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Indigenous eye health measures 2018

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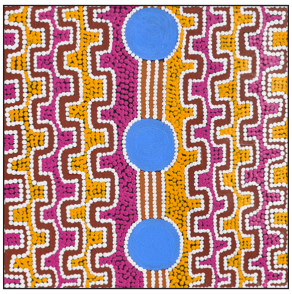

Cover art

Ngurlu Jukurrpa (Native Seed Dreaming) by Gloria Napangardi Gill.

Please note that there is the potential for minor revisions of data in this report.

Please check the online version at <www.aihw.gov.au> for any amendment.

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Summary

- This is the third annual report on the Indigenous eye health measures which were developed to provide an evidence base for monitoring changes in Indigenous eye health over time, access to and use of eye health services.
- The report compiles data from a range of sources covering the year up to 2018, and presents findings at the national, state and regional levels.
- In 2016 the prevalence of bilateral vision impairment for Indigenous Australians aged 40 and over was 10.4% and the prevalence of bilateral blindness was 0.3% (which combined 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 were refractive error (61%), cataract (20%) and diabetic retinopathy (5.5%).
- Repeated untreated trachoma infections are a cause of vision loss in some remote Indigenous communities, but the estimated prevalence of active trachoma in children aged 5–9 in all at-risk communities fell from 14% in 2009 to 3.8% in 2017.
- The age-standardised proportion of Indigenous Australians who had had an eye examination by an eye-care professional in the preceding 12 months increased from 13% in 2007–08 to 16% in 2017–18.
- There were around 7,900 hospitalisations (5.3 per 1,000) of Indigenous Australians for eye procedures in the two year period 2015–17.
- Between 2007–09 and 2015–17, the age-standardised rate for cataract surgery for Indigenous Australians increased by over 40% from 5,743 to 8,105 per 1,000,000.
- In 2016–17, the median waiting time for elective cataract surgery for Indigenous Australians was 141 days, with 3.3% waiting for more than 1 year for cataract surgery.
- Hospitalisation rates for cataract surgery were higher for Indigenous Australians in *Remote* and *Very remote* areas combined, while waiting times were longest in *Inner regional* areas.
- The number of occasions of service for Indigenous patients under the Visiting Optometrists Scheme (VOS) more than quadrupled between 2009–10 and 2017–18, rising from 6,975 to 29,161.

Comparison with non-Indigenous Australians

- Indigenous Australians suffered from vision loss at 2.8 times the rate of non-Indigenous Australians.
- In 2017–18, a lower proportion of Indigenous Australians had had an eye examination by an eye care professional in the preceding 12 months compared with non-Indigenous Australians across all age groups.
- The proportion of Indigenous Australians tested for diabetes who also had an eye test was lower than for non-Indigenous Australians across all age groups.
- The hospitalisation rate for eye injuries for Indigenous Australians aged 35 to 44 was more than 8 times the rate of non-Indigenous Australians in this age group.
- In 2015–17, Indigenous Australians had slightly lower age-standardised rates of hospitalisations for cataract surgery than non-Indigenous Australians. But among those with cataracts, less than 6 out of 10 Indigenous Australians had had cataract surgery compared with around 9 out of 10 non-Indigenous Australians.

1

Introduction

1.1 Background

The Department of Health funded the AIHW to develop and report annually on a set of Indigenous eye health measures. This is the third annual report on the measures and includes comprehensive eye health data at the national, state and regional levels. The measures cover the prevalence of vision impairment and blindness; diagnosis and screening; treatment; workforce; and outreach programs. The report provides an evidence base for monitoring changes in Indigenous eye health over time, access to and use of eye health services, and for identifying gaps in service delivery.

Issues for Indigenous Australians

Eye diseases and vision problems are the most common long-term health conditions reported by Aboriginal and Torres Strait Islander Australians, with one-third of Indigenous Australians (33%) reporting 1 or more long-term eye conditions (ABS 2013). While Aboriginal and Torres Strait Islander children have a lower incidence of poor vision than other Australian children, the prevalence of vision impairment increases markedly with age and Aboriginal and Torres Strait Islander people over the age of 40 have nearly 3 times the rate of vision loss of other Australians (Foreman et al. 2016). However, there is evidence of some improvement in recent years—with findings of the 2016 National Eye Health Survey indicating that the prevalence of blindness among Indigenous adults has declined, possibly related to improvements in prevention and treatment services.

Most of the blindness and vision impairment experienced by Indigenous Australians is caused by conditions that are preventable or amenable to treatment—that is, refractive errors, cataract and diabetic retinopathy. For example, spectacle correction and cataract surgery are 2 relatively low-cost, effective interventions that can address the main causes of vision loss among Indigenous Australians (Foreman et al. 2016).

Despite higher rates of visual impairment, previous studies found that Indigenous Australians used eye health services at lower rates than non-Indigenous Australians (AIHW 2017). The barriers to service-use include a lack of specialist care in rural and remote areas as well as the complexity of the eye health system. Treatment of eye conditions, such as diabetic retinopathy and cataract, for example, involve complex clinical pathways and a series of visits to different providers (Taylor et al. 2012). Aboriginal and Torres Strait Islander Australians are more likely to drop out at different points in the system and therefore not receive the comprehensive eye health services required to address more complex eye conditions.

Australian governments have put in place programs and services to address the barriers to service use for Indigenous Australians, including eye health outreach services, many of which are delivered through Indigenous specific primary health-care services. Other government initiatives include spectacle subsidies, diabetes eye screening, surgical support and funding for the coordination of eye health care.

Box 1.1: 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 shortsightedness and is a frequent cause of reduced visual acuity. The error can generally be corrected with the use of spectacles and contact lenses, or through laser surgery (National Eye Institute 2010).

A **cataract** is a mostly degenerative condition in which the lens of the eye clouds over, obstructing the passage of light to the retina and causing vision impairment and, potentially, blindness. Cataracts usually develop slowly and at different rates in each eye, and most cataracts are due to ageing. Other risk factors include smoking, exposure to the sun, diabetes, and injury to the eye. Cataracts can be treated with surgery which involves replacing the clouded lens with one 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 all at risk of developing diabetic retinopathy, but factors that increase the risk include poor control of diabetes; having diabetes for a long period of time; high blood pressure; high cholesterol; and smoking (Biotext 2008). Initially, the condition may cause no symptoms or only mild vision problems, but if poor diabetes management continues it can result in blindness—so early diagnosis is important. At any stage of severity, it can be associated with diabetic macular edema, a swelling of the macular area of the retina, that impacts on vision. A retinal camera is used by eye specialists to screen for diabetic retinopathy. Treatment includes laser surgery to repair leaking blood vessels, injections to decrease inflammation and, in more severe cases, surgery (Healthinfonet 2016).

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

1.2 Eye health services and programs

Responsibility for eye health services in Australia is shared across different levels of government, the private sector, health-care professions and non-government organisations. The Australian Government, through Medicare, funds eye health services provided by general practitioners (GPs), optometrists and ophthalmologists, as well as procedures for private patients in public hospitals. It also funds some targeted eye health programs designed to improve access to eye care services for Aboriginal and Torres Strait Islander Australians. Public hospitals are funded by state, territory and Australian governments, are managed by state and territory governments, and provide services to public and some private patients. States and territories also provide funding for various other eye health services, including outreach programs and spectacle schemes.

Box 1.2: Australian Government Policy context

The *National Framework for Action to Promote Eye Health and Prevent Avoidable Blindness and Vision Loss* was developed as Australia's response to the World Health Assembly's call for member nations to develop a national Vision 2020 plan. The framework focuses on eliminating avoidable blindness and vision impairment in Australia, providing an outline for nationally coordinated action by governments, health professionals, non-government organisations, industry and individuals to work in partnership (AHMC 2005). The 2014–16 Implementation Plan under the national framework promotes and draws together Australian Government activity on eye health. Aboriginal and Torres Strait Islander eye health is the first of 3 key priority areas outlined (Department of Health 2014).

The *National Aboriginal and Torres Strait Islander Health Plan 2013–23* was developed to provide an overarching framework and areas of focus for investment and effort in relation to improving Aboriginal and Torres Strait Islander health (Department of Health 2013).

The 2013–23 Implementation Plan outlines actions to be taken by the Australian Government, the Aboriginal community controlled health sector and other key stakeholders. Eye health is a clear priority under this plan (Department of Health 2015). Partnering with Aboriginal and Torres Strait Islander people is a fundamental principle underlying the plan.

The Australian Government currently funds a range of initiatives to prevent and address vision loss, including:

- trachoma control, surveillance and reporting
- coordination and integration of eye health services to improve the patient journey, and activities to improve access to eye surgery through surgical support
- delivery of health outreach services
- provision of eye health equipment and associated training for health professionals
- better data to inform eye health need
- Medical Benefits Schedule (MBS) items for screening and treatment of eye conditions.

Delivery of eye health services

Eye health services covering the continuum of care include prevention; diagnosis and screening; and treatment services. These services are provided by a range of different health-care providers including GPs, optometrists, ophthalmologists and allied health workers (see Box 3.5 for details of the eye health workforce). A broad overview of these services, including main providers, settings, and access, is provided in Table 1.1.

The Medical 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 (item 715, 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 1.1: Overview of eye health services

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

Sources: Adapted from Taylor et al. 2012; Maher & Brown 2011.

In November 2016, 2 new MBS items were listed for GPs to cover testing for diabetic retinopathy through retinal photography. The item covering Indigenous patients can be claimed annually, and the item for other Australians can be claimed every second year. Patients can then be referred to an optometrist or ophthalmologist when retinopathy is suspected or identified. This is supported by funding from the Australian Government for the purchase of retinal cameras for eligible Aboriginal Medical Services and by other health services in priority areas with large numbers of Indigenous patients, mainly in rural and regional Australia (Optometry Australia 2016).

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.

Australian Government outreach programs

There are 3 Australian Government outreach programs relevant to eye health (see 'Chapter 3 Box 3.6' for more details):

- the Visiting Optometrists Scheme (VOS)
- the Rural Health Outreach Fund (RHOF)
- the Medical Outreach Indigenous Chronic Disease Program (MOICDP).

These outreach programs are delivered through single fund holder arrangements in each jurisdiction. Most fund holders are responsible for the key eye health outreach services, though there is some variation across states in the models used to deliver these services. Access to many of the outreach services for Indigenous Australians is provided through Indigenous-specific primary health-care services.

State based programs and services

All jurisdictions have subsidised spectacle schemes which provide eye care and visual aids to clients at low or no cost. These schemes have varying eligibility criteria and different levels of entitlements. The schemes generally provide access for those eligible for pensioner or benefit concessions, through participating optometrists and ophthalmologists. Some states also provide access for Indigenous people through Aboriginal Community Controlled Health Services. This report includes data on state spectacle schemes, and on services delivered in hospitals, but not on other state-funded services.

Box 1.3: A population-based assessment of treatment for diabetic eye disease for Indigenous patients in Western Australia by Lions Outback Vision

Lions Outback Vision, based at the Lions Eye Institute in Western Australia, provides eye health services in regional Western Australia, as well as in urban Indigenous services. The standard of care for treatment of diabetic macula edema (DME), a form of diabetic retinopathy, includes access to intravitreal injection therapy every month or two, but many patients in more remote areas have much longer periods between treatment.

In order to tackle geographic barriers to treatment in the northwest of Western Australia, a trial of outreach trips, specifically focussed on the patients requiring treatment for DME, was conducted in the Pilbara region. This involved 6 trips per year to South Hedland and Karratha. These trips were of short duration and spaced at even intervals to provide the intravitreal therapy in a more timely fashion. In contrast, the administration of intravitreal injections for Kimberley region patients continued on the existing ad-hoc outreach schedules of around 2 to 4 times per year.

Population-based analysis of data on patients with diabetic macula edema in the both Pilbara and Kimberly regions was undertaken to assess the effectiveness of the trial. The analysis demonstrated that Pilbara DME patients had 72% treatment coverage compared with 31% for Kimberley patients (Odds Ratio 5.82; Confidence Interval (CI) 2.9-11.7). In addition, the median number of injections per patient was higher in the Pilbara than in the Kimberley (4 and 1, respectively (p=0.001)).

The regionally-based eye service in Broome commencing 2020 aims to improve treatment for DME in the Kimberley region and will be based on the Pilbara model.

Source: Lions Outback Vision, unpublished data

There are a range of other state-based Indigenous eye health programs delivered, or supported by, state and territory governments, including outreach programs and coordination of services in regional and remote areas. The models of care and types of programs differ somewhat across states and territories. These programs include, for example:

- the Outback Eye Service which delivers culturally appropriate ophthalmology services to western New South Wales
- the Cape York Regional Eye Health Program, which visits remote communities and offers coordinated eye care services
- the Lions Outback Vision program in Western Australia which coordinates trips to most regions by visiting specialists, and includes the Vision Van a mobile ophthalmology clinic
- the Central Australian and Barkly Integrated Eye Services which provides visiting services to remote communities in Central Australia (Razavi et al. 2018).

Box 1.4: Aboriginal and Torres Strait Islander National Subsidised Spectacles Scheme Initiative

The Australian Government has funded an Aboriginal and Torres Strait Islander National Subsidised Spectacles Scheme Initiative to run from 2018 to 2020. Vision 2020 Australia is working with stakeholders to encourage states and territories to establish ongoing, nationally consistent schemes for provision of subsidised spectacles and other optical appliances based on the principles developed by Optometry Australia and the National Aboriginal Community Controlled Organisation.

The project will also develop an evidence-based methodology to allocate one off funds to improve short term access to glasses and other optical aids for Aboriginal and Torres Strait Islander people, as part of closing the gap in vision.

Trachoma control, surveillance and reporting

Australia is a signatory to the World Health Organization's Alliance for the Global Elimination of Trachoma by 2020. The Australian Government funds trachoma surveillance and control services for Indigenous Australians through project agreements with 5 states and territories (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory).

This funding provides for comprehensive and systematic trachoma and trichiasis screening and treatment programs in communities where these conditions are prevalent, or where communities are assessed as being 'at-risk'. The surveillance and management of trachoma is guided by the 2014 *National Guidelines for the Public Health Management of Trachoma in Australia*, which were developed in the context of the WHO SAFE strategy (surgery, antibiotics, facial cleanliness and environmental improvement) (Kirby Institute 2015). Funding also supports the reporting of annual trachoma screening and control data by the National Trachoma Surveillance Unit, currently managed by the University of New South Wales Kirby Institute.

Other initiatives

Roadmap to close the gap for vision

In 2012 the Indigenous Eye Health Unit at the University of Melbourne launched the 'Roadmap' which provides a policy framework to improve the quality and sustainability of eye care services for Indigenous Australians (Taylor et al 2012). It outlines an evidence-based sector-endorsed framework to improve Indigenous eye health and close the gap for vision. It includes recommendations relating to primary eye care, access and coordination of services, increasing the eye health workforce, eliminating trachoma, improving health promotion and awareness of eye health. Annual updates on the Roadmap outline the implementation of the recommendations, achievements and activities, and highlight areas where further work is needed (IEHU 2018).

Box 1.5: Grampians—Indigenous eye health

The Victorian Grampians region has been successful in narrowing the gap in Indigenous eye health through community-led programs and state government leadership. The model involved bringing together the key regional stakeholders – the Aboriginal Community Controlled Health Organisations (ACCHOs), the Local Hospital Network, the Primary Health Network, and the local and visiting optometrists and ophthalmologists.

In 2014, the Victorian Government allocated funding to the Grampians Regional Aboriginal Eye Health (GRAEH) project, to support the *Koolin Balit: Victorian Government strategic directions for Aboriginal health 2012–2022* to support the improvement of Indigenous eye care services in the Grampians region. This built on the work of the 2012 *Roadmap to Close the Gap for Vision*, to develop an evidence based plan that provide a template for integrating primary care with specialist services.

The overall purpose of the project was to improve eye health outcomes for Aboriginal people across the Grampians through improving systems and pathways to increase the uptake of eye health services. The project also aimed to improve awareness of the importance of eye health by Aboriginal people, local eye health and other primary care practitioners across the region.

The GRAEHAG met regularly to drive planning, implementation, data sharing and evaluation. Across the GRAEHAG key partners and community stakeholders had a voice and were able to influence the direction of the project. Success illustrates the importance of strong community-led care and state government leadership, and employing a locally-based project officer. The specific achievements of the advisory group are outlined below:

- Identified the need for additional optometry services through the Australian College of Optometry and managed additional equipment and training needs. Developed health promotion resources, with strong local community engagement, and free online material designed for adaptation across Australia. Together these initiatives supported an increase of over 55% of patients receiving annual diabetic eye checks from 2013 to 2016.
- Addressed long waiting times for public cataract surgery, and by 2015-16 the Grampians region had an increase in surgery rates of over 64%, and hospital admissions for eye disease of over 54%, with 8 Indigenous patients undergoing surgery from Commonwealth funds administered through the Rural Workforce Agency Victoria.
- Improved dialogue with the community to address cultural barriers resulting in a 50% increase in the uptake of the $10 subsidised spectacles program.

Effective and efficient pathways of health care mean waiting times can be reduced and cost-effective services implemented, supporting improved engagement from both patients and health workers.

Sources: Jatkar, Anjou and Taylor 2017; Taylor 2019.

Strong eyes, strong communities

Strong eyes, strong communities: a five year plan for Aboriginal and Torre Strait Islander eye health and vision 2019–2024 released in 2019 charts a course to close the gap for vision and achieve a world class system of eye health and vision care for Aboriginal and Torres Strait Islander people. It was developed using available evidence and shaped by the collective input of Vision 2020 Australia members, individuals and other organisations.

Strong eyes, strong communities recognises that improving eye health for Aboriginal and Torres Strait Islander people is everybody's business, and that the collective efforts of governments, alongside communities, service providers and others is essential. It describes an integrated suite of activities that need to be progressed over the coming 5 years to:

- expand service delivery
- strengthen partnerships and local support
- embed eye care into community controlled and mainstream services
- eliminate trachoma
- sustain the focus on monitoring progress.

1.3 The measures and the data

The 23 Indigenous eye health measures are grouped into 4 categories: prevalence of vision impairment and blindness (3 measures); diagnosis and screening (6 measures); treatment (10 measures); and workforce and outreach programs (4 measures). (Table 1.2). The AIHW has previously published 2 annual reports on the measures (AIHW 2017; 2018). This publication and the accompanying web report provides the third annual update.

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

- for both Indigenous and other Australians
- over time
- by age and sex
- by state/territory
- by remoteness areas, and/or Primary Health Network (PHN) and/or Statistical Local Area (SA3).

Data sources

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

- National Eye Health Survey 2016 (NEHS), Centre for Eye Research and Vision 2020
- National Hospital Morbidity Database (NHMD), AIHW
- Australian Trachoma Surveillance reports (ATSR), Kirby Institute
- Medical Benefits Schedule (MBS) data, Department of Health
- National Health Workforce Data Set (NHWDS), Department of Health
- Department of Health administrative data on outreach programs
- State government administrative data on the spectacle subsidy schemes.

More details about the data sources and the quality of the Indigenous data reported are provided in Section 3 under each measure and in Appendix B.

Table 1.2: The Indigenous eye health measures

Measures	Main data source	Latest year of reporting
Prevalence		
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	2017
Diagnosis and screening services		
2.1 Eye health problems managed by GPs	BEACH	2010–15
2.2 Annual health assessments	MBS	2017–18
2.3 Eye examinations undertaken by an eye care professional	MBS	2017–18
2.4 Target population screened for diabetic retinopathy	MBS	2017–18
2.5 Trachoma and trichiasis screening coverage	ATSR	2017
2.6 Undiagnosed eye conditions	NEHS	2016
Treatment services		
3.1 Hospitalisations for diseases of the eye	NHMD	2015–17
3.2 Hospitalisations for injuries to the eye	NHMD	2015–17
3.3 Hospitalisations for eye procedures	NHMD	2015–17
3.4 Cataract surgery rate	NHMD	2015–17
3.5 Cataract surgical coverage rate	NEHS	2016
3.6 Waiting times for elective cataract surgery	NHMD	2016–17
3.7 Target population treated for diabetic retinopathy	MBS	2017–18
3.8 Trachoma and trichiasis treatment coverage	ATSR	2017
3.9 Treatment of refractive error	NEHS	2016
3.10 Spectacles dispensed under state schemes	State admin	2017–18
Workforce and outreach services		
4.1 Number and rate of optometrists	NHWDS	2016
4.2 Number and rate of ophthalmologists	NHWDS	2016
4.3 Number and rate of allied ophthalmic personnel	ABS	2016
4.4 Occasions of eye health services provided under outreach programs	DoH admin data	2017–18

Note: Pink shading shows measures for which data updated since Indigenous eye health measures 2016 were not available, though there were some data enhancements to the National Eye Health Survey measures.

Regional data

The data for some of the measures are reported for smaller regional units, including PHNs and SA3s. 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. In this report, the PHNs were classified as either metropolitan (if at least 85% of the population was in an area classified as Major cities) or regional (AIHW 2016c). The data relate to services provided to those living in these areas, and not to whether the PHNs provided the services.

The data for 1 MBS measure (2.2) and 4 of the hospitalisations measures (3.1, 3.2, 3.3 and 3.4) are also presented by SA3 for the first time. The SA3s are an Australian Bureau of Statistics (ABS) standardised regional breakup of Australia designed to capture populations between 30,000 and 130,000 (ABS 2016). There are 333 SA3s across Australia.

Needs estimates

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

Box 1.6: 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 making comparisons between populations with different age structures, such as Indigenous and non-Indigenous Australians. It is important to take into account these differences, particularly when looking at conditions that are age related, such as refractive error and cataracts.

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

Data enhancements

The following data enhancements have been made since the *Indigenous eye health measures 2016* report:

- The data reported for measure *2.2 Annual health assessments* and for 4 hospitalisation measures (measures 3.1 to 3.4) are reported by SA3 as well as by PHN.
- A new measure under Treatment, *3.7 Target population treated for diabetic retinopathy* is reported for the first time.
- The MBS data for measure *2.4 Target population screened for diabetic retinopathy* includes services provided by GPs, in addition to services provided by optometrists and ophthalmologists.
- The data for 4 of the measures based on the National Eye Health Survey (1.1, 1.2, 3.5 and 3.9) have been updated to report survey-adjusted results instead of crude unadjusted rates. This resulted in very minor changes to the results.
- Eye health services provided relative to estimated need were included for measures *2.3 Eye examinations by an eye care professional, 3.4 Cataract surgery rate and 3.10 Spectacles dispensed under state schemes*.

1.4 Structure of the report

Chapter 2 provides an overview of the main findings.

Chapter 3 presents the detailed results for the 23 measures in the 4 groups: prevalence; diagnosis and screening; treatment; and workforce and outreach programs. Each chapter begins with a brief section providing information about the measures and why they are important. The detailed results are then presented for each measure.

Appendix A provides information on the data sources, as well as notes about the interpretation of the data to assist users to understand data issues and limitations.

Appendix B provides technical specifications for the measures reported, including information on relevant classification codes.

Supplementary tables with the data for all figures in the report are provided in an attachment. These tables are available on the AIHW website <www.aihw.gov.au>.

2

Overview of the key findings

2.1 What is the extent of eye health problems?

The 2016 NEHS included 1,738 Indigenous Australians aged 40 and over, and found that the prevalence of bilateral vision impairment for Indigenous Australians was 10.4% and the prevalence of bilateral blindness was 0.3% (Table 2.1) (Foreman et al. 2016). It was estimated from these survey results that around 18,300 Indigenous Australians aged 40 and over suffered from vision impairment or blindness (vision loss). Rates of blindness for Indigenous Australians appear to have decreased significantly since 2008, but these results were based on small numbers.

Indigenous Australians suffered from vision loss at 2.8 times the rate of non-Indigenous Australians (Foreman et al. 2016). The prevalence of vision loss increased markedly with age, and was highest for Indigenous Australians aged 80 and over.

Main causes

The main causes of vision loss found in the 2016 NEHS for older Indigenous adults were uncorrected refractive error (61%), cataract (20%), and diabetic retinopathy (5.5%). While diabetic retinopathy was 1 of the main causes of vision impairment for Indigenous Australians, it was not a main cause for non-Indigenous Australians.

The trachoma surveillance report found that the estimated prevalence of trachoma for those aged 5–9 in all at-risk communities fell from 14% in 2009 to 3.8% in 2017 (Kirby Institute 2018).

2.2 How are eye health problems identified?

Health assessments

In 2017–18, around 230,000 Indigenous Australians had an Indigenous-specific health assessment (MBS item 715), 31% of the Indigenous population. This was an increase from 23% in 2014–15. Health assessments are undertaken by GPs and a basic eye health check is a mandatory component. The rate of Indigenous specific health assessments increased with age and was highest for those aged 55 and over.

There were large variations by jurisdiction and regions in the proportions of Indigenous Australians who had a health check. Across jurisdictions, the rate ranged from 13% in Tasmania to 39% in Queensland and the Northern Territory. Across PHNs, rates were lowest in the metropolitan areas of Sydney and Melbourne and highest in Western and Northern Queensland, where rates were over 40%.

Eye examinations by an eye care professional

In 2017–18, around 96,000 Indigenous Australians had had an eye examination by an optometrist or ophthalmologist in the preceding 12 months. In 2017–18, a lower proportion of Indigenous Australians had had an eye examination by an optometrist or ophthalmologist in the preceding 12 months, compared with non-Indigenous Australians across all age groups.

Table 2.1: Summary results for the key Indigenous eye health measures

Measures	Reporting period	Indigenous rate	Indigenous trends
Prevalence			
1.1 Prevalence of			
(i) Vision impairment (%, aged 40 and over) (n=1,738)	2016	10.4	↔
(ii) Blindness (%, aged 40 and over) (n=1,738)	2016	0.3	↓
1.2 Main causes of vision impairment and blindness			
(i) Refractive error (% of those with vision impairment) (n=183)	2016	60.8	↓
(ii) Cataract (% of those with vision impairment) (n=183)	2016	20.1	↓
1.3 Prevalence of			
(i) Trachoma (%, aged 5–9, Queensland, WA, SA and NT)	2017	3.8	↓
(ii) Trichiasis (%, aged 40 and over, WA, SA and NT)	2017	0.5	↓
Diagnosis and screening services			
2.2 Annual health assessments (%)	2017–18	31	↑
2.3 Eye examinations undertaken by an eye care professional (%)	2017-–18	12	↑
2.4 Target population screened for diabetic retinopathy	2017–18	42	↑
2.5 Screening coverage			
(i) Trachoma (%, aged 5–9, Queensland, WA, SA and NT)	2017	83	↓
(ii) Trichiasis (%, aged 40 and over, WA, SA and NT)	2017	24	↓
Treatment services			
3.1 Hospitalisations for diseases of the eye (number per 1,000)	2015–17	5.6	↑
3.2 Hospitalisations for injuries to the eye (number per 1,000)	2015–17	1.3	↔
3.3 Hospitalisations for eye procedures (number per 1,000)	2015–17	5.3	↑
3.4 Cataract surgery rate (number per 1,000,000)	2015–17	3,443	↑
3.6 Waiting times for elective cataract surgery (median waiting time in days)	2016-17	141	↔
3.7 Target population treated for diabetic retinopathy (% screened for diabetes)	2017–18	3.6	↓
3.8 Treatment coverage			
(i) Trachoma (% community members treated, all ages, WA, SA and NT)	2017	82	↓
(ii) Trichiasis (number aged 40+ offered ophthalmic consultation, WA, SA and NT)	2017	52	↓
Workforce and outreach services			
4.1 Number and rate of optometrists (FTE per 100,000)	2017	18	↑
4.2 Number and rate of ophthalmologists (FTE per 100,000)	2017	4	↔
4.4 Occasions of eye health services provided under outreach programs			
(i) Visiting Optometrists scheme (VOS) (number)	2017–18	29,161	↑
(ii) Rural Health Outreach Fund (RHOF) (number)	2017–18	7,821	↓
(iii) Medical Outreach Indigenous Chronic Disease Program (MOICDP) (number)	2017–18	2,038	↑

Note: ↑ = increased over time, ↓ = decreased over time, ↔ = no change over time or no clear trend. Measures 4.1 and 4.2 are total rates and not Indigenous rates.

Source: See Chapter 3 and supplementary tables for detailed results.

The rates of eye examinations for Indigenous Australians also varied by region and jurisdiction. In 2017–18, they decreased as remoteness increased with the lowest proportion in *Remote* and *Very remote* areas combined (8.5%). The proportion of Indigenous Australians who had had an eye examination were lowest in the Northern Territory (8.1%) followed by Western Australia (8.8%) and were highest in Victoria/Tasmania (15%). Data on eye examinations for Indigenous Australians are not currently available by PHN.

NHMRC guidelines recommend that diabetic eye checks should be undertaken annually for Indigenous Australians and biennially for non-Indigenous Australians. The 2017–18 MBS data showed that around 42% of Indigenous Australians who had a diabetes test had also had an eye examination. The proportion of Indigenous Australians who had a diabetes test and had an eye examination, was lower than non-Indigenous Australians across all age groups.

Screening for trachoma and trichiasis

In 2017, 2,872 Indigenous children in the target group of 5–9 years were screened for trachoma in the 84 communities that undertook screening (Kirby Institute 2018). Screening coverage for this group was 83%—just under the 85% recommended in the guidelines for trachoma control (CDNA 2014). In 2017, 7,215 (17%) Indigenous Australians aged 15–39 and 8,270 (24%) Indigenous adults aged 40 and over were screened for trichiasis in at-risk communities (Kirby 2016).

2.3 How are eye health problems treated?

Hospitalisations for eye diseases and injury

Over the 2 year period 2015–17 there were around 8,300 hospitalisations of Indigenous Australians for eye diseases, and around 1,900 for eye injuries. Hospitalisation rates for Indigenous Australians for eye diseases increased with age, peaking in the 75–84 age group, while rates for eye injuries peaked in the middle years.

Rates of hospitalisation for eye diseases were higher for Indigenous compared with non-Indigenous Australians for those aged 45 to 54 (6.8 and 6.1 per 1,000, respectively) and 55 to 64 (21.1 and 19.5 per 1,000, respectively). The hospitalisation rate for eye injuries for Indigenous Australians aged 35 to 44 was more than 8 times the rate of non-Indigenous Australians in this age group.

Hospitalisation rates for both eye diseases and eye injuries were highest for Indigenous Australians in *Remote* and *Very remote* areas combined.

There were around 7,868 hospitalisations of Indigenous Australians for eye procedures in 2015–17, with 4,721 being for lens procedures (mainly cataract surgery) and 1,242 for retinal procedures. Between 2007–09 and 2015–17, the age-standardised hospitalisation rate for eye procedures for Indigenous Australians increased from 7.5 to 11.0 per 1,000, while the rate for non-Indigenous Australians increased from 11.4 to 13.3 per 1,000.

Cataract surgery

There were around 5,131 hospitalisations of Indigenous Australians for cataract surgery in 2015–17, a rate of 3,443 per 1,000,000. The number of hospitalisations for cataract surgery for Indigenous Australians in 2015–17 was below the estimated annual number of Indigenous people needing cataract surgery (7,581). Indigenous Australians had slightly lower age-standardised rates of hospitalisations for cataract surgery than non-Indigenous Australians, but their need for cataract surgery was higher. Among those with cataracts, less than 6 out of 10 Indigenous Australians had had cataract surgery compared with around 9 out of 10 non-Indigenous Australians.

Between 2007–09 and 2015–17, the age-standardised Indigenous hospitalisation rate for cataract surgery increased by over 40% from 5,743 to 8,105 per 1,000,000. The rate remained relatively constant for those aged 45 to 64, but increased among those aged 65–74 and 75–84. The rate of hospitalisations for cataract surgery was higher for Indigenous Australians aged 45–54 and 55–64 than for non-Indigenous Australians of the same age.

Cataract surgery rates for Indigenous Australians varied significantly across PHNs, ranging from 919 to almost 7,000 per 1,000,000. This may in part reflect variations in Indigenous identification across PHNs.

The median waiting time for elective cataract surgery in 2016–17 was longer for Indigenous Australians than for non-Indigenous Australians (141 days and 89 days, respectively).

Diabetic retinopathy treatment

In 2017–18, there were 462 Indigenous Australians screened for diabetic retinopathy who underwent treatment. This was 3.6% of those screened for diabetic retinopathy. The age-standardised proportion treated was the same for Indigenous and non-Indigenous Australians (2.7%).

Treatment of trachoma and trichiasis

In 2017, 82% of community members were treated in communities where active trachoma was identified (Kirby Institute 2018). Treatment was generally through implementation of the SAFE strategy, involving antibiotics and health promotion activities (Box 1.1). Between 2011 and 2014, the proportion of community members who received treatment rose from 65% to 90% and then fell to 82% in 2017.

In 2017, of the 44 Indigenous adults with trichiasis, 23 were offered an ophthalmic consultation and 9 had surgery. The reporting of trichiasis data on referral and surgery, however, is limited due to incomplete data collection.

Correction of refractive error

The 2016 NEHS survey found that the treatment rate for refractive error for Indigenous participants was 83%, lower than the treatment rate for non-Indigenous participants (94%).

State spectacle schemes provide subsidised spectacles for those on low incomes, though the eligibility criteria used for these schemes is different in each jurisdiction. In 2017–18, there were 7,365 spectacles provided to Indigenous Australians under state spectacle schemes in New South Wales (31 per 1,000 population), 5,755 in Queensland (26 per 1,000 population), 1,980 in Victoria (18 per 1,000 population), and 82 in South Australia (2 per 1,000 population). This compares with the estimated numbers needing spectacles of 16,998 in New South Wales, 14,161 in Queensland, 3,696 in Victoria and 2,703 in South Australia.

2.4 Workforce and outreach programs

The eye health workforce

In 2017, there were around 4,832 optometrists employed in Australia, (an increase on the 4,034 employed in 2011), and 930 ophthalmologists (compared with 836 in 2012). The rates of employed optometrists were highest in some Sydney, Melbourne and Brisbane metropolitan areas, where FTE rates were over 20 per 100,000 population. The FTE rates were generally lower in more remote PHNs, though some PHNs closer to the cities also had relatively low rates of optometrists. The PHNs with the lowest FTE rates for optometrists were Country Western Australia and Murrumbidgee in New South Wales, while Western Queensland had fewer than 10 employed optometrists.

Ophthalmologists showed a similar distribution, though numbers and FTE rates were much lower than for optometrists. The highest rates were in some Sydney and Melbourne metropolitan areas where FTE rates were over 6 per 100,000 population, while many PHNs had too few ophthalmologists (less than 10) for rates to be calculated. The 3 PHNs with 5 or fewer employed ophthalmologists were Western Queensland, Gippsland, and Murrumbidgee.

Eye health outreach programs

The number of occasions of service provided to Indigenous Australians under the VOS more than quadrupled between 2009–10 and 2017–18 rising from 6,975 to 29,161. The number of occasions of service was highest in the regional PHNs, which generally had low numbers of registered optometrists. The PHNs with high numbers of occasions of service delivered under VOS were the Northern Territory, Country Western Australia, Northern Queensland, and Western New South Wales.

The eye health component of the Rural Health Outreach Fund (RHOF) supports specialists, GPs and allied health professionals to provide services in regional and remote areas. The number of these RHOF occasions of service for Indigenous patients rose by over 50%, from 4,977 in 2011–12 to 7,821 in 2017–18. As is the case with the VOS, the highest number and rate of occasions of service for Indigenous patients under this program was in regional PHNs including the Northern Territory and Country Western Australia.

The MOICDP supports medical specialists, GPs, allied health and other health professionals to provide services for Aboriginal and Torres Strait Islander people living with chronic disease. As part of this program, eye health services are provided to those suffering from chronic conditions such as diabetes. In 2017–18, there were 2,038 occasions of service with an eye health professional for Indigenous patients under the MOICDP. Data are available for MOICDP patients by state, with New South Wales and Western Australia having the highest rates.

2.5 Future reporting

Data on the prevalence of eye health conditions for Indigenous Australians are critical for measuring changes in Indigenous eye health. An update on the 2016 National Eye Health Survey is required to identify areas of improvement as well as areas where further work is required.

There are more than 60 regions under the Roadmap that are used to co-ordinate the delivery of eye health services. Where possible, the data for measures will be disaggregated and mapped to these regions. This will allow for better monitoring and accountability at the regional level. The AIHW will also work on improving reporting on the MBS data on eye examinations, for example reporting data by provider types and at the PHN level.

3

The measures—detailed results

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

Box 3.1: Overview of prevalence

- The 2016 NEHS showed that the crude prevalence of bilateral vision impairment for Indigenous Australians was 10.5% and the prevalence of bilateral blindness was 0.3% (together affecting an estimated 18,300 Indigenous Australians aged 40 and over).
- Indigenous Australians suffered from vision impairment and blindness at 3 times the rate of non-Indigenous Australians in 2016, based on age-standardised rates.
- The most common causes of vision impairment for Indigenous Australians were refractive error (61%), cataract (20%) and diabetic retinopathy (5.5%).
- Diabetic retinopathy was 1 of the 3 most common causes of vision impairment for Indigenous participants in the 2016 NEHS, but not for non-Indigenous participants.
- The prevalence of vision impairment increased markedly with age, and was highest for Indigenous Australians aged 80 and over.
- The age-standardised rate of vision impairment for Indigenous Australians was significantly higher in *Outer regional* areas than in *Major cities*.
- In 2017, there were 91 children aged 5–9 in at-risk Indigenous communities with active trachoma.
- Between 2009 and 2017, the estimated prevalence of active trachoma for children aged 5–9 in at-risk communities fell from 14% to 3.8%.

Measures of the prevalence of vision impairment and blindness are important for ongoing monitoring. Two of the 3 measures in this category—*1.1 Prevalence of vision impairment and blindness,* and *1.2 Main causes of vision impairment and blindness*—were in the Australian Government's National Framework for Action to Promote Eye Health and Prevent Avoidable Blindness and Vision Loss and in the World Health Organization's Universal Eye Health Global Action Plan 2014–19 (WHO 2013). The data for these measures come from sample surveys. The 2016 NEHS included a sample of 1,738 Indigenous Australians aged 40 years over and included ophthalmologic examinations to assess vision impairment and blindness.

The third measure relates to trachoma and trichiasis. Australian governments have committed to eliminating trachoma by 2020 and have funded surveillance and management programs that provide data on prevalence. This measure—*1.3 Prevalence of trachoma and trichiasis*—provides important information for assessing whether this target will be met. 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 2018).

Measure 1.1: Prevalence of vision impairment and blindness

Measure: The number of Indigenous Australians with vision impairment and blindness (vision loss), proportion of the population and age-standardised rates.

Results

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 10.4% and the prevalence of bilateral blindness was 0.3% (Figure 3.1.1b).

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% CI 14.5–21.06; 4%, CI 5.2–7.6 respectively). Based on the age-standardised data, it was estimated that up to 18,300 Indigenous Australians aged 40 and over suffer from vision impairment or blindness.

Time trend: The 2 national eye health surveys with results for Indigenous Australians found that rates of blindness decreased significantly from 1.9% in 2008 (1.9% CI 1.1%–2.6%) to 0.3% in 2016 (CI 0.1% to 0.7%), but these results are based on small numbers. There was no significant change in the rates of vision impairment over the 2 periods (Figure 3.1.1a).

Sex and age: The prevalence of vision loss for both Indigenous and non-Indigenous survey participants in 2016 increased markedly with age. For Indigenous Australians, the prevalence of vision loss was 7.2% among those aged 40–49, compared with 56% among those aged 80 and over. Indigenous rates were higher than non-Indigenous rates for all age groups (non-Indigenous Australians aged 40–49 were not surveyed) (Figure 3.1.1c).

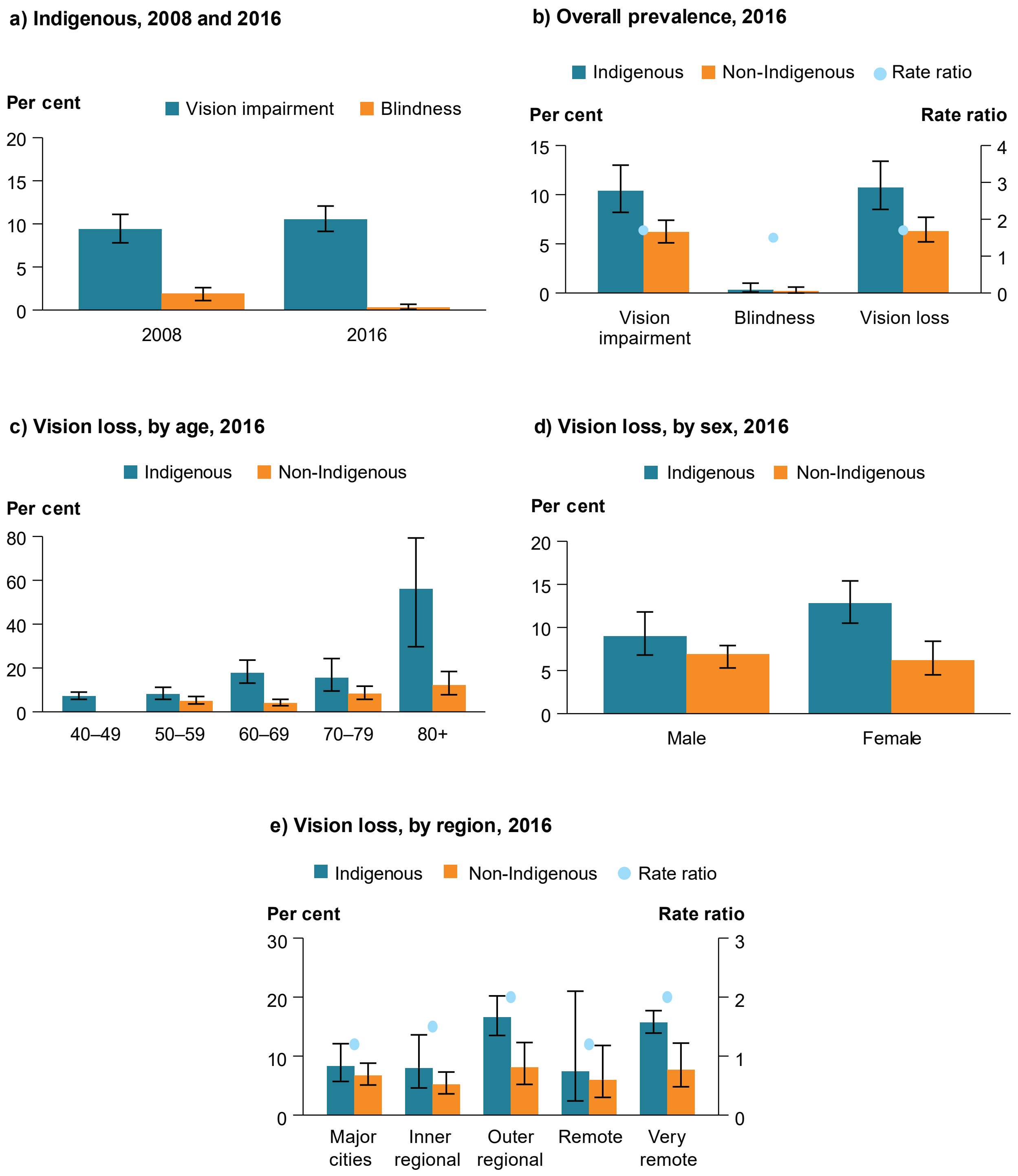
There was no significant difference between Indigenous males and females in the rates of vision loss (Figure 3.1.1d).

Remoteness: In 2016, the age-standardised prevalence of vision loss for Indigenous Australians in *Outer regional* and *Very remote* areas was significantly higher than in *Major cities*, the reference area (Figure 3.1.1e).

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% confidence intervals (CI) are provided to indicate the reliability of the estimates reported.
- Time trend data were based on the 2008 Indigenous Eye Health Survey and the 2016 NEHS, but there were some differences in the methodologies used, so caution should be used when interpreting time trends.
- Vision loss refers to vision impairment and blindness combined.
- Vision impairment does not include corrected refractive error.

Figure 3.1.1: Prevalence of vision impairment and blindness (vision loss), by various characteristics



Notes

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

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

1.1.2 Self-reported eye or sight problems

Overall: In 2012–13, one-third (33%) or 213,000 Indigenous Australians reported that they had an eye or sight problem.

After adjusting for age, the proportion of Indigenous Australians with an eye or sight problem was 8% lower than that of non-Indigenous Australians (Figure 3.1.2a).

Time trend: Since 2001, the age-standardised proportion of Indigenous Australians who had an eye or sight problem increased from 47% to 48% in 2012–13, whereas for non-Indigenous Australians it remained stable at 52% (Figure 3.1.2b).

Sex and age: The prevalence of self-reported eye or sight problems was highest for Indigenous people aged 55 and over (92%), compared with 9% for those aged 0–14 (Figure 3.1.2c).

A higher proportion of Indigenous females reported an eye or sight problem (38%), than males (29%) (Figure 3.1.2d).

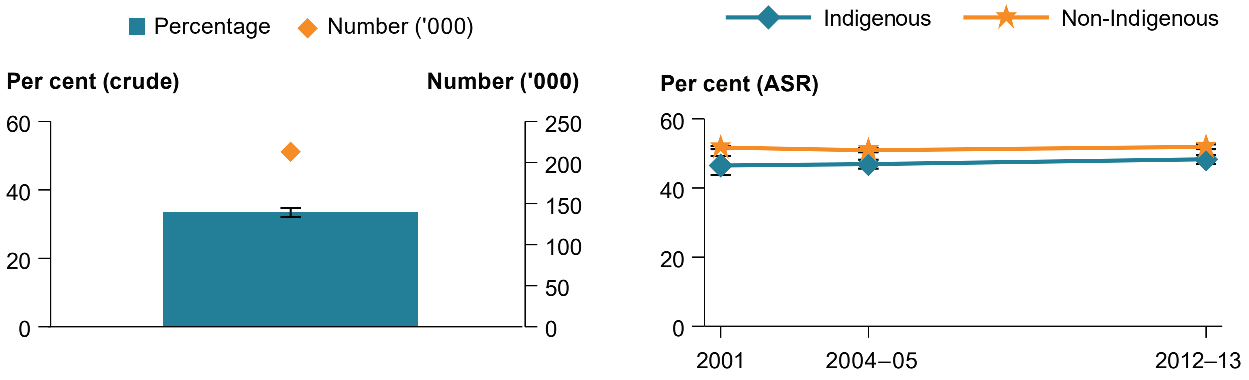
Remoteness: Indigenous Australians in non-remote areas (35%) reported a higher prevalence of eye or sight problems than those in remote areas (28%) (Figure 3.1.2e).

Jurisdiction: The prevalence of self-reported eye or sight problems was highest in the Australian Capital Territory (43%) and lowest in the Northern Territory (24%) (Figure 3.1.2f).

Things to consider

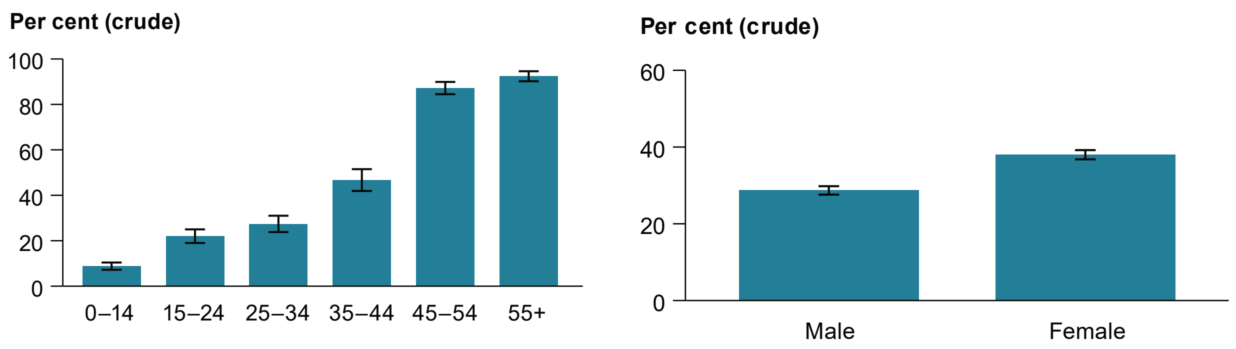
- The 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) included 12,000 Indigenous Australians for the core sample. Survey results are subject to sampling errors as only a small proportion of the population is used to produce estimates that represent the whole population.
- These data are self-reported eye or sight problems and have not necessarily been diagnosed by a health professional. They therefore do not include eye conditions that respondents are not aware that they have, or which were misdiagnosed.
- Eye or sight problems include corrected refractive error.

Figure 3.1.2: Self-reported eye/sight problems, by various characteristics



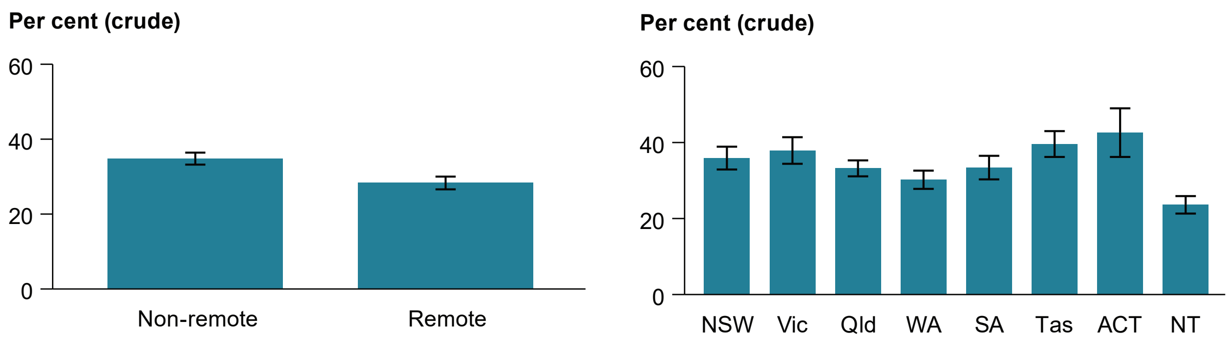
a) Indigenous, 2012–13

b) Time trend, 2001 to 2012–13



c) Indigenous, by age, 2012–13

d) Indigenous, by sex, 2012–13



e) Indigenous, by region, 2012–13

f) Indigenous, by jurisdiction, 2012–13

Notes

1. Age-standardised rates (ASR) are shown in Figure b). All other figures show crude rates.
2. Error bars show 95% confidence intervals.
3. Data for these figures are available in the online supplementary tables.

Source: ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey.

Measure 1.2: Main causes of vision impairment and blindness

Measure: Main causes of vision impairment and blindness (vision loss) for Indigenous Australians, as a proportion of those with vision loss.

Results

1.2.1 Main causes of vision impairment and blindness

Overall: Among Indigenous Australians with vision loss, the main causes were refractive error (61%), cataract (20%) and diabetic retinopathy (5.5%) (Figure 3.1.3a). For non-Indigenous Australians with vision loss, the main causes were refractive error (61%), cataract (13%) and macular degeneration (10%) (Figure 3.1.3a).

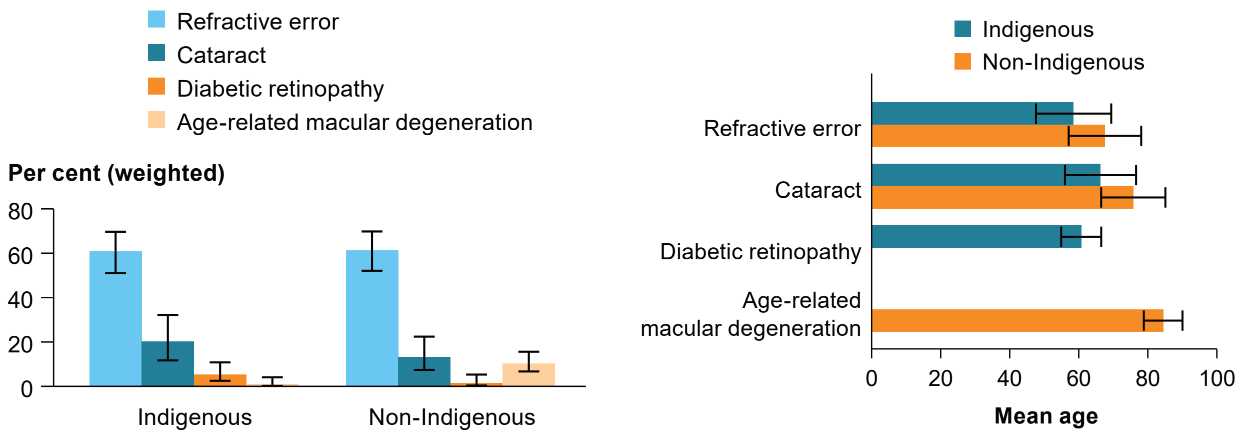
Sex and age: The main causes of vision loss for Indigenous males and females were similar, though a higher proportion of Indigenous females had cataracts as a main cause (Figure 3.1.3c). For non-Indigenous Australians, the pattern of causes for males and females was similar (Figure 3.1.3d).

There were no significant differences in the mean age of participants by cause of vision loss (Figure 3.1.3b).

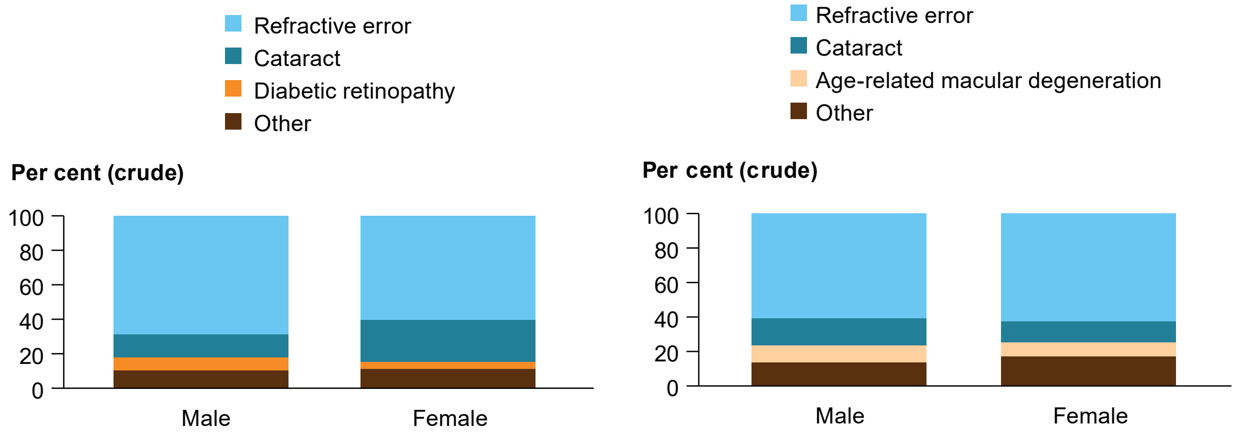
Things to consider

- 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% confidence intervals are provided to indicate the reliability of the estimates reported.
- Time trend data were based on the 2008 Indigenous Eye Health Survey and the 2016 NEHS, but there were some differences in the methodologies used, so caution should be used when interpreting time trends.
- Vision loss does not include corrected refractive error.

Figure 3.1.3: Main causes of vision impairment and blindness (vision loss), by various characteristics


a) By Indigenous status, 2016

b) Mean age, 2016


c) Indigenous, by sex, 2016

d) Non-Indigenous, by sex, 2016

Notes

1. Figure (a) includes vision impairment and blindness (vision loss). Figures (b), (c) and (d) include vision impairment only.
2. Error bars in figure (a) are 95% confidence intervals, whereas in Figure (b) they represent the standard deviation. Confidence intervals were not available for figures (c) and (d).
3. Data are not presented for some groups, due to small numbers.
4. Data for these figures are available in the online supplementary tables.

Source: NEHS data 2016; Foreman et al. 2017c.

1.2.2 Self-reported causes of eye or sight problems

Overall: The main causes of sight problems reported by Indigenous Australians were long-sightedness (57%), short-sightedness (38%) and cataract (3%) (Figure 3.1.4a).

Indigenous Australians were more likely than non-Indigenous Australians to report blindness (3.1 times as likely) or having a cataract (1.8 times as likely) as a cause of sight problems based on age-standardised rates (Figure 3.1.4b).

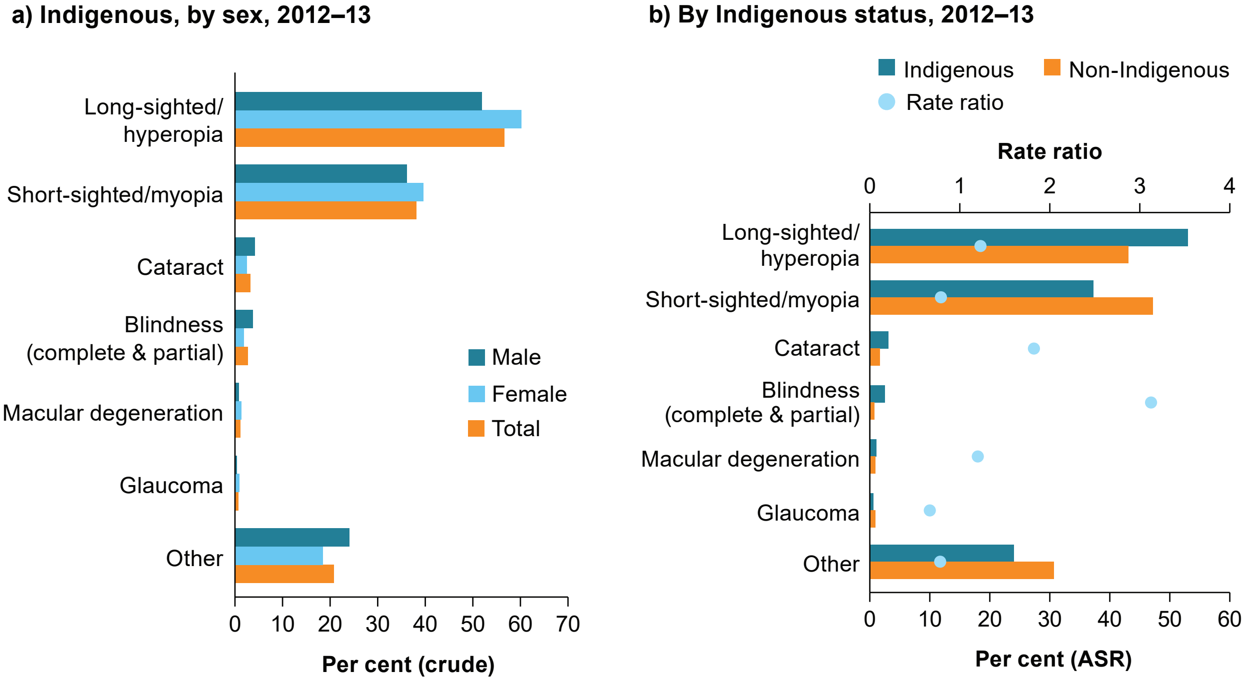
Sex and age: The prevalence of long-sightedness was higher for Indigenous females than for Indigenous males (60% and 52%, respectively) (Figure 3.1.4a).

Rates of long-sightedness and cataract were highest for those aged 45 and over.

Things to consider

- The 2012–13 AATSIHS included a sample of 12,000 Indigenous Australians for the core sample. Survey results are subject to sampling errors, as only a small proportion of the population is used to produce estimates that represent the whole population.
- These data are self-reported eye or sight problems and have not necessarily been diagnosed by a health professional. They therefore don’t include eye conditions that respondents are not aware that they have, or which were misdiagnosed.
- Eye or sight problems include corrected refractive error.

Figure 3.1.4: Prevalence of eye/sight problems, by main cause, by various characteristics



Notes

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

Source: ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey.

Measure 1.3: Prevalence of trachoma and trichiasis

Measure: The estimated number, and proportion of:

1. Indigenous children in at-risk communities with active trachoma
2. Indigenous adults in at-risk communities with trichiasis.

Results

1.3.1 Trachoma

Overall: In 2017, there were a total of 139 children aged 0–14 with active trachoma in the 84 at-risk communities that were screened for trachoma. This was 3.2% of 0–4 year olds screened (18 children), 3.2% of 5–9 year olds screened (91 children), and 3.1% of 10–14 year olds screened (30 children) (Figure 3.1.5a).

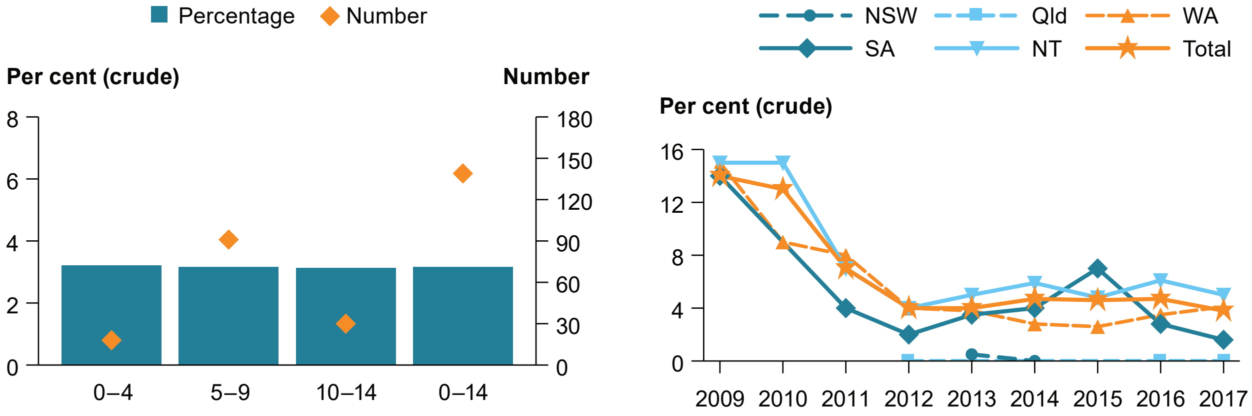
Time trend: Between 2009 and 2017, the estimated prevalence of active trachoma in children aged 5–9 screened in all at-risk communities fell from 14% to 3.8% (Figure 3.1.5b).

Jurisdiction: In 2017, the proportion of children aged 5–9 with active trachoma in the screened communities was 8.8% in Western Australia (47 children), 2.5% in South Australia (15 children) and 1.8% in the Northern Territory (29 children). In Queensland no children were found with active trachoma (Figure 3.1.5c).

Things to consider

- In 2017, trachoma screening was undertaken in 84 at-risk communities in 4 jurisdictions (Northern Territory, Western Australia, South Australia and Queensland), while trichiasis screening was undertaken in 135 at-risk communities in 3 jurisdictions (Northern Territory, Western Australia and South Australia) (Kirby Institute 2016).
- 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 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.

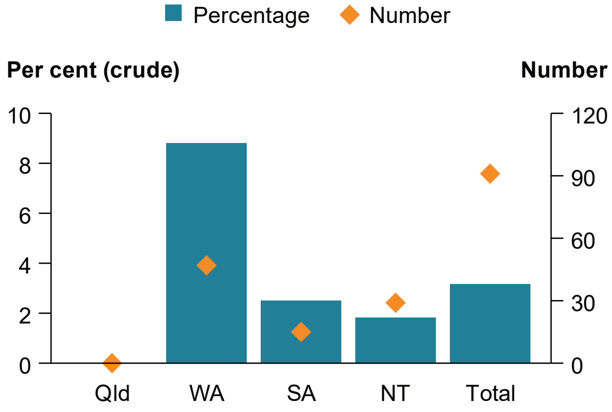
Figure 3.1.5: Prevalence of active trachoma in at-risk Indigenous communities, by various characteristics



a) By age, 2017

b) Children aged 5–9, 2009 to 2017

c) Children aged 5–9, by jurisdiction, 2017



Notes

1. All figures show crude rates.
2. 2017 data cover the 84 communities and 2,872 children screened (29 communities and 1,587 children in the NT; 34 communities and 534 children in WA; 18 communities and 598 children in SA; and 3 communities and 159 children in Queensland).
3. The rates shown in Figure (b) are based on the most recent estimates carried forward in all communities that were considered at risk at some time.
4. Data for these figures are available in the online supplementary tables.

Source: Australian Trachoma Surveillance report 2017 (Kirby Institute, 2018).

1.3.2 Trichiasis

Overall: In 2017, among Indigenous Australians aged 40 and over examined in at-risk communities, there were 44 with trichiasis, a prevalence rate of 0.5%. There were another 6 people aged under 40 with trichiasis in these communities (Figure 3.1.6a).

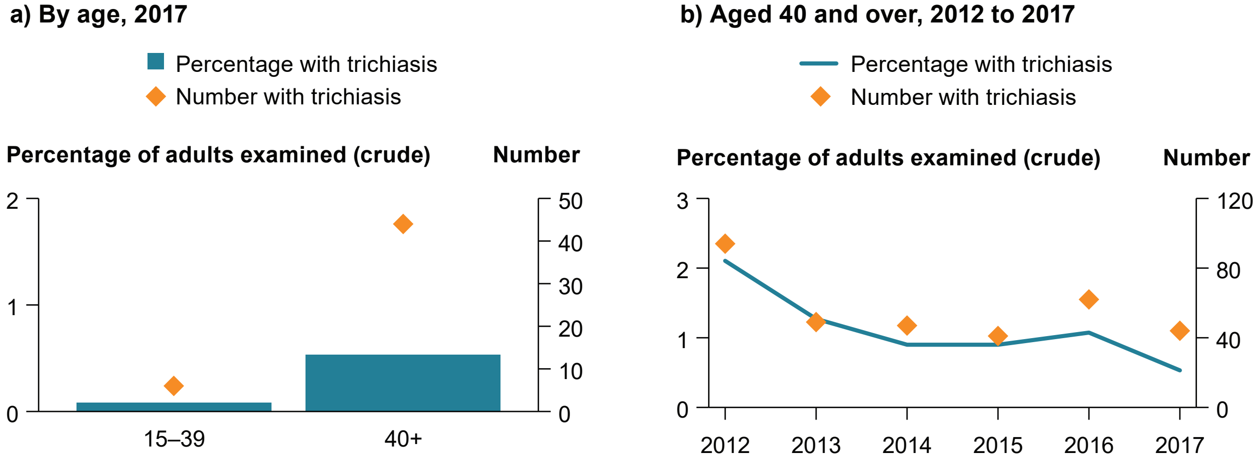
Time trend: The proportion of Indigenous Australians aged 40 and over with trichiasis fell from 2.1% in 2012 to 0.5% in 2017 (Figure 3.1.6b).

Jurisdiction: Of the 3 jurisdictions that undertook screening in 2017, the prevalence of trichiasis in Indigenous Australians aged 40 and over was highest in South Australia (1.0%) and lowest in Western Australia (0.2%) (Figure 3.1.6c).

Things to consider

- Screening for trichiasis is undertaken opportunistically, such as during adult health checks.

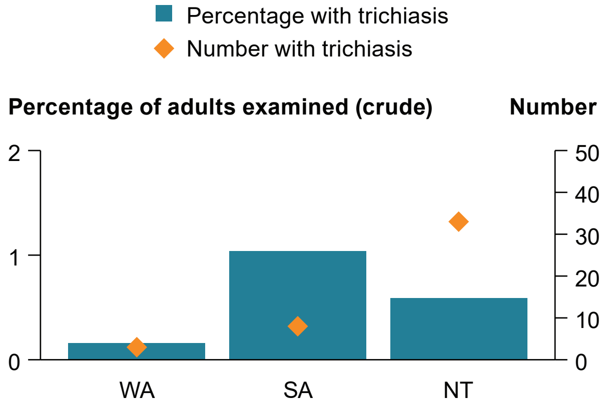
Figure 3.1.6: Prevalence of trichiasis in at-risk Indigenous communities, by various characteristics



a) By age, 2017

b) Aged 40 and over, 2012 to 2017

c) Aged 40 and over, by jurisdiction, 2017



Notes

1. All figures show crude rates.
2. The data covers the 135 communities screened in 2017 (73 in the NT; 43 in WA; and 19 in SA).
3. Data for these figures are available in the online supplementary tables.

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

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

Box 3.2: Overview of diagnosis and screening

- In the years 2010 to 2015, eye health problems accounted for 1.1% of all problems managed by GPs at encounters with Indigenous patients.
- Just under one-third (31%) of Indigenous Australians had an Indigenous-specific health assessments (MBS item 715) in 2017–18. Rates of health assessments were highest for those aged 55 and over.
- In 2017–18, around 96,000 Indigenous Australians had had an eye examination by an optometrist or ophthalmologist in the preceding 12 months. Compared with non-Indigenous Australians (22%), a lower proportion of Indigenous Australians (16%) had had an eye examination in the preceding 12 months, based on age-standardised rates.
- Age-standardised rates of eye examinations for Indigenous Australians decreased with increasing remoteness, and were lowest in the Northern Territory (11%) and Western Australia (12%).
- The 2017–18 MBS data show that around 42% of Indigenous Australians who had a diabetes test had also had an eye examination.
- In 2017, 2,872 (83%) Indigenous children aged 5–9 were screened for trachoma in the 67 communities that undertook screening.
- In 2017, 7,215 Indigenous Australians aged 15–39 (17%) and 8,270 Indigenous adults aged 40 and over (24%) were screened for trichiasis in at-risk communities.
- In the 2016 NEHS, over half (57%) of Indigenous participants with vision impairment or blindness attributed to 1 of 5 main conditions had not previously had their condition diagnosed. The corresponding rate for non-Indigenous participants was 52%.
- The proportion of Indigenous participants found to have a condition that had not previously been diagnosed was highest for cataract (69%), followed by refractive error (55%).

Primary health-care providers play a key role in detecting problems, treating more minor eye conditions and referring patients to more specialised care. Measure *2.1 Eye health problems managed by GPs* comes from the BEACH (Bettering the Evaluation and Care of Health) survey of GPs, but this survey has been discontinued. Due to the small numbers of Indigenous clients in the survey, 5 years of BEACH data were aggregated to allow for analysis by Indigenous status and other characteristics.

The MBS database was the data source for 3 of the measures in this category. All Aboriginal and Torres Strait Islander Australians are eligible for an annual Indigenous-specific health assessment provided by GPs and rebated through the MBS. It includes assessment of vision and, where applicable, for trichiasis—along with referral to an optometrist if required. Measure *2.2 Annual health assessments* is based on claims for MBS item 715.

Optometrists and ophthalmologists provide more specialised eye health screening services and can detect more serious eye problems. Various types of eye examinations are rebated through the MBS. Measure *2.3 Eye examinations undertaken by an eye care professional* includes those MBS items used for screening for eye problems.

Data for measure *2.4 Target population screened for diabetic retinopathy* includes the screening undertaken by optometrists and ophthalmologists, as well as screening undertaken by GPs under the new MBS items introduced in 2017.

Data for measure *2.6 Undiagnosed eye conditions* come from the 2016 NEHS and provide some indication of the effectiveness of screening for diabetic retinopathy among those with diabetes, and for all eye health conditions.

Trachoma and trichiasis surveillance is undertaken in 'at-risk' communities in remote areas of Australia. Measure *2.5 Trachoma and trichiasis screening coverage*, captures data on screening activities and coverage in 'at-risk' communities in Australia (Kirby Institute 2018).

Measure 2.1: Eye health problems managed by GPs

Measure: The number of eye health problems managed by GPs, by type of problem, per 1,000 encounters and age-standardised rates.

Results

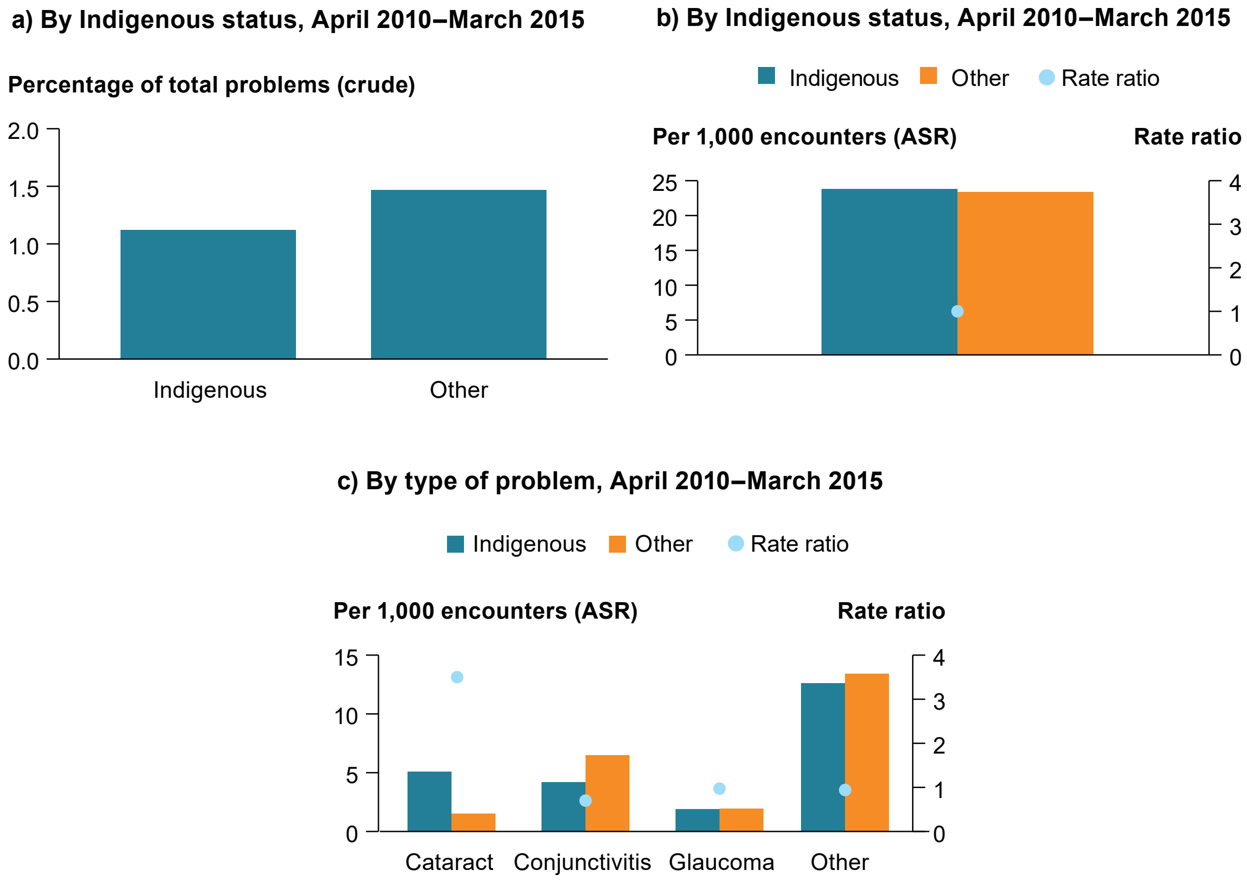
Overall: Based on GP survey data, eye health problems accounted for 1.1% of all problems managed by GPs at encounters with Indigenous patients during 2010–15 (Figure 3.2.1a).

After adjusting for age, the overall rate of problems managed was similar for Indigenous and other Australians (24 and 23 per 1,000 encounters, respectively), except for cataracts, where the rate for Indigenous Australians was 3.5 times the rate for other Australians (figures 3.2.1b and 3.2.1c).

Things to consider

- The BEACH survey collected information from a random sample of 1,000 GPs across Australia each year. The survey has been discontinued, so more recent data are not available.
- BEACH data may underestimate the number of encounters with Indigenous Australians.

Figure 3.2.1: Eye health problems managed by general practitioners, by various characteristics



Notes

1. Age-standardised rates (ASR) are shown in figures (b) and (c), whereas Figure (a) shows crude rates.
2. Figure (c) shows the top 3 problems managed.
3. Figure (a) shows eye health problems as a percentage of total problems, whereas figures (b) and (c) show eye health problems managed per 1,000 encounters. More than 1 problem can be managed in each encounter.
4. Data for these figures are available in the online supplementary tables.

Source: Analyses conducted by the Family Medicine Research Centre, University of Sydney, of BEACH data collected by that Centre.

Measure 2.2: Annual health assessments

Measure: The number of people who had an Indigenous health assessment (MBS item 715), proportion of the population and age-standardised rates.

Results

Overall: In 2017–18, just under one-third (30% or 230,000) of Indigenous Australians had an Indigenous-specific health assessment (MBS item 715). This is an increase of 18,731 people from 2016–17 (Figure 3.2.2a).

Time trend: Between 2010–11 and 2017–18, the age-standardised proportion of Indigenous Australians who had an MBS item 715 health assessment increased from 12% to 32%. This increase occurred across all age groups (0–14, 15–54 and 55+), but was highest for those aged 55 and over (Figure 3.2.2b).

Sex and age: In 2017–18, the number and proportion of Indigenous males and females aged 0–14 who had an MBS 715 health assessment were very similar—39,739 (28%) and 36,081 (27%), respectively. For all other age groups, health assessments for Indigenous females outnumbered those for Indigenous males (Figure 3.2.2c).

Remoteness: The proportion of Indigenous Australians who had a health assessment was very similar in the combined *Inner* and *Outer regional* areas and the combined *Remote* and *Very remote* areas (32% and 33% respectively). The proportion was lowest in *Major cities* (23%) (Figure 3.2.2d).

Jurisdiction: The proportion of Indigenous Australians who had a health assessment was highest in Queensland (38%) and the Northern Territory (38%), and was lowest in Tasmania (13%) (Figure 3.2.2e).

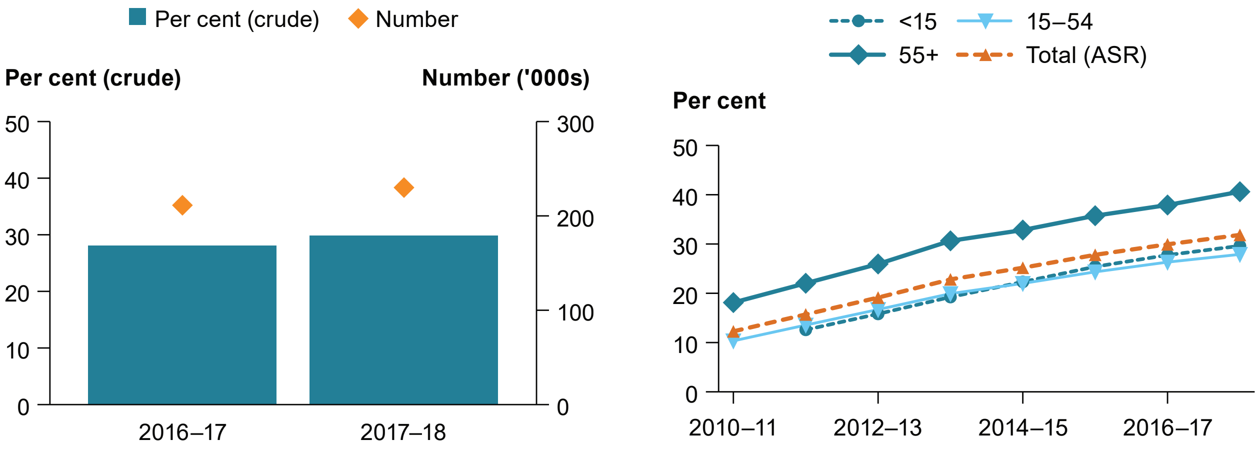
PHN: The PHNs with the lowest proportion of Indigenous Australians who had an MBS item 715 health assessment were Northern Sydney (4.3%) and South Eastern Melbourne (7.6%), while those with the highest rates were in Western Queensland (44%) and Northern Queensland (40%) (Figure 3.2.3).

SA3: The SA3s with the highest proportion of Indigenous Australians who had an MBS item 715 health assessment were Townsville (61%), Alice Springs (51%) and Cairns—South (43%), while those with the lowest rates were North Sydney—Mosman (2.3%) and Manly (3.4%). Rates were not calculated for SA3s with 6 assessments or less.

Things to consider

- A basic eye check is a mandatory component of the MBS item 715 health assessment.
- MBS data reflect billing practices and do not necessarily reflect all services received. For example, MBS data do not generally capture equivalent services provided by state and territory funded primary health care or by public hospitals. Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).

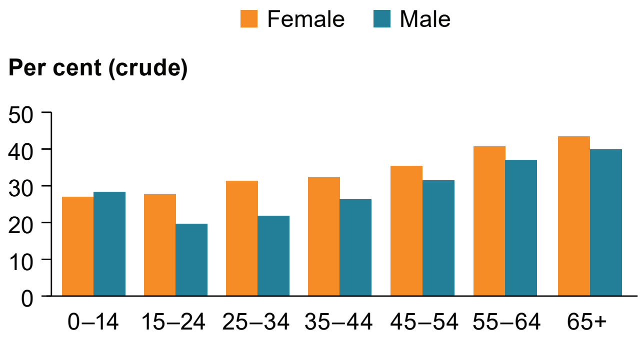
Figure 3.2.2: MBS health assessments, by various characteristics



a) Crude rate and number, 2016–17 and 2017–18

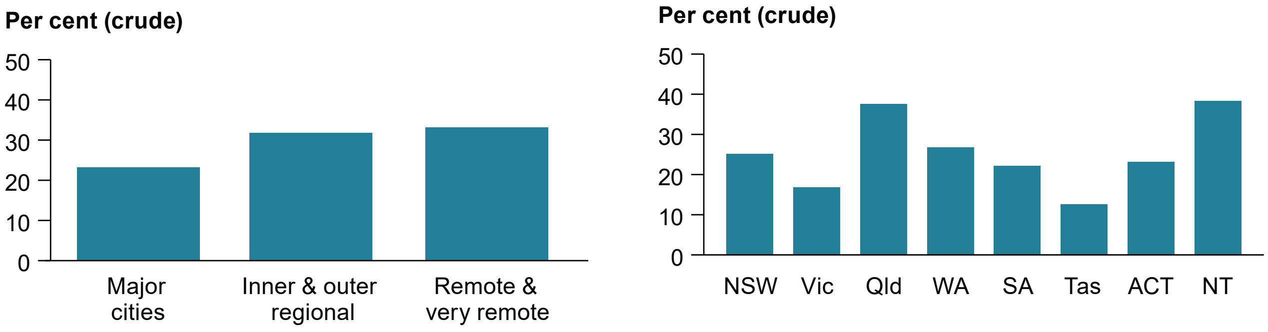
b) Item 715, by age, 2010–11 to 2017–18

c) Item 715, by age and sex, 2017–18



d) Item 715, by region, 2017–18

e) Item 715, by jurisdiction, 2017–18

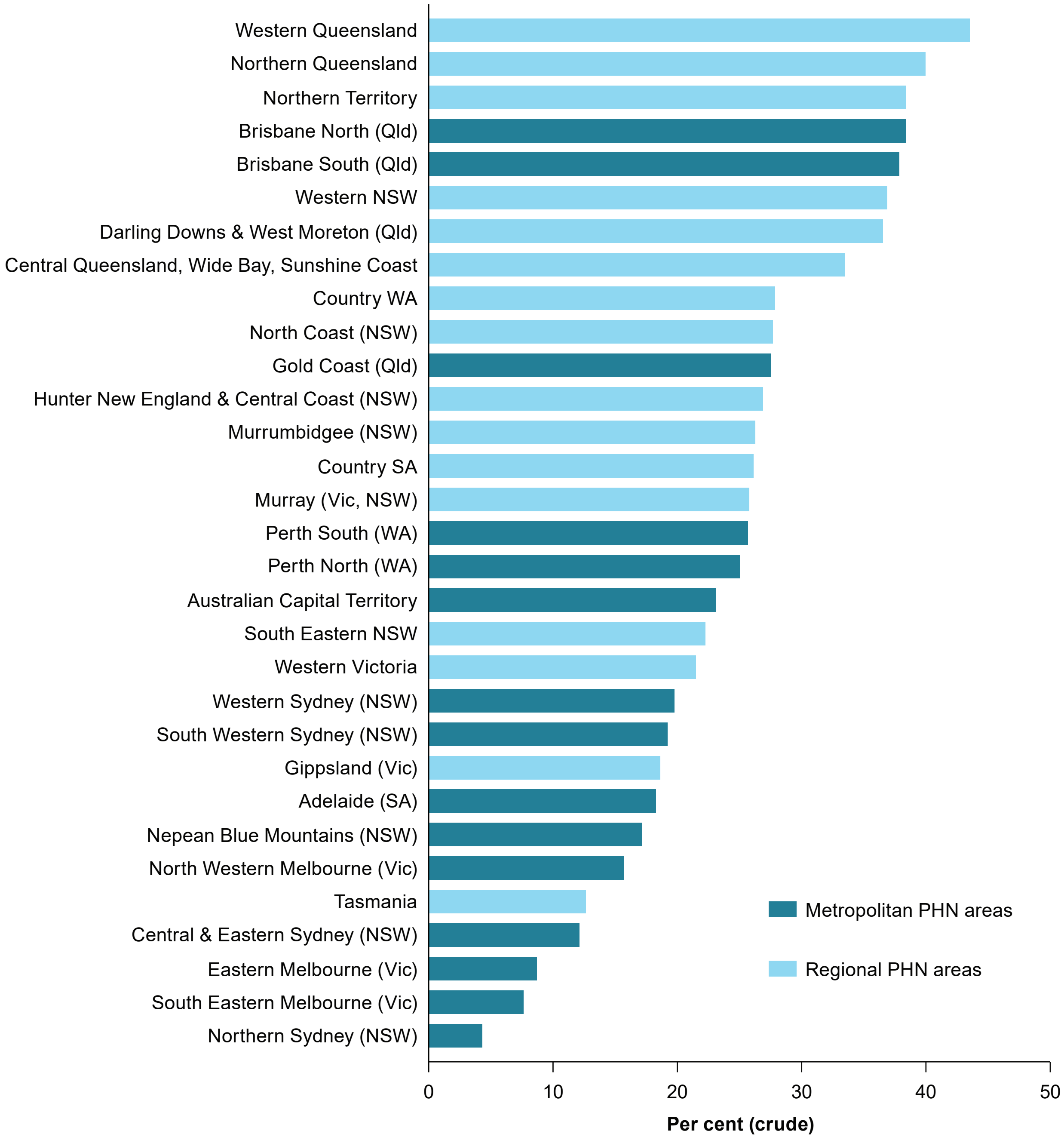


Notes

1. Age-standardised rates (ASR) are shown in Figure (b) for total, whereas all other figures show crude rates.
2. Data are based on patient's street address.
3. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of MBS data.

Figure 3.2.3: MBS health assessments (item 715), by PHN, 2017–18

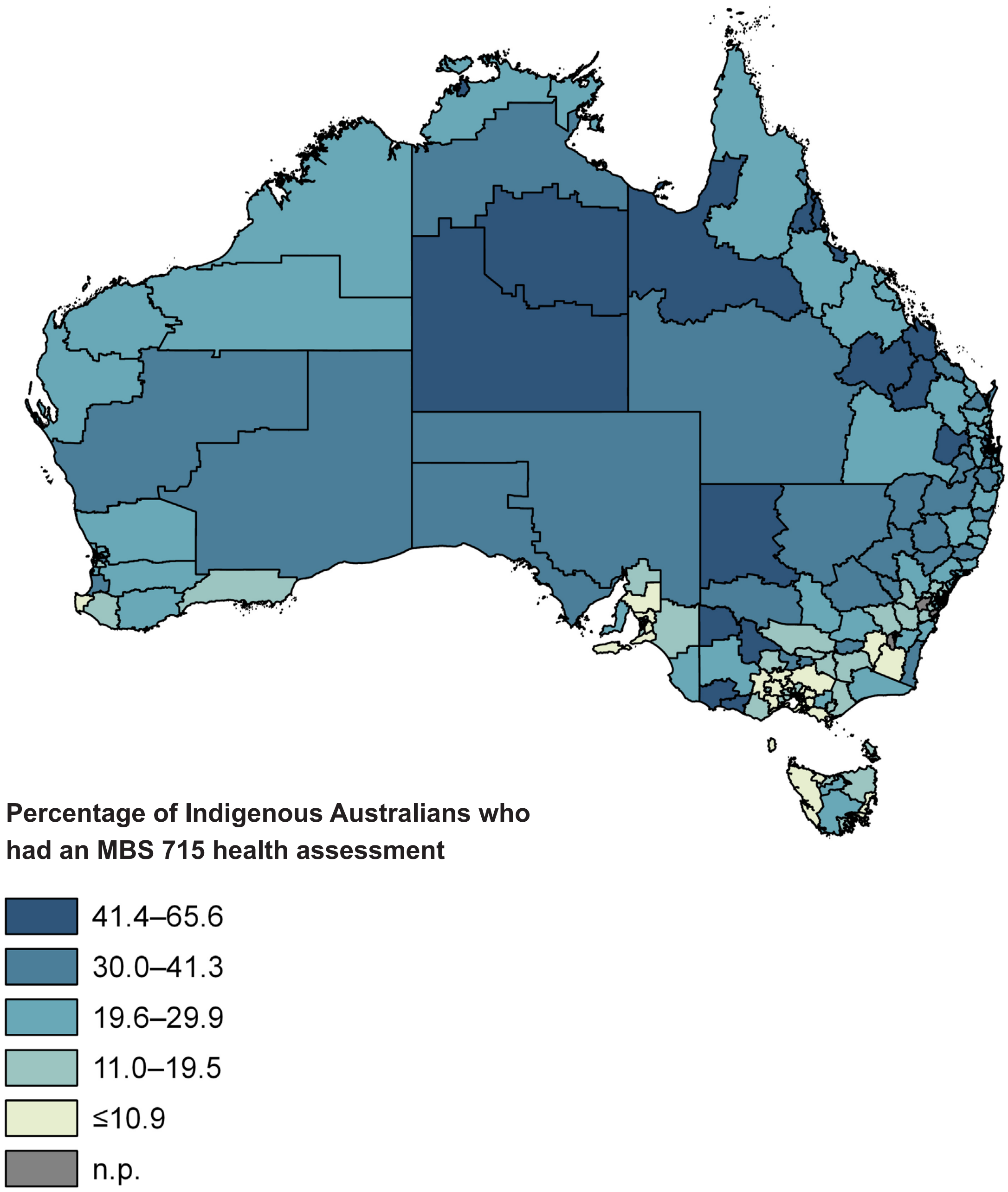


Notes

1. Data are crude rates.
2. Data are based on provider's street address.
3. Data for this figure are available in the online supplementary tables.

Source: AIHW analysis of MBS data.

Map 3.2.1: MBS health assessments (item 715), by SA3, 2017–18



n.p. Not published for SA3s with less than 6 health assessments, or an Indigenous population less than 100.

Notes

1. Data are based on provider's street address.
2. The SA3 data for this map are available in the online supplementary tables.

Source: AIHW analysis of MBS data.

Measure 2.3: Eye examinations by an eye care professional

Measure: The number of Indigenous Australians who had an eye examination by an optometrist or ophthalmologist in the last 12 months, proportion of the population.

Results

Overall: In 2017–18, there were around 95,600 Indigenous Australians who had had an eye examination undertaken by an optometrist or ophthalmologist in the preceding 12 months—12% of the population (Figure 3.2.4a). This was less than the estimated number of eye examinations needed for Indigenous Australians each year (135,682) (IEHU 2017).

Sex and age: In 2017–18, the proportion of Indigenous Australians that had had an eye examination in the preceding 12 months increased with age from 45–54 onward, for both males and females. The proportion was highest for those aged 65 and over, and second highest for those aged 0–14.

Time trend: Between 2007–08 and 2017–18, the total age-standardised proportion of the Indigenous population that had had an eye examination increased from 13% to 16%, while the proportion for non-Indigenous Australians increased from 17% to 22% (Figure 3.2.4b).

Looking at age-specific rates, between 2007–08 and 2017–18, the proportion of the Indigenous population who had had an eye examination by an optometrist or ophthalmologist increased across all age groups. The largest increase was in those aged 65+ where the proportion rose from 26% to 34% (Figure 3.2.4c). Over the same period, the proportion of non-Indigenous Australians aged 65+ that had an examination increased from 29% to 48% (Figure 3.2.4d). Across all age groups, the proportion of non-Indigenous Australians increased to a greater degree than Indigenous Australians of the same age group.

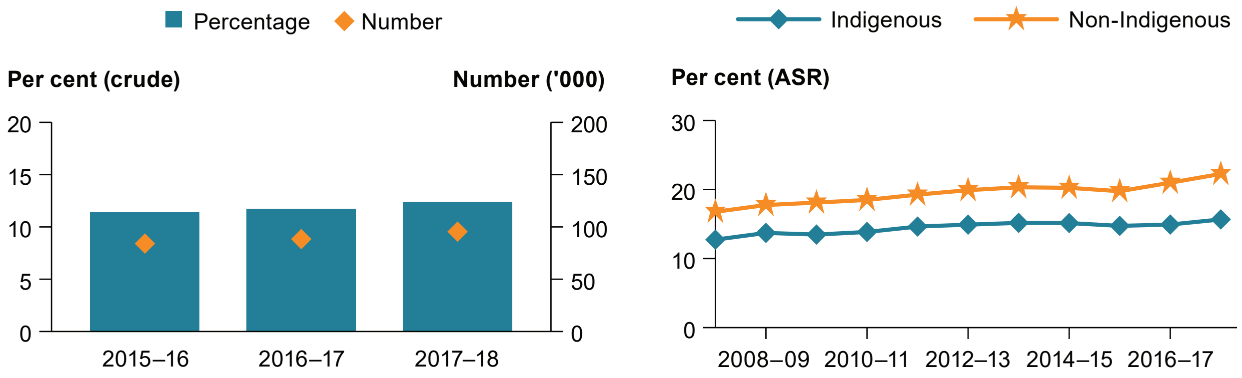
Remoteness: The proportion of Indigenous Australians who had an eye examination in the preceding 12 months decreased with remoteness, with the lowest proportion in those living in *Remote* and *Very remote* areas combined (8.5%) (Figure 3.2.4e).

Jurisdiction: The proportion of Indigenous Australians who had had an eye examination was lowest in the Northern Territory (8.1%) followed by Western Australia (8.8%) and was highest in Victoria/Tasmania (15%) (Figure 3.2.4f).

Things to consider

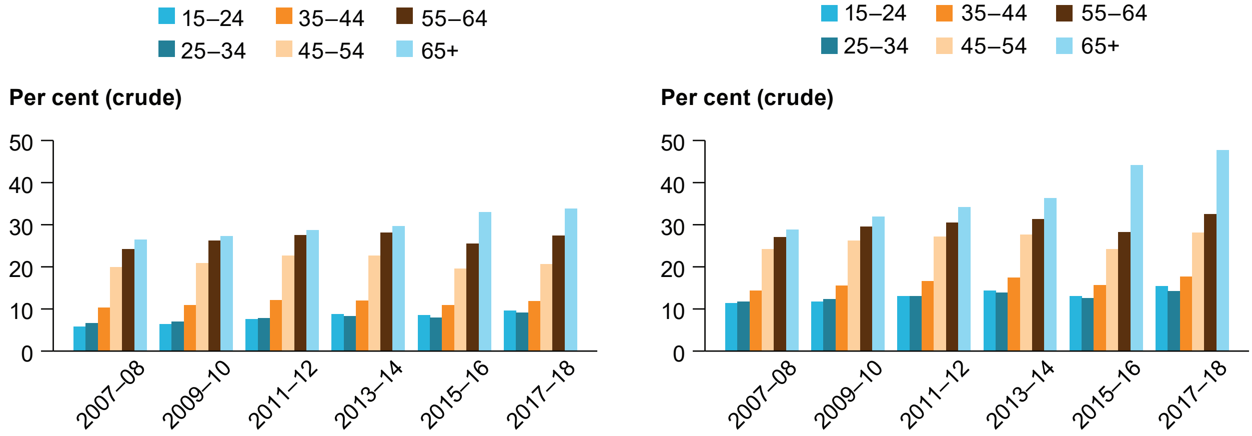
- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals;—for example, eye examinations undertaken by salaried ophthalmologists in public hospitals.
- Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).
- MBS data shown for this measure were adjusted for Indigenous under-identification.
- Age-standardised and age-specific rates are both presented (See Box 1.6).

Figure 3.2.4: Proportion of the population that had an eye examination by an eye care professional in the last 12 months, by various characteristics



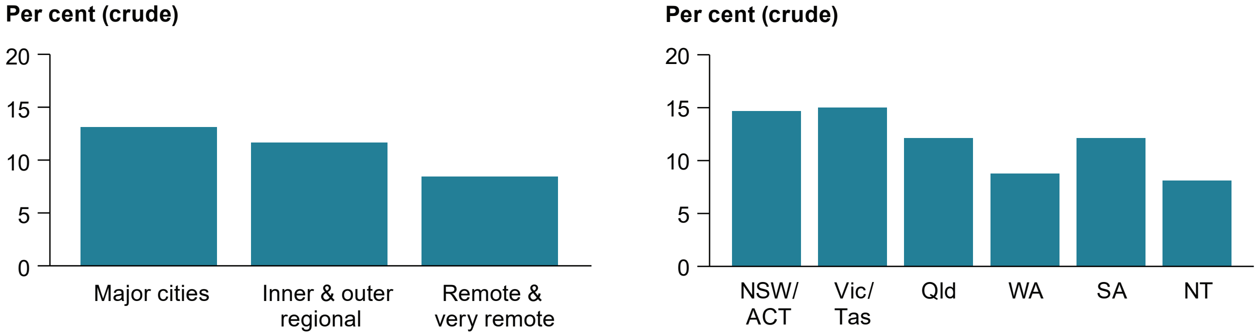
a) Indigenous, 2015–16 and 2017–18

b) Time trend, 2007–08 to 2017–18



c) Indigenous, by age, 2007–08 to 2017–18

d) Non-Indigenous, by age, 2007–08 to 2017–18



e) Indigenous, by region, 2017–18

f) Indigenous, by jurisdiction, 2017–18

Notes

1. Age-standardised rates (ASR) are shown in figure (b).
2. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of MBS data.

Measure 2.4: Target population screened for diabetic retinopathy

Measure: The number of Indigenous Australians who had a diabetic eye examination in the 12-month period who had also had a diabetes test in the 12-month period or in the year before, as a proportion of those who had a diabetes test.

Results

2.4.1 Target population screened for diabetic retinopathy (MBS data)

Overall: An estimated 30,600 Indigenous people had had a diabetes test in the previous 2 years, with 12,900 (42%) also screened for diabetic retinopathy at least once in 2017–18. Most of the screenings were performed by optometrists (12,500), with smaller numbers by ophthalmologists (866) and GPs (471) (Figure 3.2.5a).

Age and sex: The proportion of Indigenous Australians tested for diabetes who were screened for diabetic retinopathy increased with age, with the highest proportion in those aged 65 and over for both males and females (58% and 59%, respectively).

Time trend: Between 2005–06 and 2017–18, the total age-standardised proportion of Indigenous Australians tested for diabetes who had an eye examination increased from 27% to 36%, while for non-Indigenous Australians it rose from 31% to 45% (Figure 3.2.5b).

Looking at age-specific rates, between 2005–06 and 2017–18 the estimated proportion of Indigenous Australians tested for diabetes who had an eye examination increased across all age groups, with the greatest increase in those aged 65 and over where rates rose from 42% to 58% (Figure 3.2.5c). For non-Indigenous Australians, the greatest increase was also in those aged 65 and over, closely followed by those aged 15–24 (Figure 3.2.5d). Higher proportions of non-Indigenous Australians were screened across all age groups.

Remoteness: In 2017–18, the proportion of Indigenous Australians screened for diabetic retinopathy was highest in *Inner regional* areas and *Major cities* (both 48%), and then decreased with increasing remoteness (Figure 3.2.5e).

Jurisdiction: In 2017–18, the proportion of Indigenous Australians screened for diabetic retinopathy was highest in Victoria and Tasmania combined (49%), and lowest in the Northern Territory (30%) (Figure 3.2.5f).

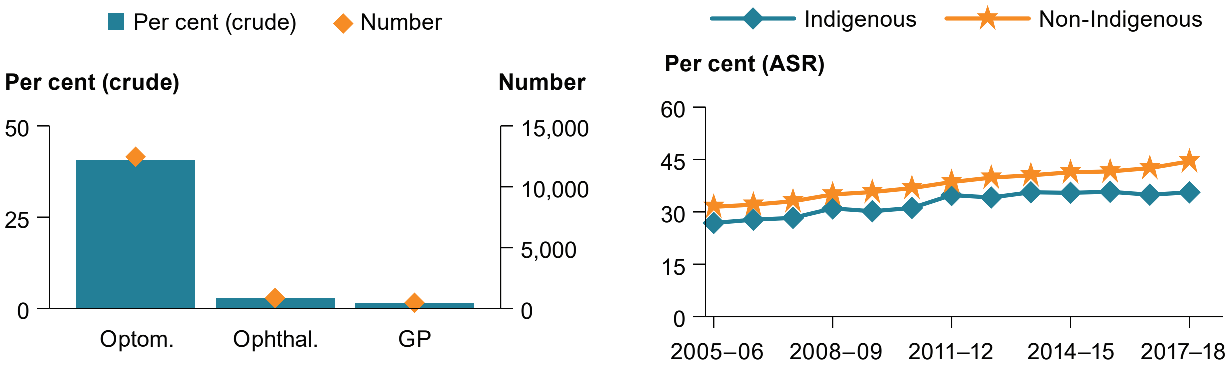
Things to consider

- MBS data reflect billing practices, and not necessarily all services received. For example, MBS data do not generally capture equivalent services provided by jurisdiction-funded primary health care or by public hospitals—for example, eye examinations undertaken by salaried ophthalmologists in public hospitals.
- Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).
- MBS data shown for this measure were adjusted for Indigenous under-identification.
- Age-standardised and age-specific rates are both presented (See Box 1.6).

Figure 3.2.5: Proportion of those screened for diabetes who had an eye examination, by various characteristics

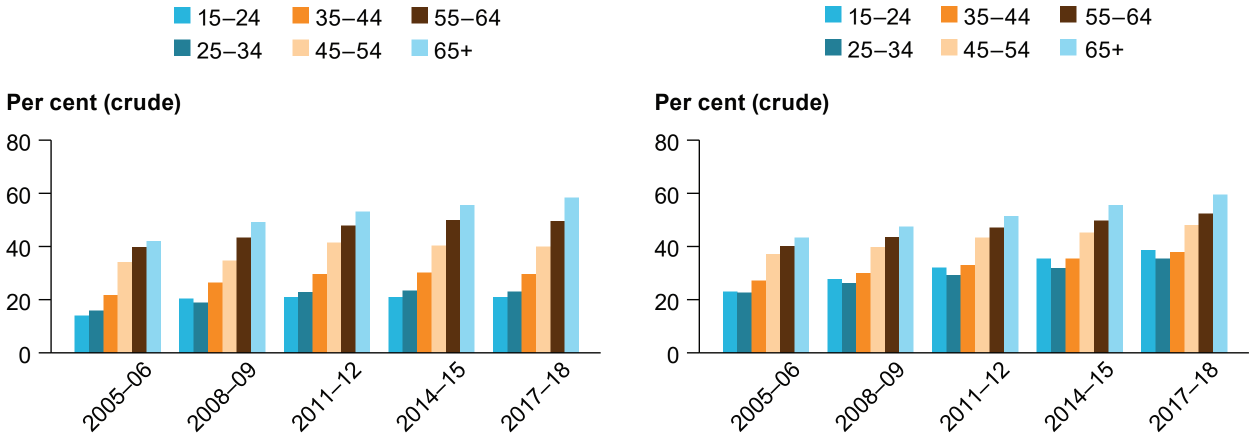
a) Indigenous, by profession, 2017–18

b) Time trend, 2007–08 to 2017–18



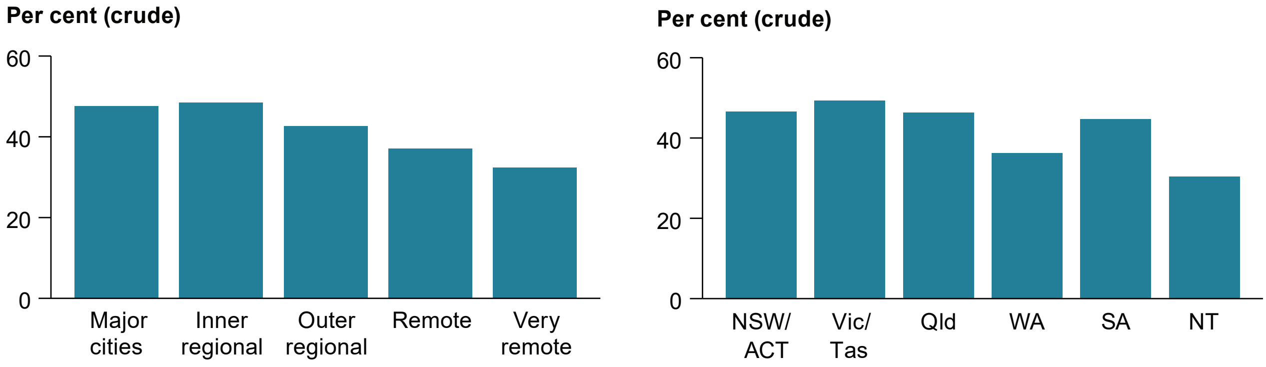
c) Indigenous, by age, 2005–06 to 2017–18

d) Non-Indigenous, by age, 2005–06 to 2017–18



e) Indigenous, by region, 2017–18

f) Indigenous, by jurisdiction, 2017–18



Notes

1. Profession types (Figure (a)): Optom.: Optometrist; Ophthal.: Ophthalmologist, GP: General Practitioner.
2. Age-standardised rates (ASR) are shown in figure (b).
3. Data for these figures are available in the online supplementary tables.

Source: AIHW analysis of MBS data.

2.4.2 Target population screened for diabetic retinopathy (survey data)

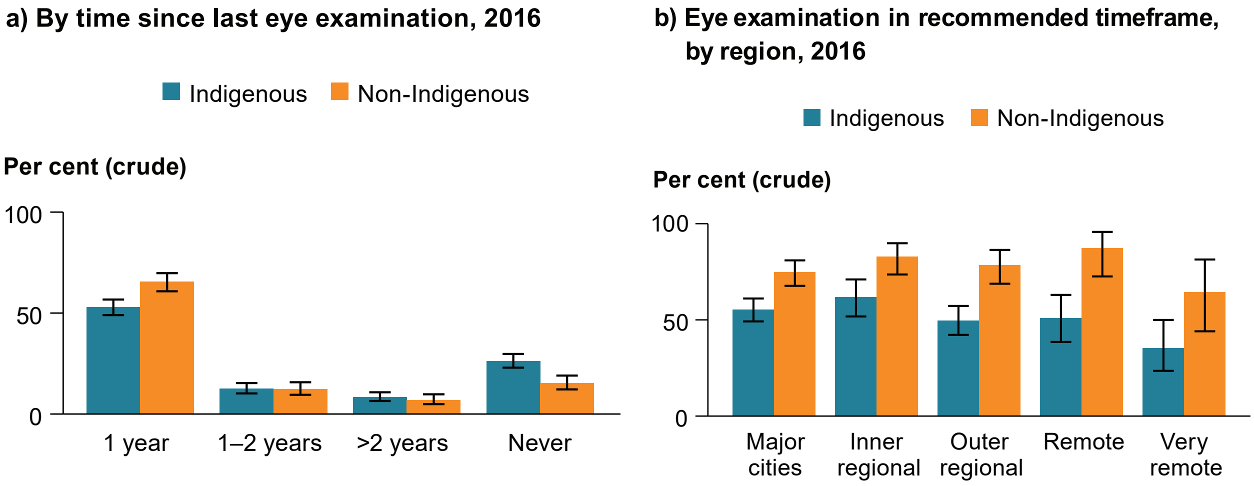
Overall: In 2016, just over half (53%) of Indigenous participants in the eye health survey aged 40 and over with self-reported diabetes had had a diabetic eye examination in the preceding 12 months, the period recommended in the NHMRC guidelines. For non-Indigenous participants with diabetes aged 50 and over, over three-quarters (78%) had had a diabetic eye examination in the preceding 2 years, the period recommended in the NHMRC guidelines for non-Indigenous Australians (Figure 3.2.6a).

Remoteness: The proportion of Indigenous participants in the NEHS with self-reported diabetes who had 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 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 3.2.6b).

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 3.2.6: Proportion of those with diabetes who had an eye examination in the recommended timeframe, 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 online supplementary tables.

Source: NEHS data 2016.

Measure 2.5: Trachoma and trichiasis screening coverage

Measure: The estimated number, and proportion, of:

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

Results

2.5.1 Trachoma

Overall: In 2017, in the 84 communities that undertook screening, there were a total of 4,393 children aged 0–14 screened for trachoma, a rate of 48%. This included 562 children aged 0–4 (25%), 2,872 aged 5–9 (83%), and 959 aged 10–14 (32%) (Figure 3.2.7a).

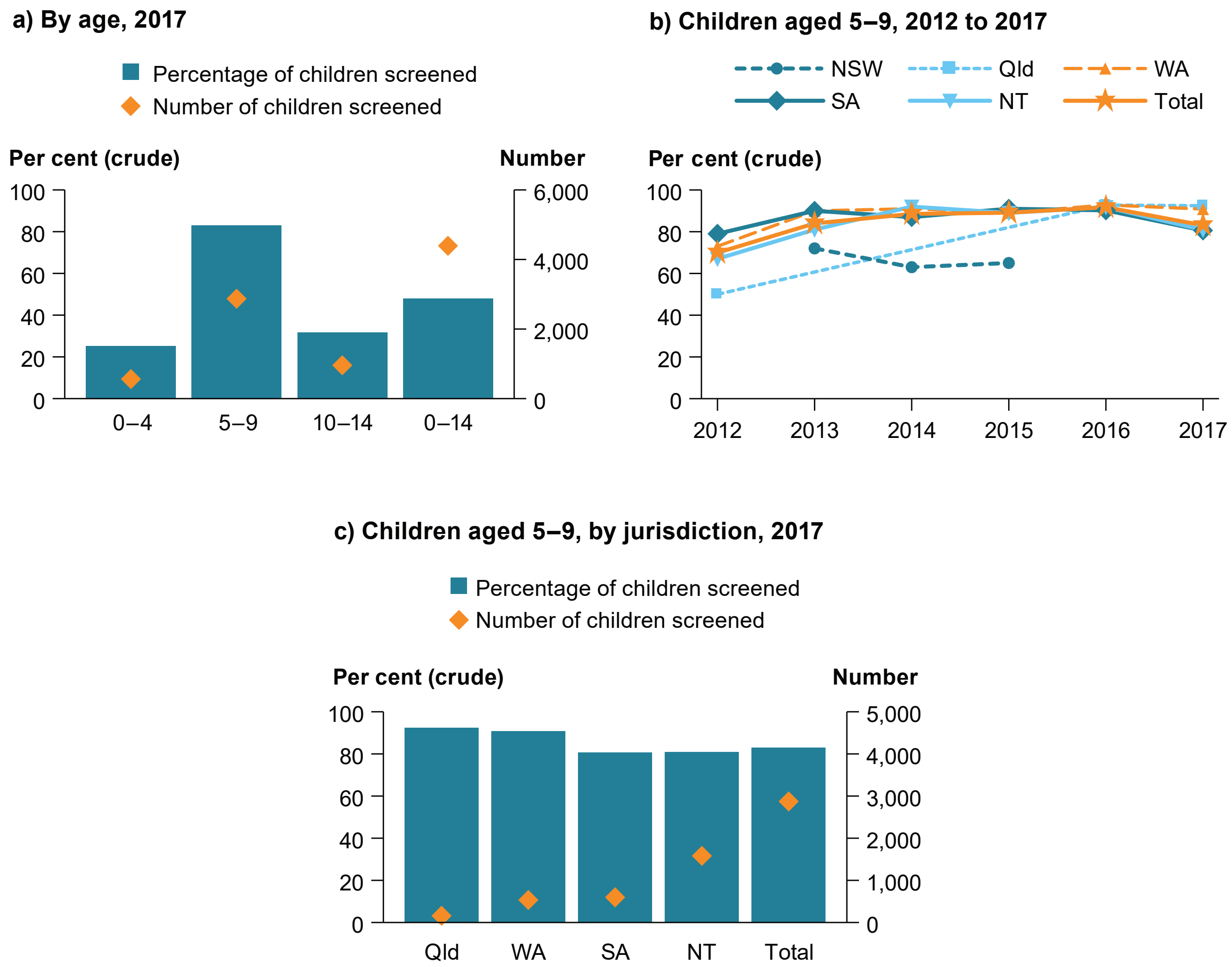
Time trend: Between 2012 and 2017, the proportion of children aged 5–9 screened for trachoma in at-risk communities rose from 70% in 2012 to 92% in 2016, before falling slightly to 83% in 2017 (Figure 3.2.7b).

Jurisdiction: In 2017, the proportion of children aged 5–9 in at-risk communities screened for trachoma was 91% in Western Australia (534 children), 81% in South Australia (598 children), 92% in Queensland (159 children) and 81% in the Northern Territory (1,581 children) (Figure 3.2.7c).

Things to consider

- In 2017, trachoma screening was undertaken in 84 at-risk communities in 4 jurisdictions (Northern Territory, Western Australia, South Australia and Queensland), while trichiasis screening was undertaken in 135 at-risk communities in 3 jurisdictions (Northern Territory, Western Australia and South Australia) (Kirby Institute 2018).
- 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.
- The 5–9 age group is the target group for screening programs in all regions, in line with the CDNA guidelines, with variable screening undertaken for other age groups.

Figure 3.2.7: Trachoma screening coverage in Indigenous communities, by various characteristics



Notes

1. All figures show crude rates.
2. Data covers the 84 communities that screened for trachoma in 2017.
3. Data for these figures are available in the online supplementary tables.

Sources: Australian trachoma surveillance reports (Kirby Institute 2013, 2014, 2015, 2016, 2017, 2018).

2.5.2 Trichiasis

Overall: In 2017, 7,215 Indigenous Australians aged 15–39 (a rate of 17%) and 8,270 Indigenous adults aged 40 and over (a rate of 24%) were screened for trichiasis in at-risk communities (Figure 3.2.8a).

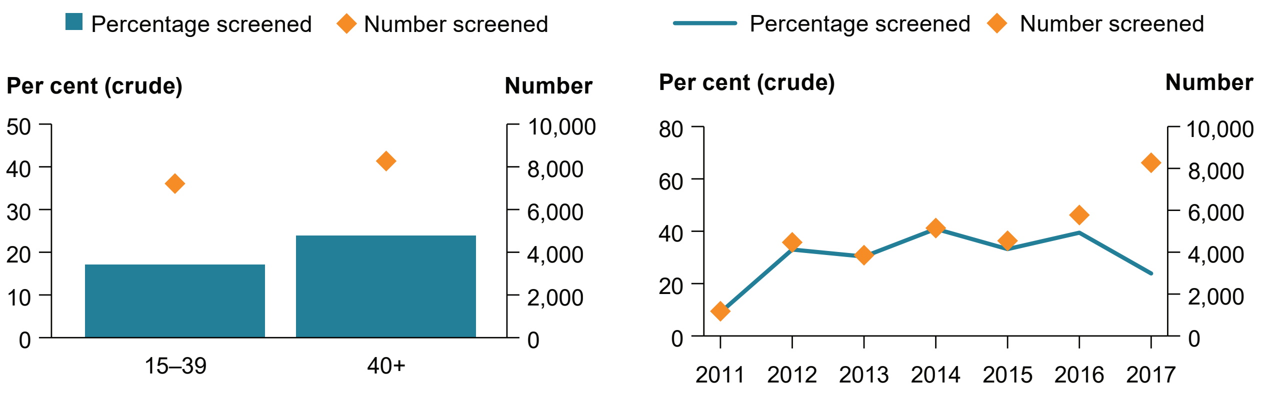
Time trend: In the jurisdictions that undertook screening, the proportion of Indigenous adults aged 40 and over screened for trichiasis rose from 1,036 (8%) in 2010 to 8,270 (24%) in 2017 (Figure 3.2.8b). Screening coverage peaked at 41% (5,151 people) in 2014.

Jurisdiction: In 2017, the proportion of Indigenous adults aged 40 and over screened for trichiasis was highest in the Northern Territory (5,600 adults, a rate of 48%) and lowest in Western Australia (1,901 adults, a rate of 9%) (Figure 3.2.8c).

Things to consider

- Screening for trichiasis is undertaken opportunistically, such as during adult health checks.

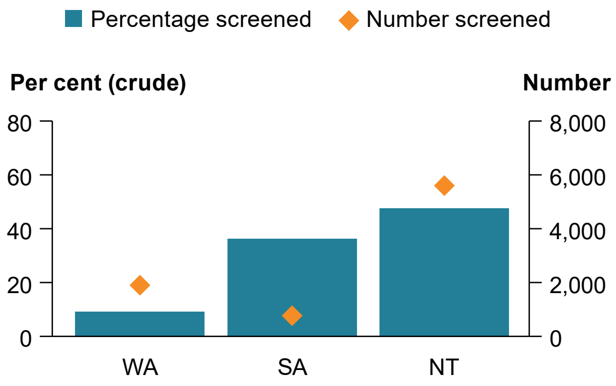
Figure 3.2.8: Trichiasis screening coverage in Indigenous communities, by various characteristics



a) By age, 2017

b) Aged 40 and over, 2011 to 2017

c) Aged 40 and over, by jurisdiction, 2017



Notes

1. All figures show crude rates.
2. 2017 data cover the 135 communities that screened for trichiasis.
3. Data for these figures are available in the online supplementary tables.

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

Measure 2.6: Undiagnosed eye conditions

Measure: The number of Indigenous Australians with vision impairment or blindness attributed to 1 of the 5 main causes 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.

Results

Overall: In 2016, around 57% of Indigenous participants in the 2016 NEHS had vision impairment or blindness attributed to 1 of 5 main causes, and had not previously had their condition diagnosed.

The rates varied by condition (Figure 3.2.9a), 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.

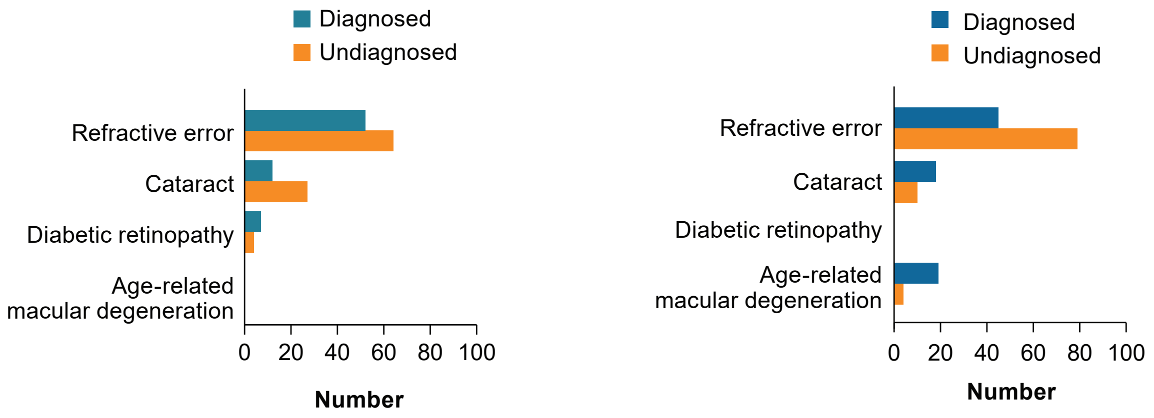
For non-Indigenous participants, 52% had vision impairment or blindness and had not previously had their condition diagnosed. The rates for non-Indigenous participants were highest for refractive error, with 79 out of 124 (64%) having undiagnosed refractive error (Figure 3.2.9b).

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 agerelated macular degeneration (Figure 3.2.9c).

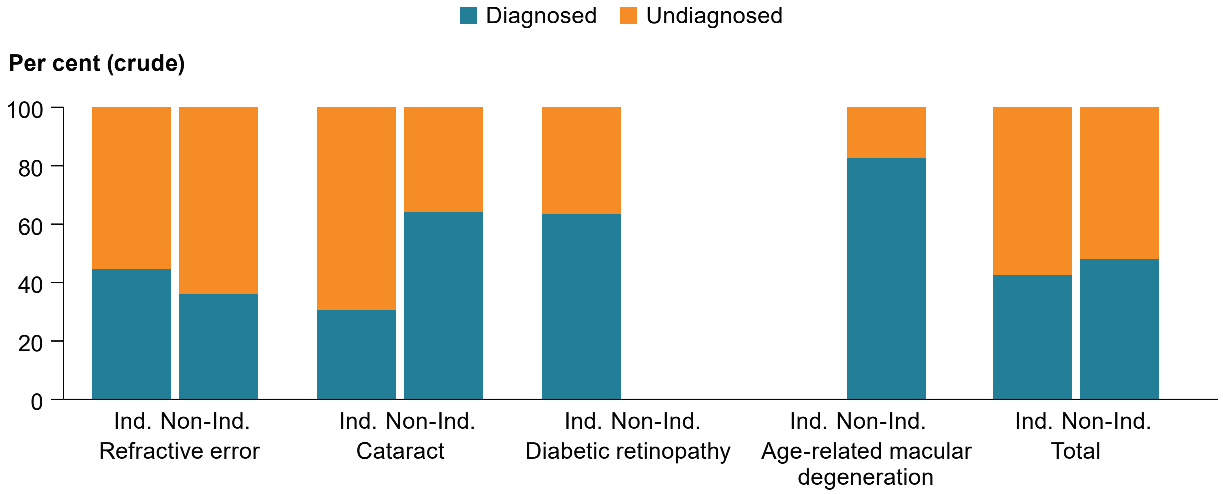
Things to consider

- 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.
- The 5 main causes of vision impairment or blindness were refractive error, cataract, diabetic retinopathy, age-related macular degeneration and glaucoma.
- ‘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 3.2.9: Diagnosis rates for top 3 eye diseases and refractive error, by various characteristics


a) Indigenous number, 2016

b) Non-Indigenous number, 2016


c) Percentage, by Indigenous status, 2016

Ind. Indigenous.

Non-Ind. Non-Indigenous.

Notes

1. Per cents 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 online supplementary tables.

Source: NEHS data 2016.

3.3 Treatment—how are eye problems treated and in what settings?

Box 3.3: Overview of treatment

- In the 2 year period 2015–17, there were around 8,300 hospitalisations of Indigenous Australians for eye diseases and around 1,900 for eye injuries.
- Indigenous Australians had lower age-standardised rates of hospitalisation for eye diseases than non-Indigenous Australians (11 and 14 per 1,000, respectively), but over 3 times the rate of hospitalisations for injuries to the eye (1.5 and 0.4 per 1,000, respectively).
- The most common eye diseases diagnosed for Indigenous Australians were disorders of the lens, while the most common eye injury was an open wound of the eyelid and periocular area.
- Hospitalisation rates for eye diseases increased with age, and peaked at ages 75–84. Hospitalisation rates for eye injuries peaked in the middle years, at ages 25–54.
- Age-standardised hospitalisation rates for both eye injuries and eye diseases were highest for Indigenous Australians in the combined *Remote* and *Very remote* areas.
- There were 7,868 hospitalisations of Indigenous Australians for eye procedures and 5,131 hospitalisations of Indigenous Australians for cataract surgery in the 2 year period 2015–17.
- Indigenous Australians had lower age-standardised rates of hospitalisation for eye procedures, compared with non-Indigenous Australians (11 and 13 per 1,000, respectively), and for elective cataract surgery (8,100 and 8,500 per 1,000,000, respectively).
- The cataract surgical coverage rate (or the proportion of people with cataracts who had had surgery) for Indigenous participants in the 2016 eye health survey was lower than for non-Indigenous participants (62% and 88%, respectively).
- In 2016–17, the median waiting time for elective cataract surgery was longer for Indigenous Australians than for non-Indigenous Australians (141 days and 89 days, respectively).
- In 2017–18, there were 462 Indigenous Australians screened for diabetic retinopathy who underwent treatment. This was 3.6% of those screened for diabetic retinopathy.
- In 2017, there were 9,158 community members where treated in communities where active trachoma was identified, a rate of 82%. In 2017, of the 44 Indigenous adults identified with trichiasis, 23 were offered ophthalmic consultation and 9 had surgery.
- In 2016, treatment rates for refractive error were higher for non-Indigenous participants than for Indigenous participants in the 2016 NEHS, at 94% and 83%, respectively.
- In 2017–18, 7,365 spectacles were provided to Indigenous Australians under state spectacle schemes in New South Wales (31 per 1,000), 5,755 in Queensland (26 per 1,000), 2,076 in Victoria (35 per 1,000), and 82 spectacles dispensed in South Australia (2 per 1,000).

Information on Indigenous Australians’ 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. These measures reflect the prevalence of particular conditions in the population as well as the use of health services. Hospitalisation rates for eye diseases; for example, reflect both the occurrence in the population of eye diseases which are serious enough to require hospitalisation, and access to, and use of, hospitals by people with these conditions.

This group includes 5 measures (3.1, 3.2, 3.3, 3.4 and 3.6) 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. Two financial years of data were aggregated to allow for analyses by Indigenous status and other characteristics, including PHN.

The first 2 measures, *3.1 Hospitalisations for diseases of the eye* and *3.2 Hospitalisations for injuries to the eye,* are hospitalisations where the principal diagnosis—the problem that was mainly responsible for the admission—was either eye disease or eye injury. The third measure, *3.3 Hospitalisations for eye procedures*, is for hospitalisations with an eye procedure. For some analysis in this measure, hospitalisations were classified using Australian Refined Diagnosis Related Groups (AR-DRG), a class of admitted patient episodes with similar clinical conditions that require similar hospital resources.

The next 3 measures relate specifically to the treatment of cataracts. Measure *3.4 Cataract surgery rate* is hospitalisations for cataract surgery—a subset of eye procedures— and is calculated per 1,000,000 to align with international standards. Measure *3.5 Cataract surgical coverage rate* is the proportion of those who have been identified as having cataracts who have had surgery. The data source was the 2016 NEHS, the only source of data that includes an estimate of the surgery rates for persons who have been identified as having cataracts. Measure *3.6 Waiting times for elective cataract surgery* comes from the records of patients on waiting lists for elective surgery managed by public hospitals who have had surgery. It includes the median waiting time and the 90th percentile waiting time, as well as the proportion of patients who had surgery within 90 days and those who waited more than 365 days for cataract surgery.

Measure *3.7 Target population treated for diabetic retinopathy* is based on MBS data. It includes those who have had intravitreal injections or laser treatment as a proportion of those screened for diabetes retinopathy, and as a proportion of those screened for diabetes.

Measure, *3.8 Trachoma and trichiasis treatment coverage,* 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 shown for treatment for those who have been identified as having the condition (Kirby Institute 2018).

The final 2 measures relate to refractive error, a major cause of vision impairment which can generally be corrected easily by providing spectacles. Measure *3.9 Treatment of refractive error* comes from the 2016 NEHS and compares treatment rates for refractive error for non-Indigenous and Indigenous Australians. All state governments have subsidised spectacle schemes targeted to low income people. Measure *3.10 Spectacles dispensed under state schemes,* captures data on Indigenous Australians’ use of these schemes, although only 4 jurisdictions could provide these data.

Measure 3.1: Hospitalisations for diseases of the eye

Measure: The number of hospitalisations for diseases of the eye and adnexa, per 1,000 Indigenous population.

Results

Overall: In 2015–17, there were around 8,300 hospitalisations for Indigenous Australians for diseases of the eye—a crude rate of 5.6 per 1,000 population. For Indigenous Australians, the most common principal diagnosis for hospitalisations for diseases of the eye was disorders of the lens (3.4 per 1,000) (Figure 3.3.1a).

Sex and age: In 2015–17, hospitalisation rates for diseases of the eye were lowest for Indigenous males and females at younger ages, but increased sharply for Indigenous males and females from age 55. The rates were highest for those aged 75–84.

Time trend: Between 2007–09 and 2015–17, the age-standardised hospitalisation rate for diseases of the eye for Indigenous Australians doubled, from 5.4 to 11.4 per 1,000, while the rate for non-Indigenous Australians increased from 10 to 14 per 1,000 (Figure 3.3.1b).

Looking at age-specific rates, between 2007–09 and 2015–17 the hospitalisation rate for Indigenous Australians for diseases of the eye increased for all age groups over 45. The largest increase was for those aged 75 to 84, where the rate more than doubled from 38 per 1,000 in 2007–09 to 81 per 1,000 in 2015–17 (Figure 3.3.1c). Hospitalisation rates for non-Indigenous Australians also increased across all age groups over the same period. Rates of hospitalisations were higher among Indigenous Australians than non-Indigenous Australians for those aged 45 to 54 (6.8 and 6.1 per 1,000, respectively) and 55 to 64 (21.1 and 19.5 per 1,000, respectively) (Figure 3.3.1d).

Remoteness: Hospitalisation rates for eye diseases increased with remoteness, with hospitalisation rates in *Remote & very remote* areas nearly double those in *Major cities* (7.5 and 3.9 per 1,000, respectively) (Figure 3.3.1e).

Jurisdiction: Hospitalisation rates for Indigenous Australians for diseases of the eye were lowest in Victoria and Tasmania combined (4.6 per 1,000), followed by South Australia (5.3 per 1,000). Western Australia had the highest hospitalisation rates (6.4 per 1,000) (Figure 3.3.1f).

PHN: The PHNs with the lowest hospitalisation rates for Indigenous Australians for diseases of the eye were Western Sydney, the Australian Capital Territory and South Western Sydney (all under 3 per 1,000) (Figure 3.3.2).

SA3: The SA3s with the highest hospitalisation rates for Indigenous Australians were Bayside (18.7 per 1,000), North East (13.6 per 1,000) and Outback-South (12.8 per 1,000) (Map 3.3.1).

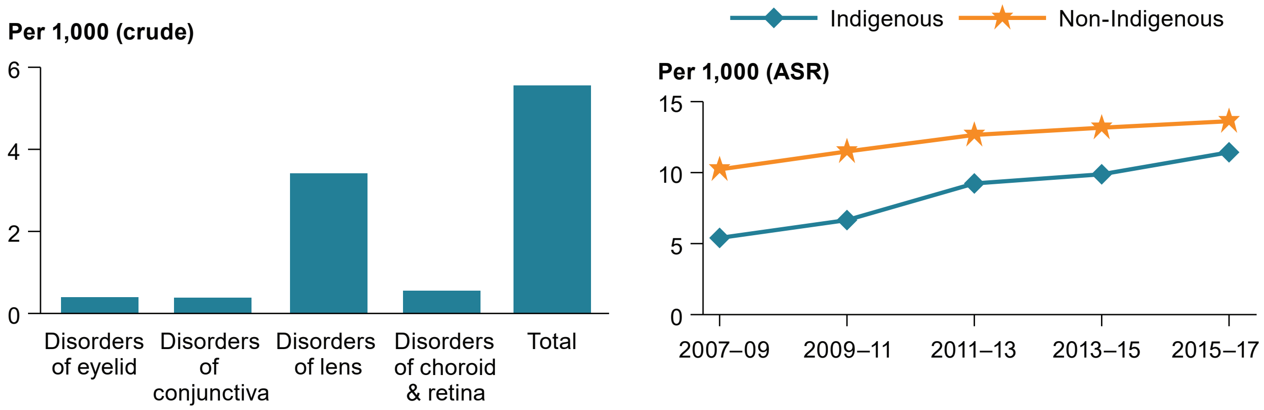
Things to consider

- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.
- Data by state and territory, PHN and SA3 should be interpreted with caution due to variations in admission practices; and because patients may be hospitalised outside the area where they reside.
- Age-standardised and age-specific rates are both presented (See Box 1.6).

Figure 3.3.1: Hospitalisation rates for diseases of the eye and adnexa, by various characteristics

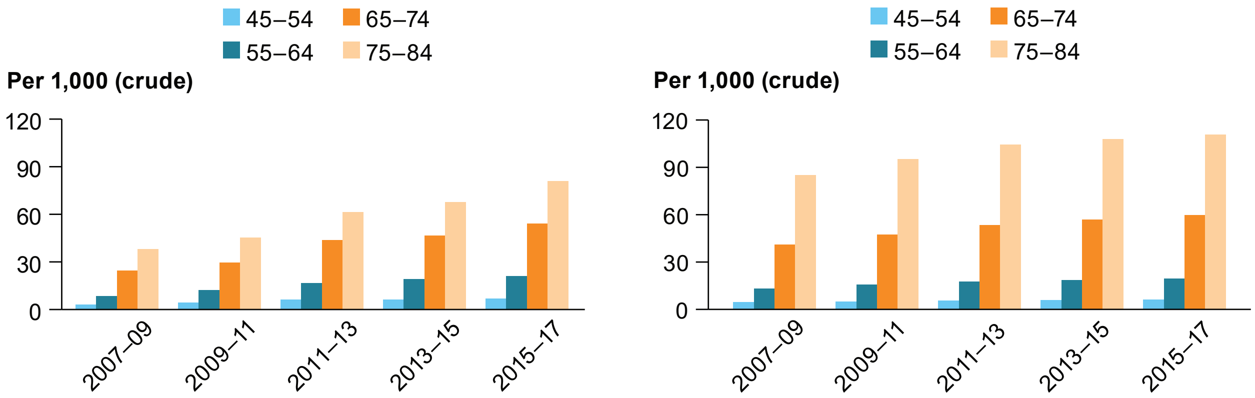
a) Indigenous, by principal diagnosis, 2015–17

b) Time trend, 2007–09 to 2015–17



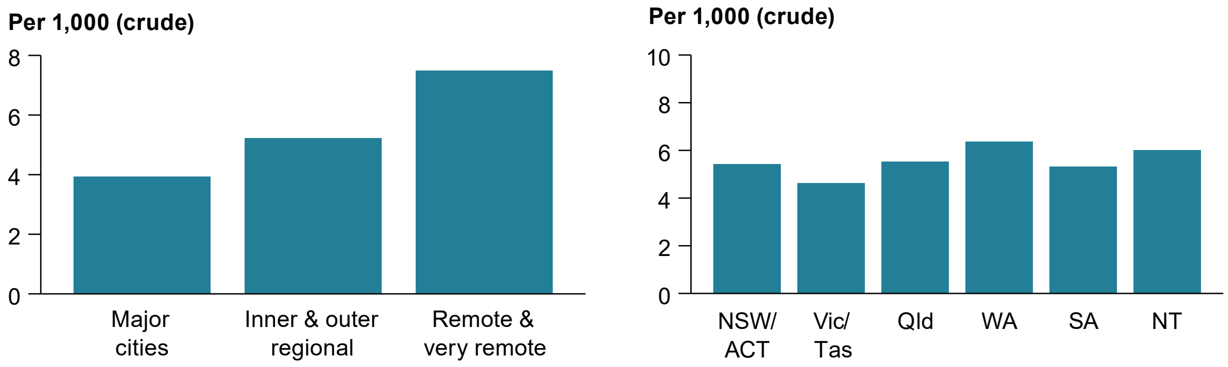
c) Indigenous, by age, 2007–09 to 2015–17

d) Non-Indigenous, by age, 2007–09 to 2015–17



e) Indigenous by region, 2015–17

f) Indigenous, by jurisdiction, 2015–17

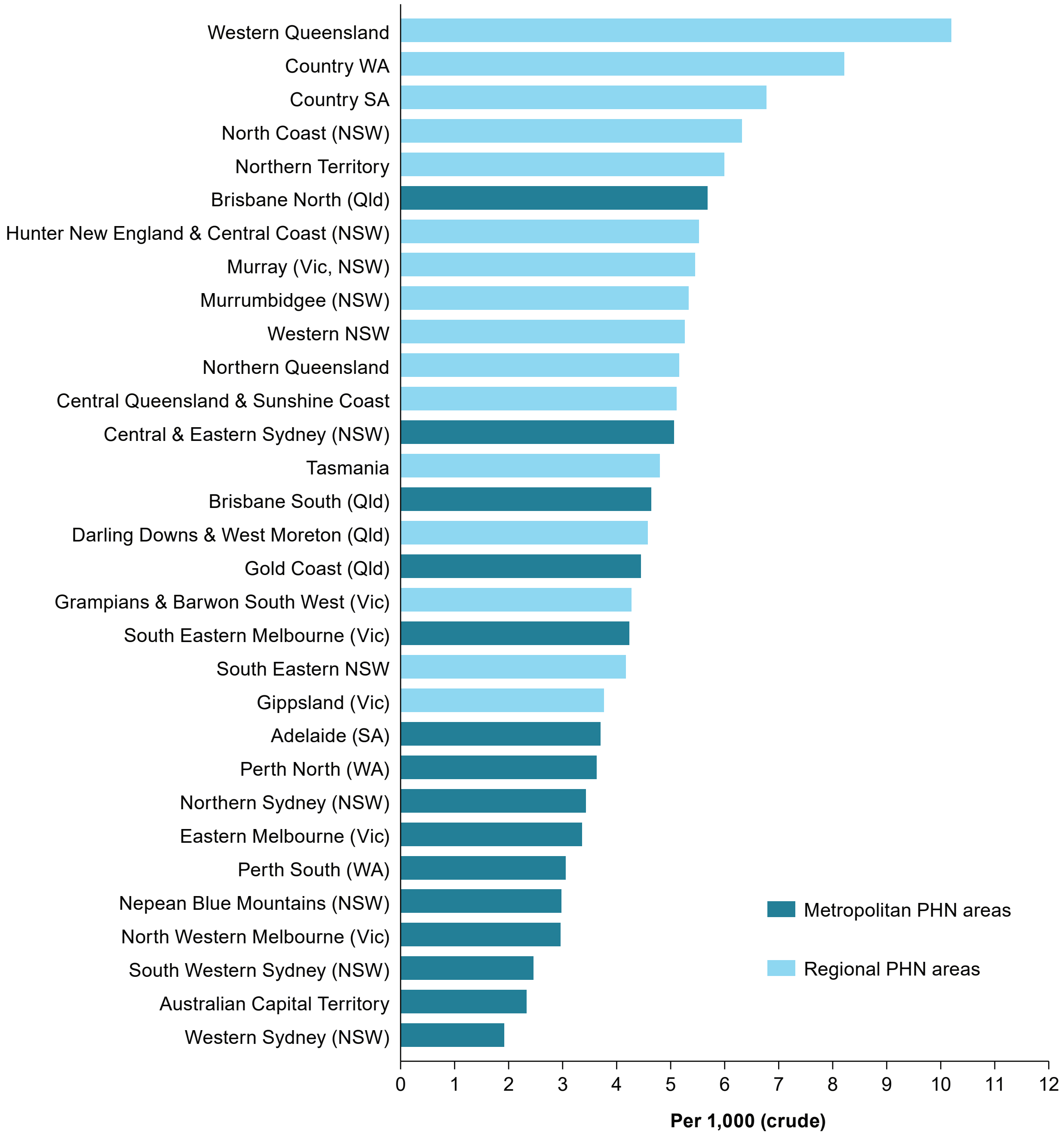


Notes

1. Figure (a) shows the top 4 principal diagnoses for Indigenous Australians.
2. Figures (b), (c) and (d) include NSW, Vic, Qld, WA, SA and the NT combined.
3. Age-standardised rates (ASR) are shown in figure (b).
4. Data for these figures are available in the online supplementary tables.

Source: AIHW NHMD.

Figure 3.3.2: Hospitalisation rates for diseases of the eye and adnexa for Indigenous Australians, by PHN, 2015–17

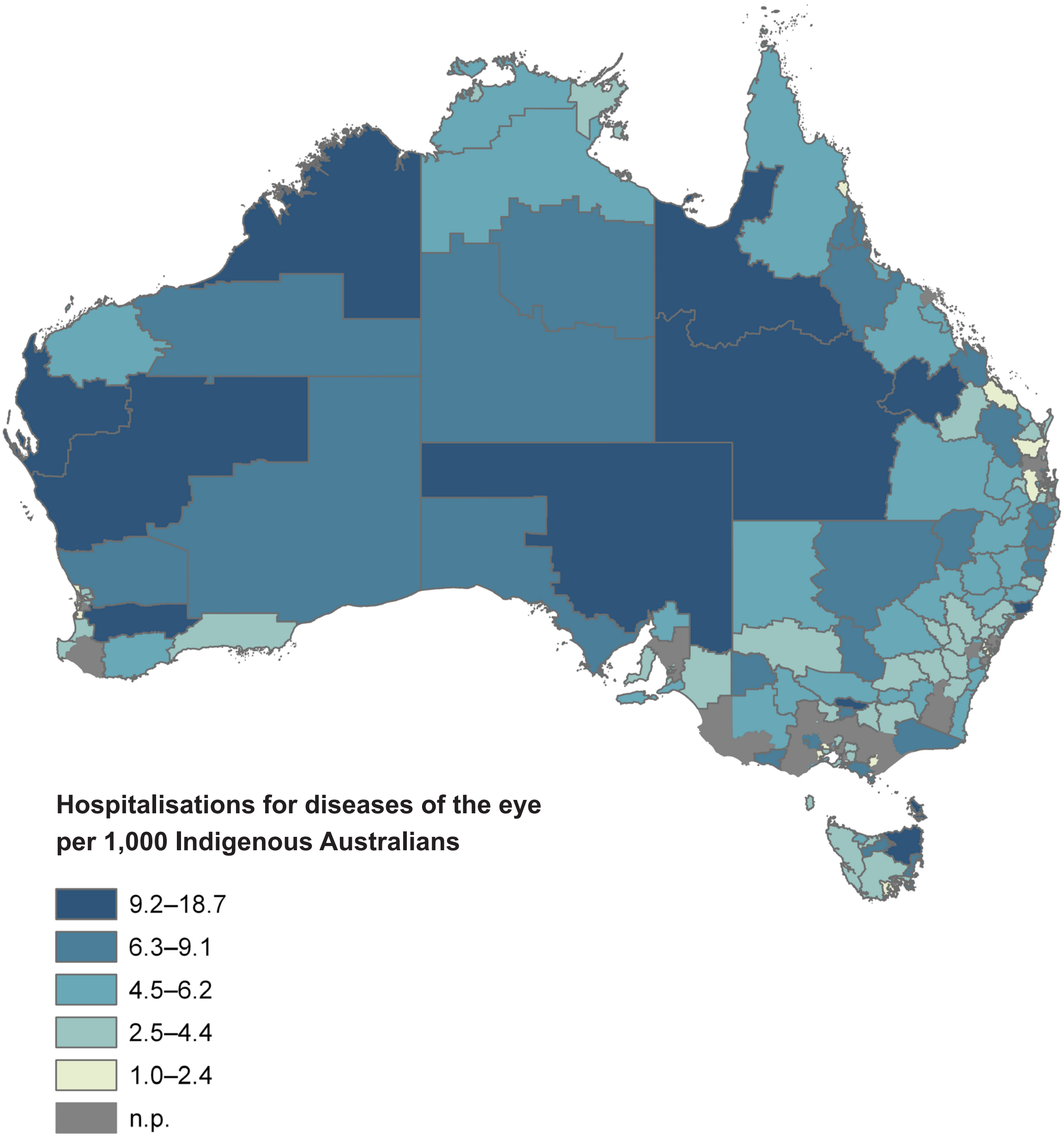


Notes

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

Source: AIHW NHMD.

Map 3.3.1: Hospitalisation rates for diseases of the eye and adnexa for Indigenous Australians, by SA3, 2015–17



n.p. = Not published for SA3s with less than 5 hospitalisations, or an Indigenous population less than 100.

Note: The SA3 data for this map are available in the online supplementary tables.

Source: AIHW NHMD.

Measure 3.2: Hospitalisations for injuries to the eye

Measure: The number of hospitalisations for injuries to the eye and adnexa, per 1,000 Indigenous population, age-standardised rate and rate ratio.

Results

Overall: In 2015–17, there were around 1,944 hospitalisations of Indigenous Australians for injuries to the eye—1.3 per 1,000 population. 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 3.3.3a).

Sex and age: For Indigenous Australians in 2015–17, age-specific hospitalisation rates for eye injuries were highest in the middle age groups. The rates for Indigenous males aged 35 to 44, 45 to 54 and 55 to 64 were higher than those for Indigenous females in the same age group.

Time trend: Between 2007–09 and 2015–17, the age-standardised hospitalisation rate due to injury to the eye for both Indigenous Australians and non-Indigenous Australians was fairly constant (Figure 3.3.3b).

Looking at age-specific rates, between 2007–09 and 2015–17, the hospitalisation rates for injuries to the eye for Indigenous Australians were fairly constant across all age groups (Figure 3.3.3c). Over the same period, the rates for non-Indigenous Australians were also fairly constant, ranging from 0.3 to 0.7 per 1,000 across all age groups. (Figure 3.3.3d).The crude hospitalisation rate for Indigenous Australians aged 35 to 44 (2.6 per 1,000) was more than 8 times the rate for non-Indigenous Australians of the same age (0.3 per 1,000).

Remoteness: Rates of hospitalisation for Indigenous Australians were highest in *Remote* and *Very remote* areas combined (2.7 per 1,000). This is more than double the rate in *Inner* and *Outer regional* areas combined (1.0 per 1,000) and more than triple the rate in *Major cities* (0.7 per 1,000) (Figure 3.3.3e).

Jurisdiction: Hospitalisation rates for Indigenous Australians for eye injuries were highest in the Northern Territory and Western Australia (3.1 and 1.7 per 1,000, respectively). (Figure 3.3.3f).

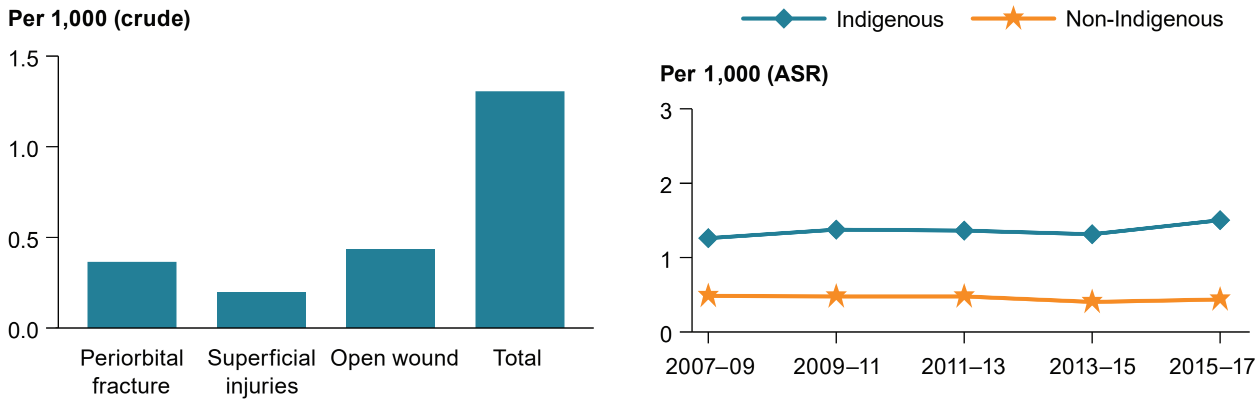
PHN: The PHNs with the highest hospitalisation rate for Indigenous Australians for injury to the eye were Country WA, Western Queensland and the Northern Territory (over 2 per 1,000) (Figure 3.3.4).

SA3: The SA3s with the highest hospitalisation rates for Indigenous Australians for injuries to the eye were Darwin city, Alice Springs and Barkly (Map 3.3.2).

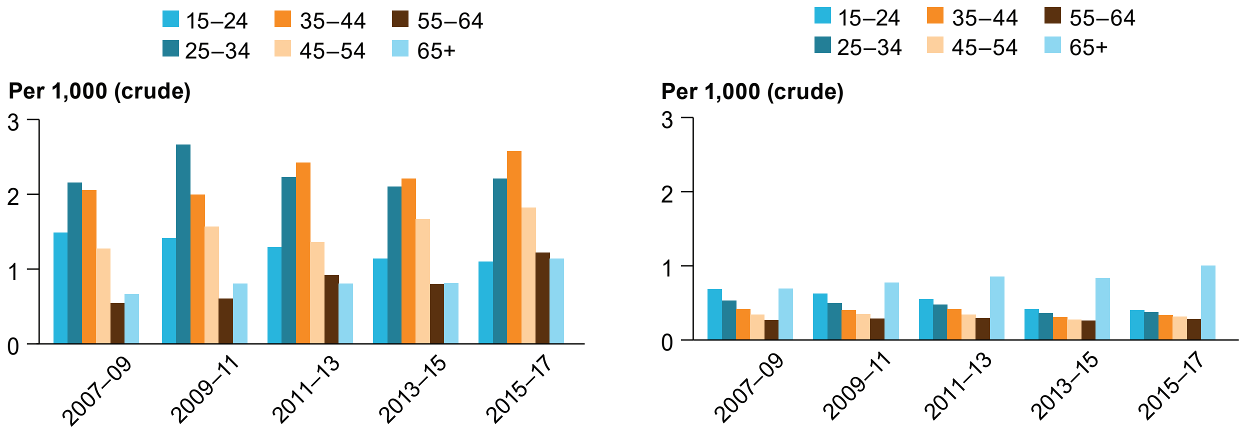
Things to consider

- This measure is a count of hospitalisations for injury, not of occurrence of injury—as some injuries would result in more than 1 hospitalisation.
- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.
- Data by state and territory, PHN and SA3 should be interpreted with caution, due to variations in admission practices; and because patients may be hospitalised outside the area where they reside.
- Age-standardised and age-specific rates are both presented (See Box 1.6).

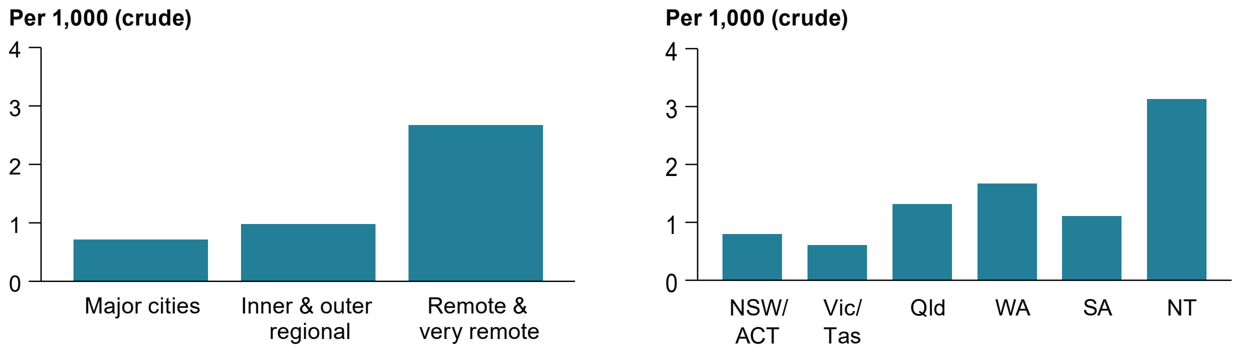
Figure 3.3.3: Hospitalisation rates for injuries to the eye, by various characteristics


a) Indigenous, by principal diagnosis, 2015–17

b) Time trend, 2007–09 to 2015–17


c) Indigenous, by age, 2007–09 to 2015–17

d) Non-Indigenous, by age, 2007–09 to 2015–17


e) Indigenous by region, 2015–17

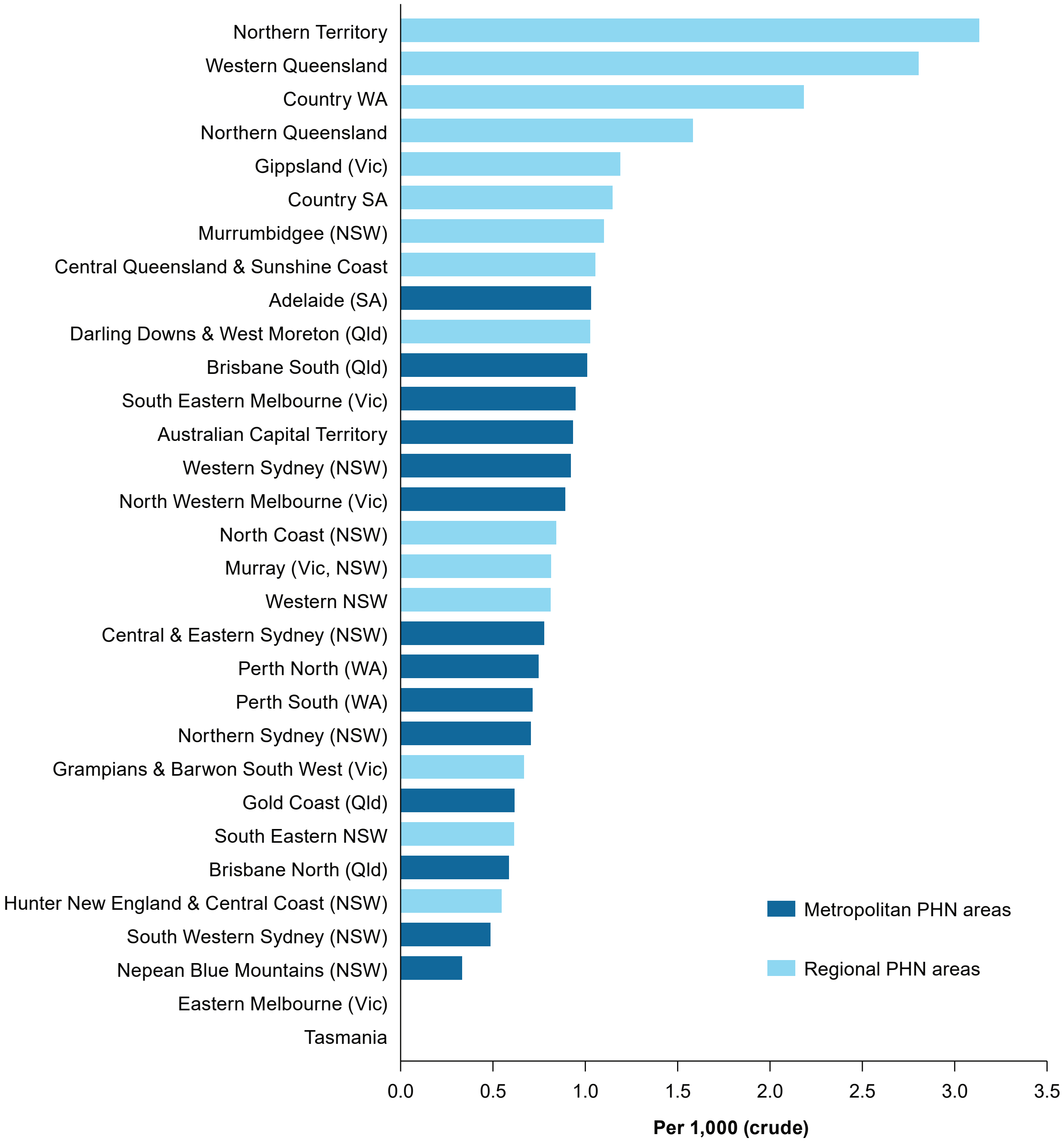
f) Indigenous, by jurisdiction, 2015–17

Notes

1. Figure (a) shows the top 3 principal diagnoses for Indigenous Australians. *Superficial injuries* and *Open wound* refer to the eyelid and periocular area.
2. Figures (b), (c) and (d) include NSW, Vic, Qld, WA, SA and the NT combined.
3. Age-standardised rates (ASR) are shown in figure (b).
4. Data for these figures are available in the online supplementary tables.

Source: AIHW NHMD.

Figure 3.3.4: Hospitalisation rates for injuries to the eye for Indigenous Australians, by PHN, 2015–17

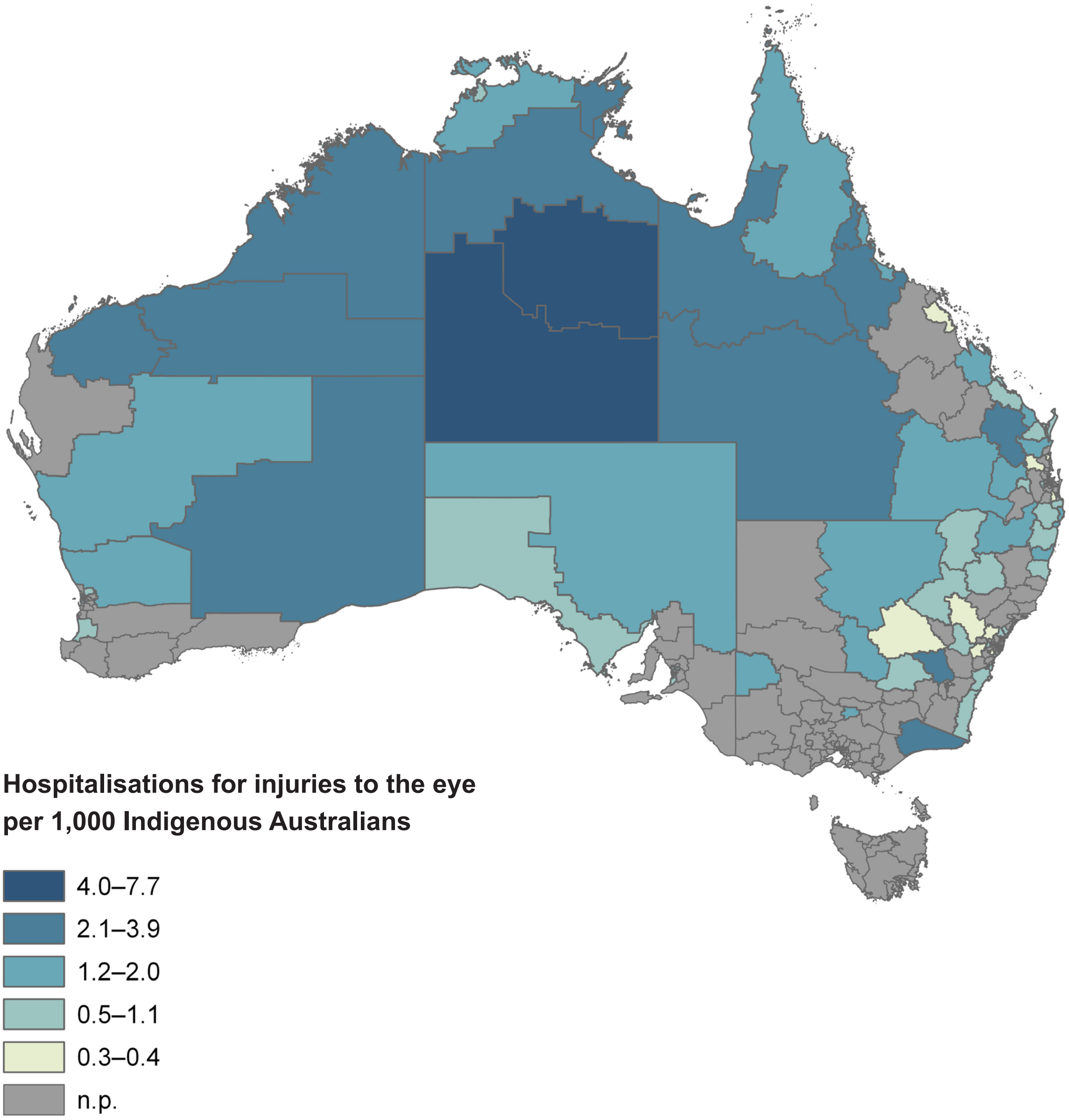


Notes

1. Data are crude rates.
2. Data are not presented for Eastern Melbourne and Tasmania for confidentiality reasons, because of small numbers.
3. Data for this figure are available in the online supplementary tables.

Source: AIHW NHMD.

Map 3.3.2: Hospitalisation rates for injuries to the eye for Indigenous Australians, by SA3, 2015–17



n.p. = Not published for SA3s with less than 5 hospitalisations, or an Indigenous population less than 100.

Note: The SA3 data for this map are available in the online supplementary tables.

Source: AIHW NHMD.

Measure 3.3: Hospitalisations for eye procedures

Measure: The number of hospital separations with a procedure on the eye and adnexa, per 1,000 Indigenous population.

Results

Overall: In 2015–17, there were around 7,868 hospitalisations of Indigenous people for eye procedures—a crude rate of 5.3 per 1,000 population. For Indigenous Australians, the most common AR-DRG for hospitalisations for an eye procedure were lens procedures (3.2 per 1,000) (Figure 3.3.5a).

Sex and age: In 2015–17, hospitalisation rates for eye procedures were low for Indigenous males and females in the younger age groups, but increased from age 45. Rates were highest for those aged 75 to 84: 69 per 1,000 for Indigenous males and 86 per 1,000 for Indigenous females.

Time trend: Between 2007–09 and 2015–17, the age-standardised hospitalisation rate for eye procedures for Indigenous Australians increased from 7.5 to 11.0 per 1,000, while the rate for non-Indigenous Australians increased from 11.4 to 13.3 per 1,000 (Figure 3.3.5b).

Looking at age-specific rates, between 2007–09 and 2015–17, the hospitalisation rates for eye procedures for Indigenous Australians remained fairly constant for those aged from 45 to 64, but increased for those aged 65 to 74 and 75 to 84, by 17 per 1,000 and 29 per 1,000, respectively (Figure 3.3.5c). Hospitalisation rates for non-Indigenous Australians showed a similar pattern (Figure 3.3.5d). Hospitalisations rates for Indigenous Australians aged 45–54 and 55–64 were higher than non-Indigenous Australians of the same age.

Remoteness: Rates of hospitalisation for Indigenous Australians for eye procedures were highest in *Remote* and *Very remote* areas combined (6.8 per 1,000), and lowest in *Major cities* (3.8 per 1,000) (Figure 3.3.5e).

Jurisdiction: Hospitalisation rates for Indigenous Australians for eye procedures were highest in Western Australia (6.3 per 1,000), followed by Queensland (5.3 per 1,000) (Figure 3.3.5f).

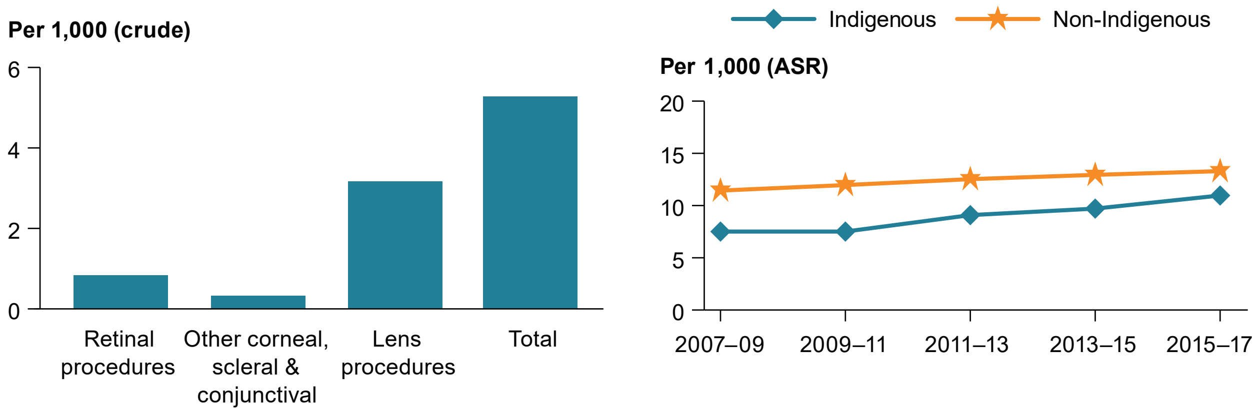
PHN: The PHNs with the highest reported rates of hospitalisations for Indigenous Australians for eye procedures were Country WA and Western Queensland (7.8 and 9.5 per 1,000, respectively) (Figure 3.3.6).

SA3: The SA3s with the highest hospitalisation rates for Indigenous Australians for eye procedures were Bayside, North East and Outback-South (Map 3.3.3).

Things to consider

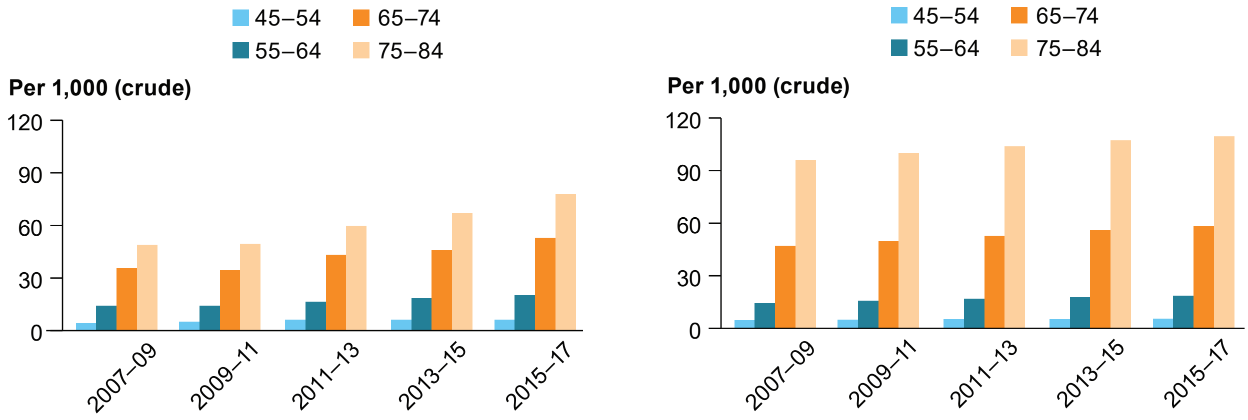
- The AR-DRG represents a class of patients with similar clinical conditions that require similar hospital resources.
- The data may underestimate the number of procedures provided, as they do not include those undertaken on an outpatient basis.
- Data by state and territory, PHN and SA3 should be interpreted with caution due to variations in admission practices; and because patients may be hospitalised outside the area where they reside.
- The quality of data provided for Indigenous status varies. Time series analyses may also be affected by changes in the quality of Indigenous identification over time.
- Age-standardised and age-specific rates are both presented (See Box 1.6).

Figure 3.3.5: Hospitalisation rates for eye procedures, by various characteristics



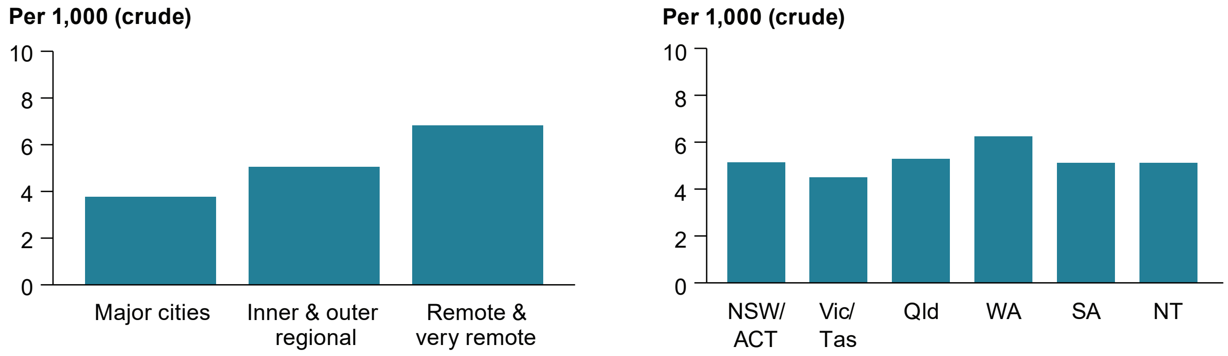
a) Indigenous, by AR-DRG, 2015–17

b) Time trend, 2007–09 to 2015–17



c) Indigenous, by age, 2007–09 to 2015–17

d) Non-Indigenous, by age, 2007–09 to 2015–17



e) Indigenous by region, 2015–17

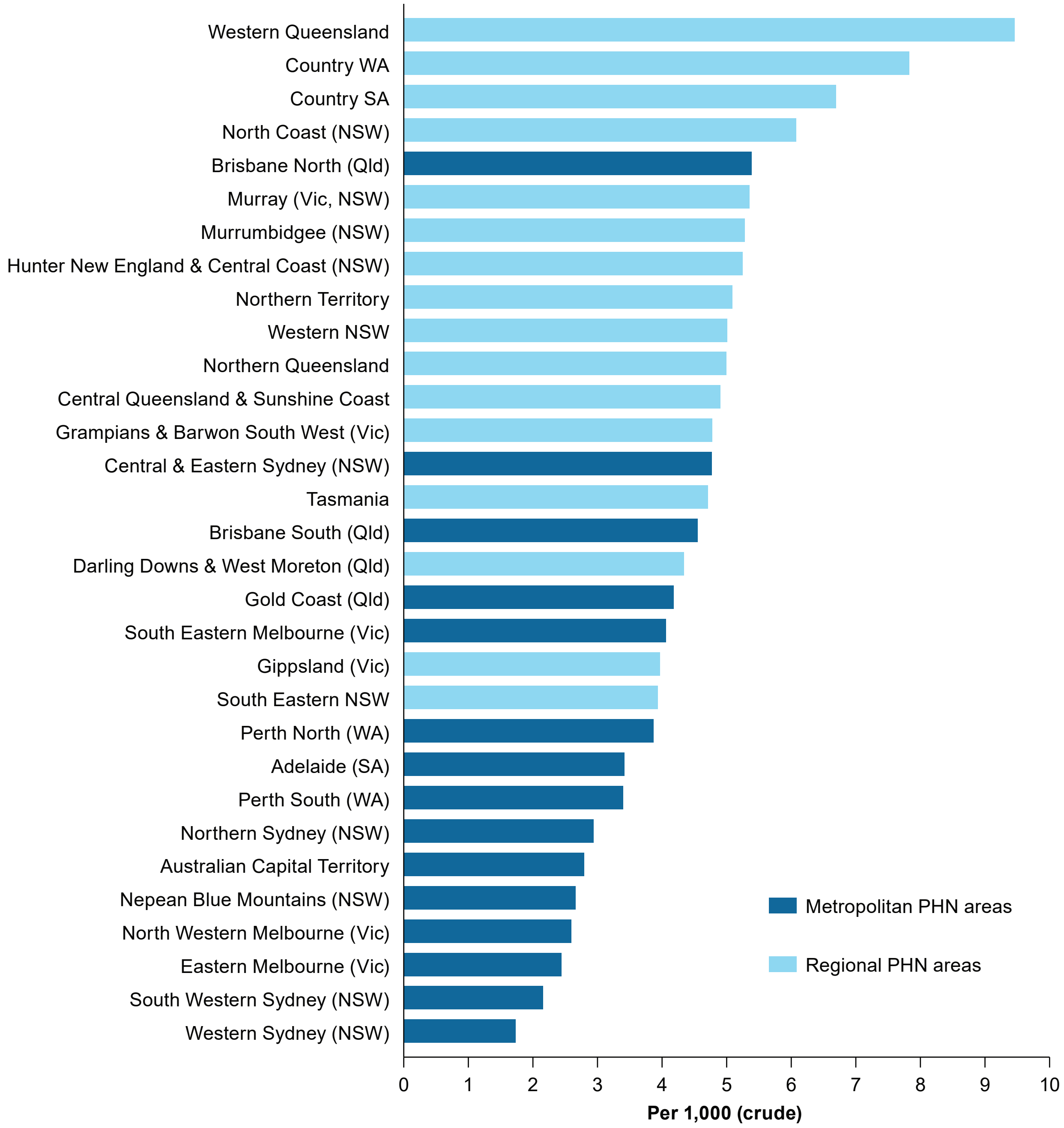
f) Indigenous, by jurisdiction, 2015–17

Notes

1. Figure (a) shows the top 3 AR-DRG for Indigenous Australians.
2. Figures (b), (c) and (d) includes NSW, Vic, Qld, WA, SA and the NT combined.
3. Age-standardised rates (ASR) are shown in figure (b).
4. Data for these figures are available in the online supplementary tables.

Source: AIHW NHMD.

Figure 3.3.6: Hospitalisation rates for eye procedures for Indigenous Australians, by PHN, 2015–17

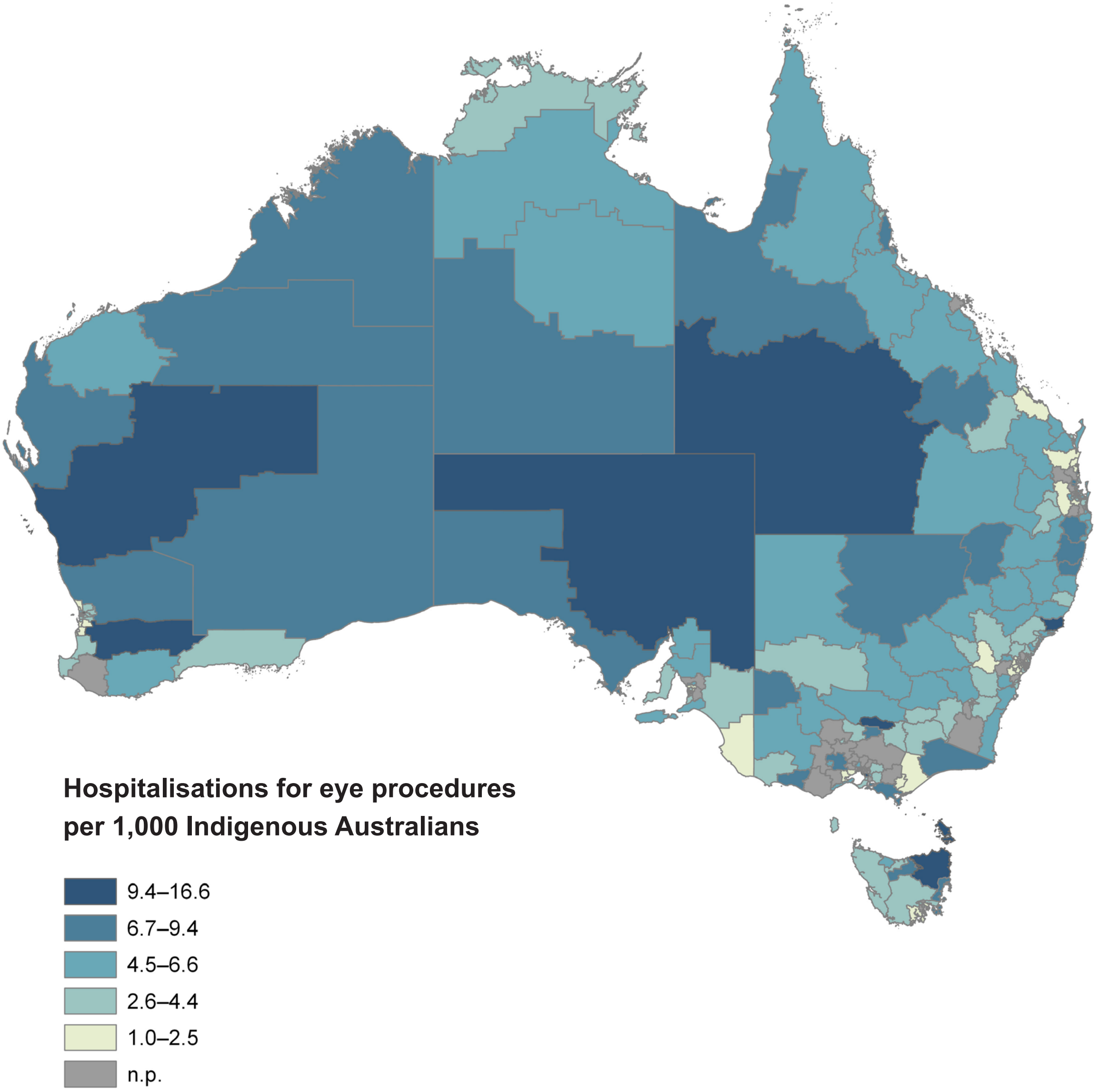


Notes

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

Source: AIHW NHMD.

Map 3.3.3: Hospitalisation rates for eye procedures for Indigenous Australians, by SA3, 2015–17



n.p. = Not published for SA3s with less than 5 hospitalisations, or an Indigenous population less than 100.

Note: The SA3 data for this map are available in the online supplementary tables.

Source: AIHW NHMD.

Measure 3.4: Cataract surgery rate

Measure: The number of hospital separations with a procedure for cataract surgery, per 1,000,000 Indigenous population.

Results

Overall: In 2015–17, there were 5,131 hospitalisations for Indigenous Australians for cataract surgery—a rate of 3,443 per 1,000,000 population (Figure 3.3.7a). The number of hospitalisations over the 2 year period 2015–17 was below the estimated annual number of Indigenous people needing cataract surgery (7,581) (IEHU 2017).

Sex and age: Hospitalisation rates for Indigenous Australians for cataract surgery increased with age and were highest for those aged 75–84 in 2015–17.

Time trend: Between 2007–09 and 2015–17, the age-standardised rate for cataract surgery for Indigenous Australians increased from 5,743 to 8,105 per 1,000,000, while the rate for non-Indigenous Australians increased from 8,247 to 8,559 per 1,000,000 (Figure 3.3.7b).

Looking at age-specific rates, between 2007–09 and 2015–17, the hospitalisation rate for Indigenous Australians for cataract surgery remained relatively constant for those aged 45 to 64, but increased among those aged 65 to 74 and 75 to 84 (Figure 3.3.7c). The rate for non-Indigenous Australians remained relatively constant across all age groups over 45 (Figure 3.3.7d).The rate of hospitalisations were higher for Indigenous Australians aged 45–54 and 55–64 than for non-Indigenous Australians of the same age.

Remoteness: For Indigenous Australians, hospitalisation rates for cataract surgery were lowest in *Major cities* (2,284 per 1,000,000) and highest in *Remote* and *Very remote* areas combined (4,616 per 1,000,000) (Figure 3.3.7e).

Jurisdiction: The hospitalisation rates for cataract surgery for Indigenous Australians were highest in Western Australia (3,869 per 1,000,000) and lowest in Victoria/Tasmania (3,121 per 1,000,000) (Figure 3.3.7f). By jurisdiction, the differences between hospitalisations for cataract surgery and estimated need were largest in New South Wales/Australian Capital Territory (1,657), followed by Queensland (1,413).

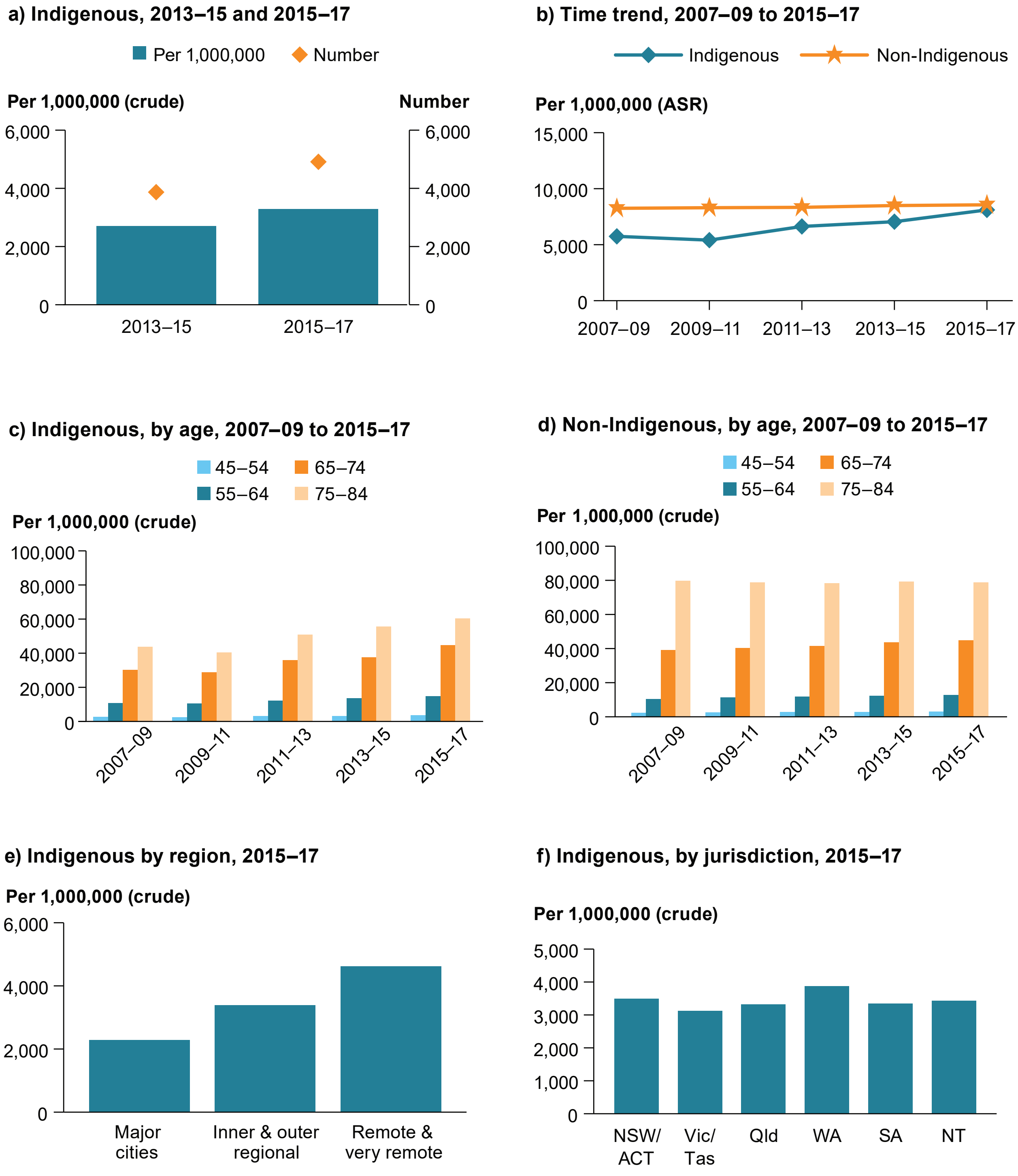
PHN: Indigenous Australians hospitalisation rates for cataract surgery by PHN ranged from 919 to almost 7,000 per 1,000,000. The PHN with the highest rate for Indigenous Australians was Western Queensland (6,713 per 1,000,000) (Figure 3.3.8).

SA3: The SA3s with the highest hospitalisation rates for Indigenous Australians were Bayside (Victoria) and Moira (Victoria) (Map 3.3.4).

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 may underestimate the number of procedures provided as they do not include those undertaken on an outpatient basis.
- Data by state and territory, PHN and SA3 should be interpreted with caution, due to variations in admission practices; and because patients may be hospitalised outside the area where they reside.
- Time series analyses may also be affected by changes in the quality of Indigenous identification over time.
- Age-standardised and age-specific rates are both presented (See Box 1.6).

Figure 3.3.7: Hospitalisation rates for cataract surgery, by various characteristics

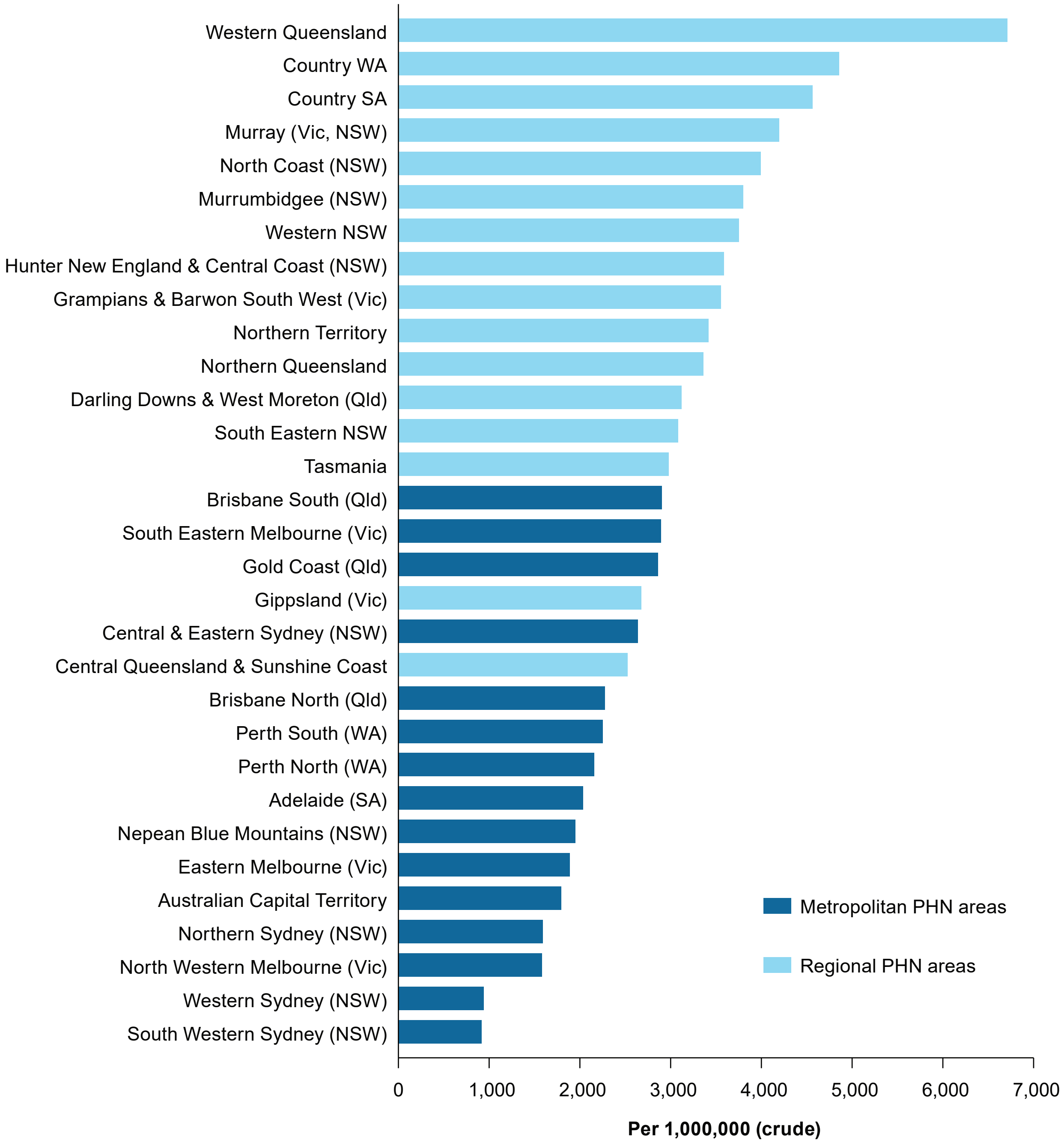


Notes

1. Figures (b), (c) and (d) include NSW, Vic, Qld, WA, SA and the NT combined.
2. Age-standardised rates (ASR) are shown in figure (b).
3. Data for these figures are available in the online supplementary tables.

Source: AIHW NHMD.

Figure 3.3.8: Hospitalisation rates for cataract surgery for Indigenous Australians, by PHN, 2015–17

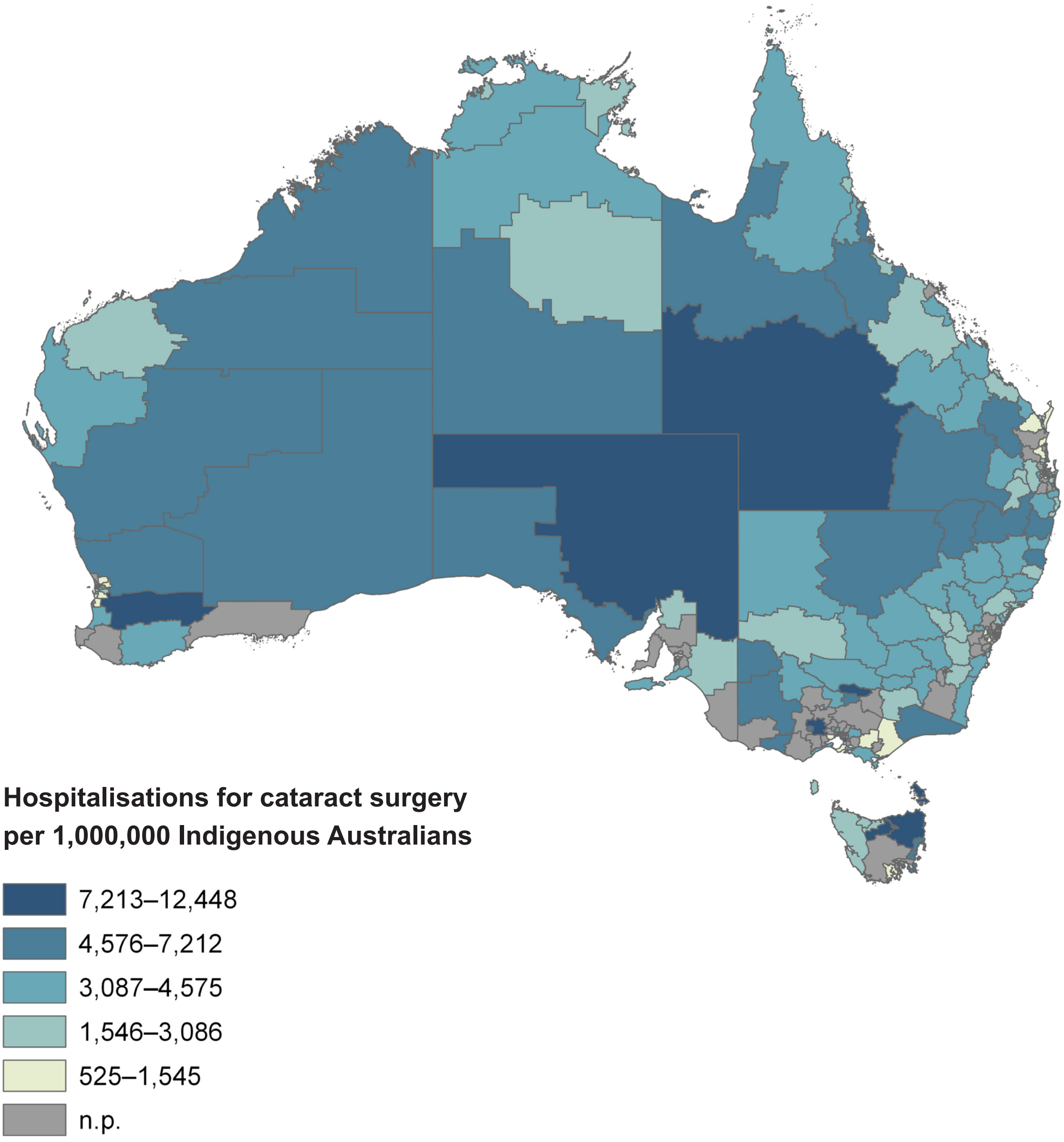


Notes

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

Source: AIHW NHMD.

Map 3.3.4: Hospitalisation rates for cataract surgery for Indigenous Australians, by SA3, 2015–17



n.p. = Not published for SA3s with less than 5 hospitalisations, or an Indigenous population less than 100.

Note: The SA3 data for this map are available in the online supplementary tables.

Source: AIHW NHMD.

Measure 3.5: Cataract surgical coverage rate

Measure: The cataract surgical coverage rate, expressed as:

1. NEHS definition: the 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.
2. World Health Organisation (WHO) definition: the 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.

Results

3.5.1 NEHS coverage rate

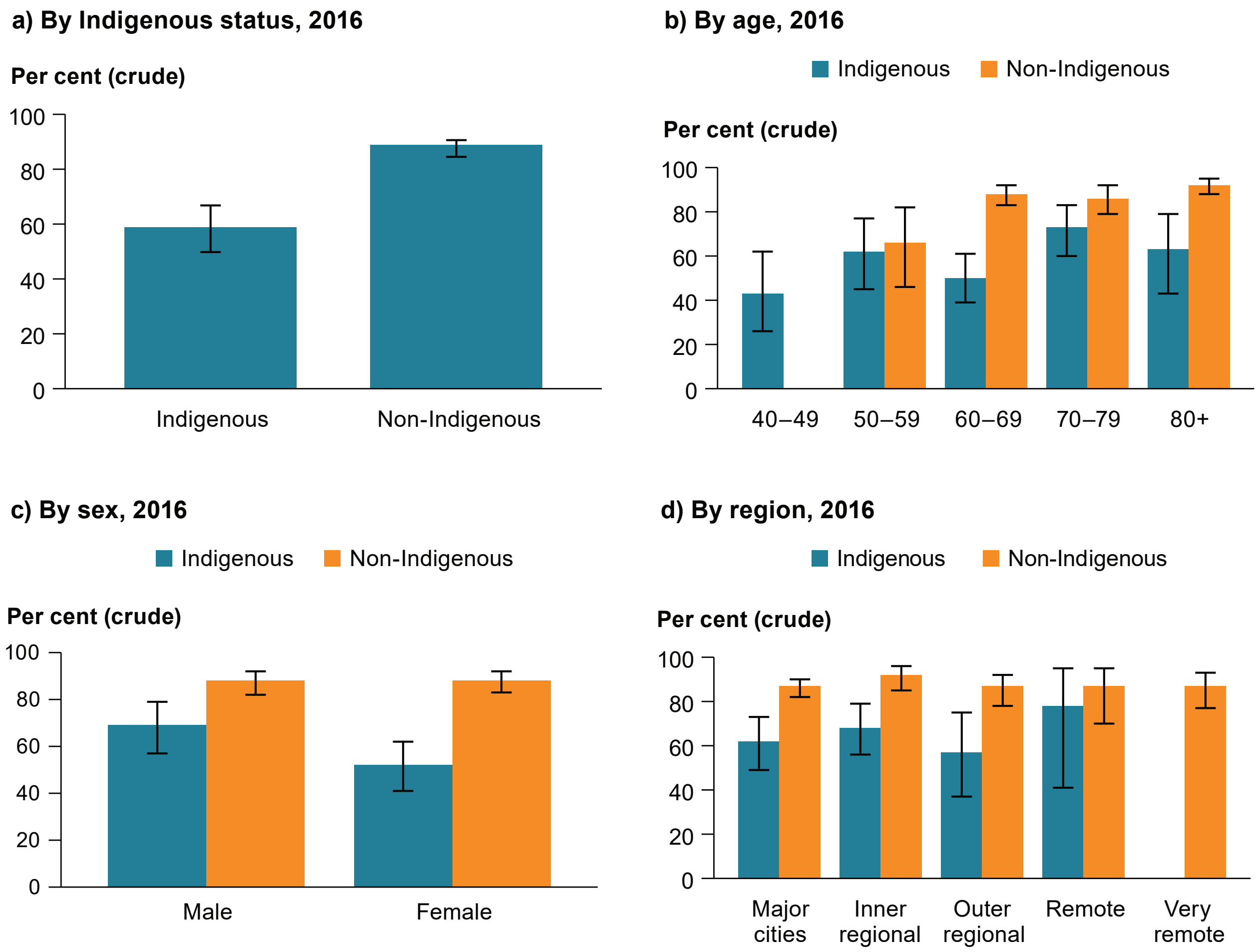
Overall: In 2016, the NEHS cataract surgical coverage rate for Indigenous Australians was 59%. This was significantly lower than the rate for non-Indigenous Australians (89%) (Figure 3.3.9a).

Sex and age: The estimated cataract surgical coverage rate for Indigenous Australian was lowest for those aged 40–49 (43%) and highest for those aged 70–79 (73%). The surgical coverage rate for non-Indigenous Australians was significantly higher than for Indigenous Australians, for those aged 60–69 (88%; CI 83%–92% and 50%; CI 39%–61%, respectively) and for those aged 80 or over (92%; CI 88%–95% and 63%; CI 43%–79%, respectively) (Figure 3.3.9b).

Cataract surgical coverage rates for Indigenous Australians did not differ significantly by sex (Figure 3.3.9c).

Remoteness: Cataract surgical coverage rates for Indigenous participants did not differ significantly by remoteness (Figure 3.3.9d).

Figure 3.3.9: Cataract surgery coverage, NEHS definition, by various characteristics



Notes

1. Cataract surgery coverage using the NEHS definition was calculated as the number of 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 one 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 people were not collected for the aged 40–49 years.
5. Data for these figures are available in the online supplementary tables.

Source: NEHS data 2016; Foreman et al. 2017b.

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 3.3.10a).

Sex and age: Cataract surgical coverage rates did not differ significantly by age or sex, for Indigenous or for non-Indigenous Australians (Figure 3.3.10b & 3.3.10c).

Remoteness: Cataract surgical coverage rates did not differ significantly by remoteness, for Indigenous or for non-Indigenous Australians (Figure 3.3.10d).

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% confidence intervals 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 3.3.10: Cataract surgery coverage, WHO definition, by various characteristics

Notes

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

Source: NEHS data 2016; Foreman et al. 2017b.

Measure 3.6: Waiting times for elective cataract surgery

Measure: The waiting time for elective cataract surgery, expressed as:

1. the 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).
2. the proportion of patients who completed their wait who had cataract surgery within 90 days, and within 365 days.

Results

3.6.1 Median and 90th percentile waiting times

Overall: In 2016–17, there were 1,838 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 (141 days and 89 days, respectively). The time waited before 90% of Indigenous Australians were admitted for cataract surgery was also longer than that for non-Indigenous Australians, though the difference between the 2 groups was not as large (346 days and 333 days, respectively).

Time trend: Between 2014–15 and 2015–16, the median waiting time for elective cataract surgery for Indigenous Australians rose from 142 days to 152 days, and then dropped to 141 days in 2016–17. Over the same period, the median waiting time for non-Indigenous Australians rose from 84 days to 93 days, then declined to 89 days (Figure 3.3.11a).

Between 2015–16 and 2016–17, 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 3.3.11b).

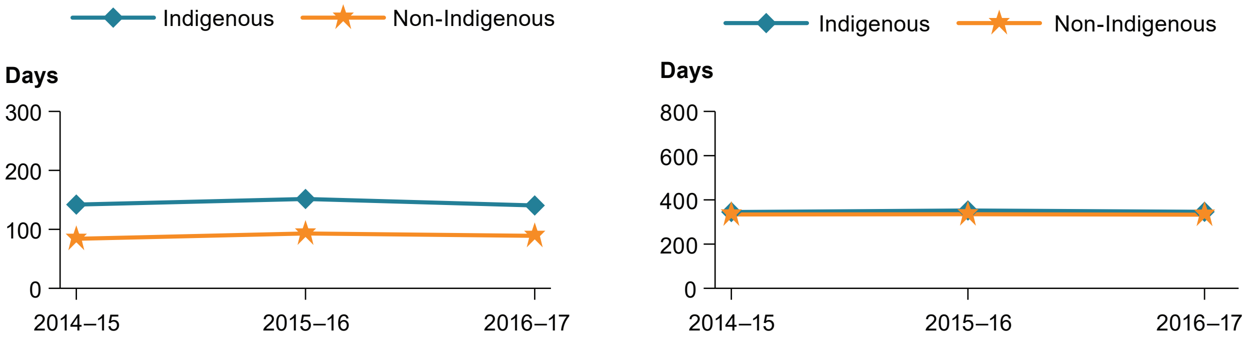
Remoteness: The median number of days waited by Indigenous and non-Indigenous Australians was longest in *Inner regional* areas, at 218 and 173 days, respectively. By comparison, both Indigenous and non-Indigenous Australians in *Major cities* had the shortest waiting times, at 85 and 72 days, respectively (Figure 3.3.11c).

The amount of time within which 90% of patients were admitted for elective cataract surgery was longest for Indigenous Australians in *Very remote* areas (362 days) and shortest for those in *Major cities* (337 days). For non-Indigenous Australians, waiting times were longest in *Outer regional* and *Inner regional* areas (348 days) and shortest in *Major cities* (316 days) (Figure 3.3.11d).

Jurisdiction: Median waiting times were longest for Indigenous Australians in New South Wales (249 days), while for non-Indigenous Australians they were longest in Tasmania (237 days). Median waiting times were shortest for Indigenous Australians in Victoria (56 days) and for non-Indigenous Australians in Western Australia (42 days) (Figure 3.3.11e).

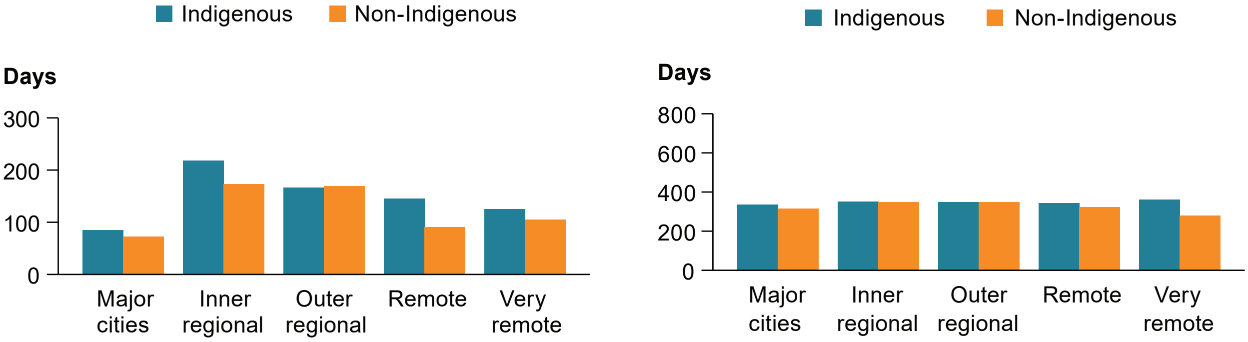
At the 90th percentile, waiting times were longest for Indigenous Australians in the Northern Territory (406 days) and for non-Indigenous Australians in Tasmania (467 days). Waiting times at the 90th percentile for Indigenous and non-Indigenous Australians were shortest in Victoria (135 and 159 days, respectively) (Figure 3.3.11f).

Figure 3.3.11: Waiting times for elective cataract surgery (days waited at 50th and 90th percentiles), by various characteristics



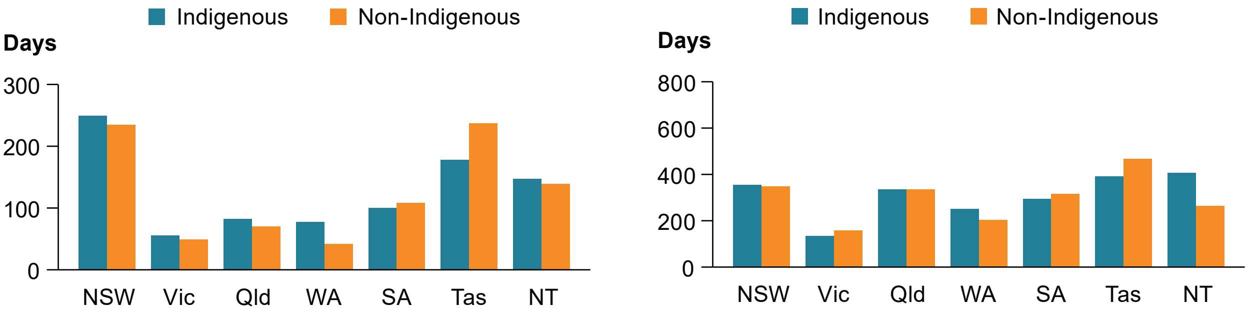
a) Time trend, days waited at 50th percentile, 2014–15 to 2016–17

b) Time trend, days waited at 90th percentile, 2014–15 to 2016–17



c) By region, days waited at 50th percentile, 2015–17

d) By region, days waited at 90th percentile, 2015–17



e) By jurisdiction, days waited at 50th percentile, 2015–17

f) By jurisdiction, days waited at 90th percentile, 2015–17

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

Source: AIHW NHMD.

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

Overall: In 2016–17, the proportion of Indigenous Australians treated within 365 days for cataract surgery was similar to the proportion of non-Indigenous Australians who were treated within this time (97% and 98%, respectively).

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 50%, respectively).

Time trend: Between 2014–15 and 2016–17, the proportion of Indigenous and non-Indigenous Australians treated within 365 days was relatively stable (Figure 3.3.12b).

The proportion of both Indigenous and non-Indigenous Australians who were treated within 90 days for elective cataract surgery also remained relatively stable over this period (Figure 3.3.11a).

Remoteness: The proportion of Indigenous Australians treated within 365 days was lowest in *Very remote* areas and highest in *Remote* areas. For non-Indigenous Australians the proportion was lowest in *Outer regional* areas and highest in *Major cities* (Figure 3.3.12d).

The proportion of Indigenous and non-Indigenous Australians who were treated within 90 days for elective cataract surgery was highest in *Major cities*. For Indigenous Australians, the proportion was lowest in *Inner regional* areas while for non-Indigenous Australians it was lowest in *Outer regional* areas (Figure 3.3.12c).

Jurisdiction: In 2015–17, over 97% of Indigenous Australians were treated within 365 days in New South Wales, Victoria, Queensland, Western Australia and South Australia. The proportion of Indigenous Australians treated within 365 days was lowest in the Northern Territory (86%) and Tasmania (88%) (Figure 3.3.12f).

The proportion of Indigenous and non-Indigenous Australians who were treated within 90 days for elective cataract surgery was highest in Victoria (69% and 73%, respectively) and lowest in Tasmania (27% and 25%, respectively) (Figure 3.3.12e).

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.
- The number of days waited does not include the time waited for the initial appointment with the specialist (from the time of referral by the patient's GP), because this information is not currently available.
- Under the National Elective Surgery Urgency Categorisation Guidelines, cataract surgery is elective (clinical urgency category 3) so that the procedure is clinically indicated within 365 days (AHMAC 2015).
- The data may underestimate the number of procedures provided, as they do not include those undertaken on an outpatient basis.
- The quality of data provided for Indigenous status varies.
- Time series analyses may be affected by changes in the quality of Indigenous identification over time.

Figure 3.3.12: Waiting times for elective cataract surgery (percentage of patients treated within 90 days and within 365 days), by various characteristics

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

Source: AIHW NHMD.

Measure 3.7: Target population treated for diabetic retinopathy

Measure: The diabetic retinopathy treatment rate, expressed as:

1. the number of Indigenous Australians who had a retinal laser procedure or an intra-vitreal injection in the 12 month period who had also had a diabetes test in this period or in the year before, as a proportion of those screened for diabetic retinopathy.
2. the number of Indigenous Australians who had a retinal laser procedure or an intra-vitreal injection in the 12 month period who had also had a diabetes test in this period or in the year before, as a proportion of those who had a diabetes test.

Results

3.7.1 Population screened for diabetic retinopathy treated for diabetic retinopathy

Overall: In 2017–18, there were 462 Indigenous Australians screened for diabetic retinopathy who underwent treatment (Figure 3.3.13a). This was 3.6% of those screened for diabetic retinopathy. The age-standardised proportion treated was the same for Indigenous and non-Indigenous Australians (2.7%). (Figure 3.3.13b).

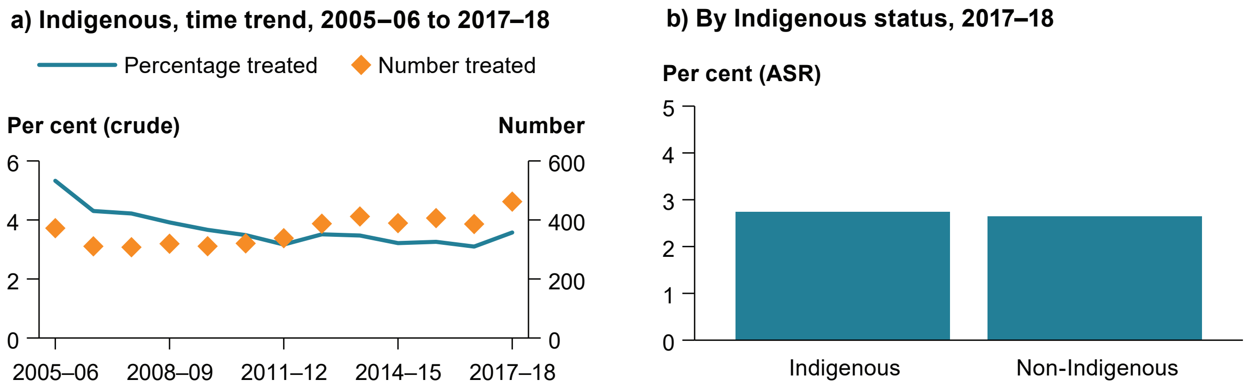
Time trend: Between 2005–06 and 2017–18, the number of Indigenous Australians screened for diabetic retinopathy who underwent treatment increased from 372 in 2005–06 to 462 in 2017–18. The proportion who underwent treatment fell from 5.3% in 2005–06 to 3.1% in 2016–17, before rising slightly to 3.6% in 2017–18 (Figure 3.3.13a). The decreasing proportion was a result of the increase in the number screened for diabetic retinopathy, which nearly doubled from 6,985 in 2005–06 to 12,927 in 2017–18.

Sex and age: In 2017–18, the number and proportion of Indigenous males and females treated for diabetic retinopathy increased steadily with age, to a peak of 4.4% (70 people) and 4.6% (87 people), respectively, in those aged 65 years and over. Across all age groups except those 65 and over, a higher proportion of males than females underwent treatment (Figure 3.3.13c).

Remoteness: The proportion of Indigenous Australians who received treatment for diabetic retinopathy was highest in *Outer regional* areas (4.2%). The rate was similar across *Major cities*, *Remote* and *Very remote* areas (3.2%, 3.1% and 3.0%, respectively) (Figure 3.3.13d).

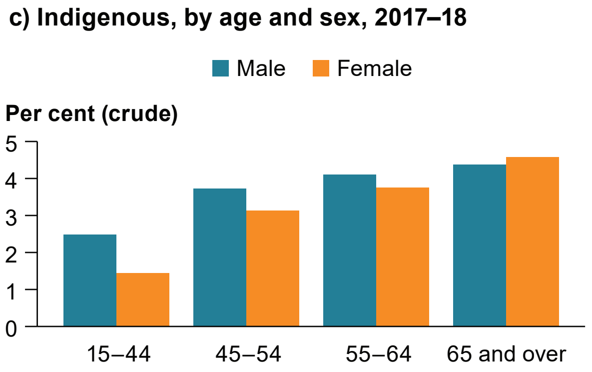
Jurisdiction: The proportion of Indigenous Australians who received treatment for diabetic retinopathy was highest in the Australian Capital Territory (9.2%) followed by Tasmania (5.4%), and lowest in the Northern Territory (1.2%) (Figure 3.3.13e).

Figure 3.3.13: Population treated for diabetic retinopathy as a proportion of those screened, by various characteristics

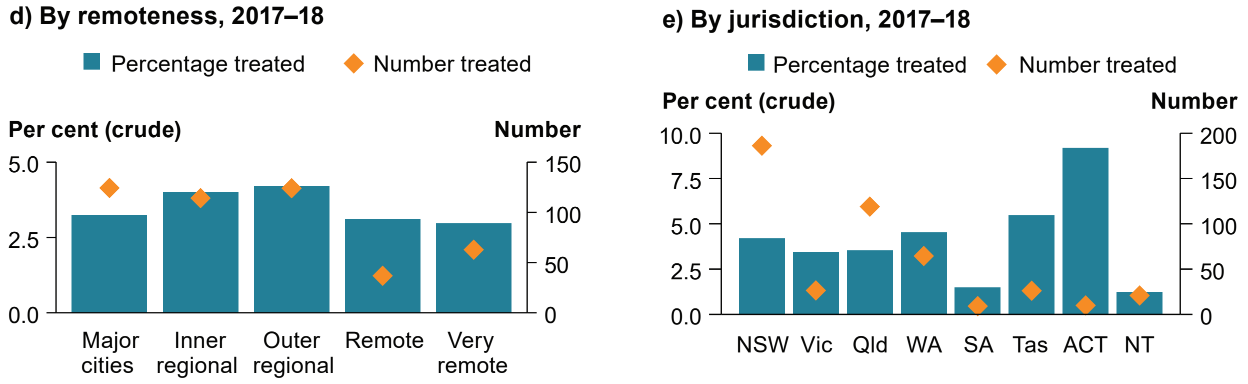


a) Indigenous, time trend, 2005–06 to 2017–18

b) By Indigenous status, 2017–18



c) Indigenous, by age and sex, 2017–18



d) By remoteness, 2017–18

e) By jurisdiction, 2017–18

Notes

1. All figures, except (b), show crude rates.
2. Data for these figures are available in the online supplementary tables.
3. The population screened for diabetic retinopathy comes from measure 2.4.

Source: AIHW analysis of MBS data.

3.7.2 Population screened for diabetes treated for diabetic retinopathy

Overall: In 2017–18, there were 462 Indigenous Australians screened for diabetes who underwent treatment. This was 1.5% of those screened for diabetes (Figure 3.3.14a). The age-standardised proportion of those treated was lower for Indigenous (1.1%) than for non-Indigenous Australians (1.3%) (Figure 3.3.14b).

Time trend: Between 2005–06 and 2017–18, the estimated proportion of Indigenous Australians screened for diabetes who underwent treatment fell from 1.7% in 2005–06 to 1.3% in 2016–17, before rising slightly to 1.5% in 2017–18 (Figure 3.3.14a). The number screened increased from 21,610 to 30,557 over this same time-period.

Sex and age: In 2017–18, the number and proportion of Indigenous males and females treated for diabetic retinopathy increased steadily with age, to a peak of 2.5% (70 people) and 2.7% (87 people), respectively, in those aged 65 years and over. Across all age groups except 65 and over, a higher proportion of males than females underwent treatment (Figure 3.3.14c).

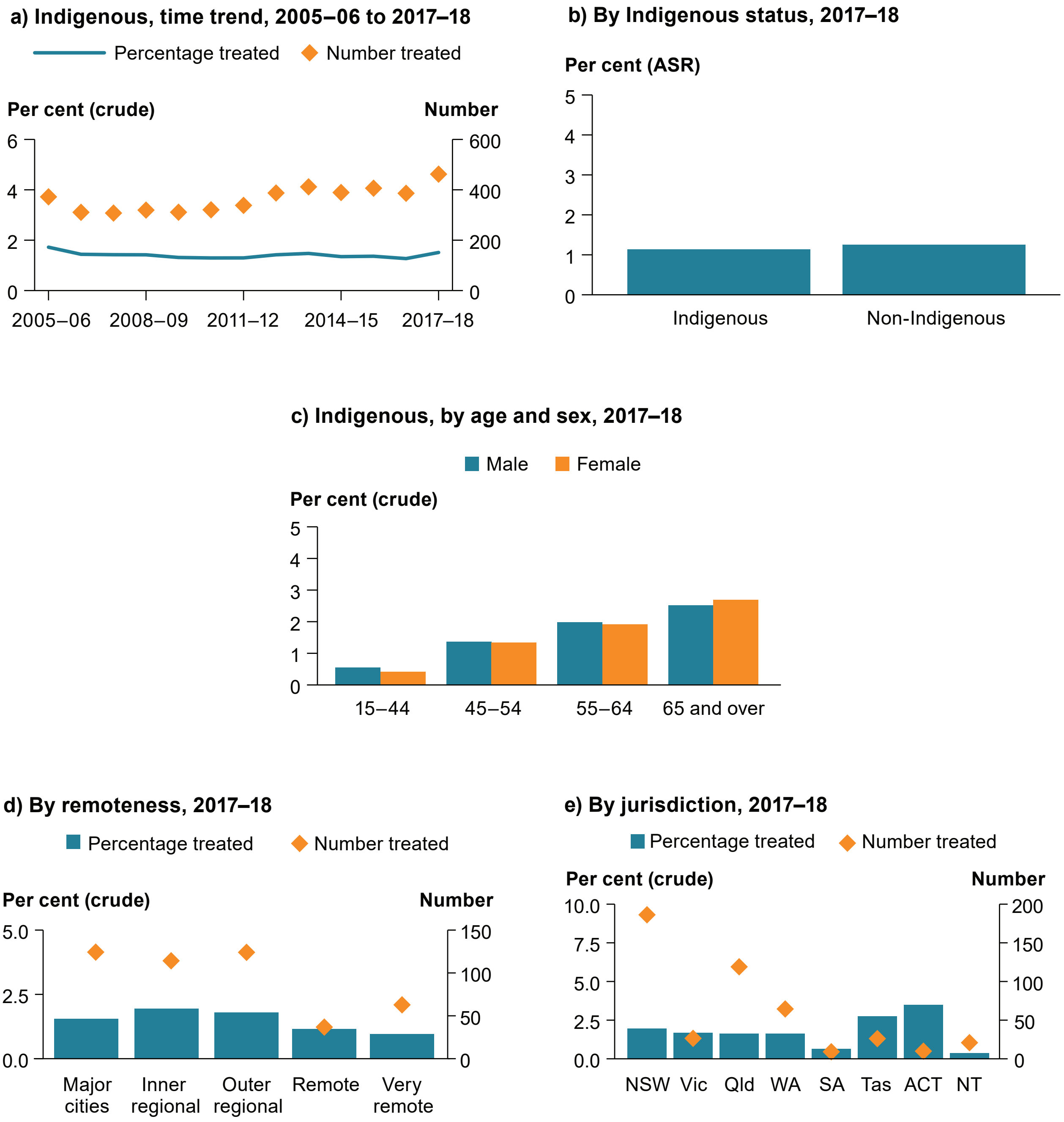
Remoteness: The proportion of Indigenous Australians screened for diabetes who received treatment for diabetic retinopathy was highest in *Inner regional* areas (1.9%), followed by *Outer regional* (1.8%). The rate was lowest in *Very remote* areas (1.0%) (Figure 3.3.14d).

Jurisdiction: The proportion of Indigenous Australians screened for diabetes who received treatment for diabetic retinopathy was highest in the Australian Capital Territory (3.5%) followed by Tasmania (2.7%), and lowest in the Northern Territory (0.4%) (Figure 3.3.14e).

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.

Figure 3.3.14: Population treated for diabetic retinopathy as a proportion of those screened for diabetes, by various characteristics



Notes

1. All figures, except (b), show crude rates.
2. Data for these figures are available in the online supplementary tables.
3. 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

Measure: The estimated number, and proportion of:

1. community members who were treated in communities where active trachoma was identified
2. Indigenous adults with trichiasis who were treated or offered treatment.

Results

3.8.1 Trachoma

Overall: In 2017, in communities where active trachoma was identified, a total of 9,158 community members received treatment, a rate of 82% (Figure 3.3.15a). This included 952 children aged 0–4 (86%), 1,378 aged 5–9 (93%), 1,142 aged 10–14 (88%) and 5,686 community members aged 15 and over (78%) (Figure 3.3.15a).

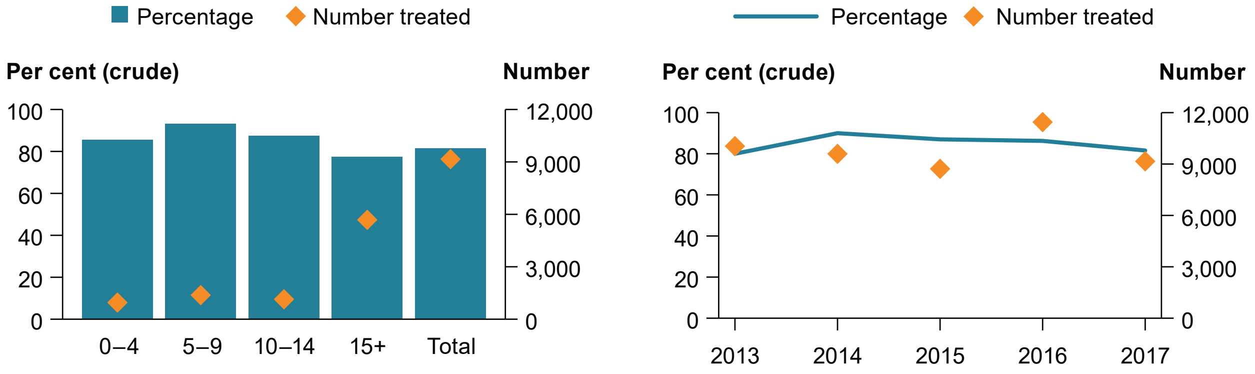
Time trend: Between 2013 and 2017, in communities where active trachoma was identified, the proportion of community members who received treatment rose from 80% to 90% in 2014, before declining to 82% in 2017 (Figure 3.3.15b).

Jurisdiction: In 2017, in communities where active trachoma was identified, the proportion of community members who received treatment was 90% in Western Australia (2,390), 94% in South Australia (159), and 79% in the Northern Territory (6,609) (Figure 3.3.15c).

Things to consider

- Trachoma treatment strategies were applied in 74 communities. Treatment was delivered to active cases and households in 28 communities and to the whole of the community in 43 communities.
- There was 1 community in the Northern Territory that did not deliver treatment in line with CDNA guidelines, due to staffing shortages (Kirby Institute 2018).
- The 5–9 age group is the target group for screening programs in all regions.

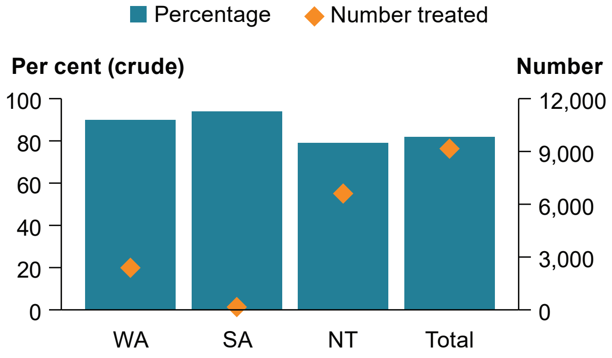
Figure 3.3.15: Community members who were treated in communities where active trachoma was identified, by various characteristics



a) By age, 2017

b) All ages, 2013 to 2017

c) All ages, by jurisdiction, 2017



Notes

1. All figures show crude rates. 'Per cent' relates to percentage of community members treated in communities where active trachoma was identified.
2. Includes data from the 74 communities that required treatment for trachoma.
3. Data for these figures are available in the online supplementary tables.

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

3.8.2 Trichiasis

Overall: In 2017, in the 3 jurisdictions with at-risk communities, of the 44 Indigenous adults aged 40 and over with trichiasis, 23 (52%) were offered an ophthalmic consultation and accepted, and 1 (2%) was offered but declined (Figure 3.3.16a).

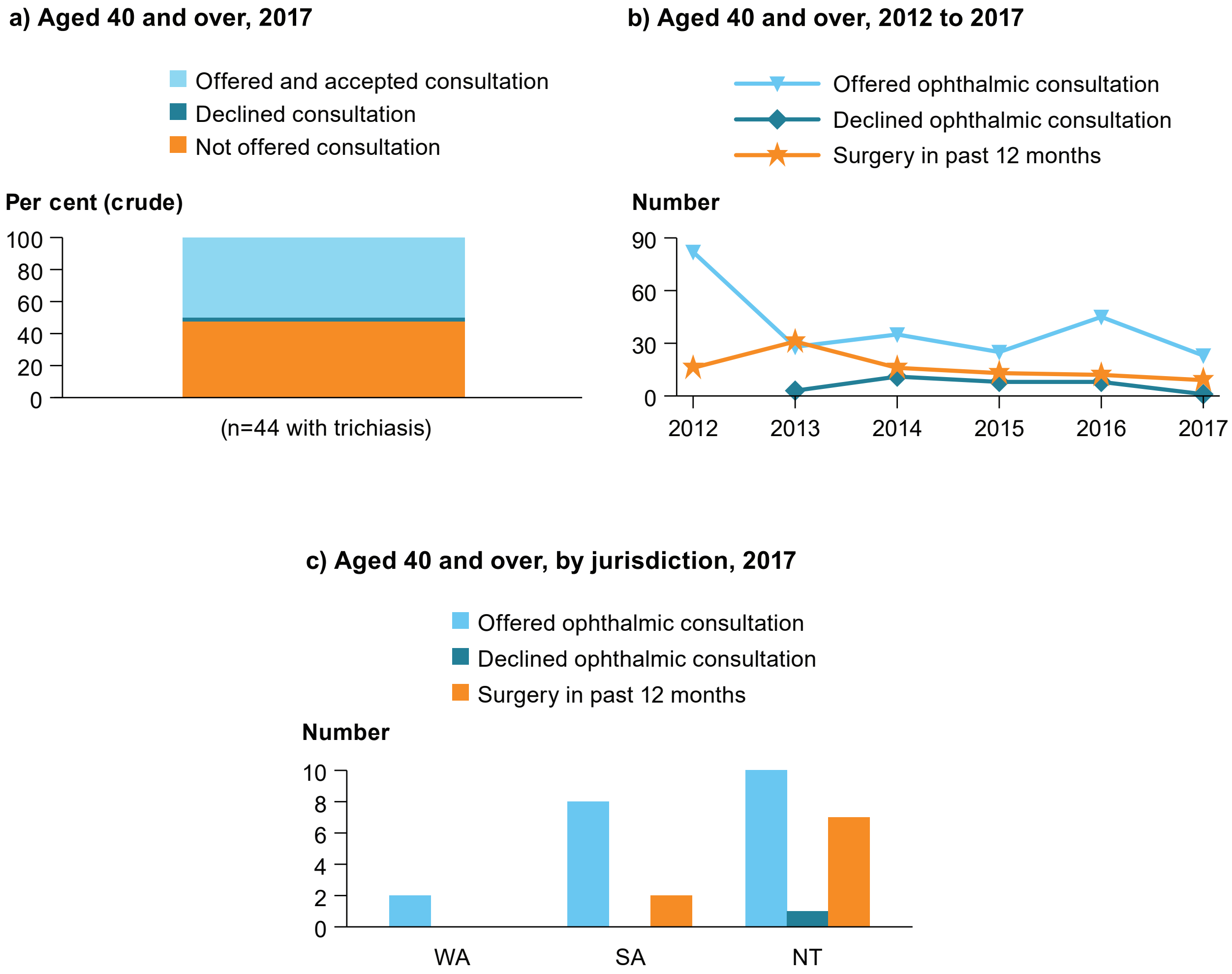
Time trend: The number of Indigenous adults aged 40 and over who were offered an ophthalmic consultation went from 82 out of 94 in 2012 to 23 out of 44 in 2017. Between 2013 and 2017, the number who declined a consultation in each year was 11 or less. The number of Indigenous adults aged 40 and over who had surgery for trichiasis rose from 16 adults in 2012 to 31 in 2013, and then declined to 9 in 2017 (Figure 3.3.16b).

Jurisdiction: All of those aged 40 and over with trichiasis in South Australia were offered an ophthalmic consultation. The Northern Territory had the largest number of adults aged 40 and over who had surgery: 7 out of the 33 adults with trichiasis (Figure 3.3.16c).

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.

Figure 3.3.16: Trichiasis treatment coverage, by various characteristics



Notes

1. Includes data from the 135 at-risk communities that screened for trichiasis, though data may be incomplete.
2. Data for these figures are available in the online supplementary tables.

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

Measure 3.9: Treatment of refractive error

Measure: The number of Indigenous Australians who required treatment for refractive error and had spectacle or contact lens correction, as a proportion of those who had spectacle or contact lens correction plus those who had refractive error as a main cause of vision impairment or blindness.

Results

Overall: In 2016, treatment rates for refractive error were higher for non-Indigenous than Indigenous Australians, at 94% and 82%, respectively (Figure 3.3.17a).

Sex and age: Treatment rates for refractive error for Indigenous Australians did not differ significantly by age group. The treatment rate for those aged 60–69 years was significantly higher for non-Indigenous Australians than Indigenous Australians (95%; CI 93%–97% and 80%; CI 67%–88%, respectively) (Figure 3.3.17b).

Treatment rates for Indigenous Australians did not differ significantly by sex (Figure 3.3.17c).

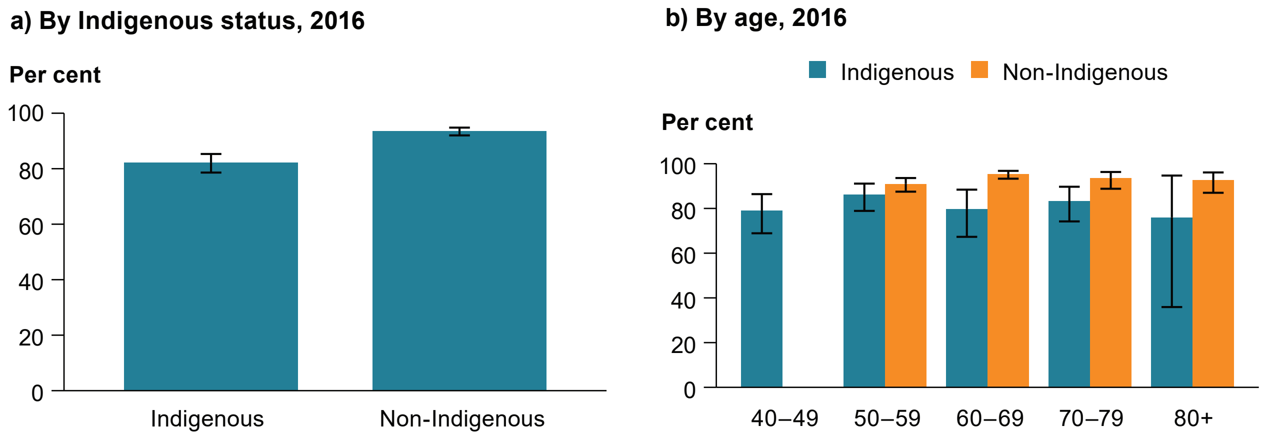
Remoteness: Treatment rates for refractive error for Indigenous Australians in *Outer regional* (70%) and *Very remote* (75%) areas were significantly lower than in *Major cities* (87%), the reference region. The treatment rate for non-Indigenous Australians was significantly higher than for Indigenous Australians in *Inner regional*, *Outer regional* and *Very remote* areas (Figure 3.3.17d).

Time since last eye exam: Treatment rates for refractive error for Indigenous Australians did not differ significantly by time since last eye exam (Figure 3.3.17e).

Things to consider

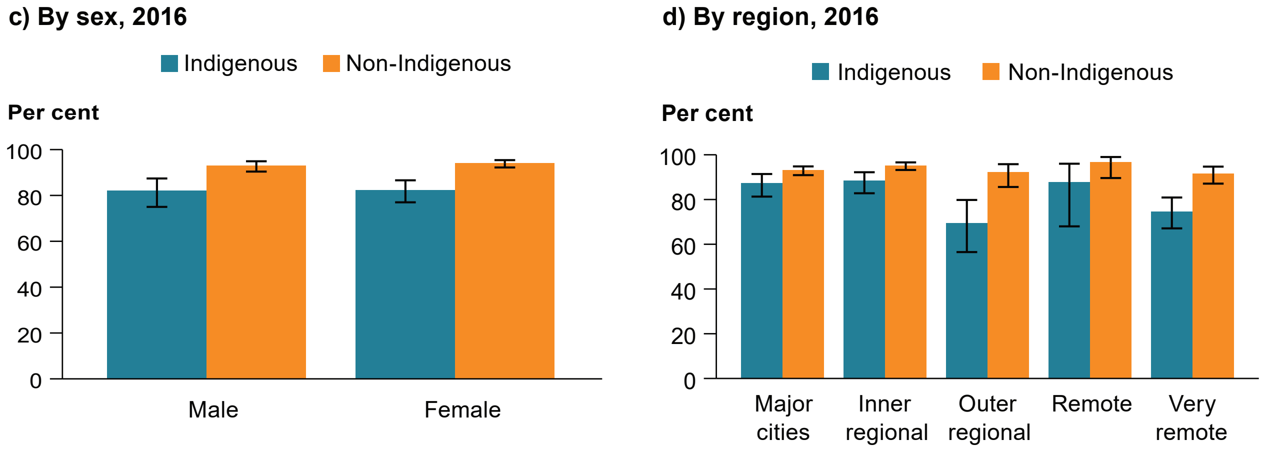
- Data are from the 2016 NEHS, a sample survey of 1,738 Indigenous Australians aged 40 and over, and 3,098 non-Indigenous Australians aged 50 and over. The survey included an eye examination.
- The results reported are survey-weighted to account for the sampling protocol. These results are subject to sampling errors, so the 95% confidence intervals 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 3.3.17: Treatment of refractive error, by Indigenous status, 2016



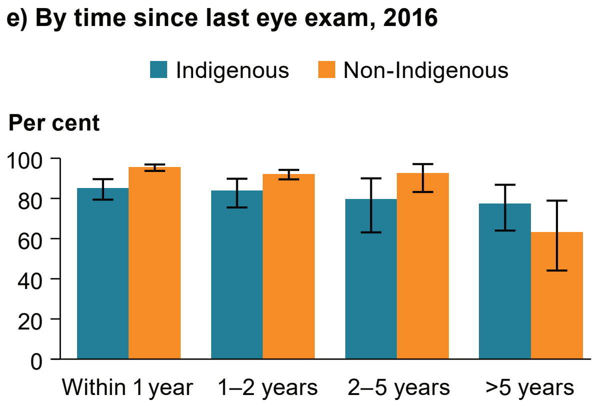
a) By Indigenous status, 2016

b) By age, 2016



c) By sex, 2016

d) By region, 2016



e) By time since last eye exam, 2016

Notes

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

Source: NEHS data 2016; Foreman et al. 2017a.

Measure 3.10: Spectacles dispensed under state schemes

Measure: The number of spectacles dispensed to Indigenous people under state subsidised spectacles programs, per 1,000 population.

Results

While all jurisdictions have subsidised spectacle schemes, only 4 jurisdictions—New South Wales, Victoria, Queensland and South Australia—could provide data for Indigenous Australians.

Overall: In 2017–18, there were around 7,365 spectacles provided to Indigenous people under the New South Wales state scheme (31 per 1,000 population), 5,755 under the Queensland state scheme (26 per 1,000 population), 1,980 under the Victorian state scheme (18 per 1,000 population) and 82 under the South Australian state scheme (2 per 1,000 population) (Figures 3.3.18a, 3.3.18b).

Comparison of the number of spectacles dispensed with the estimated need for those aged over 40 showed that Victoria (1,980) was closest to meeting the estimated number of glasses needed for Indigenous people aged over 40 (3,696). In the other jurisdictions the estimated number needed was considerably greater than the number dispensed—7,365 compared with 16,988 in New South Wales; 5,755 compared with 14,161 in Queensland; and 82 compared with 2,703 in South Australia (Figure 3.3.18a).

Sex and age: In New South Wales in 2017–18, there were higher rates of glasses dispensed under the spectacles program to Indigenous females than males in all age groups. The numbers of glasses dispensed to Indigenous clients was highest for males and females aged 50–64, while the highest rates were for males and females 65 and over (Figure 3.3.18c).

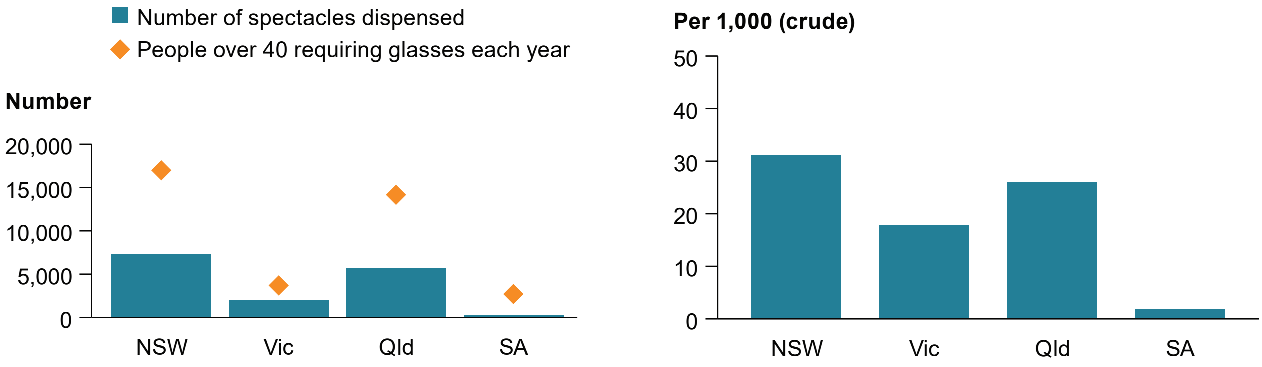
In Queensland in 2017–18, the number of glasses dispensed was similar between the 0–15 and 30–49 age groups (1,025 and 1,114, respectively), and between the 50–64 and 65+ age groups (1,772 and 1,470, respectively). Rates were highest among those aged 65 and over (82 per 1,000), followed by those aged 50–64 (38 per 1,000) (Figure 3.3.18d).

In Victoria there were 832 glasses dispensed by the Australian College of Optometry mainly in metropolitan areas, and 1,083 dispensed by a network of rural providers. Among those dispensed by the Australian College of Optometry, the largest number (193) was provided to those aged over 60, while the highest rate was for those in the 51–60 age group (45 per 1,000) (Figure 3.3.18e).

Things to consider

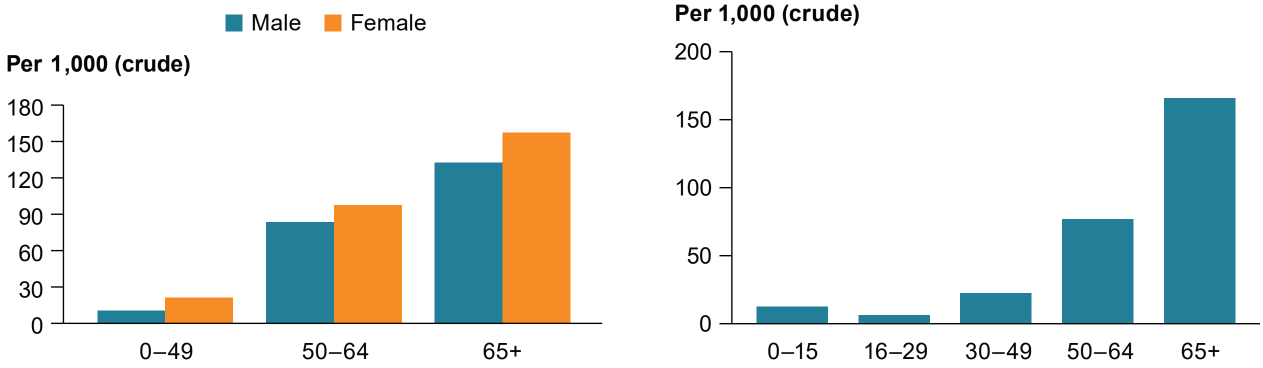
- The eligibility criteria and entitlements provided by the state schemes vary across jurisdictions.
- The estimated annual numbers of Indigenous people needing spectacles were derived from the Calculator for the delivery and coordination of eye care services developed by the Indigenous Eye Health Unit at the University of Melbourne (IEHU 2017).
- The estimated number of people needing spectacles relate to those aged over 40, while the data on spectacles dispensed provided by jurisdictions cover all age groups.

Figure 3.3.18: State spectacles schemes, by various characteristics



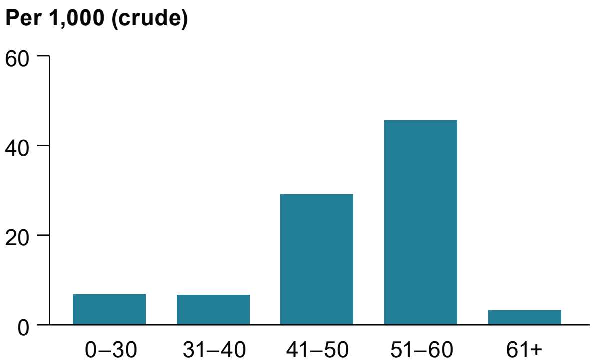
a) Indigenous need, by jurisdiction, 2017–18

b) Indigenous, by jurisdiction, 2017–18



c) Indigenous, by age and sex, NSW, 2017–18

d) Indigenous, by age, Qld, 2017–18



e) Indigenous, by age, Vic, 2017–18

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 (IEHU 2017).
3. Age groups vary by jurisdiction due to differences in the data provided.
4. Data for Figure (e) only include spectacles dispensed by the Australian College of Optometry, mainly in metropolitan areas.
5. Data for these figures are available in the online supplementary tables.

Sources: AIHW analysis of NSW Department of Family and Community Services data (unpublished); Australian College of Optometry Victorian data (unpublished); Queensland Health data (unpublished); SA Department of Human Services (unpublished); IEHU 2017.

3.4 Workforce and outreach programs—size and distribution

Box 3.4: Overview of workforce and outreach services

- In 2017, there were 4,832 optometrists employed in Australia, an increase of 798 on the number of employed optometrists in 2011 (4,034).
- In 2017, there were 930 ophthalmologists, compared with 836 employed in 2012.
- In 2010, of all allied ophthalmic personnel identified in the Census, there were around 4,239 optical dispensers, 720 optical mechanics and 643 orthoptists.
- The number and FTE rate of registered optometrists, ophthalmologists and allied ophthalmic personnel decreased with remoteness. There were insufficient numbers of eye health workforce specialists to calculate rates in both *Remote* and *Very remote* areas.
- In 2017–18, there were 29,161 occasions of service for Indigenous patients under the VOS, with the numbers generally highest in those areas with fewer registered optometrists.
- The number of occasions of service for Indigenous patients under the VOS more than quadrupled between 2009–10 and 2017–18 rising from 6,975 to 29,161.
- In 2017–18 there were 7,821 occasions of service for Indigenous clients in relation to eye health under the RHOF, and 2,038 occasions of service for Indigenous clients with an eye health professional under the MOICDP.

The size and location of the eye health workforce gives a broad indication of access to specialist and allied eye health services. Specialist eye health practitioners are required to treat more serious eye problems and to undertake the more complex procedures, such as cataract surgery. National data are available for 3 eye health workforce measures: *4.1 Number and rate of optometrists; 4.2 Number and rate of ophthalmologists* and *4.3 Number and rate of allied ophthalmic personnel*. The rates used are FTEs.

The data on optometrists and ophthalmologists come from the National Health Workforce Data Set (NHWDS). These data are derived from the annual registration process required for health workforce professionals and are available annually. The data on allied ophthalmic personnel come from various sources, including the ABS Census, professional associations and employer organisations, and were collated by the AIHW (AIHW 2016b). These data are not updated on a regular basis.

The measures of occasions of eye health services were provided under the Australian Government outreach programs–VOS, RHOF and MOICDP (Box 3.6). The data for measure *4.4 Occasions of eye health services provided under outreach programs* were provided to the Department of Health by the fund holders for these programs in each jurisdiction. The outreach data does not include outreach services funded by state governments or other sources.

Box 3.5: The eye health workforce

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

Source: AIHW 2016b.

Box 3.6: Australian Government outreach programs

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

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

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

Funding is also provided to jurisdictional fund holders to improve the coordination of Indigenous eye health services.

Measure 4.1: Number and rate of optometrists

Measure: The number of employed optometrists, full-time equivalent (FTE) per 100,000 Australian population.

Results

Overall: In 2017, there were 4,832 optometrists employed in Australia (18 FTE per 100,000).

Time trend: Between 2011 and 2017, the number and rate of optometrists increased from 4,034 (17 FTE per 100,000) to 4,832 (18 FTE per 100,000) (Figure 3.4.1a).

Remoteness: In 2017, *Major cities* had the highest number (3,812) and rate (20 FTE per 100,000) of employed optometrists. This was followed by *Inner regional* areas (751, or 16 FTE per 100,000) and *Outer regional* areas (236, or 11 FTE per 100,000). The numbers and rates of optometrists were lowest in *Remote* and *Very remote* areas (Figure 3.4.1b).

Jurisdiction: The Northern Territory had the lowest number (35) of employed optometrists. New South Wales had the highest number (1,659) and rate (20 FTE per 100,000) of employed optometrists (Figure 3.4.1c).

PHN: 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 (512, or 30 FTE per 100,000). Country Western Australia had the lowest rate of optometrists (9 FTE per 100,000). Western Queensland had fewer than 10 optometrists, so FTE rates were not calculated (Figure 3.4.2; Map 3.4.1).

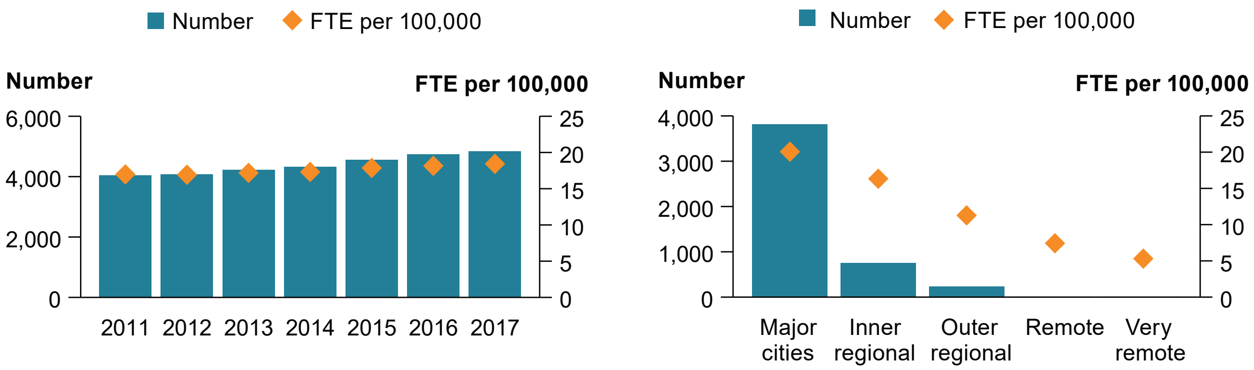
Things to consider

- The data comes from the Department of Health's NHWDS. It includes optometrists who register with their respective health practitioner board via the National Registration and Accreditation Scheme and are employed in Australia.
- Optometrists can only include details of 1 site in their registration, so multiple sites are not captured in the data.
- 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 optometrists (38 hours per week). The number of FTE is then compared with the size of relevant population to get the FTE 100,000 population.

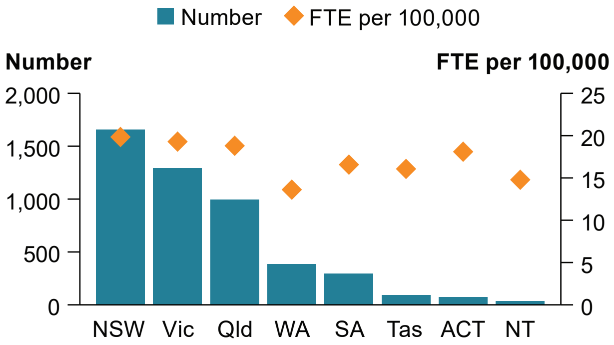
Figure 3.4.1: Optometrists, by various characteristics

a) Optometrists, 2011 to 2017

b) Optometrists, by region, 2017



c) Optometrists, by jurisdiction, 2017

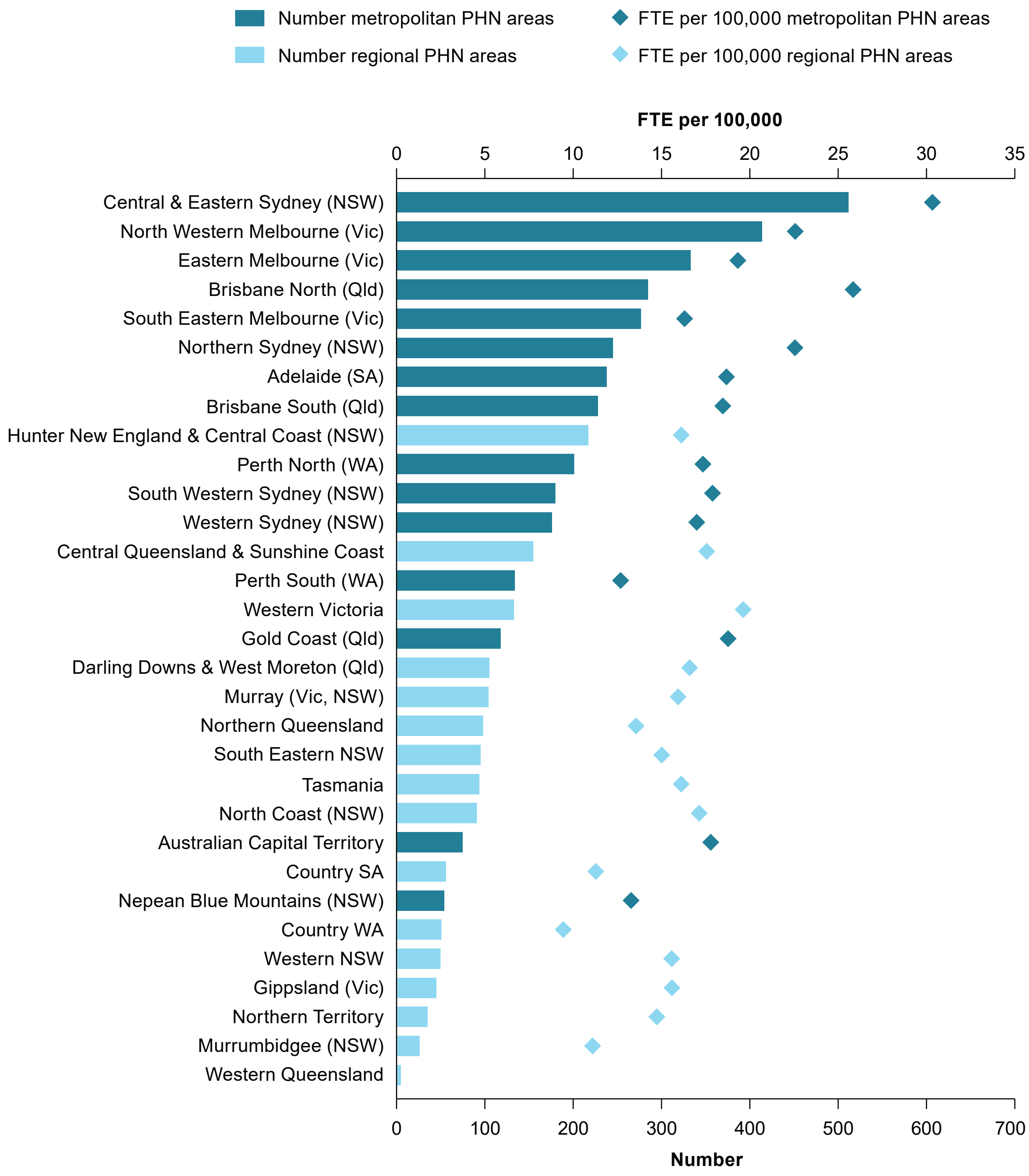


Notes

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 online supplementary tables.

Source: AIHW analysis of NHWDS.

Figure 3.4.2: Optometrists, by PHN, 2017

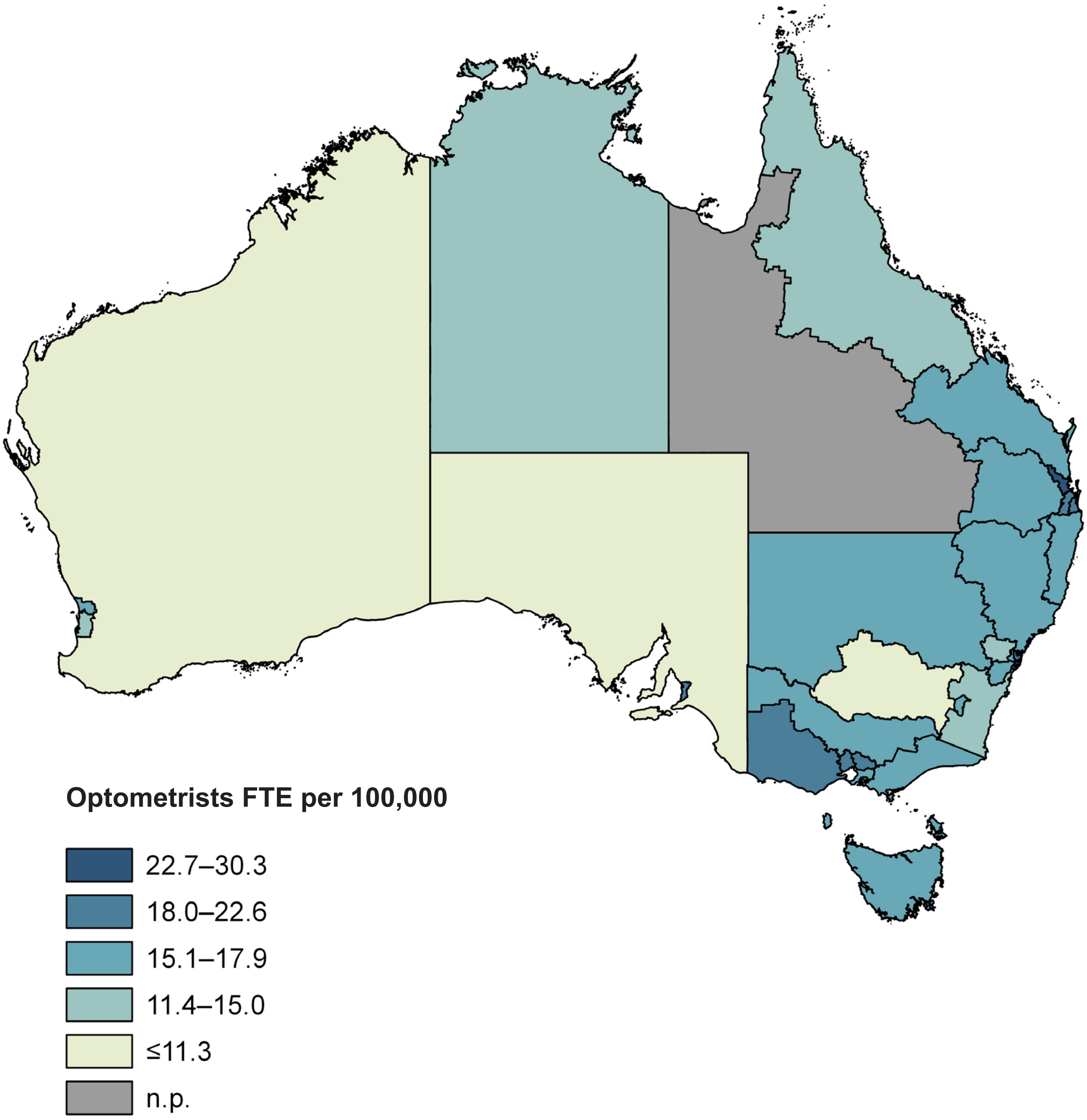


Notes

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 online supplementary tables.

Source: AIHW analysis of NHWDS.

Map 3.4.1: Optometrists, by PHN, 2017



Notes

1. The PHN data for this map are available in the online supplementary tables.
2. Data were not published where the number of optometrists employed in a PHN was less than 10.

Source: AIHW analysis of NHWDS.

Measure 4.2: Number and rate of ophthalmologists

Measure: The number of employed ophthalmologists, full-time equivalent (FTE) per 100,000 Australian population.

Results

Overall: In 2017, there were around 930 ophthalmologists employed in Australia (4.0 FTE per 100,000).

Time trend: Between 2012 and 2017, the number of ophthalmologists increased slightly, while the rate remained fairly constant. In 2012 there were 836 employed ophthalmologists (3.9 FTE per 100,000). By 2017, the number and rate of employed ophthalmologists had increased to 930 (4.0 FTE per 100,000) (Figure 3.4.3a).

Remoteness: *Major cities* had the highest number (782) and rate (4.7 FTE per 100,000) of employed ophthalmologists, followed by *Inner regional* areas (119, 2.7 FTE per 100,000) and *Outer regional* areas (26, or 1.5 FTE per 100,000). There were insufficient numbers of ophthalmologists to calculate rates in other areas (Figure 3.4.3b).

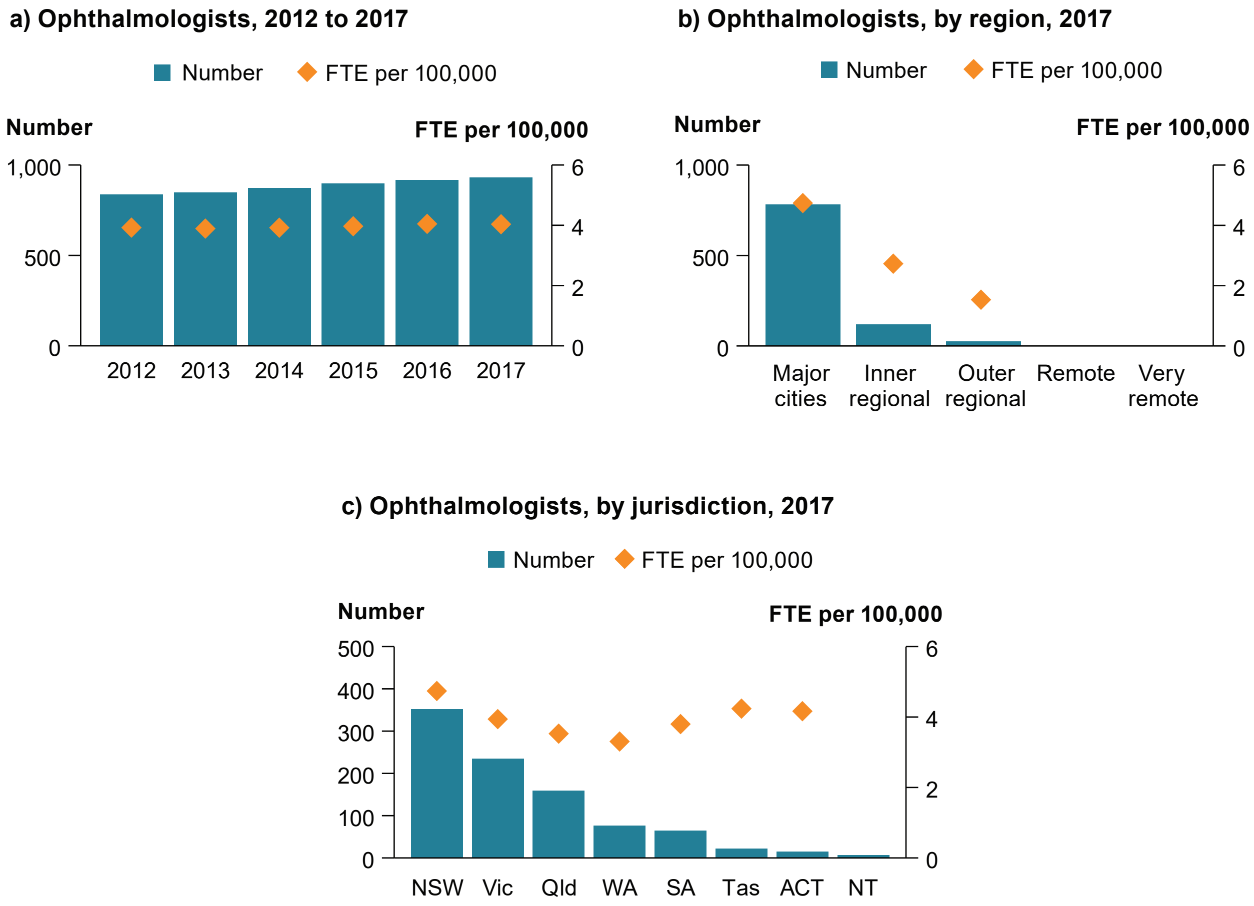
Jurisdiction: New South Wales had the highest number (352) and rate (4.7 FTE per 100,000) of employed ophthalmologists followed by Victoria (235, or 3.9 FTE per 100,000). Western Australia had the lowest rate (3.3 FTE per 100,000). There were insufficient numbers of ophthalmologists in the Northern Territory to report rates (Figure 3.4.3c).

PHN: Central and Eastern Sydney had the highest number (142) and rate (9.2 FTE per 100,000) of employed ophthalmologists. This was followed by North Western Melbourne (96, or 5.9 FTE per 100,000) and Northern Sydney (63, or 7.3 FTE per 100,000). The number of ophthalmologists was too low to calculate FTE rates in 7 PHNs, but of those areas where rates could be published, they were lowest in Darling Downs & West Moreton (1.5 FTE per 100,000) and South Eastern NSW (1.5 FTE per 100,000) (Figure 3.4.4; Map 3.4.2).

Things to consider

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

Figure 3.4.3: Ophthalmologists, by various characteristics


a) Ophthalmologists, 2012 to 2017

b) Ophthalmologists, by region, 2017

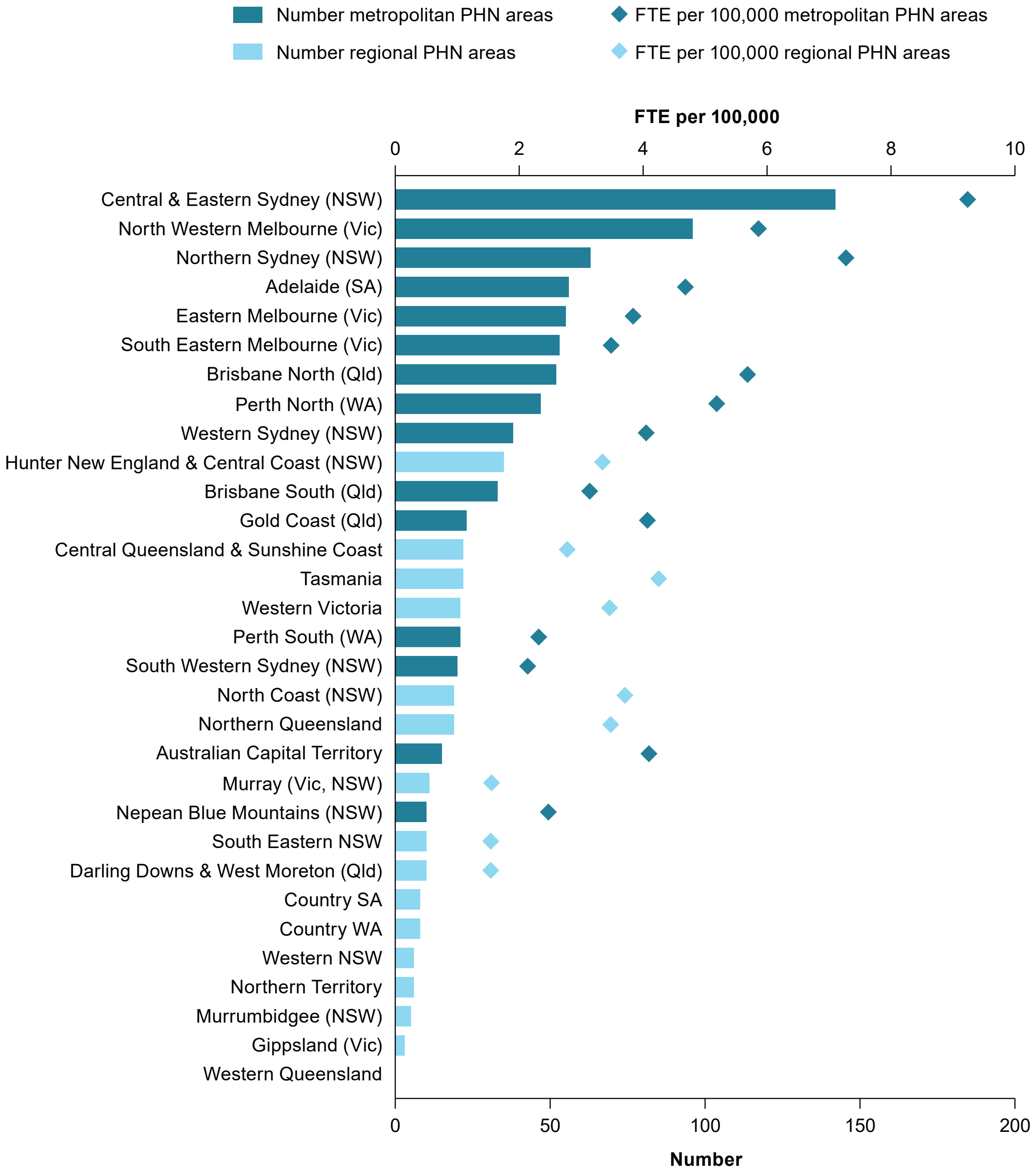
c) Ophthalmologists, by jurisdiction, 2017

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 online supplementary tables.

Source: AIHW analysis of NHWDS.

Figure 3.4.4: Ophthalmologists, by PHN, 2017



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 of ophthalmologists was fewer than 10.
4. Data for this figure are available in the online supplementary tables.

Source: AIHW analysis of NHWDS.

Map 3.4.2: FTE rates for ophthalmologists, by PHN, 2017

Notes

1. FTE per 100,000 are based on a 40-hour week.
2. Maps include all those PHNs where FTE rates were published (that is, there were 10 or more ophthalmologists employed).
3. The PHN data for this map are available in the online supplementary tables.

Source: AIHW analysis of National Health Workforce Data Set.

Measure 4.3: Number and rate of allied ophthalmic personnel

Measure: The number and rate of allied ophthalmic personnel, full-time equivalent (FTE), per 100,000 Australian population.

Results

Overall: The biggest category of allied ophthalmic personnel in Australia is optical dispensers. In 2016, there were around 4,855 optical dispensers (15 FTE per 100,000), 472 optical mechanics (1.9 FTE per 100,000) and 834 orthoptists (2.7 FTE per 100,000) in Australia (Figure 3.4.5a).

Time trend: From 2010 to 2016, the number of optical dispensers and orthoptists increased slightly, while the number of optical mechanics fell. The FTE rate of all allied ophthalmic personnel decreased, from 19 to 15 FTE per 1,000 for optical dispensers, and from 6.2 to 4.6 FTE per 1,000 for optical mechanics and orthoptists combined (Figure 3.4.5b).

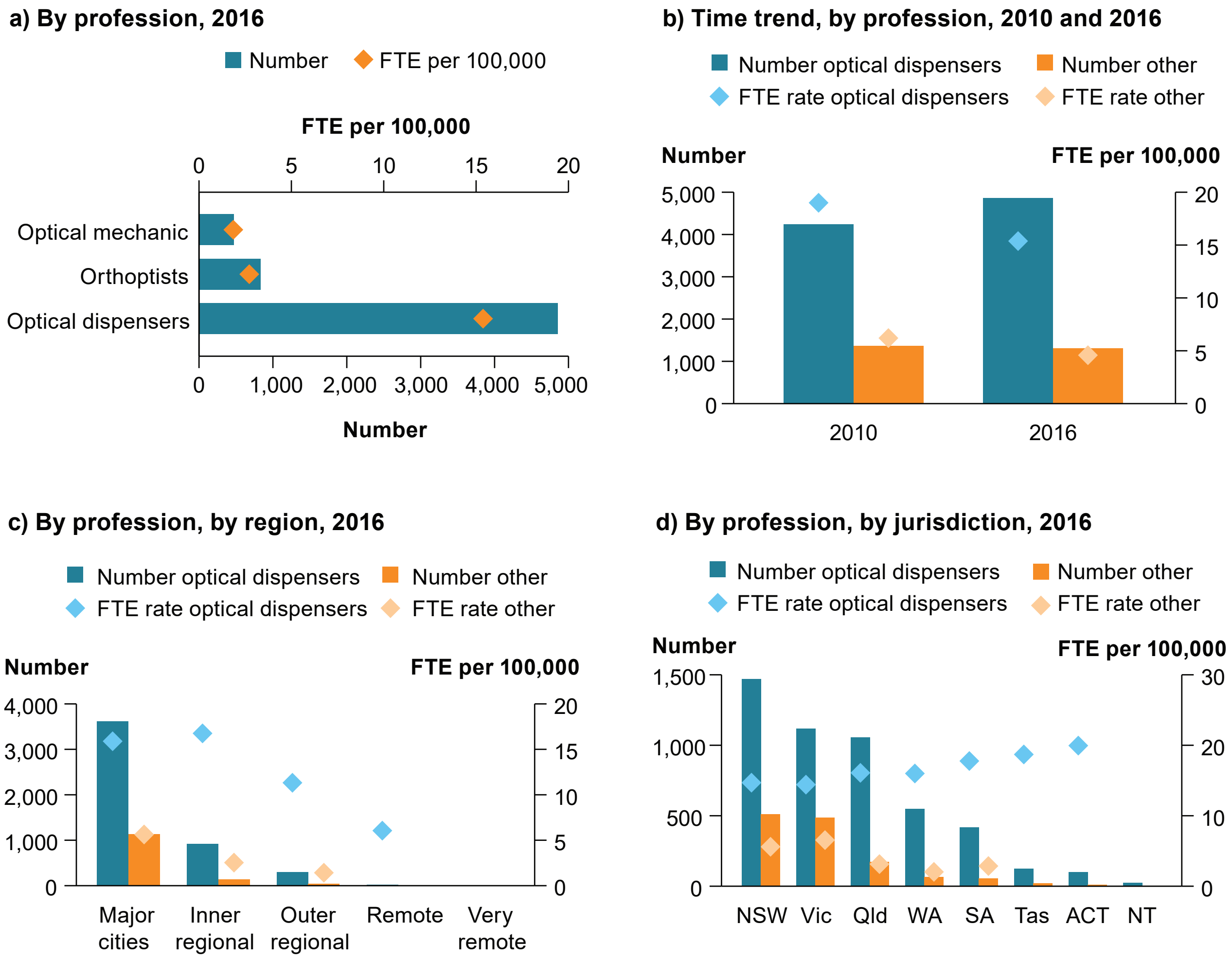
Remoteness: *Major cities* had the highest number (3,609) and rate (16 FTE per 100,000) of optical dispensers as well as other allied ophthalmic personnel (1,134, or 5.6 FTE per 100,000). This was followed by *Inner regional* areas with 919 optical dispensers (17 FTE per 100,000) and 138 other allied ophthalmic personnel (2.5 FTE per 100,000). There were insufficient numbers of optical dispensers and other allied ophthalmic personnel in *Remote* and *Very remote* areas to calculate rates (Figure 3.4.5c).

Jurisdiction: New South Wales had the highest number (1,469) of optical dispensers and of other allied ophthalmic personnel (512). The Australian Capital Territory had the highest rate of optical dispensers (20 FTE per 1,000), and Victoria had the highest rate of optical mechanics and orthoptists (6.5 FTE per 1,000) (Figure 3.4.5d).There were insufficient numbers of optical dispensers in the Northern Territory, and optical mechanics and orthoptists in the Northern Territory, Tasmania and the Australian Capital Territory to report rates.

Things to consider

- See Box 3.5 for information on the eye health workforce and the roles of various allied ophthalmic personnel.

Figure 3.4.5: Allied ophthalmic personnel, by various characteristics



Notes

1. 'Other' includes Orthoptists and Optical mechanics.
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 30 people.
4. Data for these figures are available in the online supplementary tables.

Sources: ABS 2016.

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

Measure: 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).

Results

4.4.1 Visiting Optometrists Scheme (VOS)

Overall: In 2017–18, there were 29,161 occasions of service for Indigenous patients and 22,666 for other patients under the VOS.

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 (Figure 3.4.6a). The number of occasions of service for other Australians declined over this period, so that in 2017–18 more than half of VOS occasions of service were for Indigenous Australian patients.

Remoteness: Reflecting the nature of the scheme, the rate of Indigenous occasions of service under the VOS was highest in *Very remote* areas (132 per 1,000) followed by *Remote* areas (57 per 1,000) (Figure 3.4.6b).

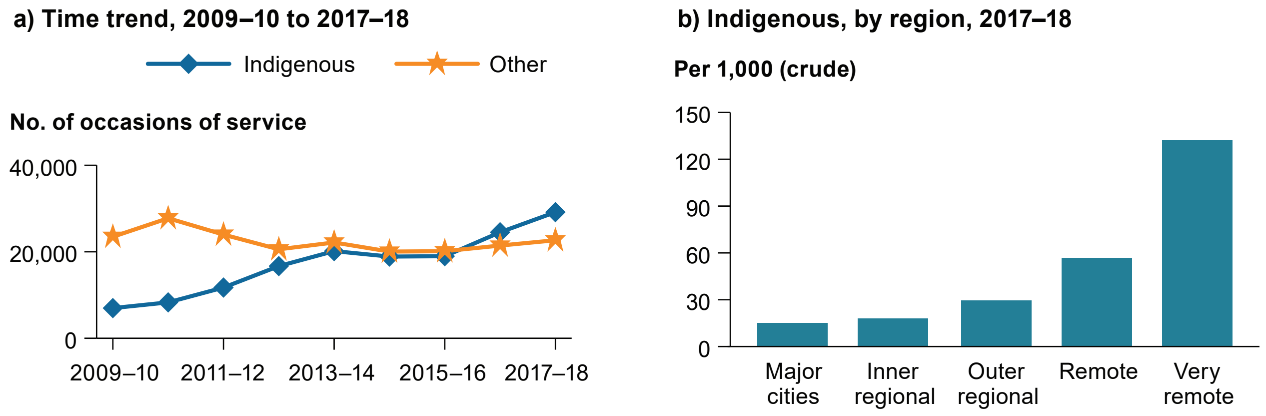
Jurisdiction: The number of Indigenous occasions of service under the VOS was lowest in Tasmania (61), followed by Victoria (963), while the highest number was in the Northern Territory (8,753), followed by Queensland (6,843) (Figure 3.4.6c). The rate of Indigenous occasions of service was highest in the Northern Territory (115 per 1,000), followed by South Australia (93 per 1,000) (Figure 3.4.6d).

PHN: The PHNs with the highest reported number of occasions of service for Indigenous patients under the VOS were the Northern Territory (7,571) followed by Country WA (4,586). The rate of Indigenous occasions of service was highest in the Northern Territory (102 per 1,000), Country WA (79 per 1,000) and Western NSW (63 per 1,000) (Figure 3.4.7; Map 3.4.3).

Things to consider

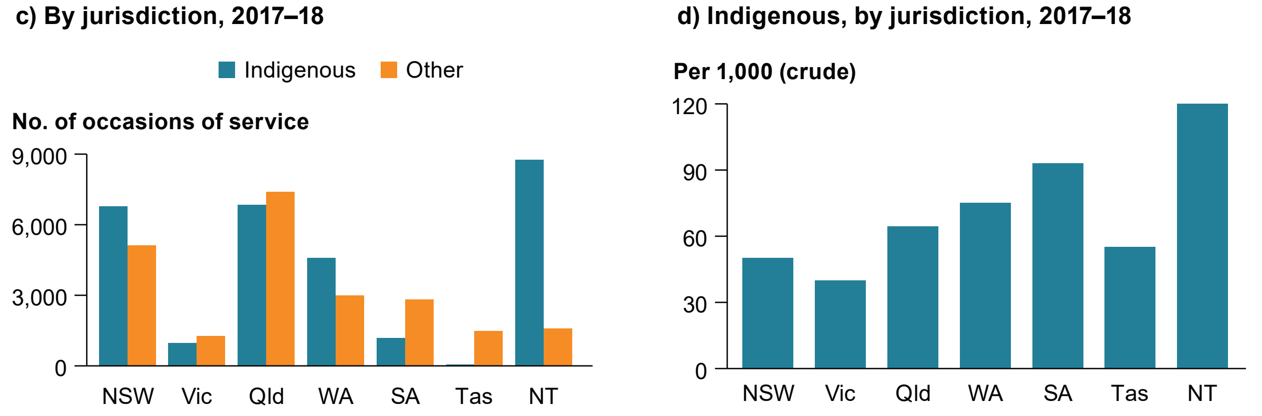
- Patients may have more than 1 occasion of service.
- The identification of Indigenous patients varies between practitioners, so the number of occasions of service for Indigenous patients may be understated.
- The rates by PHN should be interpreted with caution, as these services are predominantly provided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

Figure 3.4.6: VOS occasions of service, by various characteristics



a) Time trend, 2009–10 to 2017–18

b) Indigenous, by region, 2017–18



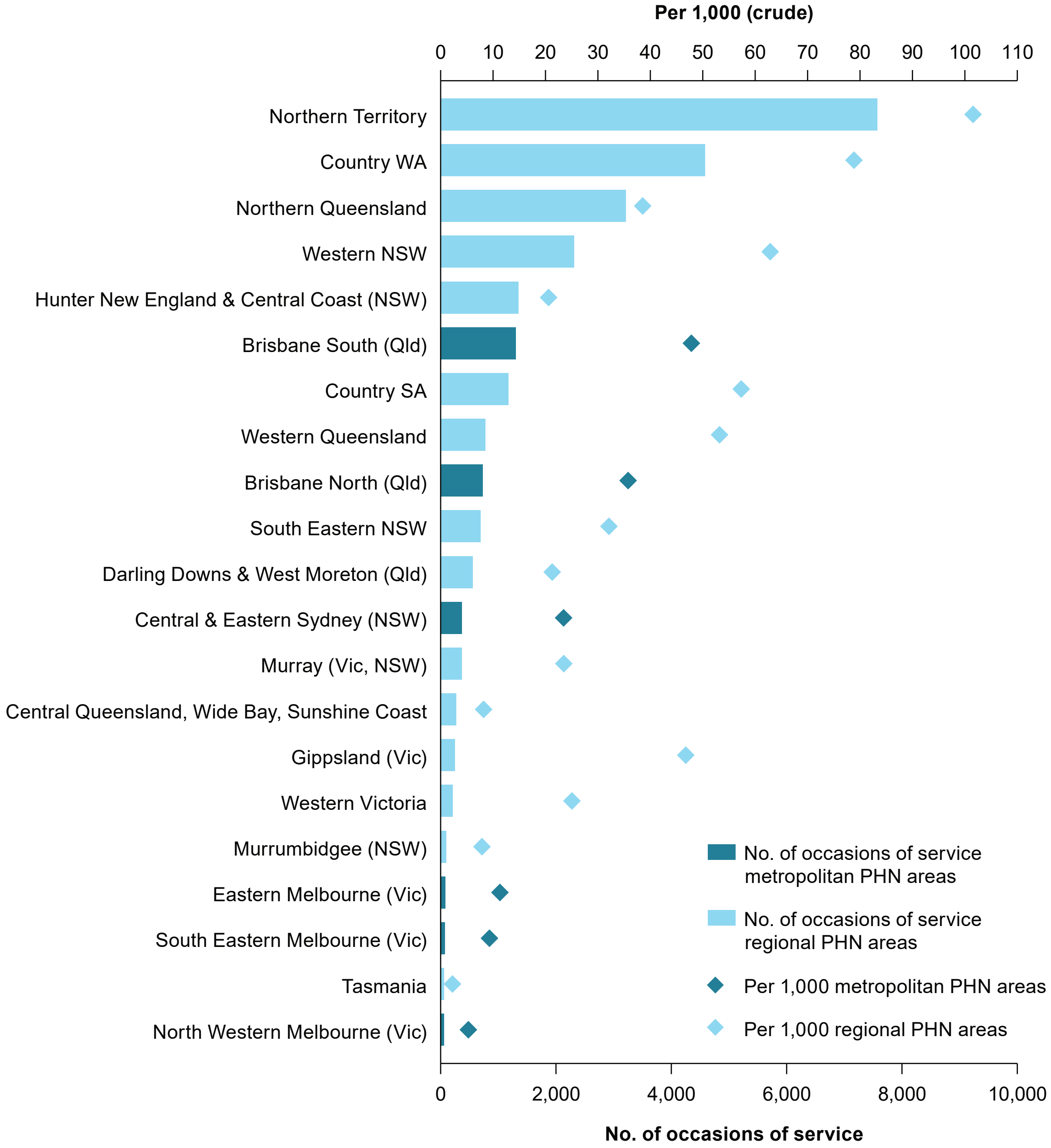
c) By jurisdiction, 2017–18

d) Indigenous, by jurisdiction, 2017–18

Note: 'Other' includes occasions of service for non-Indigenous patients and patients with 'not stated' Indigenous status.

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

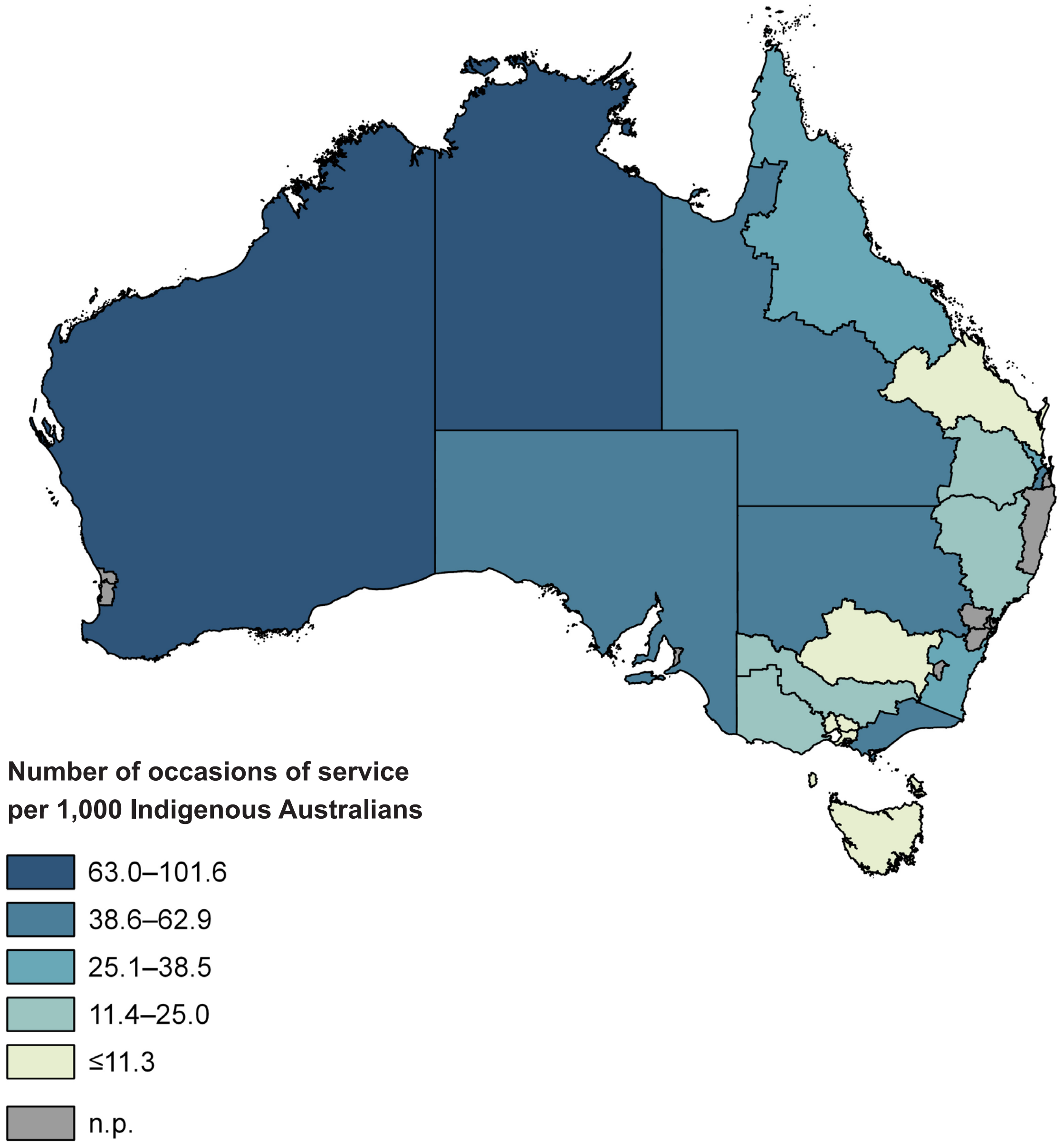
Figure 3.4.7: VOS occasions of service, by PHN, 2017–18



Note: These services are mainly provided in non-metropolitan areas so not delivered in all PHNs.

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

Map 3.4.3: VOS occasions of service for Indigenous Australians, by PHN, 2017–18



n.p. = Not published for PHNs with no VOS occasions of service.

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

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

4.4.2 Rural Health Outreach Fund (RHOF)

Overall: In 2017–18, a total of 7,821 occasions of eye health services for Indigenous patients were provided under the RHOF.

Time trend: In 2011–12, there were around 4,977 Indigenous eye health occasions of service under the RHOF. This number increased each year to reach 8,652 in 2015–16, before declining to 7,821 in 2017–18 (Figure 3.4.8a).

Remoteness: The number of Indigenous occasions of eye health services under the RHOF was highest in *Very remote* areas (3,419) and lowest in *Inner regional* areas (494). The rate was highest in *Remote* areas (38 per 1,000) followed by *Very remote* areas (36 per 1,000), and was lowest in *Inner regional* areas (2.6 per 1,000) (Figure 3.4.8b).

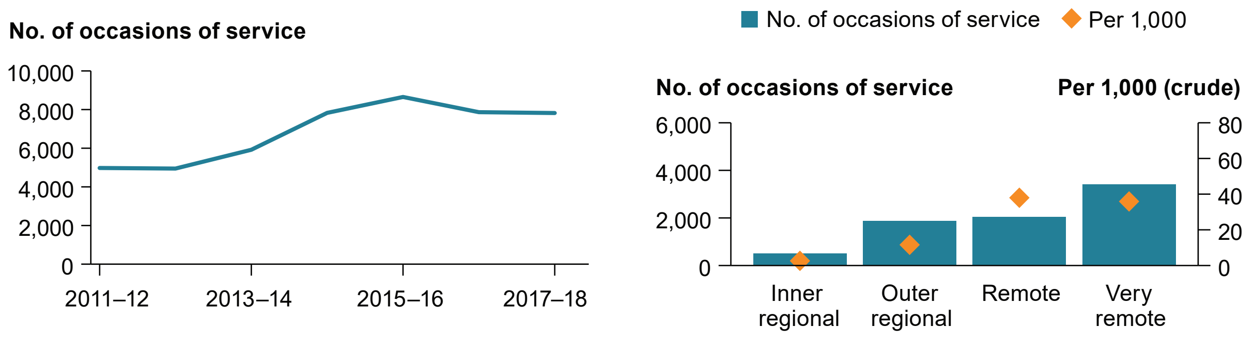
Jurisdiction: The number and rate of Indigenous eye health occasions of service under the RHOF was highest in the Northern Territory (3,248, or 44 per 1,000), followed by Western Australia (2,258, or 38 per 1,000) (Figure 3.4.8c).

PHN: The PHNs with the highest number and rate of occasions of service for Indigenous patients under the RHOF were the Northern Territory (3,248, or 44 per 1,000), followed by Country WA (1,904, or 33 per 1,000) (Figure 3.4.8d; Map 3.4.4).

Things to consider

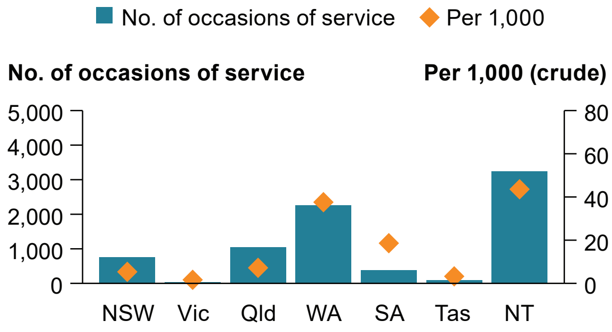
- Patients may have more than 1 occasion of service.
- Numbers reflect Indigenous RHOF patient contacts with all health professionals in relation to their eye health and include those seen by ophthalmologists, optometrists, orthoptists, retinal photographers, ophthalmic assistants, ophthalmic nurses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

Figure 3.4.8: RHOF occasions of eye health services for Indigenous Australians, by various characteristics

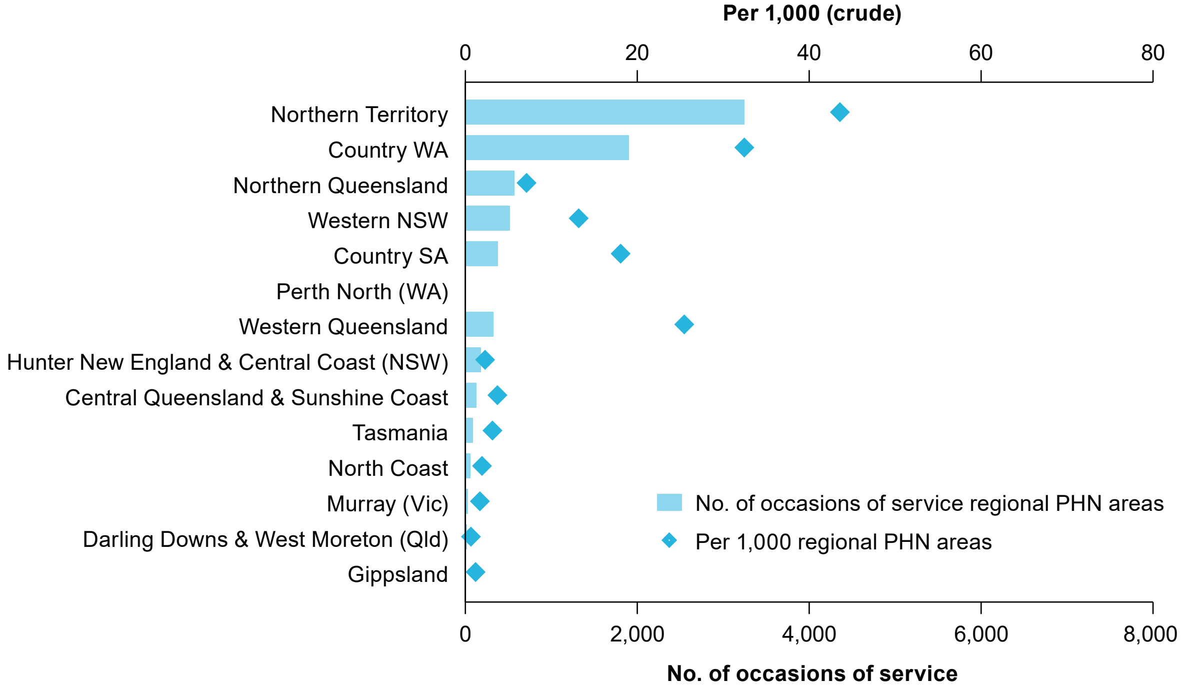


a) Time trend, 2011–12 to 2017–18

b) By region, 2017–18



c) By jurisdiction, 2017–18



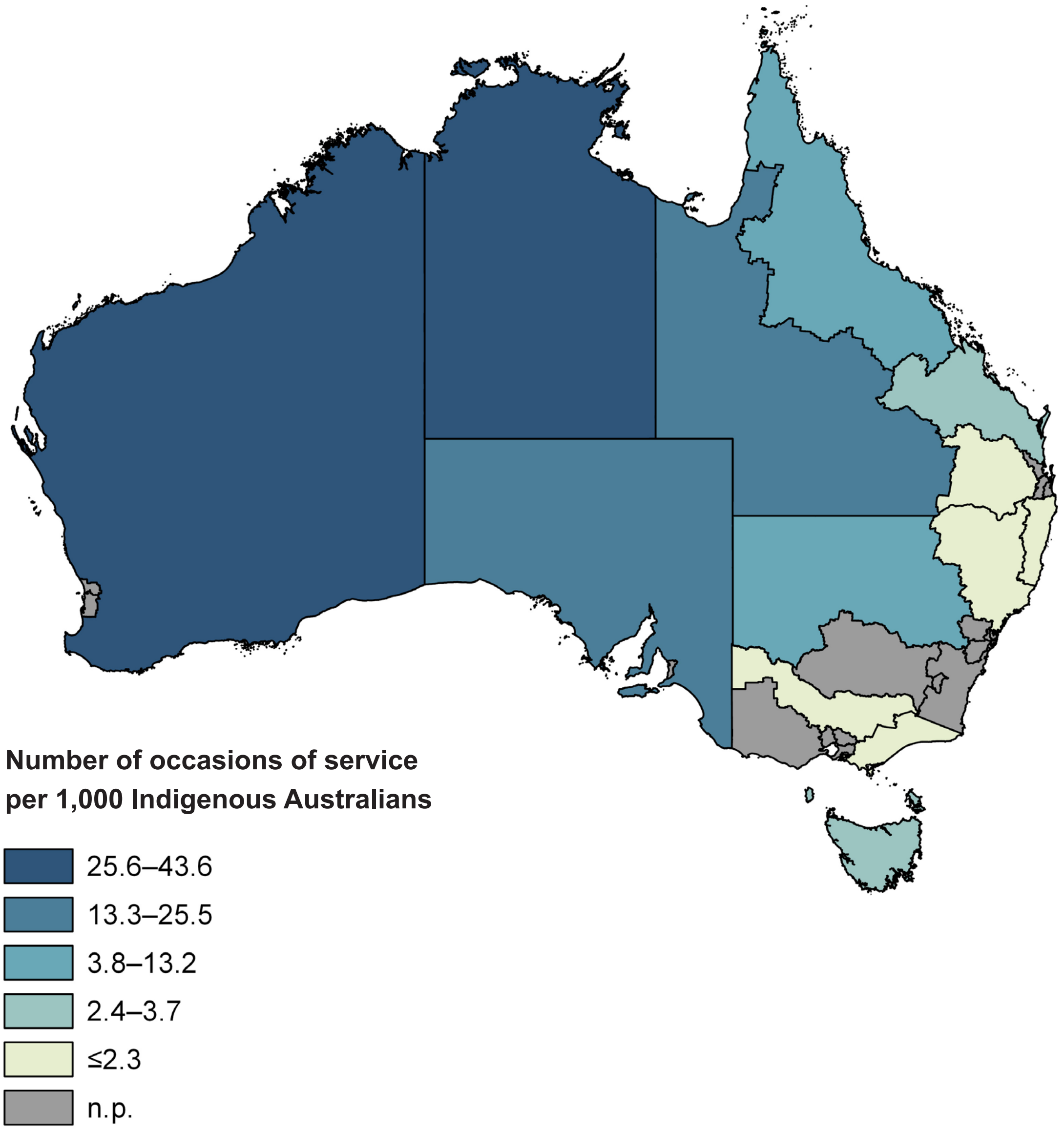
d) By PHN, 2017–18

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 supplementary tables.

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

Map 3.4.4: RHOF occasions of eye health services for Indigenous Australians, by PHN, 2017–18



n.p. = Not published for PHNs with no VOS occasions of service.

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

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

4.4.3 Medical Outreach Indigenous Chronic Disease Program (MOICDP)

Overall: In 2017–18, a total of 2,038 occasions of service for Indigenous patients were provided by eye health professionals under the MOICDP.

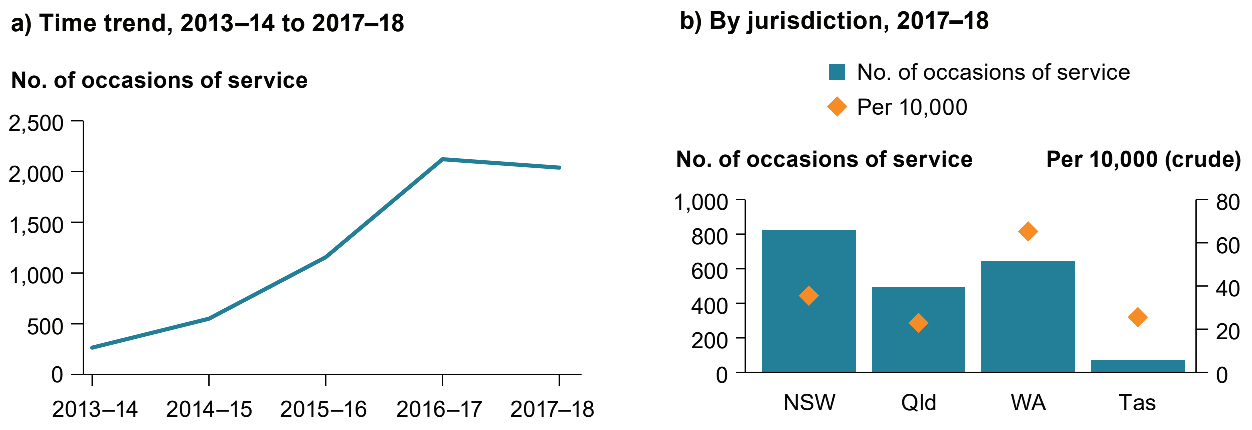
Time trend: In 2013–14, there were around 265 Indigenous occasions of services provided by health professionals in relation to eye health under the MOICDP. This number increased to 2,121 in 2016–17 and then decreased to 2,038 in 2017–18 (Figure 3.4.9a).

Jurisdiction: Services were provided to Indigenous patients in 4 jurisdictions. The highest number of Indigenous occasions of service provided by an eye health professional under the MOICDP was in New South Wales (825, or 36 per 10,000), and the highest rate of service was in Western Australia (65 per 10,000) (Figure 3.4.9b).

Things to consider

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

Figure 3.4.9: MOICDP, occasions of eye health services for Indigenous Australians, by various characteristics



Notes

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

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

Appendix A: Technical specifications

Table A1: Technical specifications for the Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
1.1	Prevalence of vision impairment and blindness	Crude rate: Numerator ÷ denominator x 100 Age-standardised rate (ASR): ASR = $\Sigma_i N_i p_i / \Sigma_i N_i$ where: p_i is the agespecific 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
			Number of participants who reported that they had an eye or sight problem	Number of participants responding to AATSIHS		AATSIHS
1.2	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 A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
	Main cause of vision impairment and blindness (continued)	Numerator ÷ denominator x 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	Prevalence of:					Trachoma Surveillance Report
	i) trachoma	Numerator ÷ denominator x 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, but data for children aged 0–14 are shown by age group	
	ii) trichiasis	Numerator ÷ denominator x 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	
2.1	Eye health problems managed by GPs	Numerator ÷ denominator x 1,000 See calculation for measure 1.1 for age-standardised rate	Number of eye health problems managed by general practitioners (International Classification of Primary Care (ICPC-2) chapter codes F01–99)	Number of encounters with GPs		BEACH

(continued)

Table A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
2.2	Annual health assessments	Numerator ÷ denominator x 100 See calculation for measure 1.1 for age-standardised rate	Number of Indigenous people who had an MBS item 715 health assessment claimed in the financial year	Indigenous population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year		MBS and ABS population data
2.3	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 and ABS population data
2.4	Proportion of the target population screened for diabetic retinopathy	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 iii) Medical practitioner MBS item 12325 or 12326	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
		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 A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
2.5	Screening coverage for:					Trachoma Surveillance Report
	i) trachoma	Numerator ÷ denominator x 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	Target age group is children aged 5–9, but data for children aged 0–14 are shown by age group	
	ii) trichiasis	Numerator ÷ denominator x 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	
2.6	Undiagnosed eye conditions	Numerator ÷ denominator x 100	Number of participants with vision impairment or blindness attributed to each main cause who self-reported 'No' or 'Unsure' to the question 'Have you ever been told by a doctor that you have the following condition?' for that condition	Number of participants with vision impairment or blindness attributed to each main cause		National Eye Health Survey
3.1	Hospitalisation rates for diseases of the eye	Numerator ÷ denominator x 1,000 (See calculation for Measure 1.1 for ASR)	Number of hospitalisations with a principal diagnosis of diseases of the eye and adnexa (International Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) codes H00–H59) and care type not 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year		NHMD and ABS population data

(continued)

Table A1 (continued): Technical specifications for 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		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		NHMD and ABS population data
3.4	Cataract surgery rate	Numerator ÷ denominator x 1,000,000 (See calculation for Measure 1.1 for ASR)	Number of hospitalisations that had a procedure related to cataract surgery (ACHI codes 42698–00 to 42698–05, 42702–00 to 42702–11, 42716–00, 42719–00, 42719–02, 42722–00, 42731–00, 42731–01, 42734–00, 42788–00) 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		NHMD and ABS population data

(continued)

Table A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.5	Cataract surgical coverage rate	Numerator ÷ denominator x 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		NEHS
3.6	Waiting times for elective cataract surgery	i) 50th and 90th percentile: The 50th percentile (median waiting time) represents the number of days within which 50% of patients were admitted for elective cataract surgery (The 90th percentile data represent the number of days within which 90% of patients were admitted for elective cataract surgery)	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’ (Based on first indicator procedure waiting time)			NHMD

(continued)

Table A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
	Waiting times for elective cataract surgery (continued)	ii) The proportion of patients: a) treated within 90 days b) treated within 365 days for elective cataract surgery: Numerator ÷ denominator x 100	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: a) less than 90 days b) within 365 days (Based on first indicator procedure waiting time)	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'		NHMD
3.7	Target population treated for diabetic retinopathy	i) Numerator ÷ denominator x 100	Number of people who had a laser eye procedure (MBS item 42809) and/or Intra-vitreal injection (MmBS items42738 and 42739), and who claimed MBS item 66551 in the financial year or year before	Number of people who claimed MBS item 66551 in the financial year or year before, and who had an eye examination in the financial year: i) MBS group A10, Optometrical Services (except items 10921–10930) and/or ii) MBS group D1 subgroup 2, Miscellaneous Diagnostic Procedures and Investigations, Ophthalmology iii) Medical practitioner MBS item 12325 or 12326		MBS
		ii) Numerator ÷ denominator x 100	Number of people who had a laser eye procedure (MBS item 42809) and/or Intra-vitreal injection (MmBS items42738 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

(continued)

Table A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.8	Trachoma and trichiasis treatment coverage					Trachoma Surveillance Report
	i) trachoma	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		
	ii) trichiasis		Number of adults aged 40 and over: a) offered ophthalmic consultation b) who had surgery in the past 12 months			
3.9	Treatment of refractory error	Numerator ÷ denominator x 100	Number of participants who reported distance spectacle or contact lens correction and had visual acuity (VA)≥6/12	Number of participants who reported distance spectacle or contact lens correction and had VA≥6/12 + participants who had refractive error as their main cause of vision impairment or blindness		National Eye Health Survey
3.10	Number and rate of glasses dispensed under state spectacle schemes	Numerator ÷ denominator x 1,000	Data are number of spectacles provided to Indigenous people	Population at the middle of the financial year, calculated from the average of the populations at 30 June, at the beginning and end of the financial year	Only 4 jurisdictions could provide data	NSW Depart of Family & Community Services; Australian College of Optometry Victorian; Queensland Health, SA Dept of Human Services and ABS population data

(continued)

Table A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
4.1	Number and rate of optometrists	Number	Number of registered optometrists employed in Australia working in registered profession			NHWDS and ABS population data
		FTE rate: Numerator ÷ denominator x 100,000	FTE of registered optometrists employed in Australia working in registered profession	Population at 30 June	FTE based on a 38-hour work week	
4.2	Number and rate of ophthalmologists	Number	Number of registered ophthalmologists employed in Australia working in registered profession			NHWDS and ABS population data
		FTE rate: Numerator ÷ denominator x 100,000	FTE of registered ophthalmologists employed in Australia working in registered profession	Population at 30 June	FTE based on a 40-hour work week	
4.3	Number and rate of allied ophthalmic personnel	Number	Number of allied ophthalmic personnel employed in the workforce			Census; professional associations and employer organisations; and ABS population data
		FTE rate: Numerator ÷ denominator x 100,000	FTE of allied ophthalmic personnel employed in the workforce	Population at 30 June	FTE based on a 38-hour work week	

(continued)

Table A1 (continued): Technical specifications for Indigenous eye health measures

Measure	Description	Calculation	Numerator	Denominator	Notes and definitions	Data sources
4.4	Occasions of eye health services provided under outreach programs	Crude rate: Numerator ÷ denominator x 1,000	The number of Indigenous people seen by eye health professionals under the: a) VOS b) RHOF c) 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 (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

Appendix B: Data sources

ABS population data

ABS estimates of the population, based on the 2016 Census were used to calculate the most recent rates reported (generally 2017–18) (ABS 2018). For trends data, however, the rates were based on ABS population projections from the 2011 Census, for both Indigenous Australians (ABS 2014) and non-Indigenous Australians (ABS 2017).

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

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

The Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) 2012–13 was conducted by the Australian Bureau of Statistics (ABS) to report on the health of Aboriginal and Torres Strait Islander peoples in Australia. It provides information on long-term health conditions: health risk factors: selected social and emotional wellbeing indicators: health measurements: and health related actions for Indigenous Australians.

The AATSIHS forms part of the broader Australian Health Survey and is based on a nationally representative sample of around 12,900 Aboriginal and Torres Strait Islander people across the nation. It was conducted in remote and non-remote areas throughout Australia.

The AATSIHS is made up of three components:

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

Australian Trachoma Surveillance reports (ATSR)

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

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

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

The revised guidelines state that not all 'at-risk' communities are required to screen for trachoma each year, as prevalence levels don't vary greatly from year to year. Instead, if trachoma is present in the community, communities are to focus their efforts on treatment. The frequency of screening recommended varies according to the prevalence and spread of active trachoma in the community. For example, where prevalence is over 20% it is recommended that screening be undertaken every 3 years, but where it is between 5% and 20%, it should be undertaken each year (CNDA 2014).

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

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

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

Bettering the Evaluation and Care of Health survey

The BEACH survey collects information about encounters with general practitioners (GPs), including GP and patient characteristics; patient reasons for the visit; problems managed; and treatments provided. Information is collected from a random sample of approximately 1,000 GPs from across Australia each year. Each participating GP provides details of 100 consecutive patient encounters. The survey has now been discontinued so no new data are available.

Although the questionnaire contained an Indigenous identifier, it is unknown whether all GPs ask their patients this question. In a sub-study of approximately 9,000 patients, Supplementary Analysis of Nominated Data, it was found that if the question on Indigenous status was asked within the context of a series of questions about origin and cultural background, 1.3% identified as Aboriginal and Torres Strait Islander. This is twice the rate routinely recorded in BEACH, indicating that BEACH may underestimate the number of encounters by GPs with Indigenous Australians (AIHW 2015a).

Medicare Benefits Schedule data

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

The MBS data presented in this report were provided by the Department of Health, with the AIHW further analysing those data (for example, deriving rates).

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

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

Indigenous identification

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

As at March 2016, an estimated 65% of the Indigenous population had identified as being of Aboriginal and/or Torres Strait Islander origin through the VII process. VII coverage varies by age group and state and territory. The MBS data presented in this report have been adjusted for under-identification, except for data on MBS item 715 health assessments and the new items 12325 and 12326 for diabetic retinopathy screening, which are Indigenous specific.

National Eye Health Survey

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

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

Comparative 2008 data are from the National Indigenous Eye Health survey conducted by the Indigenous Eye Health Unit at the University of Melbourne, in collaboration with the Centre for Eye Research Australia and the Vision Cooperative Research Centre. This survey used a multistaged random-cluster sample, selected after consultation with the ABS using data from the 2006 Census. Thirty clusters containing 300–400 people were selected. In each cluster, all children aged 5–15 and all adults over 40 were examined. Standardised demographic data were collected, and a standardised eye examination was done on all participants. Overall, 1,694 children aged 5 to 15 (84% of those eligible) and 1,189 adults aged 40 and above (72% of those eligible) were examined (AIHW 2015a).

National Health Workforce Data Set

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

National Hospital Morbidity Database

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

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

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

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

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

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

Indigenous identification

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

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

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

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Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACHI	Australian Classification of Health Interventions
AHPRA	Australian Health Practitioner Regulation Agency
AIHW	Australian Institute of Health and Welfare
AR-DRG	Australian Refined Diagnosis Related Groups
ASR	age-standardised rate
ATSR	Australian Trachoma Surveillance reports
BEACH	Bettering the Evaluation and Care of Health
CDNA	Communicable Diseases Network Australia
CI	confidence interval
DoH	Department of Health
FTE	full-time equivalent
GP	general practitioner
HPF	Aboriginal and Torres Strait Islander Health Performance Framework
ICD-10-AM	International Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification
ICPC-2	International Classification of Primary Care-2
IEHU	Indigenous Eye Health Unit
IPNF	Implementation Plan under the National Framework for Action to Promote Eye Health and Prevent Avoidable Blindness and Vision Loss
MBS	Medicare Benefits Schedule
MOICDP	Medical Outreach Indigenous Chronic Disease Program
MSOAP	Medical Specialist Outreach Assistance Program
NEHS	National Eye Health Survey
NHMD	National Hospital Morbidity Database
NHMRC	National Health and Medical Research Council
NHWDS	National Health Workforce Data Set
NSW	New South Wales
NT	Northern Territory
NTSRU	National Trachoma Surveillance and Reporting Unit

OES	Outback Eye Service
PHN	Primary Health Network
Qld	Queensland
RHOF	Rural Health Outreach Fund
SA	South Australia
SAFE	surgery, antibiotics, facial cleanliness and environmental improvement
VA	visual acuity
Vic	Victoria
VII	Voluntary Indigenous Identifier
VOS	Visiting Optometrists Scheme
WA	Western Australia
WHO	World Health Organization

Symbols

—	nil or rounded to zero
. .	not applicable
n.a.	not available
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data
<	less than
≥	greater than or equal to

Glossary

Aboriginal and Torres Strait Islander: People who identified themselves, or were identified by another household member, as being of Aboriginal and/or Torres Strait Islander origin. See also **Indigenous**.

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.

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.

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

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

other Australians: Includes people who did not identify as being of Aboriginal and/or Torres Strait Islander origin, and people for whom information on their Indigenous status was not available. Compare with **non-Indigenous**.

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

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

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

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

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

separation: See **hospitalisation.**

Vision loss: Vision impairment plus blindness.

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

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This is the third annual report on the Indigenous eye health measures. The measures cover the prevalence of eye health conditions, diagnosis and treatment services, the eye health workforce and outreach services. The report examines differences between Indigenous and non-Indigenous Australians, as well as differences by factors such as age, sex, remoteness, jurisdiction and lower level geographies. The report provides an evidence base for monitoring changes in Indigenous eye health over time, access to and use of eye health services, and for identifying gaps in service delivery.

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