

HEARING LOSS IN RURAL AUSTRALIA



Healthy and sustainable rural, regional and remote communities across Australia

Hearing loss is a significant health issue in rural Australia, intensified by environmental factors, demographics, geographic isolation, and limited access to healthcare services.¹ It ranks as the third leading cause of disability globally.²



Current Situation

Approximately 7 million Australians (approximately 30% of the population) reside in rural and remote areas.¹ Studies indicate that hearing loss is more prevalent in rural areas compared to urban areas. For instance, a study in rural Victoria found that hearing loss was quite prevalent (12.5% out of 6,432 survey participants), with males (9.5%) more likely to experience it than females (5.2%).³ Research in Western Australia also supports these findings, indicating higher rates of hearing loss in rural regions.⁴

Rural Australians face increased risks of hearing loss due to:

- **Occupational noise:** from activities such as farming and mining, including exposure to loud machinery, explosions and firearms.³ These loud noises put individuals at risk of permanent hearing loss. Hearing loss can also occur if a worker is exposed to ototoxic substances (solvents, heavy metals and asphyxiants), or a combination of the substance and noise.⁵
- **Age-related hearing loss:** rural populations are generally older increasing the risk of age-related hearing loss.¹ Age-related hearing loss is common among those aged over 65.⁶
- **Ear infections and diseases:** higher rates of childhood otitis media (or middle ear infection) among Aboriginal and Torres Strait Islander children can lead to hearing loss.⁷ Certain environmental factors such as poor housing conditions and limited access to clean water in some remote areas also contribute to higher rates of ear disease.⁶

- **Limited access to healthcare:** fewer healthcare facilities and professionals in rural areas can delay diagnosis and treatment, complicating hearing loss management.

Additional factors contributing to hearing loss include genetics (e.g. malformation of the outer ear, ear canal, or middle ear), prenatal, perinatal and postnatal conditions, trauma and lifestyle choices such as smoking.^{8,9}

Understanding Hearing Loss

Disabling hearing loss is defined as having a loss greater than 35 decibels (dB) in the better hearing ear. Over 5% of people worldwide, or about 430 million globally, require support due to hearing loss.¹⁰ In Australia, approximately 3.6 million Australians experience some form of hearing loss.¹¹

Hearing loss is increasing worldwide, with research indicating that an ageing and increasing world population are the two most significant factors that will affect the increase in hearing loss globally.¹² Projections are that nearly 2.5 billion people will be affected by 2050, and 700 million people will need support. This means 1 in 4 Australians could have hearing loss.

Over 1 billion young adults risk permanent hearing damage due to noise-induced hearing loss. Among rural youth, exposure to noise through activities such as operating machinery, powered tools and recreational all-terrain vehicles increase their risk.¹³ The risk of hearing loss rises with age, affecting more than 25% of people over 60.¹⁰

Occupational noise

One of the biggest contributors to the risk of hearing loss in rural and remote communities is noise exposure, most likely occurring at work. However, research shows that rural individuals are frequently exposed to multiple sources of loud noise throughout the day, not just during standard working hours.¹⁴

During an average workday, Australian men living in regional or remote locations are twice as likely than those in major cities to be exposed to noise levels higher than the permissible exposure limit. Women outside of major cities are also proportionately more likely to be exposed to these noise levels.¹⁵

Farmers – a high-risk group

Farmers, both male and female, young and old, are at risk of hearing loss from high levels of noise exposure. Statistics indicate that audiometric hearing loss is present in 65% of Australian farmers aged between 15 and 75+ years.¹⁶

There is clear evidence that farmers' hearing loss is linked to noise exposures from regular farm activities including shooting, driving tractors and shearing. Use of common farming tools such as chainsaws, post-hole drivers, angle grinders, ride-on mowers and quad bikes contribute to noise exposure and increase the risk of hearing loss. Almost all people employed in farming (93.5%) are exposed to ototoxic chemicals, and 34.8% are co-exposed to noise and ototoxins.¹⁷

Compared to the general population, young farmers are around seven times more likely to have hearing loss than the general population of the same age. That is, they develop hearing loss when they are younger, and their hearing loss tends to be more advanced at earlier ages.¹⁸

Childhood otitis media

Otitis media, an accumulation of fluid impeding the vibration of the eardrum and bones of the middle ear, often accompanied by pain and fever, occurs predominantly at a young age and can lead to conductive hearing losses.

Otitis media is the main contributing factor to hearing loss among Aboriginal and Torres Strait Islander people, and is both treatable and preventable.

For Aboriginal people, otitis media occurs much earlier, more persistently and more severely than the rest of the population, and they suffer from conductive hearing loss for longer periods.¹⁹ On average, one in three Aboriginal and Torres Strait Islander children experience chronic middle ear disease, and in some remote parts of Australia, up to 90% of children experience some form of ear disease at any time.²⁰

The conductive hearing loss resulting from middle ear infections may fluctuate, and it is not uncommon for small children to experience multiple infections, often during or after a cold. Monitoring is recommended to check for progression to otitis media with effusion, where pressure from fluid builds up, causing the eardrum to burst, with discharge occurring from the ear. Repeated ear infections can result in 'glue ear' (otitis media with effusion).¹⁷

Monitoring may include hearing screening as part of child health visits or child health checks as it is simple to screen for tympanometry and audiology by nurses and health workers who are appropriately trained.

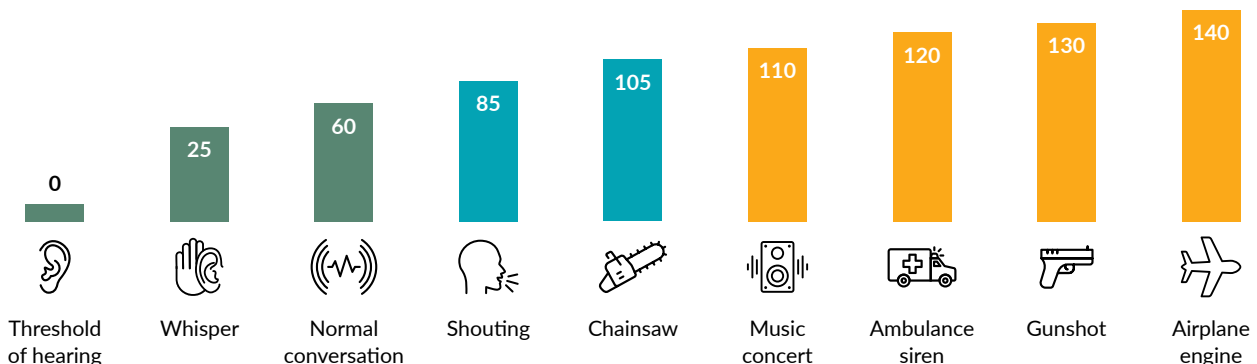
Noise-Induced Hearing Loss

Noise exposure is the leading cause of preventable hearing loss.¹¹ One study indicates 37% of Australians have experienced noise-related hearing loss.²¹ Noise intensity is measured in decibels (dBA) using a noise (or sound) level meter. The decibel scale is logarithmic, meaning a 10 dBA increase represents a tenfold increase in sound intensity. A 10 dBA increase is 10 times more intense, and a 20-decibel increase is 100 times more intense.

Sounds at or above 85 dBA can cause hearing damage over time. Long-term exposure to such levels is also linked to other health issues, including high blood pressure and cardiovascular disease.²²

Research shows that many sounds used in agricultural, forestry and animal husbandry tasks frequently exceed 85 dBA. Common farming activities often generate noise levels up to 99 dBA, with some tasks reaching 102 dBA. Agricultural tractors are a significant source of noise and difficult to mitigate due to their power requirements. Chainsaws, at 110 dBA can damage hearing in less than 2 minutes. Sledgehammering or gunshots can be 140 dBA or higher.²³

Figure 1: Decibel sound examples (dBA)



Source: deafnessforum.org.au/wp-content/uploads/2024/08/Safe-Listening-Student-FACT-Sheets.pdf

Climate Change and Hearing Health

Rural communities are particularly vulnerable to the impacts of climate change. Research indicates that climate change will impact rural Australians in several ways including: increased extreme weather events, strain on small health systems during disasters and potential changes in health support.²⁴

Regarding hearing health specifically, climate change may increase exposure to loud noises, such as disaster response machinery, thereby further straining rural health systems and complicating hearing care. While these potential impacts have been identified, further research is needed to fully understand the long-term effects of climate change on rural Australian health, including hearing health.

Recognising Hearing Loss

Signs of hearing loss could include:

- Difficulty hearing in noisy environments
- Trouble hearing phone conversations or people speaking
- Frequently asking others to repeat themselves
- Hearing muffled sounds
- Increasing device volumes
- Missing sounds like doorbells and phone ringing
- Avoiding social situations due to hearing difficulties²⁵

Tinnitus, often described as ringing in the ears, can also signal hearing loss or other ear problems. It may present as ringing, roaring, buzzing, or clicking sounds and can be subjective (heard only by the individual) or objective (audible during a medical exam).

Tinnitus is more common in older people and can vary in intensity.²⁶

Though tinnitus cannot be cured, it can be managed by:

- Avoiding silence
- Staying calm
- Reviewing medications, as some may worsen tinnitus
- Reducing caffeine intake²⁷

Impacts of Hearing Loss

Hearing loss can significantly impact quality of life by:

- Affecting communication and social interactions
- Impacting school and work opportunities
- Leading to social isolation and decreased community participation
- Increasing risks of cognitive decline and mental health issues like depression³

In children, hearing loss can impair listening, learning and speech development, potentially affecting school attendance.

Prevention

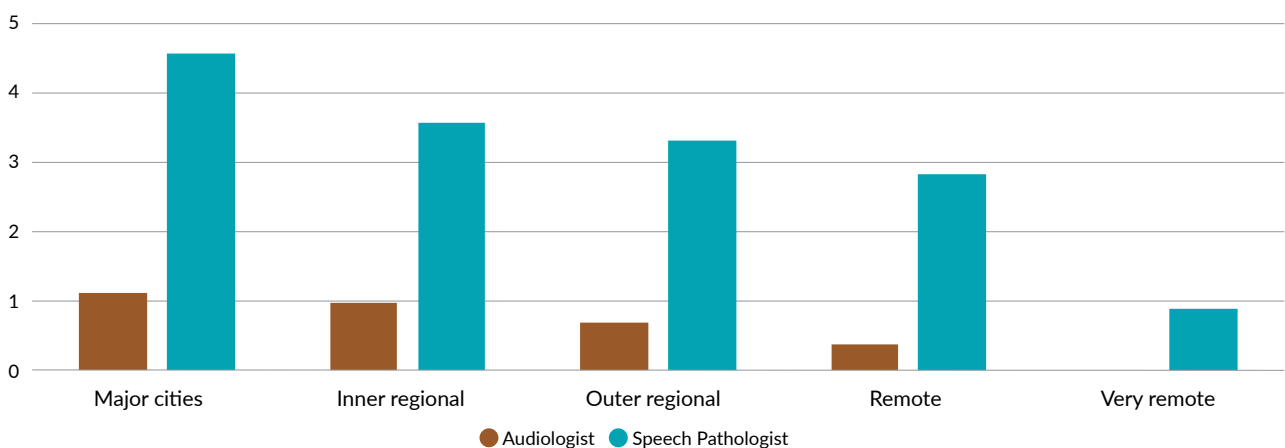
Preventing hearing loss involves:

- Practicing safe listening habits, such as using ear protection and limiting noise exposure
- Scheduling regular hearing checks for early detection
- Monitoring noise levels with sound level meters or smartphone apps like the [National Institute for Occupational Safety & Health \(NIOSH\) Sound Level Meter App](#) that was developed by acoustic engineers and hearing loss experts.

GPs and hearing health professionals

GPs play a pivotal role in the early identification of, and appropriate referral for, hearing loss, yet many rural communities have insufficient access to GPs. Hearing health specialists also are often in insufficient numbers to meet demand in rural and remote communities. The number of speech pathologists and audiologists decreases with remoteness (Figure 2).

Figure 2: Number of Audiologists and Speech Pathologists per 10,000 Population, 2021



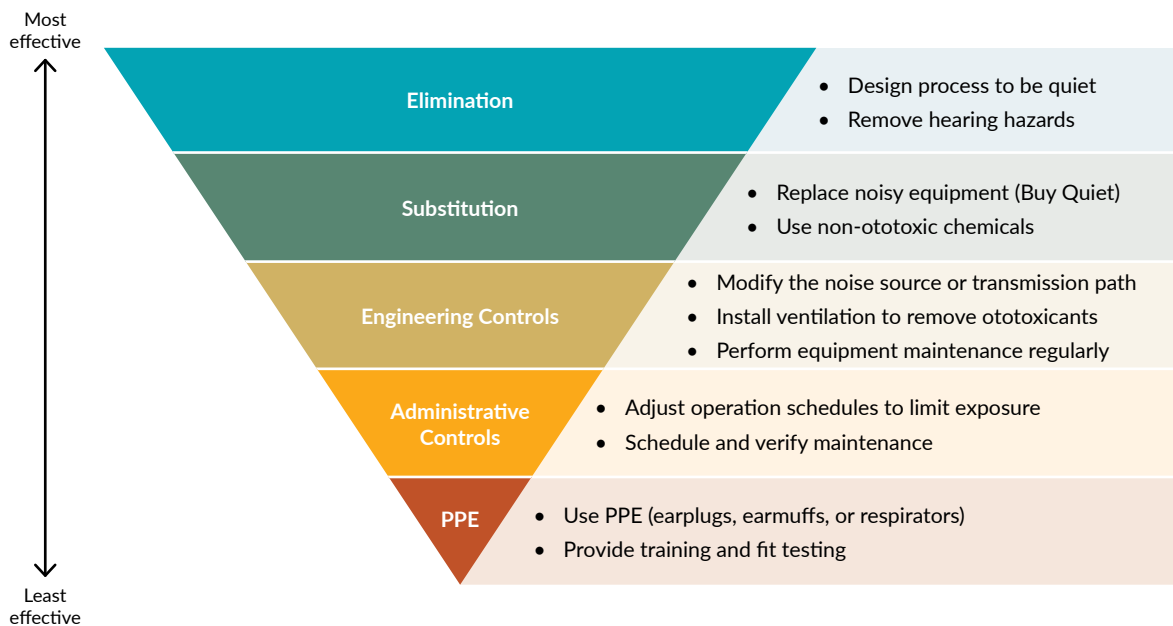
Source: Australian Bureau of Statistics (2021), Census of Population and Housing, 2021, Audiologist, Speech Pathologist by Remoteness Areas, [Census TableBuilder], accessed 2 October 2024.

Workplace Noise Control

In rural working environments, the [hierarchy of controls](#) should be considered in developing noise-reduction strategies:

1. **Elimination:** Remove the noise source, such as by changing or stopping the use of noisy machinery.
2. **Substitution:** Replace noisy equipment with quieter alternatives.
3. **Engineering controls:** Modify equipment or work areas to reduce noise exposure, using noise-absorbing materials or enclosures.
4. **Administrative controls:** Adjust work practices to limit noise exposure, such as rotating tasks and providing breaks away from noisy areas.
5. **Personal protective equipment (PPE):** Provide ear protection like earmuffs, earplugs or canal caps to workers.²⁸ Guidelines are available from sites such as: [SafeWork Australia](#), [SafeWork NSW](#), [WorkSafe QLD](#), and [WorkSafe Victoria](#).

Figure 3: Hierarchy of Hearing Loss Control



Source: [cdc.gov/niosh/noise/about/chemicals.html](https://www.cdc.gov/niosh/noise/about/chemicals.html)

The Western Australian Department of Energy, Mines, Industry Regulation and Safety provides noise prevention strategies in different industries such as [agriculture](#) and [mining](#).

Guidelines and standards on industry noise regulation are available from sites such as: Environment Protection Authority (EPA) Victoria [Noise from Industry in Regional Victoria](#), NT EPA and EPA NSW.

Safe Work Australia requires a person conducting a business or undertaking to reduce workers' exposure to noise as much as possible, such as identifying noise hazards, undertaking noise assessments, using suitable control measures, providing PPE to workers, and testing noise levels.

[Safe Work Australia's Model Code of Practice: Managing noise and preventing hearing loss at work](#) provides guidance on achieving the standards of health, safety and welfare required under the *Work Health and Safety Act 2011* and the *Work Health and Safety Regulations* in jurisdictions. For example, workers must not be exposed above 85 dBA (as an average) over eight hours at work. Machines like blenders, lawnmowers and leaf blowers are around 85 dBA.

Management

Managing hearing loss involves strategies such as:

- Minimising background noise
- Ensuring hearing aids are functioning
- Using written communication if needed
- Speaking slowly and rephrasing message if needed
- Utilising phone apps, such as translation apps¹¹

Support Services

Several services and resources are available for understanding, preventing and managing hearing loss:

Health Professionals & Hearing Tests

- See an audiologist for a hearing test. Healthdirect's [Service Finder](#) can be utilised to find an audiologist. A referral from a GP should not be needed.
- Take an [online hearing test](#), but it should be noted that it is a guide and only a qualified hearing professional can give an accurate test.
- Speak to a GP who may be able to treat some causes of hearing loss, such as ear infections.
- Telehealth options can be utilised for remote consultations, hearing assessments and follow ups.
- Outreach health programs exist for rural and remote areas such as [Rural Doctors Network](#) and [Check Up Australia](#).

Government Programs

- The [Hearing Service Program](#) provides hearing services and devices to eligible participants and can be contacted on 1800 500 726. To find a Hearing Services Program provider, visit [Local Hearing Services Provider Directory](#).
- The [National Relay Service](#) is a free and confidential service that can provide a variety of call services that can help people with hearing loss or who find it hard to speak or hear people on the phone.
- The [NDIS](#) can provide funding for hearing services for eligible participants.
- The Department of Health and Aged Care provides [ear and hearing health supports for Aboriginal and Torres Strait Islander people](#).
- For more information, see the Australian Government's list of [hearing support services](#).

Technology

- For permanent hearing loss, different devices are available, including [hearing aids](#) and [cochlear implants](#). Consult a hearing professional for options.

Other Resources

- [AgHealth Australia](#) provides resources and support for farm-related health issues. This includes a [Firearms Safety](#) resource that discusses ear protection and a FACT sheet about [Rural Noise Injury](#).
- Rural Health West manages the [Ear Health Coordination Program](#) in Western Australia that is working towards improving ear health in rural areas. It provides different resources on ear and hearing health education.
- Hearing Australia provides a [Safe Work Toolkit](#) that has a range of resources on how to manage noise in the workplace.
- The [Know Your Noise](#) website created by the National Acoustic Laboratory and funded by the Australian Government provides resources on noise exposure and hearing health.
- Safe Work Australia publishes a number of resources such as the [Model Code of Practice: Managing noise and preventing hearing loss at work](#) and [Hazardous noise in the workplace infographic](#).

Early detection and effective management can greatly improve health outcomes and quality of life. If you or someone you know is experiencing hearing difficulties, seek professional advice.

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