



Australian Government

**Australian Institute of
Health and Welfare**

Indigenous eye health measures 2017

Technical notes and data sources

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Summary list of the Indigenous eye health measures

Measures	Main data source	Latest data
1. Prevalence		
1.1 Prevalence of vision impairment and blindness	National Eye Health Survey	2016
1.2 Main causes of vision impairment and blindness	National Eye Health Survey	2016
1.3 Prevalence of trachoma and trichiasis	Australian Trachoma Surveillance Reports	2016
2. Diagnosis and screening services		
2.1 Eye health problems managed by GPs	Bettering the Evaluation and Care of Health survey	2010–2015
2.2 Annual health assessments	Medicare Benefits Schedule data	2015–16
2.3 Eye examinations undertaken by an eye care professional	Medicare Benefits Schedule data	2015–16
2.4 Target population screened for diabetic retinopathy	Medicare Benefits Schedule data	2015–16
2.5 Trachoma and trichiasis screening coverage	Australian Trachoma Surveillance Reports	2016
2.6 Undiagnosed eye conditions	National Eye Health Survey	2016
3. Treatment services		
3.1 Hospitalisations for diseases of the eye	National Hospital Morbidity Database	2014–16
3.2 Hospitalisations for injuries to the eye	National Hospital Morbidity Database	2014–16
3.3 Hospitalisations for eye procedures	National Hospital Morbidity Database	2014–16
3.4 Cataract surgery rate	National Hospital Morbidity Database	2014–16
3.5 Cataract surgical coverage rate	National Eye Health Survey	2016
3.6 Waiting times for elective cataract surgery	National Hospital Morbidity Database	2014–16
3.7 Trachoma and trichiasis treatment coverage	Australian Trachoma Surveillance Reports	2016
3.8 Treatment of refractive error	National Eye Health Survey	2016
3.9 Spectacles dispensed under state schemes	State admin data	2016–17
4. Workforce and outreach services		
4.1 Number and rate of optometrists	National Health Workforce Dataset	2014
4.2 Number and rate of ophthalmologists	National Health Workforce Dataset	2015
4.3 Number and rate of allied ophthalmic personnel	AIHW 2017	2010
4.4 Occasions of eye health services provided under outreach programs	DoH admin data	2014–15

1 Notes on data quality and limitations by measure

1.1 Prevalence of vision impairment and blindness

1.1.1 Prevalence of vision impairment and blindness

Measure

The number of Indigenous Australians with vision impairment and blindness, proportion of the population and age-standardised rates.

Data source

The 2016 National Eye Health Survey (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.

Things to consider

- The survey results reported are crude unadjusted sample proportions. 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 impairment does not include corrected refractive error.

1.1.2 Self-reported eye or sight problems

Measure

The number of Indigenous Australians with self-reported eye or sight problems, proportion of the population and age-standardised rates.

Data source

The 2012–13 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.

Things to consider

- 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.

1.2 Main causes of vision impairment and blindness

1.2.1 Main causes of vision impairment and blindness

Measure

Main causes of vision impairment for Indigenous Australians, as a proportion of those with vision impairment.

Data source

The National Eye Health Survey 2016, 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.

Things to consider

- The survey results reported are crude unadjusted sample proportions. These results are subject to sampling errors, so the 95% confidence intervals (CI) are provided to indicate the reliability of the estimates reported. CIs were not available for the data on Indigenous status by sex (Graph b).
- The data on mean age show plus or minus one standard deviation from the mean where around 68% of values fall (Graph c).
- 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 impairment does not include corrected refractive error.
- The main causes of blindness were not provided, due to small numbers.

1.2.2 Self-reported causes of eye or sight problems

Measure

The self-reported main causes of eye or sight problems for Indigenous Australians, as a proportion of those with eye or sight problems.

Data source

The 2012–13 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.

Things to consider

- 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.

1.3 Prevalence of trachoma and trichiasis

1.3.1 Prevalence of trachoma

Measure

The estimated number, and proportion of Indigenous children in at-risk communities with active trachoma.

Data source

ATSR 2017

Things to consider

- The data cover the 106 communities and 4,748 children screened in 2016. There were 47 communities and 1,628 screened children in the NT, 37 communities and 975 children in WA, 19 communities and 1,553 children in SA, and 3 communities and 155 children in Queensland) (Kirby Institute 2017).
- The CDNA guidelines for trachoma control were revised in 2014 so that at-risk communities were not all required to be screened each year. These guidelines were implemented in the Northern Territory in 2014, and in all 4 states in 2015.
- 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.

1.3.2 Prevalence of trichiasis

Measure

The estimated number, and proportion Indigenous adults in at-risk communities with trichiasis.

Data source

ATSR 2017

Things to consider

- The data cover the 146 at-risk communities in 3 jurisdictions (76 in the Northern Territory, 51 in Western Australia and 19 South Australia) that screened in 2016 (Kirby Institute 2017).
- The target age group for screening is those aged 40 and over, though data are reported for other age groups.

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.

Data source

BEACH 2010–2015 surveys, which collected information from a random sample of 1,000 GPs across Australia each year. The surveys have been discontinued.

Things to consider

- BEACH data may underestimate the number of encounters with Indigenous Australians.

2.2 Annual health assessments

Measure

The number of Indigenous people who had an MBS health assessment within a 12-month period, proportion of the population and age-standardised rates.

Data source

AIHW analysis of MBS data

Things to consider

- The MBS item 715 is an Indigenous specific health assessment. Indigenous Australians also have access to mainstream MBS health assessment. A basic eye check is a mandatory component of the MBS 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).

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, age-standardised rate and Indigenous to non-Indigenous rate ratio.

Data source

AIHW analysis of MBS data

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 jurisdictional-funded primary health care or by public hospitals; for example, eye examinations undertaken by salaried ophthalmologists in public hospitals.
- Equivalent or similar care may also be billed as a different MBS item (such as a standard consultation).
- MBS data shown for this measure were adjusted for Indigenous under-identification.
- The estimated annual 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).

2.4 Target population screened for diabetic retinopathy

2.4.1 Diabetic retinopathy screening (MBS)

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-months period or in the year before, as a proportion of those who had a diabetes test, crude rates.

Data source

AIHW analysis of MBS data

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 jurisdictional-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.
- MBS data shown for this measure were adjusted for Indigenous under-identification.
- 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.

2.4.2 Diabetic retinopathy screening (survey)

Measure

The number of Indigenous Australians with diabetes who had a diabetic eye examination in the last year, as a proportion of the population with diabetes, age-standardised rates and rate ratios.

Data source

NEHS 2016, 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.

Things to consider

- 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.

2.5 Trachoma and trichiasis screening coverage

2.5.1 Trachoma screening coverage

Measure

The estimated number, and proportion, of Indigenous children in at-risk Indigenous communities screened for trachoma.

Data source

ATSR 2017

Things to consider

- The data cover the 106 communities and 4,748 children screened in 2016. There were 47 communities and 1,628 screened children in the NT, 37 communities and 975 children in WA, 19 communities and 1,553 children in SA, and 3 communities and 155 children in Queensland) (Kirby Institute 2017).
- The CDNA guidelines for trachoma control were revised in 2014 so that at-risk communities were not all required to be screened each year. These guidelines were implemented in the Northern Territory in 2014, and in all 4 states in 2015.

2.5.2 Trichiasis screening coverage

Measure

The estimated number, and proportion, of Indigenous adults in at risk communities screened for trichiasis.

Data source

ATSR 2017

Things to consider

- The data cover the 146 at-risk communities in 3 jurisdictions (76 in the Northern Territory, 51 in Western Australia and 19 South Australia) that screened in 2016 (Kirby Institute 2017).
- The target age group for screening is those aged 40 and over, though data are reported for other age groups.

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.

Data source

NEHS 2016, 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.

Things to consider

- The survey results reported are crude unadjusted sample proportions. These results are subject to sampling errors. The confidence intervals were not available for these estimates.
- 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 in participants found to have vision impairment who reported 'No' or 'Unsure' to the question 'Have you ever been told by a doctor that you have the following condition?'.

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, age-standardised rate and rate ratio.

Data source

NHMD

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, and by PHN, should be interpreted with caution due to variations in admission practices across regions; and because patients may be hospitalised outside the state or territory, or PHN, where they reside.

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.

Data source

NHMD

Things to consider

- This measure is a count of hospitalisations for injury, not of occurrence of injury—as some injuries may result no hospitalisation or 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, and by PHN, should be interpreted with caution due to variations in admission practices across regions; and because patients may be hospitalised outside the state or territory, or PHN, where they reside.

3.3 Hospitalisations for eye procedures

Measure

The number of hospitalisations with a procedure on the eye and adnexa, per 1,000 Indigenous population, age-standardised rate and rate ratio.

Data source

NHMD

Things to consider

- The AR-DRG (Australian Refined Diagnosis Related Group) 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, and by PHN, should be interpreted with caution due to variations in admission practices across regions; and because patients may be hospitalised outside the state or territory, or PHN, where they reside. Also Australian Capital Territory private day hospitals did not provide data to the NHMD.
- 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.

3.4 Cataract surgery rate

Measure

The number of hospitalisations with a procedure for cataract surgery, per 1,000,000 Indigenous population, age-standardised rate and rate ratio.

Data source

NHMD

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, and by PHN, should be interpreted with caution due to variations in admission practices across regions; and because patients may be hospitalised outside the state or territory, or PHN, 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.
- 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).

3.5 Cataract surgical coverage rate

Measure

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 impairment or blindness and cataracts in 1 or both eyes.

Data source

NEHS 2016, 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.

Things to consider

- 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.

3.6 Waiting times for elective cataract surgery

3.6.1 Cataract surgery waiting times—percentile

Measure

The waiting time for elective cataract surgery, expressed as:

- 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).

Data source

NHMD

Things to consider

- This measure includes data for waiting lists managed by public hospitals—and may include public patients admitted from waiting lists to private hospitals.
- 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.
- Most cataract surgery is non-urgent, and therefore not clinically recommended as being required within 90 days.
- 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.
- ACT 2016–15 data were not included as they were not available at the time of publication.

3.6.2 Cataract surgery waiting times—days

Measure

The waiting time for elective cataract surgery, expressed as:

- the proportion of patients who completed their wait who had cataract surgery within 90 days, and the proportion who waited more than 365 days for cataract surgery.

Data source

NHMD

Things to consider

- This measure includes data for waiting lists managed by public hospitals—and may include public patients admitted from waiting lists to private hospitals.
- 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.
- Most cataract surgery is non-urgent, and therefore not clinically recommended as being required within 90 days.
- 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.
- ACT 2016–15 data were not included as they were not available at the time of publication.

3.7 Trachoma and trichiasis treatment coverage

3.7.1 Trachoma treatment coverage

Measure

The estimated number, and proportion of community members who were treated in communities where active trachoma was identified

Data source

ATSR 2017

Things to consider

- Includes data from the 80 communities that required treatment for trachoma.
- The 5–9 age group is the target group for screening programs in all regions.

3.7.2 Trichiasis treatment coverage

Measure

The estimated number, and proportion of Indigenous adults with trichiasis who were treated or offered treatment.

Data source

ATSR 2017

Things to consider

- The data cover the 146 at-risk communities in 3 jurisdictions (76 in the Northern Territory, 51 in Western Australia and 19 South Australia) that screened in 2016 (Kirby Institute 2017).
- 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.

3.8 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.

Data source

NEHS 2016, 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.

Things to consider

- The survey results reported are crude unadjusted sample proportions. These results are subject to sampling errors. The confidence intervals were not available for these data.
- 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.

3.9 Spectacles dispensed under state schemes

Measure

The number of Indigenous people receiving glasses under state subsidised spectacles programs, per 1,000 population.

Data source

AIHW analysis of NSW Department of Family and Community Services data (unpublished); Australian College of Optometry Victorian data (unpublished) and Queensland Health data (unpublished)

Things to consider

- Only 4 jurisdictions could provide data for this measure (NSW, Victoria, Queensland and South Australia). The data for South Australia were only available for the period from 17 October 2016 to 30 June 2017 and so were not shown in this report. It is intended that

data for South Australia will be included in the next report when a full year of data is available.

- The data for New South Wales relate to the number of clients receiving glasses, whereas data for Victoria and Queensland relate to the number of glasses provided.
- The eligibility criteria and entitlements provided by the state schemes vary across jurisdictions:
 - In New South Wales and Queensland clients are eligible for subsidised glasses every two years.
 - In Victoria, each client may receive more than 1 pair of glasses.
- 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 provided by jurisdictions cover all age groups.

4.1 Number and rate of optometrists

Measure

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

Data source

AIHW analysis of NHWDS

Things to consider

- Data 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.

4.2 Number and rate of ophthalmologists

Measure

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

Data source

AIHW analysis of NHWDS

Things to consider

- Data 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 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.

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.

Data source

AIHW analysis of Census 2011 data on optical dispensers, orthoptists and optical mechanics; and from professional associations and employer organisations for data on orientation and mobility specialists, occupational therapists specialising in eye health, and ophthalmic nurses (AIHW 2016)

Things to consider

- These data were drawn from a number of different sources and may not be directly comparable. See *Eye health workforce in Australia* (AIHW 2016) for more details.

4.4 Occasions of eye health services provided under outreach programs

4.4.1 Occasions of service–VOS (Visiting Optometrists Scheme)

Measure

The number of occasions of service for Indigenous Australians with eye health professionals, per 1,000 population, under the VOS.

Data source

AIHW analysis of Department of Health data (unpublished)

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.

4.4.2 Occasions of service-RHOF (Rural Health Outreach Fund)

Measure

The number of occasions of service for Indigenous Australians with eye health professionals, per 1,000 population, under the RHOF.

Data source

AIHW analysis of Department of Health data (unpublished)

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.
- RHOF services are provided in Inner regional, Outer regional, Remote and Very remote areas only; populations used to calculate the rates did not include Major cities.
- These data include Australian Government-funded outreach services and not those funded by state governments or other providers.
- Prior to 2013–14, eye health services were delivered through 2 programs—the Medical Specialist Outreach Assistance Program (MSOAP) and a specific eye health expansion that were moved into the RHOF. The data for 2011–12 and 2012–13 represent the Indigenous patients seen under these 2 programs.

4.4.3 Occasions of service—MOICDP (Medical Outreach Indigenous Chronic Disease Program)

Measure

The number of occasions of service for Indigenous Australians with eye health professionals, per 1,000 population, under the MOICDP.

Data source

AIHW analysis of Department of Health data (unpublished)

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 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.

2 Main data sources

ABS population data

The rates in this report were calculated using ABS estimates and projections of the population, based on the 2011 Census (ABS 2014, 2017).

The size of the Indigenous population varies substantially by state and territory. In 2017, the Indigenous population ranged from about 7,300 in the Australian Capital Territory to 234,700 in New South Wales. The proportion of the total population who are Indigenous also varies by state and territory. In 2017, this proportion ranged from 1% in Victoria to 31% 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 Australian people.

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:

- National Aboriginal and Torres Strait Islander health survey
- National Aboriginal and Torres Strait Islander nutrition and physical activity survey
- 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 for 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 their 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 over-estimate 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, as required by state and territory project agreements (Kirby Institute 2016).

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

Bettering the Evaluation and Care of Health survey (BEACH)

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. Although the questionnaire contains 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 with Indigenous Australians (AIHW 2015).

Medicare Benefits Schedule data (MBS)

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. These benefits are 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 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 about MBS item 715 health assessments. As only Indigenous Australians are eligible to receive such health assessments, it is assumed that all people who receive an MBS item 715 are Indigenous.

National Eye Health Survey (NEHS)

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 multi-stage, random-cluster sampling methodology to select 30 geographic areas stratified by remoteness, to provide a representative target population of 3,000 non-Indigenous Australians aged 50 and older and 1,400 Indigenous Australians aged 40 and older. Participants were primarily recruited by door-to-door knocking, with adjustments as required to adapt to local circumstances within diverse Indigenous communities.

Over 85% of those eligible to enrol in the study did so. In total, the NEHS examined 3,098 non-Indigenous Australians aged 50 and older, and 1,738 Indigenous Australians aged 40 and older. The survey achieved a positive response rate of 85% and an examination rate of

72%. The testing protocol involved a general questionnaire, vision testing, anterior segment examination, visual field testing, fundus photography and intraocular pressure testing. The 95% confidence intervals were provided, where available, to indicate the reliability of 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 multi-staged 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 5–15 (84% of those eligible) and 1,189 adults aged 40 and over (72% of those eligible) were examined (AIHW 2015).

National Health Workforce Dataset (NHWD)

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 Dataset (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 comes from the NHWDS as reported by AIHW.

National Hospital Morbidity Database (NHMD)

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. The NHMD is based on data provided to the AIHW by state and territory health authorities for the National minimum data set (NMDS) for Admitted patient care. The AIHW collect and report the NHMD under the auspices of the Australian Health Ministers' Advisory Council, through the National Health Information Agreement. The NHMD contains episode-level records from admitted patient morbidity data collection systems in Australian public and private hospitals and include administrative, demographic and clinical data. Data are based on financial years.

Data are a count of hospitalisations (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 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, 9th 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; 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 true 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 true number of hospitalisations for Indigenous Australians in 2013–14 is estimated to have been about 445,000 (AIHW 2015). NHMD data presented in this report have not been adjusted for under-identification, so are likely to underestimate the true 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 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.

3 Technical specifications

Table 1: Technical specifications for the Indigenous eye health measures

Measure	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): $ASR = \frac{\sum_i N_i p_i}{\sum_i N_i}$ where: p_i is the age-specific rate for age group i in the population being studied N_i is the population of age group i in the standard population	Number of participants with: i) bilateral vision impairment (<6/12–6/60) ii) bilateral blindness (<6/60) Number of participants who reported that they had an eye or sight problem	Number of participants responding to NEHS Number of participants responding to AATSIHS		NEHS 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
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-sighted/myopia c) long-sighted/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

(continued)

Table 1 (continued): Technical specifications for Indigenous eye health measures

Measure	Calculation	Numerator	Denominator	Notes and definitions	Data sources
1.3 Prevalence of:				Screening is in Indigenous communities designated by jurisdictional authorities as being at risk of endemic trachoma	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	
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	
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
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

(continued)

Table 1 (continued): Technical specifications for Indigenous eye health measures

Measure	Calculation	Numerator	Denominator	Notes and definitions	Data sources
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 the previous year and who had an eye examination in the financial year: i) MBS group A10, Optometrical Services (except items 10921–10930) and/or ii) MBS group D1 subgroup 2, Miscellaneous Diagnostic Procedures and Investigations, Ophthalmology	Number of people who claimed MBS item 66551 (Quantitation of glycosylated haemoglobin performed in the management of established diabetes) in the financial year or the previous year		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
2.5 Screening coverage for:				Screening is in Indigenous communities designated by jurisdictional authorities as being at risk of endemic trachoma	Australian 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 communities that were screened for trachoma	Target age group is children aged 5–9	
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	

(continued)

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

Measure	Calculation	Numerator	Denominator	Notes and definitions	Data sources
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		
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
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

(continued)

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

Measure	Calculation	Numerator	Denominator	Notes and definitions	Data sources
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
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 1 (continued): Technical specifications for Indigenous eye health measures

Measure	Calculation	Numerator	Denominator	Notes and definitions	Data sources
Waiting times for elective cataract surgery (continued)	<p>ii) The proportion of patients:</p> <p>a) treated within 90 days</p> <p>b) waiting more than 365 days</p> <p>for elective cataract surgery.</p> <p>Numerator ÷ denominator x 100</p>	<p>Number of hospitalisations for a patient on the public hospital elective surgery waiting list that had a procedure related to cataract surgery (indicator procedure '01') and care type not 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder' for which the waiting time was:</p> <p>a) less than 90 days</p> <p>b) more than 365 days</p> <p>(Based on first indicator procedure waiting time)</p>	<p>Number of hospitalisations for a patient on the public hospital elective surgery waiting list that had a procedure related to cataract surgery (indicator procedure '01') and care type not 'new born—unqualified days only' or 'organ procurement—posthumous' or 'hospital boarder'</p>		
3.7 Trachoma and trichiasis treatment coverage				Screening and treatment is performed in Indigenous communities designated by jurisdictional authorities as being at risk of endemic trachoma	Trachoma Surveillance Report
i) trachoma	Numerator ÷ denominator x 100	Number of community members where active trachoma was identified who were treated for trachoma	Estimated number of community members requiring treatment		
ii) trichiasis		<p>Number of adults aged 40 and over:</p> <p>a) offered ophthalmic consultation</p> <p>b) who had surgery in the past 12 months</p>			

(continued)

Table 1 (continued): Technical specifications for Indigenous eye health measures

Measure	Calculation	Numerator	Denominator	Notes and definitions	Data sources
3.8 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		
3.9 Number and rate of glasses dispensed under state spectacle schemes	Numerator ÷ denominator x 1,000	Data for New South Wales are the number of persons receiving spectacles, while data for Victoria and Queensland are number of spectacles provided	For New South Wales and Queensland 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 For Victoria, population at 30 June		NSW Department of Family and Community Services; Australian College of Optometry Victorian; Queensland Health and ABS population data
4.1 Number and rate of optometrists	Number FTE rate: Numerator ÷ denominator x 100,000	Number of registered optometrists employed in Australia working in registered profession FTE of registered optometrists employed in Australia working in registered profession	Population at 30 June	FTE based on a 38-hour work week	NHWDS and ABS population data
4.2 Number and rate of ophthalmologists	Number FTE rate: Numerator ÷ denominator x 100,000	Number of registered ophthalmologists employed in Australia working in registered profession FTE of registered ophthalmologists employed in Australia working in registered profession	Population at 30 June	FTE based on a 40-hour work week	NHWDS and ABS population data

(continued)

Table 1 (continued): Technical specifications for Indigenous eye health measures

Measure	Calculation	Numerator	Denominator	Notes and definitions	Data sources
4.3 Number and rate of allied ophthalmic personnel	Number FTE rate: Numerator ÷ denominator x 100,000	Number of allied ophthalmic personnel employed in the workforce FTE of allied ophthalmic personnel employed in the workforce	Population at 30 June	FTE based on a 38-hour work week	Census; professional associations and employer organisations; and ABS population data
4.4 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 <i>Inner regional, Outer regional, Remote</i> and <i>Very remote</i> areas only. Therefore populations used to calculate the rates for RHOF did not include <i>Major cities</i>)		Department of Health and ABS population data

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