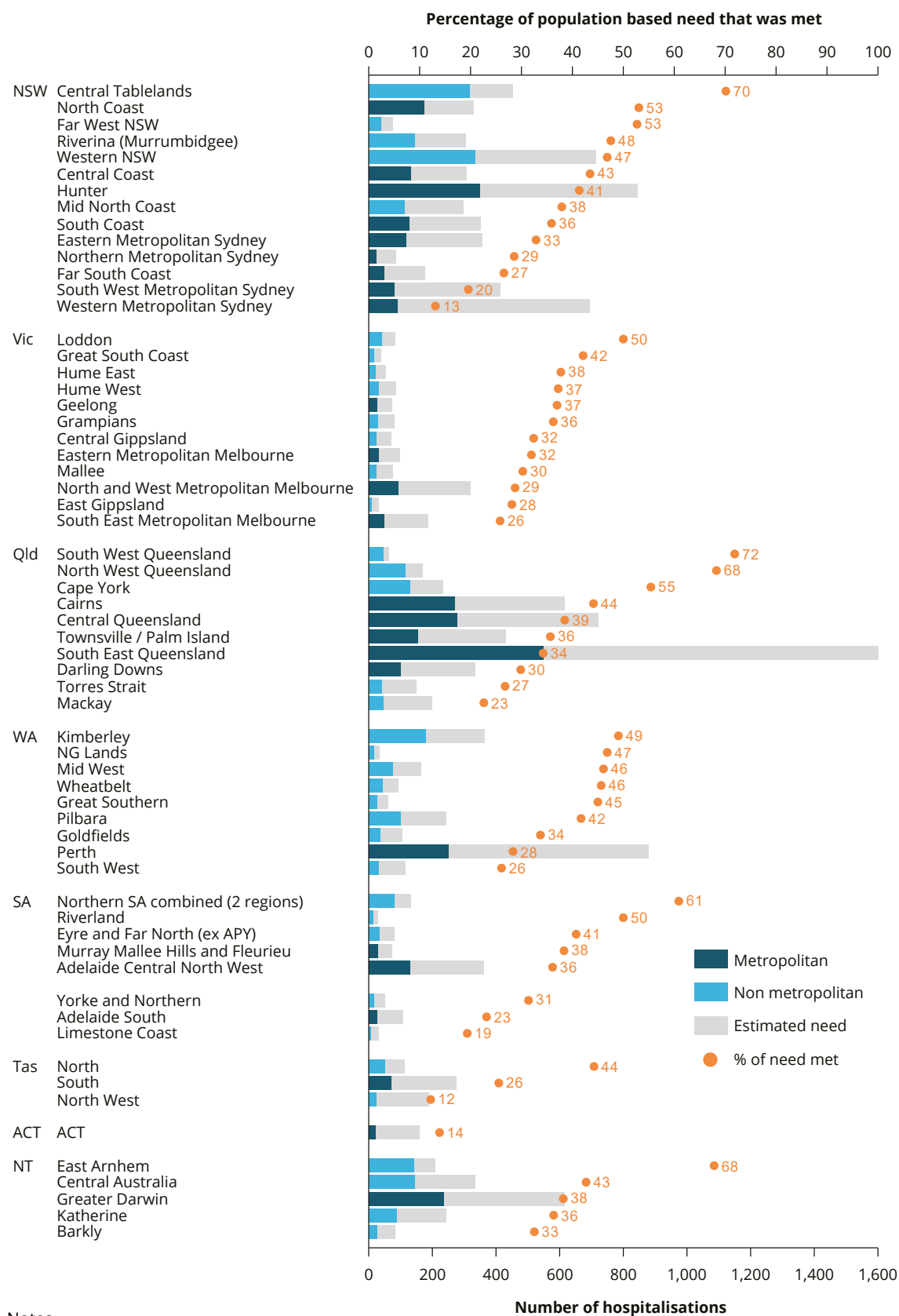


**Notes**

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 data tables.

Source: AIHW analysis of NHMD.

**Figure 3.4k: Hospitalisations and estimated need for cataract surgery, Indigenous Australians, by Roadmap region, 2018–20**

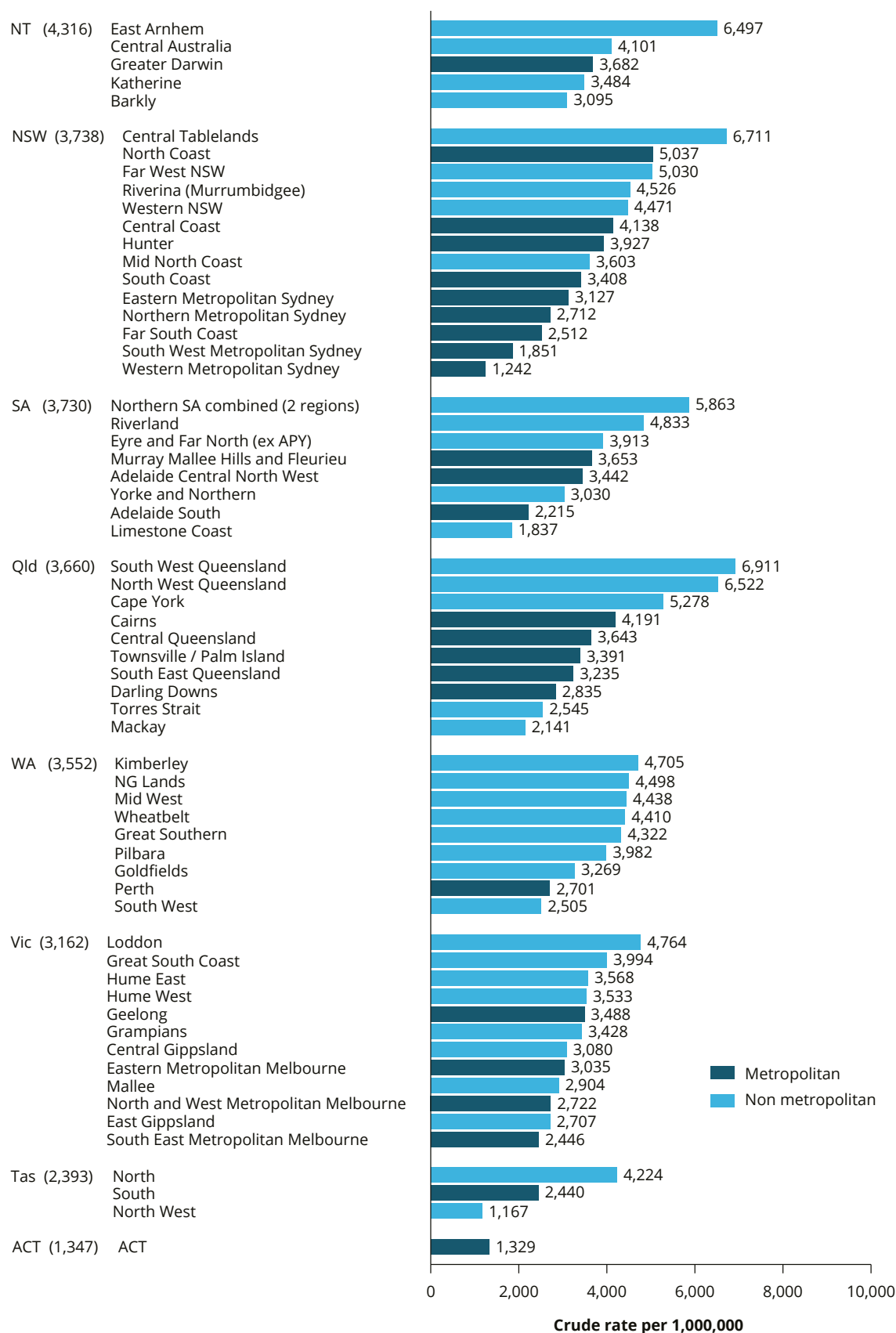


**Notes**

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

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

**Figure 3.4I: Hospitalisations for cataract surgery, Indigenous Australians, by Roadmap region, 2018–20**

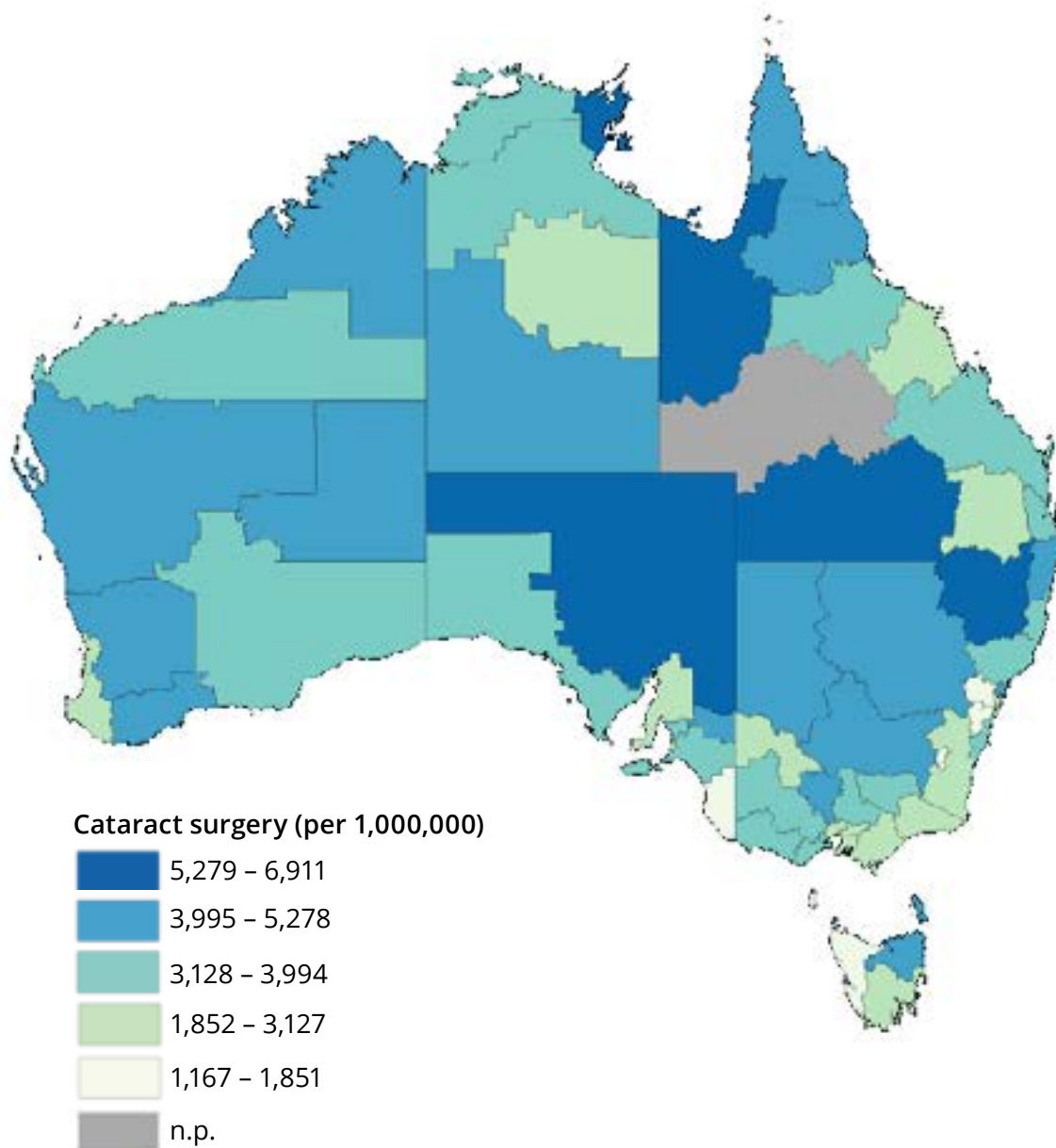


**Notes**

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

Source: AIHW analysis of NHMD.

Figure 3.4m: Hospitalisations for cataract surgery, Indigenous Australians, by Roadmap region, 2018–20



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

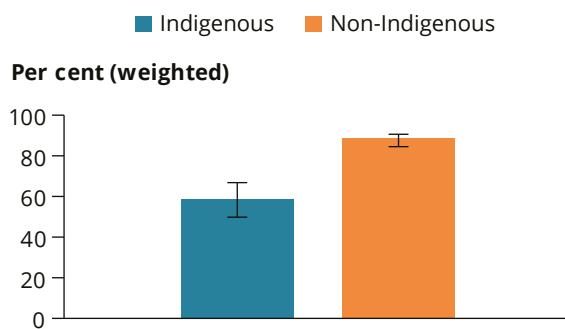
**Age and sex:** In 2016, the estimated cataract surgical coverage rate for Indigenous Australians was lowest for those aged 40–49 (43%) and highest for those aged 70–79 (73%). The surgical coverage rate for non-Indigenous Australians was significantly higher than that for Indigenous Australians for 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).

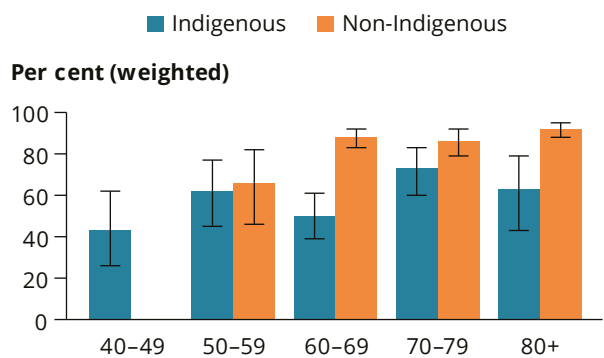
**Remoteness:** Cataract surgical coverage rates for Indigenous participants did not differ significantly by remoteness (Figure 3.5.1d).

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

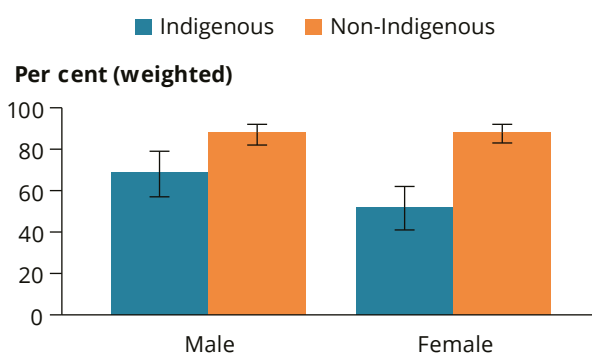
#### a) By Indigenous status, 2016



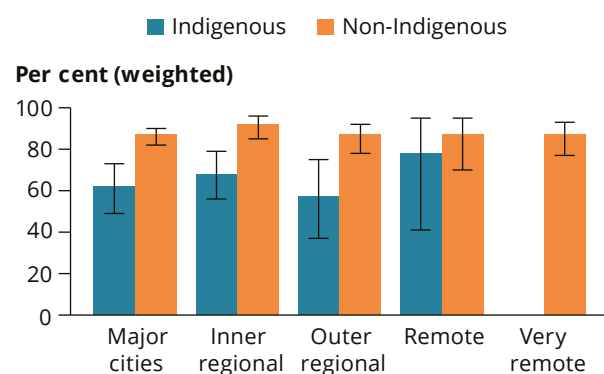
#### b) By age, 2016



#### c) By sex, 2016



#### d) By region, 2016



#### Notes

1. Cataract surgery coverage using the NEHS definition was calculated as the number of those 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.
  5. Data for these figures are available in the online data tables.
- Sources: 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).

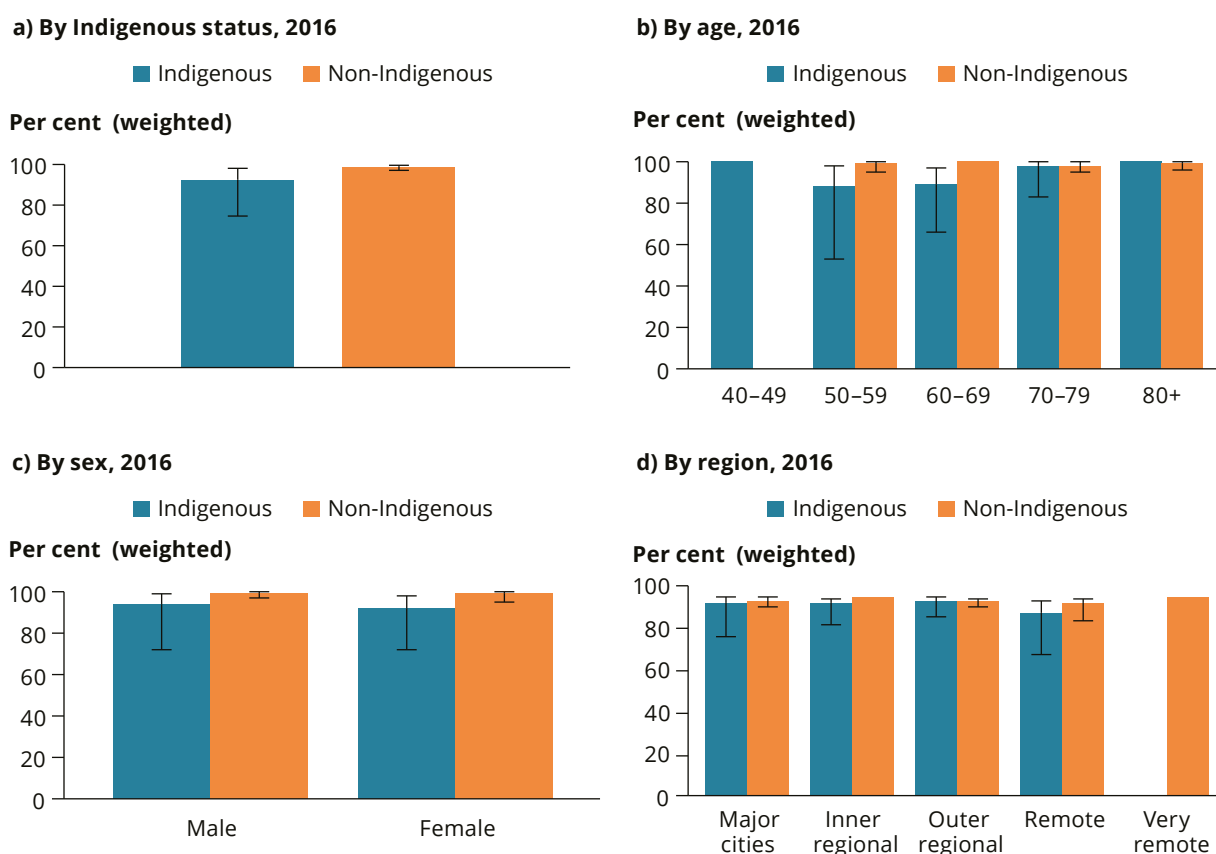
**Age and sex:** In 2016, cataract surgical coverage rates did not differ significantly by age or sex for Indigenous or for non-Indigenous Australians (figures 3.5.2b and 3.5.2c).

**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**



**Notes**

1. Cataract surgery coverage using the WHO definition was calculated as the number of those 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.
  5. Data for these figures are available in the online data tables.
- Sources: AIHW analysis of NEHS data 2016; Foreman et al. 2017 .



## Measure 3.6: Waiting times for elective cataract surgery

**Key finding:** In 2019–20, the median waiting time for elective cataract surgery for Indigenous Australians was longer than for non-Indigenous Australians (130 days and 95 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); it then dropped to 124 days in 2018–19 before increasing to 130 days in 2019–20.

### 3.6.1 Median and 90th percentile waiting times

**Overall:** In 2019–20, there were 1,660 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 (130 days and 95 days, respectively). The time waited at the 90th percentile of Indigenous Australians who 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 (354 days and 351 days, respectively).

**Remoteness:** In 2018–20, the median number of days waited was longest in *Inner regional* areas, at 194 for Indigenous Australians and 151 days for non-Indigenous Australians. By comparison, Indigenous Australians had the shortest waiting times in *Major cities* (88 days) and non-Indigenous Australians had the shortest waiting times in *Major cities* and *Remote* areas (both 72 days) (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 *Very remote* areas (357 days) and shortest for those in *Remote* areas (334 days). For non-Indigenous Australians, waiting times were longest in *Inner regional* areas (350 days) and shortest in *Very remote* areas (288 days) (Figure 3.6.1b).

**Jurisdiction:** In 2018–20, median waiting times were longest for Indigenous and non-Indigenous Australians in New South Wales (211 days and 252 days, respectively). Median waiting times were shortest for Indigenous and non-Indigenous Australians in Victoria (49 days and 40 days, respectively) (Figure 3.6.1c).

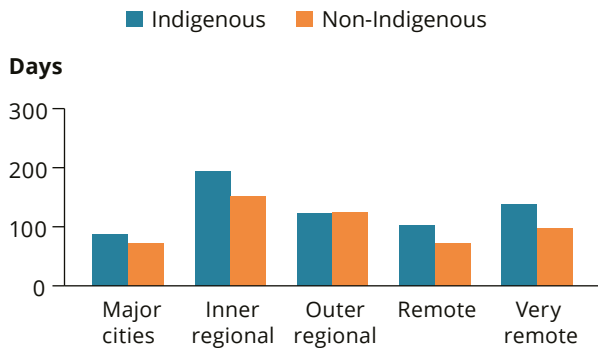
At the 90th percentile, waiting times were longest for Indigenous and non-Indigenous Australians in Tasmania (372 days and 461 days, respectively). Waiting times at the 90th percentile for Indigenous and non-Indigenous Australians were shortest in Victoria (165 and 131 days, respectively) (Figure 3.6.1d).

**Time trend:** From 2012–13 to 2019–20, 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 before rising again to 130 days in 2019–20. Over the same period, the median waiting time for non-Indigenous Australians rose from 88 days to 93 days, then fell to 82 days before rising again to 95 days (Figure 3.6.1e).

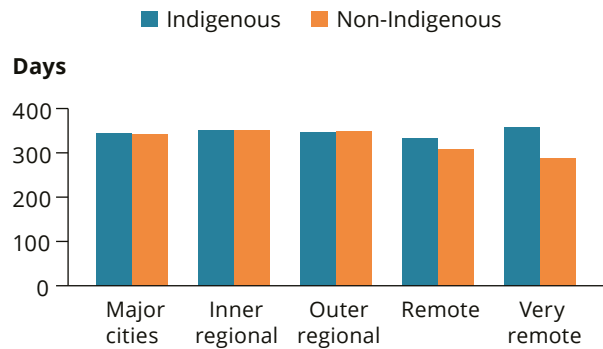
From 2012–13 to 2019–20, the number of days waited at the 90th percentile was similar for Indigenous and non-Indigenous Australians and remained relatively stable for both groups (Figure 3.6.1f).

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

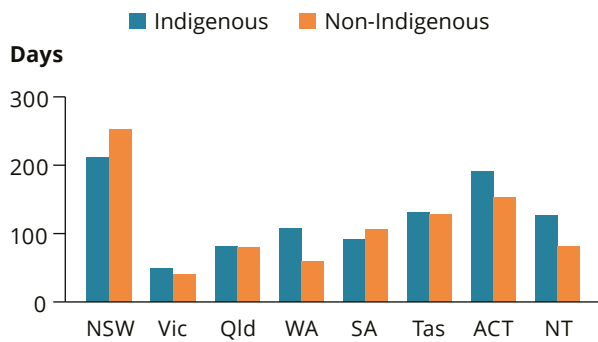
**a) By region, days waited, 50th percentile, 2018–20**



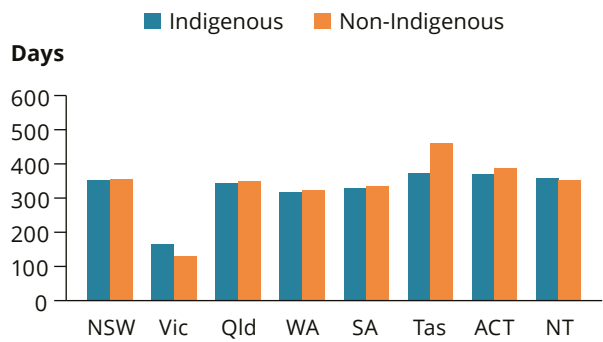
**b) By region, days waited, 90th percentile, 2018–20**



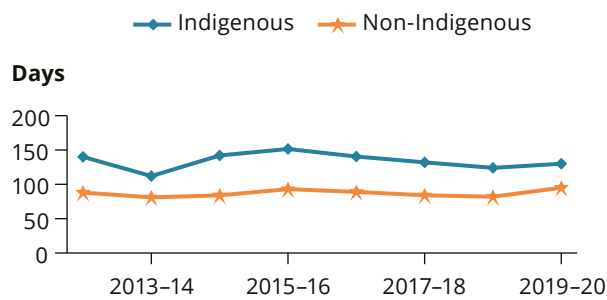
**c) By state, days waited, 50th percentile, 2018–20**



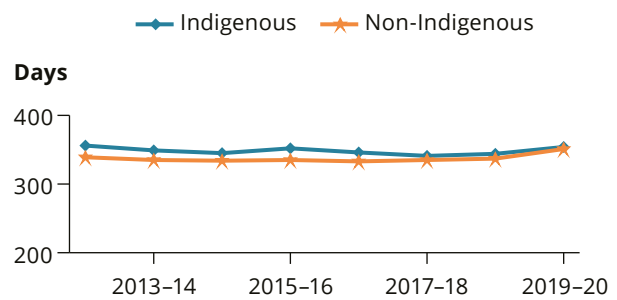
**d) By state, days waited, 90th percentile, 2018–20**



**e) Time trend, days waited at the 50th percentile, 2012–13 to 2019–20**



**f) Time trend, days waited at the 90th percentile, 2012–13 to 2019–20**



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

Source: AIHW analysis of NHMD.

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

**Overall:** In 2019–20, the proportion of Indigenous Australians who had elective cataract surgery and were treated within 90 days was lower than that for non-Indigenous Australians treated within this time (39% and 48%, respectively).

The proportion of Indigenous Australians treated within 365 days for cataract surgery was similar to that for non-Indigenous Australians treated within this time (both 95% when rounded).

**Remoteness:** In 2018–20, the proportion of Indigenous Australians treated within 90 days for elective cataract surgery was highest in *Major cities* (51%) and highest for non-Indigenous Australians in *Major cities* and *Remote* areas (57%). Proportions were lowest for Indigenous and non-Indigenous Australians in *Inner regional* areas (30% and 38%, respectively) (Figure 3.6.2a).

The proportion of Indigenous Australians treated within 365 days was lowest in *Very remote* areas (92%) and highest in *Major cities* (98%). For non-Indigenous Australians, the proportion was lowest in *Outer regional* areas (96%) and highest in *Remote* areas (97%) (Figure 3.6.2b).

**Jurisdiction:** In 2018–20, the proportion of Indigenous and non-Indigenous Australians treated within 90 days for elective cataract surgery was highest in Victoria (74% and 79%, respectively); it was lowest for Indigenous patients in the Australian Capital Territory (25%) and for non-Indigenous patients in New South Wales (25%) (Figure 3.6.2c).

Over 96% of Indigenous Australians were treated within 365 days in New South Wales, Victoria, Queensland and South Australia. The proportion of Indigenous Australians treated within 365 days was lowest in the Australian Capital Territory (88%) (Figure 3.6.2d).

**Time trend:** Between 2012–13 and 2019–20, the proportion of both Indigenous and non-Indigenous Australians treated within 90 days for elective cataract surgery remained relatively stable (Figure 3.6.2e).

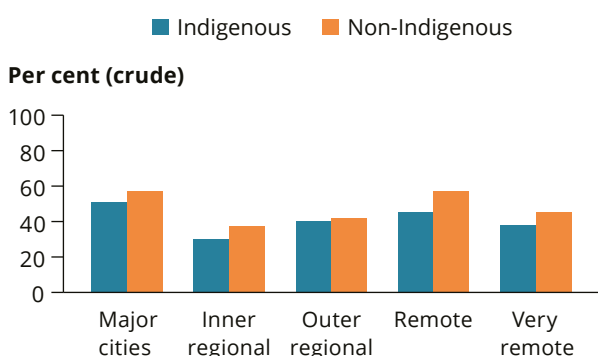
The proportion of Indigenous and non-Indigenous Australians treated within 365 days was also relatively stable over this period (Figure 3.6.2f).

#### Things to consider

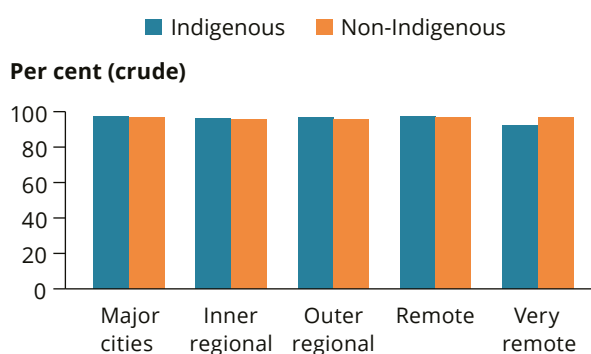
- This measure includes data for waiting lists managed by public hospitals – and may include public patients admitted to private hospitals from public hospital waiting lists.
- There are no nationally agreed benchmarks for waiting times for cataract surgery, and there are significant variations across jurisdictions. Waiting times depend 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 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**

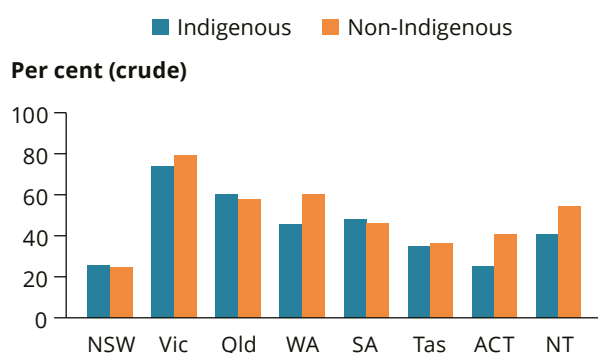
**a) By region, treated within 90 days, 2018–20**



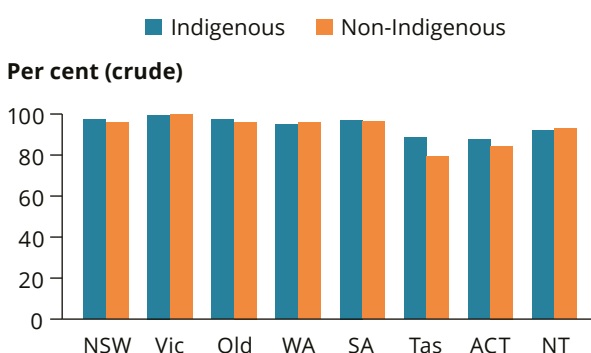
**b) By region, treated within 365 days, 2018–20**



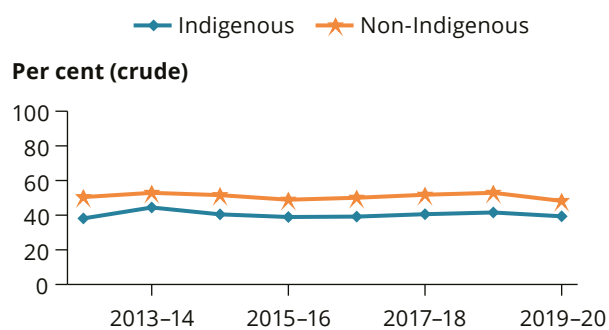
**c) By jurisdiction, treated within 90 days, 2018–20**



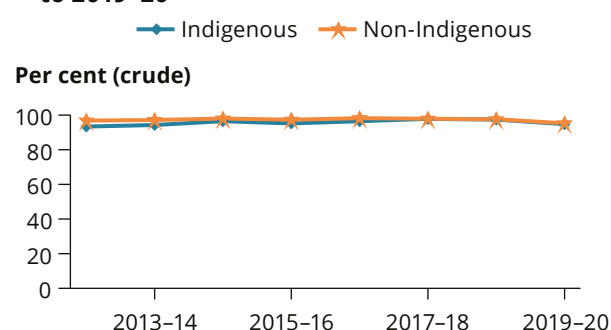
**d) By jurisdiction, treated within 365 days, 2018–20**



**e) Time trend, treated within 90 days, 2012–13 to 2019–20**



**f) Time trend, treated within 365 days, 2012–13 to 2019–20**



Note: Data for these figures are available in the online data tables.  
Source: AIHW analysis of NHMD.

## Measure 3.7: Treated for diabetic retinopathy among target population

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

### 3.7.1 Treated for diabetic retinopathy among those screened for diabetic retinopathy

**Overall:** In 2019–20, 506 Indigenous Australians screened for diabetic retinopathy 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 4.8% (92 males) in those aged 55–64 and 4.8% (106 females), in those aged 65 and over. Across all age groups except those aged 65 and over, a higher proportion of males than females underwent treatment (Figure 3.7.1b).

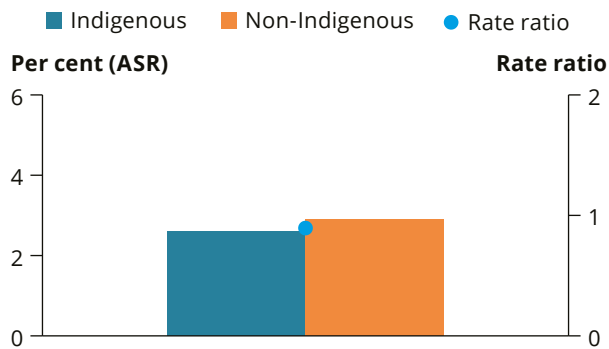
**Remoteness:** In 2019–20, the proportion of Indigenous Australians who received treatment for diabetic retinopathy was highest in *Major cities* and *Outer regional* areas (4.2%). The rate was lowest in *Very remote* areas (2.0%) (Figure 3.7.1c).

**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%); it was highest in the Australian Capital Territory (5.8%), followed by Western Australia (5.7%) (Figure 3.7.1d).

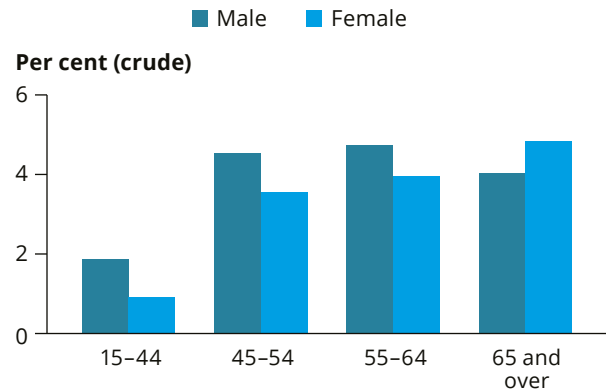
**Time trend:** Between 2010–11 and 2019–20, the number of Indigenous Australians screened for diabetic retinopathy who underwent treatment increased from 351 in 2010–11 to 506 in 2019–20. The proportion who underwent treatment fell from 3.5% in 2010–11 to 3.2% in 2014–15, 2015–16 and 2016–17, before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

**Figure 3.7.1: Population treated for diabetic retinopathy among those screened for diabetic retinopathy, by various characteristics**

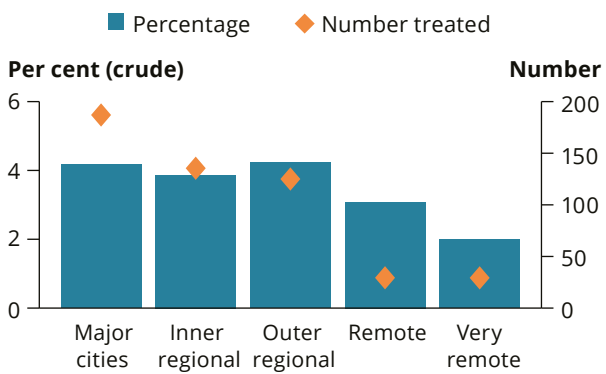
**a) By Indigenous status 2019-20**



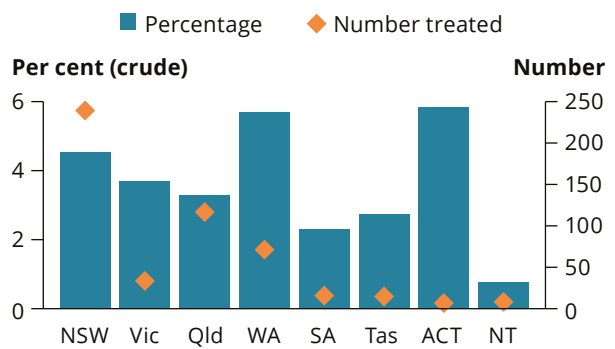
**b) Indigenous, by age and sex, 2019-20**



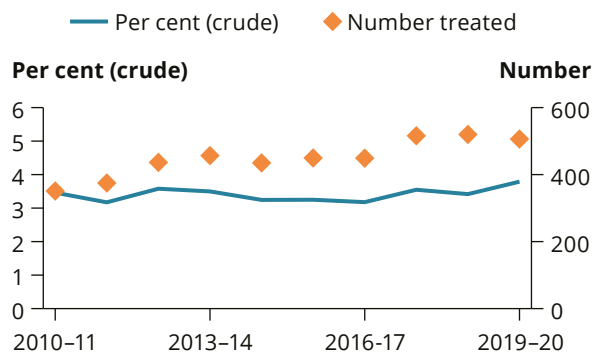
**c) By remoteness, 2019-20**



**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 data tables.
  4. The population screened for diabetic retinopathy comes from Measure 2.3.
- Source: AIHW analysis of MBS data.

### 3.7.2 Treated for diabetic retinopathy among those tested for diabetes

**Overall:** In 2019–20, there were 506 Indigenous 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 males) and 2.7% (106 females), in those aged 65 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%); it was highest in the Australian Capital Territory (2.2%), followed by New South Wales (2.0%) (Figure 3.7.2d).

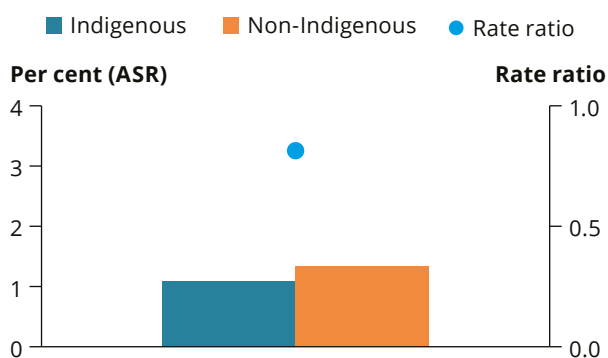
**Time trend:** Between 2010–11 and 2019–20, the estimated proportion of Indigenous Australians screened for diabetes who underwent treatment rose from 1.3% in 2010–11 to 1.6% in 2019–20 (Figure 3.7.2e). The number screened increased from 26,713 to 32,000 over this same period.

#### Things to consider

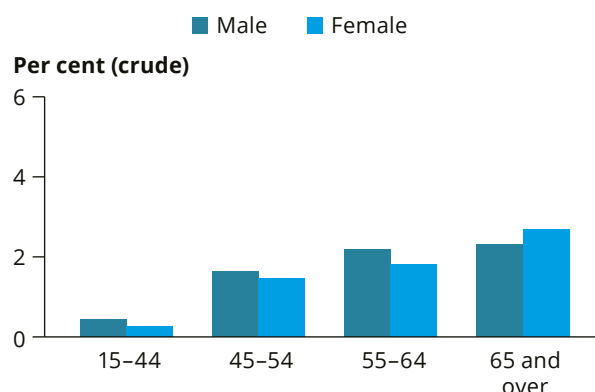
- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals – for example, eye examinations undertaken by salaried ophthalmologists in public hospitals or intravitreal or laser procedures in outpatient 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 among those tested for diabetes, by various characteristics**

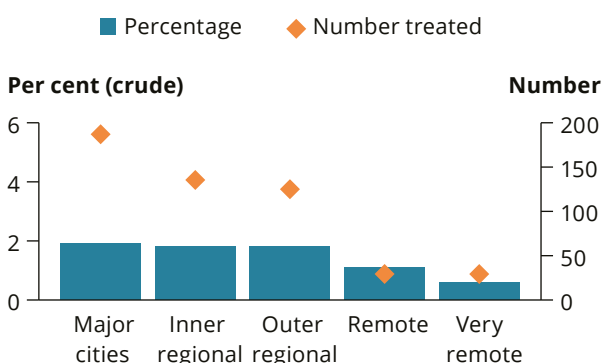
**a) By Indigenous status 2019-20**



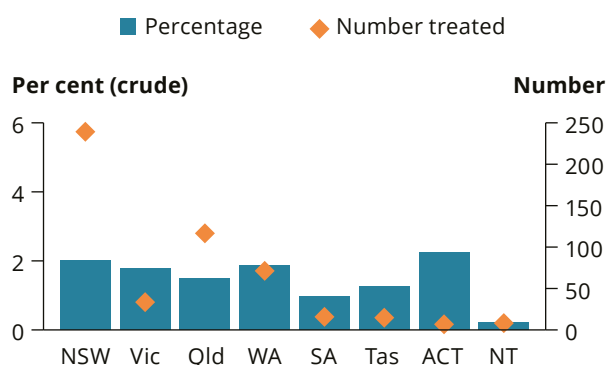
**b) Indigenous, by age and sex, 2019-20**



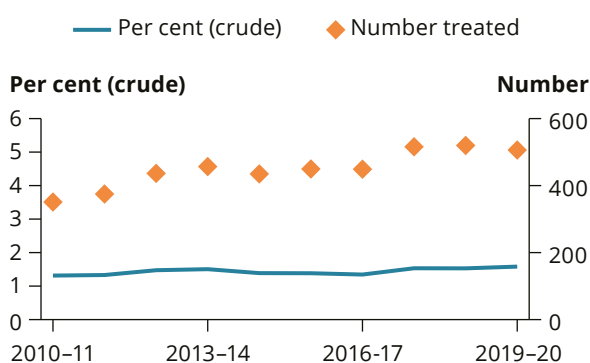
**c) By remoteness, 2019-20**



**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 data 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 2021, in communities where active trachoma was identified, a total of 1,666 (71%) community members received treatment, increasing from 65% in 2011. In 2021, in the 4 jurisdictions with at-risk communities, 8 of the 13 (62%) Indigenous adults aged 40 and over with trichiasis had surgery in the past 12 months.

### 3.8.1 Trachoma

**Overall:** In 2021, in communities where active trachoma was identified, a total of 1,666 community members received treatment, a rate of 71% (Figure 3.8.1b). This included 177 children aged 0–4 (67%), 204 aged 5–9 (72%), 234 aged 10–14 (78%) and 1,051 (71%) community members aged 15 and over (Figure 3.8.1a).

**Jurisdiction:** In 2021, in communities where active trachoma was identified, the proportion of community members who received treatment was 84% in South Australia (42 community members treated), 71% in Western Australian (602), and 71% in the Northern Territory (628). No active trachoma case was identified in Queensland (Figure 3.8.1b).

**Time trend:** Between 2011 and 2021, 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 69% in 2020 and then rose to 71% in 2021 (Figure 3.8.1c).

#### Things to consider

- Trachoma treatment strategies were applied in 53 communities. Treatment was delivered to active cases and households in 46 communities and to the whole of the community in 7 communities.
- The 5–9 age group is the target group for screening programs in all regions.

### 3.8.2 Trichiasis

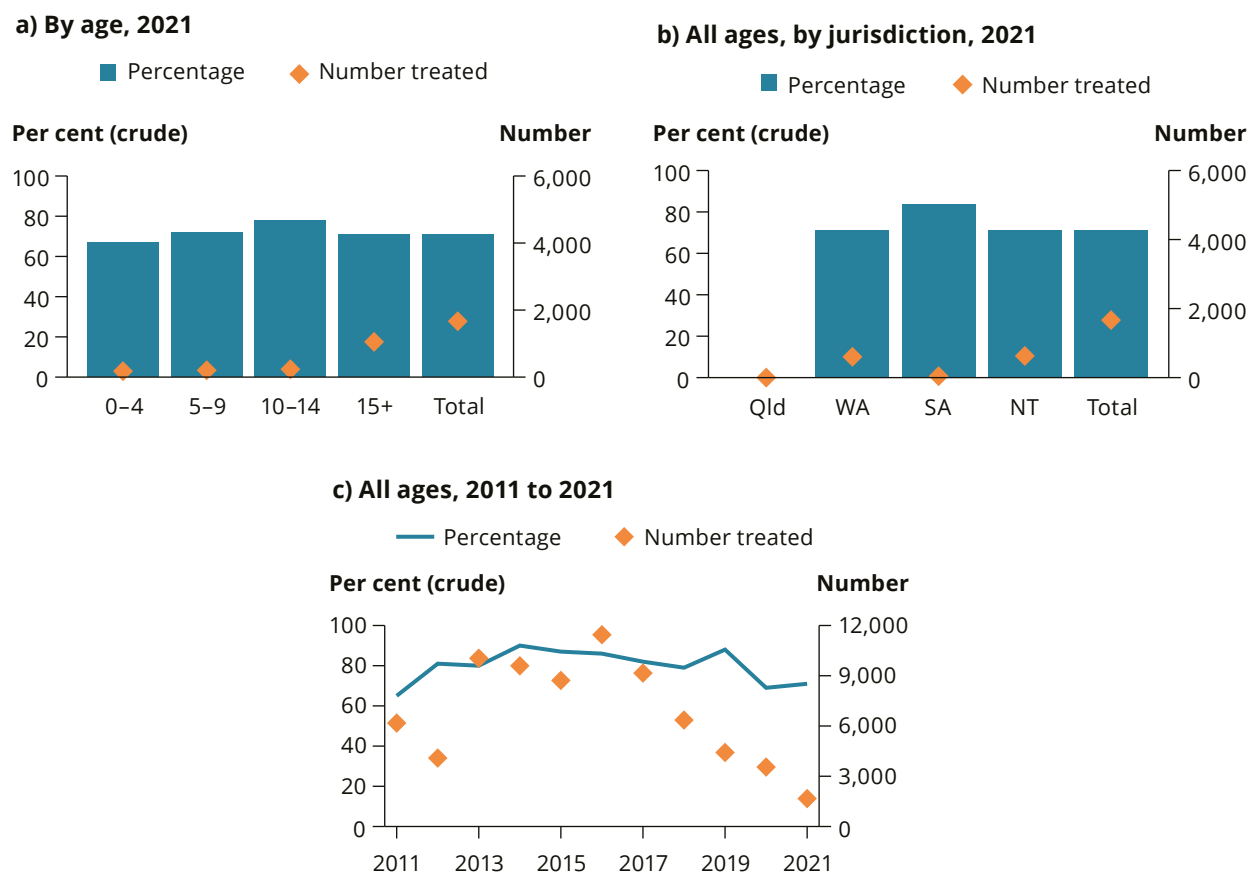
**Overall:** In 2021, in the 4 jurisdictions with at-risk communities, 8 of the 13 (62%) Indigenous adults aged 40 and over with trichiasis had surgery in the past 12 months. Four of the 8 surgeries took place in Western Australia (Figure 3.8.2a).

**Time trend:** Between 2012 and 2021, the number of Indigenous adults aged 40 and over who had surgery for trichiasis rose from 16 in 2012 to 31 in 2013. The number of surgeries has generally fallen over time since then, to 8 in 2021 (Figure 3.8.2b).

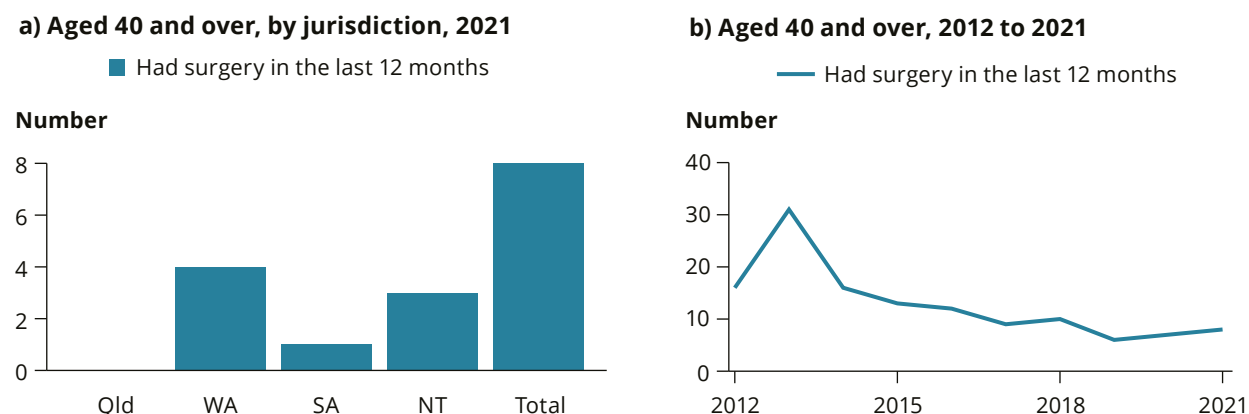
#### Things to consider

- 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 2021, no data on ophthalmic consultations were provided.

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



**Figure 3.8.2: Trichiasis treatment coverage, by various characteristics**



**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 data tables.

Sources: Australian Trachoma Surveillance reports (Kirby Institute Kirby Institute 2013, 2014, 2015, 2016, 2018, 2019a, 2019b, 2020, 2022, 2023 (forthcoming)).

## 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 was significantly higher for non-Indigenous Australians than for 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 examination:** In 2016, treatment rates for refractive error for Indigenous Australians did not differ significantly by time since the last eye examination (Figure 3.9e).

### Things to consider

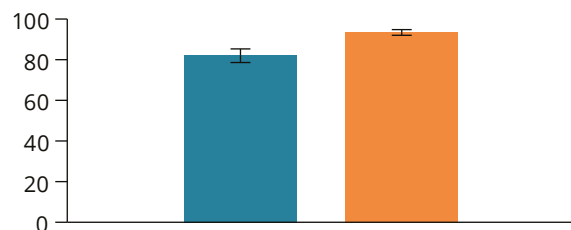
- Data are from the 2016 NEHS – a sample survey of 1,738 Indigenous Australians aged 40 and over, and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey weighted to account for the sampling protocol. These results are subject to 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 Indigenous status, by various characteristics**

**a) By Indigenous status, 2016**

■ Indigenous ■ Non-Indigenous

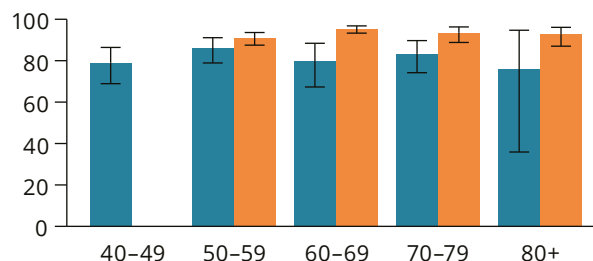
Per cent (weighted)



**b) By age, 2016**

■ Indigenous ■ Non-Indigenous

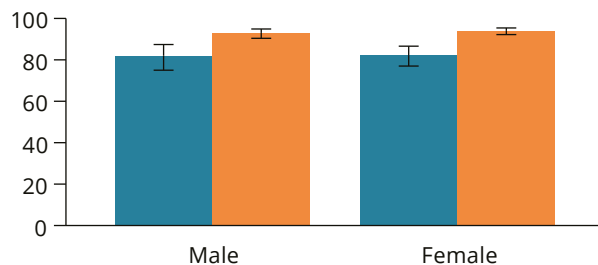
Per cent (weighted)



**c) By sex, 2016**

■ Indigenous ■ Non-Indigenous

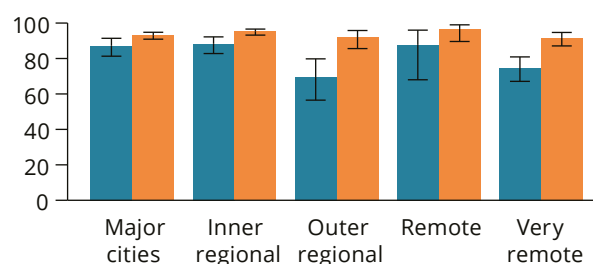
Per cent (weighted)



**d) By region, 2016**

■ Indigenous ■ Non-Indigenous

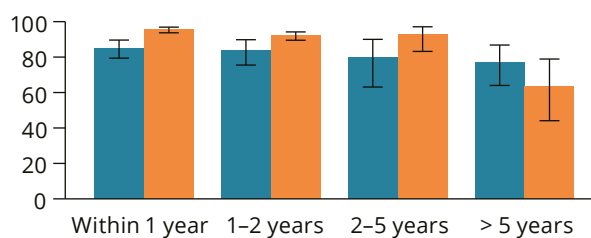
Per cent (weighted)



**e) By time since last eye exam, 2016**

■ Indigenous ■ Non-Indigenous

Per cent (weighted)



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

## Measure 3.10: Spectacles dispensed under state schemes

**Key finding:** In 2020–21, across the 5 jurisdictions that were able to provide data (New South Wales, Victoria, Queensland, South Australia and Tasmania) 18,373 spectacles were provided to Indigenous Australians.

**Overall:** In 2020–21, around 6,912 spectacles were provided to Indigenous Australians under the New South Wales scheme (24 per 1,000), 2,454 under the Victorian scheme (39 per 1,000), 7,679 under the Queensland scheme (32 per 1,000), 879 under the South Australian scheme (19 per 1,000) and 449 under the Tasmanian scheme (15 per 1,000) (Figure 3.10a).

Victoria was closest to meeting the estimated number of glasses needed by Indigenous people aged over 40 (2,454 dispensed compared with 4,024 needed). In the other jurisdictions, the estimated number needed was considerably greater than the number dispensed – 18,135 needed compared with 6,912 dispensed in New South Wales, 15,293 needed compared with 7,679 dispensed in Queensland, 2,891 needed compared with 879 dispensed in South Australia, and 1,926 needed compared with 449 dispensed in Tasmania (Figure 3.10b).

**Age and sex:** In New South Wales in 2020–21, higher rates of glasses were 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 (109 and 116 per 1,000, respectively) (Figure 3.10c).

In Victoria in 2020–21, the Australian College of Optometry dispensed 816 glasses (mainly in metropolitan areas), the largest number and highest rate of which was for Indigenous Australians aged 61 and over (385, 79 per 1,000) (Figure 3.10d). A network of rural providers dispensed 1,638 glasses.

In Queensland in 2020–21, 7,679 glasses were dispensed to Indigenous clients. The largest number was for Indigenous Australians aged 50 to 64 (2,657, 98 per 1,000) while the highest rate was for those aged 65 and over (2,022, 179 per 1,000) (Figure 3.10e).

In South Australia in 2020–21, the number of glasses dispensed to Indigenous Australians was highest among people aged 45–64 (394), while the rate was highest among Indigenous males and females aged 65 and over (47 per 1,000 and 70 per 1,000, respectively) (Figure 3.10f).

In Tasmania in 2020–21, 449 glasses were dispensed to Indigenous clients, the highest number of which was for people aged 45–64 (181), while the rate was highest for males and females aged 65 and over (49 and 94 per 1,000, respectively) (Figure 3.10g).

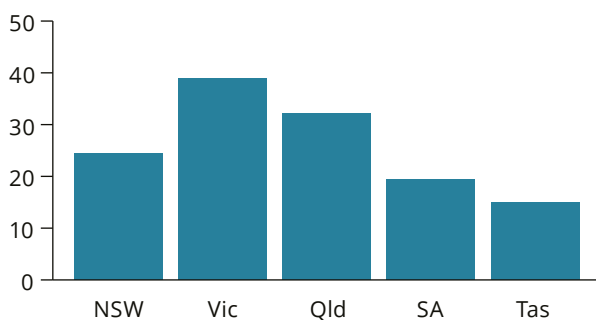
## Things to consider

- 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://drgrading.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 et al. 2012) and should be interpreted with caution.
- The IEHU calculator estimates the need for spectacles for 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, Indigenous Australians, by various characteristics**

### a) Indigenous, by jurisdiction, 2020–21

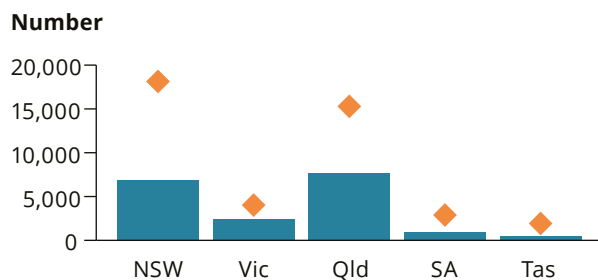
Per 1,000 (crude)



### b) Indigenous need by jurisdiction, 2020–21

Number

■ Number of spectacles dispensed  
◆ People over 40 requiring glasses



#### Notes

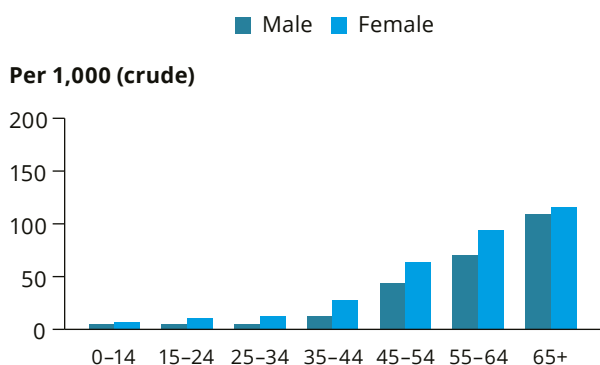
1. All figures show crude rates.
2. The estimated number of people needing spectacles was derived from the calculator for the coordination and delivery of eye care services.
3. Age groups vary by jurisdiction due to differences in the data provided.
4. Data for these figures are available in the data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

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

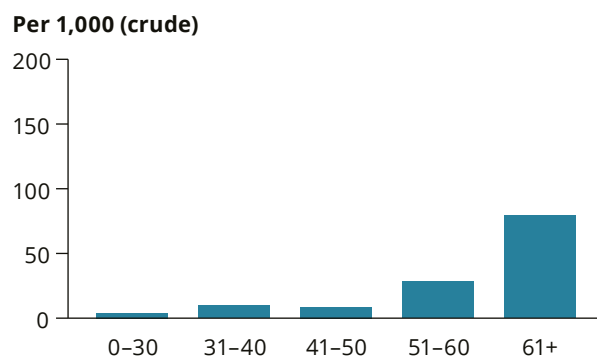
(continued)

**Figure 3.10 (continued): State spectacles schemes, Indigenous Australians, by various characteristics**

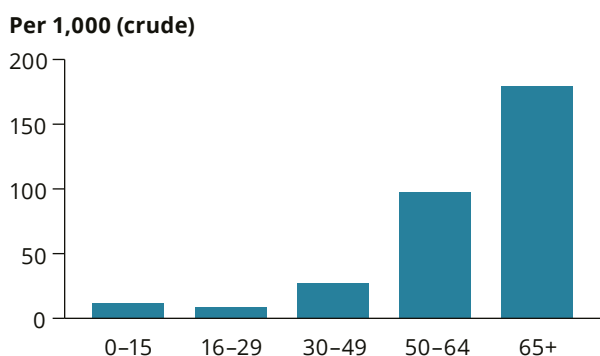
**c) Indigenous by age and sex, NSW, 2020-21**



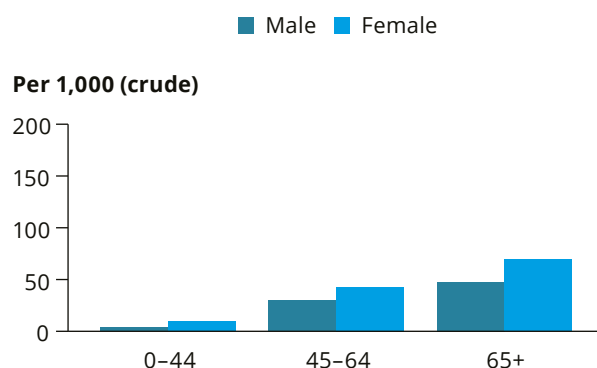
**d) Indigenous, by age Vic, 2020-21**



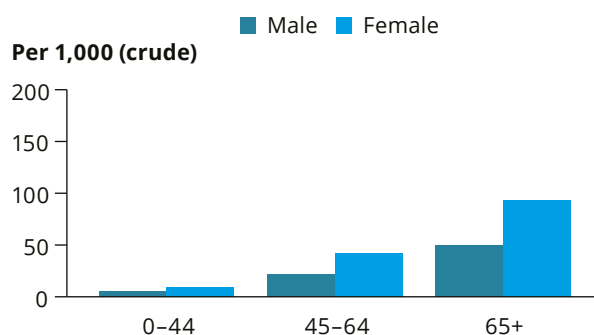
**e) Indigenous, by age Qld, 2020-21**



**f) Indigenous, by age and sex SA, 2020-21**



**g) Indigenous, by age and sex Tas, 2020-21**



**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) include only spectacles dispensed by the Australian College of Optometry, mainly in metropolitan areas.
4. Data for these figures are available in the data tables.

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

### **Case study: National Subsidised Spectacles Scheme Project – improving access to spectacles and other vision aids for Aboriginal and Torres Strait Islander Australians**

The Department of Health funded Vision 2020 Australia to develop the National Subsidised Spectacles Scheme Project (NSSS) in partnership with National Aboriginal Community Controlled Health Organisations.

The NSSS Project aims to facilitate improved access to subsidised vision aids for Indigenous Australians with funding allocations weighted to jurisdictions with larger remote and very remote Indigenous communities. In line with the project's aims, progress to date has included:

- distribution of additional spectacles to Indigenous Australians. Four jurisdictions have completed or exceeded their NSSS allocations (New South Wales, Victoria, South Australia and Tasmania), with Queensland and the Australian Capital Territory in progress
- launching of NSSS pilot schemes, led by Aboriginal Community Controlled Health Organisations (ACCHOs), in Western Australia and the Northern Territory, with proposals and schemes currently under development in Tasmania
- enhancements to existing jurisdictional subsidised spectacles schemes, including a trial to expand eligibility for subsidised spectacles in New South Wales, the establishment of the Queensland Indigenous Spectacle Supply Scheme and streamlining administrative arrangements for optometry claims in New South Wales and South Australia
- roll-out of the PrioritEYES Survey to 144 ACCHOs in April 2022.

The NSSS Project activities are ongoing, with activities funded to 31 December 2022 and final reporting to the Department of Health to be delivered by February 2023. Further information is available at [www.vision2020australia.org.au](http://www.vision2020australia.org.au).





# 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. There are relatively low numbers of Aboriginal and Torres Strait Islander specialist eye health practitioners. In 2021, there was only one Indigenous ophthalmologist and 12 Indigenous optometrists working in Australia.

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:

- **The Visiting Optometrists Scheme (VOS)** supports optometrists to deliver outreach services in regional, rural and remote locations. 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 ACCHOs.
- **The Rural Health Outreach Fund (RHOF)** supports the delivery of medical specialities, GPs and allied and other health outreach services in regional, rural and remote areas. These include eye health services.
- **The Medical Outreach Indigenous Chronic Disease Program (MOICDP)** improves access to medical specialists, GPs, nurses, 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 Program (EESS)** program expedites access to surgery for Indigenous Australians who require eye surgery, especially for those living in rural and remote locations. 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).

Funding provisions differ under the various outreach programs. For example, the RHOF provides funding for the costs of travel and accommodation for a variety of medical specialities, including eye health services. Under the MOICDP, eye health services can be provided to those suffering from chronic conditions such as diabetes. The EESS supports access to surgical services, including for Indigenous Australians who require eye surgery. This means jurisdictions will access outreach services differently, depending on their needs. For example, some jurisdictions use the RHOF or the EESS chiefly for eye services and use the RHOF for other specialties apart from eye services. This should be kept in mind when comparing jurisdictional differences in the use of outreach services for eye health.

## **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 these measures come from the NHWDS. These annual data are derived from the annual registration process required for health workforce professionals.

**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 come from the ABS 2016 and ABS 2021 Census of Population and Housing.

The final measure relates to 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 Program (EESS).

These services were provided under the Australian Government outreach programs – VOS, RHOF, MOICDP and EESS. The outreach data do not include outreach services funded by state governments or other sources.

#### **Box 4.1: Eye health workforce**

- **Optometrists** are eye care professionals who 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** are medical doctors who 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.

## Measure 4.1: Number and rate of optometrists

**Key finding:** In 2020, around 5,440 (19 FTE per 100,000) optometrists were employed in Australia. Of these, 10 identified as Indigenous Australians.

**Overall:** In 2020, around 5,440 optometrists were employed in Australia (19 FTE per 100,000). Of these, 10 identified as Indigenous Australians.

**Remoteness:** In 2020, *Major cities* had the highest number (4,267) and rate (20 FTE per 100,000) of employed optometrists. This was followed by *Inner regional* areas (859, or 18 FTE per 100,000) and *Outer regional* areas (276, or 13 FTE per 100,000). The numbers and rates of optometrists were lowest in *Remote* and *Very remote* areas (Figure 4.1a).

**Jurisdiction:** In 2020, the Northern Territory had the lowest number (33) of employed optometrists. New South Wales had the highest number (1,823) and rate (20 FTE per 100,000) of employed optometrists (Figure 4.1b).

**Time trend:** Between 2014 and 2020, the number and rate of optometrists increased from 4,322 (17 FTE per 100,000) to 5,437 (19 FTE per 100,000) (Figure 4.1c).

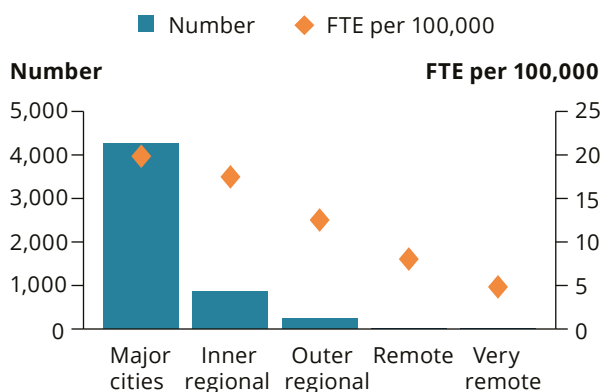
**PHN:** In 2020, the highest numbers and rates of optometrists were in metropolitan areas. The PHN with the highest number and rate of employed optometrists was Central and Eastern Sydney (526, or 28 FTE per 100,000). Country WA had the lowest rate of optometrists (11 FTE per 100,000). Western Queensland had fewer than 10 optometrists, so FTE rates were not calculated (Figure 4.1d).

### Things to consider

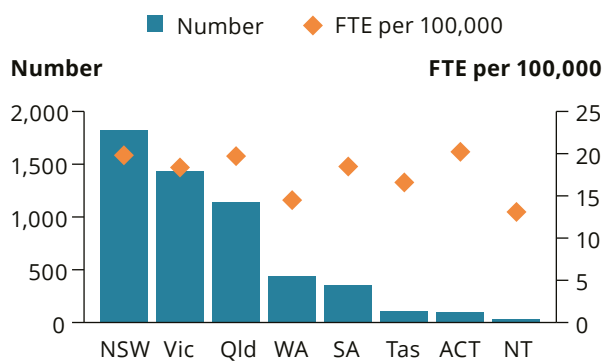
- The data come from the Department of Health's NHWDS. The data set includes optometrists who register with their respective health practitioner board via the National Registration and Accreditation Scheme and are employed in Australia.
- Optometrists can include details of only 1 site in their registration, 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**

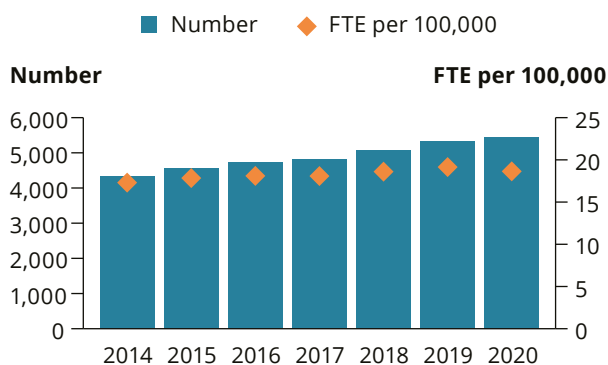
**a) Optometrists, by region 2020**



**b) Optometrists, by state 2020**



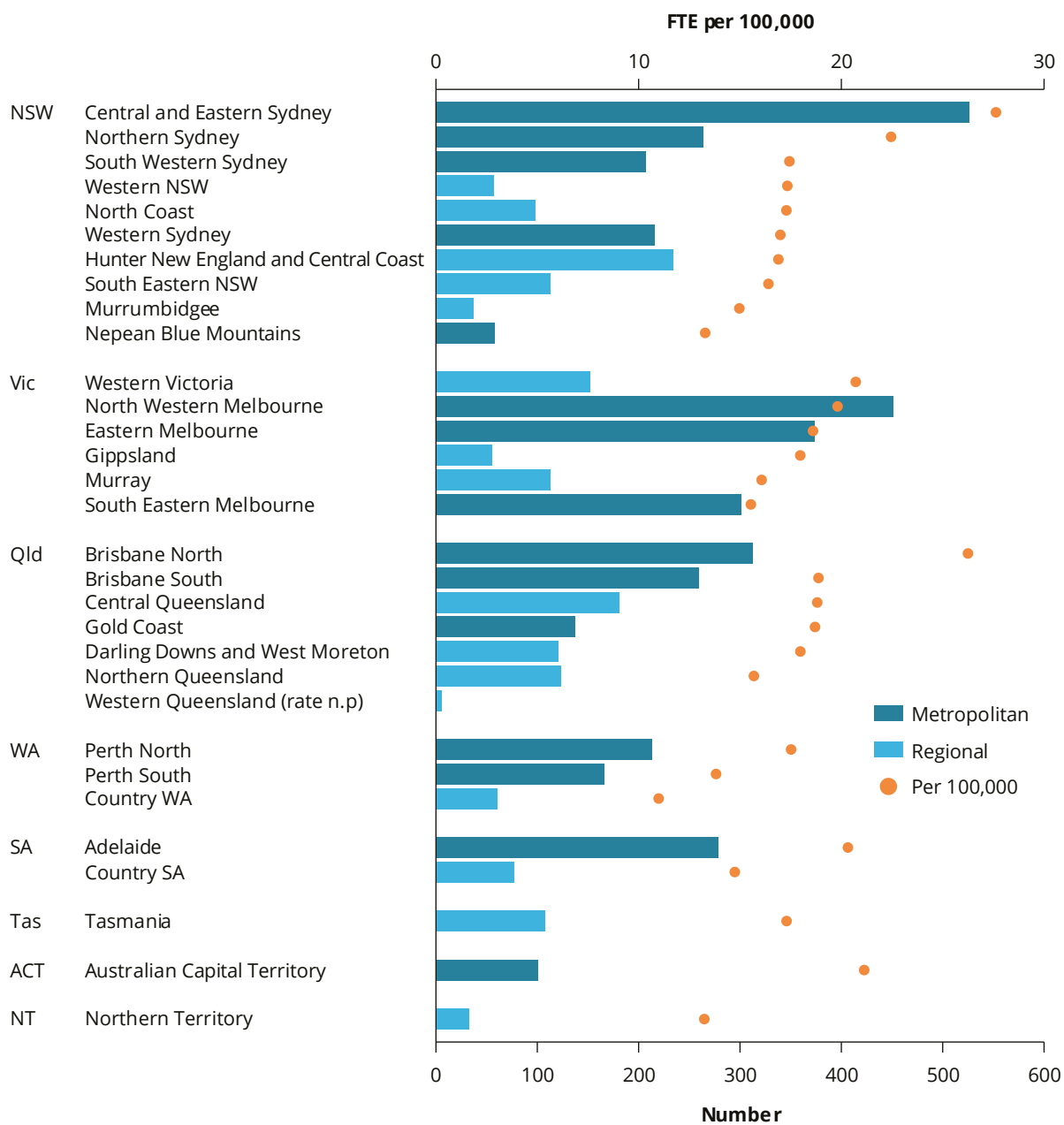
**c) Optometrists, 2014 to 2020**



**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 data tables.
- Source: AIHW analysis of National Health Workforce Dataset.

Figure 4.1d: Optometrists, by PHN, 2020



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 data tables.

Source: AIHW analysis of National Health Workforce Dataset.

## Measure 4.2: Number and rate of ophthalmologists

**Key finding:** In 2020, there were 977 (3.7 FTE per 100,000 population) ophthalmologists employed in Australia.

**Overall:** In 2020, there were 977 ophthalmologists employed in Australia (3.7 FTE per 100,000).

**Remoteness:** In 2020, *Major cities* had the highest number (821) and rate (4.3 FTE per 100,000) of employed ophthalmologists, followed by *Inner regional* areas (125, 2.8 FTE per 100,000) and *Outer regional* areas (28, or 1.6 FTE per 100,000). There were insufficient numbers of ophthalmologists to calculate rates in other areas (Figure 4.2a).

**Jurisdiction:** In 2020, New South Wales had the highest number (364) and rate (4.4 FTE per 100,000) of employed ophthalmologists. Victoria had the next highest number of employed ophthalmologists (244), but the lowest rate (3.1 FTE per 100,000). There were insufficient numbers of ophthalmologists in the Northern Territory to report rates (Figure 4.2b).

**Time trend:** Between 2014 and 2020, the number of ophthalmologists increased slightly, while the rate remained fairly constant. In 2014, there were 872 employed ophthalmologists (3.9 FTE per 100,000). By 2020, the number and rate of employed ophthalmologists had risen to 977 (3.7 FTE per 100,000) (Figure 4.2c).

**PHN:** Central and Eastern Sydney had the highest number (141) and rate (8.0 FTE per 100,000) of employed ophthalmologists. The PHNs with the next highest rates were Northern Sydney (67, or 6.8 FTE per 100,000) and Brisbane North (61, or 6.0 FTE per 100,000). The number of ophthalmologists was too low to calculate FTE rates in 6 PHNs, but of those areas where rates could be published, they were lowest in South Eastern New South Wales and Murray (1.7 and 1.3 FTE per 100,000, respectively) (Figure 4.2d).

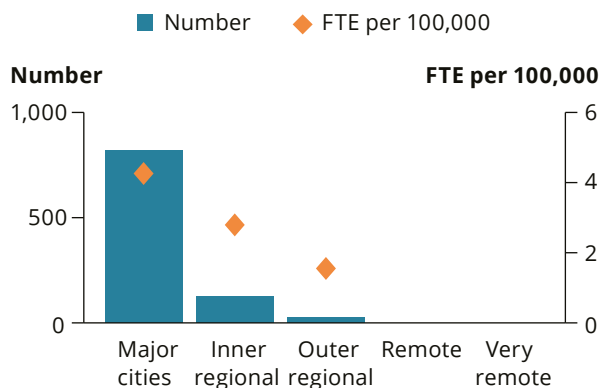
### Things to consider

- The data come from the Department of Health's NHWDS. The data set includes ophthalmologists who register with their respective health practitioner board via the National Registration and Accreditation Scheme and are employed in Australia.
- Ophthalmologists can include details of only 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 the relevant population to get the FTE per 100,000 population.

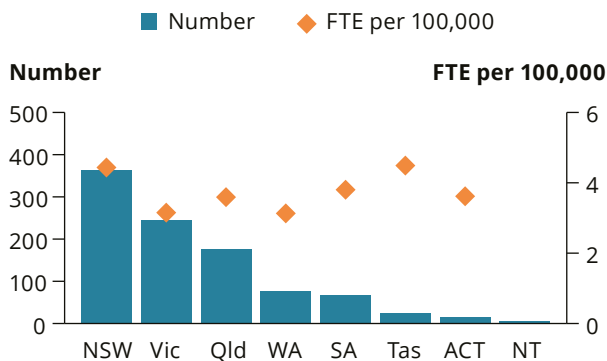


**Figure 4.2: Ophthalmologists, by various characteristics**

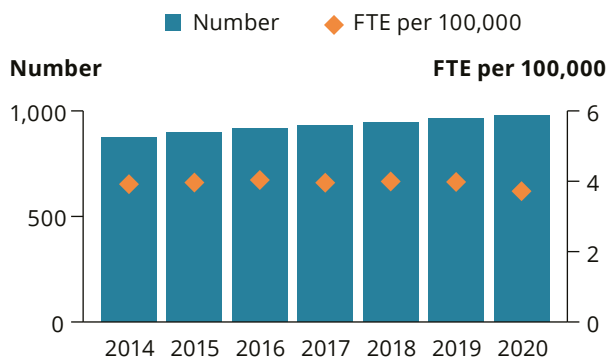
**a) Ophthalmologists, by region 2020**



**b) Ophthalmologists, by state 2020**



**c) Ophthalmologists, 2014 to 2020**

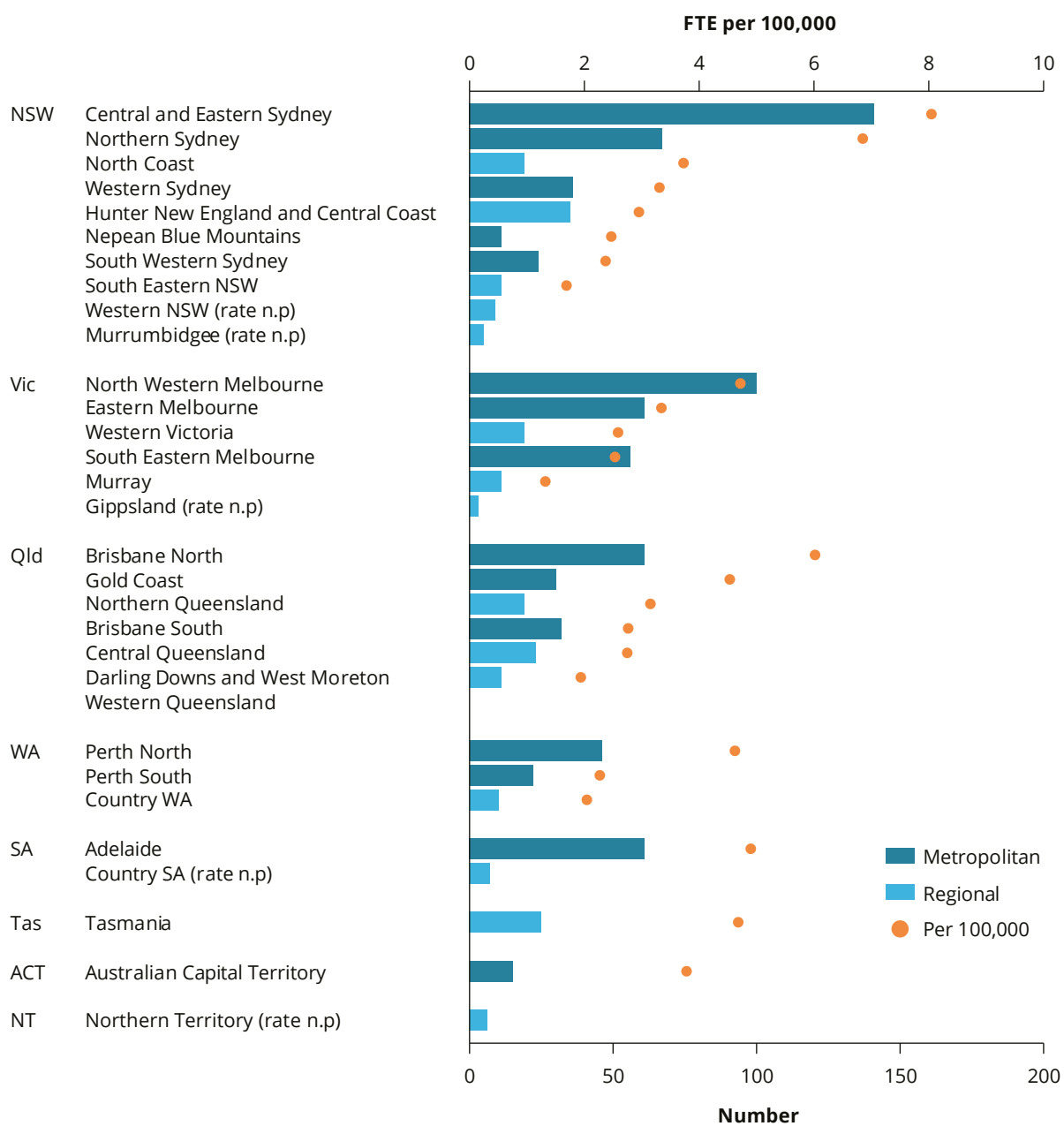


**Notes**

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 data tables.

Source: AIHW analysis of National Health Workforce Dataset.

Figure 4.2d: Ophthalmologists, by PHN, 2020



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 data tables.
- Source: AIHW analysis of National Health Workforce Dataset.

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

**Key finding:** In 2021, there were around 6,133 optical dispensers (14 FTE per 100,000), 401 optical mechanics (1.3 FTE per 100,000) and 1,055 orthoptists (3.1 FTE per 100,000) in Australia.

**Overall:** The biggest category of allied ophthalmic personnel in Australia is optical dispensers. In 2021, there were around 6,133 optical dispensers (14 FTE per 100,000), 401 optical mechanics (1.3 FTE per 100,000) and 1,055 orthoptists (3.1 FTE per 100,000) in Australia (Figure 4.3a).

**Time trend:** From 2016 to 2021, the FTE rate of all allied ophthalmic personnel remained relatively constant, from 15 to 14 FTE per 100,000 for optical dispensers, and from 4.5 to 4.4 FTE per 100,000 for optical mechanics and orthoptists combined. (Figure 4.3b).

**Remoteness:** In 2016, *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).

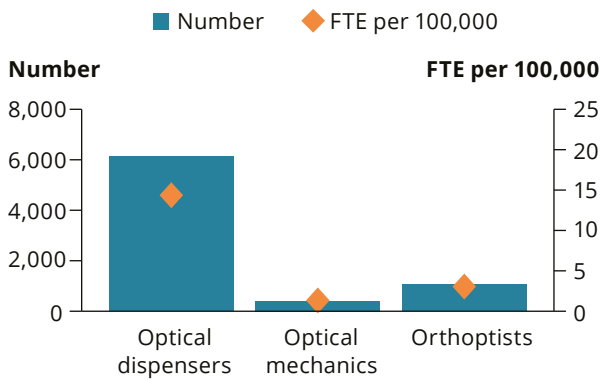
**Jurisdiction:** In 2021, New South Wales had the highest number (1,776) of optical dispensers and of other allied ophthalmic personnel (607). The Australian Capital Territory had the highest rate of optical dispensers (19 FTE per 100,000), and Victoria had the highest rate of optical mechanics and orthoptists (6.2 FTE per 100,000) (Figure 4.3d). There were insufficient numbers of optical mechanics and orthoptists in Tasmania, the Australian Capital Territory and the Northern Territory to report rates.

### Things to consider

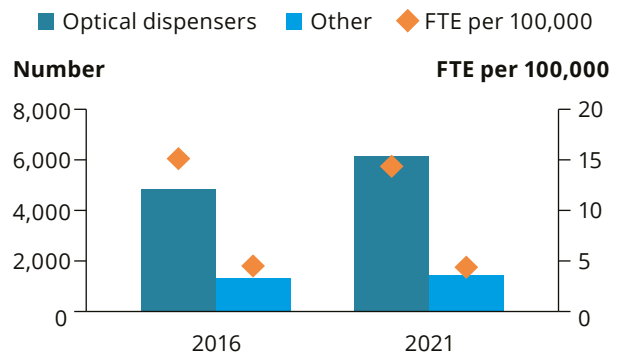
See Box 4.1 for information on the eye health workforce and the roles of various allied ophthalmic personnel.

Figure 4.3: Allied ophthalmic personnel, by various characteristics

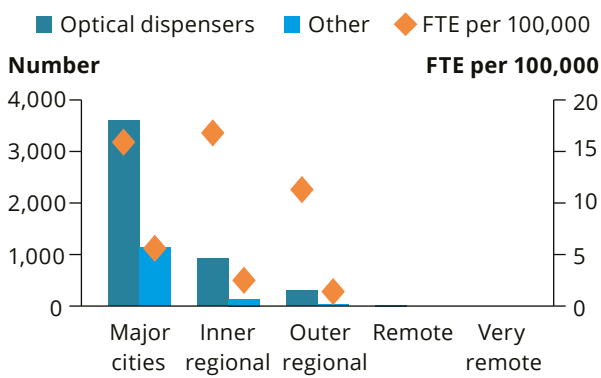
a) By profession, 2021



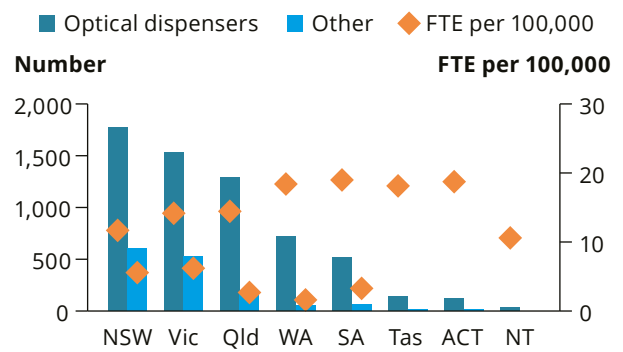
b) By profession, 2016 and 2021



c) By profession, by region, 2016



d) By profession, by jurisdiction, 2021



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 data tables.

Sources: AIHW analysis of 2016 and 2021 Census.

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

**Key finding:** In 2020–21, eye health professionals provided around 38,600 occasions of service for Indigenous patients under combined outreach services (VOS, RHOF and MOICDP).

### 4.4.1 Visiting Optometrists Scheme

**Overall:** In 2020–21, there were 26,459 occasions of service for Indigenous patients and 22,676 for other patients under the VOS.

**Remoteness:** The rate of Indigenous occasions of service under the VOS in 2020–21 was highest in *Very remote* areas (121 per 1,000) followed by *Remote* areas (54 per 1,000) (Figure 4.4.1a).

**Jurisdiction:** In 2020–21, the rate of Indigenous occasions of service was highest in the Northern Territory (66 per 1,000), followed by Western Australia (37 per 1,000) (Figure 4.4.1b). The number of Indigenous occasions of service under the VOS was lowest for Indigenous Australians in Tasmania (170), followed by Victoria (998), while the highest number was in the Queensland (8,224), followed by New South Wales (6,358) (Figure 4.4.1c).

**Time trend:** In 2009–10, there were around 6,975 occasions of service for Indigenous patients under the VOS. This increased to 29,161 in 2017–18 before falling to 22,089 in 2019–20 and then increasing to 26,459 in 2020–21 (Figure 4.4.1d). In 2020–21, Indigenous Australians had around 3,800 more VOS occasions of service than other Australian patients. VOS occasions of service have been higher for Indigenous Australians than non-Indigenous Australians since 2016–17.

**PHN:** The PHNs with the highest reported number of occasions of service for Indigenous patients under the VOS were the Northern Territory (5,149) followed by Country WA (4,004). The rate of Indigenous occasions of service was highest in Western Queensland (119 per 1,000), Western New South Wales (68 per 1,000) and the Northern Territory (66 per 1,000) (Figure 4.4.1e).

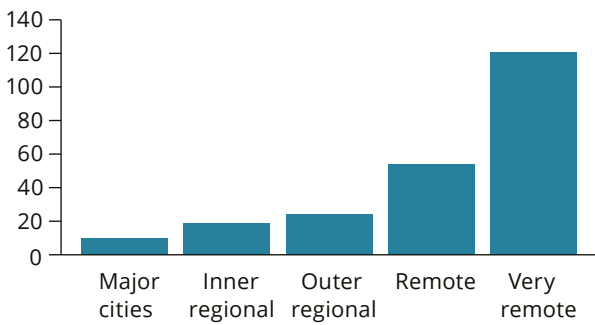
#### Things to consider

- 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 outreach services funded by the Australian Government and not those funded by state governments or other providers.

**Figure 4.4.1: VOS occasions of service, by various characteristics**

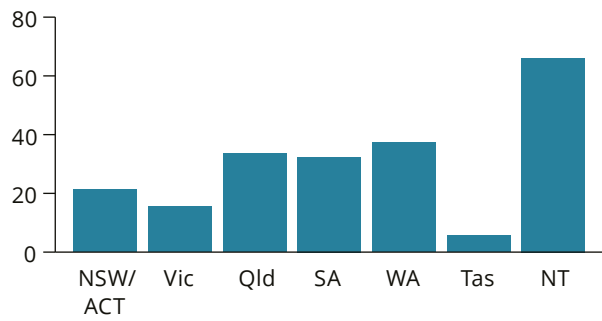
**a) Indigenous by region 2020-21**

Per 1,000 (crude)



**b) Indigenous by jurisdiction 2020-21**

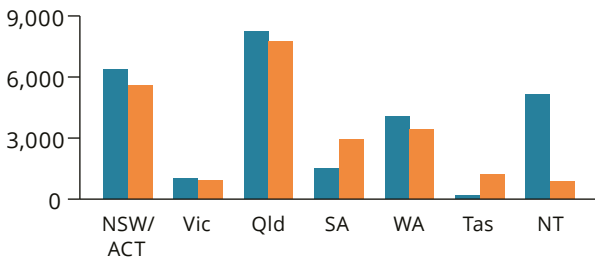
Per 1,000 (crude)



**c) By jurisdiction, 2020-21**

■ Indigenous ■ Other

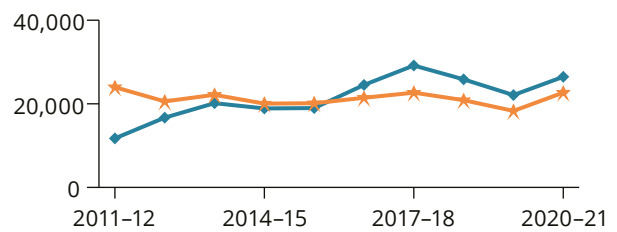
No. of occasions of service



**d) Time trend, 2010-11 to 2020-21**

— Indigenous — Other

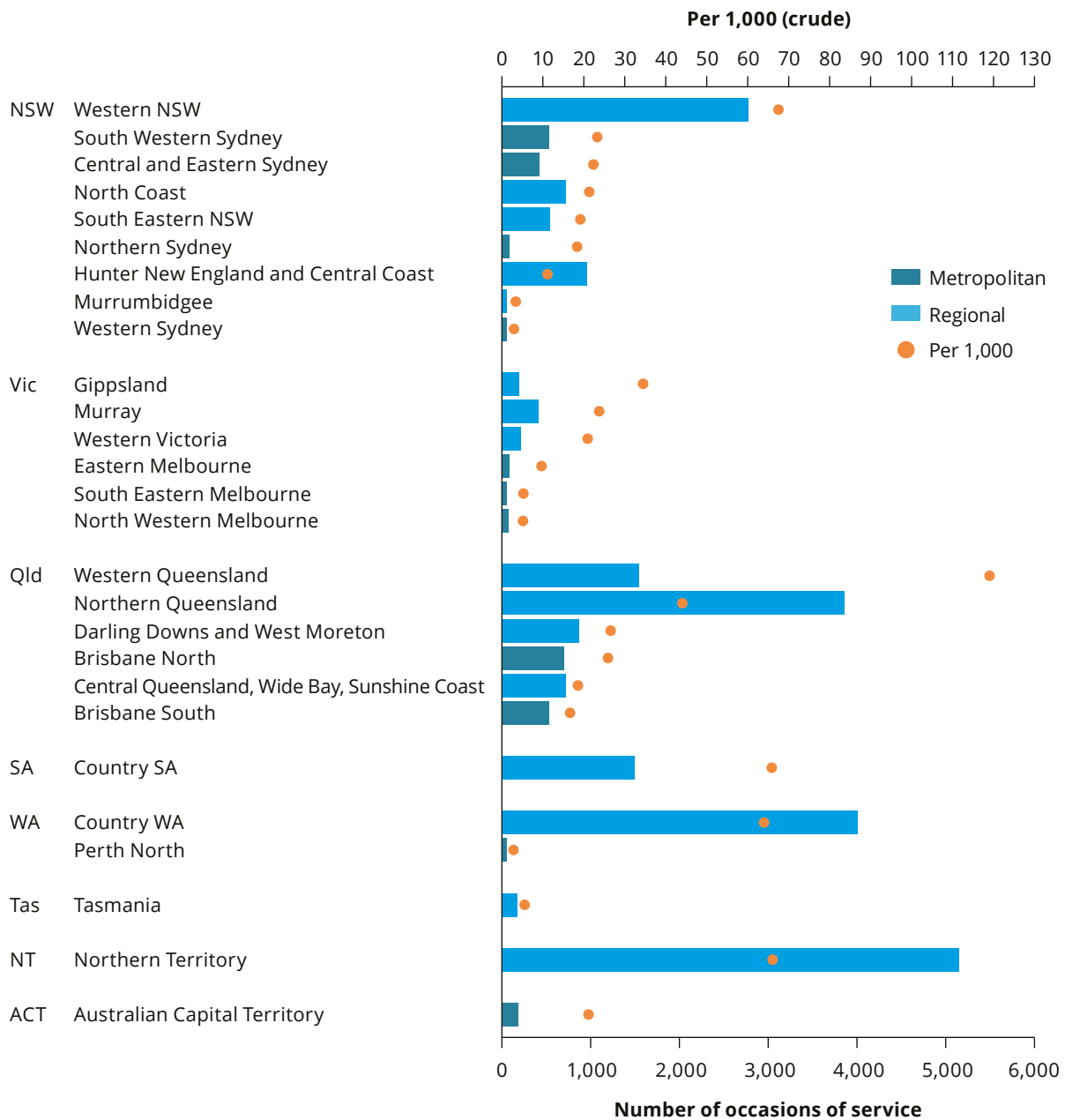
Number of occasions of service



**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 data tables.
- Source: AIHW analysis of Fundholder data (unpublished).

**Figure 4.4.1e: VOS occasions of service, by PHN, 2020–21**



**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 data tables.

Source: AIHW analysis of Fundholder data (unpublished).

## 4.4.2 Rural Health Outreach Fund

**Overall:** In 2020–21, a total of 2,966 occasions of eye health services for Indigenous patients were provided under the RHOF.

**Remoteness:** In 2020–21, the number of Indigenous occasions of eye health services under the RHOF was highest in *Remote* areas (828) and lowest in *Inner regional* areas (728). The rate was highest in *Remote* areas (15 per 1,000) followed by *Very remote* areas (7 per 1,000) and was lowest in *Inner regional* areas (3.5 per 1,000) (Figure 4.4.2a).

**Jurisdiction:** In 2020–21, the number and rate of Indigenous eye health occasions of service under the RHOF was highest in Western Australia (1,214, or 19 per 1,000), followed by the Northern Territory (682, or 9 per 1,000) (Figure 4.4.2b).

**Time trend:** In 2012–13, there were around 4,947 Indigenous eye health occasions of service under the RHOF. This number increased each year to reach 8,652 in 2015–16, before declining to 2,996 in 2020–21 (Figure 4.4.2c).

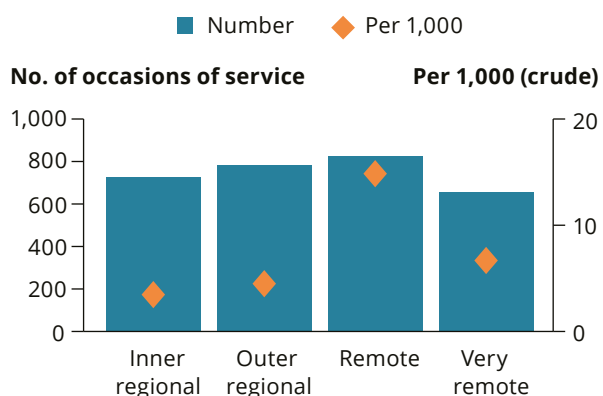
### Things to consider

- 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 outreach services funded by the Australian Government and not those funded by state governments or other providers.

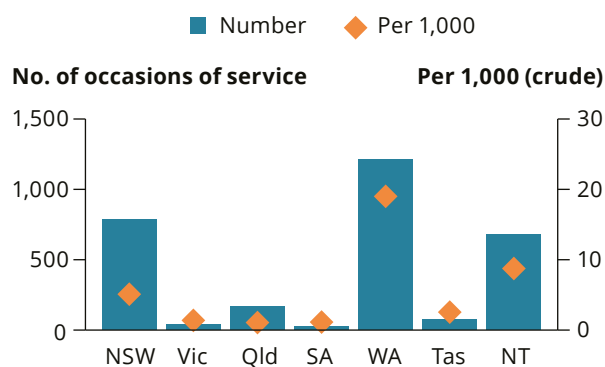


**Figure 4.4.2: RHOF occasions of eye health service, Indigenous Australians, by various characteristics**

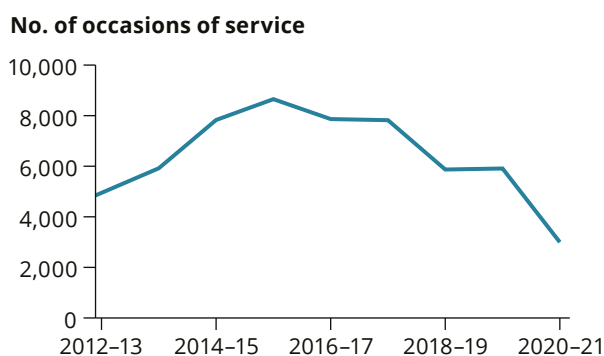
**a) By region 2020-21**



**b) By jurisdiction 2020-21**



**c) Time trend, 2012-13 to 2020-21**



**Notes**

1. RHOF services are provided in Inner regional, Outer regional, Remote and Very remote areas only.

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

Source: AIHW analysis of Fundholder data (unpublished).

### 4.4.3 Medical Outreach Indigenous Chronic Disease Program

**Overall:** In 2020–21, eye health professionals provided a total of 9,158 occasions of service for Indigenous patients under the MOICDP.

**Jurisdiction:** Services were provided to Indigenous patients in 7 jurisdictions. The highest rate of Indigenous occasions of service provided by an eye health professional under the MOICDP was in Western Australia (275 per 10,000) (Figure 4.4.3a).

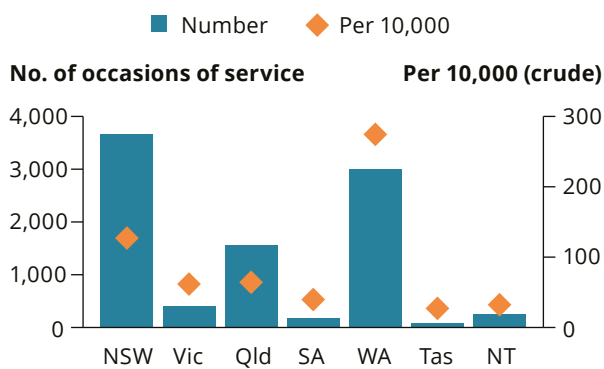
**Time trend:** In 2014–15, around 550 Indigenous occasions of services were provided by health professionals in relation to eye health under the MOICDP. This number increased to 9,158 in 2020–21 (Figure 4.4.3b).

#### Things to consider

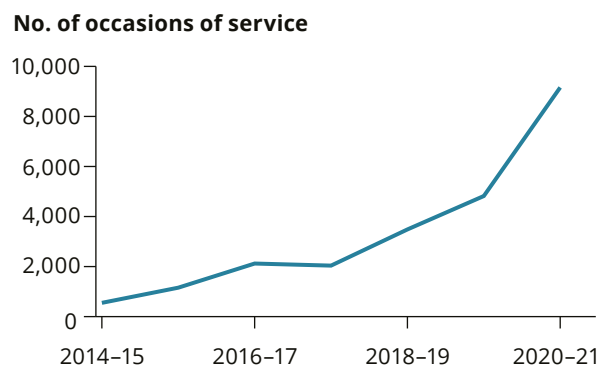
- Patients may have more than 1 occasion of service.
- The numbers show occasions of service provided to Indigenous patients by all health professionals in relation to eye health, including ophthalmologists, ophthalmic assistants, ophthalmic nurses and Aboriginal Health Workers.
- These data include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

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

**a) By jurisdiction 2020–21**



**b) Time trend, 2014–15 to 2020–21**



**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 data tables.
- Source: AIHW analysis of Fundholder data (unpublished).

#### 4.4.4 Combined outreach programs

**Overall:** In 2020–21, eye health professionals provided a total of 38,613 occasions of service for Indigenous patients under all the outreach programs combined (VOS, RHOF and MOICDP).

**Jurisdiction:** In 2020–21, the highest number of Indigenous occasions of service provided by an eye health professional under the combined outreach programs was in New South Wales (10,816) followed by Queensland (9,968) (Figure 4.4.a).

**Time trend:** In 2014–15, health professionals provided around 27,269 Indigenous occasions of services in relation to eye health under the combined outreach programs. This number increased to 38,613 in 2020–21 (Figure 4.4.b).

**Figure 4.4.4: Combined outreach programs, Indigenous Australians, number of occasions of service**

**a) by jurisdiction 2020–21**

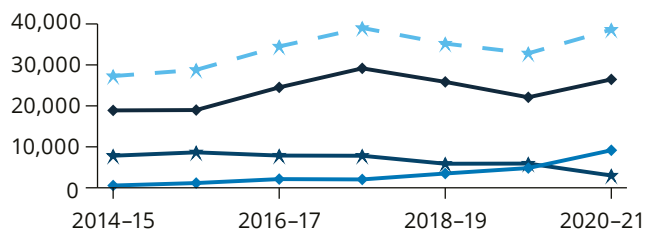
Number of occasions of service



**b) Time trend, 2014–15 to 2020–21**

MOICDP RHOF VOS All programs

Number of occasions of service



Note: Data for these figures are available in the online data tables.  
Source: AIHW analysis of Fundholder data (unpublished).

#### 4.4.5 Eye and Ear Surgical Support Program

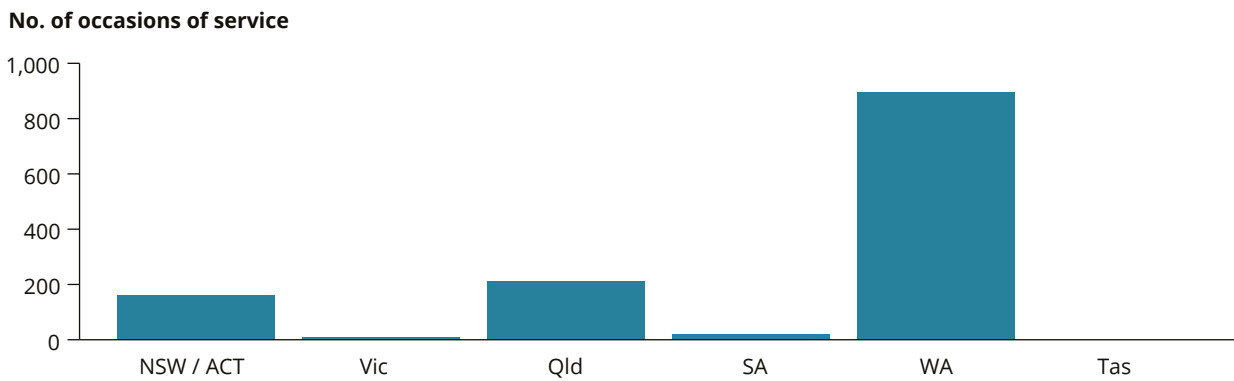
**Overall:** In 2020–21, eye health professionals provided a total of 1,296 occasions of service for Indigenous patients under the EESS.

**Jurisdiction:** In 2020–21, the highest number of Indigenous occasions of service provided by an eye health professional under the EESS was in Western Australia (895) followed by Queensland (211) (Figure 4.4.5).

##### 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 service, Indigenous Australians, by jurisdiction, 2020–21**



Note: Data for these figures are available in the online data tables.  
Source: AIHW analysis of Fundholder data (unpublished).

### **Case study: Indigenous Eye Health Coordination Program**

The NSW Rural Doctors Network's Indigenous Eye Health Coordination Program aims to improve access and delivery of eye care services for Aboriginal and Torres Strait Islander patients in Far West NSW.

This program has been successful in establishing collaborative partnerships with Rural Doctors Network, Far West NSW Local Health District, Maari Ma Health Aboriginal Corporation and the visiting optometrist providing regular services under the Rural Doctors Network's Outreach VOS program. This collaborative approach has enabled streamlined processes for Aboriginal patients accessing services, for example:

- fast-tracking referrals, appointments and surgeries where required
- arranging transportation for patients to access services
- providing regular, and locally delivered optometry clinics
- upskilling local GPs
- improving the referral pathway between optometrists and ophthalmologists to ensure prompt patient follow-up and referral to surgery.

# Appendix A: Data sources

## ABS population data

Population data are used for demographic analyses and as the denominator in calculating rates. The Australian, Indigenous Australian and non Indigenous Australian population data used in this report were based on data from Australian Bureau of Statistics (ABS) publications as well as unpublished data from the ABS. ABS publications, include:

- National, state and territory population  
<https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release>
- Estimates of Aboriginal and Torres Strait Islander Australians  
<https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-aboriginal-and-torres-strait-islander-australians/latest-release>
- Estimates and Projections, Aboriginal and Torres Strait Islander Australians  
<https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-and-projections-aboriginal-and-torres-strait-islander-australians/latest-release>

The size of the Indigenous population varies substantially by state and territory. In 2021, it ranged from about 9,500 in the Australian Capital Territory to about 340,000 in New South Wales (ABS 2022). The proportion of the total population who are Indigenous also varies by state and territory. In 2021, this proportion ranged from 1.2% in Victoria to 31% in the Northern Territory (ABS 2022).

## Australian Aboriginal and Torres Strait Islander Health Survey

The ABS conducted the Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) in the years 2012–13 and 2018–19 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 Indigenous people across the nation. It was conducted in remote and non-remote areas throughout Australia.

The AATSIHS is made up of 3 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

The Department of Health funds the National Trachoma Surveillance and Reporting Unit (NTSRU) of the Kirby Institute to undertake data collation, analysis and reporting related to the ongoing evaluation of trachoma control strategies in Australia. The Australian Trachoma Surveillance reports (ATSRs) 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 New South Wales. These data are included in the 2013, 2014 and 2015 reports, along with data from South Australia, Western Australia and the Northern Territory (Kirby Institute 2015). Each jurisdiction undertakes its own screening and treatment for trachoma according to its protocols, and in the context of the Communicable Diseases Network Australia (CDNA) National Guidelines for the Public Health Management of Trachoma in Australia. Before January 2014, these guidelines 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 do not 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's data. This is likely to overestimate current levels of trachoma.

World Health Organization (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 National Trachoma Surveillance and Reporting Unit (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, 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 on 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 Medical Benefits Schedule (MBS) is a list of Medicare services 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 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 National Eye Health Survey (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
- measure the treatment and coverage rate of major conditions and diseases.

It used a multi-stage, 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, 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, form the Department of Health's National Health Workforce Data Set (NHWDS). Data in the NHWDS include 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 the Australian Institute of Health and Welfare (AIHW).

## National Hospital Morbidity Database

Data about hospitalisations were extracted from the AIHW National Hospital Morbidity Database (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 by 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 online Data tables: Indigenous eye health treatment.

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

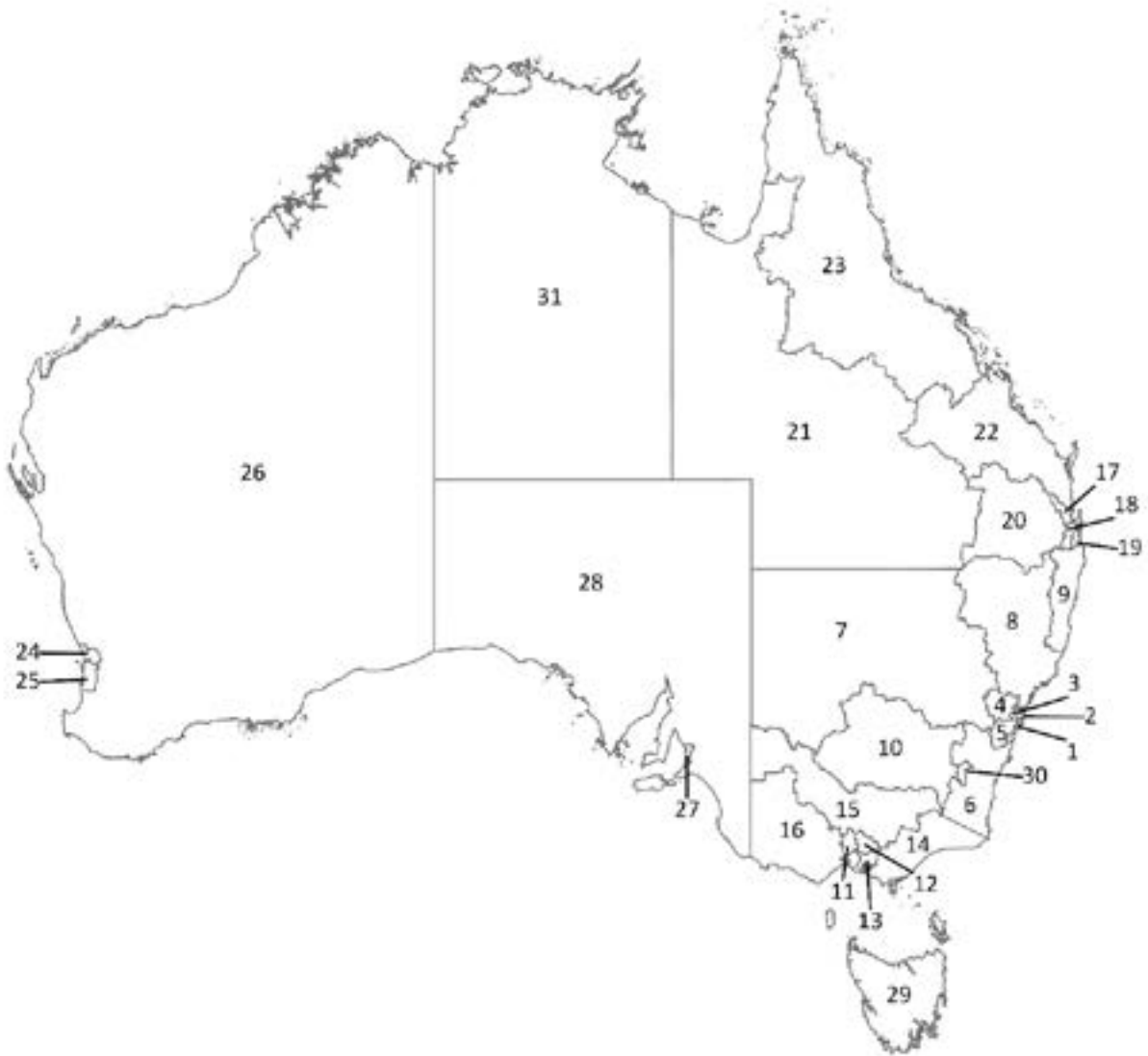
There is some under-identification of Indigenous Australians in the NHMD, but NHMD data for all states and territories are considered to have adequate Indigenous identification from 2010–11 onwards (AIHW 2013). An AIHW study found that, in 2011–12, the number of hospitalisations nationally for Indigenous 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 to 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.

Except for 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 around 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: PHN and Roadmap regions

Figure B1: PHN locations

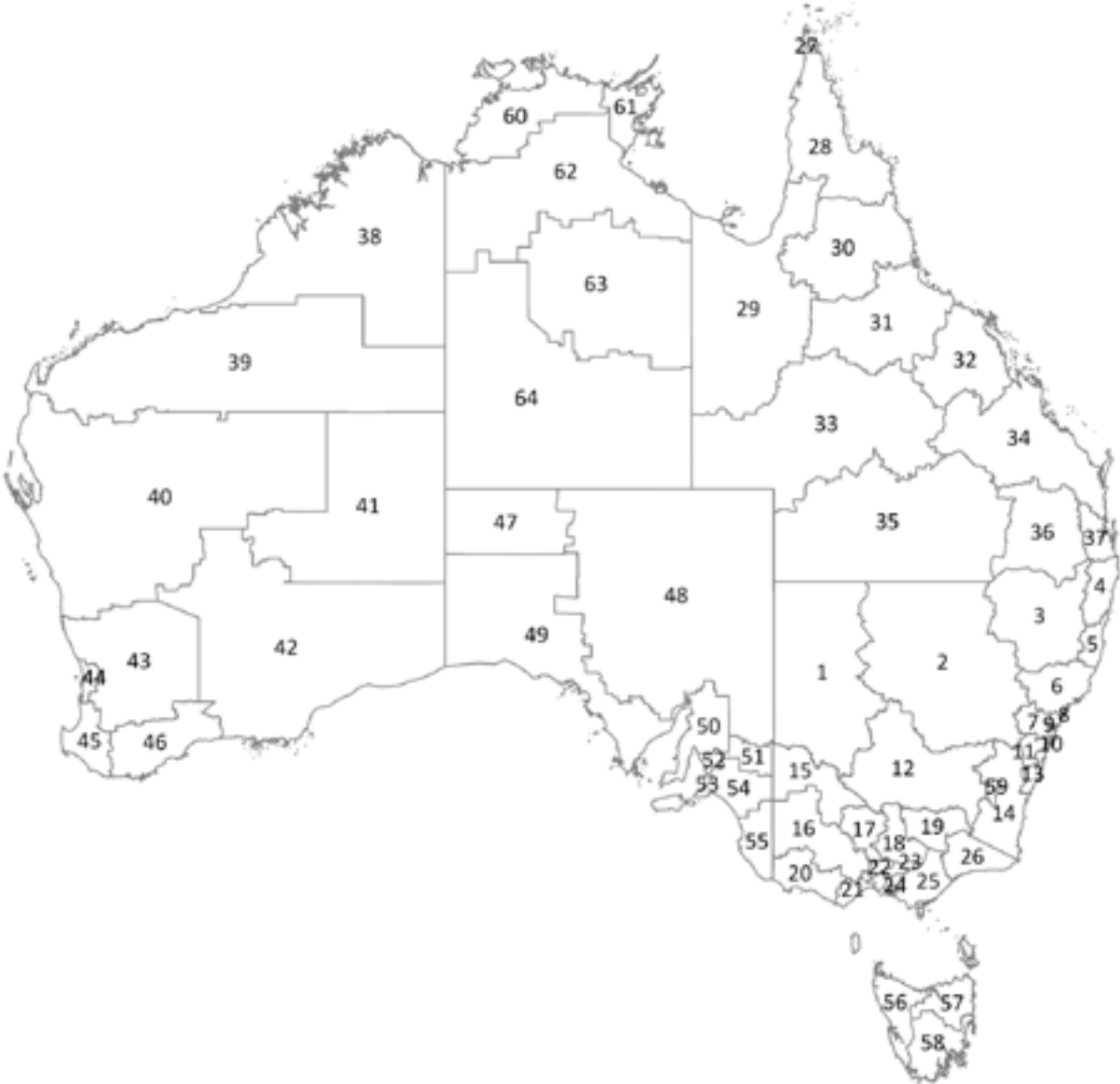


(continued)

Figure B1 (continued): PHN locations

No.	State	PHN	No.	State	PHN
1	NSW	Central and Eastern Sydney	17	QLD	Brisbane North
2	NSW	Northern Sydney	18	QLD	Brisbane South
3	NSW	Western Sydney	19	QLD	Gold Coast
4	NSW	Nepean Blue Mountains	20	QLD	Darling Downs and West Moreton
5	NSW	South Western Sydney	21	QLD	Western Queensland
6	NSW	South Eastern NSW	22	QLD	Central Queensland, Wide Bay, Sunshine Coast
7	NSW	Western NSW	23	QLD	Northern Queensland
8	NSW	Hunter New England and Central Coast	24	WA	Perth North
9	NSW	North Coast	25	WA	Perth South
10	NSW	Murrumbidgee	26	WA	Country WA
11	VIC	North Western Melbourne	27	SA	Adelaide
12	VIC	Eastern Melbourne	28	SA	Country SA
13	VIC	South Eastern Melbourne	29	Tas	Tasmania
14	VIC	Gippsland	30	ACT	Australian Capital Territory
15	VIC	Murray	31	NT	Northern Territory
16	VIC	Western Victoria			

Figure B2: Roadmap regions – locations



(continued)

Figure B2 (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			

NG = Ngaanyatjarra, APY = Anangu Pitjantjatjara Yankunytjatjara

# 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		AATSIHS
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
2.1.1	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, 93470 and 93479) 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

*continued*



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

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
2.1.2	Proportion of the population that had an annual health assessment and an initial eye examination by an optometrist	Numerator ÷ denominator x 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, 93470 and 93479) or a Telehealth assessment (MBS items 92004, 92011, 92016, 92023) claimed in the financial year and an initial eye examination by an optometrist (MBS items 10900, 10910, 10911, 10912, 10913, 10914, 10915, 10916)	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	Numerator ÷ denominator x 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
2.3.1	Eye examinations among those tested for diabetes	Numerator ÷ denominator x 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)	Numerator ÷ denominator x 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

continued

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

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
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 the 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
2.5	Undiagnosed eye conditions	$\frac{\text{Numerator}}{\text{denominator}} \times 100$	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		NEHS
3.1	Hospitalisation rates for diseases of the eye	$\frac{\text{Numerator}}{\text{denominator}} \times 1,000$ (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

continued

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

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
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
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</p> <p>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 - posthumous' or 'hospital boarder'</p> <p>(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 - posthumous' 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:</p> <p>a) treated within 90 days</p> <p>b) treated within 365 days</p> <p>for elective cataract surgery:  <math display="block">\frac{\text{Numerator}}{100} \div \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 - posthumous' or 'hospital boarder' for which the waiting time was:</p> <p>a) less than or equal to 90 days</p> <p>b) less than or equal to 365 days</p> <p>(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 - posthumous' 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 screened 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, Ophthalmological 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 tested 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	$\frac{\text{Numerator}}{100}$	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	NEHS
3.10	Number and rate of glasses dispensed under state spectacle schemes	$\frac{\text{Numerator}}{1,000}$	Data are the 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 Inner regional, Outer regional, Remote and Very remote areas only. Therefore populations used to calculate the rates for RHOF did not include Major cities)		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 Program (EESS)		The number of Indigenous occasions of service that received support from the EESS			Department of Health and ABS population data

# Appendix D: Data gaps and limitations

## National eye health survey

The NEHS was last conducted in 2016. The next NEHS will be conducted in 2023 and updated NEHS data should be available in 2024. The updated survey will enable monitoring of the change (compared with non-Indigenous Australians) in the prevalence of vision impairment due to uncorrected refractive error, cataract and diabetic retinopathy.

## 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 general practitioners (GPs) in Australia including problems related to eye health; however, this collection ceased in 2015. The Australian Institute of Health and Welfare (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 measures related to eye health.

Through Medicare, Indigenous 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 problems related to eye health. The MBS data cover 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 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 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. Because the updated VII was not available in time, MBS measures reliant on the VII have not been updated in this report.

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 by 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 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.

Except for 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 around 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.

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 (for example, New South Wales, Western Australia, the Australian Capital Territory and the Northern Territory). 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. There needs to be greater transparency and uniformity in reporting wait times for patients seeking care in public hospitals, potentially with standardised national reporting.

## Australian Trachoma Surveillance Report

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 being at-risk. Community population estimates are based on 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 2017b). Designation of at-risk status does not appear to have been systematically reviewed in any jurisdiction.

## Spectacles data

Data analysed in this report represent one aspect of a broader system through which Indigenous people may receive subsidised spectacles.

In many instances, spectacles are received outside of jurisdictional spectacle schemes (for example, through philanthropic programs or private prescribers). Data received through the National Subsidised Spectacles Scheme (NSSS) Project indicate that, in some jurisdictions, the supply of subsidised spectacles may be significantly higher than captured in data presented in this report. As well, jurisdictions such as Western Australia, the Australian Capital Territory and the Northern Territory currently do not routinely collect Indigenous identification data as part of their subsidised spectacles eligibility provisions, so the number of subsidised spectacles delivered to Indigenous people in these jurisdictions cannot be presented in this report.

## 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. As well, 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 are fragmented and 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 Indigenous 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 also 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.

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## **Indigenous Eye Health Data Report Advisory Group Members for 2022 (in alphabetical order):**

Fadwa Al-Yaman – Indigenous Group, AIHW

Mitchell D Anjou – Indigenous Eye Health, University of Melbourne

Skye Cappuccio – Optometry Australia

Carleigh Cowling – National Trachoma Surveillance and Reporting Unit, Kirby Institute

Naomi Freuden – NSW Rural Doctors Network

Sarah Hayton – National Aboriginal Community Controlled Health Organisation

Sharon Hill – Indigenous Health Division, Department of Health

Hye-Kyung Kim – National Indigenous Australians Agency

Amanda Masset – NSW Rural Doctors Network

Timothy Saunders – National Indigenous Australians Agency

Roman Serebrianik – Vision 2020 Australia

Patricia Sparrow – Vision 2020 Australia

Jess Styles – National Aboriginal Community Controlled Health Organisation

Hugh Taylor – Indigenous Eye Health, University of Melbourne

Angus Turner – Lions Outback Vision; Royal Australian and New Zealand College of Ophthalmology

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# Abbreviations

AATSIHS	Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACCHO	Aboriginal Community Controlled Health Organisations
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
DALY	a summary metric of disability-adjusted life years
DRG	diagnosis-related groups
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, 10th 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
NG	Ngaanyatjarra
NHMD	National Hospital Morbidity Database
NHMRC	National Health and Medical Research Council
NHWDS	National Health Workforce Data Set
NSSS	National Subsidised Spectacles Scheme
NSW	New South Wales
NT	Northern Territory
NTSRU	National Trachoma Surveillance and Reporting Unit

PHN	Primary Health Network
Qld	Queensland
RHOF	Rural Health Outreach Fund
SA	South Australia
Tas	Tasmania
Vic	Victoria
VII	Voluntary Indigenous Identifier
VOS	Visiting Optometrists Scheme
WA	Western Australia
WHO	World Health Organization
YLD	years lived with disability

## 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 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 aged under 15 (Kirby Institute 2020).

**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**.

**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 under 15 who were treated for trachoma during an episode of **community-wide treatment (trachoma)** (Kirby Institute 2020).

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

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

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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 is the sixth annual report to update the Eye health measures for Aboriginal and Torres Strait Islander people. The measures cover the prevalence of eye health conditions, diagnosis and treatment services, the eye health workforce and outreach services. The report provides an evidence base for monitoring changes in eye health amongst Aboriginal and Torres Strait Islander people over time, their access and use of eye health services, and for identifying gaps in service delivery. This report includes the latest available data against each measure.

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