Binge Listening

Is exposure to leisure noise causing hearing loss in young Australians?
The potential impact of noisy leisure activities on hearing is troubling hearing professionals around the world. On the one hand, hearing professionals are reporting anecdotes of patients in their teens or twenties displaying the symptoms of noise-induced hearing loss, despite having no history of exposure to work-related noise. On the other hand, a great many young people, who are often exposed to amplified music, as were the generation immediately before them, seem to suffer no effect on their hearing. This leads to some scepticism that leisure activities are a serious risk to hearing.

The data described in this report go some way towards reconciling these opposing points of view. Physical measurements of noise levels in different leisure activities combined with survey data on the duration and frequency with which young adults engage in different leisure activities show that some leisure activities are much more likely to be causing noise-induced hearing loss than others. Night clubs and dance parties, for example are not only very loud, but the patrons often stay in them for three to five hours. It is possible to receive, in one night of clubbing, several weeks worth of maximum allowable noise dose. Some people attend these venues weekly or more often, and are therefore receiving an annual noise dose considerably greater than would be allowed in any work place. Disturbingly, those who are receiving the greatest noise dose from clubbing also tend to receive the highest noise doses from other leisure activities, usually also centred around music. Sound exposure is cumulative, so the pattern emerging is of a minority of young people who are on their way to a hearing loss as a result of their leisure activity. The majority of young adults, however, seem to be enjoying their leisure activities without risk to their hearing.

The general relationship between over-exposure to sound and resulting hearing damage seems to be well understood by young people. Disconcertingly, however, most young people do not take this message personally. They consider that their friends are more at risk of hearing loss than they are. The belief that “it won’t happen to me” is frequently a barrier to health prevention messages being received and acted on. The slow and gradual nature of noise-induced hearing loss makes it a particularly difficult barrier to surmount in hearing protection.

The first challenge we now face is how to educate people as to when they individually are receiving sound exposure that is a threat to their hearing. The second challenge is how to convince those who are receiving a dangerous noise dose that the hearing loss they are gradually creating is something that in the future they will wish they had not created, but that they will not be able to reverse. Perhaps our public health campaign needs to convey that good listening habits will allow people to enjoy hearing music now but also enjoy it for decades to come. A bonus will be the ease with which they communicate with others, even during the latter decades of their life.

Professor Harvey Dillon, Ph.D.
Director of Research
National Acoustic Laboratories.

Our Goal

The aim of this report is to discuss the attitudes and perceptions of young Australians regarding the impact of leisure noise on hearing as well as to report the actual risk of hearing damage and hearing loss due to noisy leisure activities.
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Australian Hearing’s 2008 report on attitudes to hearing loss found personal stereo use and listening volume to be a major concern for Australia’s hearing health. However, it’s not just personal stereos that have the potential to cause damage to hearing. Our latest research shows that other popular leisure activities, including going to nightclubs, pubs and live concerts, can also impact on the hearing of young Australians.

Common leisure activities among 18-35 year olds

- 15 per cent of young people go to pubs once a week or more while nine per cent go to nightclubs once a week or more. A further 10 per cent go to nightclubs once a fortnight. Most stay between one and five hours. See page five and six for more.
- Young people who attend nightclubs regularly are also more likely to go to live bands, concerts and play their personal stereos ‘loud’ than those who go to nightclubs infrequently. The effect of noise on hearing is cumulative.

The risks of hearing loss as a result of these leisure activities

- Almost 40 per cent said they have trouble hearing in background noise.
- Nearly three in 10 said more than occasionally they have to raise their voice or shout to speak to someone an arm’s length away. If you need to raise your voice or shout in order to be understood in background noise, then the noise has the potential to cause damage.
- The majority consider their risk of permanent hearing loss as a result of their current lifestyle and leisure activities to be small, very small or no risk, however, 25 per cent have experienced tinnitus (ringing in the ears) after being exposed to loud noise and more than 60 per cent of young Australians have experienced tinnitus at some point. Experiencing tinnitus after exposure to loud noise means that the noise level was loud enough to cause damage. See page 18 for more on tinnitus.
- Research conducted by The National Acoustic Laboratories (NAL) has shown noise levels at nightclubs can range between 91 and 106 decibels, with an average of 98 decibels. Noise at 100 decibels can cause damage after 15 minutes.

Actual leisure noise exposure of young Australians

- Thirteen per cent of young Australians are receiving a yearly noise dose from nightclubs, concerts and sporting activities which alone exceeds the maximum acceptable dose in industry.
- A further 12 per cent receive a yearly noise dose of more than half the maximum acceptable dose in industry. See page seven to eight for more.
- Those who are receiving dangerous doses of leisure noise already report more symptoms of hearing loss than those who are receiving safe doses, despite all those surveyed being less than 35 years of age. This occurred whether the dangerous doses came from public events like nightclubs and dance parties, or from MP3 player use.

Perceptions and attitudes towards hearing loss

- While young Australians value their hearing, a significant proportion engage in leisure activities that may lead to hearing loss in the future.
- Only a fifth of young Australians (17 per cent) consider people less than 35 years to be at risk of some degree of permanent hearing loss.
One thousand Australians aged between 18 and 35 years in metropolitan and regional locations in all states across all education levels participated in a 15 minute online survey. The questions related to their exposure to noise during leisure activities, their perception of noise, perceived causes of hearing loss and attitudes towards hearing protection. The research was conducted by Inside Story.

The National Acoustic Laboratories (NAL), the research division of Australian Hearing, also conducted a study of actual noise levels at various locations. Using a small portable device to measure sound level called a dosimeter, volunteers recorded noise levels while at entertainment venues, sports venues, during active recreation and at arts and cultural activities, and travel and domestic activities. Since May 2009, NAL has collected more than 350 measurements of noisy leisure activities.

The dosimeter case studies
To support the survey and existing dosimeter research, Australian Hearing decided to conduct its own study of leisure noise exposure in early 2010.

Eight people, five female, three male, aged between 18 and 35 years old, living in the Sydney region participated in a four-day study of their noise exposure levels.

During this time, which included a weekend, participants were required to wear a dosimeter during waking hours and to keep a diary of their leisure activities, including type of activity, time spent in activity, type of venue, proximity to the noise source, and approximate number of people.

The dosimeter, worn on the body or kept in close proximity to the participant at all times, measured and recorded the noise level (in decibels) of their surroundings.

The case studies throughout the report provide insight into the hearing experiences of two male and two female dosimeter study participants aged between 18 and 35 years.

Weekend ‘binge listening’
When we conducted interviews with our dosimeter study participants, an interesting trend emerged from the research: Although the participants seemed to be exposed to low levels of noise during their working week, their weekend leisure noise exposure was much higher. In some cases, leisure noise experienced on the weekend greatly exceeded the recommended weekly workplace noise limit.
How loud is loud?

The effect of noise is cumulative, based on frequency of participation, total time of exposure and intensity of the sound (level in decibels). If you need to raise your voice or shout in order to be understood in background noise, then the noise has the potential to damage hearing.

Frequency and intensity of sound
For example, a personal stereo worn by a commuter may be played at 94 dB. After one hour, listening at this level can start to cause damage. The level of noise at a nightclub can be the same as or louder than listening to a chainsaw (100 dB). After 15 minutes, noise at this level can cause damage.

Damage to hearing due to noise exposure is a long-term issue. Usually, hearing damage can not be attributed to a particular event or activity. However, over time, the accumulated effect of hours, days and years of exposure all contribute to an individual’s hearing damage and subsequent hearing loss.

Acceptable levels of noise
A measure of acceptable levels of noise exposure in the workplace is 85 dB for an eight hour period. NAL refers to this level as the ‘allowable daily exposure’, or ADE. For every three decibel increase in level, the resulting time of allowable exposure should be halved. For example, at 88 dB, allowable exposure is cut to four hours, at 91 dB, two hours and so on. Each of these combinations is equivalent to one ADE.

That is:

\[
\begin{align*}
85 \text{ dB for eight hours} & = 88 \text{ dB for four hours} = 91 \text{ dB for two hours} = 94 \text{ dB for one hour} = \text{one ADE}
\end{align*}
\]
Exposure to leisure noise

Which leisure activities are the loudest?
Survey respondents were asked to name three main activities or events they participated in outside of work which they thought exposed them to the loudest noise levels. Graph One below shows the spontaneous responses; music-related activities considered the loudest common leisure activities for 18 - 35 year olds.

Participants’ perception of noisy activities compares well with the actual noise levels of these activities, shown in Graph Two on page six. This graph shows the average $L_{Aeq}$ measures of leisure activities which have been collected by NAL. The higher the average $L_{Aeq}$, the louder the activity; nightclubs and dance music venues being the loudest recorded. Although motorsports, sporting events and machinery also have high $L_{Aeq}$ measures, they are engaged in less frequently and were therefore less likely to be included in the respondents’ top three noisy activities.

How often and for how long are we exposed to loud noise in our leisure time?
An important factor to consider when assessing risk of hearing loss is the frequency and duration (time spent) at noisy venues.

According to the online survey, nine per cent of all participants attend a nightclub or dance music venue at least once per week. A further 10 per cent are going about once a fortnight. Fifteen per cent visit a pub or registered club once or more per week and a further 15 per cent once every two to three weeks.

The majority of people attending these venues are staying between one and five hours. More than 30 per cent of people who go to concerts, nightclubs or dance music venues are staying between three to five hours. Time spent also varies according to age. Twenty per cent of 18-24 year olds who go to a nightclub or dance music venue stay for more than five hours compared to only nine per cent of 30-35 year olds.

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Graph One: Activities participated in outside of work which are considered the loudest

- Concert, live music venue
- Other music, parties at home, etc.
- Nightclub, dance music, raves, disco
- Traffic, trains, bus, car, motorbikes, planes
- Busy places
- TV, movies
- Pub, registered club eg RSL
- Play sport
- Machinery, power tools, lawnmowers, whipper snipper
- Sporting events
- Children and children’s activities
- Motorcross, car races, ute shows
- Construction, road works
- Computer games
- Walking – surrounding noise
- Fitness class, gym
- Other performance
- People’s voices, conversation

Percentage of participants

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

*The $L_{Aeq}$ takes into account all the varying sound levels experienced at an event and produces a single figure (in decibels) which is equivalent to the energy that would be produced by a continuous sound over the same time period. The ‘A’ refers to the fact that the sound levels are measured using an A-weighted filter which weights the different frequencies according to their ability to create hearing damage. All decibel levels quoted in this report are A-weighted.

“If it feels like it’s too loud, I’ll turn it down. But what is too loud? I don’t know what 100 decibels sounds like. It’s not a measure that I understand.”

Tania, 33
Almost 10 per cent of young Australians are regularly exposed to extremely high levels of leisure noise from the combined effect of nightclubs, pubs, live music venues and personal stereos.
Almost 10 per cent of young Australians are regularly exposed to extremely high levels of leisure noise from the combined effect of nightclubs, pubs, live music venues and personal stereos. The ‘nightclub effect’

A research study undertaken by NAL has discovered that the average noise levels in nightclubs steadily increases as the night goes on. While the average noise level for the clubs visited was 97.9 dB, the study found that measurements ranged from 90.7 dB to 105.7 dB throughout the time period from 9pm to 3am. For every hour past 9pm, the average level of noise consistently rose by four decibels.

This study of ‘clubbers’ revealed regular clubbing to be a source of high noise exposure, with a sustained period of regular club attendance contributing a significant portion of noise exposure over a person’s life. The cumulative effect of noise exposure from work (at a workplace with an 85 dB noise level), clubbing and combined work plus clubbing is shown in the following graph.

Did you know? According to the Australian Bureau of Statistics, four million Australians attended a pop concert in 2005/06 (ABS, 2009). In the same year, 40 per cent of all Australians aged 18-24 and almost 31 per cent aged 25-34 attended a pop concert. (Arts and Culture in Australia: A Statistical Overview, 2009.) Meanwhile, in 2002/03 there were 91 music festivals of at least three days duration. These lasted on average for five days each, and were attended by a total of 748,000 people (ABS, Performing Arts, Australia, 2002-03).

When asked which of five common leisure activities described in Graph Three on page six were regularly attended by survey participants, visiting a pub or registered club, followed by attending a fitness class set to music and going to a nightclub or dance music venue were cited as the most regular activities young Australians are involved in.

Cumulative noise

From these activities, going to a nightclub or dance music venue and going to a concert or live music venue are the two activities where the longest time on average is spent (three hours or more). Exposure to noise from these activities may cause hearing damage, dependent on the frequency and duration of exposure.

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Graph Five: The cumulative effect of noise exposure from work, clubbing and a combination of both

AYE = Allowable yearly exposure, based on acceptable levels of workplace noise.

“Whenever I went to nightclubs, the music was so deafening, there was no way I could understand anyone, even within 10 centimetres of my ear. I find that uncomfortable. It doesn’t make me want to stay at the nightclub at all.” Matt, 27
Leisure noise exposure: an example

An example of leisure noise exposure for a young working adult may be as follows: listening to a personal stereo for two hours per day at 88 dB while commuting or exercising, going to the local pub with live music on Friday or Saturday night for five hours at 94 dB and attending a concert or nightclub twice per month for three hours at 100 dB. The following table summarises these activities and their noise exposure.

The acceptable level of workplace noise as outlined on page four is approximately 220 ADE per year. In the example below of leisure noise exposure, the level is 730 ADE per year. In just one year, the cumulative leisure noise exposure is 3.3 times greater than the allowable workplace noise exposure. If noise is also experienced in the workplace, the exposure will be even greater.

Clubbing can be seen to have a significant effect on cumulative noise exposure when compared to that from work alone, even for a workplace with the maximum allowable noise exposure level. From Graph Five on page seven we can see that the clubber who attends clubs on a weekly basis for 10 years has, at their 30th birthday, ears that are 30 years ‘older’ (in terms of accumulated noise exposure) than their non-clubbing equivalent.

Are we at risk of hearing loss from our leisure activities?

An indicator that a venue is loud enough to cause damage to hearing is whether a person needs to shout to be heard by another person one metre away.

Going to a nightclub or dance music venue (82 per cent) and going to a concert or live music venue (76 per cent) are the two main activities of the five common leisure activities where shouting to be heard occurs ‘often’ or ‘always’.

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Table One: Shouting to be heard at noisy venues

When you attend (activity), how often do you have to shout to be heard by someone one metre away?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Base: all those doing this activity</th>
<th>Visit a pub or registered club n=887</th>
<th>Attend a fitness class set to music n=521</th>
<th>Go to a concert or live music venue n=827</th>
<th>Attend a live sporting event n=751</th>
<th>Go to a nightclub or dance-music venue n=810</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>6%</td>
<td>4%</td>
<td>34%</td>
<td>6%</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>Often</td>
<td>26%</td>
<td>13%</td>
<td>42%</td>
<td>25%</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>36%</td>
<td>31%</td>
<td>15%</td>
<td>38%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Occasionally</td>
<td>23%</td>
<td>26%</td>
<td>7%</td>
<td>23%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>8%</td>
<td>28%</td>
<td>2%</td>
<td>8%</td>
<td>3%</td>
<td></td>
</tr>
</tbody>
</table>

Table Two: Example of individual leisure noise exposure and cumulative exposure over one year

<table>
<thead>
<tr>
<th>Activity</th>
<th>Attendance duration</th>
<th>Noise level L_{Aeq} (dB)</th>
<th>Exposure per attendance (ADE units)</th>
<th>Frequency of exposure per year</th>
<th>Exposure per year (ADE units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal stereo player</td>
<td>2 hour per day</td>
<td>88</td>
<td>0.5</td>
<td>365</td>
<td>182</td>
</tr>
<tr>
<td>Live music at local pub</td>
<td>5 hours once per week</td>
<td>94</td>
<td>5</td>
<td>52</td>
<td>260</td>
</tr>
<tr>
<td>Concert / nightclub</td>
<td>3 hours twice per month</td>
<td>100</td>
<td>12</td>
<td>24</td>
<td>288</td>
</tr>
<tr>
<td>Total exposure per year from leisure noise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>730</td>
</tr>
</tbody>
</table>
Among owners of personal stereos, 53 per cent describe their usual volume as loud or very loud.

Did you know? In 2003/04, $218 million was spent on dance and nightclub fees and charges while an additional $290 million was spent on music concert fees and charges (ABS Household Expenditure Survey, Australia: Detailed Expenditure Items, 2003-04). Based on an approximate cover charge of $15, we can estimate that there were around 280,000 visits per week to nightclubs in Australia in 2003/04 alone.

What about personal stereos?

Knowledge

According to the online survey, close to half of young Australians own a personal stereo. These are more likely to be 18-24 year olds (55 per cent) and less likely to be 30-35 year olds (41 per cent).

Among owners of personal stereos, 53 per cent describe their usual volume as loud or very loud.

When prompted, over half of those who play their personal stereo very loud acknowledge that the effect of the volume is definitely high enough to damage their hearing. Most of those who play their personal stereo loud (three in five), believe it is probably high enough to damage their hearing while eight in ten of those who play them not very loud do not believe the volume is high enough to damage their hearing.

These results indicate an awareness of the relationship between volume of music played through headphones and damage to hearing. However, many are still choosing to play music at high volumes, suggesting that personal risk is being downplayed.

Risk assessment and behaviour

People who set their personal stereo volume very loud are most likely to perceive their risk of hearing loss as medium. Those who play their music loud have the highest perception of very large risk.

Of those aware that loud noise and music can cause permanent damage to hearing but don’t take any action to avoid being exposed to it, 53 per cent play their personal stereo loud.

Encouragingly, among those who make a point of avoiding and/or limiting exposure to loud noise and music because they worry about the short and long term effects it will have on their hearing, 72 per cent play their personal stereo not very loud.

However, while more than half of the people who play their personal stereos at loud or very loud levels are aware of the potential damage to hearing associated with this activity, far less perceive themselves to be at risk of hearing loss. It seems that while awareness is high, the perceived risk is downplayed, despite the possibility of hearing damage and possible hearing loss in the future.
Leisure noise

“I’d have to say, I have probably damaged my ears. I didn’t notice a loss in my 20s, but probably because I didn’t care.”
Rebecca

Age 35, ex-clubber

When I was in my early 20s, I would go to local bands or nightclubs almost every weekend or every second weekend. There were probably a good couple of years when I would go clubbing every weekend from about 10pm to about 4am. Then in my mid 20s, it was mainly pubs.

I remember using earplugs, but that was at one of my workplaces, when I worked at a steel company. It was compulsory. I’ve never used earplugs at concerts; never thought about it. But it would probably help me to hear better because it would block out that background noise. I actually find it easier to hear people in that loud environment when I have got earplugs in. Because at work, when things were going on at the back, you could still speak and you could hear, but it blocked out that excess noise.

It would be nice to hear properly. It’s important.

Now I go out to the markets or the occasional live band or head to the pub. When I go out, if I’m in an environment where there are quite a few people, or there is background music, I find it hard to hear. When I do go to bands and I’m in that environment where people are talking, I feel like I’m not participating in the conversation because I can’t hear what they’re saying.

I’d have to say, I have probably damaged my ears. I didn’t notice a loss in my 20s, but probably because I didn’t care. I remember once we had Kids in the Kitchen come to our school – and I stood right next to the speaker; these giant speakers, for about three hours. That was probably the first damage I did to my ears. I do remember the next day still feeling deaf – for days actually.

A couple of years ago I went to a concert and it was stupidly loud, to the point where you just feel like you’re going to lose your mind – just ridiculous in such a small room. That’s probably why I am not into bands now – even though music interests me, I don’t like going along, because I can’t communicate with people, so for me that’s just a waste of time. It’s a shame, because I do like bands.

I have had tinnitus for a few years; it doesn’t really bother me. I’ve been slightly aware of it, but just never done anything about it, or looked into whether I can do anything about it or if I’ve completely damaged my ears. I notice it more coming out of noisy venues.

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Rebecca’s dosimeter results

<table>
<thead>
<tr>
<th>Day</th>
<th>L_Leq</th>
<th>Duration (hr:min)</th>
<th>Noise Exposure (ADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td>79.4 dBA</td>
<td>16:24</td>
<td>0.6</td>
</tr>
<tr>
<td>Saturday</td>
<td>91.6 dBA</td>
<td>16:01</td>
<td>9.2*</td>
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<tr>
<td>Sunday</td>
<td>74.0 dBA</td>
<td>14:48</td>
<td>0.1</td>
</tr>
<tr>
<td>Monday</td>
<td>71.1 dBA</td>
<td>16:32</td>
<td>0.08</td>
</tr>
</tbody>
</table>

*On Saturday night, a live band at the pub measured 98.9 dBA for 2½ hours. This noise exposure made a significant contribution to Rebecca’s overall noise dose for the day. This noise dose is equivalent to more than nine ADE.
“Although I think my hearing is good, I do think it has declined slightly. I notice in restaurants and loud environments that I often have difficulty following conversations – I miss bits.”
I wouldn’t like to lose my ability to hear, it’s so important. I work in a client-driven industry and it’s important to be able to hear them the first time they say something. It doesn’t build a good relationship with them if you continue to ask them to repeat things – it might seem like I’m not listening!

There were things that I expected to be noisy that weren’t, like the planes flying over my place. I kept checking the levels on the dosi and sometimes it wasn’t as high as I expected. I think with the planes, because it’s an inconvenient noise, and reduced my ability to hear the television, I overestimated how high the noise would be. But with things like listening to music in the car or going out, the noise is expected and you’re enjoying it, so it doesn’t seem as high as something which does annoy you.

I am much more aware now. I will definitely make changes in the future and make a greater effort to protect my hearing.

Alex’s results

<table>
<thead>
<tr>
<th>Day</th>
<th>$L_{Aeq}$</th>
<th>Duration (hr:min)</th>
<th>Noise Exposure (ADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td>86.1 dBA</td>
<td>19:39</td>
<td>3.2</td>
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<tr>
<td>Saturday</td>
<td>81.8 dBA</td>
<td>15:44</td>
<td>0.95</td>
</tr>
<tr>
<td>Sunday</td>
<td>71.8 dBA</td>
<td>12:05</td>
<td>0.07</td>
</tr>
<tr>
<td>Monday</td>
<td>68.2 dBA</td>
<td>15:14</td>
<td>0.04</td>
</tr>
</tbody>
</table>

*Friday was approximately three times the maximum allowable daily noise level. The noise dose was equivalent to 3.2 ADE. The major noise source on Friday night was a bar where the level was 94.8 dBA for 2 hours, 18 minutes.
Perceptions of risk

More than a quarter of 18-35 year olds (28 per cent) consider there is at least a medium risk of their current lifestyle and leisure activities leading to some degree of permanent hearing loss. However the majority (68 per cent) consider there is only a small, very small or no risk.

For those who consider they are at medium or higher risk, noise from participation in leisure activities and workplace noise are cited as being the factors driving the risk.

The majority of young Australians consider people who have work-related noise exposure and elderly people to have the greatest risk of permanent hearing loss.

Only a fifth of young Australians (17 per cent) consider people less than 35 years to be at a higher than average risk of some degree of permanent hearing loss.

Noisy leisure activities

Music was mentioned spontaneously by young Australians as the main leisure activity which has the loudest noise level – whether from concerts, live music, parties, music at home, nightclubs, raves or discos.

In total, 68 per cent of young Australians mentioned music. Music was mentioned more by 18-24 year olds (76 per cent) and less by 30-35 year olds (57 per cent).

When prompted on specific activities that could damage people’s hearing, the most damaging was perceived to be going to nightclub or dance music venues (54 per cent) and going to concerts or live music venues was considered the second most damaging (38 per cent). See Graph Seven on page 15.
Perceptions of Risk

Our research found that while those who are ‘often’ exposed to loud noise tend to have a higher perception of risk, the differences in perception are not statistically significant compared to those with lower exposure. Those who are ‘never’ exposed have a lower risk perception; however the differences are not large. This would suggest that young people, although recognising the connection between exposure to loud noise and hearing loss, do not see themselves as personally at risk or downplay their risk in relation to their leisure activities. This may be due to the perception that it is people who are exposed to loud noise at work and the elderly who have the greatest risk of permanent hearing loss.

...young people, although recognising the connection between exposure to loud noise and hearing loss, do not see themselves as personally at risk or downplay their risk in relation to their leisure activities.

Graph Seven: Perceived impact of leisure activities

Thinking about these leisure activities, which one do you think is the most likely to damage people’s hearing?

Perceived risk of hearing loss from exposure to loud noise

Our research found that while those who are ‘often’ exposed to loud noise tend to have a higher perception of risk, the differences in perception are not statistically significant compared to those with lower exposure.

Those who are ‘never’ exposed have a lower risk perception; however the differences are not large. This would suggest that young people, although recognising the connection between exposure to loud noise and hearing loss, do not see themselves as personally at risk or downplay their risk in relation to their leisure activities. This may be due to the perception that it is people who are exposed to loud noise at work and the elderly who have the greatest risk of permanent hearing loss.

Only a fifth of young Australians (17 per cent) consider people less than 35 years to be at a higher than average risk of some degree of permanent hearing loss.
Perceptions of risk

“I find some people hard to hear. Usually it’s the quieter sort of people, and female voices.”
I know I’ve got a really good sense of smell and taste, but hearing, I’ve often wondered. Because I like music a lot, I’ve often wondered whether that’s been detrimental with all the drumming. I used to be in a band for three or four years at uni and played very loud. We rehearsed two or three times a week and played a gig every couple of weeks. We’d usually rehearse about two hours at a time.

I’ve never used any hearing protection. I’ve considered it; mum even bought me earplugs, but I never used them. It affects the quality of the music. It’s like listening to a CD and putting your hands over your ears. They weren’t the proper musician’s earplugs. These were more your regular aeroplane, foam earplugs. So they really did affect the quality of the sound.

I don’t really go out unless it’s for a big night. Usually it will be a whole night or a Friday ‘til two or three in the morning. So six or seven hours in a loud environment, with music and dancing. Apart from going to a concert, that would be as loud as it gets for me. I still listen to my stereo a fair bit at home – I pump the stereo up in my room. I don’t have my iPod very loud. I could easily hear someone talking to me. Quite often I’ll run with a mate and we can have conversations.

I find some people hard to hear. Usually it’s the quieter sort of people, and female voices. I think I then overcompensate, coming back with my massive booming voice, when it’s me not hearing them. They might be hearing me fine.

After concerts or going to music events I used to get it [tinnitus] a fair bit. Like the last AC/DC concert, I had it for a couple of days. That was about five or six years ago, and it happened a few times. Now I don’t know if I’d like that. I don’t want to be old and saying “loud music’s bad for you and don’t go to concerts,” so I guess it’s trying to eradicate it and how you do that, I’m not sure. Sell ear plugs maybe.

I would say my hearing is very good. I would never say, “oh my hearing’s going”. But I might be astounded to find out.

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**Lucas’ results**

<table>
<thead>
<tr>
<th>Day</th>
<th>L_{eq}</th>
<th>Duration (hr:min)</th>
<th>Noise Exposure (ADE)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>18:11</td>
<td>9.0*</td>
</tr>
<tr>
<td>Saturday</td>
<td>75.6 dBA</td>
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<td>0.2</td>
</tr>
<tr>
<td>Sunday</td>
<td>80.0 dBA</td>
<td>11:33</td>
<td>0.5</td>
</tr>
<tr>
<td>Monday</td>
<td>70.1 dBA</td>
<td>14:07</td>
<td>0.06</td>
</tr>
</tbody>
</table>

*Overall exposure on Friday was 90.9 dBA for 18 hours, 11 minutes which is equivalent to almost nine ADE. Friday’s main source of noise was late in the evening at a hotel: 102.2 dBA for 1 3/4 hours. Also earlier in the night at another pub, the noise was 88 dBA for just over three hours.
Experience of Tinnitus

Tinnitus is defined as a buzzing, ringing, whistling, hissing or pulsing sound in the ears which does not come from an external source but can be heard in the ears or head. Tinnitus is more common in people who have a hearing impairment. It can be triggered by a range of causes, including exposure to loud noise and may indicate damage to hearing.

Two in five young Australians surveyed have previously heard of tinnitus. This was higher among 30-35 year olds than 18-24 year olds. Of those familiar with the term, 83 per cent spontaneously mentioned that it refers to a ringing or buzzing noise in the ears. One in 10 stated that tinnitus is due to loud noise or prolonged exposure to loud noise. Almost three in 10 young Australians have never experienced tinnitus while a quarter sometimes, often or always experience tinnitus. Approximately two in five 18-35 year olds experience it occasionally.

More than 60 per cent of young Australians who experience tinnitus after exposure to loud noise or music perceive nightclubs or dance music venues as most likely to damage people’s hearing. This suggests an awareness of the association between damage to hearing from loud leisure noise and tinnitus.

Graph Eight: Experience of tinnitus

Do you ever experience ringing or buzzing in your ears (ie tinnitus)?

“At the time [tinnitus is] annoying, but then it goes away and you think, ok, it’s gone, move on with my life. [I’m] not going to sit dwelling on it.” Sarah, 20
Just under half of Australians aged 18-35 years (45 per cent) say they do take steps to protect their hearing. This percentage increased with age, with 54 per cent of 30-35 years olds taking steps to protect their hearing compared to 37 per cent of 18-24 year olds. There were no significant differences by gender.

For those saying they do take steps to protect their hearing, the most popular strategy was limiting the amount of time spent at a noisy place (67 per cent), followed by limiting the number of visits to noisy places (57 per cent). Encouragingly, 44 per cent said they wear earplugs. These figures have increased in the 18-35 year age group since the release of Australian Hearing’s first hearing health report in 2008.

“I try to wear earplugs when I go to concerts. I think it helps in the long run. When you walk out, instead of hearing a ringing, you can actually hear people talking.” Scott, 19

“I don’t want to stop going to concerts. Now they sell earplugs, but what’s the point? If you’re going, you don’t want to wear earplugs. Why would you buy tickets and go to a concert or a band if you’re not going to hear it?” Michelle, 23
I’m very wary of noisy environments. Going out to dinner with friends, quite often we go to noisy restaurants where you’re shouting down the table just to make yourself heard, and bars too.”
My grandfather had tinnitus – he was a WWII veteran and he flew aircraft. He told me as a child about tinnitus and how he had the constant high-pitched ringing in his ear from many hours and hours of flying aircraft. I always remember my grandfather and think how annoying that would be.

I've never used hearing protection at concerts. I've thought about it, but I haven't. If it was at venues and people were saying, “here they are,” I think I would definitely be going, “thank you very much”.

For me, having my former career working in sound, I'm very protective of my hearing and hearing loss. I have brought that attitude into an office environment and am still very aware of the effect of noise.

Nicole's results

<table>
<thead>
<tr>
<th>Day</th>
<th>$L_{Aeq}$</th>
<th>Duration (hr:min)</th>
<th>Noise Exposure (ADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td>71.9 dBA</td>
<td>15:24</td>
<td>0.1</td>
</tr>
<tr>
<td>Saturday</td>
<td>74.6 dBA</td>
<td>16:17</td>
<td>0.2</td>
</tr>
<tr>
<td>Sunday</td>
<td>68.3 dBA</td>
<td>13:00</td>
<td>0.04</td>
</tr>
<tr>
<td>Monday</td>
<td>68.7 dBA</td>
<td>14:30</td>
<td>0.04</td>
</tr>
</tbody>
</table>

All four days were well below the allowable daily noise exposure. Nicole rated the gym as her noisiest activity. The noise level at the gym on Friday was: 78.3 dBA for 56 minutes and on Monday: 79.7 dBA for 50 minutes.
The majority of young Australians are concerned about their hearing health. Only a minority (17 per cent) considers hearing loss is just a natural part of growing old and a small minority (nine per cent) considers hearing loss does not concern young people like them. Although young Australians are concerned about hearing loss, most do not perceive themselves to be personally at risk of permanent hearing loss. This concern then may be due to the possibility of hearing damage in the future or the effect of hearing loss on a friend or relative.

“I have a sense of ‘live for today’. I try to plan for the future and be safe, but at the same time, I’m not going to wrap myself in cotton wool. I’m going to enjoy things now. Anything can happen.” Louise, 31
The majority of 18-35 year olds (91 per cent) consider it is very or extremely important to have good hearing.

Graph 11: Rating our hearing
How would you rate your own hearing?

Rating our hearing
The large majority of younger Australians consider that their hearing is in the good to perfect range. Only a minority (seven per cent) consider it poor. People who consider they have ‘no’ or a ‘very small’ risk of hearing loss from their current lifestyle were more likely than average to say they have almost perfect/perfect hearing (23 per cent).

Having trouble hearing in background noise, turning up the volume on the television and close friends or family thinking you have a hearing loss can be signs that a person may actually have a hearing loss.

Almost four in 10 (39 per cent) acknowledge they have trouble hearing when there is background noise. This percentage was higher among those who have had to shout to someone an arm’s length away to be heard (45 per cent), suggesting these people spend more time in noisy places. If you need to raise your voice or shout in order to be understood in background noise, then the noise has the potential to cause damage.

Importance of hearing
The majority of 18-35 year olds (91 per cent) consider it is very or extremely important to have good hearing. Those who consider themselves to be very health conscious and those who make a point of avoiding their exposure to loud noise and music are more likely to consider good hearing is extremely important (61 per cent and 60 per cent respectively).

However, those who believe there are more interesting and important things to think about than health and wellbeing do not rate the importance of good hearing as highly.

Getting hearing checked
Nearly one in two young Australians (45 per cent) have had their hearing checked. 18-24 year olds were less likely to have had this check (37 per cent) along with those who feel they are too young to be concerned about health issues (36 per cent).

Those who are concerned about their health and visit their doctor regularly are more likely to have had their hearing checked (53 per cent).
Is Australia listening yet?


This report found that two thirds of Australians regularly listen to music through headphones and 60 per cent of these people have the volume at a level where they cannot carry on a conversation some or all of the time. Our current research shows that 53 per cent of young people who own personal stereos are still reporting listening at loud or very loud volume.

In addition, approximately 30 per cent of young Australians still do not realise that once you damage your hearing, it cannot be restored and 10 per cent believe that if you damage hearing, the medical profession can bring it back to its original state. These results in the younger age groups are similar to the 2008 findings, suggesting that more education and awareness is required.

**Protection is prevention**

When damage occurs, such as at a concert or dance party, people notice that the very obvious, short-term damage recovers within a few days, and think there is no problem. They fail to notice the small, permanent damage which continues to accumulate.

The research shows that young people are adopting behaviours to help reduce the impact that leisure noise has on their hearing. While a similar number of young people say they take action to protect their hearing, of those, more are using earplugs at loud venues or during noisy activities than was reported in the 2008 research.

Other protective measures include:

- Limiting the time spent at nightclubs and live music venues. This can mean taking a break in a chill-out room, spending less time at the venue, going outside for a break or going less than once per week.
- Being aware of the cumulative effect of noise. Young people going out to a concert or live band need to consider what other noise sources they are being exposed to during the week.
- Safe use of noise-cancelling headphones with personal stereos. These headphones reduce unwanted ambient noise. This makes it possible to listen to music without raising the volume excessively as the personal stereo does not need to be turned up to compete with other external noise.

Damage to hearing by exposure to loud noise is preventable and can be minimised by the adoption of preventative behaviours. This is unlikely to occur, however, without widespread education of the causes and serious nature of hearing loss, identification of the detrimental sources of excessive noise and understanding of the importance of hearing protection.

**A sensible serve of sound**

Young people need to be provided with options to enable them to access lower levels of leisure noise. Nightclubs, pubs, live music and dance venues have a responsibility to their patrons to reduce the risk that excessive noise levels are exposing young Australians to. Venue operators, bands and DJs need to be aware of the level of noise being produced in enclosed venues and the damage which can be caused by repeated exposure to this noise.

**Attitudes to hearing aids in 2010**

On a positive note, two thirds of young Australians would consider wearing hearing aids if their hearing deteriorates. This figure has significantly increased (from 46 per cent) in the 18-35 year age group since the launch of our last hearing health report in 2008.

While 18-24 year olds are less likely to consider hearing aids as an option (56 per cent), 25-35 year olds are more likely (74 per cent of 25-29 years and 72 per cent of 30-35 years).

A further 18 per cent said that it would depend on a range of issues such as the severity of the hearing loss, technological advancement, the cost, the benefit delivered, age when it happened, the design of the aid and what other options were available. 18-24 year olds were more likely to say this (26 per cent).

The above results indicate an increasing level of acceptance in young Australians of hearing aids as a relevant and appropriate solution to hearing loss.

**Our message to young Australians**

*Living loud now may be causing you damage.*

While many Australians are aware of noise damage in the workplace and many protect their ears against industrial noise and machinery, hearing loss is still common and set to rise from one in six to one in four Australians by 2050. The most significant single cause of hearing loss in Australia is exposure to loud noise. Currently, 37 per cent of the Australian population aged over 15 have evidence of hearing damage due to noise exposure.

Hearing loss has been shown to impact on emotional wellbeing, with a connection between hearing loss and depression. Research commissioned by Australian Hearing in 2007 found 60 per cent of those with a hearing loss...
displayed some symptoms of depression while almost 20 per cent had at least three key symptoms. Other research has highlighted a link between good hearing and positive relationships. This research shows that awareness of the link between noise exposure and hearing damage is high and the majority of young Australians believe hearing to be important. However, a subset of young Australians is at very high risk of hearing damage and hearing loss from their current leisure activities and remains unaware of their risk. A larger group meanwhile are aware of the link between exposure to loud noise and hearing damage, but are not changing behaviours as a result and do not seem to consider themselves to be personally at risk from their current leisure activities. It seems that perception of personal risk is low and behaviour of young Australians in relation to healthy hearing is at odds to the impact of loud leisure noise on their hearing.

There is widespread knowledge that excessive sound damages hearing, that damage is permanent, that there is a need to actively protect hearing in noisy places and that hearing aids are an acceptable way to compensate for hearing damage. However, there are many young Australians who do not yet understand each of these messages. The challenge is to find relevant and effective ways to present these messages to them.

References:
3. Williams, W., Beach, E. & Gilliver, M. (accepted for publication) Clubbing – the cumulative effect of noise exposure from attendance at dance clubs and nightclubs on whole-of-life noise exposure Noise and Health.
7. This Newspoll survey was conducted in July – August 2007 by telephone among 2401 adults aged 18+ nationally, including n=305 who live with someone with a hearing loss.
Who is Australian Hearing?

Australian Hearing is a federal government agency and the largest national provider of hearing services, with 110 permanent centres and almost 300 visiting sites across Australia.

Our services include assessment of hearing, fitting hearing devices and providing counselling and rehabilitation programs to enable eligible people manage their hearing impairment.

Our clients include children and young people up to 21, aged pensioners, veterans and Indigenous people aged over 50.

Our Mission

Australian Hearing provides the best hearing care, the latest hearing aid technology and leads the world in hearing research.

Check your hearing over the phone with Telscreen™

You can check your hearing from a land line phone in around five minutes. Now available in 11 languages, Telscreen™ is the most advanced telephone hearing service in the world. Based on extensive research, the test was developed by the National Acoustic Laboratories in conjunction with Australian Hearing. Call toll free on 1800 826 500 and follow the voice prompts.

Contact us

Call 131 797 to be connected to your nearest Australian Hearing centre.

For media enquiries call 02 9412 6800.