

Changes in the hearing status and noise injury prevention practices of Australian farmers from 1994-2008

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Aim and rationale

- Prolonged and cumulative effects of exposure to farm noise (eg.tractors, chainsaws and firearms) is believed to be associated with significant hearing loss in farmers.
- Audiometric evidence for the benefits of reducing farm noise exposure and increasing the use of hearing protection, has been difficult to demonstrate.
- This study - a retrospective analyses of hearing questionnaires and audiometric results of farmers who attended the RNIPP Program between 1994-2008, to determine at group level:
 - improvements in the hearing status and hearing health behaviours of farmers
 - factors associated with measurable hearing loss in farmers

Rural Noise Injury Prevention Program

- The Rural Noise Injury Prevention Program (RNIPP) provides hearing screening and noise injury prevention advice to farmers at agricultural field days (mainly NSW) for 23 years
- In 2009, the program provided hearing screening at:
 - Ag-Quip Field Days, Gunnedah
 - Total small farm field days
 - Beef Week, Casino
 - Local Ag Shows (eg. Goondiwindi , Glen Innes)
- The program is an ongoing program of the Australian Centre for Agricultural Health & Safety and Hunter New England Area Health Service





Rural Noise Injury Prevention Program

- Participants' are asked questions about hearing difficulties and noise exposure, prior to hearing screening
- Hearing health professionals discuss results with farmers and provide information on prevention and management of hearing loss, where indicated.
- Participants questionnaires and hearing results are retained and periodically analysed.

2.6 FARM NOISE & HEARING LOSS

Noise injury affects the hearing of up to two-thirds of the farming community. Noise injury occurs when thousands of tiny hair cells in the inner ear (cochlear), are damaged through excessive noise. These hair cells are needed to receive sound vibrations before transmitting them to the brain. Once destroyed, these hair cells are not replaced. The process of hearing loss through noise injury is painless, progressive and permanent - but it is also preventable.

SIGNS OF NOISE INJURY AND HEARING LOSS

Do you experience difficulty hearing:

- On the telephone
- Watching TV
- In meetings or during conversation at work
- When there is background noise

Do you have:

- Tinnitus (noises in the ears or head)?
- Family or friends suggest you have a hearing loss?

HEARING SCREENING AND SERVICES

Have you had a hearing screening test? If not, contact your Community Health Centre or the Yellow Pages® for hearing services in your area. Australian Hearing offers a free telephone hearing screening service through: Telscreen 1800 826 500 (freecall). The National Relay Service www.relayservice.com.au provides telephone access services for the hearing impaired.


FARM NOISE EXPOSURE

The degree of noise injury will depend on the length of time exposed to noise - as well as how 'loud' the noise is, as measured in decibels (dB). For each 3 dB increase, the noise intensity is doubled. Intense noise, (eg. discharging firearm), can cause instant damage, but long periods exposed to tractors and other noise can also cause damage.

Are you (or were you) exposed to the following noise sources:

- Tractor (no cabin)
- Workshops tools
- Firearms
- Heavy machinery
- Chainsaw
- Tractor with cabin, (if it is getting older & noisier)
- Other recreational or occupational noise

For each activity, do you ALWAYS wear hearing protection? (ear muffs or ear plugs)



Hearing program results 1994-2008

- Between 1994 and 2008, 8309 farmers participated in the program in rural NSW, Queensland and Tasmania.
- Eighty-two percent were male and the average age was 43 years.
- Snapshots:
 - Around 50% had tinnitus
 - Around 40% had difficulties hearing the TV and 2/3 had trouble hearing in background noise.
 - Almost 2/3 of all farmers and 80% of young farmers / farm workers under 25 years, were exposed to firearms

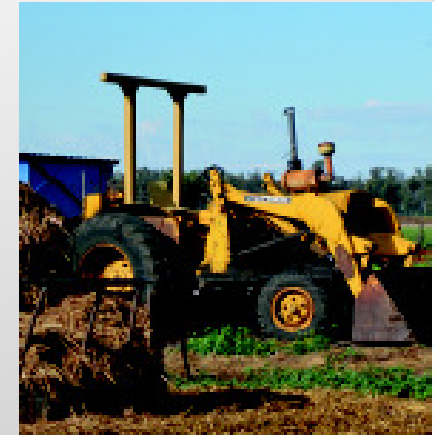


Changes over time (1994-2001 to 2002-2008)

Results for hearing status, noise exposure and frequency of PHP use, were compared for the periods 1994-2001 (n=6382) and 2002-2008 (n=1927)

For farm noise exposure –

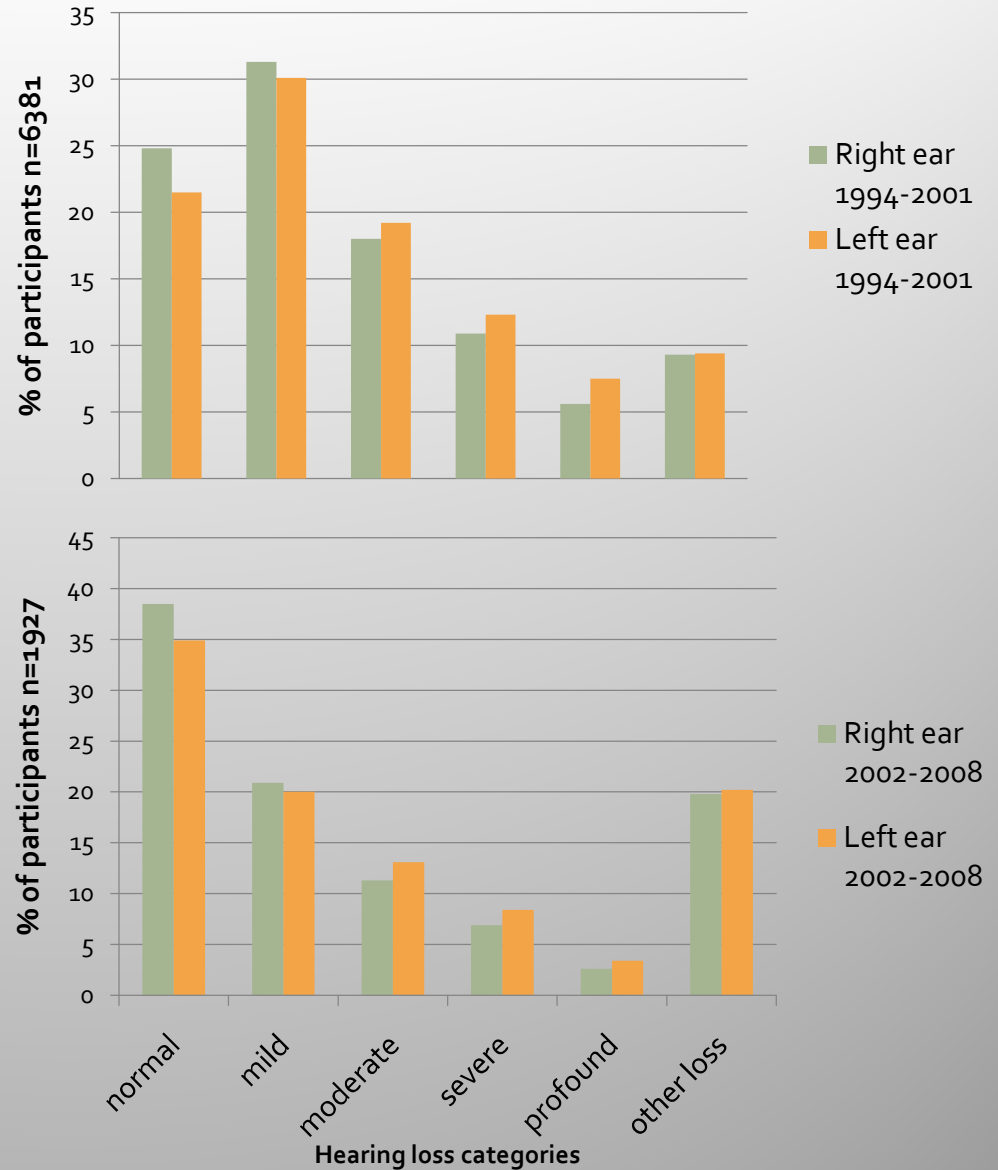
- Percentage of participants exposed to tractors without cabins declined from 72.4% to 59.9% between periods*
- Corresponding increase in use of cabined tractors from 48.4% to 60.1% *
- (This is good news for farmers hearing)





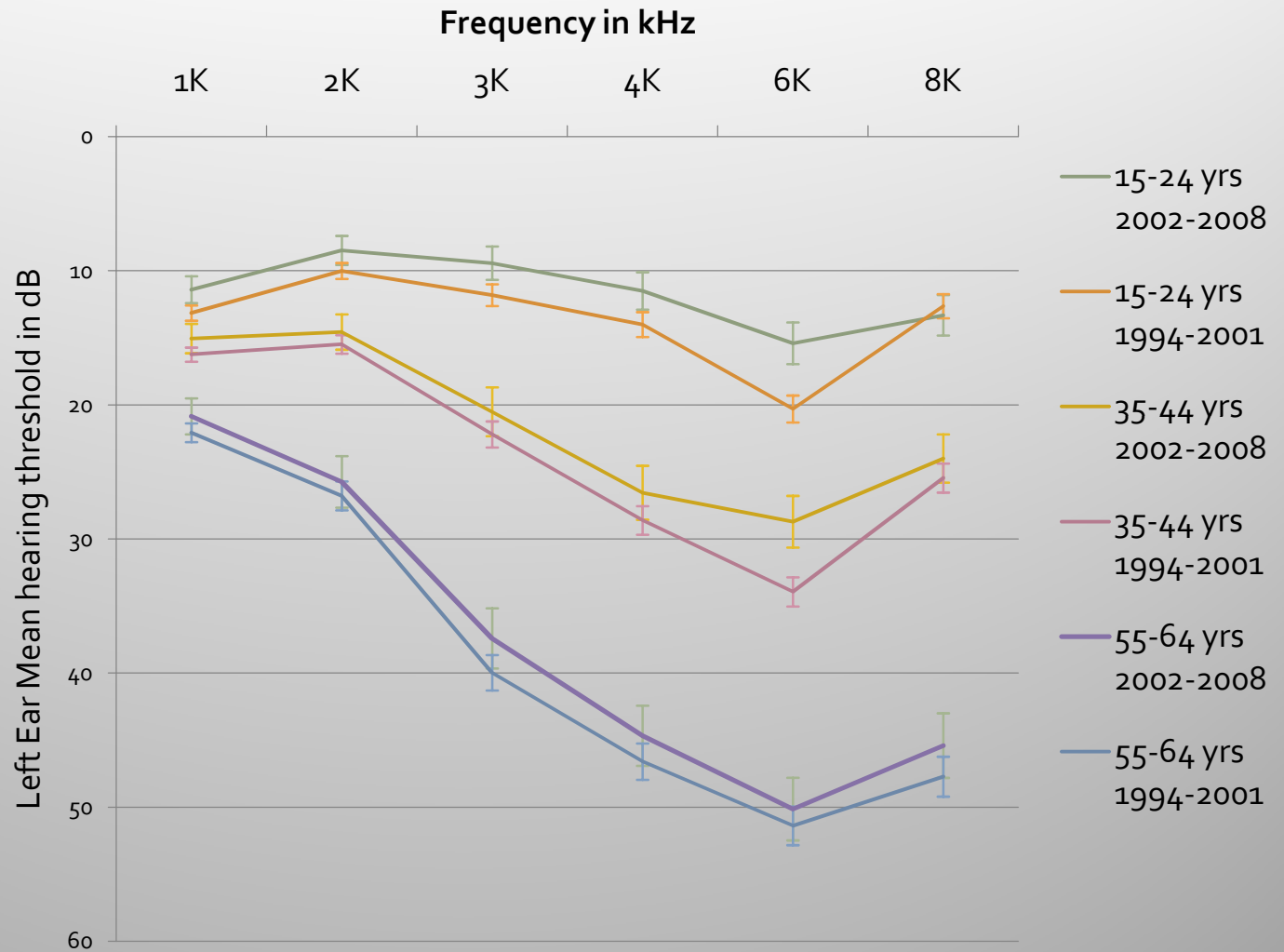
Changes in % farmers with normal hearing

- 14% more farmers in the 2002-2008 period had hearing classified as 'normal'
- % with normal hearing in left ears improved from 21.5% 1994-2001 to 34.9% in 2002-2008
- Shift ($X_2 > 439.3$ df=5 p<.01)



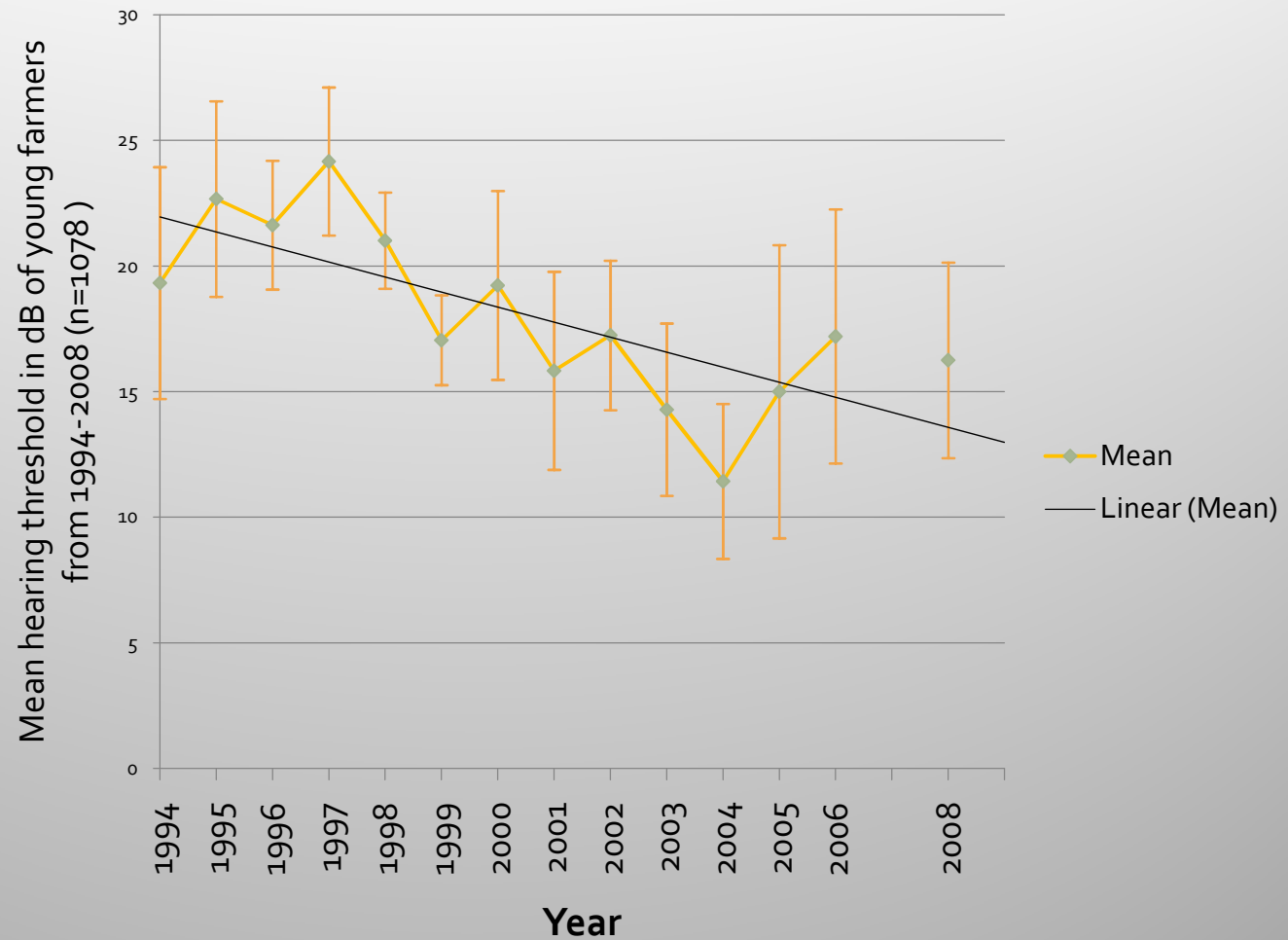


Changes in mean hearing threshold





Mean hearing threshold - young farmers

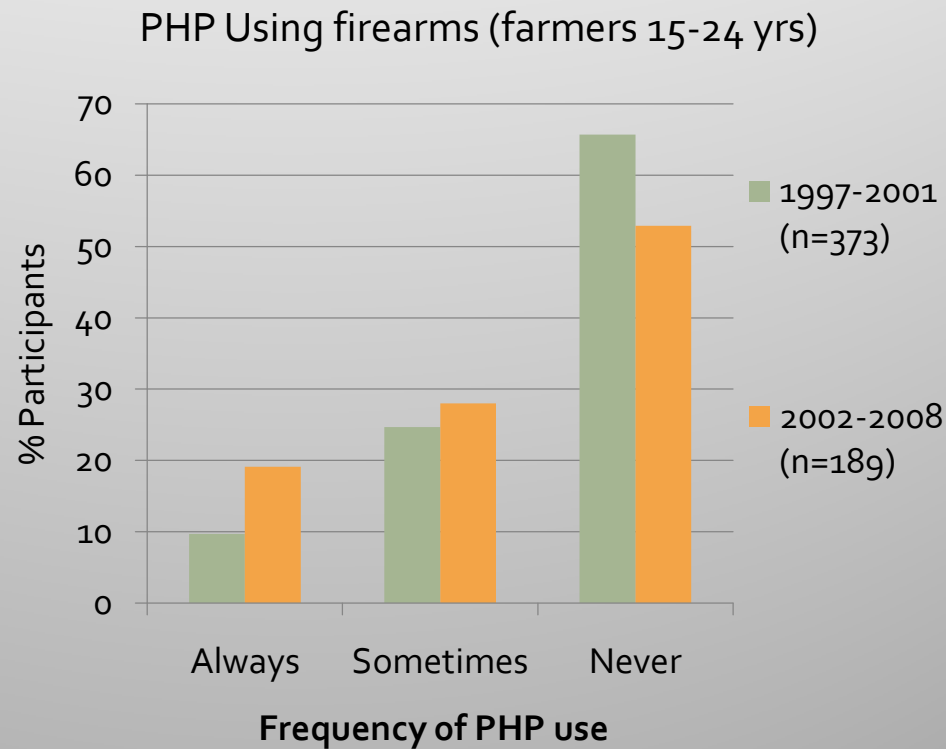


* sig dif in MHT left ear 6K by year (Kruskall-Wallis $X^2=79.3$ $df=13$ $p<.01$).



Hearing protection use

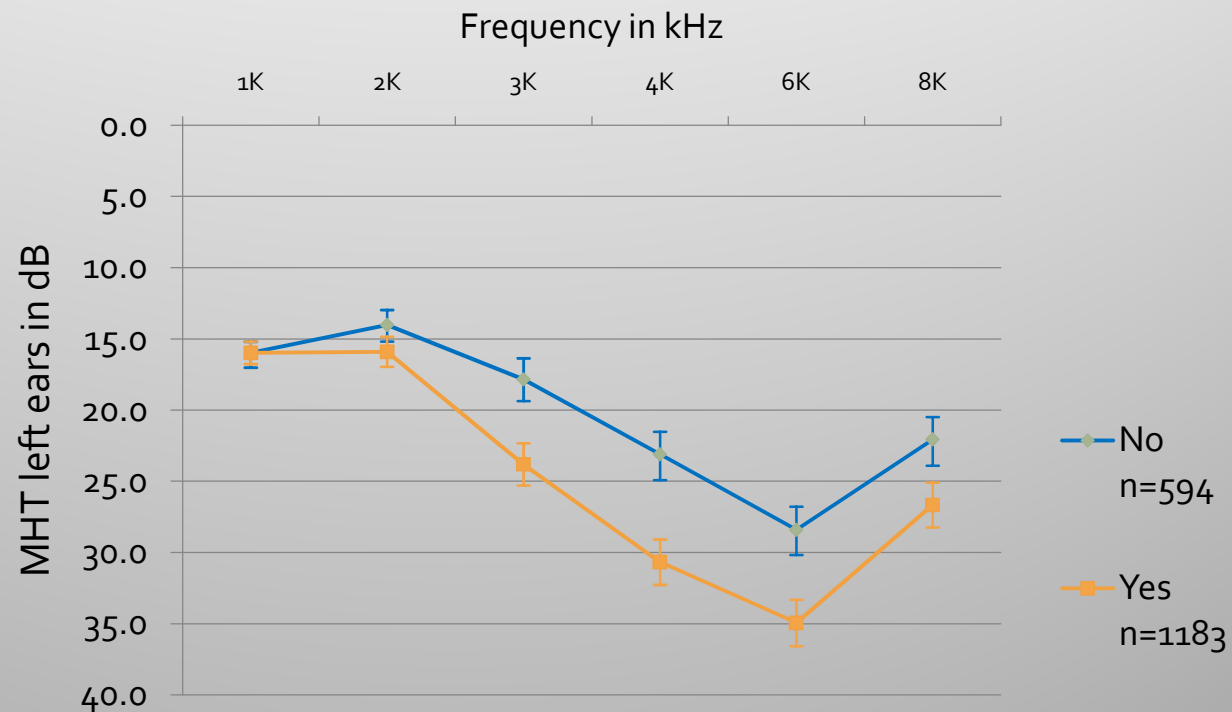
- Almost a half of farmers after 2003 stated they used PHP more often or for more activities than 5 years ago.
- Significant improvements in the frequency of hearing protection use for specific high risk activities (eg.firearms).





Factors affecting hearing – noise exposure

- A range of variables tested for association with hearing loss (MHT)
- Farmers exposed to firearms, chainsaws, workshop tools, heavy machinery and tractors with cabins had significantly higher MHT's (ie. worse hearing) than unexposed counterparts (controlling for age)

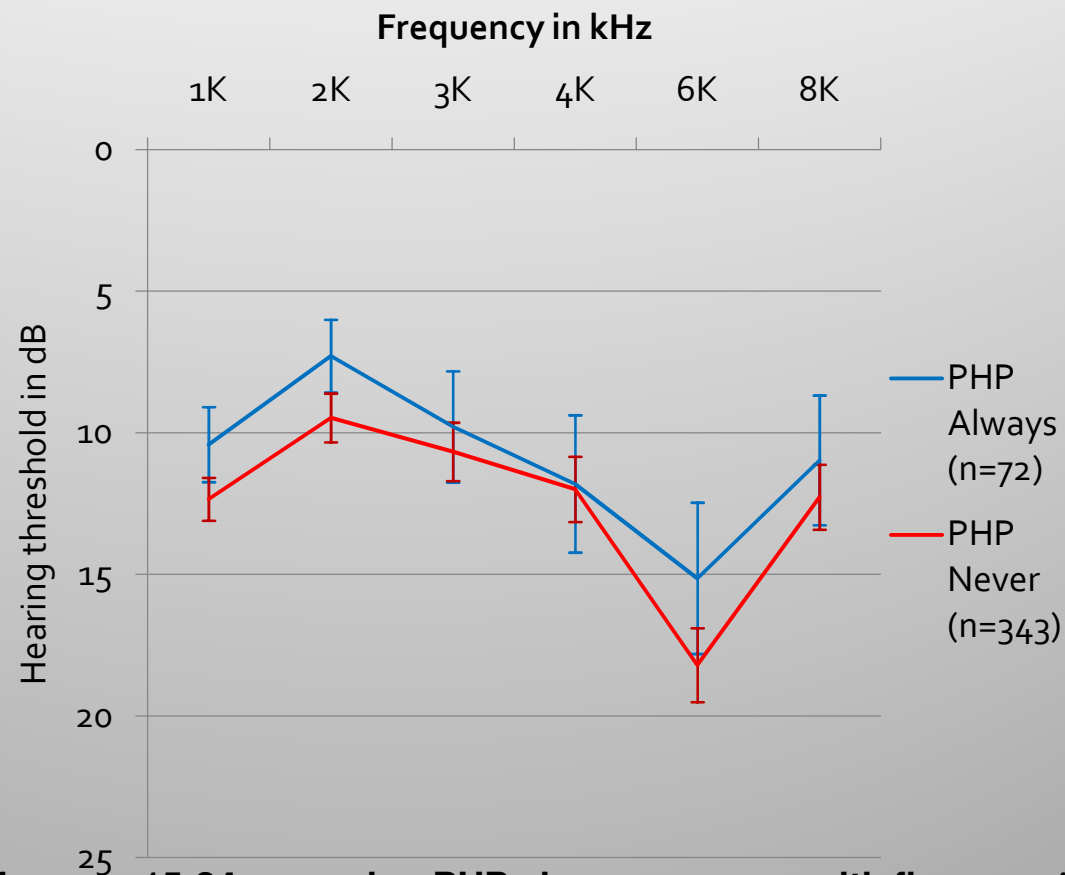


MHT farmers 35-44 years, exposed and unexposed to firearms 1994-2008



Factors affecting hearing – PHP use

- The hearing status of younger farmers who 'always' use hearing protection with firearms and with uncabined tractors, was significantly better than those who 'never' used PHP



MHT farmers 15-24 yrs, using PHP always or never with firearms 1994-2008



Conclusion

- Hearing status of farmers improving (but still a way to go)
- Reduced exposure to chainsaws and un-cabined tractors; with increase in cabined tractors offering greater protection to hearing
- Better use of hearing protection for high risk activities (and one third of farmers use other noise reduction strategies on farm)
- Farmers exposed to firearms, chainsaws, workshop tools, heavy machinery and tractors with cabins have significantly worse MHT (hearing) those not exposed (age controlled)
- The hearing status of younger farmers who 'always' use hearing protection with firearms, is significantly better than those who 'never' use PHP

These findings provide evidence to support current efforts promoting farm noise management strategies. PHP use with firearms, especially by young farmers, is a hearing health priority.