



Australian Government

Australian Institute of
Health and Welfare

Ear and hearing health of Aboriginal and Torres Strait Islander people 2023





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Summary

This is the first Australian Institute of Health and Welfare (AIHW) annual report on the ear and hearing health of Aboriginal and Torres Strait Islander (First Nations) children and adults.

First Nations people continue to experience excessive rates of ear and hearing problems, which can have profound impacts on overall health and quality of life, and can affect both the ability to communicate cultural knowledge and their immersion in culture. Ear and hearing problems limit opportunities for education, work, personal relationships and community engagement. Problems affecting children are of particular concern, with ongoing impacts that can affect speech, language, and cognitive and behavioural development. Much ear disease and hearing loss affecting First Nations people, particularly children and younger adults, is preventable.

This report presents a set of measures developed to document changes over time in ear and hearing health among First Nations people and their use of ear and hearing health services.

Data presented in this report are available through the online data tables:

[Ear and hearing health of Aboriginal and Torres Strait Islander people 2023, Data.](#)

Key findings

Prevalence

Based on the latest available data on measured hearing loss, in 2018–19:

- around 43% of First Nations people aged 7 and over (290,400 people) had measured hearing loss in one or both ears
- around 29% of children aged 7–14 had measured hearing loss in one or both ears (42,200), increasing to 40% (10,000) in Remote and very remote areas (measure 1.2).

Screening and diagnosis

- the proportion of eligible (medically suitable) First Nations babies who participated in hearing screening was very high, ranging from 91% to 98% across the 4 states for which data were accessible for reporting (measure 2.1)
- in 2021–22, 6,500 First Nations people (7.3 per 1,000) received Medicare-subsidised audiology services
- audiology service rates among First Nations children aged 0–14 increased from around 12 per 1,000 population in 2010–11 to nearly 19 per 1,000 population in 2014–15, before falling to 14% in 2021–22 (measure 2.3)

Intervention and treatment

- rates of hospitalisations for middle ear related procedures for First Nations children aged 0–6 increased between 2010–11 and 2021–22 (note that hospitalisation rates reflect both the population prevalence of a health condition and access to hospital treatment) (measure 3.3)
- median waiting times (from the time a person is placed on a hospital waiting list to being admitted for their procedure) for elective ear-related surgeries increased between 2012–13 and 2021–22; the waiting time for a procedure to make an incision in the eardrum to relieve pressure or drain fluid (myringotomy) increased from 54 to 77 days over this period (measure 3.4)

Rehabilitation

- in 2022, around 36% of First Nations young people aged 0–25 who wore a hearing aid or cochlear implant had been fitted with their first device when aged 0–4 (measure 4.1).

Workforce

While the primary care workforce is critical to delivering ear and hearing health services, it faces challenges including high staff turnover, competing demands from multiple programs and lack of access to training for staff. There is also a lack of access to culturally appropriate services. These challenges reduce the capacity of the ear and hearing health workforce, particularly in rural and remote communities (Siggins Miller 2017).

Change over time

Some progress has been made towards better ear and hearing health for First Nations people (Table 1):

- The proportion of First Nations people receiving Medicare-subsidised audiology services increased between 2011 and 2022 (measure 2.3).
- The rate of First Nations people receiving ear or hearing related hospital procedures rose between 2010–11 and 2020–21, particularly among First Nations children aged 0–2 (measure 3.3).
- Between 2008 and 2022, the peak age group of first device fitting fell from 7–9 years to 4–6 years among First Nations clients of Hearing Australia aged 0–25 with a hearing aid or a cochlear implant (measure 4.1).
- The proportion of health-care services specifically for First Nations people that offer audiology services and ear, nose and throat (ENT) specialist services increased between 2013–14 and 2021–22 (measure 5.1).

But challenges remain:

- Ear and hearing related emergency department presentations rose between 2013–14 and 2021–22 (measure 3.1).
- In-hospital middle ear related procedure rates for First Nations children aged 0–14 fell between 2018–19 and 2021–22 (measure 3.3). Median waiting times for myringotomy and myringoplasty elective surgeries have increased between 2012–13 and 2021–22 (measure 3.4).

Data gaps and data development

Clear data gaps were identified in preparing this report. Information is needed on:

- prevalence of ear and hearing conditions
- patient pathways, including waiting times from initial screening to treatment
- the ear and hearing health workforce, particularly outreach services provided by specialists and trained primary health-care workers
- ear and hearing health among incarcerated populations.

Data development is being undertaken in the following key reporting areas:

- a new national Key Performance Indicator which will help to provide information on annual ear and hearing health checks for First Nations children in primary care settings
- a national Neonatal Hearing Screening Data Collection that will be a source of nationally consistent newborn screening data.

Table 1: Key changes and other findings from the ear and hearing health measures for First Nations people


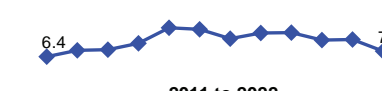
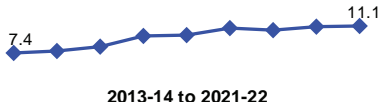
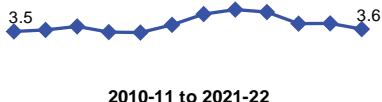
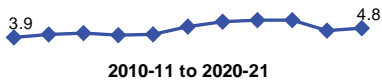
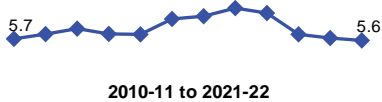
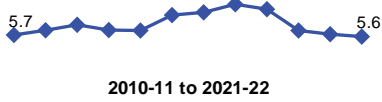

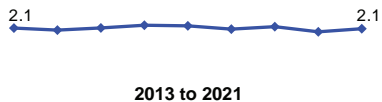

Measure	Change over time for First Nations people	Progress
Prevalence		
1.1 Reported long-term ear or hearing conditions (children aged 0–14, per cent)	 <p>2001 to 2018-19</p>	✓
1.2 Measured hearing loss	Note: data available for 2018-19 only	
(i) measured hearing loss in one or both ears	43% (aged 7 and over)	n.a.
(ii) unilateral or bilateral	20% unilateral, 23% bilateral	n.a.
(iii) severity of measured hearing loss	15% mild, 3.6% moderate, 4.4% severe or profound	n.a.
Screening and diagnosis		
2.1 Neonatal hearing screening	<p><i>National timeseries is not currently available</i></p> <p>In 2021–22, screening coverage of eligible First Nations babies ranged from a high of 98% to 91% in states and territories with accessible data.</p>	
2.3 Diagnostic audiology services Medicare-subsidised audiology services (all ages, rate per 1,000 population)	 <p>2011 to 2022</p>	✓
2.4 First Nations children aged 0-6 who had a diagnostic assessment through HAPEE	In 2021–22, the rate of First Nations children who had a diagnostic hearing assessment was highest in the Northern Territory at 121 per 1,000 population.	✓

Table 1 (continued): Key changes and other findings from the ear and hearing health measures for First Nations people

Measure	Change over time for First Nations people	Progress
Intervention and treatment		
3.1 Emergency department presentations for ear or hearing related problems (all ages, rate per 1,000 population) ^a		--
3.2 Hospital admissions for ear or hearing related problems (all ages, rate per 1,000 population)		--
3.3 In-hospital procedures for ear or hearing related problems		
(i) ear or hearing related procedures (all ages, rate per 1,000 population)		✓
(ii) middle ear related procedures among children aged 0–14 (all ages, rate per 1,000 population)		--
3.4 Waiting times for key elective ear or hearing-related surgery (myringotomy shown in changes over time) (median number of days)		✗
Intervention and treatment		
4.1 Hearing aids and cochlear implants (age at first fitting)	The peak age group of first fitting decreased from 7–9 years to 4–6 years from 2008 to 2022	✓
4.2 NDIS participants who reported hearing impairment as a disability	<i>Time series not analysed</i> 2,069 First Nations people (2022–23)	--
Workforce		
5.1 Audiologists (FTE rate per 100,000 population)		✓
5.2 Ear, nose and throat specialists (FTE rate per 100,000 population)		--
Ear and hearing health specialist services in Indigenous-specific primary health-care organisations – per cent		✓

Not updated since previous reporting period

FTE = full-time equivalent; HAPEE = Hearing Assessment Program – Early Years; NDIS = National Disability Insurance Scheme.

✓ Measure shows improvement over time.

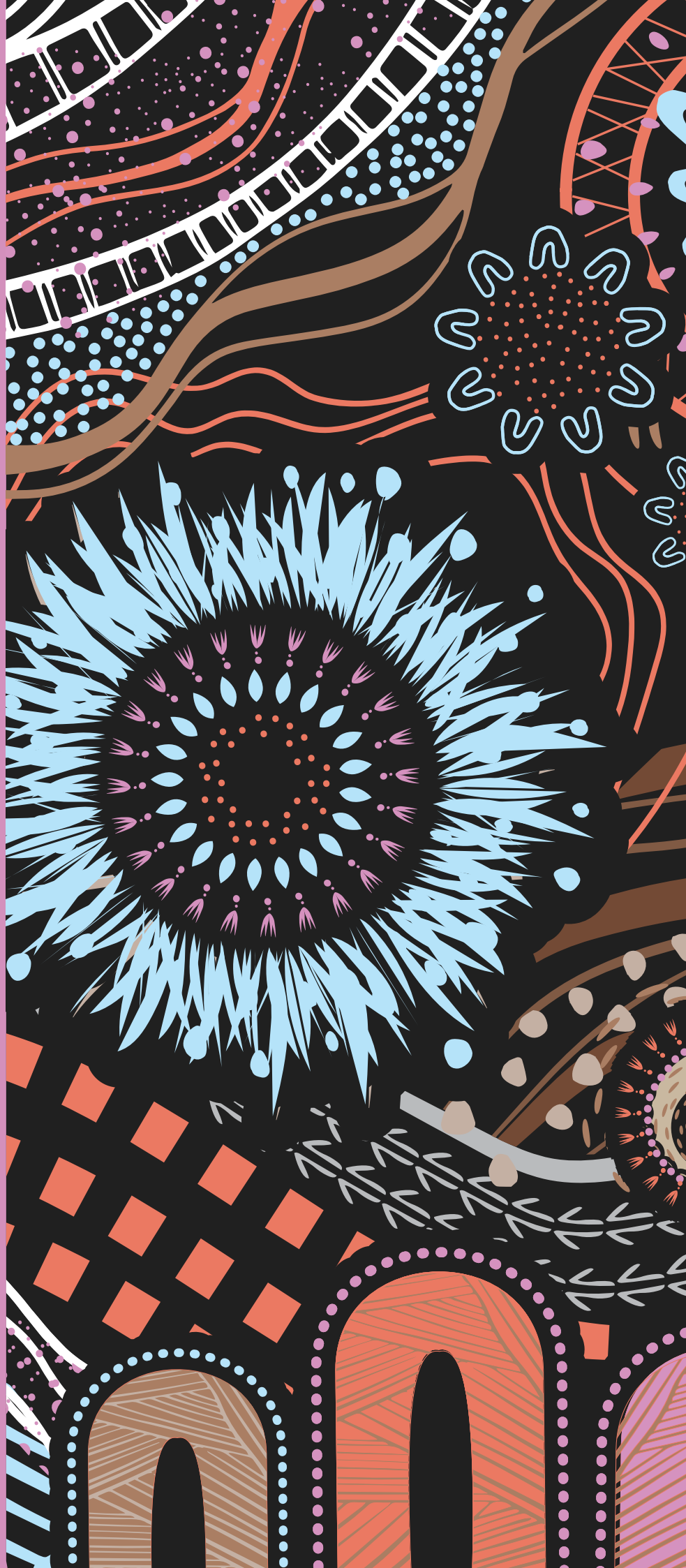
✗ Measure shows decline over time.

-- No change/no clear trend over time/unable to determine whether there has been an improvement or a decline over time.

n.a. not available.

(a) Note that hospitalisation rates reflect both the population prevalence of a health condition and access to hospital treatment, so it is difficult to determine whether an increase reflects increasing prevalence or increasing service usage.

Sources: See chapters 1, 2, 3, 4 and 5 and the online data tables for detailed results.





Introduction



In 2018–19, more than 2 in 5 (43%) Aboriginal and Torres Strait Islander (First Nations) people aged 7 and over were assessed as having hearing loss (ABS 2019a). First Nations children have some of the highest rates of ear disease and associated hearing loss in the world (WHO 2004). First Nations people lost an estimated 5,200 years of healthy life to hearing loss and ear disease in 2018, or 6.3 years of healthy life lost for every 1,000 First Nations people (AIHW 2022).

Apart from hearing loss caused by genetic conditions and ageing, much of the hearing loss experienced by First Nations people is preventable or amenable to treatment. Worldwide, the World Health Organization estimates that 60% of childhood hearing loss is due to preventable causes (WHO 2021).

While First Nations people experience elevated rates of ear and hearing problems, their ear and hearing health has steadily improved over the last 10 years due to new initiatives by government, Aboriginal Medical Services, non-government organisations, and specialist medical and paramedical groups, and researchers (Coates and Kong 2020).

Ear and hearing health has a profound impact on a person's quality of life and ability to perform everyday activities. Ear and hearing problems can have an impact on speech and language development in young children. Over the longer term, these problems can lead to poorer school performance, increased risk of behaviour problems, social isolation, interaction with the justice system, difficulties obtaining employment and increased risk of cognitive decline (Australian Indigenous HealthInfoNet 2021; Burns and Thomson 2013; Gotis-Graham et al. 2020; Leach et al. 2021; Su et al. 2019; Su et al. 2020a; Su et al. 2020b).

A range of factors influence ear and hearing health among First Nations people. These include broader determinants of health, such as housing conditions and exposure to tobacco smoke, and the performance of the health system, such as access to health services (AIHW and NIAA 2023).

The following initiatives form part of the broader policy context for ear and hearing health among First Nations people:

- the National Agreement on Closing the Gap was developed in partnership between Australian governments and the Coalition of Aboriginal and Torres Strait Islander Peak Organisations. It has been built around four Priority Reforms which will change the way governments work with First Nations people and communities, and includes 17 outcome areas over the life course. One outcome area, closely related to ear and hearing health, is to ensure that 'Children thrive in their early years' (Joint Council on Closing the Gap 2020)
- the Roadmap for Hearing Health – which identifies priority areas and actions to improve hearing health and its impacts for First Nations people
- the Aboriginal and Torres Strait Islander Ear and Hearing Health Partnership Committee (a partnership between the Australian Government, states and territories and First Nations representatives in the hearing health sector) – which aims to transition ear health promotion, community engagement functions and training and workforce development coordination to community controlled organisations. The committee will provide input to the Aboriginal and Torres Strait Islander Ear and Hearing Health National Strategy, led by the National Aboriginal Community Controlled Health Organisation (NACCHO).

Main ear and hearing conditions

Ear and hearing problems and their causes change over the life course (Figure 1). Middle ear infection or inflammation (otitis media) is the main cause of ear and hearing problems in First Nations children. Other causes of ear and hearing problems in children include congenital hearing loss (present at birth), noise related hearing loss, other infections, and certain medications and chemicals that have a toxic effect on the ear – that is, they are ototoxic (see Glossary for more information).

Figure 1: Causes of hearing loss over the life span

Prenatal	Perinatal	Childhood and adolescence	Adulthood and older age
<ul style="list-style-type: none"> • Genetic factors* • Intrauterine infections (for example, rubella and cytomegalovirus) 	<ul style="list-style-type: none"> • Early onset otitis media • Birth complications • Birth asphyxia • Neonatal jaundice • Low-birth weight 	<ul style="list-style-type: none"> • Chronic otitis media • Meningitis and other infections 	<ul style="list-style-type: none"> • Chronic diseases • Smoking • Otosclerosis* • Age-related* • Sudden hearing loss*
<p>Any age</p>			

Trauma to the ear or head, loud noise, ototoxic medicines, ototoxic chemicals, nutritional deficiencies, viral infections and other ear conditions, recurrent ear disease, impacted ear wax, delayed onset or progressive genetic hearing loss*

* These are causes that are not considered preventable.

Chart: AIHW.

Sources: Smith 2019; WHO 2016, 2021

First Nations adults are less likely than children to experience ear infections. Adult ear and hearing health is most affected by ageing, noise exposure, genetics, infectious and chronic diseases, use of ototoxic medicines, and injuries and accidents. Older adults are more likely to experience permanent hearing loss due to damage to the inner ear, also called sensorineural hearing loss (Box 1). First Nations adults can also experience ongoing ear and hearing problems because of the impact of middle ear infections suffered in childhood.

Box 1 Understanding ear and hearing problems

Ear health refers to the health status of the ear. Some conditions affecting the ear are infectious diseases, ear infections, injuries to the ear, balance disorders, tinnitus, hearing sensitivity and hearing loss.

Hearing loss refers to loss of hearing in one or both ears, which may result from genetic causes, complications at birth, infectious diseases, chronic ear infections, use of certain medicines, injuries and accidents, exposure to loud noise and ageing.

While ear disease and other ear conditions can cause hearing loss, not all hearing loss is caused by ear conditions. Similarly, not all ear conditions cause hearing loss.

Hearing loss can be present at birth (congenital) or occur later in childhood or adulthood (acquired). The 3 types of hearing loss are:

- **sensorineural** – hearing loss that occurs due to a reduction in sound transmission between the inner ear and the brain. Causes can include ageing, noise, chemical agents or medications, chemicals from smoking, and in children: genetic, structural changes of the inner ear or nerves and infections during pregnancy. Sensorineural hearing loss is permanent and cannot be rectified surgically or medically
- **conductive** – hearing loss that occurs when sounds cannot get through the outer and middle ear. Causes can include otitis media, fluid in the middle ear, impacted wax in the ear or a ruptured eardrum. Conductive hearing loss may be temporary or permanent and often resolves without treatment but can usually be rectified through surgery or medications
- **mixed** – hearing loss that has elements of both sensorineural and conductive hearing loss. This means the outer ear cannot conduct sound properly to the inner ear and the inner ear cannot process sounds to be sent to the brain.

The impact of hearing loss varies widely, influenced by various factors including severity of the hearing loss (Section 2.2), whether it affects one ear or both ears, age of onset of hearing loss, type of hearing loss, and access to services.

Otitis media refers to the inflammation and infection of the middle ear. Antibiotics or surgical intervention can be required to effectively manage chronic otitis media. The main forms of this disease are:

- **acute otitis media** (or 'bulging eardrum') – fluid behind the eardrum plus at least one of: bulging or red eardrum, recent discharge of pus, fever, ear pain or irritability
- **otitis media with effusion** (or 'glue ear') – fluid behind the eardrum without acute symptoms other than conductive hearing loss
- **chronic suppurative otitis media with discharge (CSOM)** (or 'runny ears') – persistent ear discharge through a persistent hole in the eardrum lasting for more than 2 weeks
- **dry perforation or inactive CSOM** – a hole in the eardrum without evidence of discharge or fluid behind the ear (Leach et al. 2020).

Signs and symptoms of otitis media in children

In young children, signs of otitis media (usually due to fluid) include a child pulling at their ears, fever, a complaint of ear pain, discharge from the ear, dizziness or clumsiness, congestion related to a cold or a child being unusually grizzly and grumpy. In older children, signs include decreased alertness, asking people to repeat things, asking to turn sounds up, boredom, watching others for cues, poor concentration and behavioural problems.

Children can also have otitis media or middle ear fluid with no symptoms or obvious signs, especially in very young children. This is why early and regular screening checks for First Nations children are key to preventing hearing loss (AIHW 2021b).

Impact of ear and hearing problems

Ear and hearing problems can have impacts across the life course (Australian Indigenous HealthInfoNet 2021; Burns and Thomson 2013; Gotis-Graham et al. 2020; Leach et al. 2021; Su et al. 2019; Su et al. 2020a; Su et al. 2020b).

Ear and hearing problems in young children can:

- lead to delays in speech and language development and hamper cognitive and behavioural development, which can affect school engagement and contribute to poorer educational outcomes (Menzies School of Health Research 2023, Wong et al. 2019)
- lead to higher rates of psychosocial problems, including anxiety, depression, hyperactivity and conduct problems (Wong et al. 2019)
- hamper cognitive and behavioural development, which in turn can affect school engagement.

Over the longer term, ear and hearing problems:

- can be a barrier to employment opportunities
- have been associated with increased contact with the criminal justice system
- can lead to strained relationships and isolation from community and culture
- have been associated with cognitive decline in older adults.

Factors influencing ear and hearing health

Both the social determinants of health, and access to appropriate ear and hearing health services across the continuum of care – starting with prevention through to screening, diagnosis, treatment and rehabilitation – are critical for achieving better ear and hearing health outcomes for First Nations people over the life span.

More information about protective and risk factors for ear and hearing health is available in Chapter 3 of the foundational edition of this report. The AIHW Aboriginal and Torres Strait Islander Health Performance Framework provides a comprehensive view of health outcomes, the social determinants of health, and performance of the health system for First Nations people. For more information see: <https://www.indigenoushpf.gov.au/>.

Determinants of ear and hearing health

The factors that contribute to poorer ear and hearing health for First Nations people are complex and are related to a range of historical, social and cultural determinants of health, such as dispossession, powerlessness and lack of self-determination.

Social and economic disadvantage – such as lower levels of education, lack of employment, and poverty – contribute to greater rates of untreated acute and chronic ear infections (Jacoby et al. 2011; Leach and Morris 2017). For many First Nations people, the direct costs and indirect costs (such as transportation) of health-care services may be unaffordable. Social determinants of ear and hearing health include overcrowded housing – as this is a risk factor for the spread of upper respiratory tract infections and the subsequent development of middle ear infections (Jacoby et al. 2011). Exposure to tobacco smoke is another risk factor for middle ear infections, including in infants (Jervis-Bardy et al. 2014; Leach and Morris 2017).



Early risk factors for ear and hearing health problems include birth complications, low birthweight or premature birth, and hereditary and non-hereditary genetic factors. High quality care during pregnancy decreases the risk of birth complications, low birthweight, premature birth and infections during pregnancy that can cause congenital hearing loss. Following childbirth, avoiding smoke exposure – and having breastfeeding support, good hygiene and adequate housing – are protective factors for ear and hearing health.

During pregnancy and childhood, a number of vaccine-preventable conditions can cause congenital and acquired hearing loss, including rubella, measles, Haemophilus influenzae type b, pneumococcus, meningococcus and influenza.

Over the life course, risk factors for poor hearing include ageing, injury or trauma to the ear or head, use of certain medications, exposure to certain chemicals, and workplace noise. Protective factors include managing repeated or chronic ear infections and other chronic conditions, limiting repeated exposure to loud noise and reducing exposure to tobacco smoke.

Broader risk factors for ear and hearing health relate to public awareness of conditions and treatment, determinants of ear and hearing health, and access to health care (Burns and Thomson 2013; DeLacy et al. 2020; Jarvis-Bardy et al. 2014; Leach et al. 2020; Leach et al. 2021; NACCHO and RACGP 2018).

Access to ear and hearing health services

Access to appropriate ear and hearing health services across the continuum of care and over the life span is critical for achieving better ear and hearing health outcomes for First Nations people.

Systemic barriers to First Nations people accessing ear and hearing health services can exacerbate difficulties in navigating pathways through an already complex health system. Access may be affected by the availability and accessibility of culturally appropriate health services, a lack of continuity of care, racism and unconscious bias from health-care providers (AIHW 2021a; Burns and Thomson 2013; Gotis-Graham et al. 2020).

Quigley et al. (2021) explored the impacts of implicit bias on the experience and care provided to First Nations patients within emergency departments, finding:

‘... implicit racial bias which can result in stereotyping of racial minorities and premature diagnostic closure. Furthermore, it may contribute to distrust of medical professionals resulting in higher rates of leave events and hinder [First Nations people] from seeking care or following treatment recommendations’.

Other barriers include:

- a complex referral pathway for specialist services and long wait times for specialist consults, relevant procedures, follow-up and rehabilitation services
- availability of health professionals with the training and equipment required to conduct audiometric tests (which may require a number of complementary assessments for hearing and eardrum mobility)
- considerable variability in access to services across Australia, given the wide geographic spread and isolation of some First Nations communities, while audiologists and ENT specialists are mostly located in metropolitan areas
- some remote areas having strong outreach programs providing communities with timely access to services, with other areas having very limited and infrequent access to services
- high mobility of First Nations families, which may mean they are not present during outreach service visits

- access to transport services
- affordability of health-care services plus the indirect costs of transportation, time taken for travel and having to take time off work.

Navigating ear and hearing health services

The ear and hearing health service system is extremely complex and navigating it is challenging for patients and their families (the patient journey). The journey through the health system may require accessing numerous services from initial and follow-up screenings, diagnosis, medical interventions, through to rehabilitation services. Rehabilitation services include device fitting, early intervention services for children, speech pathology and occupational therapy. Educational, workplace and community supports may also be needed for patients to better communicate and to participate effectively at school, at work and in their community.

Multiple services and sectors are not typically joined up, and there are different challenges involved in accessing each of these services. This means it is difficult to navigate pathways through these services. This imposes a substantial burden on patients and their families, who need to advocate strongly to ensure the patient gets access to the right services at the right time. See Box 2 for an example of the challenges faced in identifying ear and hearing problems.

There are critical points in the patient journey where delays in receiving care, and barriers to accessing care, may result in patients ‘falling out’ along the care pathway. As a result it can take substantial time to receive screening, diagnosis, treatment and rehabilitation services such as referrals, ear nose and throat (ENT) specialist consults and surgery (Hearing Australia 2021).

Box 2: Challenges with identifying ear and hearing problems

For First Nations children, the importance of strong and consistent ear and hearing health surveillance within the primary health setting is well understood. Ideally, children need to have access to regular and age-appropriate ear and hearing health checks in line with the Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations (the OM Guidelines).

It is acknowledged that these local primary health services often deal with chronic disease and acute health problems beyond ears and hearing. Often these services report that it is difficult to undertake regular ear and hearing health checks. This means there is a potential gap in knowledge about the extent of otitis media and related problems in local communities.

Identifying and managing otitis media depend on the right children being referred, at the right time and in the right place. If children miss having regular ear and hearing health checks, it increases the likelihood of children living with chronic otitis media and associated impacts without identification and management.

Figure 2 presents an example of the complexity of the patient journey for children and young people as they move through the Queensland Government’s Deadly Ears Program. The program aims to enhance coordination across health, early childhood development and education sectors.



The ear and hearing health system

Ear and hearing health services are provided across a continuum of care from awareness, prevention, screening, diagnosis, treatment and rehabilitation. An overview of these services is provided in this section, and examples to illustrate the diversity of services, providers and settings are summarised in Table 2.

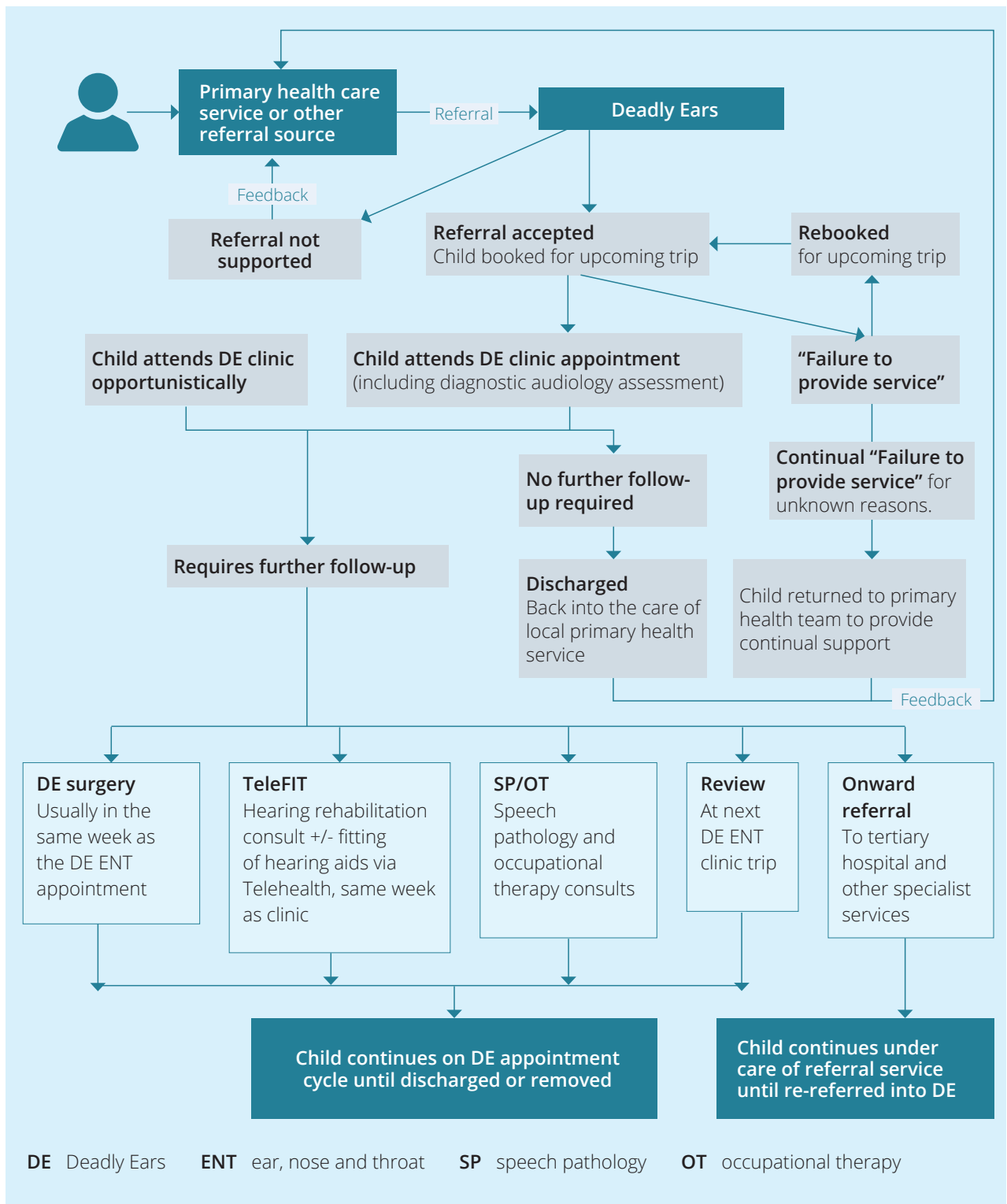
Providers

Ear and hearing health-care services are provided by various health-care professionals. These include Aboriginal Health Workers, general practitioners (GPs) and nurses (including Audiometry Nurses and Maternal and Child Health nurses). Health services are also provided by First Nations health practitioners, community hearing health workers, Ear Health Workers and Coordinators, audiologists, audiometrists, clinical nurse specialists, ENT specialists, child ear and hearing health coordinators, occupational therapists, speech pathologists, paediatricians, other health practitioners, allied health workers and nurses. At any point along the continuum of care, a number of providers may need to work together as a team to support ear and hearing health outcomes. More complex health issues and related impacts – such as speech, language and behavioural development – are likely to require a larger and more diverse team of health professionals.

Ear Health Workers and Coordinators work with communities and health-care providers to build skills and knowledge that help prevent and treat ear disease and hearing loss and identify pathways to ear and hearing health services. Other professionals, including support workers, interpreters and teachers, provide vital diagnosis, treatment and rehabilitation support for people with an ear disease or hearing loss.

Families, workplaces, and professionals not traditionally considered part of the health-care system – such as teachers, early childhood education and care professionals, teachers of the deaf, and support workers – also help to prevent, identify and manage ear and hearing problems, and to provide support and rehabilitation services.

Figure 2: Patient journey through the Deadly Ears Program



Source: Deadly Ears Program data collection



Services

There are many challenges in identifying ear and hearing problems using screening and diagnostic tests, and a number of services may be involved in this process. Continuity of care is a particular challenge in identifying and managing ear and hearing health problems as conditions such as chronic and recurring middle ear infections require multiple screenings at the right times by the same provider or by a team of providers.

Once diagnosed, ear disease and conductive hearing loss can usually be treated with medical and surgical interventions. Chronic or recurrent ear infections can be treated with antibiotics. Other procedures include cleaning ears and removing wax, incising the eardrum to remove fluid, inserting grommets (drainage tubes), and repairing perforations to the eardrum. Sensorineural hearing loss and other hearing problems such as tinnitus cannot usually be treated or reversed.

The impact of both temporary and permanent ear and hearing problems can be mitigated through rehabilitation. Rehabilitation reduces the impact of ear disease and hearing loss and helps to ensure ongoing access to communication through interventions such as:

- hearing aids or cochlear implants
- speech and/or occupational therapy
- counselling
- teaching and/or school assistance.

For example, the impacts of conductive or temporary hearing loss on speech and language development can be mitigated with the use of hearing aids and other rehabilitation services.

Settings

Most people enter the ear and hearing health system through primary health-care services delivered in settings such as Aboriginal Community Controlled Health Services, general practices, community health centres and allied health practices. Alternatively, people may attend screening programs, visit hospital emergency departments or present at an audiology clinic or hearing aid provider.

Accessibility and availability of culturally safe ear and hearing health specialist services are key to First Nations people receiving timely diagnosis and treatment.

Table 2: Overview of ear and hearing health services

Prevention Services	Screening Services	Diagnosis Services	Treatment Services	Rehabilitation Services
<p>Education</p> <p>Awareness raising</p>	<p>Ear examinations</p> <p>Audiometric assessments (which may require complementary assessments, including hearing, tympanometry and/or pneumatic otoscopy)</p>	<p>History taking</p> <p>Ear examinations</p> <p>Audiometric assessments (which may require complementary assessments, including hearing, tympanometry and/or pneumatic otoscopy)</p> <p>Balance assessments</p> <p>Other scans, biopsies, cultures or tests</p>	<p>Antibiotics and other medical treatments</p> <p>Ear surgery (for example, myringotomy and myringoplasty)</p> <p>Wax removal and ear cleaning</p>	<p>Hearing aids, cochlear implants</p> <p>Assistive listening devices</p> <p>Communication training</p> <p>Vestibular (balance) rehabilitation</p> <p>Counselling</p> <p>Education and support services</p> <p>Early childhood development/intervention services</p> <p>Speech therapy</p> <p>Occupational therapy</p>
Providers	Providers	Providers	Providers	Providers
<p><i>Providers listed under each column do not necessarily provide all of the services listed in the same column above.</i></p>				
<p>Families and carers</p> <p>First Nations Health Workers</p> <p>Early childhood educators</p> <p>Employers</p>	<p>First Nations Health Workers</p> <p>GPs</p> <p>Nurses</p> <p>Audiologists</p> <p>Audiometrists</p> <p>Audiometry Nurses</p> <p>Ear Health Coordinators</p> <p>Paediatricians</p>	<p>First Nations Health Workers</p> <p>GPs</p> <p>Nurses</p> <p>Audiologists</p> <p>Audiometrists</p> <p>Audiometry Nurses</p> <p>ENT-specialists</p> <p>Paediatricians</p>	<p>GPs</p> <p>Nurses</p> <p>Audiologists</p> <p>ENT specialists</p> <p>Paediatricians</p>	<p>Audiologists</p> <p>Audiometrists</p> <p>ENT specialists</p> <p>GPs</p> <p>Teachers of the deaf</p> <p>Teachers and other educators</p> <p>Support workers</p> <p>Speech pathologists</p> <p>Occupational therapists</p> <p>Paediatricians</p>

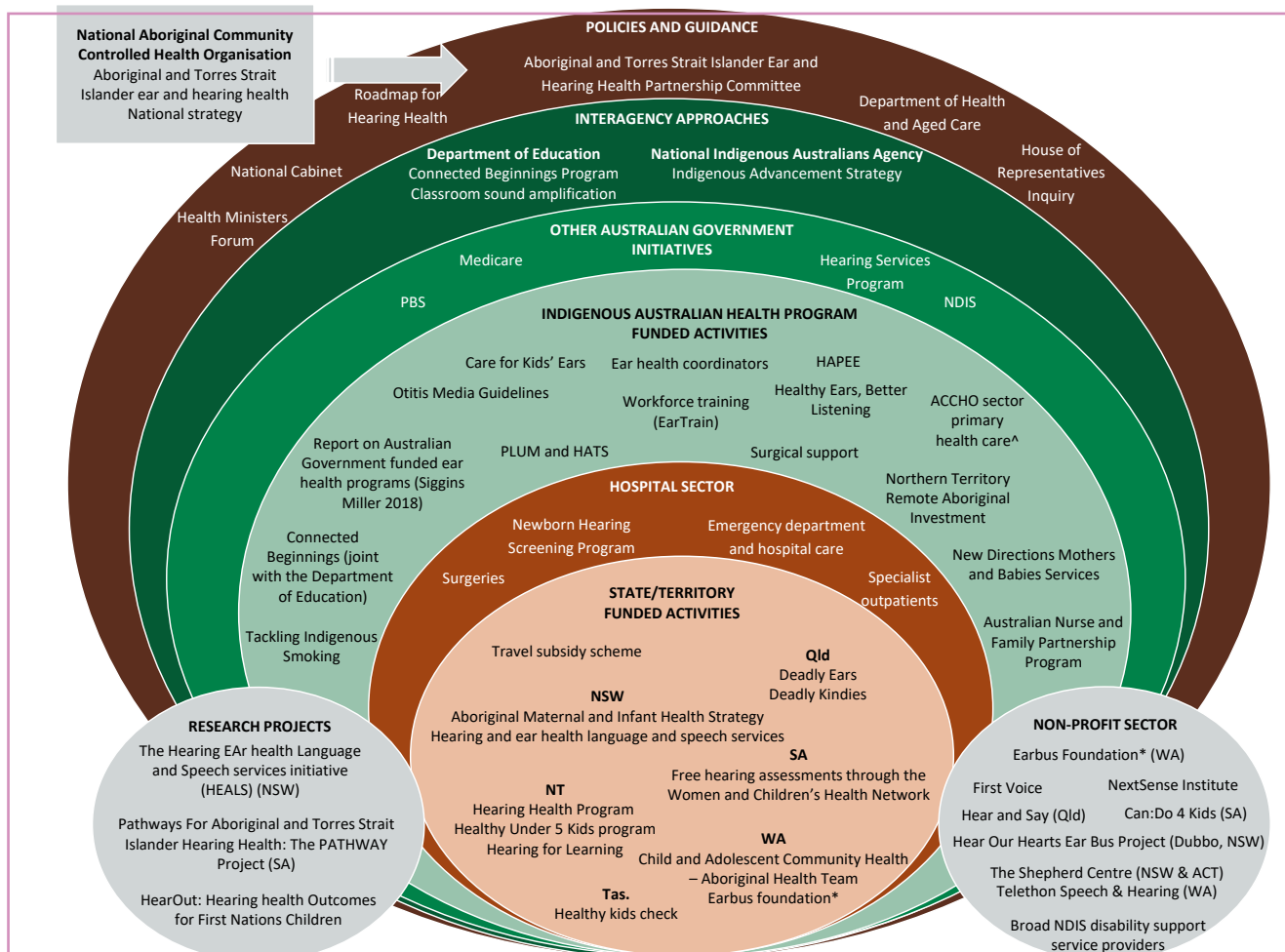
Table 2 (continued): Overview of ear and hearing health services

Prevention Settings	Screening Settings	Diagnosis Settings	Treatment Settings	Rehabilitation Settings
Households Communities and community events Aboriginal Community Controlled Health Services Other Indigenous-specific primary health-care services Community clinics and health centres Private practices and clinics Hospitals Schools and early childhood education and care services Workplaces	Aboriginal Community Controlled Health Services Other Indigenous-specific primary health-care services Community clinics and health centres Private practices and clinics Hospitals Schools and early childhood education and care services	Aboriginal Community Controlled Health Services Other Indigenous-specific primary health-care services Community clinics and health centres Private practices and clinics Hospitals Outreach services	Aboriginal Community Controlled Health Services Other Indigenous-specific primary health-care services Community clinics and health centres Private practices and clinics Hospitals Outreach services	Aboriginal Community Controlled Health Services Other Indigenous-specific primary health-care services Community clinics and health centres Private practices and clinics Hospital outpatient clinics Outreach services in various settings
Access No referral required	Access No referral required	Access Referral required for some subsidised audiology and ENT services	Access Antibiotics can be provided by any medical practitioner Surgery requires referral to ENT specialists and access to a hospital with trained surgical staff	Access Referral required to access subsidised supports

Ear and hearing health policy context, services and programs

A broad range of policies and programs provides ear and hearing services for First Nations people, with the provision of these services being complex and fragmented. A preliminary mapping of the policy and program landscape is provided in Figure 3 and Table 3. This policy and program landscape includes programs and services for all Australians, not just those specifically for First Nations people. The AIHW will continue to work with the Ear and Hearing Advisory Group to develop a more comprehensive mapping of ear and hearing health policies and programs for First Nations people in Australia.

Figure 3: First Nations ear or hearing related services, policies and programs in Australia



ACCHO = Aboriginal Community Controlled Health Organisation; HAPEE = Hearing Assessment Program – Early Ears; HATS = Hear and Talk Scale; NDIS = National Disability Insurance Scheme; PBS = Pharmaceutical Benefits Scheme; PLUM = Parents Evaluated Listening and Understanding Measure.

^ As well as the Indigenous Australian Health Program, ACCHOs may access other funding sources to support service delivery.

* The Earbus Foundation is a non-profit sector organisation which accesses government and other funding sources to support service delivery.

Note: This figure presents a selection of current First Nations ear or hearing related services, policies and programs in Australia; it is not a comprehensive overview of all services, policies, programs and organisations providing services.

Source: This figure was developed by the AIHW with input from the Department of Health and Aged Care.



National, state and territory governments share funding, operational and management responsibilities. Service provision – through private hospitals, medical practices, audiology services and rehabilitation services – is also spread across the private, for profit, and non profit sectors. As a result:

- the system (like the whole health system) is complex for consumers to access and navigate
- providers face challenges in resourcing, delivering and reporting on services
- it is difficult to maintain ongoing data collections and monitor change over time
- better data are needed to evaluate programs and inform decisions.

The Universal Neonatal Hearing Screening Program provides a model for integrated ear and hearing services as different service components are interconnected from the outset (measure 2.1, Neonatal hearing screening).

While not comprehensive, Table 3 highlights some of the ear and hearing health programs that exist around the country as well as their key sources of funding. This table does not include the many unnamed programs that provide important services to communities.

Programs are described in the 2021 foundational report and summarised in Figure 3 and Table 3.

Table 3: Summary of ear and hearing health programs

Program	Funding	Eligibility		Program activities						
		Location	Target population	Awareness	Screening	Primary care	Audiology/ENT	Surgical	Rehabilitation	Workforce dev.
Neonatal Hearing Screening	S/T	Australia	Newborns		•					
Hearing Assessment Program – Early Ears (HAPEE)	AG	Australia	<6 yrs	•			•			•
Maternal and Child Health Services	S/T	Australia		•						
New Directions Mothers and Babies Services	AG	Australia		•						
Kindergarten Hearing Screening Program	SA	SA	3–4 yrs		•					
Healthy Kids Check	Tas	Tas	4 yrs		•					
Winnunga Nimmityjah Aboriginal Health Service - School Visit Program	..	ACT			•					
Sound Scouts	AG	Australia	4+ yrs		•					
NSW Aboriginal Ear Health Program	NSW	NSW	<6 yrs	•						
Listen and Learning in Aboriginal Children (Macquarie University)	AG	Developed in NSW; rolled out Australia	<10 yrs						•	
Hearing for Learning (Menzies)	Mixed	Remote NT	<16 yrs		•					•
Deadly Ears Program	Mixed	Qld	<18 yrs	•	•		•	•	•	•
Hear to Learn – School Hearing Program	Private	Qld			•					
EarBus	Mixed	WA	0–21+ yrs		•	•	•			
WA Country Health Service (WACHS) Kimberley ENT Outreach	Mixed	Kimberley region, WA	All	•	•		•	•	•	•
Healthy Ears, Better Hearing, Better Listening (HEBHBL)	AG	Australia	<21 yrs			•	•			
Hearing health outreach services for Aboriginal and Torres Strait Islander children in the Northern Territory	AG and NT gov	NT	<21 yrs	•		•	•			•
Hearing Services Program (HSP)			<26;							
• Voucher Program	AG	Australia	26–49*;				•		•	•
• Community Services Obligation			50+ yrs							

Table 2 (continued): Summary of ear and hearing health programs

Program	Funding	Eligibility		Program activities						
		Location	Target population	Awareness	Screening	Primary care	Audiology/ENT	Surgical	Rehabilitation	Workforce dev.
National Disability Insurance Scheme (NDIS)	AG	Australia	<65 yrs						•	
NDIS service providers	Various	Various	All						•	
Ear surgical support	AG	Australia	All					•		
Djaalinj Waakinj Centre for Ear and Hearing Health (Telethon Kids Institute)	Mixed	WA metro	<18	•	•	•	•			•
Care for Kids' Ears	AG	Australia	Carers / teachers	•						
PLUM (Parents Evaluated Listening and Understanding Measure) ^a and HATS (Hear and Talk Scale) ^a	AG	Australia	PHC/ECE/ parents of children <6 yrs	•	•					
Improving Access and Pathways to Care for Otolaryngology Disease (ASOHNS) ^b	AG	Australia	<14 yrs							•
Listen to Learn	AG	National	PHC/ECE/ school staff		•		•			•
EarTrain	AG	Australia	PHC							•
Ear Health Coordinators Program	AG	Australia	n.a.							•
Ear and hearing assessment equipment	AG	Australia	n.a.		•	•				•
Clinical Care of Otitis Media Guidelines										•
<i>National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people</i>										•

* If meet additional eligibility criteria.

AG = Australian Government; ECE = early childhood educators; S/T = state/territory; PHC = Primary health care nurse.

a PLUM and HATS are not programs but tools that workers can use.

b ASOHNS = Australian Society of Otolaryngology Head and Neck Surgery.

Reporting on ear and hearing health measures

This is the first annual update of the foundational report [Ear and hearing health of Aboriginal and Torres Strait Islander people 2021](#). This update brings together information and data at both national and jurisdictional levels on:

- ear and hearing health status of First Nations people
- patient use of hearing health services
- the ear and hearing health workforce
- key data developments since the foundational report.

Definitions and supporting contextual information were provided in the foundational report.

Structure of this report

The structure of this report follows the national framework for reporting on ear and hearing problems presented in the foundational report, with data presented for a range of measures across the continuum of care – from screening and diagnosis, treatment and rehabilitation.

The report is organised into the following chapters:

- **Chapter 1: Prevalence** – presents available information on the prevalence of ear and hearing health problems
- **Chapter 2: Screening and diagnosis** – presents information on screening and diagnosis services
- **Chapter 3: Intervention and treatment** – presents detailed information on the treatment of ear and hearing health conditions in hospitals
- **Chapter 4: Rehabilitation** – presents information on the provision of assistive devices
- **Chapter 5: Workforce** – presents available information on the size and location of the ear and hearing health workforce
- **Chapter 6: Data gaps and development opportunities** – discusses new data developments relevant to the ear and hearing health of First Nations people.

Table 4 provides an overview of the data sources in this report, by section (including age groups reported) to help readers identify information specific to paediatric age groups.

This report includes data collected during 2020 and 2021. During this period, collection was affected by the wide-ranging impacts of the coronavirus disease 2019 (COVID-19) pandemic. For data covering 1 July 2019 to 30 June 2020, only the months between March and June 2020 overlap with the pandemic. Some explanations for variations in data due to COVID-19 are summarised in [Section 1.5 Impact of COVID-19](#) in the foundational 2021 report.

Table 4: Information, data sources and age groups reported

Section	Data source	Reference period	Age groups reported (years)	
Prevalence				
1.1	Reported long-term ear or hearing problems	NATSIHS	2018–19	0–14, 15–24, 25–54, 55+
1.2	Measured hearing loss	NATSIHS	2018–19	7–14, 7 and over
	1.2.1 Measured hearing loss in one or both ears			
	1.2.2 Severity of measured hearing loss			
	1.2.3 Measured and reported hearing loss			
	1.2.4 Measured hearing loss among program participants	Programs	Various	Various
Screening and diagnosis				
2.1	Neonatal hearing screening	UNHS	2021–22	n.a.
	2.1.1 Participation in neonatal hearing screening			
	2.1.2 Referral for audiological assessment following neonatal hearing screening			
	2.1.3 Diagnosis			
2.2	Annual ear health checks in primary care settings	MBS	2021–22	0–4, 15–24...55–64, 65+
	Health assessments for First Nations people (proxy measure)			
2.3	Diagnostic audiology services			
	2.3.1 Audiology services	MBS	2021–22	0–4, 15–49, 50+
2.4	Hearing Assessment Program – Early Years (HAPEE)	Hearing Australia	2022	0–6*
Intervention and treatment				
3.1	Emergency department presentations for ear or hearing related problems	NAPEDCD	2020–22	0–14*, 15–54, 55+
3.2	Hospitalisations for diseases of the ear and mastoid process	NHMD	2020–22	0–14*, 15–34, 35–54, 55+
3.3	Hospital procedures for ear or hearing related problems	NHMD	2020–22	0–14*, 15–54, 55+
	3.3.1 Ear or hearing related procedures, all ages			
	3.3.2 Middle ear related procedures among children aged 0–14			
3.4	Waiting times for key elective ear or hearing related surgery	NHMD	2020–22	0–14, 15+
	3.4.1 Waiting times for elective myringotomy surgery			
	3.4.2 Waiting times for elective myringoplasty surgery			
3.5	Eye and Ear Surgical Support Program			

Table 4 (continued): Information, data sources and age groups reported

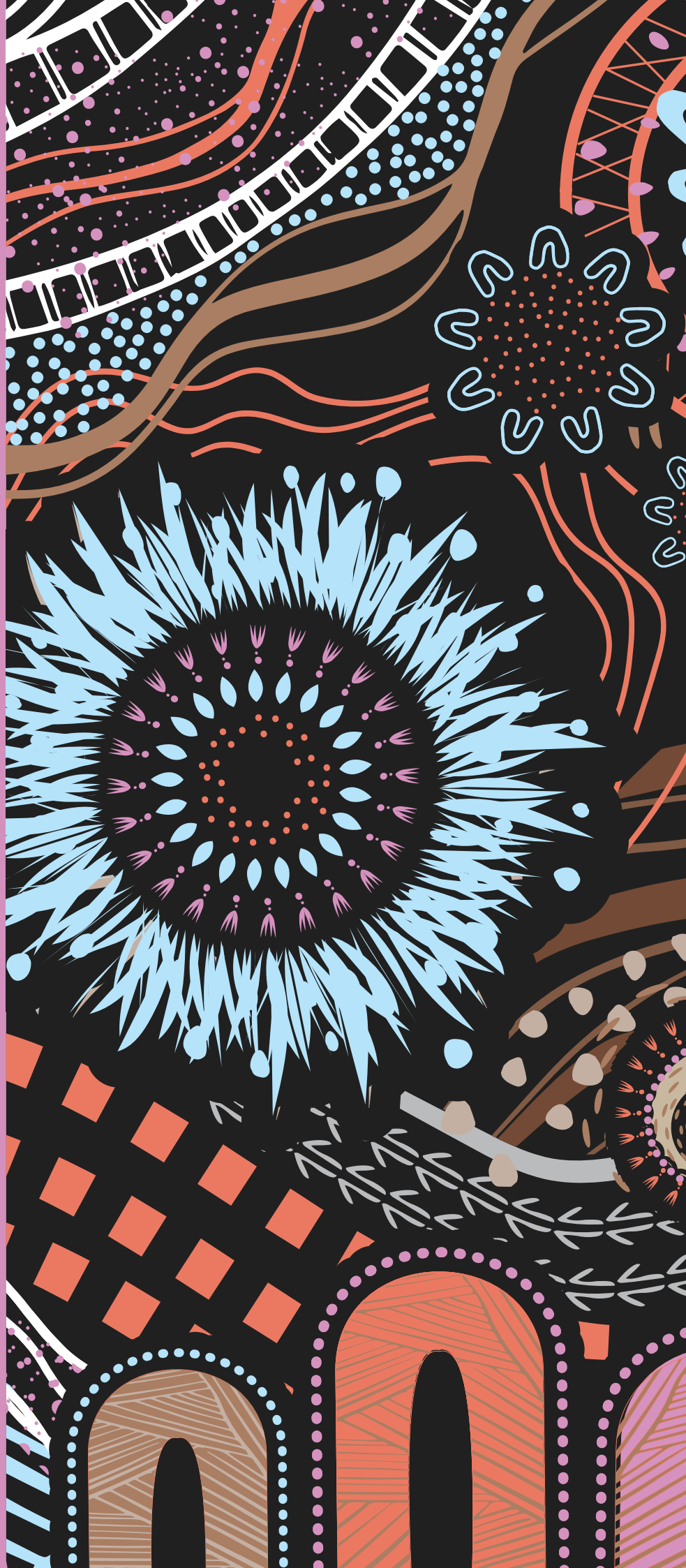
Section	Data source	Reference period	Age groups reported (years)	
Rehabilitation				
4.1	Hearing aids and cochlear implants	Hearing Australia	2021–22	0–14, 15–25, 26–49, 50+
	4.1.1 Hearing Australia clients fitted with hearing devices			
	4.1.2 Age of first fitting			
4.2	National Disability Insurance Scheme	NDIS	2022–23	0–6*, 7–14, 15–25
Workforce				
5.1	Audiologists – number and rate per 100,000 Australian population	Census, DESE	2021	n.a.
5.2	ENT specialists – number and FTE per 100,000 Australian population	NHWD	2022	n.a.
5.3	EarTrain workforce training	TAFE NSW	2022–23	n.a.
5.4	Healthy Ears – Better Hearing, Better Listening occasions of outreach services	DoHAC	2021–22	n.a.

Not updated – no new data available since previous report.

* Age groupings also reported in individual years.

Census = 2016 Census of Population and Housing; DESE = Department of Education, Skills and Employment; DoHAC = Department of Health and Aged Care; MBS = Medicare Benefits Schedule; NATSIHS = National Aboriginal and Torres Strait Islander Health Survey; NDIS = National Disability Insurance Scheme; NHMD = National Hospital Morbidity Database; NHWD = National Health Workforce Dataset; NNAPEDCD = National Non-admitted Patient Emergency Department Care Database; NTRAI = Northern Territory Remote Aboriginal Investment Hearing Health Program; OSR = Online Services Report; TAFE = Technical and Further Education; UNHS = Universal Neonatal Hearing Screening programs (states and territories).

Note: A range of government-funded programs exist covering public awareness, diagnosis and screening, and treatment and rehabilitation provision. Data are available only for some of these programs.






1



Prevalence



Prevalence refers to the number of people in a population who have a health condition at a specific time. Data about prevalence can help to identify population groups more likely to experience poor ear health and regions in greater need of support and services.

This chapter covers the following information:

1.1 Reported long-term ear or hearing problems

1.2 Measured hearing loss.

The main data source for these measures is the Australian Bureau of Statistics (ABS).

2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), which collected information from First Nations people of all ages in non remote and remote areas of Australia, including discrete First Nations communities. As the next NATSIHS is being collected during 2023, these measures could not be updated for this report. More information on these measures, including limitations of the reported data and how the hearing test was conducted, is available in [Appendix A: Data sources](#). Program data come from the Queensland Government’s Deadly Ears Program and the National Partnership on Northern Territory Remote Aboriginal Investment (NTRAI).

Measure 1.1 Reported long-term ear or hearing problems



Key finding:


In 2018–19, 14% (around 111,700) of First Nations people reported an ear or hearing problem.

Measure 1.1 presents information on reported ear or hearing problems that have lasted or are expected to last for 6 months or more (ABS 2019a). An adult (parent or guardian) was asked to respond on behalf of children aged 0–14, and given the option to respond on behalf of children aged 15–17. These data underestimate the true prevalence of ear and hearing conditions, and the episodic nature of ear disease may not be well captured in these data.

1.1.1 Reported long-term ear or hearing problems

Overall: In 2018–19, 1 in 7 First Nations people (14% or 111,700 people) reported long-term ear or hearing problems, according to the 2018–19 NATSIHS. After adjusting for age differences between the 2 populations, First Nations people were 1.4 times more likely to report long-term ear or hearing problems than non-Indigenous Australians (AIHW and NIAA 2020).

Types of ear/hearing problems: Reported long-term ear or hearing problems were categorised into hearing loss, otitis media, and other diseases of the ear and mastoid. People could report experiencing conditions in more than one category. In 2018–19, 10% of First Nations people reported hearing loss and 1.3% reported otitis media (Figure 1.1.1a).



Age and sex: In 2018–19, the proportion of First Nations people reporting ear or hearing problems increased with age. Reported problems were lowest among First Nations children aged 0–4 (5.4%) and highest among those aged 55 and over (34%) (Figure 1.1.1b). The overall proportion of First Nations people reporting ear or hearing problems was the same for males and females (14%). Among those aged 55 and over, males (38%) were more likely to report ear or hearing problems than females (31%).

Compared with non-Indigenous children, Indigenous children were 3 times as likely to have otitis media (2.6% compared with 0.9%, respectively) (AIHW and NIAA 2020).

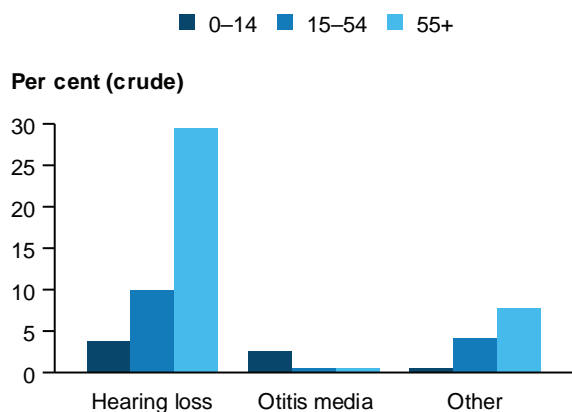
State/territory and remoteness area: In 2018–19, long-term ear or hearing problems were more likely to be reported by First Nations people:

- aged 55 and over who lived in Inner and outer regional areas (37%) than those who lived in Major cities (35%) or Remote and very remote areas (25%) (Figure 1.1.1c)
- aged 0–14 who lived in Remote and very remote areas (9.7%) than those who lived in Major cities (6.3%) and Inner and outer regional areas (6.7%)
- who lived in Tasmania (17%) compared with other states and territories (Figure 1.1.1d).

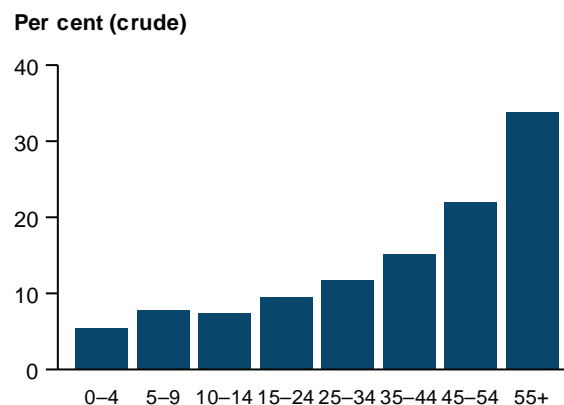
Time trend: Overall, the proportion of First Nations people reporting an ear or hearing problem was similar between 2001 (15%) and 2018–19 (14%). For First Nations children aged 0–14, the proportion reporting an ear or hearing problem dropped from 11% to 6.9% over the same period (Figure 1.1.1e).

Figure 1.1.1: Reported long-term ear/hearing problems among First Nations people, by selected characteristics

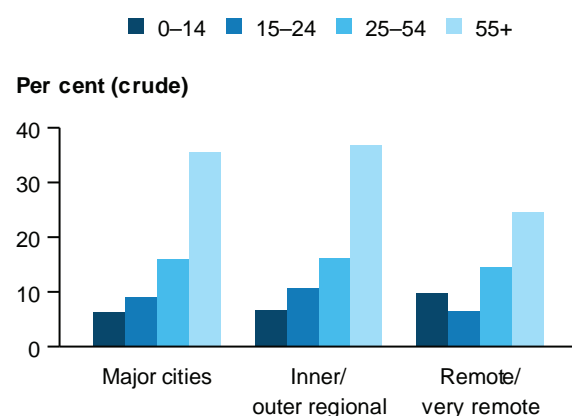
a) By type of problem and age, 2018–19



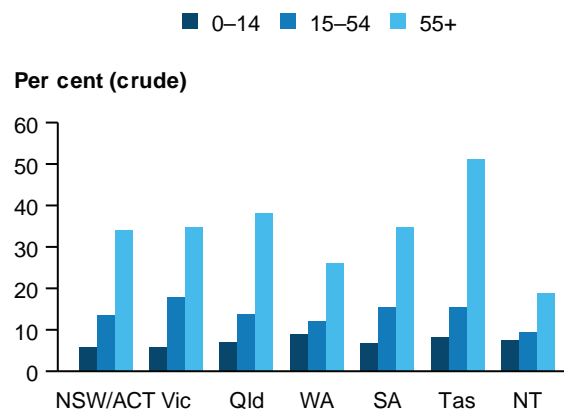
b) By age, 2018–19



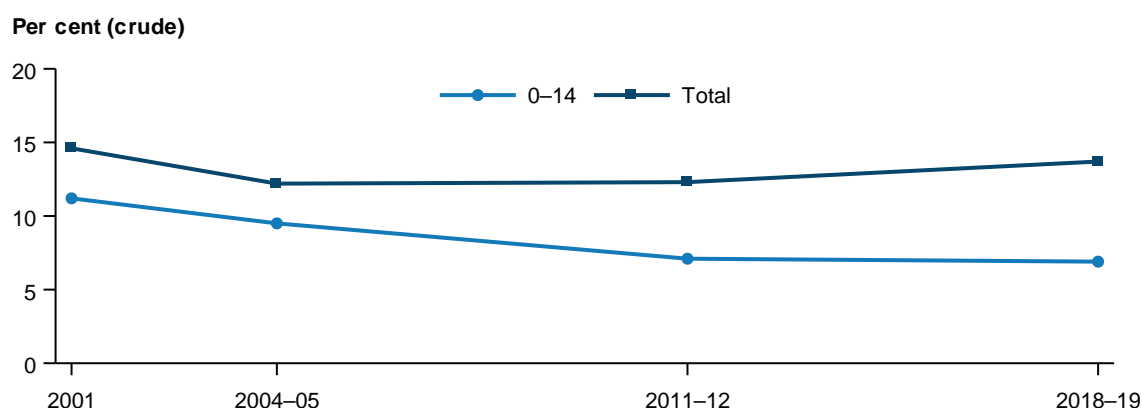
c) By remoteness area and age, 2018–19



d) By state/territory and age, 2018–19



e) Time trend, by age, 2001 to 2018–19



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

Sources: AIHW analysis of ABS National Health Survey 2001, National Aboriginal and Torres Strait Islander Health Survey 2004–05, Australian Aboriginal and Torres Strait Islander Health Survey 2012–13 and National Aboriginal and Torres Strait Islander Health Survey 2018–19.

Measure 1.2 Measured hearing loss

Key finding:

In 2018–19, an estimated 290,400 (43%) First Nations people aged 7 and over were found to have hearing loss in one (20%) or both ears (23%).

Almost 8 in 10 (79%) of those with measured hearing loss did not report long-term hearing loss.

Measure 1.2 presents information on the prevalence of hearing loss, its severity and whether the hearing loss affects one or both ears (ABS 2019a). This information was collected from participants aged 7 and over who did not have a cochlear implant, using a voluntary, self administered hearing test – 46% of participants completed the test. The test categorised the results into four levels of hearing impairment: no measured hearing impairment (quietest sound that can be heard is 20 dB or lower), mild hearing impairment (21 to 40 dB), moderate hearing impairment (41 to 60 dB) and severe or profound (more than 60 dB). The test was not diagnostic and information on type of hearing loss (conductive, sensorineural, or mixed) was not collected (ABS 2019b).

1.2.1 Measured hearing loss in one or both ears

Overall: In 2018–19, 290,400 (43%) First Nations people aged 7 and over were found to have hearing loss in one (20%) or both ears (23%) (Table 1.2.1).

Age and sex: The proportion of First Nations people with measured hearing loss in one or both ears increased steadily with age, from 29% among First Nations children aged 7–14 to 82% among those aged 55 and over (Table 1.2.1). Among First Nations children aged 7–14, a greater proportion of First Nations girls (35%) had measured hearing loss than First Nations boys (23%) (Figure 1.2.1a), while a greater proportion of First Nations men aged 55 and over (90%) had measured hearing loss than First Nations women aged 55 and over (75%).

Table 1.2.1: Estimated number of First Nations people with hearing loss by age, 2018–19 – number ('000) and per cent

Age (years)	No measured hearing loss	With measured hearing loss			Total
		One ear only	Both ears	Total with hearing loss	
7–14	102.9 (71%)	24.0 (17%)	18.1 (12%)	42.2 (29%)	145.1 (100%)
15–24	111.1 (71%)	29.7 (19%)	15.3 (10%)	44.7 (29%)	155.5 (100%)
25–34	79.2 (67%)	25.5 (22%)	13.3 (11%)	39.1 (33%)	117.8 (100%)
35–44	49.6 (59%)	16.2 (19%)	17.9 (21%)	33.9 (41%)	83.7 (100%)
45–54	30.7 (38%)	22.2 (27%)	28.3 (35%)	50.7 (62%)	81.8 (100%)
55 and over	17.6 (18%)	18.2 (19%)	61.7 (63%)	79.8 (82%)	97.6 (100%)
Total	390.8 (57%)	135.8 (20%)	154.3 (23%)	290.4 (43%)	681.0 (100%)

Note: Proportions within each age group are given in brackets.

Source: ABS National Aboriginal and Torres Strait Islander Health Survey 2018–19: Table 32.1.



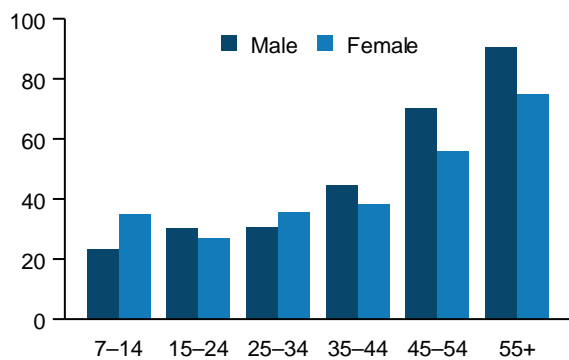
State/territory and remoteness area: In Remote and very remote areas, 40% of First Nations children aged 7–14 had measured hearing loss, compared with 31% in Inner and outer regional areas and 23% in Major cities. For all age groups, measured hearing loss increased with remoteness (Figure 1.2.1b).

The proportion of First Nations people with measured hearing loss was highest in the Northern Territory (60%) (Figure 1.2.1c).

Figure 1.2.1: Measured hearing loss among First Nations people aged 7 and over, by selected characteristics, 2018–19

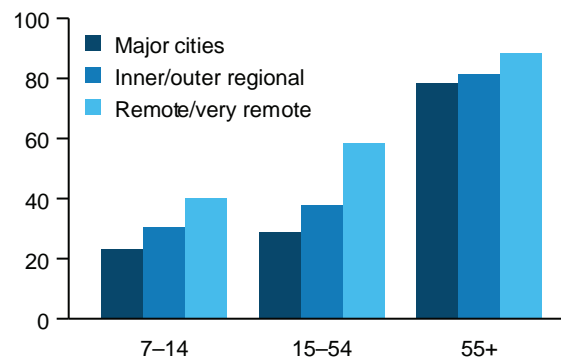
a) By type of problem and age, 2018–19

Per cent (crude)



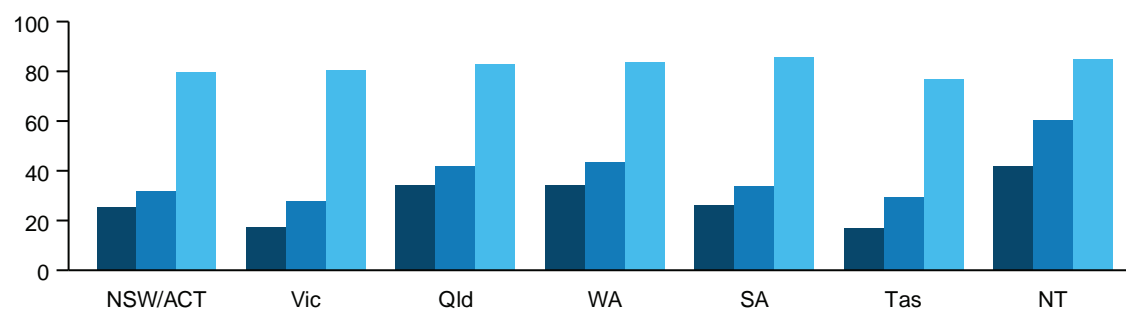
b) By age, 2018–19

Per cent (crude)



e) Time trend, by age, 2001 to 2018–19

Per cent (crude)



Notes

1. Data for measured hearing loss were imputed for all participants who elected not to complete the hearing test.
2. Data for these figures are available in the online data tables.

Source: AIHW analysis of ABS National Aboriginal and Torres Strait Islander Health Survey 2018–19.

1.2.2 Severity of measured hearing loss

Hearing loss may affect one ear (unilateral) or both ears (bilateral). For First Nations people with measured hearing loss in both ears, the severity of hearing impairment was determined using the quietest sound a person could hear in their better ear (in decibels or dB).

Overall: In 2018–19, of the estimated 290,000 First Nations people aged 7 and older who had hearing loss or hearing impairment:

- 20% had hearing loss in one ear only (unilateral)
- 15% had a mild hearing impairment (21–40dB)
- 3.6% had a moderate hearing impairment (41–70dB)
- 4.4% had a severe (71–90dB) or profound (91dB+) hearing impairment (ABS 2019a).

Age and sex: In 2018–19:

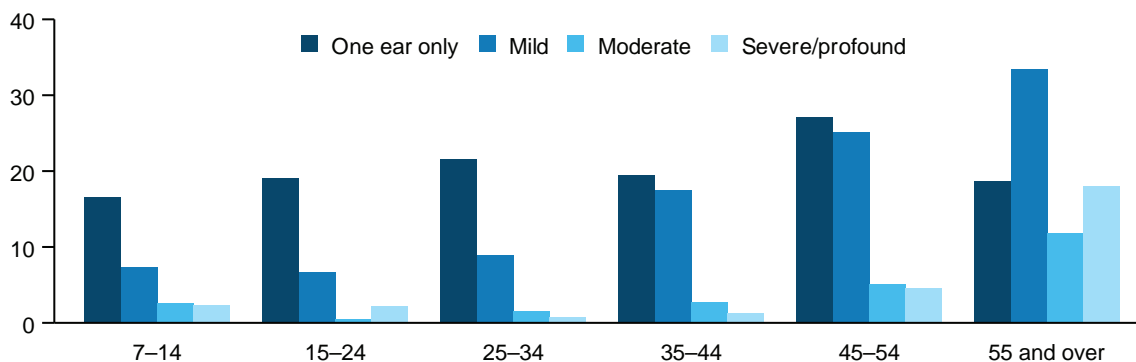
- the proportion of First Nations people with hearing impairment increased with age (Figure 1.2.2a). Nearly 2 in 3 First Nations people aged 55 and over (63%) had hearing impairment in both ears compared with 1 in 8 First Nations children aged 7–14 (13%)
- a higher proportion of males (5.6%) had a severe or profound hearing impairment than females (3.3%) (Figure 1.2.2b).

Remoteness: In 2018–19, a greater proportion of First Nations people in remote areas had hearing loss in one ear only or a mild hearing impairment compared with non-remote areas (Figure 1.2.2c). The proportion of people with moderate, severe or profound hearing loss was similar in remote and non-remote areas.

Figure 1.2.2: Severity of hearing loss among First Nations people aged 7 and over, by selected characteristics, 2018–19

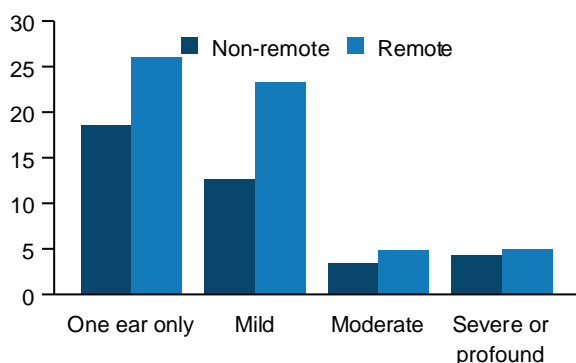
a) By age

Per cent (crude)



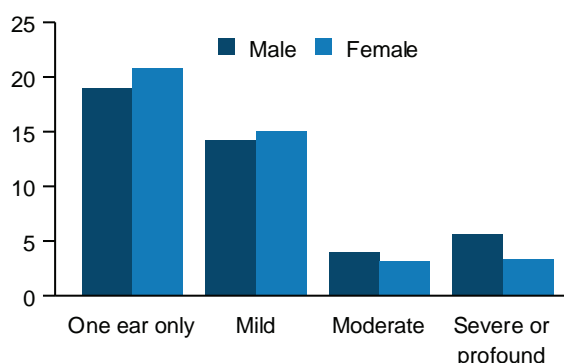
b) By sex

Per cent (crude)



c) By remoteness

Per cent (crude)



Notes

1. In figure (c), 'Remote' includes Remote and very remote areas and 'Non-remote' includes Major cities, Inner regional and Outer regional areas.
2. regional areas.
3. Data for measured hearing loss were imputed for all participants who elected not to complete the hearing test. See Glossary for definitions of mild, moderate, severe and profound hearing loss.
4. Data for these figures are available in the online data tables.

Source: AIHW analysis of ABS National Aboriginal and Torres Strait Islander Health Survey 2018–19.

1.2.3 Measured and reported hearing loss

The 2018–19 NATSIHS allows comparisons of measured and reported hearing loss for the same people. This helps to understand the level of under-reporting of hearing loss among First Nations people (ABS 2020). Reported data in this section are for people who reported long-term deafness or hearing loss in one or both ears. This excludes people who reported other ear conditions, such as otitis media, which may cause short-term hearing loss.

In 2018–19, among First Nations people aged 7 and over:

- 34% (228,500 people) had measured hearing loss and did not report long-term hearing loss. This was almost 8 in 10 (79%) of those with measured hearing loss
- 9% (61,600 people) reported long-term hearing loss and had measured hearing loss
- 3% (17,500 people) reported long-term hearing loss and did not have measured hearing loss.

The proportion of First Nations people aged 7 and over who had both measured hearing loss and reported long-term hearing loss increased with age, from only 2% among children aged 7–14 to 28% among adults aged 55 and over (Figure 1.2.3).

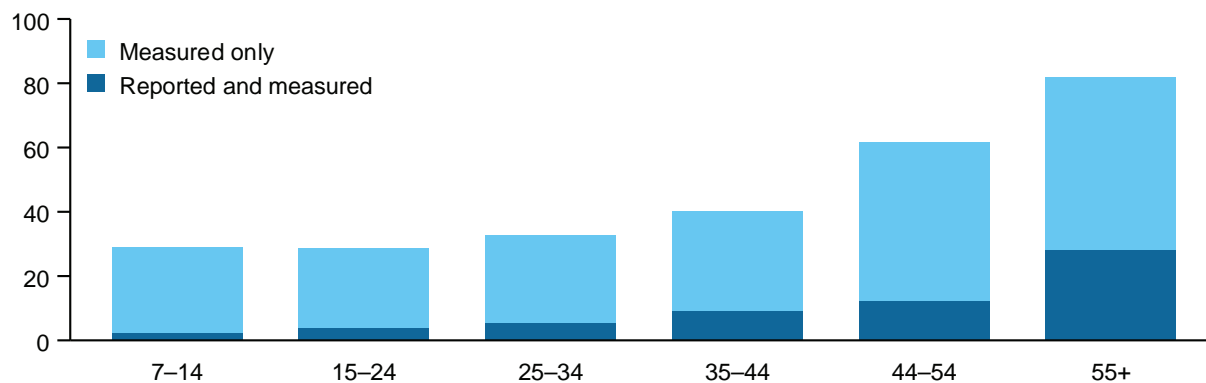
Among First Nations people with measured hearing loss:

- reported hearing loss was highest among those with a moderate, severe or profound hearing impairment (47%)
- reported hearing loss was lowest among those with a mild hearing impairment (18%) or hearing loss in one ear (13%)
- reporting was lower among those living in Remote or very remote areas (16%) than among those living in non-remote areas (23%).



Figure 1.2.3: Measured and reported hearing loss among First Nations people aged 7 and over, by age, 2018–19

Per cent (crude)



Notes

1. Reported and measured estimates for First Nations children aged 7–14 and First Nations adults aged 35–44 have a high standard error and should be used with caution.
2. Reported hearing loss includes participants who reported complete deafness, partial deafness or hearing loss in one or both ears.
3. Data for measured hearing loss were imputed for all participants who elected not to complete the hearing test.
4. Data for this figure are available in the online data tables.

Source: AIHW analysis of ABS National Aboriginal and Torres Strait Islander Health Survey 2018–19.

1.2.4 Measured hearing loss among program participants

Data from ear and hearing health programs can indicate prevalence of ear conditions and hearing loss among participants who attend these services, called ‘minimum prevalence’.

Deadly Ears (Queensland)

The Queensland Government set up the Deadly Ears Program to reduce the high rates of chronic middle ear disease and conductive hearing loss among First Nations children in Queensland. The Deadly Ears data collection contains information on ear, nose and throat (ENT) clinic, audiology assessment and ENT surgery services from 2007 to 2019.

Overall: Between 2015 and 2017, 13% of eligible First Nations children aged 0–14 accessed a Deadly Ears service and were found to have an ear condition. The estimated minimum prevalence of eligible children with an ear condition varied by age: 11% aged 0–4, 20% aged 5–9, and 8% aged 10–14 (AIHW 2021b).

Northern Territory Remote Aboriginal Investment Hearing Health (Northern Territory)

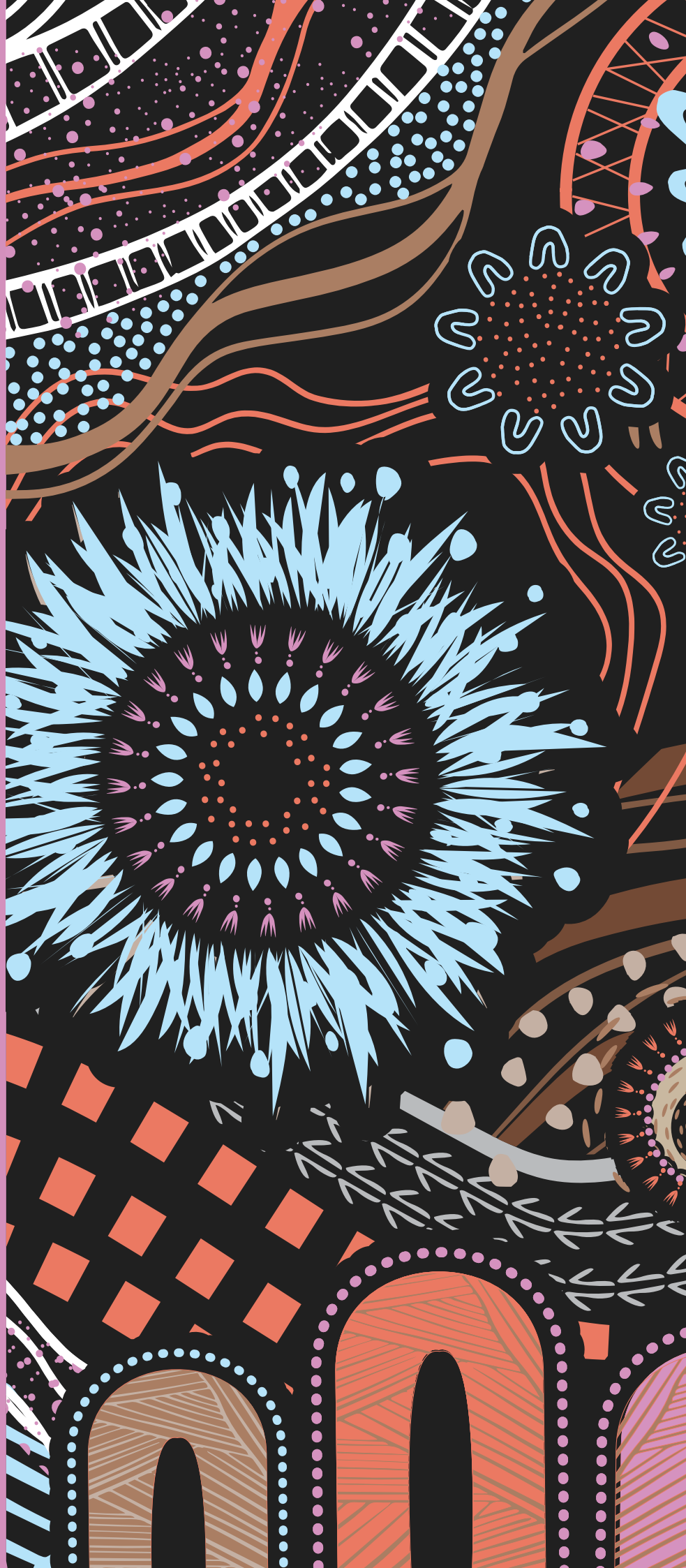
Since 2012, the Australian Government has funded the Northern Territory Government to deliver hearing health outreach services to First Nations children and young people aged under 21 in the Northern Territory. These services include audiology services, ENT services, and clinical nurse specialist services.

Overall: In 2022, 1,751 First Nations children and young people aged under 21 received hearing health outreach services through the NTRAI. Among these children:

- 1 in 2 (56%) had at least one ear condition
- 1 in 2 (56%) experienced hearing loss (AIHW 2023c).

Box 1.1 Measured hearing loss among study participants

Between 2017 and 2020, the Djaalinj Waakinj cohort study enrolled 125 Aboriginal infants at 0–12 weeks of age in the Perth South Metropolitan region, Western Australia. The study found that around half of these infants had otitis media by the age of 6 months, and that early onset of disease strongly predicts subsequent otitis media (Richmond et al. 2023).






2



Screening and diagnosis



Timely detection and accurate diagnosis of ear disease and hearing loss are essential for early intervention and prompt access to appropriate treatment and rehabilitation services. Early diagnosis can prevent further hearing loss or ongoing problems. In the case of some ear disease, early diagnosis and appropriate treatment can prevent associated hearing loss.

This chapter covers the following information:

2.1 Neonatal hearing screening – participation, referrals and diagnoses

2.2 Annual ear health checks in primary care settings – health assessments for First Nations people

2.3 Diagnostic audiology services – Medicare-subsidised audiology services and children’s hearing assessments

2.4 Ear health checks and diagnostic hearing assessments for children aged 0–6 (→Hearing Assessment Program – Early Ears)

Information in this chapter comes from neonatal hearing screening programs in states and territories (where accessible), health assessments for First Nations people subsidised by Medicare, audiology services subsidised by Medicare, and diagnostic assessments for young children performed through the Hearing Assessment Program – Early Years (HAPEE).

Measure 2.1 Neonatal hearing screening



Key finding:

In 2021–22, recorded neonatal hearing screening coverage was between 91% to 98% for First Nations babies.

Neonatal hearing screening is used to detect bilateral moderate to profound permanent congenital hearing impairment in infants, which occurs in 1 to 2 infants per 1,000 births. Neonatal screening leads to earlier identification of congenital hearing loss, earlier intervention and, ultimately, better language development and outcomes (Ching et al. 2006; Leigh 2010; Neumann et al. 2019; Pimperton et al. 2016; Sininger et al. 2009).

All state and territory governments have screening programs that aim to screen all eligible infants as early as possible. Neonatal screening uses non-invasive, automated tests – such as automated auditory brainstem response technology – which can be performed bedside in term and pre-term infants soon after birth (Patel and Feldman 2011).

This section provides information on participation in screening, referrals and diagnoses from neonatal hearing screening programs in Victoria, Queensland, Western Australia (for births in public maternity hospitals only), South Australia and the Northern Territory. While all states and territories have universal hearing screening programs for First Nations babies, programs from the 4 states mentioned here have data accessible for reporting. Data from the Northern Territory were provided separately for the Top End Health Service and the Central Australian Health Service screening programs.

2.1.1 Participation in neonatal hearing screening

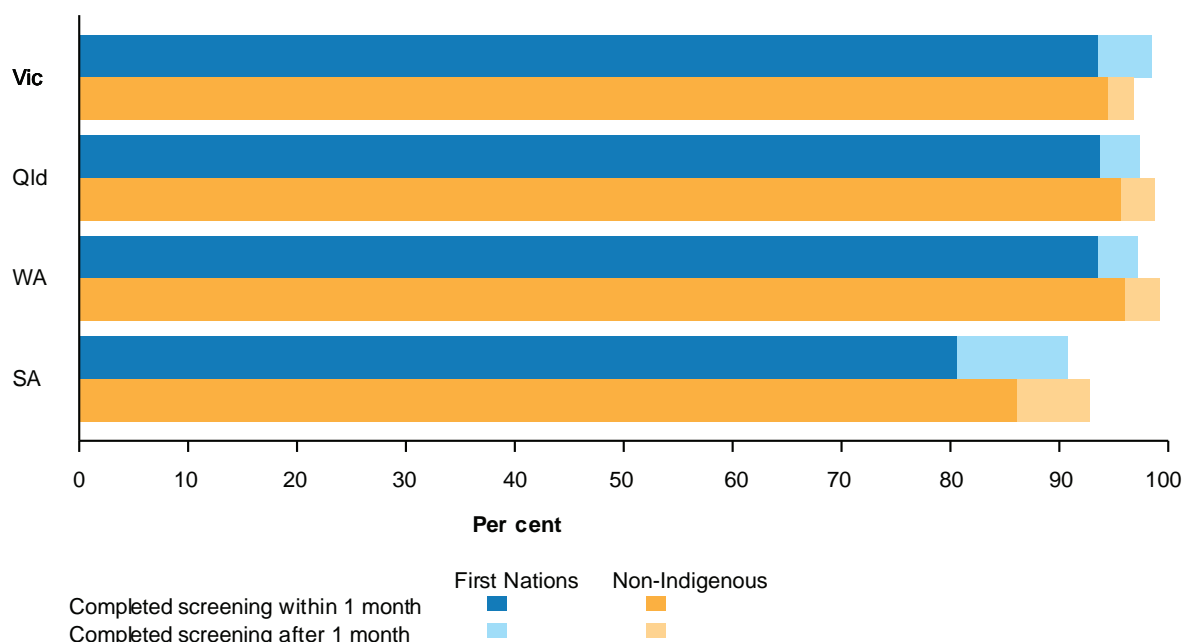
This section presents information on the percentage of all eligible First Nations babies who participate in and complete neonatal hearing screening. This may be referred to as ‘screening coverage’ or ‘participation in screening’.

Eligibility criteria for screening varies somewhat between programs. In general, all babies of at least 34 weeks gestation can be screened within hours of birth using automated tests such as automated auditory brainstem response technology. Ideally, testing should be completed within one month of birth (corrected age); however, babies may be eligible for screening up to either 3 or 6 months of age (corrected age), depending on individual program protocols.

State/territory: In 2021–22, screening coverage of eligible First Nations babies ranged from a high of 98% to 91% across states and territories with data accessible for reporting. In 2021–22, screening coverage was similar (within 2 percentage points) for First Nations babies and non-Indigenous babies in all 4 state screening programs (Figure 2.1.1a).

Age: Most neonatal hearing screening occurs within one month of birth. In 2021–22, 94% of eligible First Nations babies in Victoria, Queensland and Western Australian public maternity hospitals completed screening within one month of birth, and 81% in South Australia (Figure 2.1.1a). First Nations babies were slightly less likely to be screened within one month of birth than non-Indigenous babies, ranging from a difference of 0.9 percentage points in Victoria to 5.5 percentage points in South Australia (Figure 2.1.1a).

Figure 2.1.1a: Screening coverage of eligible babies by age, state and territory, by Indigenous status, 2021–22



Notes

1. Data for these figures are available in the online data tables.
2. Data for Western Australia are for babies born in public hospitals only.

Sources: AIHW analysis of The Royal Children’s Hospital Melbourne data (unpublished), Queensland Health data (unpublished), Western Australia Department of Health data (unpublished), South Australia Women’s and Children’s Health Network data (unpublished).



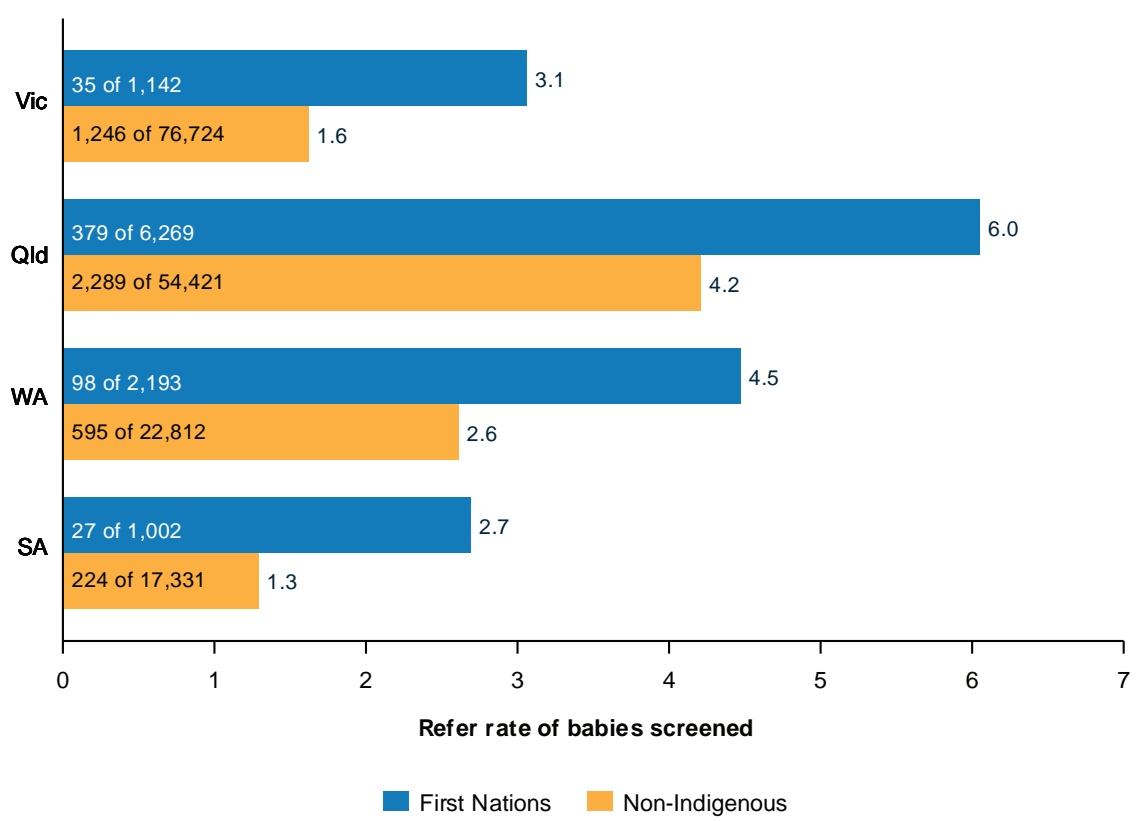
A 'refer rate' of less than 2% is expected using automated auditory brainstem response technology (NHSWG 2013).

This section presents data on the 'refer rate', or the percentage of babies screened who received a 'positive' or 'refer screening' result.

State/territory: In 2021–22, the refer rate for:

- First Nations babies was highest in Queensland – 6.0% (Figure 2.1.1b)
- First Nations babies was higher than that for non-Indigenous babies, ranging from 2.1 times as high in South Australia to 1.4 times as high in Queensland (Figure 2.1.1b)
- all babies was 2.2% in the Central Australian Health Service (Northern Territory) and 1.6% in the Top End Health Service (Northern Territory) (Northern Territory Department of Health, unpublished).

Figure 2.1.1b: Refer rate of babies screened, by state and territory and Indigenous status, 2021–22



Note: Data for this figure are available in the online data tables.
Sources: AIHW analysis of The Royal Children's Hospital Melbourne data (unpublished), Queensland Health data (unpublished), Western Australia Department of Health data (unpublished), South Australia Women's and Children's Health Network data (unpublished).



2.1.2 Diagnosis

Following a positive screening, an audiological diagnostic assessment establishes whether a baby has a definitive diagnosis of permanent childhood hearing impairment, another hearing or ear condition, or functionally normal hearing. Bilateral permanent childhood hearing impairment that is moderate to profound occurs in around 1.3 per 1,000 babies (NHSWG 2013).

This section provides diagnostic information for babies referred for audiological assessment following neonatal hearing screening in Queensland, Victoria, South Australia and the Northern Territory.

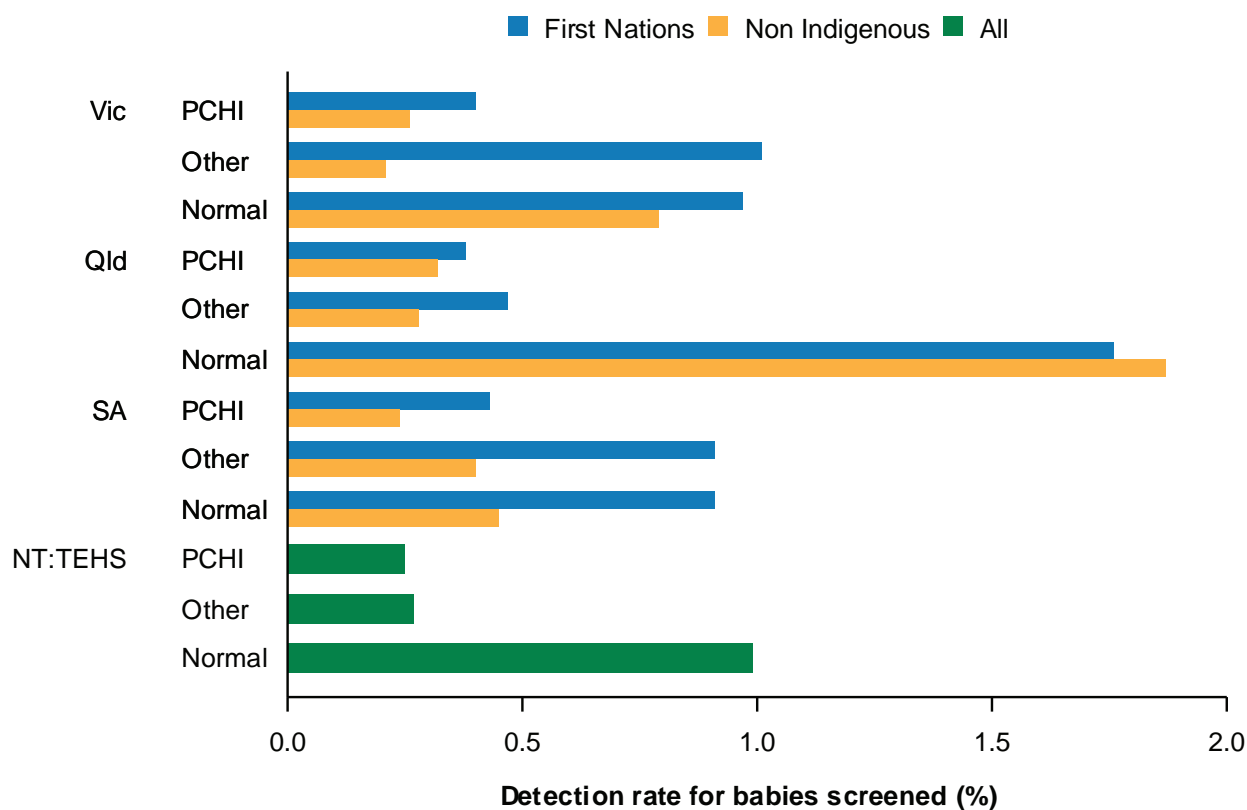
State/territory: Among First Nations babies participating in screening from July 2020 to June 2022, a diagnosis of permanent childhood hearing impairment was received for (Figure 2.1.2):

- 47 babies (0.4%) in Queensland
- 9 babies (0.4%) in South Australia
- 9 babies (0.4%) in Victoria
- 9 babies (% unavailable) in the Northern Territory (Top End Health Service and Central Australian Health Service combined) (AIHW analysis of Northern Territory Department of Health, unpublished).

In 2020–22, diagnosis rates following neonatal hearing screening for permanent childhood hearing impairment were similar for First Nations babies and non-Indigenous babies in Victoria, Queensland and South Australia (less than 0.2 percentage points difference) (Figure 2.1.2).



Figure 2.1.2: Diagnosis outcomes among babies who participated in screening, by state or territory, Indigenous status and diagnosis, 2020–22



PCHI = Permanent childhood hearing impairment (bilateral moderate to profound); Other = Hearing impairment, other than PCHI;

TEHS = Top End Health Service.

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

Sources: AIHW analysis of The Royal Children’s Hospital Melbourne data (unpublished), Queensland Health data (unpublished), South Australia Women’s and Children’s Health Network data (unpublished), and Northern Territory Department of Health data (unpublished).

Measure 2.2 Annual ear health checks in primary care settings

A new indicator for this measure is currently being developed by the AIHW:

Proportion of First Nations regular clients aged 0–14 who received an ear health check in the previous 12 months, including whether a visual check, tympanic movement check, or both, were performed.

See Section 6.2 for more information.

While this indicator is being developed, information on participation on health assessments for First Nations people is provided.

Health assessments for First Nations people

Key finding:

The proportion of First Nations people who had a First Nations-specific health assessment was highest in Outer regional and Remote areas, and increased with age for each age group from 15 years onward.

All First Nations people are eligible for an annual health assessment for First Nations people subsidised by Medicare, listed as Item 715 or Item 228 on the MBS. Also included in this measure are the temporary telehealth health checks provided under First Nations-specific MBS items 92004, 92016, 92011 and 92023 – introduced in March 2020 as part of the Australian Government's COVID-19 response. This comprehensive health assessment provides access to follow-up services, including hearing services, and helps to manage chronic health conditions.

The health assessment is a key opportunity for First Nations people to have their ears checked. For First Nations people aged 0 to 55, the health check must include an ear and hearing examination, including an ear examination with otoscopy. However, there are concerns that an ear and hearing check is not always conducted during the health assessment. This may be due to time limitations, health priorities of the patient and medical practitioner, availability of equipment and trained practitioners, and other factors.

Data in this section come from MBS data.

In early 2020, restrictions imposed by the Australian and state and territory governments due to the COVID-19 pandemic limited people's movements and activities to curb the spread of the disease. In 2020–21, claims for health assessments fell across nearly all age groups. More details on monthly health assessments can be found in the AIHW publication *Tracking progress against the Implementation Plan goals for the Aboriginal and Torres Strait Islander Health Plan 2013–2023* (AIHW 2021c).



Overall: In 2021–22, just under 1 in 4 (208,620 or 24%) First Nations people had a health assessment. This included about 4,000 health assessments provided by videoconference or teleconference (AIHW 2023b, Table HC17).

Age and sex: In 2021–22, the proportion of First Nations people receiving a health assessment generally increased with age (Figure 2.2a). The proportion was:

- highest among people aged 75 and over (4,959 or 36%) and lowest among those aged 0–14 (31,700 or 19%)
- higher for children aged 0–4 than for children aged 5–14 (24% and 20%, respectively) (AIHW 2023b).

State/territory and remoteness area: In 2021–2022, the proportion of First Nations people who had:

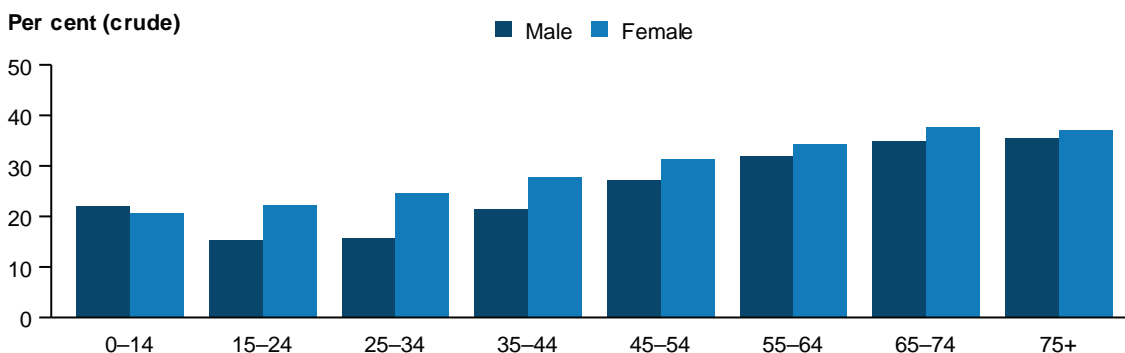
- a health assessment was highest in Outer regional and Remote areas (30% and 26%, respectively). Rates were lower in Inner regional areas (23%), Major cities (21%) and Very remote areas (20%) (Figure 2.2b)
- a health assessment was highest in Queensland (30%) and the Northern Territory (25%) (Figure 2.2c).

Time trend: For First Nations children aged 0–14, the proportion who had a health assessment increased from 12% in 2011–12 to 21% in 2021–22. A similar trend was observed for First Nations people aged 15–54. For those aged 55 and over, the proportion rose from 20% in 2011–12 to 35% in 2021–22 (Figure 2.2d).

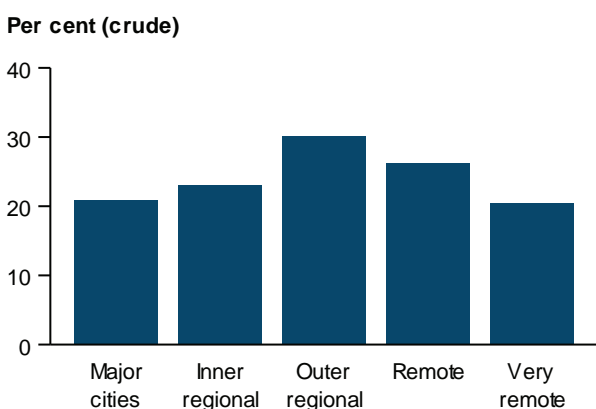
The proportion of First Nations people who had a health assessment rose from 13% in 2011–12 to 24% in 2021–22 (Figure 2.2e).

Figure 2.2: Health assessments for First Nations people, by selected characteristics

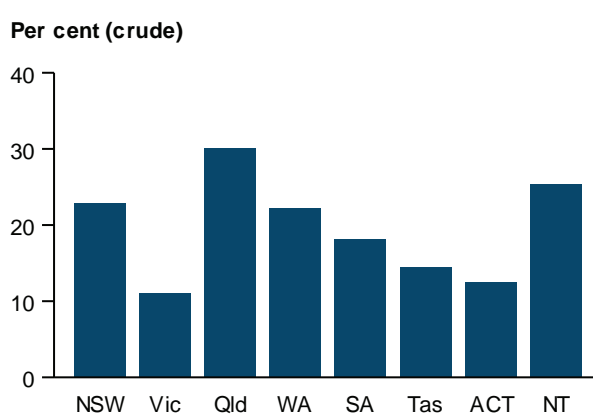
a) By age and sex, 2021–22



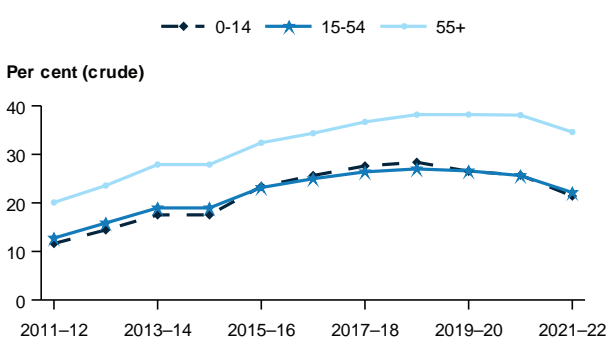
b) By remoteness area, 2021–22



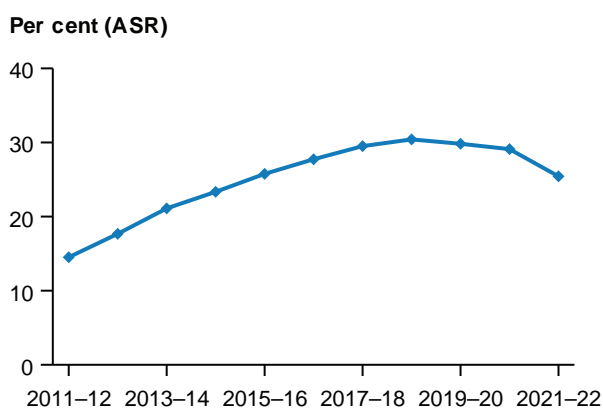
c) By state/territory, 2021–22



d) Time trend by age, 2011–12 to 2021–22



e) Time trend, 2011–12 to 2021–22



ASR = age-standardised rate.

Notes

1. Data for 2019–20 to 2021–22 include telehealth assessments.
2. Data for these figures are available in the online data tables.

Source: AIHW analysis of MBS data.

Measure 2.3 Diagnostic audiology services

Key finding:

The gap in audiology service rates between First Nations people and non Indigenous Australians narrowed over the period 2010–11 to 2021–22.

One in 5 (20%) First Nations children aged under 6 who received a diagnostic assessment had a hearing impairment.

2.3.1 Audiology services

Audiology services are needed to diagnose, treat and manage a range of ear and hearing conditions. Audiologists are qualified and trained to conduct these services. Medical practitioners may also conduct diagnostic audiology tests.

This section looks at the number of First Nations people receiving Medicare-subsidised audiology services conducted by an audiologist or medical practitioner.

Overall: In 2021–22, around 6,500 (7.3 per 1,000 population) First Nations people received Medicare-subsidised audiology services. After adjusting for differences in age structure between the 2 populations, the rate of First Nations people who received at least one audiology service in 2021–22 was slightly lower than that for non-Indigenous people (6.3 compared with 7.7 per 1,000 population).

Age and sex: Audiology service rates were highest among First Nations children aged 0–14 (14 per 1,000 population). This was 4 times the rate for those aged 15–49 (3.5 per 1,000 population) (Figure 2.3.1a).

Among children aged 0–14, rates for First Nations children were similar to those of non-Indigenous children (14 and 16 per 1,000 population, respectively).

The rate of First Nations males and females who received at least one audiology service in 2021–22 was similar (7.7 and 6.8 per 1,000 population, respectively).

State/territory and remoteness area: Audiology service rates were highest in Inner regional areas and Major cities (9.7 and 7.7 per 1,000 population, respectively), and lowest in Outer regional areas (4.3 per 1,000 population) (Figure 2.3.1b).

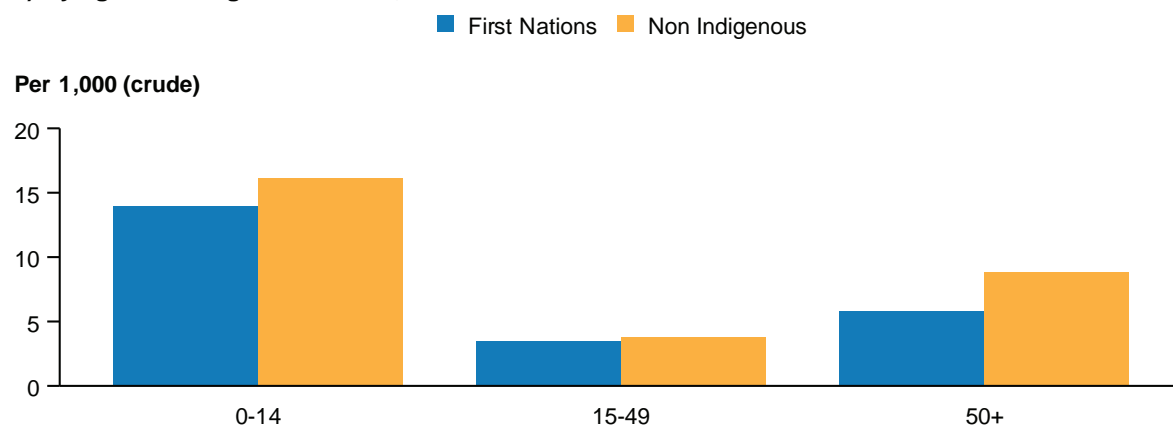
Audiology service rates were highest in Queensland and Victoria (11 per 1,000 population) (Figure 2.3.1c).

Time trend: Among First Nations people:

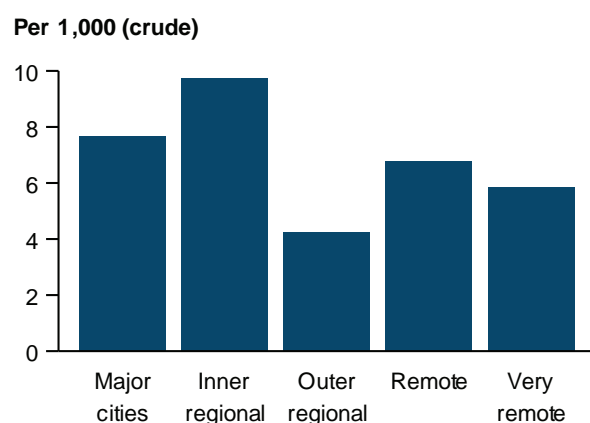
- audiology service rates increased marginally from 6.7 to 7.3 per 1,000 population between 2010–11 and 2021–22, peaking at 11 per 1,000 population in 2014–15 (Figure 2.3.1e)
- audiology services rates in children aged 0–14 increased from 12 per 1,000 population in 2010–11 to a high of 19 per 1,000 in 2014–15 before falling to 14 per 1,000 population in 2021–22 (Figure 2.3.1d).

Figure 2.3.1: Audiology services, by selected characteristics

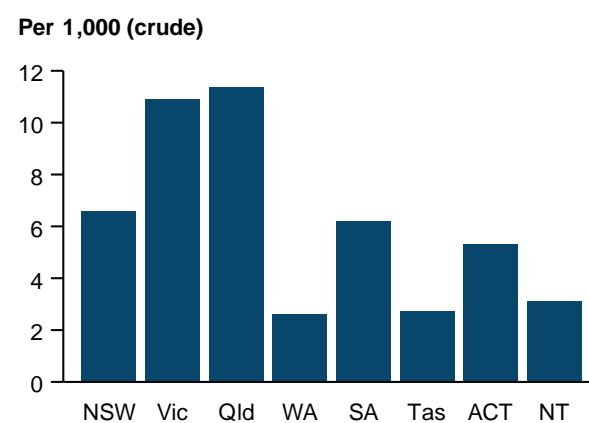
a) By age and Indigenous status, 2021–22



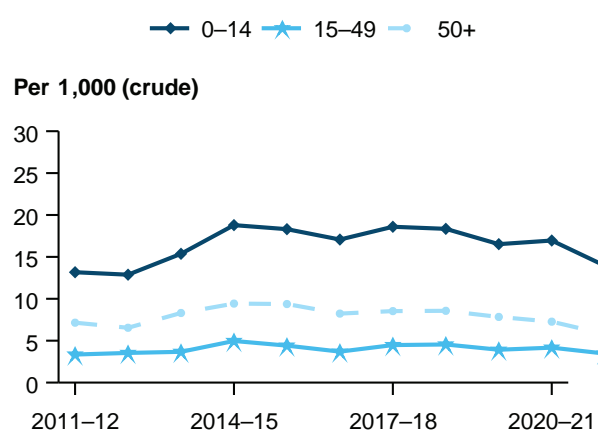
b) First Nations people, by remoteness area, 2021–22



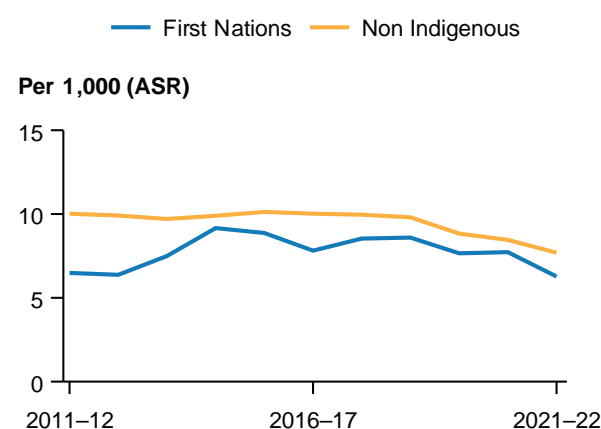
c) First Nations people, by state/territory, 2021–22



d) First Nations people, by age, 2011–12 to 2021–22



e) By Indigenous status, 2011–12 to 2021–22



ASR = age-standardised rate.

Notes

- Includes MBS items 10952, 11300, 11303, 11304, 11306, 11309, 11312, 11315, 11318, 11324, 11327, 11330, 11332, 11333, 11336, 11339, 81310, 82300, 82306, 82309, 82312, 82315, 82318, 82324, 82327 and 82332.
- Data from the MBS Voluntary Indigenous Identifier (VII) database have been adjusted to reflect the size of the First Nations population.
- Data are based on date of processing.
- Data for these figures are available in the online data tables.

Source: AIHW analysis of MBS data.

Measure 2.4 Ear health checks and diagnostic hearing assessments for children aged 0–6 (Hearing Assessment Program – Early Ears)

To combat the high levels of ear disease and associated hearing loss among First Nations children, the Australian Government provides funding for the Hearing Assessment Program – Early Ears (HAPEE), led by Hearing Australia. The HAPEE provides free ear health checks and diagnostic hearing assessments for First Nations children aged 0–6 who do not yet attend full-time school.

This section presents data from Hearing Australia on assessments and results for children receiving HAPEE services in 2021–22. Children may receive multiple assessments through the HAPEE program, so the number of services provided is not the same as the number of children assessed.

The HAPEE initially focused on First Nations children in rural and remote areas. Over time, it has expanded to include First Nations children in all areas, with regional and remote areas continuing to be priority locations.

2.4.1 Ear health checks and diagnostic assessments

Overall: In 2021–22, around 6,970 ear health checks and diagnostic hearing assessments were provided to First Nations children aged under 6 (58 per 1,000 population).

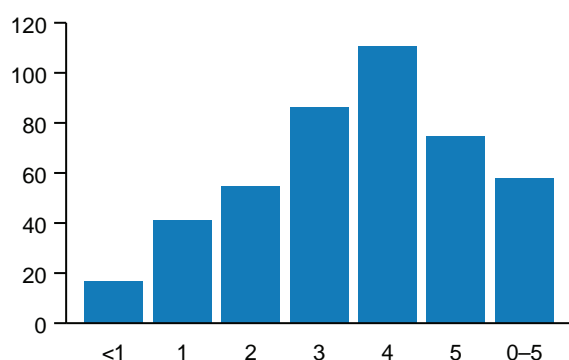
Age: The rate of First Nations children receiving at least one assessment was highest among those aged 4 (2,149 children, 111 per 1,000 population) (Figure 2.4.1a).

State/territory: The Northern Territory had the highest rate of assessments (121 per 1,000 population) (Figure 2.4.1b).

Figure 2.4.1: HAPEE ear health checks and diagnostic assessments among First Nations children aged under 6, 2021–22

a) By age

Per 1,000 (crude)



b) By state/territory

■ Rate ◆ Number

Per 1,000 (crude)

Number



Notes

1. As children may receive multiple assessments, the number of services provided is not the same as the number of children assessed.
2. Data for this figure are available in the online data tables.

Source: AIHW analysis of Hearing Australia (2023) data.

2.4.2 Diagnosed hearing impairment

Diagnosis: In 2021–22, 1,451 (21%) First Nations children aged under 6 who had a diagnostic assessment were found to have a hearing impairment. Of these, 1,291 (19%) had a mild hearing impairment, and 160 (2.3%) had a moderate or greater (severe or profound) hearing impairment.

Age and sex: Among First Nations children aged under 6 who had a diagnostic hearing assessment, older children were more likely to have a hearing impairment (Figure 2.4.2a):

- Of children aged under 1, 13% had a hearing impairment.
- Of children aged 3, 4 and 5, 22–23% had a hearing impairment.

Cases where it could not be determined whether or not children had a hearing impairment were most likely in children aged under 2.

Among First Nations children who had a diagnostic hearing assessment, rates of hearing impairment were similar between boys and girls (21% and 20%, respectively).

Of children aged 1 to 5, the highest rates of moderate or greater hearing loss were among children aged 3 and 4, both 2.7%.

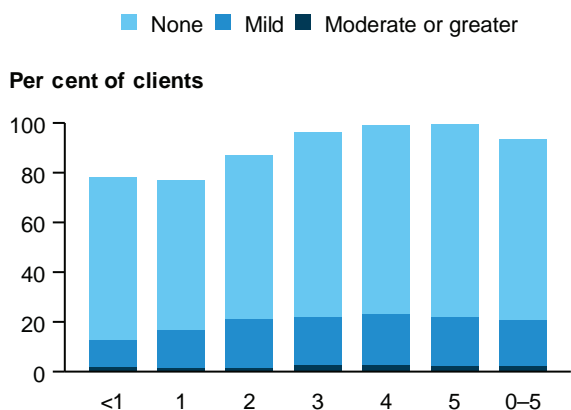
State/territory: Among those who received a diagnostic assessment, the Northern Territory had the highest rate of hearing impairment (38%), followed by Western Australia (28%). In general, severity of hearing impairments among children was similar across most jurisdictions with the following exceptions:

- the Northern Territory and Western Australia had the highest rates of mild hearing loss, at 33% and 24%, respectively
- the Northern Territory had the highest rate of First Nations children screened with moderate or greater hearing impairment (5.0%), followed by Western Australia (4.3%) and Victoria (2.9%). All other states and territories had rates at or below 1.8% (Figure 2.4.2b).

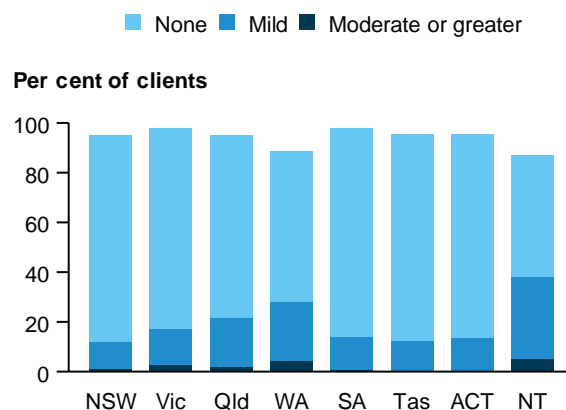


Figure 2.4.2: First Nations children aged under 6 receiving diagnostic assessment, by level of severity and selected characteristics, 2021–22

a) By age



b) By state/territory

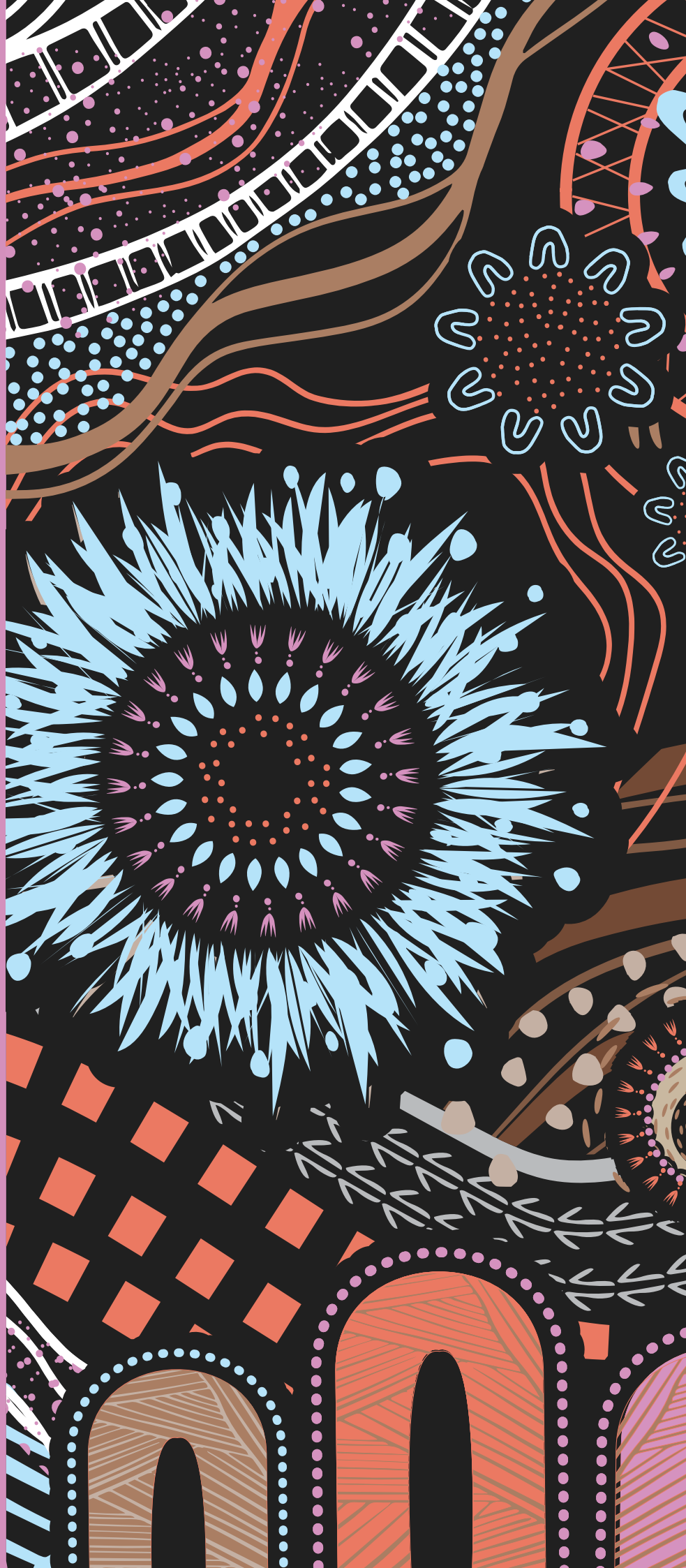


Notes

1. Excludes children whose hearing loss was unable to be determined.
2. Proportion for Tasmania is not comparable due to small sample size. Data were not available for the Australian Capital Territory.
3. Data for these figures are available in the online data tables.

Source: AIHW analysis of Hearing Australia (2023) data.







3

Intervention and treatment



Intervention and treatment services serve to minimise the impact of injury and disease, including ear or hearing related diagnoses. Measuring the frequency and types of treatment that First Nations people receive for ear disease can provide a better understanding of the treatment pathway. Such information indicates the use of health services and costs, and can be used to better target preventive health services in areas of greatest need.

Information on intervention and treatment services is primarily available from hospital settings, where patients may go to seek urgent care or specialised surgery or procedures.

This chapter covers the following information:

3.1 Emergency department presentations

3.2 Hospitalisations for diseases of the ear and mastoid process

3.3 Hospital procedures – ear and hearing related procedures, middle ear related procedures for children aged 0–14

3.4 Waiting times – common ear or hearing related elective surgeries (myringotomy and myringoplasty)

3.5 Eye and Ear Surgical Support Program

Information in this chapter comes from the AIHW National Hospital Morbidity Database, the AIHW National Non-admitted Patient Emergency Department Care Database and the Eye and Ear Surgical Support Program (EESS).

In response to the COVID-19 pandemic, which emerged in early 2020, all non-urgent elective surgery was temporarily suspended from 25 March 2020 in both public and private hospitals. The impact of this may be apparent in data on elective hospital procedures and waiting times.

Measure 3.1 Emergency department presentations

Key finding:

From July 2020 to June 2022, there were 19,500 emergency department presentations by First Nations people with a principal diagnosis of ear or hearing related problems (11 per 1,000 population). The rate was highest for children aged 1 (34 per 1,000 population).

Emergency departments are a vital part of Australia's health-care system; they provide care for people who require urgent medical attention.

This section looks at emergency department presentations by First Nations people with a principal diagnosis of ear or hearing related problems. These are defined as presentations to public hospitals with a principal diagnosis of Diseases of the ear and mastoid process (International Classification of Disease, 11th edition, Australian modification).

Ear or hearing related diagnoses are divided into diagnosis groups based on the part of the ear affected and the type of condition. These groups are:

- Otitis externa
- Other disorders of the external ear
- Diseases of the middle ear and mastoid ('middle ear')
- Diseases of the inner ear
- Hearing loss
- Other ear conditions.

Overall

- From July 2020 to June 2022, First Nations people presented to emergency departments 19,500 times with a principal diagnosis of ear or hearing related problems (11 per 1,000 population).
- The rate ear of hearing-related emergency department presentations among First Nations people was more than twice the rate of non-Indigenous Australians (age standardised rates of 9.8 and 3.6 per 1,000 population, respectively) (Figure 3.1b).

Age and sex: In 2020–22, among First Nations people:

- the rate of ear or hearing related emergency department presentations was highest for children aged 1 (34 per 1,000 population). The rate then decreased with age, reaching 7.8 per 1,000 population at age 14
- the rate of ear or hearing related emergency department presentations was slightly higher for females than males for most ages (12 and 10 per 1,000 population, respectively). However, among children aged 0-4, this rate was higher for boys than for girls (28 and 24 per 1,000 population, respectively) (Figure 3.1a).



State and territory and remoteness area: In 2020–22, among First Nations people:

- the rate of ear or hearing related emergency department presentations generally increased with remoteness. It was lowest in Major cities (5.9 per 1,000 population) and highest in Remote areas (26 per 1,000 population) (Figure 3.1c)
- the highest rates of ear or hearing related emergency department presentations were in Western Australia (19 per 1,000 population), Northern Territory (15 per 1,000 population) and New South Wales (13 per 1,000 population) (Figure 3.1d).

Over time: Between 2013–14 and 2021–22:

- the rate of ear or hearing related emergency department presentations by First Nations people (all ages) increased by 51%, from 7.4 to 11 per 1,000 population, while remaining steady for non-Indigenous Australians at around 3.7 per 1,000 population
- First Nations people aged 15 and over had a larger increase in ear or hearing related emergency department presentations by percentage, with a 72% increase from 4.9 to 8.4 per 1,000 population, while First Nations children aged 0–14 had a 42% increase from 12 to 17 per 1,000 population (Figure 3.1e).

Figure 3.1: Emergency department presentations for ear or hearing problems, by selected characteristics

a) First Nations people, age and sex, 2020–22

b) by Indigenous status and age, 2020–22

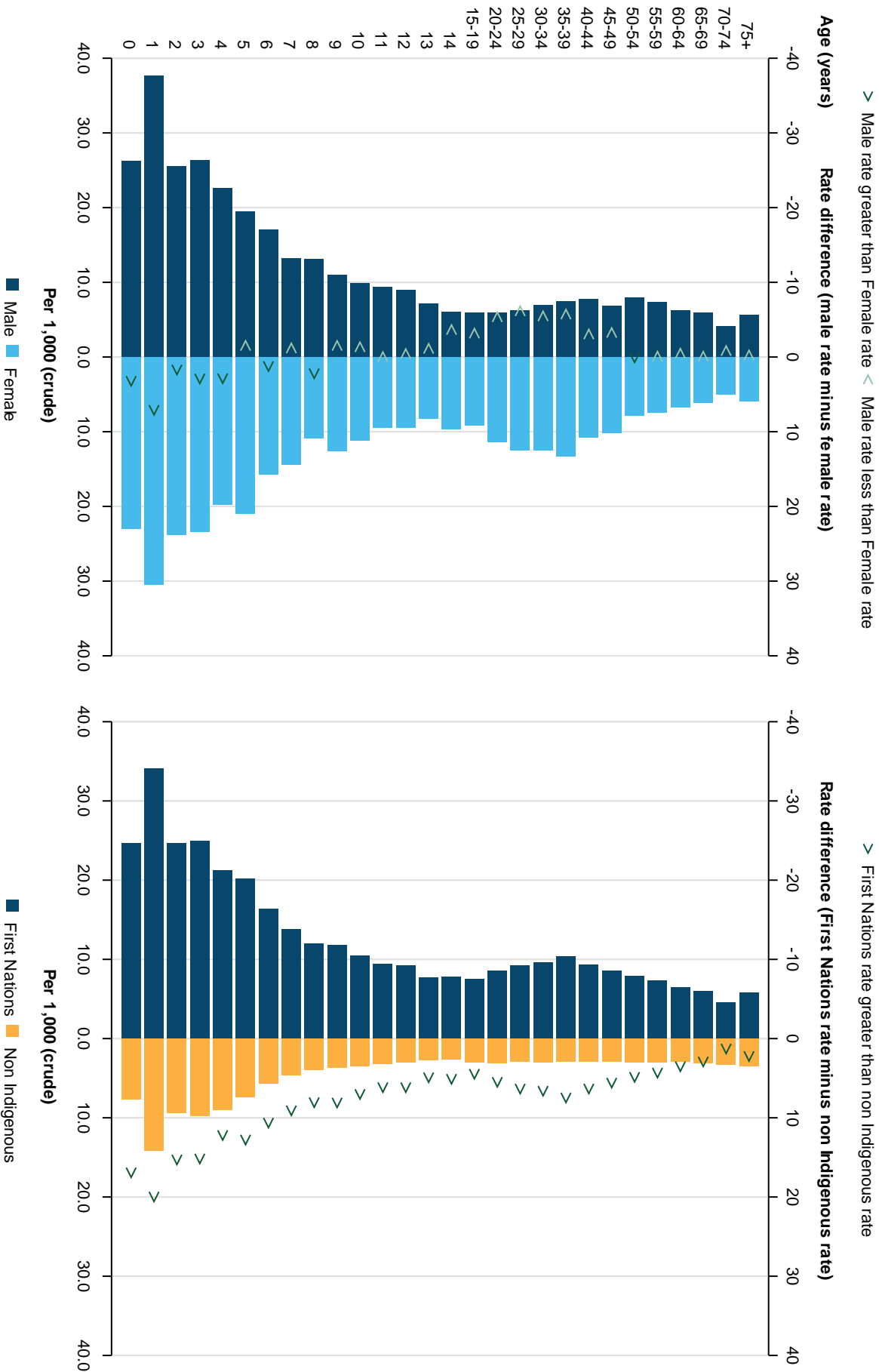
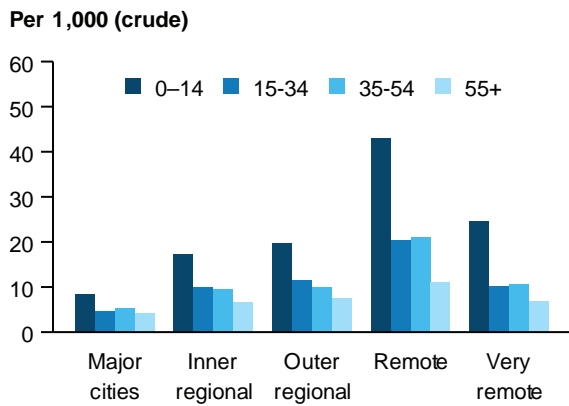
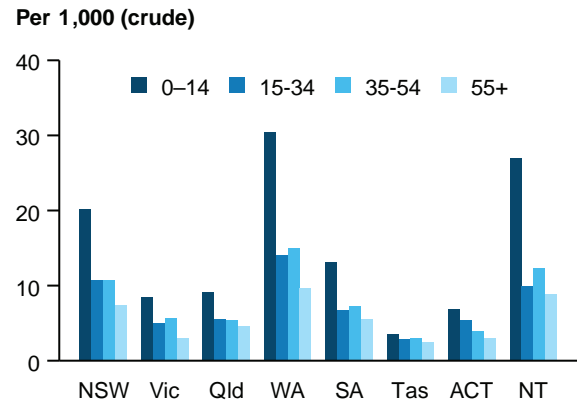


Figure 3.1 (continued): Emergency department presentations for ear or hearing problems, by selected characteristics

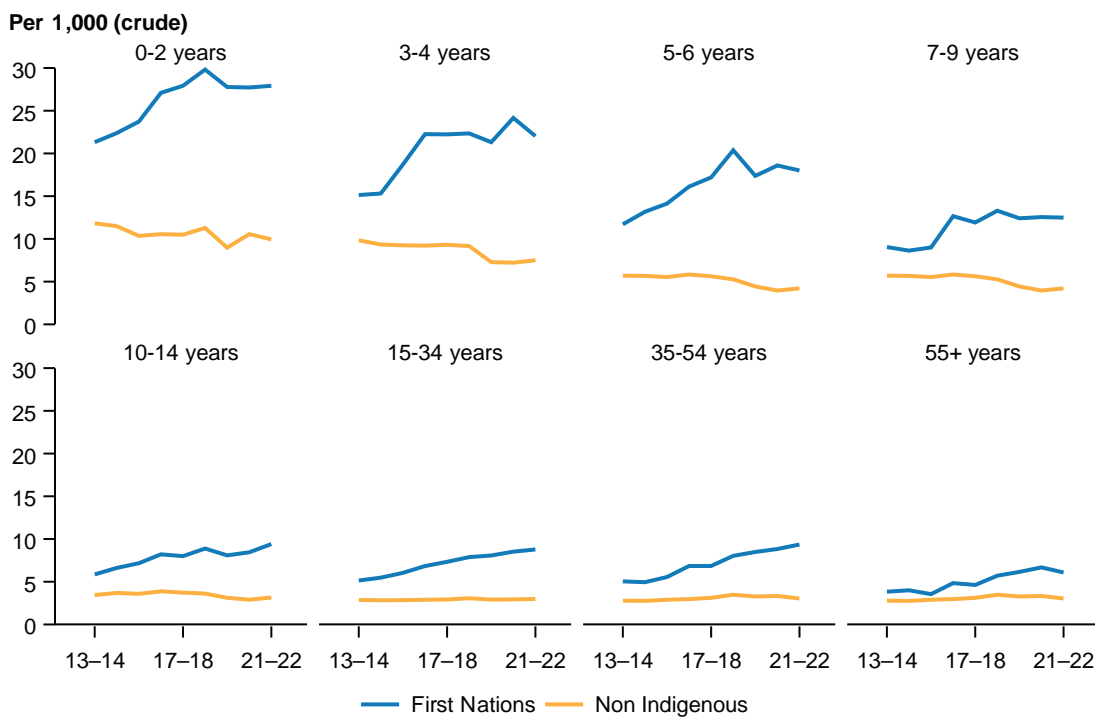
c) First Nations people, by remoteness area and age, 2020–22



b) First Nations people, by state/territory and age, 2020–22



e) Time trend, by Indigenous status and age, 2013–14 to 2021–22



Note: Data for these figures are available in the online data tables.
 Source: AIHW National Non-admitted Patient Emergency Department Care Database

Measure 3.2 Hospitalisations for diseases of the ear and mastoid process

Key finding:

In 2020–22, middle ear disease in children aged 0–14 accounted for 53% of all First Nations ear or hearing related hospitalisations, and 88% of ear or hearing related hospitalisations in children aged 0–14.

People hospitalised for ear disease generally have more severe ear disease or are hospitalised to undergo a surgery or other procedure. The reason for hospitalisation is determined using principal diagnosis and is based on the part of the ear affected and the type of condition. Information on additional diagnoses are available in the online data tables.

Overall: From July 2020 to June 2022, around 6,500 (3.7 per 1,000 population) hospitalisations of First Nations people were for an ear or hearing related principal diagnosis.

Age and sex: First Nations children aged 0–4 had the largest number and highest rate of ear or hearing related hospitalisations (2,100, or 10.6 per 1,000 population) of any age group. Middle ear disease accounted for 9 in 10 hospitalisations among children aged 0–14 (88%, 3,500 hospitalisations).

Among First Nations children, boys aged 1–6 had rates that were 1.3 to 1.8 times higher than girls of the same age (Figure 3.2a).

State and territory and remoteness area: The rate of ear or hearing related hospitalisations among First Nations people was highest for usual residents of Western Australia, the Northern Territory and Queensland (5.0, 4.4 and 4.2 per 1,000 population, respectively) (Figure 3.2d).

The rates of ear or hearing related hospitalisations for First Nations people were highest for usual residents of Very remote or Remote areas (5.3 and 4.9 per 1,000 population, respectively) (Figure 3.2e).

Over time: Between 2010–11 and 2021–22:

- rates of ear or hearing related hospitalisations for First Nations children aged 0–9 peaked around the years 2017–19, and have since decreased
- although First Nations rates were lower than non-Indigenous rates for children aged 0–4 in 2010–11, they have since risen and were higher in 2021–22 (Figure 3.2f).

Rates have historically been highest for First Nations people aged 3–4 since 2010–11; however, in 2021–22 rates were similar for ages 0–2 and 3–4. Non-Indigenous Australians have historically shared highest rates in both the 0–2 and 3–4 age groups; since 2018–19, the 0–2 age group has had the highest rates.



Figure 3.2: Hospitalisation rates for ear or hearing related conditions, by selected characteristics

a) First Nations people by age and sex, 2020–22

> Male rate greater than female rate < Male rate less than female rate

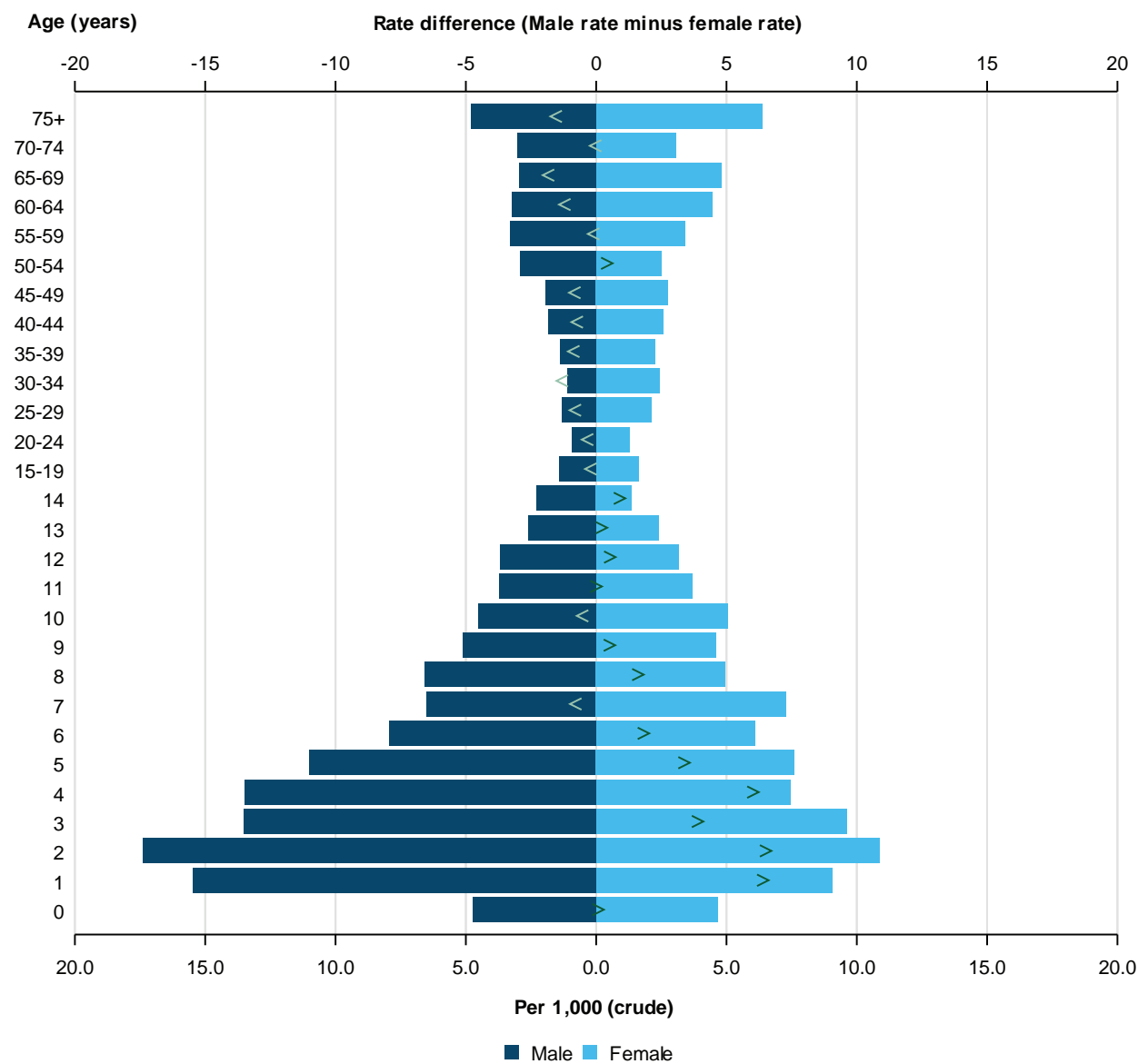
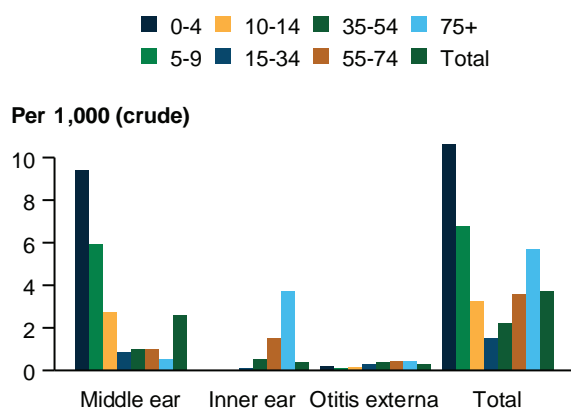
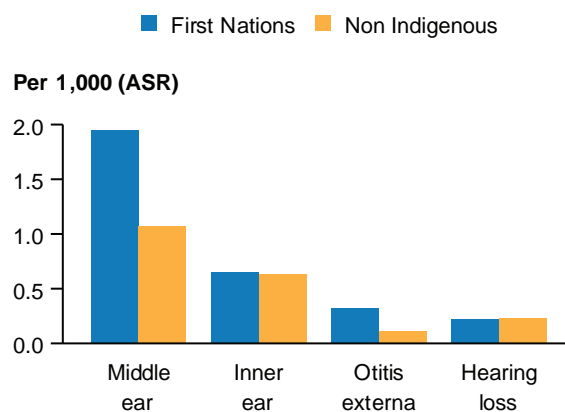


Figure 3.2 (continued): Hospitalisation rates for ear or hearing related conditions, by selected characteristics

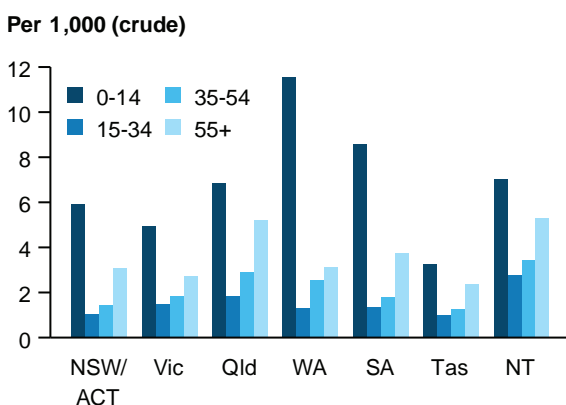
b) First Nations people, by diagnosis status and age, 2020–22



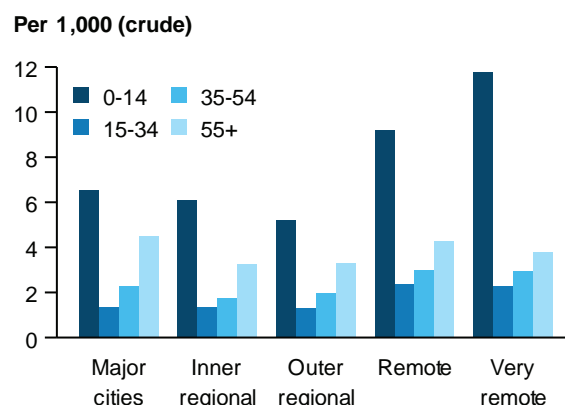
c) By diagnosis and Indigenous 2020–22



d) First Nations people, by state and territory, 2020–22



e) First Nations people, by remoteness area, 2020–22



ASR = age-standardised rate.

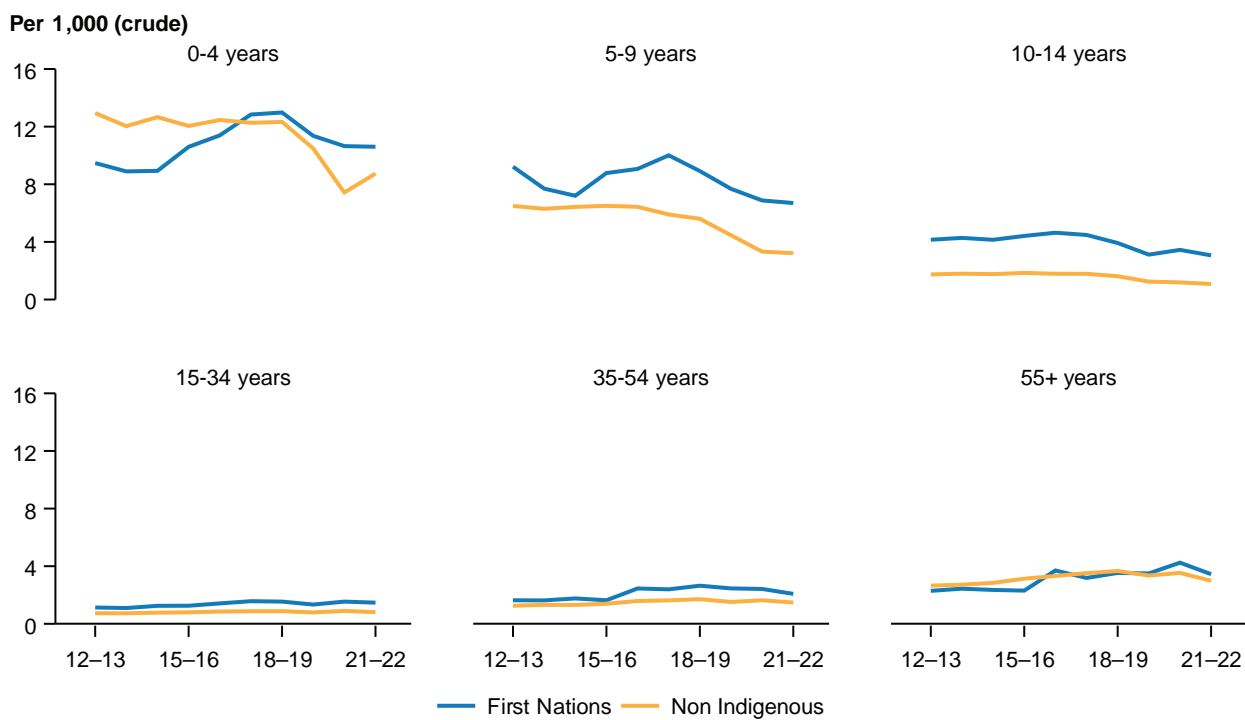
Notes

1. Hospitalisations are categorised based on principal diagnosis.
2. Figures (a) and (b) show the top 3 and 4 principal diagnoses for First Nations people respectively.
3. Figure (c) data for age 75+ in Remote and Very remote areas have been suppressed for reasons of confidentiality.
4. Data for these figures are available in the online data tables.

Source: AIHW National Hospital Morbidity Database.

Figure 3.2 (continued): Hospitalisation rates for ear or hearing related conditions, by selected characteristics

e) Time trend, by Indigenous status and age, 2012-13 to 2021-22



ASR = age-standardised rate.

Notes

1. Hospitalisations are categorised based on principal diagnosis.
2. Figures (a) and (b) show the top 3 and 4 principal diagnoses for First Nations people respectively.
3. Figure (c) data for age 75+ in Remote and Very remote areas have been suppressed for reasons of confidentiality.
4. Data for these figures are available in the online data tables.

Source: AIHW National Hospital Morbidity Database.

Measure 3.3 Hospital procedures

Key finding:

Myringotomy in children aged 0–14 accounted for 49% of all ear or hearing related procedures for First Nations people, and 93% of all ear or hearing related procedures for children aged 0–14 in 2020–22.

A number of in-hospital procedures can be used to treat ear disease and associated hearing loss. Common ear or hearing related procedures include myringotomy (with or without grommets), myringoplasty, otoscopy, mastoidectomy and ear toileting.

Other procedures include those performed on various areas of the ear and include insertions, removals, excisions, reconstructions and repair.

Section 3.3.2 presents an analysis that focuses only on middle ear related procedures.

3.3.1 Ear or hearing related procedures, all ages

Overall: In 2020–22, 8,020 in-hospital ear or hearing related procedures were performed for First Nations patients (4.6 per 1,000 population). The most common procedure was myringotomy, which accounted for over half of the procedures performed (4,180 procedures, 2.4 per 1,000 population) (Figure 3.3.1a). First Nations children aged 0–14 accounted for 74% (5,950) of all ear or hearing related hospital procedures for First Nations people, at a rate of 10 per 1,000 population.

Age and sex:

In 2020–22:

- the highest procedure rates for First Nations children were at age 2 for both boys and girls (24 and 16 per 1,000 population, respectively), followed by ages 3–5
- among First Nations children, boys aged 1–6 had rates that were 1.3 to 1.7 times higher than girls of the same age (Figure 3.3.1b).

State and territory and remoteness area:

In 2020–22:

- the rate of ear or hearing related hospital procedures was highest for usual residents of Western Australia (6.1 per 1,000 population) (Figure 3.3.1c)
- among First Nations people, the rate of ear or hearing related procedures was highest for First Nations people living in Very remote areas (5.2 per 1,000 population) and lowest in Outer regional areas (3.8 per 1,000 population) (Figure 3.3.1d).

Over time

Ear or hearing related hospitalisation rates for First Nations children aged 0–6 peaked around the years 2017–19, and have since decreased. However, since 2010–11, rates have risen overall for First Nations children aged 0–6 while falling for non-Indigenous children in the same age group.

For ages 7–54, First Nation rates have remained both higher than, and generally parallel to, non-Indigenous rates from 2010–11 to 2021–22. Rates for all ages 7 and over have changed little since 2010–11 for First Nations people (Figure 3.3.1e).



Figure 3.3.1: Ear or hearing related hospital procedures, by selected characteristics

a) First Nations people by age and sex, 2020–22

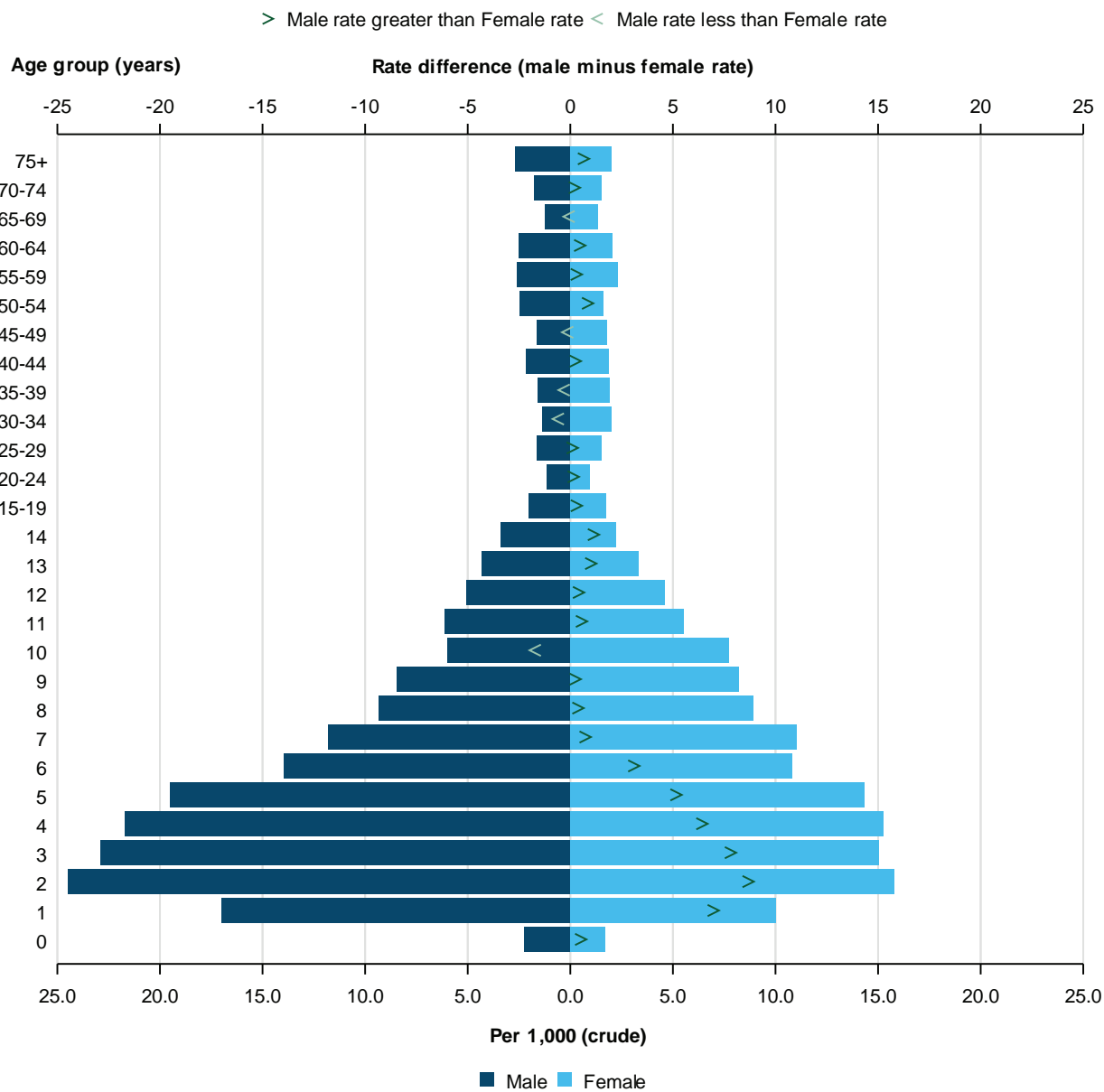
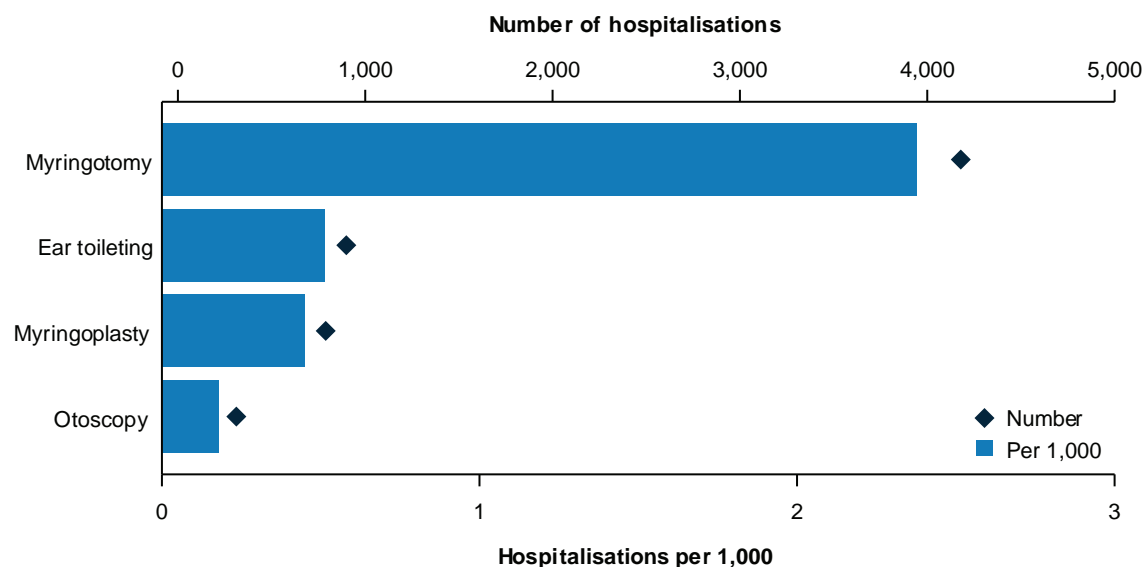
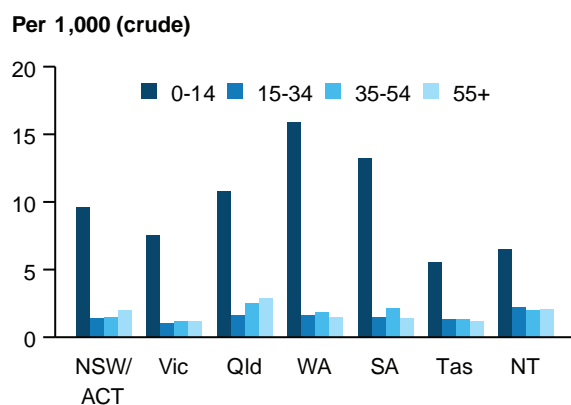


Figure 3.3.1 (continued): Ear or hearing related hospital procedures, by selected characteristics

b) First Nations people, by diagnosis type, 2020–22



c) First Nations people, by state and territory, 2020–22



d) First Nations people, by remoteness area, 2020–22

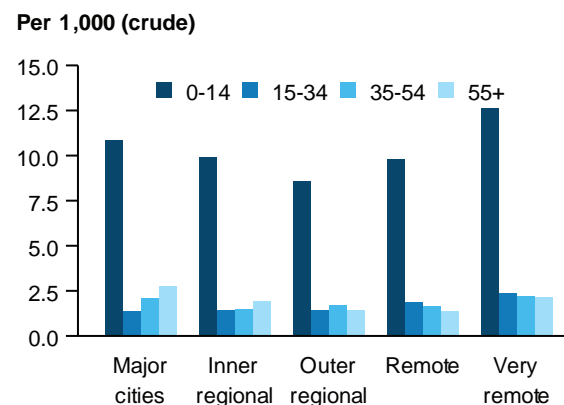
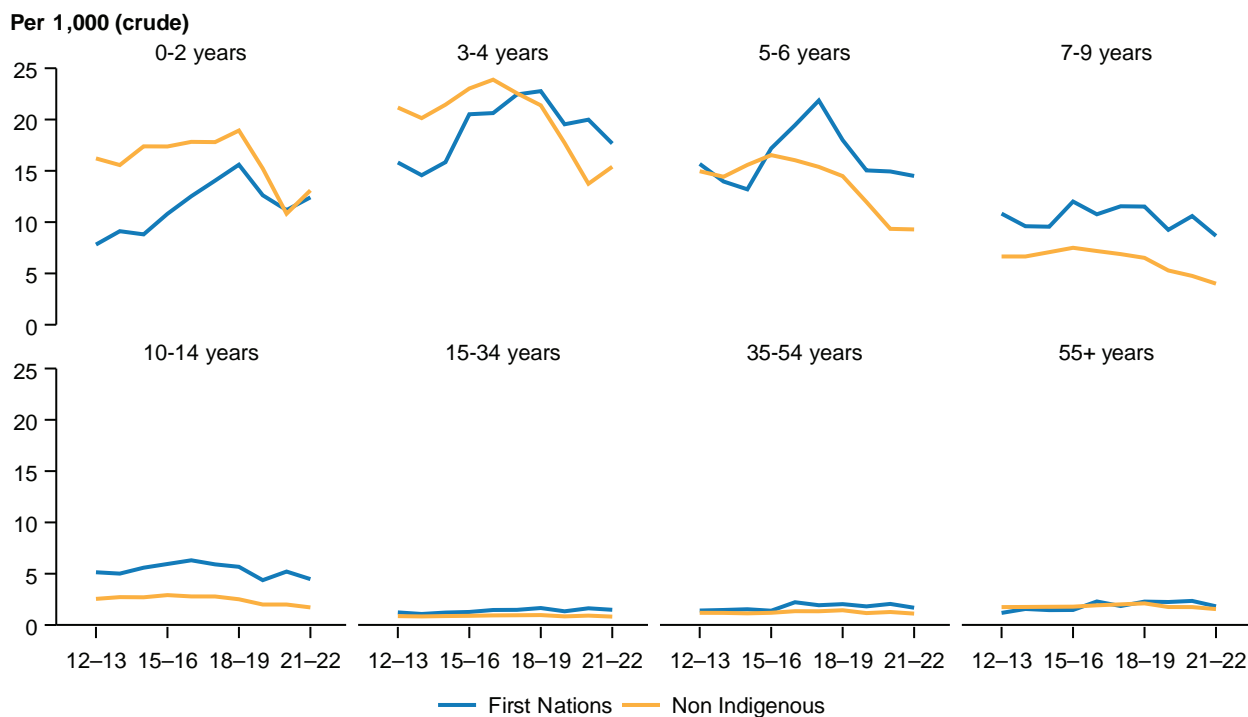


Figure 3.3.1 (continued): Ear or hearing related hospital procedures, by selected characteristics

e) Time trend, by Indigenous status and age, 2012–13 to 2021–22



Notes

1. Figure (a) shows the top 5 procedure groups for First Nations people. Myringotomy includes procedures with and without the insertion of grommets, 'ear toileting' refers to clearing wax, debris or foreign bodies from the ear canal.

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

Source: AIHW National Hospital Morbidity Database.

3.3.2 Hospitalisations for middle ear related procedures among children aged 0–14

Key finding:

Myringotomy in children aged 0–14 accounted for 49% of all procedures for First Nations people, and 93% of procedures for children aged 0–14 in 2020–22.

Because middle ear procedures among children aged 0–14 are so common, this section focuses on middle ear related procedures occurring during hospitalisations with a principal diagnosis of middle ear disease for children aged 0–14.

Middle ear related procedures include surgical procedures such as myringotomy and myringoplasty, as well as non-surgical procedures such as removing foreign bodies from the middle ear and ear toileting.

Data in this section cannot be directly compared with those data in Section 3.3.1 because this section limits data to middle ear related procedures, not all ear or hearing related procedures.

Overall: From July 2020 to June 2022, 3,440 in-hospital middle ear related procedures were performed on children aged 0–14. The middle ear procedure rate was higher among First Nations children than among non-Indigenous children (6.0 and 3.7 per 1,000 population, respectively).

Age and sex

- Middle ear procedure rates were highest in First Nations children aged 3–4, and highest in non-Indigenous children aged 0–2 (9.8 and 7.2 per 1,000 population, respectively) (Figure 3.3.2a).
- Among First Nations children, rates were 1.3 to 1.7 times higher for boys aged 1–6 than for girls of the same age.

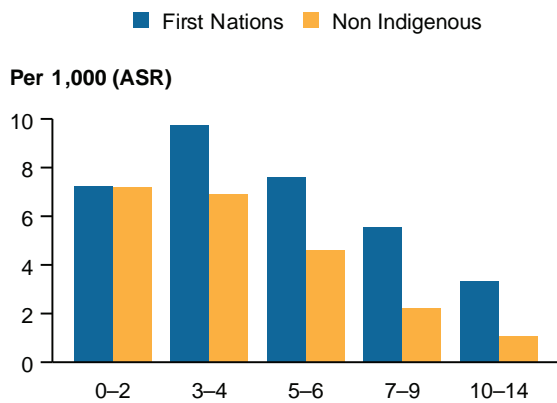
Remoteness area: For First Nations children living in Major cities, Inner regional and Outer regional areas, peak procedure rates were at ages 3–4 (10, 9.7 and 6.8 per 1,000 population, respectively). However, peak rates for First Nations children living in Remote and Very remote areas were at ages 7–9 and 5–6 (9.8 and 13 per 1,000 population) (Figure 3.3.2b).

Over time: Middle ear related hospital procedure rates for First Nations children aged 0–6 peaked around the years 2017–19, and have since decreased. However, rates have risen overall since 2010–11 for First Nations children aged 0–6 but gone down for non-Indigenous children in the same age group (Figure 3.3.2c).

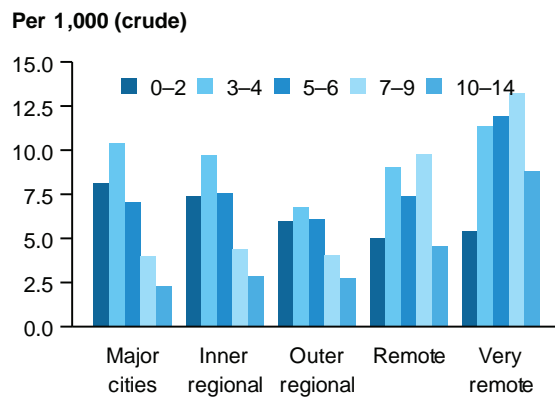
Rates for First Nations children aged 7–14 have remained both higher than, and generally parallel to, non-Indigenous rates from 2010–11 to 2021–22, with both these rates falling in that period.

Figure 3.3.2: Middle ear related procedures among children aged 0-14, by selected characteristics

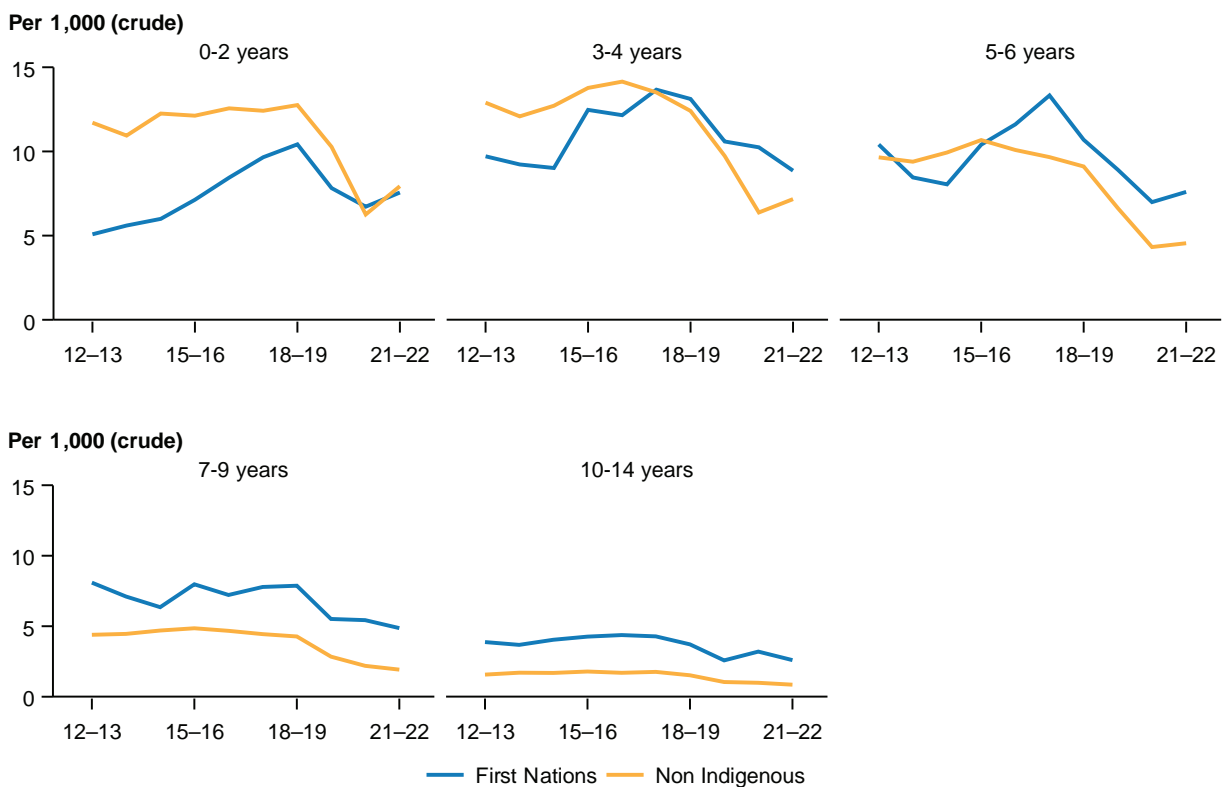
a) By Indigenous status and age, 2020-22



b) First Nations people, by remoteness area, 2020-22



c) Time trend by Indigenous status and age, 2012-13 to 2021-22



ASR = age-standardised rate.

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

Source: AIHW National Hospital Morbidity Database.

Measure 3.4 Waiting times

Key finding:

Myringotomy in children aged 0–14 accounted for 49% of all procedures for First Nations people, and 93% of procedures for children aged 0–14 in 2020–22.

Elective surgery is planned surgery that can be booked in advance as a result of a specialist clinical assessment and the patient being placed on a waiting list. Data on waiting times measure the amount of time elapsed from a person being placed on a waiting list to admission for their procedure.

However, data do not include the length of time for other steps in the clinical pathway for elective surgery to take place, including time taken to diagnose the underlying condition and refer the patient to an ENT specialist, or waiting times for appointments with an ENT or any delays from that consultation to being put on the surgical waiting list.

Data on waiting times for admissions from public hospital elective surgery waiting lists is available for myringotomy and myringoplasty procedures (see Glossary for definitions).

The COVID-19 pandemic has had an ongoing impact on surgery activity, including elective surgery activity, since its emergence in early 2020. More information about the impacts for the whole population is available in Australia's hospitals at a glance (AIHW 2023a). The different geographic distribution of the First Nations and non-Indigenous populations, for example by remoteness, may also be a relevant consideration. More analysis is required to better understand the factors driving some of the results presented.

3.4.1 Waiting times for elective myringotomy surgery

Overall: In 2020–22, there were 1,300 admissions for First Nations people from public hospital waiting lists for elective myringotomy surgery. Of these patients:

- 50% waited at least 77 days (around 2.5 months) for admission, which was longer than for non-Indigenous Australians (71 days)
- 90% were admitted within 326 days (just under 11 months).

Age: In 2020–22, almost all (92%) admissions for First Nations people from public hospital waiting lists for elective myringotomy surgery were for children aged 0–14 and almost half (48%) were for children aged 0–4.

Median waiting time increased with age, from 66 days for First Nations children aged 0–2 to 91 days for those aged 10–14 and 82 days for those 15 and over (Figure 3.4.1a).

State and territory and remoteness area: In 2020–22, waiting times for admission for First Nations people were generally shorter in more remote areas (Figure 3.4.1b). Half (50%) of First Nations patients living in Remote areas were admitted within 63 days, compared with 78 days for those living in Major cities (Figure 3.4.1b).

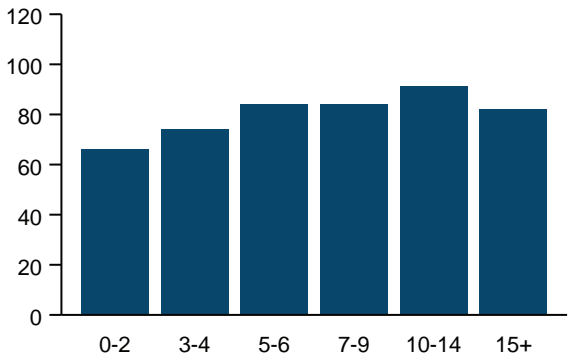
Over time: Between 2012–13 and 2021–22, the median waiting time for First Nations people for myringotomy increased by 23 days (from 54 to 77 days). Waiting times were comparable to those for non-Indigenous people over the same period (Figure 3.4.1c).



Figure 3.4.1: Median waiting times for elective myringotomy, by selected characteristics

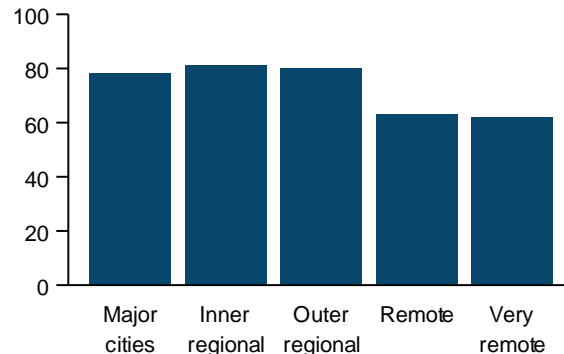
a) First Nations people, by age, 2020–22

Median waiting time (days)



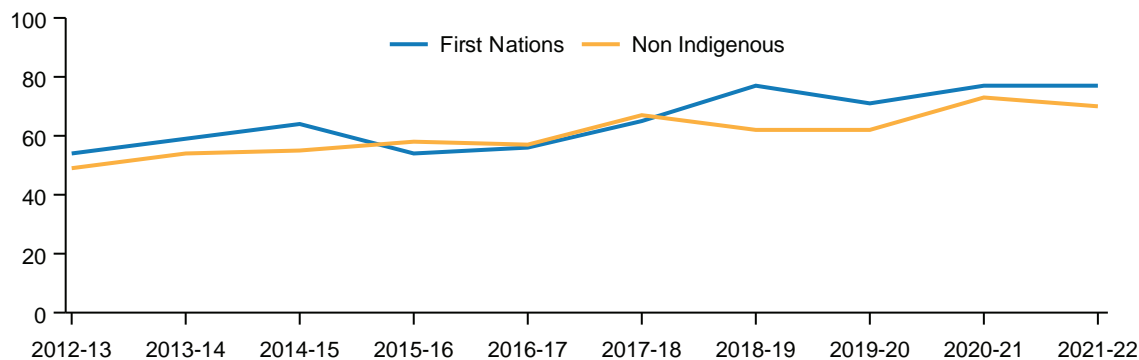
b) First Nations people, by remoteness area, 2020–22

Median waiting time (days)



c) Indigenous status, 2012–13 to 2021–22

Waiting time (days)



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

Source: AIHW National Elective Surgery Waiting Times Data Collection.

3.4.2 Waiting times for elective myringoplasty surgery

Overall: In 2020–22, there were 595 admissions for First Nations people from public hospital waiting lists for elective myringoplasty surgery. Of these patients:

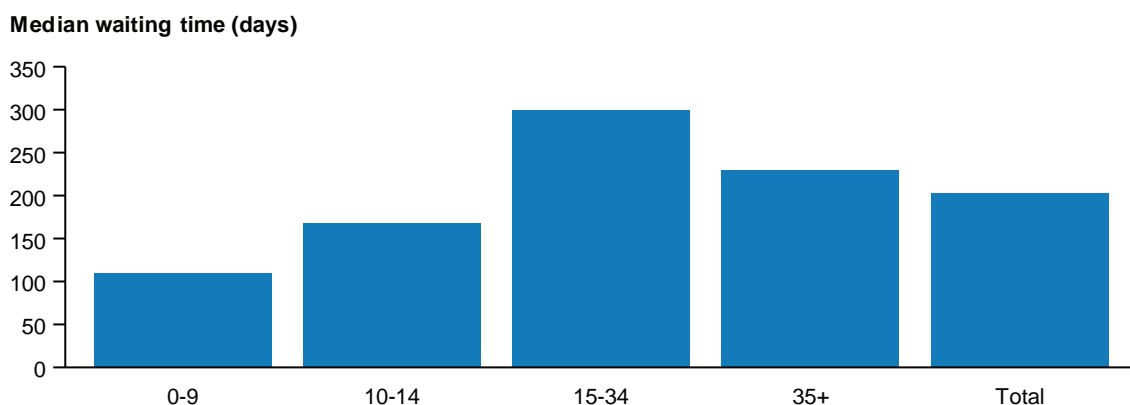
- 50% waited at least 203 days (just under 7 months) for admission, which was shorter than for non-Indigenous Australians at 299 days (or around 10 months)
- 90% were admitted within 472 days.

Age: In 2020–22, almost half (48%) of admissions for First Nations people from public hospital waiting lists for myringoplasty surgery were for children aged 0–14. Waiting times for admission tended to increase with age (Figure 3.4.2a).

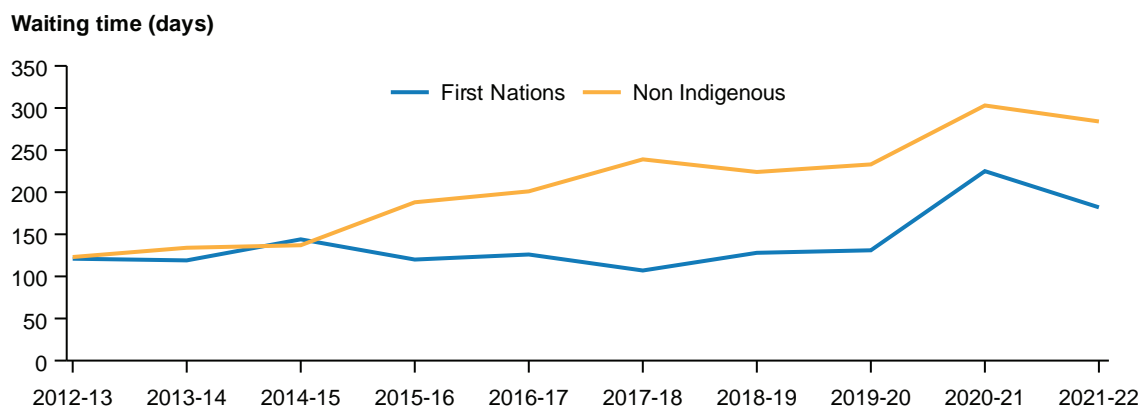
Over time: The median waiting times for admission of First Nations patients was largely stable between 2012–13 and 2019–20; there was a sharp rise in 2020–21 from which it partially recovered in 2021–22. This increase in waiting times in 2020–21 was likely due to restrictions put in place in 2019–20 on elective surgery (as part of the early response to the COVID-19 pandemic), which led to an increase in waiting times for most intended procedures in the following year (Figure 3.4.2b).

Figure 3.4.2: Median waiting times for elective myringoplasty, by selected characteristics

a) First Nations people, by age, 2020–22



b) Indigenous status, 2012–13 to 2021–22



Notes

1. See online data tables for more detail.



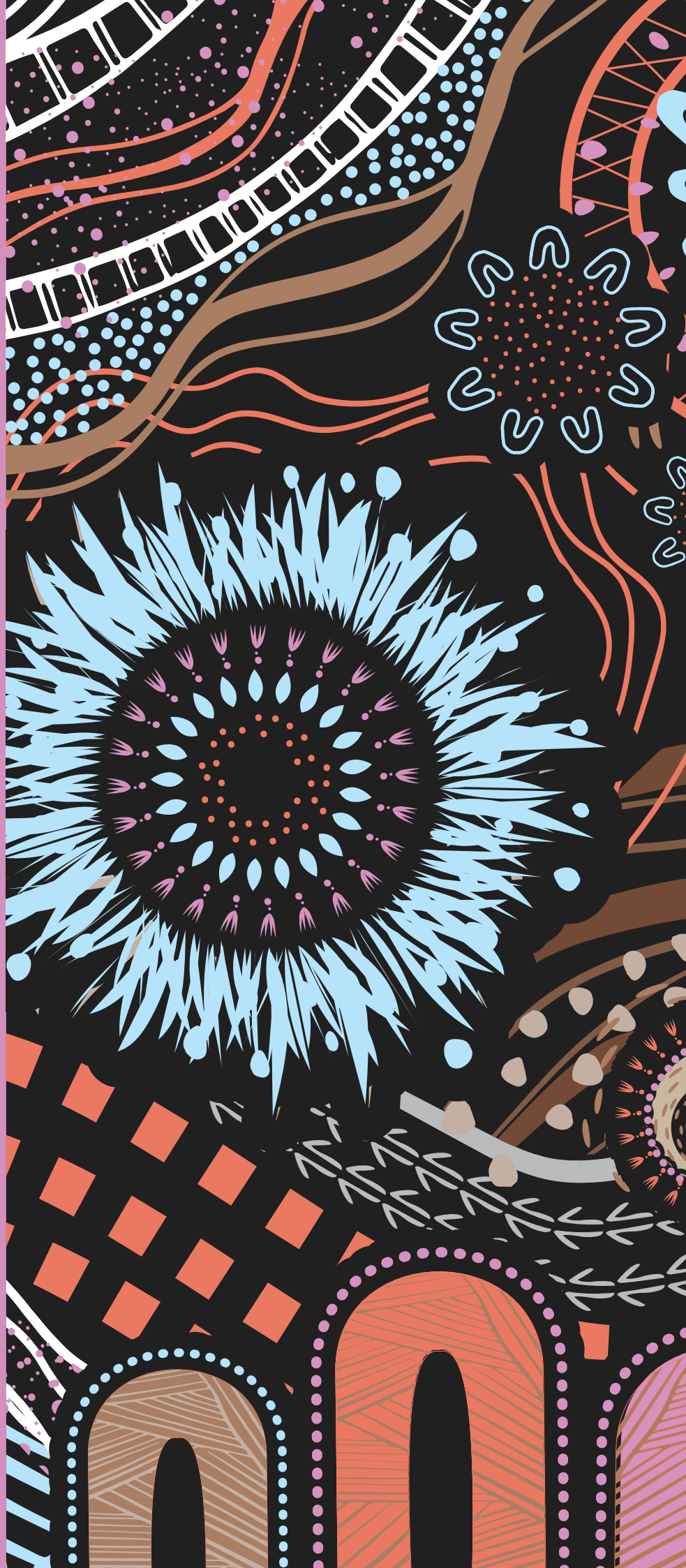
Measure 3.5 Eye and Ear Surgical Support Program

The EESS program expedites access to ear surgery for First Nations people, especially for those living in rural and remote locations. The program facilitates a culturally safe surgical support pathway, access to hospital theatre time and access to bulk-billing surgeons. The program also arranges travel and accommodation for the surgical patient and carer (where needed).

Overall: From July 2021 to June 2022, there were 187 ear related surgeries delivered through the EESS.

State/territory: The highest number of surgeries were delivered in Queensland (66; 35%), followed by New South Wales (38; 20%) and South Australia (33; 18%). South Australia and Tasmania had the highest rate of ear related surgeries (7.0 and 4.8 per 10,000 population, respectively). EESS data were not available for the Northern Territory and the Australian Capital Territory.







4



Rehabilitation



Most ear and hearing problems experienced by First Nations people can be mitigated through rehabilitation. Information about rehabilitation services can be used to better target health services in areas of greatest need. Rehabilitation services include:

- fitting of hearing aids and cochlear implants
- provision of assistive devices, audiology-related counselling, speech and occupational therapy, audiology services and other allied health services.

Rehabilitation can be assisted by a hearing inclusive environment. This includes:

- the availability of hearing loops in public spaces
- acoustically appropriate spaces
- widespread use of Auslan and other interpreting services
- availability of closed captioning
- efforts to reduce hearing loss stigma and discrimination.

This chapter covers the following information:

4.1 Hearing aids and cochlear implants – First Nations clients of Hearing Australia fitted and age of first fitting

4.2 National Disability Insurance Scheme – First Nations participants with hearing impairment.

Information in this chapter comes from Hearing Australia and the National Disability Insurance Scheme (NDIS).

Measure 4.1 Hearing aids and cochlear implants

Key finding:

Among First Nations Hearing Australia clients as of December 2022, the rate of clients fitted with a hearing device increased with remoteness. This pattern was strongest among First Nations children aged 0–14.

This section presents data from Hearing Australia on the characteristics of First Nations people with hearing loss who:

- have been fitted with a hearing aid or cochlear implant, and
- were provided with audiological, hearing aid or cochlear implant speech processor support services by Hearing Australia through the Hearing Services Program (HSP).

Some difference in rates between First Nations and non-Indigenous clients, particularly in those aged 26 and over, may be due to different HSP eligibility criteria for both groups. For more information on the HSP, see the foundational report page 66 (AIHW 2022).

Hearing aids and cochlear implants (collectively called ‘hearing devices’) amplify sounds and can improve the user’s ability to understand speech, even in noisy environments. Using a hearing device can improve mood, physical health and social activity. Early fitting of hearing devices among children with hearing loss is associated with better speech and language outcomes (Ching et al. 2018).

The data presented in this section is a ‘snapshot’ of Hearing Australia clients as at 31 December 2022, as follows:

- the demographic and hearing loss characteristics of First Nations Hearing Australia clients fitted with a hearing device as at 31 December 2022
- the age at first fitting of hearing devices for First Nations Hearing Australia clients aged under 26 at time of first fitting, between 2008 and 2022.

4.1.1 Hearing Australia clients fitted with hearing devices

This section presents data on hearing impairment (the ear with better hearing) among Hearing Australia clients fitted with a hearing device. These data cannot be directly compared with data presented in Section 1.2, which presented data on severity of hearing loss (any hearing loss) among all First Nations people (excluding those with a cochlear implant). The classification for severity of hearing loss also differs slightly to that presented in Section 1.2.

Overall: As at 31 December 2022, there were 172,961 Hearing Australia clients with a hearing device fitted. Among Hearing Australia clients, 8,044 (4.9%) identified as First Nations people (8.9 per 1,000 population).



Age: Of the 8,044 First Nations clients, 1,303 (16%) were aged 0–14, 466 (5.8%) aged 15–25, 625 (7.8%) aged 26–49 and 5,649 (70%) aged 50 and over (Figure 4.1.1a).

The rate of hearing device fitting was highest among First Nations people aged 50 and over (35 per 1,000 population), followed by First Nations children aged 0–14 (4.5 per 1,000 population).

For all age groups except those aged 15–25, a higher rate of First Nations people were clients of Hearing Australia and fitted with a hearing device than non-Indigenous Australians (Figure 4.1.1a).

Children: First Nations children aged 5–9 were more likely to be Hearing Australia clients with aided hearing loss (556 children, 5.9 per 1,000 population) than children aged 0–4 (279 children, 2.7 per 1,000 population) or 10–14 (468 children, 5.0 per 1,000 population)

First Nations children were 1.6 times more likely than non-Indigenous children to have aided hearing loss and receive support services from Hearing Australia (4.5 and 2.9 per 1,000 population, respectively). Rates for First Nations children aged 0–4, 5–9 and 10–14 were 1.3, 1.9 and 1.5 times, respectively, the rate among non-Indigenous children in the corresponding age groups (Figure 4.1.1b).

Sex: There were 3,715 (8.2 per 1,000 population) First Nations male and 4,321 First Nations female clients (9.6 per 1,000 population). The rate was similar among First Nations boys (4.6 per 1,000 population) and First Nations girls (4.4 per 1,000 population) (Figure 4.1.1c).

Remoteness area: The rate of First Nations clients increased with remoteness – from 6.8 per 1,000 population in Major cities, 8.7 per 1,000 population in Inner and outer regional areas, and 14 per 1,000 population in Remote and very remote areas.

This pattern was strongest among First Nations clients aged 0–14, with a rate of 3.7 per 1,000 population in Major cities and 11 per 1,000 population in Remote and very remote areas (Figure 4.1.1d).

State/territory: The rate of First Nations clients was highest in the Northern Territory (15 per 1,000 population) (Figure 4.1.1e).

Type of device: As at 31 December 2022, 7,947 First Nations clients (99%) were fitted with a hearing aid and 163 (2.0%) with a cochlear implant; 66 First Nations clients were fitted with both a cochlear implant and a hearing aid.

Among aided First Nations children, 1,255 (96%) were fitted with a hearing aid and 67 (5.1%) with a cochlear implant.

Around 2 in 3 (69%) First Nations clients with a cochlear implant were aged under 50 – 41% aged 0–14, 19% aged 15–24 and 8.6% aged 26–49. In contrast, 2 in 3 (70%) First Nations clients with a hearing aid were aged 50 and over.



Level of hearing impairment: Assessment of hearing impairment is made by the level of hearing loss in the better ear, based on the classifications of severity of hearing loss for children. At their latest assessment, for First Nations clients of all ages as at 31 December 2022:

- 4,488 (56%) had normal hearing or mild hearing impairment (0–40dB)
- 2,258 First Nations clients (28%) had moderate hearing impairment (41–60dB)
- 1,283 First Nations clients (16%) had severe or profound hearing impairment (61–90dB)
- the proportion with moderate or greater hearing impairment was greatest among First Nations clients aged 26–49 (60%) (Figure 4.1.1f).

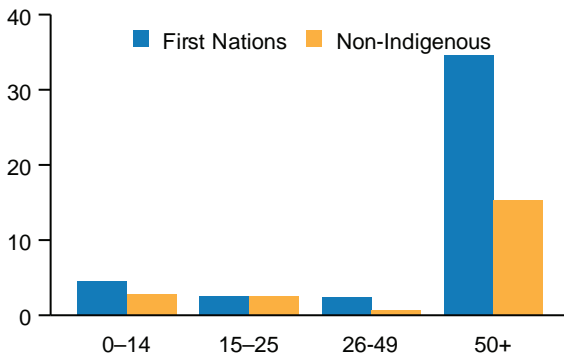
At their latest assessment with Hearing Australia, of aided First Nations clients aged 0–14:

- 984 (76%) had normal hearing or mild hearing impairment
- 213 (16%) had moderate hearing impairment
- 92 (7.1%) had severe or profound hearing impairment
- the proportion with moderate or greater hearing impairment was highest among children aged under 1 year (Figure 4.1.1g).

Figure 4.1.1: Hearing Australia clients with a hearing aid or cochlear implant, by selected characteristics, as at 31 December 2022

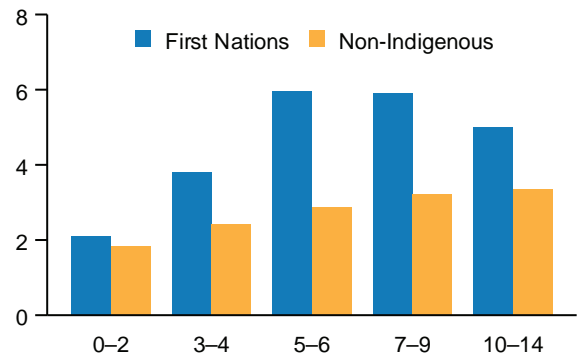
a) By age and Indigenous status*

Per 1,000 (crude)



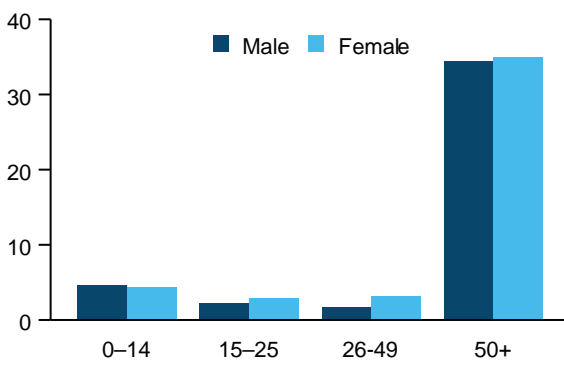
b) Children 0-14, by age and Indigenous status*

Per 1,000 (crude)



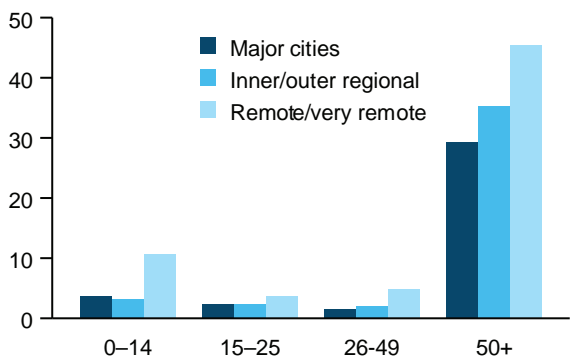
c) First Nations people, by age and sex

Per 1,000 (crude)



d) First Nations people, by remoteness area and age

Per 1,000 (crude)



e) First Nations people, by state/territory

Per 1,000 (crude)

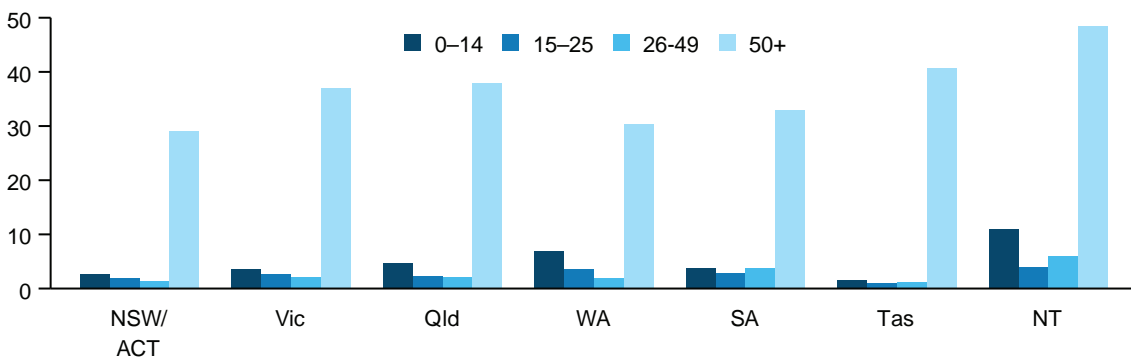
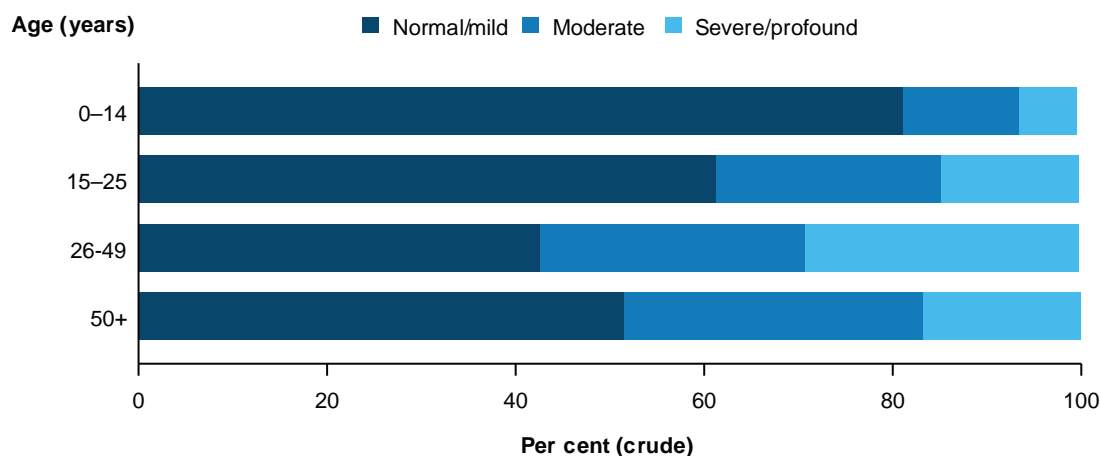
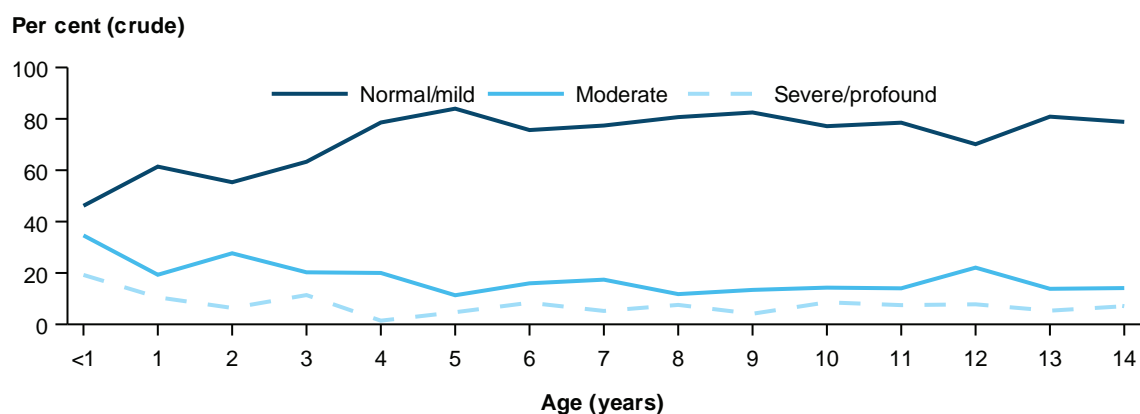


Figure 4.1.1 (continued): Hearing Australia clients with a hearing aid or cochlear implant, by selected characteristics, as at 31 December 2022

f) First Nations clients, by age



g) First Nations clients aged 0-14, by age



* Eligibility criteria differ for First Nations and non-Indigenous Hearing Australia clients aged 26 and over, affecting comparisons by Indigenous status.

Notes

1. Rates per 1,000 population.
2. Hearing impairment level is at most recent assessment.
3. Figures present the proportion of Hearing Australia clients in the corresponding age group as at 30 December 2022.
4. Hearing impairment is based on the ear with better hearing. 'Normal/mild' includes clients with unilateral hearing loss (one ear affected).
5. Data for these figures are available in the online data tables.
6. Data do not include the HAPEE program data.

Source: AIHW analysis of Hearing Australia (2023) data.

4.1.2 Age of first fitting

For Hearing Australia clients aged 0–25 with a hearing aid or a cochlear implant (referred to in this section as ‘aided children and young adults’), data on age at first fitting are available from 2008 to 2022. Clients were provided with audiological and hearing aid or cochlear implant speech implant support services through Hearing Australia (Hearing Australia 2023).

Overall: Between 2008 and 2022, 5,779 Hearing Australia clients were First Nations children and young adults aged 0–25 who had been fitted with a hearing aid or cochlear implant. Of these, 4,791 (83%) were aged 0–14.

In 2022, 468 aided First Nations children and young adults aged 0–25 were newly fitted.

Age: In 2022, 170 (36%) aided First Nations children and young adults aged 0–25 were first fitted when aged 0–4, 153 (33%) when aged 5–9 and 70 (15%) when aged 15–25. Only 9% of aided First Nations children and young adults were fitted under the age of one.

The peak age of first fitting for First Nations children was between ages 3–6. A total of 35% of aided First Nations children and young adults were fitted with their first hearing device between the ages of 3 and 6.

For non-Indigenous children, the peak age of first fitting was under one year of age (545, 19%), with a smaller, secondary peak at age 5 (187, 6%) (Figure 4.1.2c).

Time trend: Between 2008 and 2022, there was a trend toward earlier ages of first fitting among aided First Nations children and young adults. The proportion first fitted in the 0–4 year age group increased from 10% in 2008 to 36% in 2022 (Figure 4.1.2a). The peak age of first fitting fell from 7–9 years to 4–6 years of age (Figure 4.1.2b).

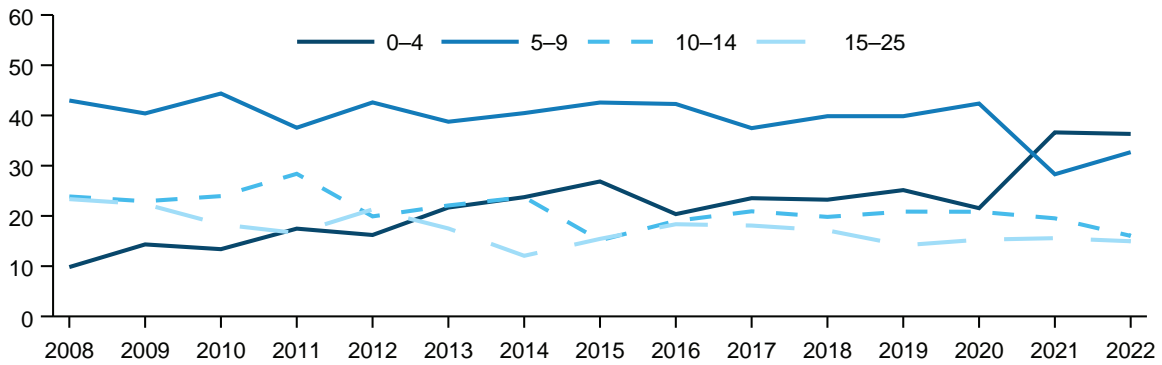
The number of First Nations clients first fitted aged 0–14 dropped from 289 in 2008 to 171 in 2012, before increasing to a peak of 594 in 2020 and then dropping slightly to 398 in 2022.

Type of hearing loss: For clients aged 2–14 first fitted with a hearing device between 2008 and 2022, equal proportions of First Nations clients were fitted for conductive (50%) and non conductive (50%) hearing loss. Among non-Indigenous children, 24% of clients were fitted for conductive hearing loss and 76% for non-conductive hearing loss. Among First Nations children, the proportion fitted for conductive hearing loss peaked at ages 4–8 (56% were fitted). Among non-Indigenous children, the peak of fitting for conductive hearing loss was lower and flatter, with around 40% of non-Indigenous children fitted aged 4–8 (Figure 4.1.2d).

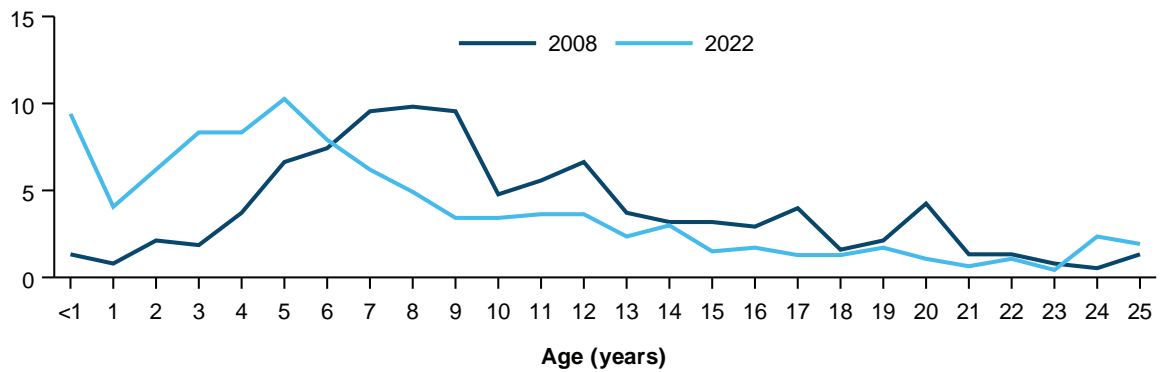
Figure 4.1.2: Age of first hearing aid or cochlear implant fitting of aided Hearing Australia clients aged 0–25, by selected characteristics

a) First Nations people, by age, 2008 to 2022

Per cent (crude)



b) First Nations people, age distribution, 2008 and 2022



c) Age distribution, by Indigenous status, 2022

Per cent (crude)

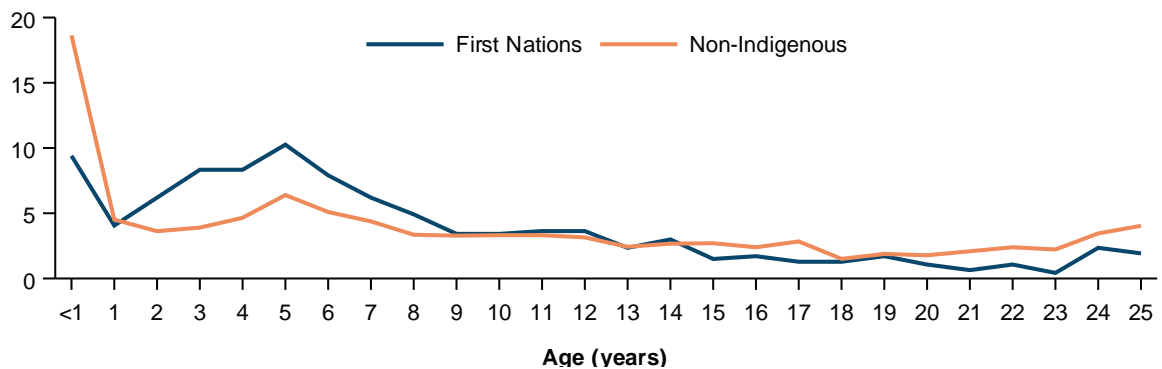
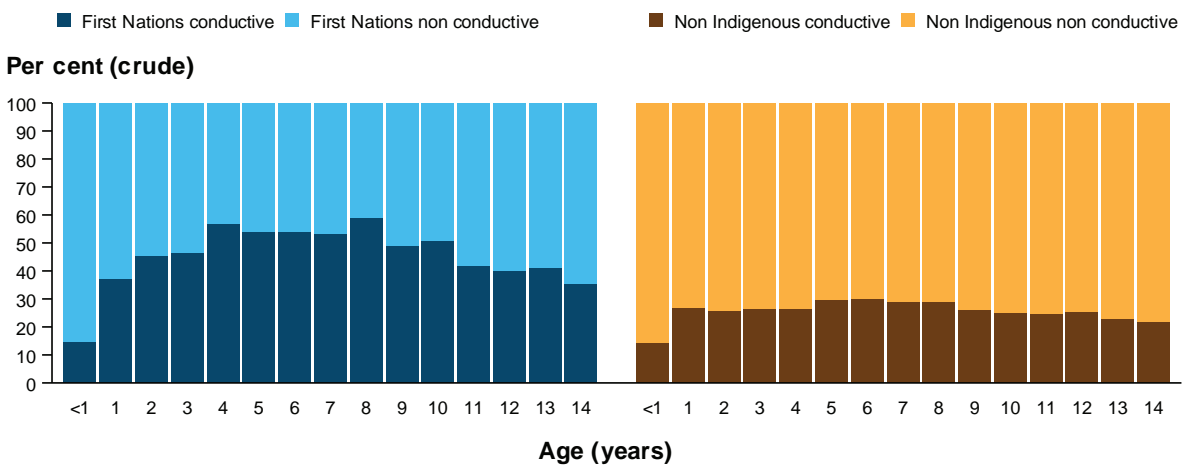




Figure 4.1.2 (continued): Age of first hearing aid or cochlear implant fitting of aided Hearing Australia clients aged 0–25, by selected characteristics

d) Type of hearing loss among clients fitted between 2008 and 2022



Notes

1. Percentages are the proportion of Hearing Australia clients who were first fitted with a hearing device before the age of 26 in a given year.
2. Figure (d) shows data from all years between 2008 and 2022, combined. All other figures show data from single calendar years, separately.
3. Data for these figures are available in the online data tables.

Source: AIHW analysis of Hearing Australia (2023) data.

Measure 4.2 National Disability Insurance Scheme

Key finding:

First Nations participants with hearing impairment were more likely to have a high level of function than all First Nations NDIS participants (49% compared with 34%).

The National Disability Insurance Scheme (NDIS) supports eligible Australians with a permanent disability, substantially enhancing their ability to complete everyday activities (NDIA 2021b).

It funds public hearing services for participants with confirmed hearing loss, including hearing aids (NDIA 2021a). This may include funding towards maintenance and replacement of hearing aids, additional assistive listening devices, and interpreting services. The NDIS funds hearing supports for NDIS participants aged 26 and over who are not eligible for the Hearing Services Program (HSP). The NDIS also funds additional reasonable and necessary hearing supports for participants if they are not available through the HSP. This includes people under 26. For those aged under 7, a streamlined NDIS pathway enables children who are newly diagnosed with a hearing loss to access early intervention supports. For more information see <https://www.ndis.gov.au/understanding/ndis-and-other-government-services/hearing-supports>.

This section presents summary information on First Nations participants in the NDIS who reported hearing impairment as a disability. As at 30 June 2023, there were 46,694 First Nations people who were active participants in the NDIS in total, and 2,069 who reported a hearing impairment as a disability.

Overall: As at 30 June 2023, 2,069 First Nations people were active participants in the NDIS and reported hearing impairment as a disability (4.4% of all 46,694 First Nations NDIS participants) and 1,241 reported hearing impairment as their primary disability (2.7% of all First Nations NDIS participants).

Of the 2,069 First Nations participants with hearing impairment, the top 3 primary disability groups were hearing impairment (60%), intellectual disability (15%) and autism spectrum disorder (7%) (Figure 4.2a).

Age: Around 63% of the First Nations participants who reported hearing impairment disability were aged 15 and over, compared with 51% of all First Nations participants, as at 30 June 2023 (Figure 4.2b).

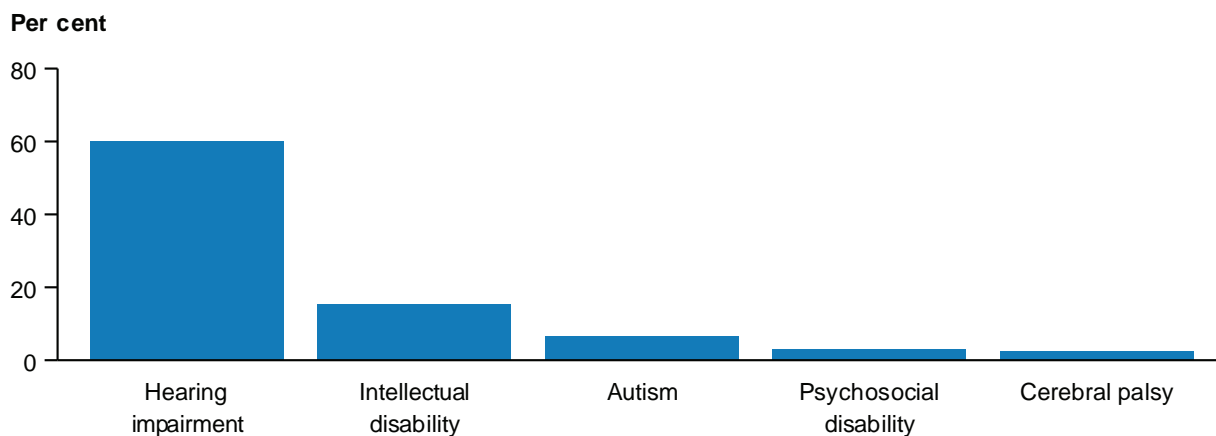
State/territory and remoteness: Of the 2,069 First Nations participants who reported hearing impairment as at 30 June 2023, 1 in 3 lived in Queensland (33%) and around another 1 in 3 lived in New South Wales (30%) (Figure 4.2d).

Of the 2,069 First Nations participants who reported hearing impairment as at 30 June 2023, 11% lived in Very remote communities, compared with 5.2% of all First Nations participants (MM7) (Figure 4.2c).

Level of function: A greater proportion of First Nations participants with a primary hearing impairment disability as at 30 June 2023 had a high level of function (68%) when compared to all First Nations NDIS participants (34%) (Figure 4.2e).

Figure 4.2: NDIS participants with hearing impairment, by selected characteristics, 30 June 2023

a) First Nations participants, by primary disability group



b) Participants by age, Indigenous status and disability group

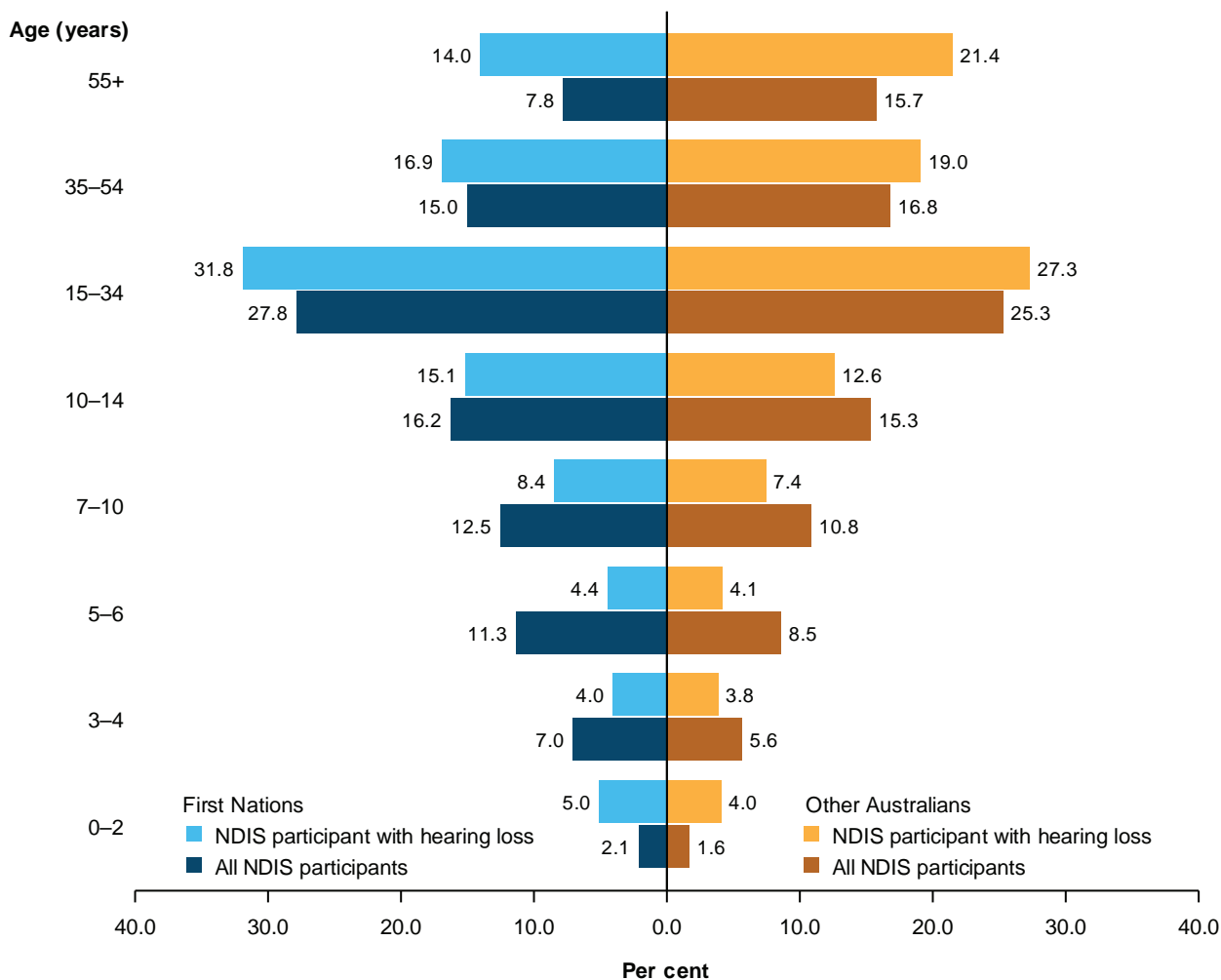
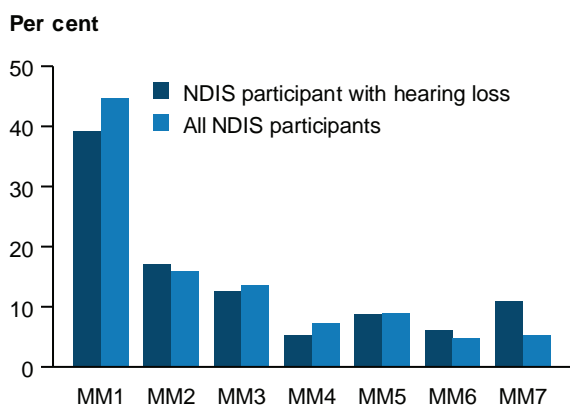
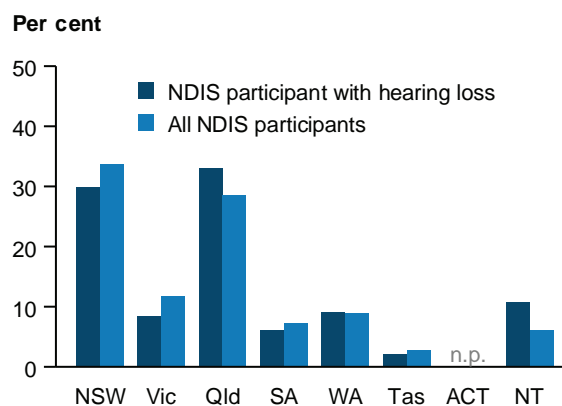


Figure 4.2 (continued): First Nations NDIS participants with hearing impairment, by selected characteristics, 30 June 2023

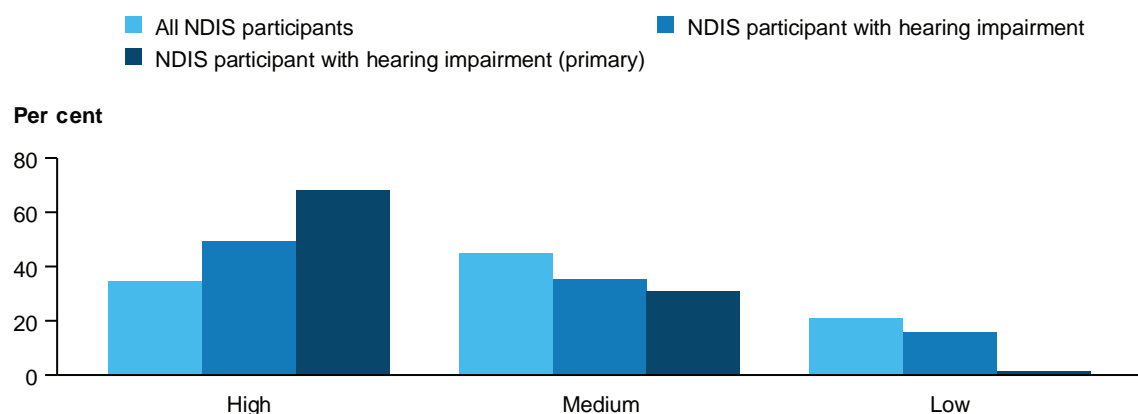
c) First Nations participants, by remoteness (MMM) and disability group



d) First Nations participants, by state and territory and disability group



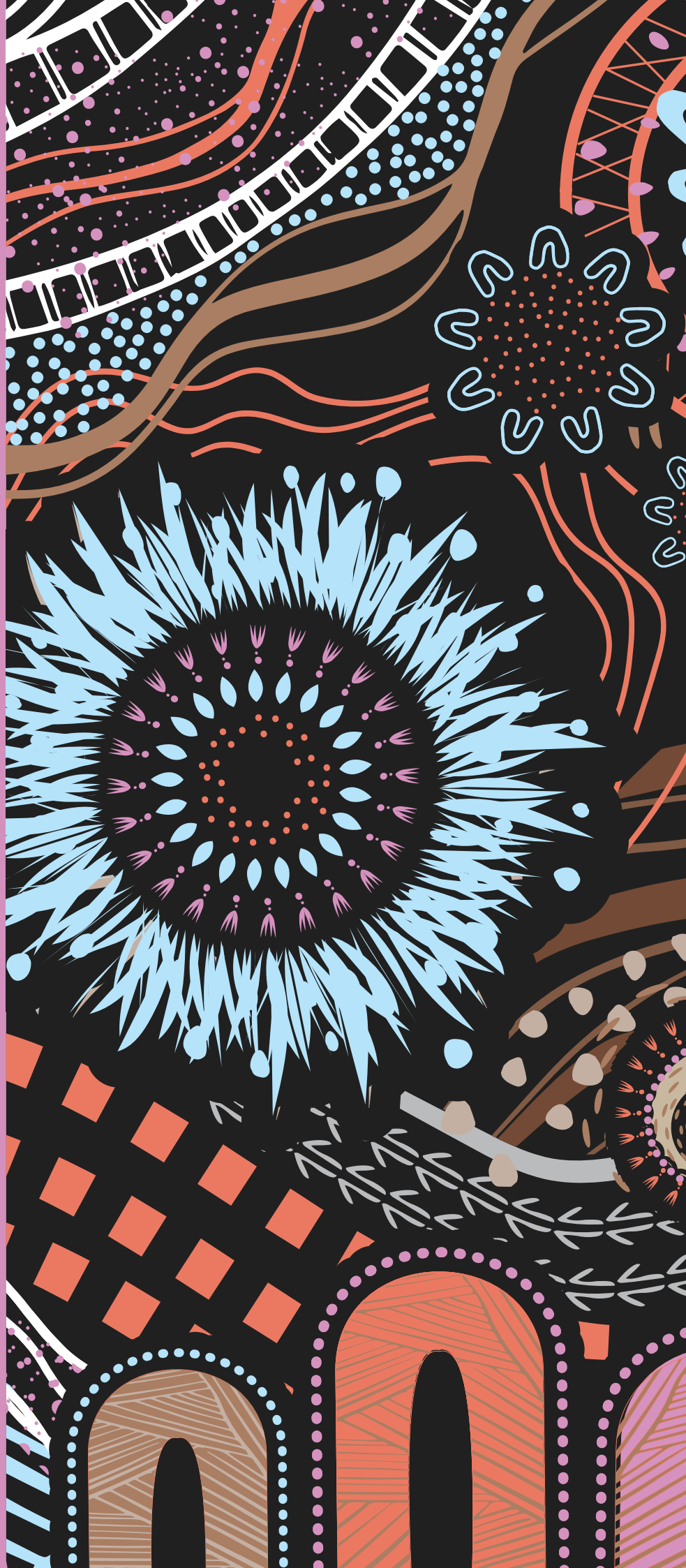
e) First Nations participants, by level of function and disability group



Notes

1. Disability groups: acquired brain injury, autism, cerebral palsy, developmental delay, Down syndrome, global developmental delay, intellectual disability, multiple sclerosis, other, other neurological, other physical, other sensory/speech, psychosocial disability, spinal cord injury, stroke, visual impairment.
2. Figure (c) uses the Modified Monash Model (MMM). MMM is a geographical classification that categorises different areas in Australia into 7 remoteness categories: MM1 = Metropolitan, MM2 = Regional centres, MM3 = Large rural towns, MM4 = Medium rural towns, MM5 = Small rural towns, MM6 = Remote communities, MM7 = Very remote communities.
3. Data that are categorised according to disability group may sum to more than the total NDIS participants, as participants may have disabilities recorded in multiple disability groups.

Source: AIHW analysis of National Disability Insurance Scheme data (unpublished).





5



Workforce



Access to culturally safe ear and hearing health specialist services is crucial for First Nations people to seek and receive timely diagnosis and treatment. The ear and hearing health workforce is diverse and often provides complementary services as part of a team (see Introduction page 18).

While the workforce is critical to delivering ear and hearing health services, it faces challenges, including high staff turnover, competing demands from multiple programs and insufficient staff training. There is also insufficient access to culturally appropriate services. These challenges reduce the capacity of the ear and hearing health workforce, particularly in rural and remote communities (Siggins Miller 2018).

Data on the ear and hearing health workforce can indicate the availability of specialised ear health services.

This chapter covers the following information:

5.1 Audiologists

5.2 Ear, nose and throat specialists

5.3 EarTrain workforce training – for primary health professionals

5.4 Healthy Ears – Better Hearing, Better Listening outreach services.

Information in this chapter comes from the ABS 2021 Census of Population and Housing (the Census), the 2021 National Health Workforce Dataset and the Online Services Report, data supplied from the training program EarTrain, data supplied by the Department of Education, Skills and Employment (DESE), and data from the program Healthy Ears – Better Hearing, Better Listening (HEBHBL).

Measure 5.1 Audiologists

Key finding:

The rate of audiologists per 100,000 population was highest in *Major cities* and decreased with remoteness. No audiologists lived in *Very remote* areas.

Audiologists provide hearing diagnostic assessments and rehabilitative services, including counselling, communication strategies and hearing aid fitting. They also assess and support other ear related conditions, such as balance problems. Data in this section are from the 2021 Census and the Department of Education, Skills and Employment (DESE).

Overall: In 2021, about 190 university students completed an audiology course in Australia (AIHW analysis of DESE unpublished data). There were around 2,640 Australians who reported their occupation as an audiologist in the 2021 Census. This is a rate of 10.3 audiologists per 100,000 population, up from 7.8 in 2016. Of these, around 10 identified as First Nations people (ABS 2021).

Employment characteristics: Around 1,560 (59%) audiologists reported working full time (35 hours or more per week), while around 910 (35%) reported working part time (less than 35 hours per week) (information about full time or part time status was not determined for the remainder) (ABS 2021). Most audiologists worked in the private sector (2,344, 89%), a large increase from 66% in 2016. Remaining audiologists reported working for a state or territory government (232, 8.8%) or the Australian Government (49, 1.9%).

Age and sex: The median age of audiologists was 36c, and over 50% of audiologists were aged 25–39. Only around 80 (3%) audiologists were aged 65 and over.

Around 3 in 4 audiologists were women (2,030, 77%) and 1 in 4 were men (600, 23%).

State and territory and remoteness: The greatest proportion of audiologists lived in Victoria (756, 29%) and New South Wales (739, 28%). However, the rate of audiologists per 100,000 population was highest in the Northern Territory (13.3 per 100,000 population) and Victoria (11.5 per 100,000) (Figure 5.1a).

Most (2,041, 77%) audiologists lived in Major cities. The rate was highest in Major cities (11.1 per 100,000) and decreased with remoteness: Inner regional areas (9.5 per 100,000), Outer regional areas (6.8 per 100,000) and Remote areas (3.7 per 100,000). No audiologists lived in Very remote areas (Figure 5.1b).

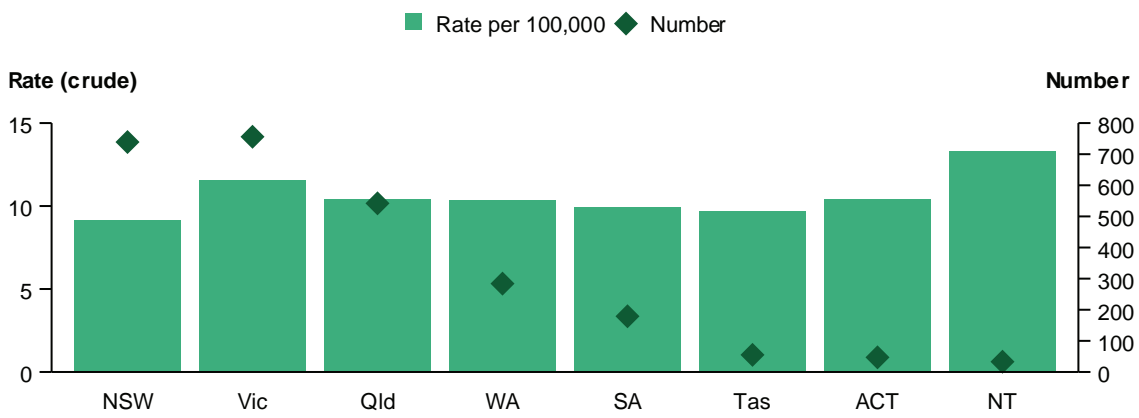
Specialist services in First Nations-specific primary health-care organisations

Between 2013–14 and 2021–22, the proportion of First Nations-specific primary health-care organisations which employed or had a visiting audiologist or audiometrist almost doubled, from 28% to 54% (113) in 2021–22, according to data from the AIHW Online Services Report database collection.

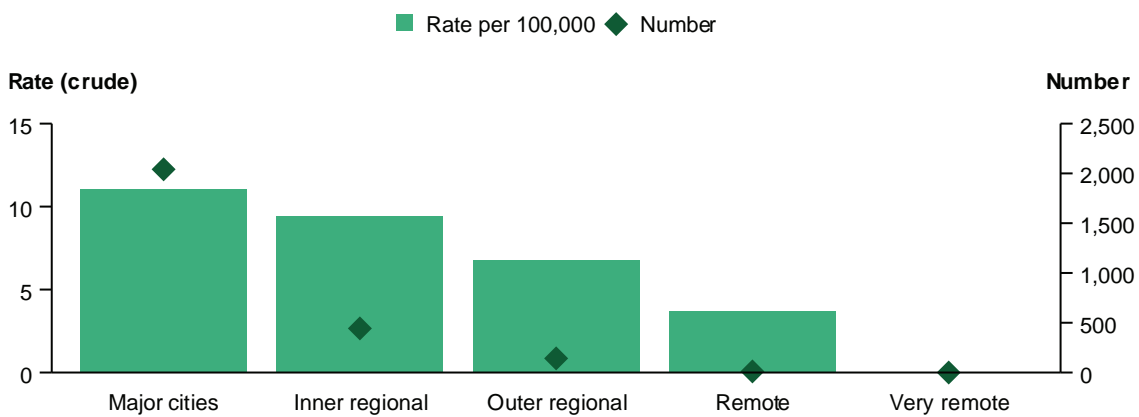


Figure 5.1: Audiologists in Australia, 2021

a) By state/territory of usual residence



b) By remoteness area of place of usual residence



Notes

1. In these figures, rates are calculated using the total Australian population, not the First Nations population.
 2. Data for these figures are available in the online data tables.
- Source: AIHW analysis of Australian Bureau of Statistics 2016 Census of Population and Housing.

Measure 5.2 Ear, nose and throat specialists

Key finding:

Nearly 4 out of 5 (79%) ENT specialists reported their principal work setting to be in private practice.

Otolaryngologists, colloquially referred to as ENTs, are specialist surgeons who investigate and treat conditions involving the ear, nose, throat, head and neck. The data in this section are from the National Health Workforce Dataset. Data are presented by:

- FTE rate, a measure of the number of standard-hour workloads worked by employed health practitioners
- FTE per 100,000 Australian population, a measure of supply.

Overall: In 2021, 498 ENT specialists were employed in Australia, with an FTE of 533 (2.1 FTE per 100,000). The mean number of hours worked per week was 42.8.

Fewer than 5 ENT specialists identified as First Nations people.

Age and sex: Most (62%) ENT specialists were aged 35–54 (308 specialists, 361 FTE) and 19% (97 specialists, 66 FTE) were aged 65 and over.

Around 18% of ENT specialists were women (88 specialists, 97 FTE) and 82% were men (410 specialists, 436 FTE).

State and territory and remoteness area: The highest proportion of ENT specialists were in New South Wales, with 33% (164 specialists, 171 FTE) indicating that state as their principal place of practice. South Australia had the highest rate of ENT specialists (2.4 FTE per 100,000 population) (Figure 5.2).

The principal place of practice of over 4 in 5 ENT specialists was in Major cities (87%, 435 ENT specialists, 468 FTE).

Job setting: Around 391 ENT specialists (79%, 417 FTE) reported their principal work setting to be in private practice.

Over time: The number of ENT specialists employed in Australia increased slightly from 420 (484 FTE) in 2013 to 498 (533 FTE) in 2021. Over the same period, the rate per 100,000 population of ENT specialists remained stable, within the range of 2.0 to 2.2 (Table 5.1).

Table 5.1: ENT specialists employed in Australia, 2013 to 2021

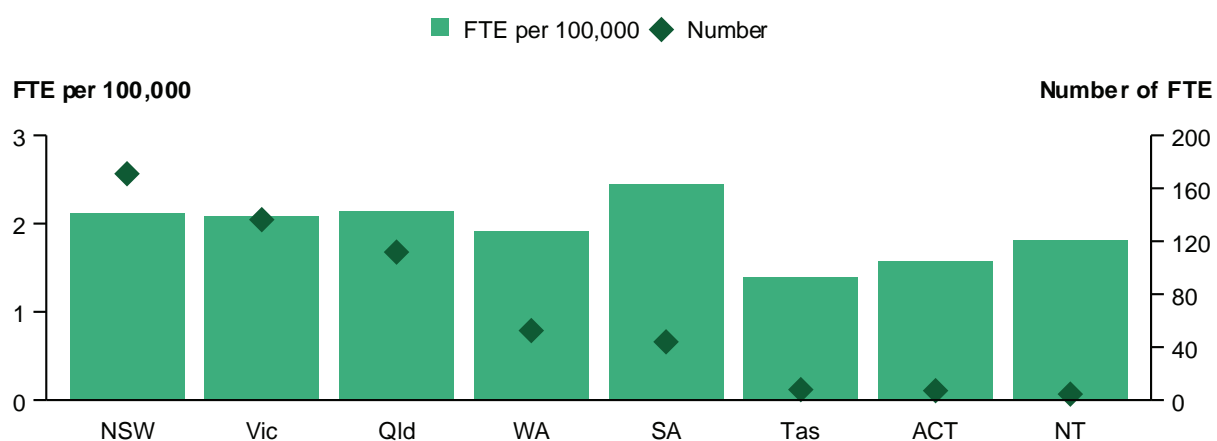
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of ENTs	420	427	443	459	455	458	475	481	498
FTE	484.3	478.2	499.1	525.1	529.9	515.7	540.0	510.3	533.1
FTE per 100,000	2.1	2.0	2.1	2.2	2.2	2.1	2.1	2.0	2.1

Notes

1. ENT specialists are medical practitioners employed in Australia with the surgical specialisation of otolaryngology.
2. FTE rate is per 100,000 Australian population.

Source: AIHW analysis of the National Health Workforce Dataset.

Figure 5.2: ENT specialists, FTE per 100,000 Australian population and number, by state/territory of work, 2020



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

Source: AIHW analysis of the National Health Workforce Dataset.

Specialist services in First Nations-specific primary health-care organisations

In 2021–22, 37 (18%) of First Nations-specific primary health-care organisations reporting data to the AIHW Online Services Report database collection either employed or had visiting ENT specialists. Since 2013–14, the proportion of these organisations with an ENT specialist has been increasing – from 12% to 18% in 2021–22. The number and proportion of organisations with an ENT specialist peaked in 2019–20 (63 organisations, 32%).

Measure 5.3 EarTrain workforce training

Key finding:

More than 1 in 3 health professionals participating in the EarTrain program identified as First Nations people.

EarTrain is a training program to identify and treat otitis media and other hearing conditions in First Nations communities. Training can be accessed by primary health-care professionals, including Aboriginal health workers, nurses and GPs, and is freely available for all primary health-care professionals providing care to First Nations people. It is primarily delivered online through a selection of topics, but also offers in-person practical skills workshops, delivered in communities. EarTrain is funded by the Australian Government and delivered nationally by TAFE New South Wales.

The information in this section is provided by EarTrain, based on data for all participants who have registered for the program since it began, through to 30 June 2023.

Overall: As of June 2023, EarTrain has recorded 1,367 participants for training. Of these, 491 identified as First Nations people.

State and territory and remoteness area: Queensland had the highest number of participants (441 participants, 1.7 per 1,000 First Nations population), followed by New South Wales (409, 1.3 per 1,000). Northern Territory had the highest rate of participants (242, 3.0 per 1,000).

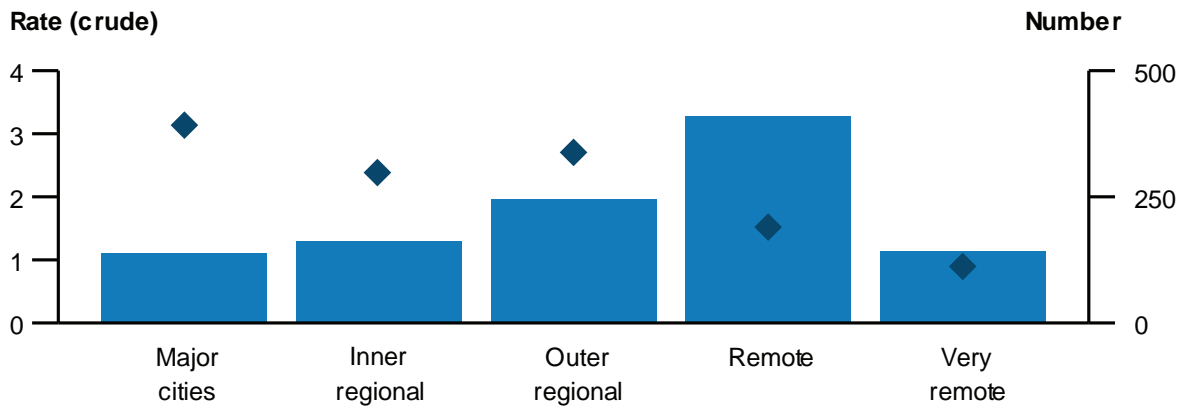
The rate of participants was highest in *Remote* and *Outer regional* areas (3.3 and 2.0 per 1,000 First Nations population, respectively), compared with other areas (1.1 to 1.3 per 1,000) (Figure 5.3a).

Job role: Nurses were the biggest group of participants (654 participants, 48% of all participants), the vast majority of whom were directly involved in assessing and treating ear health (550, 40%). Health workers were the next biggest group (522, 38%). Ear health coordinators, allied health practitioners and doctors made up the remaining 14% of participants (Figure 5.3b).

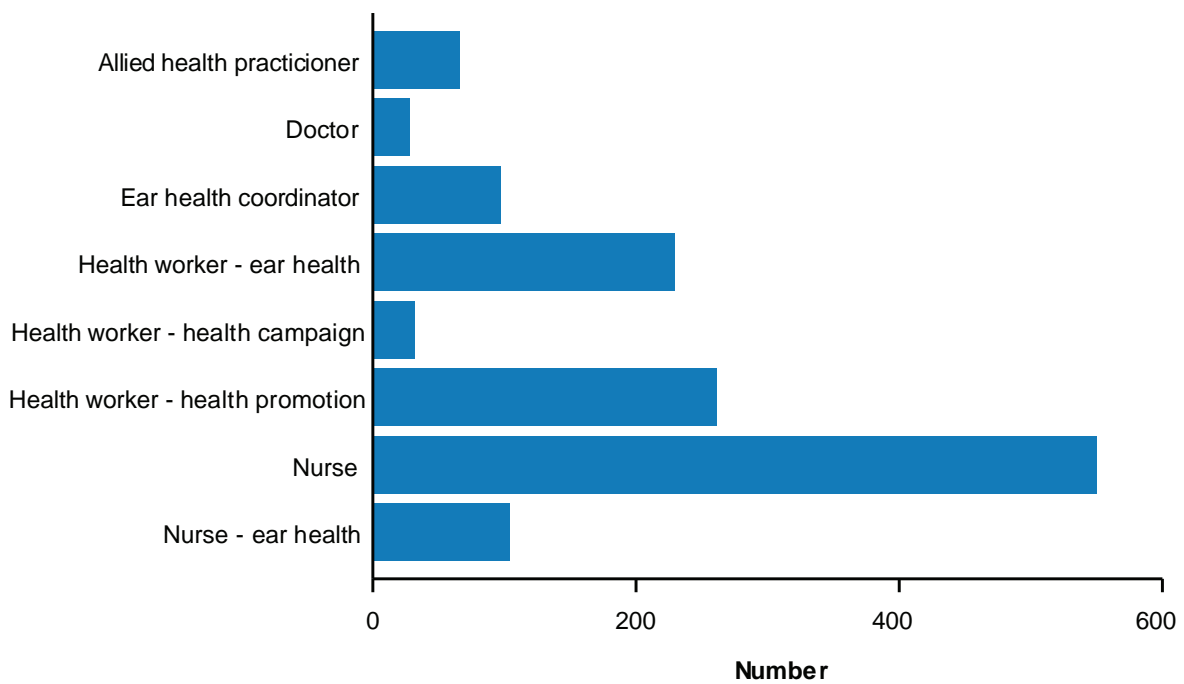
Figure 5.3: Number of EarTrain participants as at 30 June 2023

a) By remoteness area

■ Rate per 1,000 First Nations population ◆ Number



b) By job role



Notes

1. In these figures, rates are calculated using the First Nations population.
2. 'Ear Health' indicates a health-care professional being directly involved in assessing, treating and/or managing ear and hearing health.
3. 'Health campaign' indicates a health-care professional is involved with public health campaigns.
4. 'Health promotion' indicates a health-care professional is working with families and health promotion.
5. Data for these figures are available in the online data tables.

Source: EarTrain data.

Measure 5.4 Healthy Ears – Better Hearing, Better Listening outreach services

Programs that offer outreach services may provide information on the availability and variations in the uptake of these services. Outreach services are primarily provided in regional and remote areas where there are low numbers of audiologists and ENT specialists. These services are intended to compensate for the uneven distribution of the health workforce and to improve access to health services across Australia.

The Healthy Ears – Better Hearing, Better Listening (HEBHBL) program provides funding for ear health outreach services aimed at First Nations children aged 0–21. The program supports outreach services by a range of health professionals – including medical specialists, GPs, nurses, audiologists and speech pathologists – by coordinating their participation in service delivery, paying for travel and accommodation, backfilling salaried medical staff, and paying allowances for absences from practice.

Note that remoteness is reported using the Modified Monash Model (MMM) and does not align directly with ABS remoteness areas. The MMM is a geographical classification that categorises areas in Australia into 7 remoteness categories developed to support the targeting of health workforce programs to attract health professionals to work in regional and remote communities.

Overall: From July 2021 to June 2022, 31,478 occasions of service were delivered through the HEBHBL. Of these, 26,489 (84%) were delivered to First Nations clients.

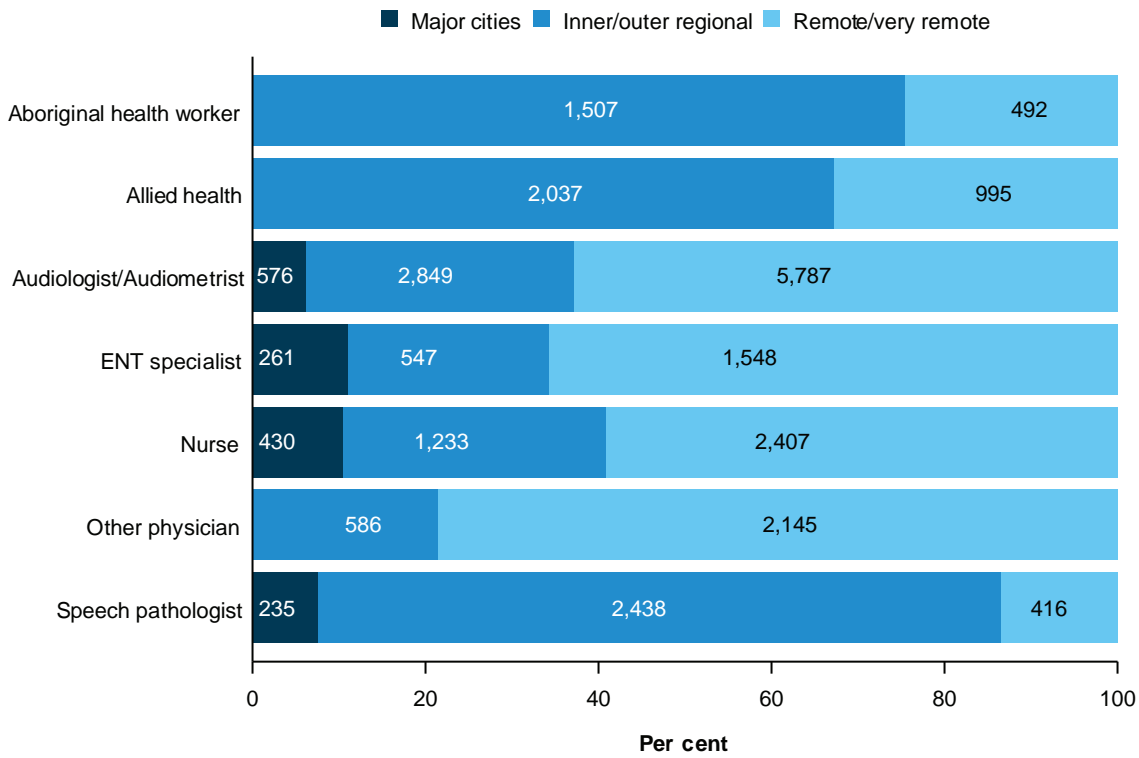
State/territory: Around 9 in 10 occasions of service delivered to First Nations clients were in Western Australia (9,952; 37%), Queensland (7,452; 28%) and New South Wales (6,052; 23%). The remaining 11% of HEBHBL services were delivered in the Northern Territory, Victoria, South Australia and Tasmania. No HEBHBL services were delivered in the Australian Capital Territory.

Remoteness area: Over half of all occasions of service delivered to First Nations clients were in *Remote and very remote areas* (13,790; 52%) and *Inner and outer regional areas* (11,197, 42%). Of the various health professions, audiologists and audiometrists delivered the most occasions of service (5,787) in Remote and very remote areas. The majority of services delivered by ENT specialists and other physicians were delivered in Remote and very remote areas (1,548 or 66%, and 2,145 or 79%, respectively) (Figure 5.4a).

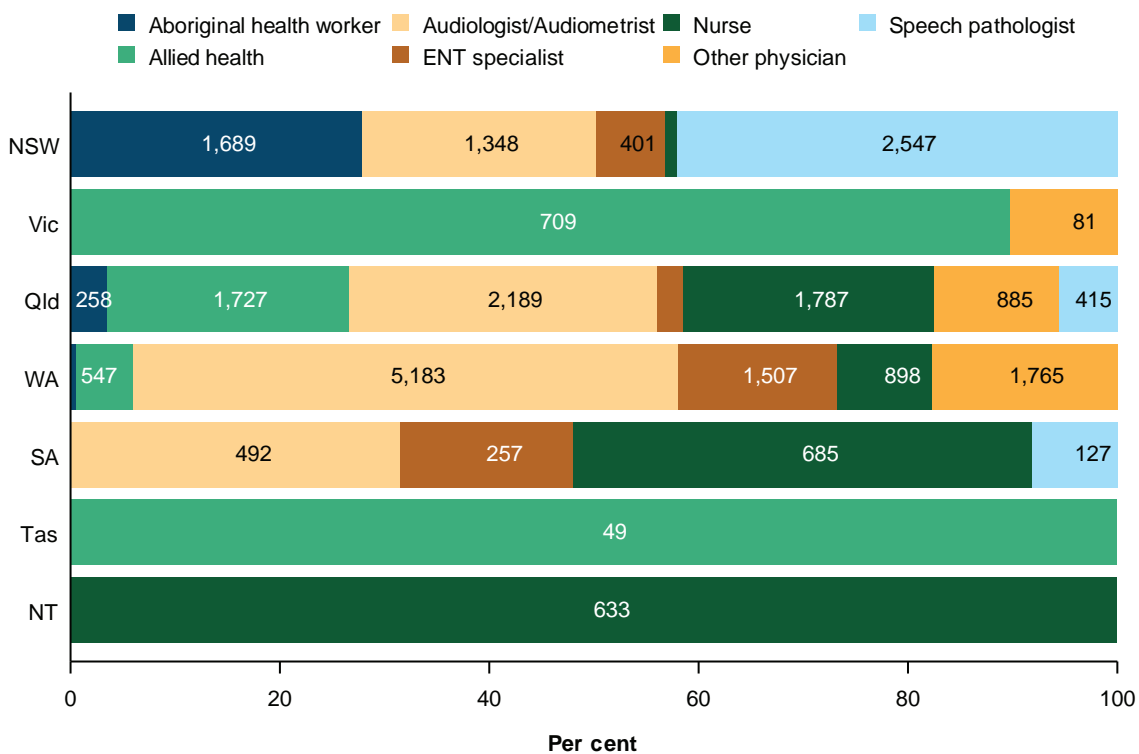
Profession type: The highest proportion of occasions of service delivered to First Nations clients were by audiologists/audiometrists, (9,212, 35%), followed by nurses (4,070; 15%). The greatest number of services delivered by First Nations health workers was in New South Wales (1,689 or 28% of all occasions of service in New South Wales) (Figure 5.4b).

Figure 5.4: HEBHBL occasions of service, 2021–22

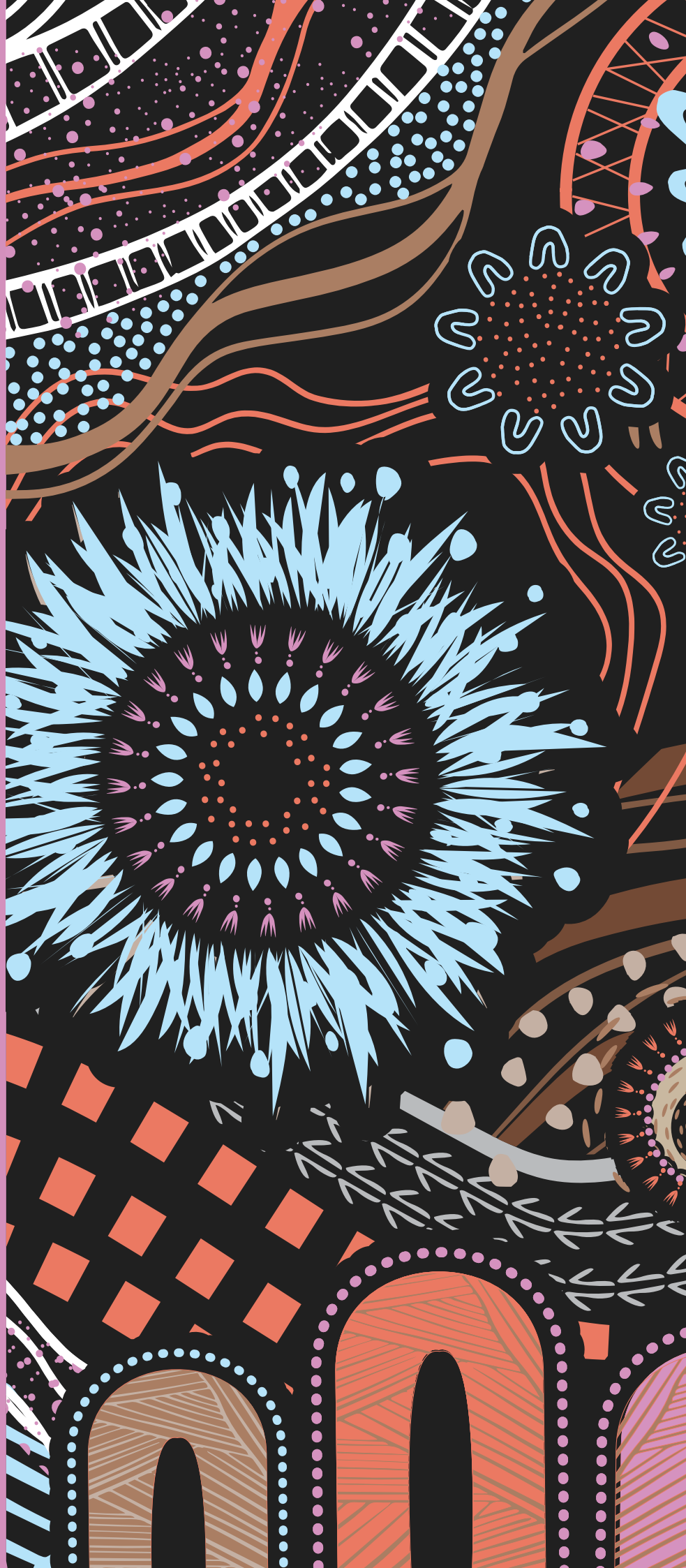
a) Number (as labelled) and per cent, by remoteness area



b) Number (as labelled) and per cent, by state and territory









6

Data gaps and development opportunities




In preparing the foundational 2021 report (AIHW 2022), a range of data sources were reviewed and assessed for reporting, including identifying data gaps and potential data development opportunities (AIHW 2022, Chapter 8). That report provided an overview of some key data gaps and opportunities relating to prevalence, primary health-care data, nationally consistent newborn hearing screening, the ear and hearing health workforce, and outcomes.

Opportunities for data development include:

- Repeated measurement of ear and hearing health in national health surveys to increase the currently limited prevalence data
- regular reporting on key primary health-care indicators, including presentations and treatments for ear and hearing health
- a comprehensive standardised national neonatal hearing screening data collection, including pathways from screening, to diagnosis, to treatment
- drawing together information from existing school hearing screening programs and pathways from screening, to diagnosis, to treatment and outcomes
- expanded workforce data sources, with more detailed information on the ear and hearing health workforce, particularly on audiologists
- greater capacity to link administrative and other data sets to understand pathways and outcomes
- improved identification of Indigenous status in administrative data sets
- improved identification of people with ear disease and hearing loss in administrative data sets, particularly:
 - education and health data sets
 - data sets relating to incarcerated populations.

Some of the challenges that need to be overcome for improved data collection include:

- the fact that services involve many different health-care professionals, service providers and government programs. This creates complexity for:
 - extracting, collating and standardising data because services have differences in governance, funding, regulations, reporting requirements and information systems
 - creating data sharing arrangements, which may include a vast number of entities
- no consistent national classification system is used to code conditions and services
- key information, such as diagnosis, may be recorded in free-text fields, which makes data extraction and reporting difficult
- the lack of culturally appropriate, validated assessment tools to provide information on outcomes for developmental milestones, including language and speech (Section 6.5.1).



This chapter provides an overview of important updates since the last publication. The data gaps and development opportunities discussed align with issues and priorities raised in:

- the Roadmap for Hearing Health (COAG Health Council 2019)
- national inquiries into the hearing health of Australians (House of Representatives Standing Committee on Health Aged Care and Sport 2017 and Senate Community Affairs References Committee 2010).

6.1 Prevalence of ear disease and hearing loss

The ABS **NATSIHS** is the main source of data on the prevalence of ear disease and hearing loss among First Nations people. The large NATSIHS sample size, First Nations-specific survey design and repeated measurements over time allow for detailed examination of reported long-term ear and hearing problems. Reported long-term ear or hearing problems were included across the 2001, 2004–05, 2012–13 and 2018–19 surveys, and will be included in the 2022–23 survey, which is under collection until December 2023.

The continued inclusion of a hearing test in the NATSIHS and a focus on how to better capture information on children aged under 7 is important for examining changes in hearing loss among First Nations people over time. Capturing this information for young children is critical as the key developmental period for language, vision, hearing and higher cognitive functioning occurs at this age. However, a hearing test was not included in the 2022–23 NATSIHS.

One main data gap relating to prevalence is the need for national information on how many people have ear and hearing conditions, such as otitis media. Research coming out of the **Telethon Kids Institute** will examine the feasibility and effectiveness of ear health screening from 6 to 8 weeks of age. The project will follow a cohort of over 600 children and provide prevalence estimates for otitis media and hearing loss in First Nations children aged 0 to 5. Collecting information on recent experiences of ear disease and hearing loss, particularly for young children, would greatly improve data on prevalence.

As well as NATSIHS, including ear and hearing health related questions in other national surveys would increase available information on the prevalence of ear and hearing problems. One example is the expansion of the second national eye health survey to become the **Australian Eye and Ear Health Survey**, currently under collection. The expanded survey will collect data to establish prevalence, risk factors and impacts of hearing loss across Australia, and is expected to run over the next 2 years. For information on this survey, see the study protocol (Kha et al. 2023).

6.2 Primary care

Improved primary health-care data are essential to understanding the role and use of primary care in the diagnosis, treatment and management of ear disease and hearing loss of First Nations people.

Data and information about how people use primary health care are limited. To bridge this gap, the AIHW is leading a program of work to develop nationally consistent primary health care data (for more information, see <https://www.aihw.gov.au/reports-data/health-welfare-services/primary-health-care/primary-health-care-data-development>). The AIHW is also working in partnership with the Department of Health and Aged Care, and the Australian Digital Health Agency to develop and implement a framework to guide the use of My Health Record system data for research and public health purposes.

A new indicator on annual ear health checks in primary care settings is being developed by the AIHW:

Proportion of First Nations regular clients aged 0–14 who received an ear health check in the previous 12 months, including whether a visual check, tympanic movement check, or both, were performed.

The new indicator will be collected as part of the national Key Performance Indicators collection, which is a set of primary health-care indicators for First Nations people focusing on maternal and child health, preventative health, and chronic disease management. The collection contains data on First Nations regular clients of organisations receiving funding under the Indigenous Australians' Health Programme.

This indicator will be piloted in June 2024 for at least 2 collection periods to assess data quality. Data will be available following the pilot if the data quality is acceptable.


This measure is important because frequent assessment of ear and hearing health ensure early identification, management and treatment of ear disease and hearing loss. Reporting against this measure will improve understanding of coverage and service access to target areas most in need.

While this indicator is being developed, information on participation on health assessments for First Nations people is provided for additional context.

6.3 Neonatal hearing screening

States and territories collect data on their respective newborn hearing screening programs. However, the content and scope of data collected varies. Substantial efforts have been made to adopt more consistent and comparable indicators across neonatal hearing screening programs nationally.

Developing a national register for neonatal hearing screening, including information on screening, diagnosis, and treatment, has been recommended in multiple parliamentary inquiries into hearing health (House of Representatives Standing Committee on Health Aged Care and Sport 2017; Senate Community Affairs References Committee 2010). This is a priority area within the Roadmap for Hearing Health (COAG Health Council 2019). To support this development, the National Framework for Neonatal Hearing Screening was reviewed in 2020.



The AIHW conducted a feasibility study in 2022 which recommended establishing a National Neonatal Hearing Screening Data Collection (NNHSDC). The development of the NNHSDC is being led by the AIHW and involves:

- establishing an advisory committee
- working with all states and territories towards consistent data standards
- developing a National Best Endeavours Data Set
- reviewing and aligning to the National Framework for Neonatal Hearing Screening and national performance indicators.

The collection will initially include demographic and hearing screening data but can be expanded in future to include audiological assessment, risk factors and early intervention data. The national NNHSDC will:

- enable consistent monitoring and evaluation of programs
- enable monitoring of program coverage for First Nations people
- enable monitoring of engagement with early intervention services
- underpin the development of a nationally consistent quality and standards framework
- permit national and international benchmarking and collaboration
- enable research into risk factors and health conditions associated with permanent congenital hearing impairment
- enable research and reporting on patient pathways through screening, diagnosis and intervention, potentially linking with other data sources to understand outcomes of children with hearing loss.



6.4 Ear and hearing health workforce

The workforce delivering ear and hearing health services is dynamic (high turnover) and diverse. It includes both specialists and generalists with ear and hearing health capability, and models of care can vary between services and regions. Available ear and hearing health workforce data give a broad indication of access to specialists and ear and hearing health services. However, current data provide an incomplete picture. The extent to which First Nations patients are serviced by ear and hearing health professionals is not clear from audiology, ENT or allied health personnel data.

Possible data developments that would increase understanding of the ear and hearing health workforce include:

- adding audiologists to the National Registration and Accreditation Scheme
- developing a national register and nationally consistent workforce survey for all allied health disciplines. For more information, see <https://www.health.gov.au/resources/publications/allied-health-workforce-data-gap-analysis-issues-paper>.

6.5 Outcome measures


No national data sources provide insights into health or social outcomes among First Nations people with ear disease and hearing loss. Two main approaches could be used to examine outcomes of First Nations people who have experienced ear or hearing problems:

1. targeted longitudinal studies
2. data linkage of health and outcome-related data sets.

6.5.1 Targeted longitudinal studies

National Acoustics Laboratories (NAL) is developing a longitudinal study called HearOut, focusing on hearing health outcomes for First Nations children. A First Nations leadership group has been established to provide cultural guidance and advice around culturally safe research practices. The project seeks to define and understand relevant developmental and wellbeing outcomes, and what tools/resources are available to inform a longitudinal study design.

The project conducted a literature review which revealed a substantial knowledge gap on the negative impacts of persistent otitis media in early childhood on speech and language for First Nations children. The NAL report that many of the studies reviewed assumes that developmental milestones for First Nations children are the same as they are for non Indigenous children, and use standardised assessments with little to no adaptation. In the published literature, only 4 development-related checklists were found that have been adapted specifically for First Nations children. As well, very few Health-Related Quality of Life tools have been developed or adapted for First Nations populations. Ethics applications are underway, and they are in the early stage of establishing research agreements with participating communities.



The Study of Environment on Aboriginal Resilience and Child Health (SEARCH) has followed over 1,600 First Nations children in urban and regional New South Wales since 2008 to provide longitudinal information about their health, including hearing and speech development. The SEARCH is owned and led by First Nations people. It functions as a long term partnership between the Aboriginal Health & Medical Research Council, Aboriginal Community Controlled Health Services in New South Wales, the Sax Institute, and researchers from across Australia (SaxInstitute 2023). Longitudinal analysis of this data source has the potential to provide new insights in antecedents of ear and hearing related outcomes.

6.5.2 Data linkage of health and outcome-related data sets

Data linkage (also called data matching, data integration or record matching) combines information from multiple data sources while preserving privacy. This tells a much more powerful story than is possible from individual data sources in isolation. It can also improve understanding of a range of issues. However, capacity to examine outcomes using data linkage is limited by data gaps in information on First Nations people with ear disease or hearing loss in administrative data sets.

The Murdoch Children’s Research Institute has been funded to develop the Australian National Child Hearing Health Outcomes Registry, which seeks to compile a national research database to collate and track ear and hearing outcome measures.

The program will pilot hearing-specific service data collections from Victoria and Queensland with an access and equity lens ‘to ensure no deaf or hard of hearing (DHH) child “slips through the cracks”’ (MCRI 2023). For more information, see <https://www.mcri.edu.au/research/projects/anchor>.

Data linkage would allow research on the relationship between ear and hearing health problems in childhood and outcomes such as contact with the criminal justice system.

6.6 The patient journey

The ear and hearing health service system is complex, and navigating it is challenging for patients and their families (the patient journey). There are critical points in this patient journey where delays to receiving care, and burden in accessing care, may result in patients ‘falling out’ along the care pathway.

There are no national sources of data on how many patients are lost along this patient journey, at what stages, or for what reasons.

6.6.1 Access and experience

Researchers from Flinders University are undertaking the Pathways For Aboriginal and Torres Strait Islander Hearing Health: The PATHWAY Project (Flinders University 2022). The aim of this project is to identify the current hearing health-care pathway patterns for First Nations children, from surveillance, through management and follow-up. Located in South Australia, the project is co-designed in partnership with Aboriginal communities, to help overcome difficulties experienced by First Nations children in accessing hearing health care.



Early consultation shows that there are a number of points along the pathway where children are 'falling out' of the system and not getting the help they need. The study will take place over 18 months and will be conducted through a yarning based intervention to further understand lived experience. The project will focus on building local capacity, to train Aboriginal health workers and support them to continue ear health work in between fly-in-fly-out visits from other professionals.

The PATHWAY Project also involves a local 'Patient Navigator' role to help families identify and access the relevant support services for their child's ear health.

6.6.2 The hidden wait list

The waiting time for elective surgery is an indication of how easy the service is to access. Information about waiting times for elective surgery presented in this report refers to the time a patient waits for elective surgery, calculated from the date a patient is placed on the hospital's waiting list to the date of admission for the surgery. However, this does not include the duration of other steps in the clinical pathway, including time taken for the patient to access primary health care and for health professionals to diagnose the underlying condition and refer the patient to an ENT specialist, and waiting times for appointments with an ENT or any delays from that consultation to being put on the surgical waiting list.

The additional time between referral from primary health care to initial consultation with a medical specialist such as an ENT, sometimes referred to as the hidden wait list, is an important step in the patient journey but is not well understood at the national level. National data are available in the National Non Admitted Patient Data Collection. However, further investigation is required in collaboration with states and territories to determine whether data quality and reliability are suitable to meaningfully report on outpatient waiting times.



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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
Census	Australian Bureau of Statistics Census of Population and Housing
COVID-19	coronavirus disease 2019
dB	decibels
DESE	Department of Education, Skills and Employment
EESS	Eye and Ear Surgical Support Program
ENT	ear, nose and throat
First Nations	Aboriginal and Torres Strait Islander
FTE	full-time equivalent
GP	general practitioner
HAPEE	Hearing Assessment Program – Early Ears
HEBHBL	Health Ears, Better Hearing, Better Listening
HSP	Hearing Services Program
MBS	Medicare Benefits Schedule
MMM	Modified Monash Model
NAL	National Acoustics Laboratories
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NDIS	National Disability Insurance Scheme
NNHSDS	National Neonatal Hearing Screening Data Collection
NSW	New South Wales
NT	Northern Territory
NTRAI	Northern Territory Remote Aboriginal Investment Hearing Health
Qld	Queensland
SA	South Australia
SEARCH	Study of Environment on Aboriginal Resilience and Child Health
Tas	Tasmania
Vic	Victoria
WA	Western Australia

Symbols

<	less than
n.a.	not available



Glossary

Aboriginal and/or Torres Strait Islander: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also First Nations.

Aboriginal and Torres Strait Islander health practitioner: A person who has completed a Certificate IV in Aboriginal and/or Torres Strait Islander Primary Health Care (Practice) and is registered with the Aboriginal and Torres Strait Islander Health Practice Board of Australia. The practitioner may undertake higher levels of clinical assessment and care within their agreed scope of practice.

Aboriginal and Torres Strait Islander health worker: An Aboriginal and/or Torres Strait Islander with a minimum qualification in the field of primary health-care work or clinical practice. This includes Aboriginal and Torres Strait Islander health practitioners who are one speciality stream of health worker. Health workers liaise with patients, clients and visitors to hospitals and health clinics, and work as a team member to arrange, coordinate and deliver health care in community health clinics.

Aboriginal Community Controlled Health Services: Primary health-care services initiated and operated by local First Nations communities to deliver comprehensive, holistic and culturally appropriate health care to the community that controls it through a locally elected board of management. These services range from large multi-functional services employing several medical practitioners to small services that rely on nurses and/or Aboriginal health workers. For more information, see the National Aboriginal Community Controlled Health Organisation (NACCHO) website. See also Indigenous-specific primary health care organisations.

acute: A term that describes a medical condition that comes on suddenly and lasts for a limited time.


acute otitis media (AOM): The general term for both acute otitis media without perforation and acute otitis media with perforation. It is the presence of fluid behind the tympanic membrane plus at least one of the following: bulging tympanic membrane, fever, ear pain or irritability.

admission: The process whereby the hospital accepts responsibility for the patient's care and/or treatment. Admission follows a clinical decision based upon specified criteria that a patient requires same-day or overnight care or treatment. METeOR id: 327206.

admitted patient: A patient who undergoes a hospital's formal admission process to receive treatment and/or care. This treatment and/or care is provided over a period of time, and can occur in hospital and/or in the person's home (for hospital-in-the-home patients). METeOR id: 268957.

age-standardisation: A way to remove the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure, and then the disease rates that would have occurred with that structure are calculated and compared.

allied health professional: A health professional who is not a doctor, nurse or dentist. Allied health professionals include (but are not limited to) audiologists, chiropractors, occupational therapists, optometrists, osteopaths, pharmacists, physiotherapists, podiatrists, psychologists and speech pathologists.



antenatal: The period from conception up to the time of birth. Synonymous with prenatal.

audiologist: A person who provides hearing diagnostic assessments and rehabilitative services, including counselling, speech reading and hearing aid fitting. They also assess and support other ear-related conditions, such as balance problems. Audiologists have a masters degree in audiology.

audiometrist: A medical technician who provides hearing diagnostic services and hearing aid fitting. Audiometrists must complete a 2-year diploma. They have a narrower scope of practice than audiologists.

audiometry nurse: A registered nurse accredited through the Australian College of Nursing. Audiometry nurses work mostly in Community Health Centres offering a range of hearing health assessments and education.

bilateral hearing loss: Hearing loss in both ears.

bimodal hearing: Hearing that combines the benefits of a hearing aid in one ear and a cochlear implant in the other. Bimodal hearing can make the best of hearing in the ear without the cochlear implant and hearing technology for situations with background noise.

child: A person aged 0–14 unless otherwise stated.

cholesteatoma: A cyst formed due to accumulation and abnormal growth of ear skin cells in a retraction pocket or through a perforation of the tympanic membrane, or in the middle ear space. Due to hyperproliferation of the skin cells, the cyst grows, becoming space occupying, often with infection. A cholesteatoma caused by middle ear disease most often occurs in the attic region of the tympanic membrane. Cholesteatomas, where untreated, are arguably the most destructive form of middle ear disease.

chronic: Describes something that is persistent and long lasting.


chronic conditions: A term describing a health condition that is persistent and long lasting.

chronic diseases/conditions: A diverse group of diseases/conditions, such as heart disease, cancer and arthritis, which tend to be long lasting and persistent in their symptoms or development. Although these features also apply to some communicable diseases (infectious diseases), the term is usually confined to non-communicable diseases.

chronic suppurative otitis media: Persistent ear discharge through a perforation in the tympanic membrane lasting 2 weeks or more. On otoscopy, the perforation must be viewed and be greater than or equal to 2% of the pars tensa (the tense part of the tympanic membrane).

cochlear implant: A device that can assist people with severe or profound sensorineural hearing loss for whom hearing aids have only limited benefits. Rather than amplify sounds, a cochlear implant does some of the work of the inner ear and turns sounds into electrical signals, delivering them directly to the nerve endings in the ear. The cochlear implant is connected directly to auditory nerve fibres in the cochlea to bypass impaired sections of the inner ear. While a cochlear implant does not restore normal hearing, it provides a representation of sounds which can be used to understand speech and enjoy music.

community hearing health worker: A person who provides health awareness, clinical, rehabilitation and training services, including conducting ear and hearing screening.



community/primary health care nurse: A nurse working in the community (acute or non acute) or primary health-care setting. This often incorporates a wide variety of roles, such as chronic disease management, child and family health and refugee health.

conductive hearing loss: Hearing loss that results from dysfunction of the outer or middle ear that interferes with the efficient transfer of sound to the inner ear.

congenital hearing loss: Hearing loss that is present from birth. Some causes of congenital hearing loss include genetic factors, infections during pregnancy, premature birth, low birthweight, severe jaundice at birth, and ototoxic medications.

corrected age: A baby's chronological age minus the number of weeks or months early they were born, to reflect their actual development and growth.

data linkage: The bringing together (linking) of information from 2 or more different data sources that are believed to relate to the same entity (for example, the same individual or the same institution). This linkage can yield more information about the entity and, in certain cases, provide a time sequence – helping to 'tell a story', show 'pathways' and perhaps unravel cause and effect. The term is used synonymously with 'record linkage' and 'data integration'.

decibels (dB): A unit of measuring for sound, based on a logarithmic scale.

disability groups: A categorisation in the National Disability Insurance Scheme based on factors such as underlying health condition, type of impairment, activity limitations and participation restrictions. The disability groups are reported as hearing impairment, acquired brain injury, autism, cerebral palsy, intellectual disability, developmental delay, global developmental delay, Down syndrome, multiple sclerosis, psychosocial disability, spinal cord injury, stroke, vision impairment, and other.


diseases of the inner ear: These diseases include otosclerosis, an abnormal bone growth that affects the 3 small bones connected to the ear drum. It causes progressive hearing loss; disorders of vestibular function, which affect balance and spatial orientation; and other diseases of the inner ear.

diseases of the middle ear and mastoid ('middle ear'): These diseases include all conditions affecting the middle ear and mastoid. The most common is otitis media, a bacterial or viral middle ear infection. Other conditions include perforations of the tympanic membrane; cholesteatoma, a pocket of skin growth in the middle ear; mastoiditis, a bacterial infection of the mastoid air cells at the back of the ear often caused by untreated middle ear infections; and Eustachian salpingitis, a blockage of the Eustachian tube due to an infection.

dry perforation: The presence of a perforation (hole) in the tympanic membrane without any signs of discharge, infection or fluid behind it. Other definitions refer to this as inactive chronic suppurative otitis media (CSOM) or CSOM without discharge.

ear health coordinator: A person who supports Aboriginal Medical Services in focusing on ear health issues, supporting training, skill development and health awareness approaches in primary health care and in improving integration between primary health care and specialist ear health services.

ear, nose and throat specialist: A surgical specialist who treats diseases and problems affecting the ears, nose, throat, head and neck.



ear toileting: A procedure where an ear, nose and throat surgeon clears wax, debris or foreign bodies from the ear canal. It is often used in treating patients with recurrent infections of the ear canal.

elective surgery: Planned surgery that can be booked in advance as a result of a specialist clinical assessment resulting in placement on an elective surgery waiting list. METeOR id: 568780.

elective surgery waiting time: The time that a patient is on a hospital waiting list for planned elective surgery in a public hospital (or private hospital if a public patient is treated there). Patients are placed on a waiting list and assigned an urgency category that indicates the clinically recommended maximum time they should wait for the surgery. The time a patient waits for elective surgery is calculated from the date a patient is placed on the hospital's waiting list to the date of admission for the surgery. The waiting time is an indication of how easy the service is to access.

emergency department: A hospital facility that provides triage, assessment, care or treatment for non-admitted patients suffering from a medical condition or injury.

ENT specialist (or otolaryngologist): A medical doctor who specialises in diagnostic, preventive and surgical treatment for diseases of the ear, nose and throat.

Eustachian tube: an opening connecting the middle ear with the nasal-sinus cavity tht helps to balance pressure in the middle ear.

First Nations people: People who have identified themselves, or have been identified by a representative (for example, their parent or guardian) as being of Aboriginal and/or Torres Strait Islander origin.

full-time equivalent (FTE) workforce or workload: A standard measure of the size of a workforce that takes into account both the number of workers and the hours that each works. For ENT specialists, an FTE of 1 is assumed to be 40 hours in a week. For example, if a workforce comprises 2 people working full time 40 hours a week and 2 working half time, this is the same as 3 working full time – that is, an FTE of 3.


general practitioner: A medical practitioner who provides comprehensive and continuing care to patients and their families within the community. They can conduct ear checks, manage the treatment of many ear conditions, and provide referrals to specialist services.

grommet: A small tube surgically placed across the eardrum to re-establish ventilation to the middle ear. It is also called a 'ventilation tube', 'pressure equalisation tube' or a 'tympanostomy tube'.

hearing: The sense for perceiving sounds; includes regions within the brain where the signals are received and interpreted.

hearing aid: A device to help people with ongoing hearing loss to make the best use of the hearing they have. They do not change a person's hearing, but they make speech louder and clearer so it is easier to hear.

hearing impairment: A term that describes the degree of impairment associated with hearing loss in the 'better hearing ear', using a scale of mild, moderate, severe and profound, essentially based on how loud sounds need to be for them to be heard.



hearing loss: Any hearing threshold response (using audiometry – the testing of a person’s ability to hear various sound frequencies) outside the normal range, to any sound stimuli, in either ear. Hearing loss in a population describes the number of people who have abnormal hearing. Hearing loss may affect one ear (unilateral hearing loss) or both ears (bilateral hearing loss). This includes conductive, sensorineural and other forms of hearing loss.

hospitalisation: An episode of hospital care that starts with the formal admission process and ends with the formal separation process. An episode of care can be completed by the patient’s being discharged, being transferred to another hospital or care facility, or dying, or by a portion of a hospital stay starting or ending in a change of type of care (for example, from acute to rehabilitation).

household: A group of 2 or more related or unrelated people who usually reside in the same dwelling, and who make common provision for food or other essentials for living, or an individual living in a dwelling who makes provision for their own food and other essentials for living, without combining with any other person.

Indigenous: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. Used interchangeably with Aboriginal and Torres Strait Islander. See also Aboriginal or Torres Strait Islander and First Nations people.

Indigenous-specific primary health-care organisations: Primary health-care organisations that receive funding from the Department of Health to provide primary health care services mainly to Aboriginal and Torres Strait Islander people. The primary health-care organisations include Aboriginal Community Controlled Health Services, state and territory managed organisations, Primary Health Networks and other non government organisations.

Indigenous status: A term that describes whether or not a person identifies as being of Aboriginal and/or Torres Strait Islander origin.


infant: A child aged under 1 year.

International Classification of Diseases and Related Health Problems (ICD): The World Health Organization’s internationally accepted classification of death and disease. The 11th revision (ICD-11) is currently in use. The Australian modification of the ICD-11 (ICD-110-AM) is used for diagnoses and procedures recorded for patients admitted to hospitals.

level of function: A term used about a person’s disability for accessing the National Disability Insurance Scheme – their disability must substantially reduce their functional capacity to undertake one or more of the following activities: moving around, communicating, socialising, learning, or undertaking self-care or self-management tasks. Functional capacity may affect participation at home, at school, at work or in social situations.

mastoid: Part of the skull located behind the ear.

mastoidectomy: A procedure that involves removing diseased mastoid air cells. Air cells are air-filled cavities made of bone located in the mastoid. Mastoid cells often become diseased as a result of an ear infection that has spread to the skull. A mastoidectomy can also be used to remove cholesteatoma, a buried pocket of skin growth in the middle ear often caused by repeated middle ear infections.



median: The midpoint of a list of observations that have been ranked from the smallest to the largest.

median waiting time: The mid-point in waiting times for patients who received elective surgery after being placed on a public waiting list. Half of all patients who received a particular type of elective surgery waited less than or equal to the median number of days, while half were on the list for longer than the median waiting time.

Medicare: A national, government-funded scheme that subsidises the cost of personal medical services for all Australians and aims to help them afford medical care. The Medicare Benefits Schedule (MBS) is the listing of the Medicare services subsidised by the Australian Government.

Ménière's disease: A disorder of the inner ear, involving episodes of vertigo, hearing loss and tinnitus, often with nausea and vomiting.

middle ear: Contains three small bones with the function of transmitting sound from the outer ear to the inner ear.

mild hearing impairment: On average, the quietest sounds that people can hear with their 'better' ear are 21 – 40dB. People with a mild hearing impairment may hear speech, but soft sounds are hard to hear, such as whispers or the consonants on the end of words like 'shoes' or 'fish'. Counselling and hearing aids may be needed.

mixed hearing loss: Hearing loss that has conductive and sensorineural components combined.

moderate hearing impairment: On average, the quietest sounds that people can hear with their 'better' ear are 41–70 dB HL. These people are able to hear and repeat words spoken in a raised voice at 1 metre and have difficulty keeping up with conversations without using a hearing aid.


My Health Record: An online platform for storing a person's health information, including their Medicare claims history, hospital discharge information, diagnostic imaging reports and details of allergies and medications.

myringoplasty: The repair of a perforation (hole) of the tympanic membrane (eardrum). A perforation can occur due to otitis media, other chronic infections, or a grommet. The surgeon covers the hole with a graft.

myringotomy: Surgical incision in the eardrum to relieve pressure or drain fluid. This takes place with or without grommet insertion. The procedure involves making a small cut in the eardrum and sucking out the fluid in the middle ear. A grommet is a small ventilation tube designed to allow air to flow into the middle ear and prevent a build-up of fluid. If required, it is inserted into the eardrum once the fluid is drained.

National Health Workforce Dataset: A data set derived from the national registration process for 15 health professions, including Aboriginal and Torres Strait Islander health practice, medical practice (doctors), nursing and occupational therapy. The Australian Health Practitioner Regulation Agency is responsible for this national registration process. Audiology is not part of the register of practitioners or of the National Health Workforce Dataset (AHPRA 2021).

non-Indigenous: A term that describes people who indicated they are not of Aboriginal and/or Torres Strait Islander origin. See also other Australians.



nurse: A person who provides health awareness, clinical, rehabilitation and training services, including conducting ear and hearing screening and coordinating care.

occupational therapist: A person who provides therapy so people can participate in everyday activities and occupations.

other Australians: People who indicated they are not of Aboriginal and/or Torres Strait Islander origin and those who did not state their Indigenous status. See also non Indigenous.

other disorders of the external ear: Other disorders affecting the outer ear, such as a build-up of wax, stenosis (narrowing) of the external ear canal, deformities of the external ear and other infections of the external ear.

other ear conditions: All other conditions affecting the ear and hearing, such as ear pain and swelling, disorders of the ear related to surgery, and any other disorders of the ear.

other procedures: Procedures that can occur in many areas of the ear and include insertions, removals, excisions, reconstructions and repairs.

otitis externa: An inflammatory condition of the external ear canal that is sometimes known as swimmer's ear. It is commonly caused by a bacterial or fungal infection, but can be caused by dermatological conditions such as eczema, psoriasis, dermatitis and acne.

otitis media: All forms of inflammation and infection of the middle ear. Active inflammation or infection is nearly always associated with a middle ear effusion (fluid in the middle ear space). It is usually a result of infection, resulting in temporary hearing loss, particularly in children.

otitis media with effusion (OME): The presence of an intact eardrum and middle ear fluid without symptoms or signs of acute infection. Other terms used to describe OME include 'glue ear', 'serous otitis media' and 'secretory otitis media'. OME may be episodic or persistent.

otosclerosis: A cause of deafness in adults affecting certain bones in the ears so they cannot conduct sound normally.


otoscopy: a clinical procedure used to examine the ear, especially the external ear canal, eardrum and middle ear.

ototoxic: A term that describes medications or chemicals that have a toxic effect on the ear or its nerve supply. Hearing loss, balance disorders and tinnitus can result from ototoxic medications, which include non-steroidal anti-inflammatory drugs such as ibuprofen or naproxen, certain aminoglycoside antibiotics, salicylates, platinum-based anti-cancer therapeutics, the anti-malarial drug quinine, and some diuretic drugs. Ototoxic chemicals include some solvents, asphyxiants, nitriles, and metals and compounds such as mercury and lead.

paediatrician: A doctor who focuses on the health of infants, children and teenagers. Paediatricians help detect, treat, manage and prevent physical, behavioural and developmental issues that affect children.

perinatal: Pertaining to, or occurring in, the period shortly before or after birth (usually up to 28 days after).

prenatal: The period covering conception up to the time of birth. Synonymous with antenatal.



prevention (of ill health or injury): Action to reduce or eliminate the onset, causes, complications or recurrence of ill health or injury.

primary disability: The impairment that has most impact on daily functioning. National Disability Insurance Scheme participants may have more than one disability; participants have one primary disability and may have multiple additional disabilities recorded. See also reported disability.

primary health care: Services delivered in many community settings, such as general practices, community health centres, Aboriginal health services and allied health practices (for example, physiotherapy, dietetic and chiropractic practices) and come under numerous funding arrangements.

principal diagnosis: The diagnosis established after study to be chiefly responsible for occasioning an episode of patient care (hospitalisation), an episode of residential care or an attendance at the health-care establishment. Diagnoses are recorded using the relevant edition of the International statistical classification of diseases and related health problems, 11th revision, Australian modification (ICD-11-AM).

profound hearing impairment: On average, the quietest sounds that people can hear with their better ear are 91+ dB HL either in soundproof conditions or non-soundproof conditions. These people are unable to hear and understand even a shouted voice. Hearing aids may help in understanding words. Additional rehabilitation is needed, and cochlear implants, lip reading and sometimes signing are necessary.

remoteness areas: Regions defined by the Australian Statistical Geographical Standard and based on the Accessibility/Remoteness Index of Australia, which uses the road distance to goods and services (such as to general practitioners, hospitals and specialist care) to measure relative accessibility of regions around Australia.

remoteness classification: A classification that divides each state and territory into several regions based on their relative accessibility to goods and services (such as to general practitioners, hospitals and specialist care) as measured by road distance. These regions are based on the Accessibility/Remoteness Index of Australia and defined as Remoteness Areas by either the Australian Standard Geographical Classification (before 2011) or the Australian Statistical Geographical Standard (from 2011 onwards) in each Census year. The 5 Remoteness Areas are Major cities, Inner regional, Outer regional, Remote and Very remote.

reported disability: The primary disability and all other disabilities reported by a participant in the National Disability Insurance Scheme (NDIS). NDIS participants may have more than one disability recorded – one primary disability and multiple additional disabilities. See also primary disability.

sensorineural hearing loss: Hearing loss that results from dysfunction in the inner ear (especially the cochlea).

severe hearing impairment: On average, the quietest sounds that people can hear with their better ear are 71–90 dB HL, either in soundproof conditions or non-soundproof conditions. These people are able to hear some words when shouted into the ‘better’ ear. Hearing aids are needed; if no hearing aids are available, lip-reading and signing may be necessary.



social determinants of health: The circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness. These circumstances are in turn shaped by a wider set of forces: economics, social policies and politics.

speech pathologist: A person who diagnoses and treats communication disorders, including difficulties with speech, language, fluency and voice.

suppurative: A term that describes a situation where pus is produced in response to inflammatory bacterial infections.

tinnitus: A continual noise in the ears or head, such as ringing, buzzing or clicking.

tympanic membrane: The ear drum, a membrane which divides the external auditory canal from the middle ear.

unable to be determined: A term used to describe a situation where a definitive hearing diagnosis is unable to be made, usually due to challenges associated with conditioning to the diagnostic assessment.

unilateral hearing loss: Hearing loss in one ear.

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This is the inaugural national report on the ear and hearing health of Aboriginal and Torres Strait Islander children and adults. Indigenous Australians experience excessive rates of ear and hearing problems which can have profound impacts on overall health and quality of life. This report brings together information on the prevalence of ear and hearing problems among Indigenous Australians along with insights on key protective and risk factors.

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