Eye health

Web report | Last updated: **11 Feb 2021** | Author: **AIHW** |

Citation

AIHW

Australian Institute of Health and Welfare 2021. Eye health. Cat. no. PHE 260. Canberra: AIHW. Viewed 11 February 2021, https://www.aihw.gov.au/reports/eye-health/eye-health

Visual impairment is the partial or full loss of sight in one or both eyes. Visual impairment may be the result of disease or injury, may progress over time, and may be permanent or corrected with visual aids (such as glasses) or with surgery.

Cat. no: PHE 260

Findings from this report:

- In 2017–18, long-term vision disorders affected 93% of people aged 65 and over
- Over 13 million Australians had one or more chronic (long-term) eye conditions in 2017–18
- About 411,000 Australians (1.7% of the population) had cataract and 244,000 (1.0%) had macular degeneration in 2017–18
- Females (59%) experienced a higher prevalence of long-term vision disorders than males (51%) in 2017–18

Last updated 21/01/2021 v15.0

How common is visual impairment?

On this page

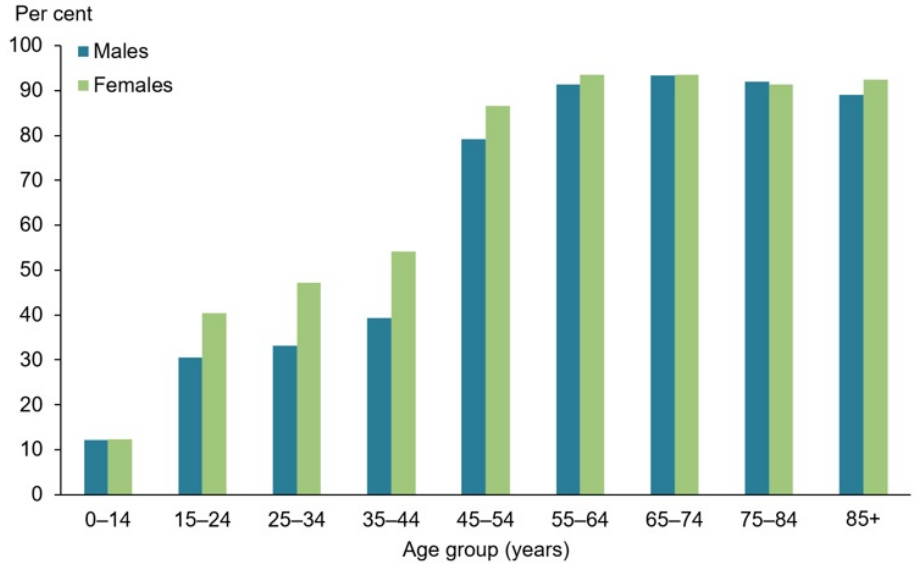
It is estimated that over 13 million Australians have one or more chronic (long-term) eye conditions, according to self-reported data from the Australian Bureau of Statistics (ABS) 2017–18 National Health Survey (NHS). This includes:

- 7.2 million with **hyperopia** (long-sightedness)
- 6.3 million with **myopia** (short-sightedness)
- 1.4 million with **astigmatism**
- 687,000 with **presbyopia** (loss of focusing ability with age)
- 549,000 with **colour blindness**
- 411,000 with **cataract**
- 244,000 with **macular degeneration**
- 131,000 with **blindness** (complete and partial).

For eye health definitions see the eye health glossary. Note that there are limitations to self-reported eye problems. For more information, see Livingston et. al (1998).

Chronic eye conditions vary in their presentation, treatment and consequences, but almost all are more common in older people. In 2017–18, chronic eye conditions affected 93% of people aged 65 and over, compared with only 12% among people aged 0–14 (Figure 1). Females experience a higher prevalence of chronic eye conditions than males (59% and 51% respectively) (ABS 2018).

Figure 1: Prevalence of self-reported chronic eye conditions[(a)] by age and sex, 2017–18

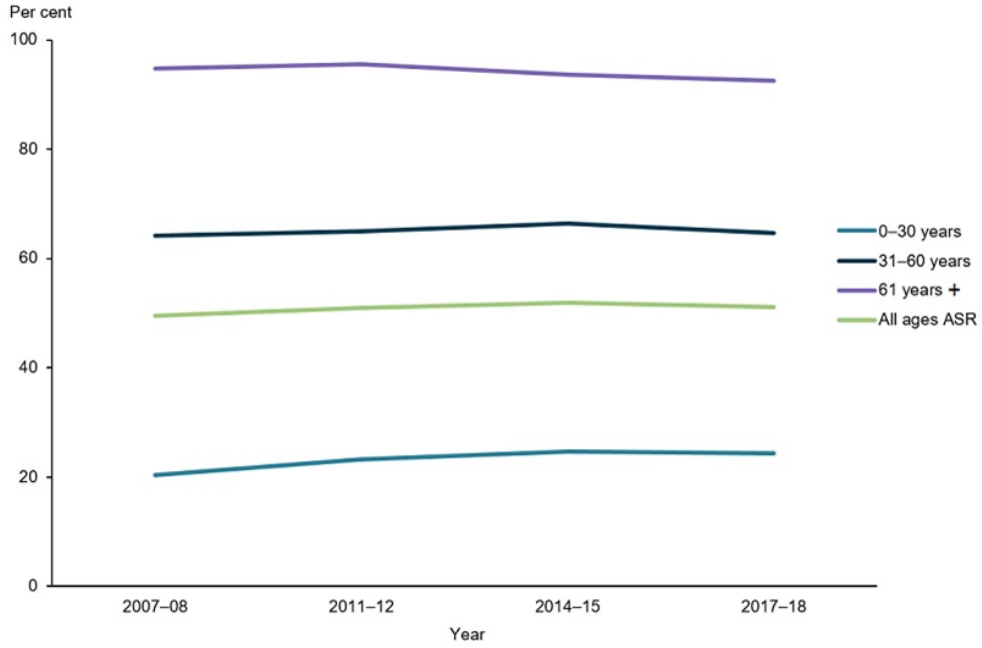


(a) Includes colour blindness, hyperopia, myopia, astigmatism, presbyopia, other disorders of ocular muscles, cataract, macular degeneration, other disorders of the choroid and retina, glaucoma, partial and complete blindness in one or both eyes, other visual disturbances or loss of vision, other diseases of eye and ocular adnexa.

Source: ABS 2019a (Table 1.1).

From 2007–08 to 2017–18, prevalence of self-reported chronic eye conditions increased for 0 to 30 year olds (from 20% to 24%), and decreased for those aged 61 years and above (95% to 93%). The prevalence overall remained steady at about 50%, after adjusting for age (Figure 2).

Figure 2: Prevalence of self-reported chronic eye conditions[(a)], by age group, 2007-08 to 2017-18



(a) Includes hyperopia, myopia, astigmatism, presbyopia, other disorders of ocular muscles, cataract, macular degeneration, other disorders of the choroid and retina, glaucoma, partial and complete blindness in one or both eyes, other visual disturbances or loss of vision, other diseases of eye and ocular adnexa.

Note: Age-standardised to the 2001 Australian standard population.

Source: ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.2).

Types of vision disorders

Refractive error

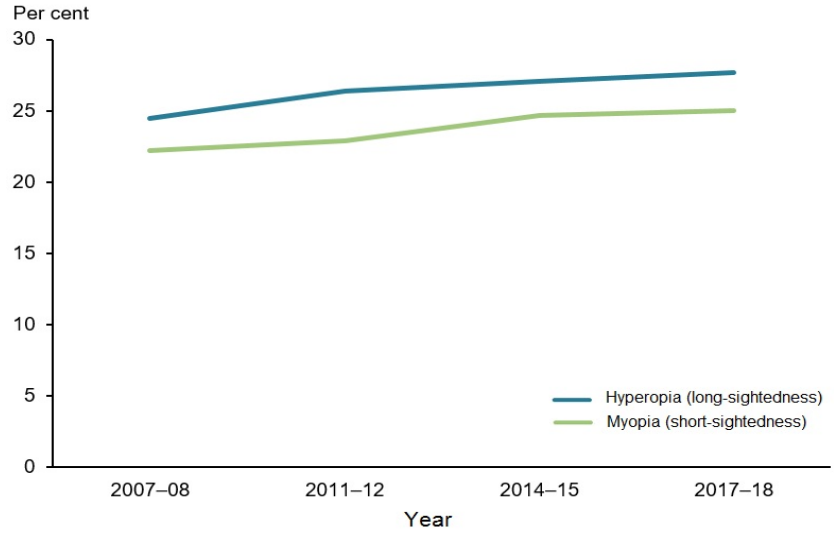
Refractive error refers to a group of common eye conditions where the eye cannot clearly focus, causing blurred vision. Corrective glasses or contact lenses can generally remedy refractive error (CERA, 2014a).

These conditions include:

- **myopia** (or short-sightedness), when someone has trouble seeing in the distance
- **hyperopia** (or long-sightedness), when someone has trouble seeing both up close and in the distance
- **astigmatism**, distorted vision due to irregular curvature of the eye's front surface
- **presbyopia**, when someone has trouble seeing up close due to reduced focussing ability of the lens with age (CERA, 2014a).

Between 2007–08 and 2017–18, there was a slight increase in the prevalence of both long-sightedness (from 25% to 28%) and short-sightedness (from 22% to 25%), after adjusting for age (Figure 3).

Figure 3: Prevalence of refractive error from 2007-08 to 2017-18



Note: Age-standardised to the 2001 Australian standard population.

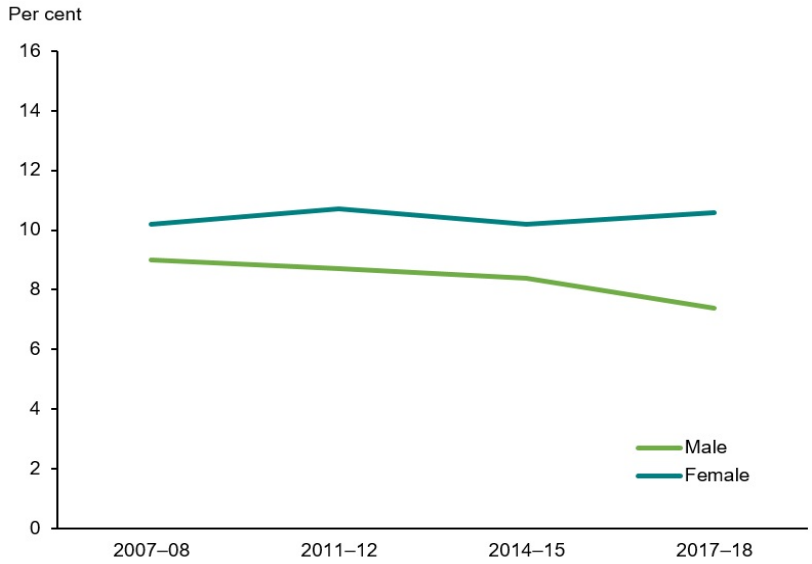
Source: ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.3).

Cataract

Cataract is a clouding of the lens inside the eye (NEI, 2019). It is a condition that mostly occurs gradually with age, though there are congenital types and some acute forms due to ocular trauma or systemic disease. Left unmanaged it can lead to vision loss and blindness. In most cases cataract is treated through surgical removal of the cloudy lens, and insertion of a clear synthetic lens (NEI, 2019). See *Treatment and Management*.

Based on results from the National Health Survey (NHS), prevalence of cataract among Australians aged 65 and older has not changed significantly between 2007–08 (9.0% males and 10.2% females) and 2017–18 (7.4% males and 10.6% females) (Figure 4).

Figure 4: Prevalence of cataract in adults aged 65 and over by sex, 2007-08 to 2017-18



Source: ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.4).

Macular degeneration

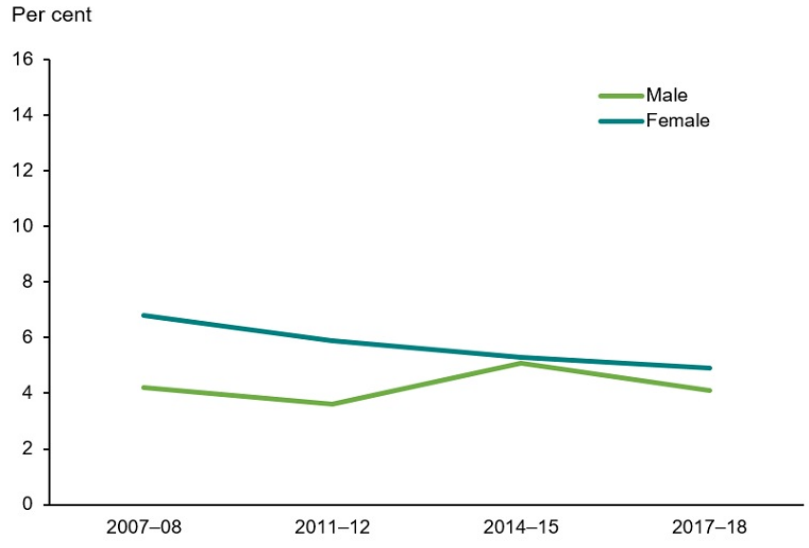
The **macula** is the part of the eye responsible for central vision. Tasks such as reading, recognising faces and driving all rely on macular function. Macular degeneration is a disease that slowly degrades the macula, leading to vision loss and sometimes blindness (MDFA 2020, CERA 2014b). In Australia, it is the leading cause of blindness in those aged 65 and over (Foreman et al. 2016).

There are two forms of macular degeneration:

- **dry macular degeneration**, there is currently no treatment (HMS 2013).
- **wet macular degeneration**, the more serious form of the disease characterised by growth of new leaky blood vessels at the macula (HMS 2013). It leads to severe vision loss and blindness, and is most commonly managed via eye injections (CERA 2014a). See *Treatment and Management*.

Among Australians aged 65 and over, prevalence has remained stable from 2007–08 to 2017–18 (between 3.6 and 5.1% in males, 6.8% and 4.9% in females) (Figure 5).

Figure 5: Prevalence of macular degeneration in people aged 65 and over by sex, 2007-08 to 2017-18



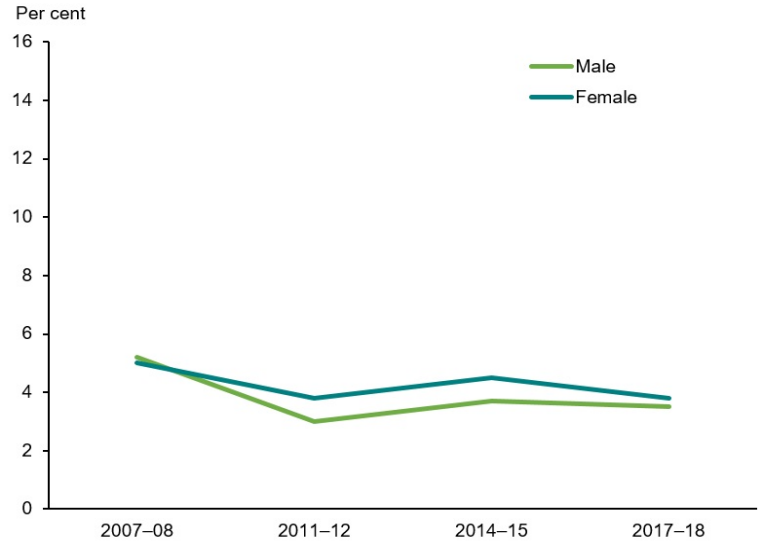
Source: AIHW analysis of ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.5).

Glaucoma

In **glaucoma**, high pressure inside the eye damages the optic nerve. The optic nerve transmits signals from the eye to brain (Glaucoma Australia 2020a). Glaucoma can occur at any stage of life, though risk increases above age 50 (Glaucoma Australia 2020b). Left unmanaged, it can lead to vision loss and blindness (Glaucoma Australia 2020a). However, early detection and treatment often prevents or halts this.

Among Australians aged 65 and over, prevalence has remained stable in both males (from 5.2% to 3.5%) and females (from 5.0% to 3.8%) between 2007–08 and 2017–18 (Figure 6).

Figure 6: Prevalence of glaucoma in people aged 65 and over by sex, 2007-08 to 2017-18



Source: ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.6).

Diabetic retinopathy

Diabetes is a chronic disease characterised by high levels of blood glucose, caused by an inability to produce or effectively use insulin, a hormone for blood glucose control. In 2017–18, about 1.2 million (6.2%) Australian adults aged 18 and over had diabetes (ABS 2018).

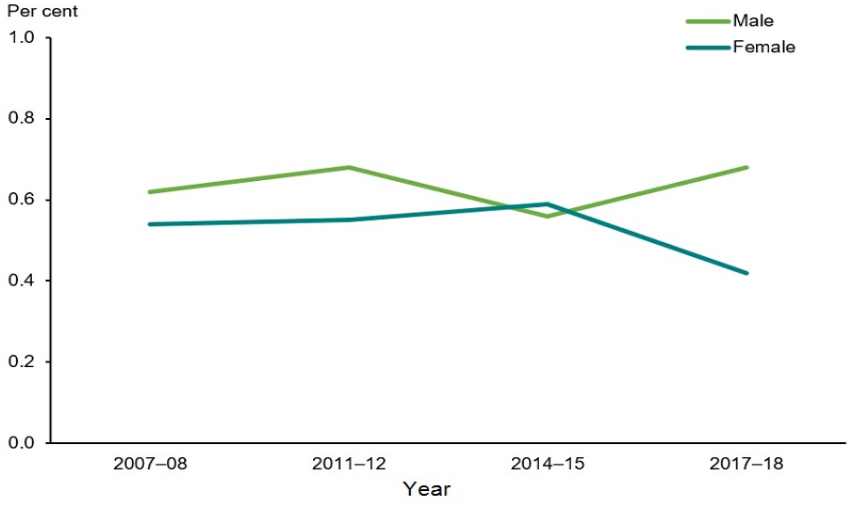
Diabetic retinopathy causes small blood vessels in the eye to leak and bleed. By the twentieth year after a diabetes diagnosis, the disease affects almost everybody with **Type 1 diabetes** and more than 60% of people with **Type 2 diabetes** (Lee et al. 2015). Left untreated, the condition can cause blindness. However, most cases can be successfully managed with **laser therapy**. See *Treatment and Management*.

In the 2016 National Eye Health Survey, 53% of Indigenous Australians (aged 40 and over) and 78% of non-Indigenous Australians (aged 50 and over) with self-reported diabetes reported having a diabetes eye examination within the last year and last two years respectively, the period recommended in the National Health and Medical Research Council Guidelines (Foreman et al. 2016).

Low Vision and blindness

Based on results from the National Health Survey (NHS) conducted by the ABS, the prevalence of self-reported total or partial blindness in one or both eyes in Australia remained stable between 0.6%–0.7% in males and 0.4–0.6% in females from 2007–08 to 2017–18 (Figure 7). Although permanent vision loss or blindness impair an individual's ability to read, move around in the world and other common tasks, services are available to support patients and help them maintain their usual activities of daily living where possible. See *Treatment and Management*.

Figure 7: Prevalence of total or partial blindness in one or both eyes by sex, from 2007-08 to 2017-18



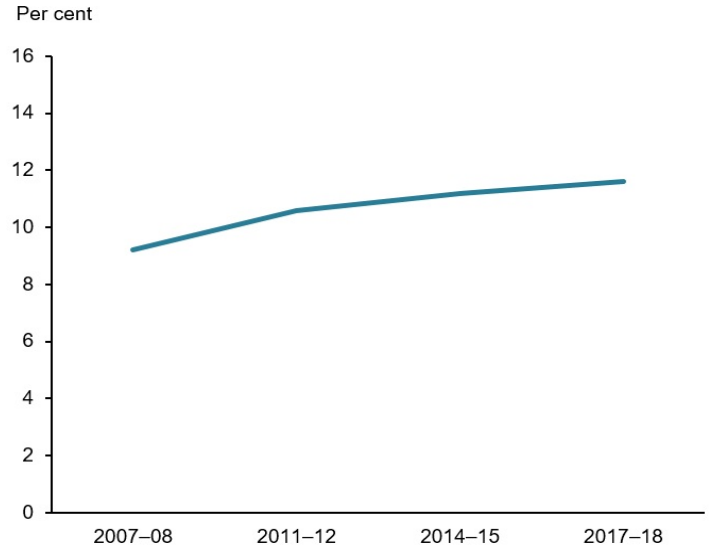
Note: Blindness is a rare condition, rates have not been age-standardised.

Source: ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.7).

Paediatric eye disease

Vision disorders affect people of all ages, including children. Based on results from the National Health Survey (NHS), the self-reported prevalence of chronic eye conditions in children aged 0–14 in Australia increased from 2007–08 (9.2%) to 2017–18 (12%) (Figure 8).

Figure 8: Prevalence of chronic eye conditions[(a)] in children aged 0–14, from 2007–08 to 2017–18

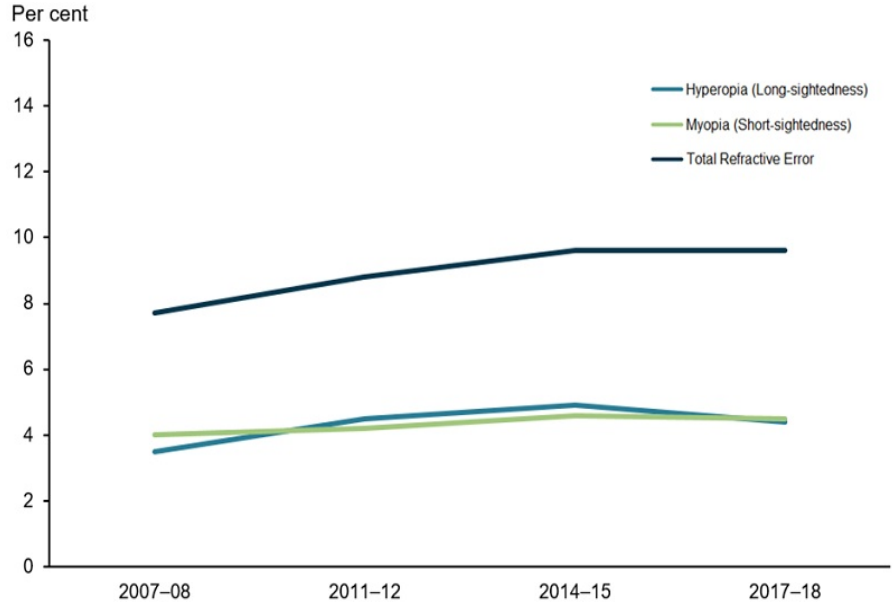


(a) Includes hyperopia, myopia, astigmatism, presbyopia, other disorders of ocular muscles, cataract, other disorders of the choroid and retina, glaucoma, partial and complete blindness in one or both eyes, other visual disturbances or loss of vision, other diseases of eye and ocular adnexa.

Source: ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.8).

Reported prevalence of refractive error increased from 7.7% in 2007–08 to 9.6% in 2017–18 among children aged 0–14 (Figure 9). Refractive error accounts for the majority of chronic paediatric eye conditions. Globally, the increasing prevalence of myopia in children—as high as 60–90% in some Asian countries—concerns health experts, as the condition increases the risk of sight-threatening eye diseases in adulthood, and often progresses with time (Dolgin 2015, Holden et al. 2015, Theophanous et al. 2018). However, according to the NHS results, prevalence of myopia among children aged 0–14 has remained steady at about 4.5% in Australia (Figure 9).

Figure 9: Prevalence of refractive error in children aged 0–14, 2007–08 to 2017–18



Source: ABS 2009, ABS 2013, ABS 2016, ABS 2019a (Table 1.9).

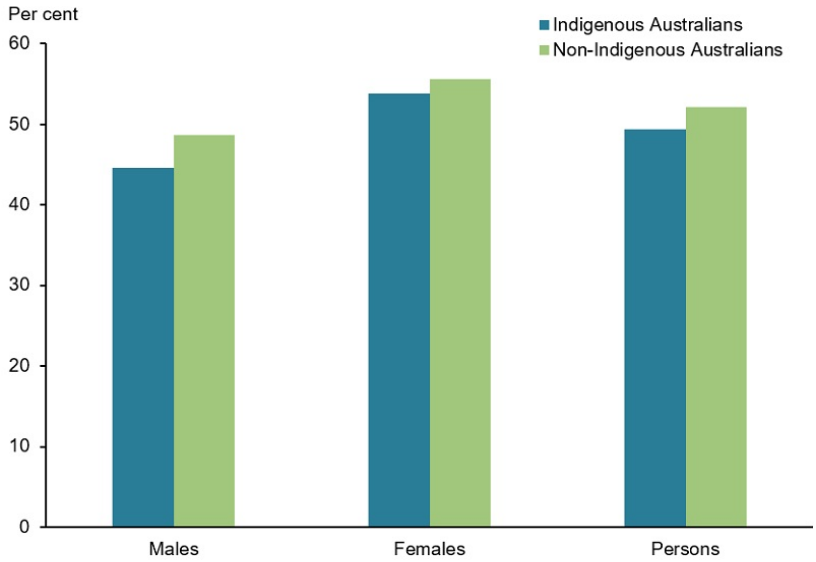
Aboriginal and Torres Strait Islander people

According to self-reported data from the ABS 2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), the prevalence of self-reported eye or sight problems among Aboriginal and Torres Strait Islander people was 38%, affecting about 307,000 people—including about 44,100 who live in *Remote* areas (30% of the remote Indigenous population).

After adjusting for age, females (54%) had higher rates of self-reported eye or sight problems than males (45%). The proportion of Indigenous Australians (49%) and non-Indigenous Australians (52%) with eye or sight problems was similar, after adjusting for age (Figure 10).

According to the National Eye Health Survey (NEHS), an estimated 15,000 Aboriginal and Torres Strait Islander people aged 40 and over experienced vision impairment and blindness in 2016. The leading causes of vision impairment were uncorrected refractive error (61%), cataract (20%) and diabetic retinopathy (5.2%) (AIHW 2020, Foreman et al. 2017).

Figure 10: Prevalence of self-reported chronic eye conditions[(a)] by Indigenous status, 2017–18 and 2018–19



(a) Includes cataract, glaucoma, disorders of the choroid and retina, disorders of the ocular muscles, binocular movement, accommodation and refraction, visual disturbances and blindness, and other diseases of the eye and adnexa.

Note: Age-standardised to the 2001 Australian standard population.

Source: ABS 2019b (Table 1.10).

In addition to the aforementioned conditions, **trachoma**—an infectious eye disease that is easily prevented but can lead to blindness if left untreated—is still present in many Indigenous communities in remote Australia (DOH 2014). Australia remains the only high-income country in the world where the disease is still commonly found (Kirby Institute 2017). However, health promotion programs focusing on good face hygiene, which helps prevent spread of the disease, have been in place over the last 15 years and screening outcomes have shown optimistic trends (Razavi et al. 2018). Prevalence of active trachoma among those aged 5 to 9 years in at-risk communities has declined from 15% in 2009 to 4.5% in 2019 (AIHW 2020).

For more information, see Indigenous eye health measures 2020.

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Last updated 3/02/2021 v27.0

Treatment and management

On this page

Treatment for vision disorders involves a wide range of health services including primary care and specialist care.

Primary care

Primary care services, provided by **general practitioners (GPs)** and **optometrists**, involve the initial diagnosis and treatment of the condition, referrals, and the provision of continuing monitoring and care.

In 2015–16, eye disorders accounted for 1.9% of Australian GP consultations (Britt et al. 2016), while in 2019–20, there were 9.2 million Medicare Benefits Schedule (MBS) subsidised claims for optometrist consultations for 7.0 million individuals (DOH 2020a).

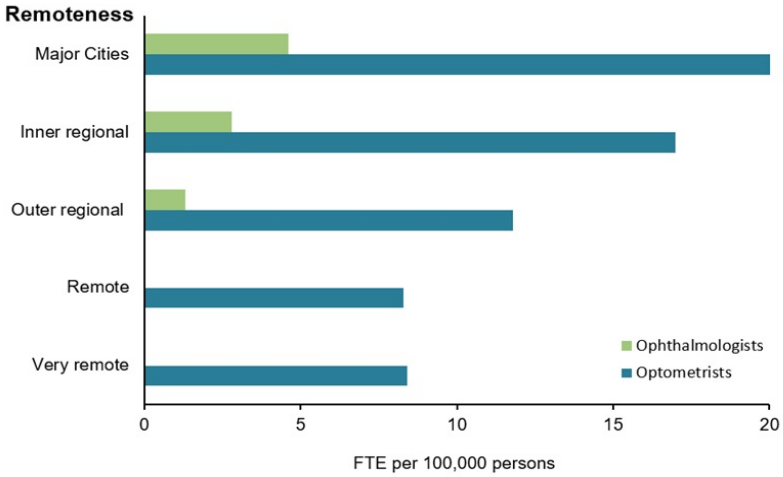
Specialist care

Ophthalmologists are medical doctors and surgeons who are specialised in the eye (RANZCO 2018a, 2019). In 2018–19, there were just over 1 million MBS-subsidised claims for surgical operations by an ophthalmologist (DHS 2019). Public patients treated in a public hospital are not included in this number. See *Hospitalisations* below.

Access to care

There were around 1,000 full-time equivalent (FTE) ophthalmologists and 4,800 FTE optometrists employed in Australia in 2019, or 4 FTE ophthalmologists and 19 FTE optometrists per 100,000 population. *Major cities* had the highest number and rate of employed eye-care providers, and workforce supply reduced with increasing remoteness (Figure 1).

Figure 1: Full-time equivalent (FTE) rate of eye-care providers, by remoteness area, 2019



Notes:

1. There were insufficient numbers of ophthalmologists to calculate rates in *Remote* and *Very remote* areas.

2. Data are based on optometrists and ophthalmologists employed in Australia and working in their registered profession.

3. FTE per 100,000 population is based on a 38-hour work week for optometrists and 40-hour work week for ophthalmologists. Population by remoteness area is derived from the total Estimated Resident Population for 2019 from the ABS, catalogue number 3218.0 Regional Population Growth, Australia, Table 1 Estimated Residential Population, Remoteness Areas, Australia, released March 2020.

Source: AIHW analysis of National Health Workforce Dataset (DOH 2020b) (Table 2.1)

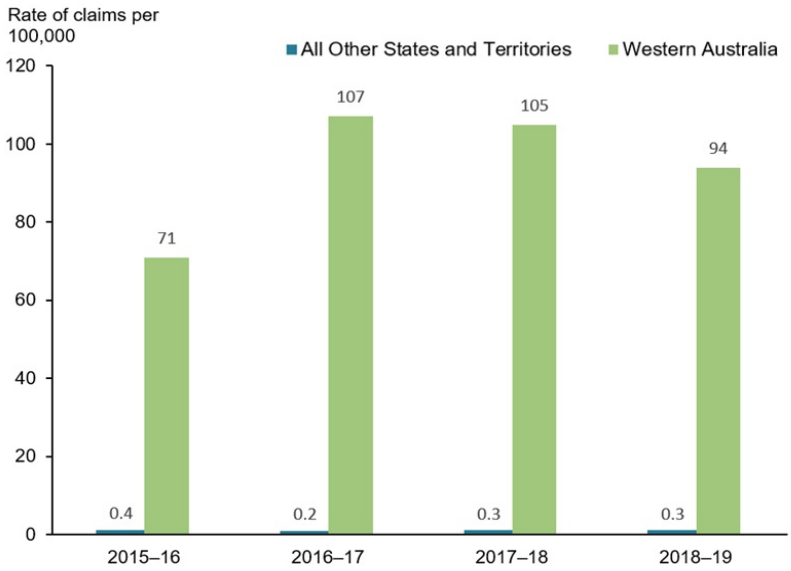
Telehealth is the use of information and communication technologies, such as videoconferencing, to deliver health services and transmit health information (DoH 2015). Benefits of telehealth services include:

- Increasing access to health services for people living in regional, rural and remote areas
- Reducing health related transport needs
- Increasing health services in an area with minimal increased cost
- Potentially reducing unnecessary hospitalisations (DoH 2014).

Recognising that telehealth removes some of the barriers to accessing medical services for Australians who have difficulty getting to a specialist, certain telehealth services are subsidised by Medicare (Services Australia 2020). Since 2015, residents in areas outside a major city living more than 15km from specialist eye care services have been eligible for optometrist facilitated telehealth consultations with an ophthalmologist under the MBS.

Almost all Medicare claims for telehealth ophthalmology services come from Western Australia (WA) (Figure 2). WA is the largest state in Australia by geographical area, most of which is rural and remote beyond the greater Perth metropolitan area. In some parts of remote WA, eye specialist coverage is almost twenty times lower than in a major city (Turner et al 2014). Telehealth ophthalmology services, spearheaded by the not-for-profit group Lions Outback Vision, have been promoted in response to this challenge. Out of almost 7,400 patient consultations conducted by Lions Outback Vision in 2017, more than 1,500 were managed by telehealth (RANZCO 2018b).

Figure 2: Eye health telehealth consultations in areas outside a major city, 2015-16 to 2017-18



Notes:

1. Billed under MBS item numbers 10945 or 10946.

2. MBS items 10945 and 10946 have been available since 1 September 2015. They are eligible to be claimed by optometrists when they present together with a patient, while participating in a video conferencing consultation with a specialist practising in ophthalomology. The patient must be located in a telehealth eligible area and at least 15km by road from the specialist, or be a patient of an Aboriginal Community Controlled Health Service or Aboriginal Medical Service. For more information, see footnotes to Table 2.2.

Source: DHS 2019b (Table 2.2).

Screening and assessment

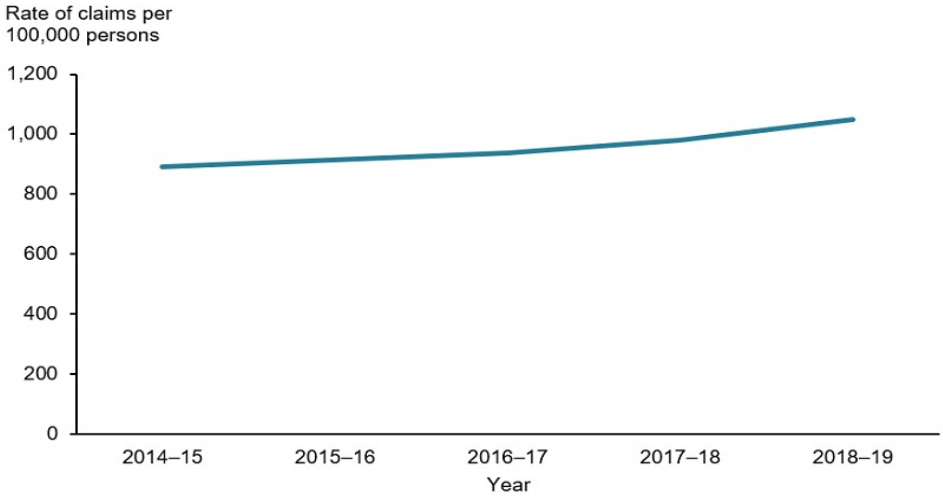
Because eye conditions can occur at any age, everyone should have their eyes tested regularly for early detection of disease. An MBS-subsidised full comprehensive eye test with an optometrist is available once every three years for anyone under 65, and annually for anyone aged 65 and over.

However, those with a family history of eye conditions, who have chronic conditions such as diabetes or high blood pressure, or who take certain medications which increase their risk of eye disease should be reviewed more often (Vision 2020 Australia 2020).

Diabetes

National Health and Medical Research Council guidelines recommend that all Aboriginal and Torres Strait Islander people with diabetes should have their eye health checked by an optometrist or ophthalmologist annually, while non-Indigenous Australians with diabetes should do so at least every 2 years (Mitchell et al. 2008). The rate of **dilated eye examinations** for diabetic ocular health checks with optometrists has increased consistently over the last 5 years from 890 per 100,000 people in 2014–15 to 1,050 per 100,000 people in 2018–19 (Figure 3). Over the same timeframe, the estimated percentage of people in Australia with diabetes has remained similar, at 5.1% (age-standardised 4.7%) in 2014–15 and 4.9% (age-standardised 4.3%) in 2017–18 based on results from the National Health Survey (ABS 2018).

Figure 3: Dilated eye examinations for diabetes, 2014-15 to 2018-19



Note: Billed under MBS item number 10915.

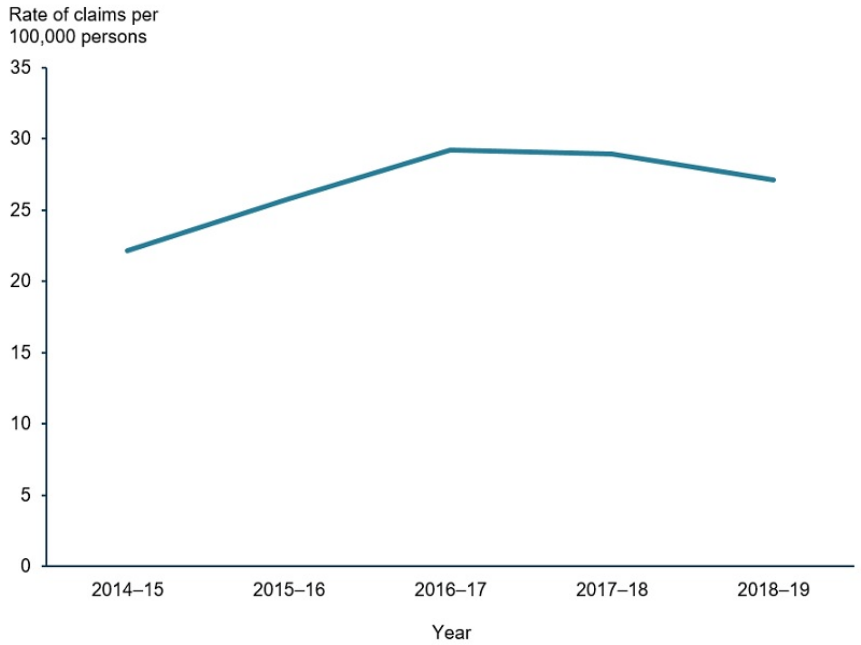
Source: DHS 2019a (Table 2.3).

Low vision assessment

Primary and specialist eye care providers can refer patients with low vision or blindness to low vision services. This includes guide dog services, visual and mobility aids, occupational therapy and counselling.

The rate of low vision assessments by optometrists to help optimise the visual performance of patients with low vision has remained steady, with 22 claims per 100,000 people in 2014–15 to 27 claims per 100,000 people in 2018–19 (Figure 4).

Figure 4: Low vision assessments, 2014-15 to 2018-19



Note: Billed under MBS item number 10942.

Source: DHS 2019a (Table 2.3)

Children's vision assessment

In addition to a preliminary eye test after birth while a child is still in hospital, and visits to the child health nurse as an infant, most states have eye screening programs for children. This often takes place between 3.5 to 4.5 years, before the child is due to start school (Table 1). Children are referred to an optometrist or ophthalmologist if they are not meeting the expected visual standards for their age.

Table 1: Availability of state/territory funded children's eye screening programs, by jurisdiction

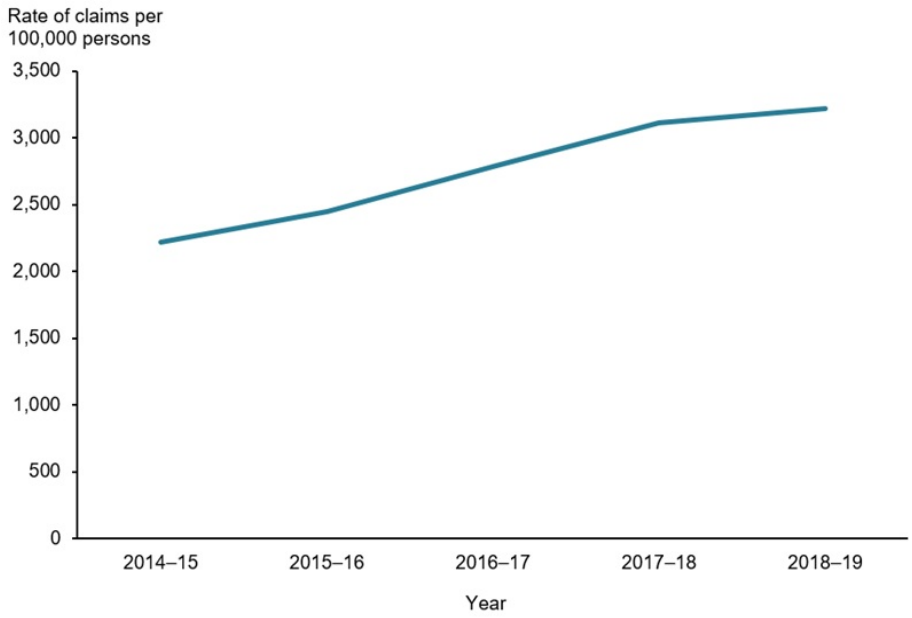
Life stage	NSW	VIC	QLD	SA	WA	TAS	ACT	NT
Infant	✔	✔	✔	✔	✔	✔	✔	✔
Before primary school	✔	✔			✔	✔	✔	
Between start of school and year 3		✔	✔					

Note: Please see the health department website for each state or territory for more information.

Source: ACT Health 2018. CHQHHS 2020. DoH 2008. NSW Health 2020. SVRC 2020. TAS Health 2020. WA Health 2020.

Disorders of ocular muscles, binocular movement and **accommodation** (focusing ability) are common among children and adolescents (see *Hospitalisations* below). The rate of children's vision assessments by optometrists to diagnose and manage these conditions has increased at a steady rate from 2,200 per 100,000 children aged 3–14 in 2014–15 to 3,200 in 2018–19 (Figure 5).

Figure 5: Vision assessment, children aged 3-14, 2014-15 to 2018-19



Note: Billed under MBS item number 10943.

Source: DHS 2019a (Table 2.3).

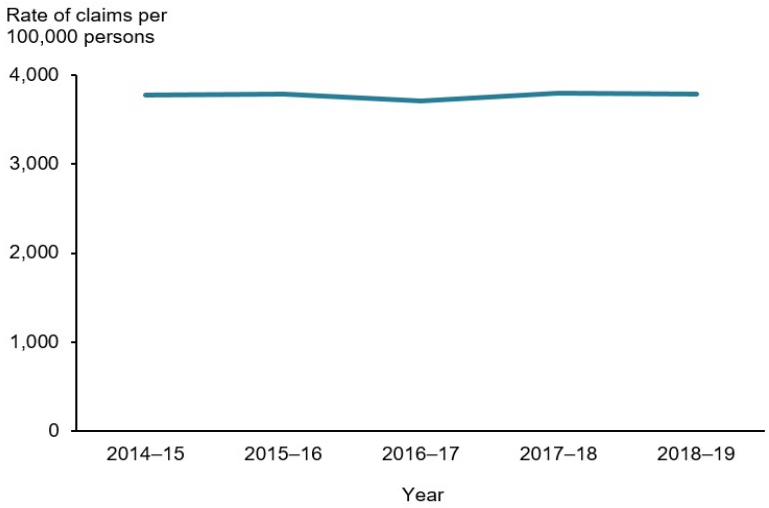
Specialist Treatments

Surgery

Surgery is considered standard treatment for ocular conditions such as cataract, and final-line treatment in other conditions such as glaucoma, where medication and other therapies fail to achieve the desired outcome.

Nationwide, the rate of MBS-subsidised cataract operations (item numbers *42698, 42702* and *42705*) has remained steady between 2014–15 to 2018–19 (about 3,800 per 100,000 people aged 65 and over) (Figure 6). Note this does not include public surgeries completed through public hospitals.

Figure 6: Standard cataract operations, people aged 65 and over, 2014-15 to 2018-19

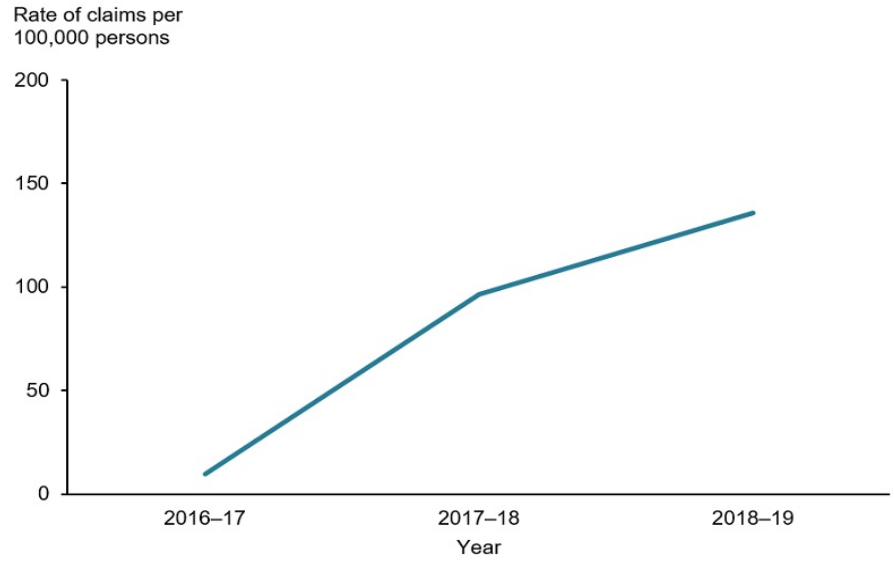


Note: Billed under MBS item numbers *42698, 42702* and *42705*.

Source: DHS 2019c (Table 2.3).

The rate of operations billed under MBS item number *42705* per 100,000 people aged 65 and over, for glaucoma-cataract combination treatment surgeries, has increased steadily since the code was introduced in 2016–17 (Figure 7). Having glaucoma does not increase the risk of cataract or vice versa. However, as both conditions are more prevalent in older patients, combination procedures reduce the need for the same patient to undergo multiple surgeries.

Figure 7: Glaucoma-cataract combination treatment operations, people aged 65 and over, 2016-17 to 2018-19



Note: Billed under MBS item number 42705.

Source: DHS 2019c (Table 2.3).

Based on National Elective Surgery Waiting Times Data, more than 100,000 admissions from waiting lists for elective eye surgery were made in 2018–19, a 2.2% increase from 2017–18. Cataract procedures recorded the highest number of admissions (72,270) when compared to other routinely monitored elective surgeries. Nationwide in 2018–19, 90% of patients were admitted after waiting 334 days for elective eye surgery through public hospitals, though wait-times differed by state (90% of people received surgery in less than 134 days in Victoria, compared with 449 days in Tasmania) (AIHW 2019b).

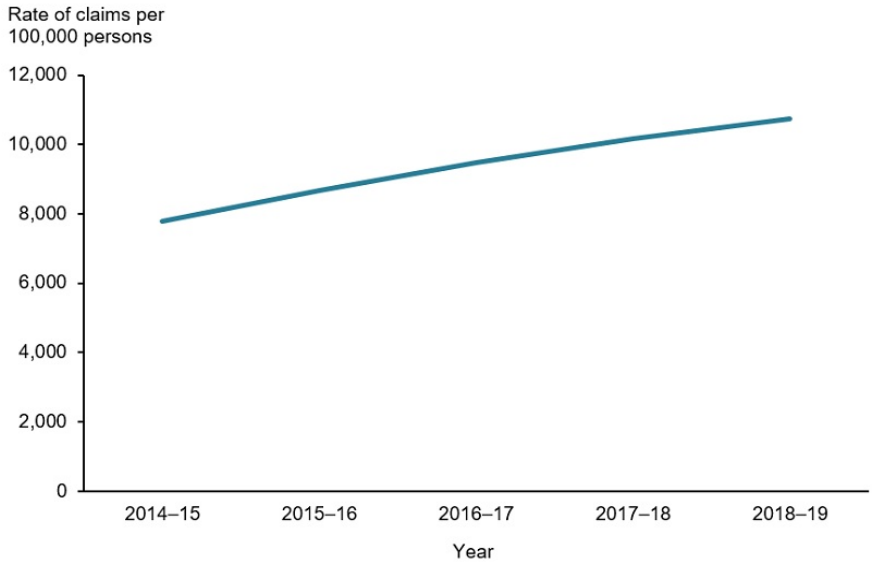
A review by the Australian Commission on Safety and Quality in Health Care found significant regional variation in cataract surgery rates across Australia, with a four-fold difference found between the areas with the highest and lowest rates (ACSQHC 2017). For more information on this review, please see the Second Australian Atlas of Healthcare Variation 2017.

Intraocular injections

Eye injections are used to treat uncontrolled blood vessel growth in the eye. This can occur in wet macular degeneration, diabetic retinopathy and blood vessel occlusions.

Nationwide the rate of intraocular injections per 100,000 people aged 65 and over has increased steadily since 2015 (Figure 8).

Figure 8: Intraocular injections, people aged 65 and over, 2014-15 to 2018-19



Note: Billed under MBS code 42738 and 42739.

Source: DHS 2019c (Table 2.3).

Hospitalisations

Based on AIHW analysis of data from the National Hospital Morbidity Database, about 448,000, or 4% of total hospitalisations in 2017–18 were related to the eye and **ocular-adnexa** (bone, muscles, nerves and other tissues surrounding the eye). Injuries and cancers each accounted for about 2% of total eye related admissions, while disorders of the eye and surrounding muscles and nerves accounted for the remaining 96%.

Males accounted for a greater proportion of ocular injury (58%) and ocular cancer (54%) admissions, while females accounted for a greater proportion of ocular disorder admissions (55%) (Table 2.4).

For information regarding hospitalisations of Aboriginal and Torres Strait Islander people for eye diseases and injuries, please see Indigenous eye health measures 2018.

Injuries

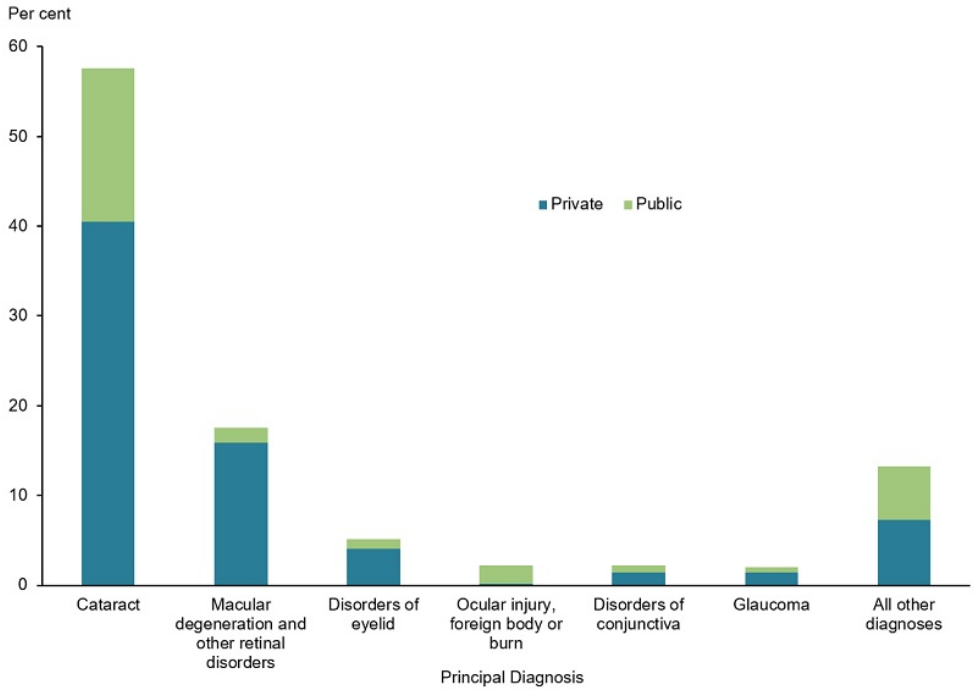
Data from Safe Work Australia's National Data Set for Compensation-Based Statistics shows 870 serious claims made for eye-related injury or disease in 2017–18 financial year. Injuries to the eye accounted for 20% of all serious claims for chemical and substance injuries (Safe Work Australia 2020). For more information, see Eye injuries in Australia 2010–11 to 2014–15.

Hospital sector

In 2017–18, private hospitals accounted for 7 in 10 (71%) hospitalisations involving the eye and surrounding tissue because private hospitals provided most of the treatment for the most common diagnoses. For example, private hospital treatment for the two most common principal diagnoses, cataracts and retinal disorders, accounted for 56% of Australia's eye related hospitalisations (Figure 9).

Public hospitals usually treated the less common diagnoses. Public hospitals almost always treated diagnoses requiring emergency care, such as injuries, foreign bodies or burns to the eye and surrounding tissue (93%) (Table 2.5).

Figure 9: Eye health hospitalisations by principal diagnosis and hospital sector, 2017–18



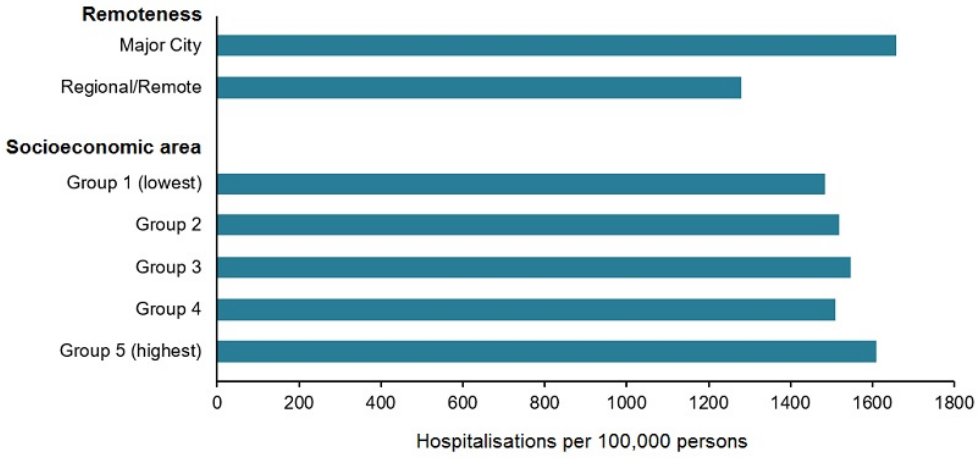
Source: AIHW. National Hospital Morbidities Database 2017–18 (Table 2.5).

Access to hospital care

After adjusting for age, the rate of eye-related hospitalisations was highest for those living in the highest socioeconomic areas (around 1,610 per 100,000 people) and lowest for those from the lowest socioeconomic areas (around 1,480 per 100,000 people) (Figure 10). Rather than reflecting the underlying rate of eye conditions in these populations, this trend likely reflects increased ability to access care in private hospitals by those in higher socioeconomic areas, which account for the majority of eye health hospitalisations (Figure 9).

The rate of total hospitalisations with eye or adnexa related principal diagnosis per 100,000 people was higher in *Major cities* than *Regional or Remote* areas (Figure 10). This was true across every age group (Table 2.6).

Figure 10: Rate of hospitalisations with eye related principal diagnosis by remoteness and socioeconomic area, 2017-18



Note: Rates are age-standardised to the Australian population as at 30 June 2001.

Source: AIHW. National Hospital Morbidity Database 2017–18 (Table 2.6).

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Last updated 21/01/2021 v11.0

Data

Data tables: Eye Health 2020
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