

FOR MANY OLDER DRIVERS, MOBILITY MAY BE MORE IMPORTANT THAN SAFETY

Jim Langford

Monash University Accident Research Centre/Tasmanian Department of Infrastructure, Energy and Resources

ABSTRACT

This paper has the following objectives:

- ?? to re-examine older drivers' apparent over-involvement in crashes;
- ?? to identify the benefits of maintaining mobility amongst older people;
- ?? to review the present capability to assess older drivers' fitness to drive;
- ?? to present policy options for managing older drivers, giving greater prominence to continued mobility.

The greying of western society has led to an increased concern about older driver safety and future road tolls. Whilst some age-related impairments reduce driving skills, they explain only a moderate portion of older drivers' crash risk - much of which is due to 'the frailty bias', rather than to a diminution of driving skills.

The need for mobility does not cease with old age. Excessive restriction of older people's mobility will be detrimental both to society generally which will become increasingly dependent upon expenditure by older citizens and to the individual, who will have reduced access to services and social facilities.

The cessation of mandatory age-based assessment is urged for a number of reasons, not the least being its dubious validity and its contribution to premature cessation of driving. The paper concludes that in all but the most clearcut cases, licensing policy should aim at keeping older drivers on the roads for as long as possible. For this to be achieved, a number of licensing and other policy steps are recommended.

1. INTRODUCTION

Licensing policies for managing older drivers often result in either total or partial loss of licence – a mobility sacrifice conventionally justified by older drivers' incapacity to continue driving safely. However the evolution of older driver research challenges this position¹:

- ?? in the late 1960's and early 70's, research focused on the functional deficiencies typical of older drivers, frequently recommending screening to eliminate high-risk cases from the roads;
- ?? in the 1980's and 90's researchers used accident epidemiology to establish that crash over-representation arose at least partly from older people's physical frailty and vulnerability to injury.² The societal implications of the older driver problem were also re-considered, with the focus beginning to shift from safety to mobility.^{3,4}
- ?? many researchers now contend that the older driver problem is mainly restricted to certain sub-groups of older people (for example older patients suffering from dementia⁵, epilepsy or insulin-treated diabetes⁶) rather than encompassing all older people.

This evolution represents a shift from a general approach ("why do older drivers have higher accident risk?") to a differential focus on high-risk sub-groups ("which older drivers have higher accident risk?").⁷ It has also been

¹ OECD Expert Group (ERS4) (in press). Mobility Needs and Safety Problems of an Ageing Society, Chapter 3: Safety Of Older Road Users. (Chapter 3 is based on a report prepared for the US Transportation Research Board by L Hakamies-Blomqvist, 2001.)

² Hauer E, (1988). The safety of older persons at intersections. In Transportation Research Board, Transportation in an Ageing Society, Special Report 218, vol. 2, 194-252, Washington D.C.

³ Evans L, (1991). Traffic Safety and the Driver, New York: Van Nostrand Reinhold.

⁴ US Department of Transportation, (1997). Improving Transportation for a Maturing Society, Washington, DC

⁵ Morris JC, (1997). Alzheimer disease and driving: clinical, research and public policy In Alzheimer Disease and Associated Disorders, Philadelphia: Lippincott-Raven.

⁶ Janke MK, (1994). Age-related disabilities that may impair driving and their assessment. Report CAL-DMV-RSS-94-156, Sacramento, California.

⁷ Hu PS et al, (1998). Crash risk of older drivers: a panel data analysis, Accident Analysis and Prevention, 30, 5.

accompanied by the recognition that for some older drivers, reduced mobility may be too high a price for the attempted safety improvements.

2. THE CASE FOR IMPROVING OLDER DRIVER SAFETY BY RESTRICTING MOBILITY

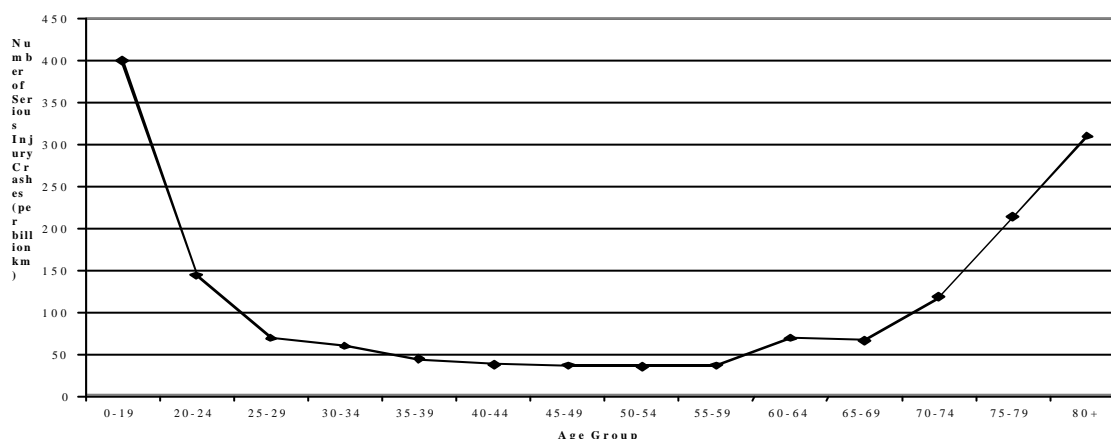
Older drivers are over-represented in serious casualty crashes, as shown in Figure 1.⁸ The so-called ‘bath tub curve’ has been repeatedly confirmed both in Australia and in most other Western countries.

The over-representation can be partly explained by specific conditions associated with ageing (particularly cognitive disorders) which produce a heightened crash risk. However the risk increases account for only a small portion of the problem. The bulk of older driver risk is usually attributed to more general consequences of ageing, particularly reduced cognitive, sensory and motor capacities.

The greying of society is intensifying: by 2030, one in every four people in the developed world will be 65 years or older⁹. This feature will be particularly marked for the ‘old-old’ where crash risk seems to be at it’s highest. By 2030, there will be a doubling of people aged 80 and over and by 2050, the proportion will have tripled.

Heightened crash risk plus demographic growth has produced a call for more stringent licensing conditions, whereby older drivers need regularly to prove their driving fitness through medical assessment and/or through on-road testing. Failure to reach the deemed standards means loss of licence as a broad safety trade-off.

Figure 1: Number of serious injury crashes per billion kilometres travelled, Australia, 1996.



3. ARE OLDER PEOPLE POOR DRIVERS?

3.1 The frailty bias

Use of serious casualty data exaggerates older drivers’ risk because of the ‘frailty bias’¹⁰. Because older people are more easily injured by a given physical impact, proportionally more of their total accidents have serious casualty outcomes. Both international¹¹ and Australian¹² research suggest that around one-half of the additional fatality risk of drivers aged 75 years or more might be due to frailty rather than to unsafe driving practices.

3.2 The short-distance bias

⁸ Fildes B et al, (2001). Older driver safety – a challenge for Sweden’s ‘Vision Zero’. Paper presented to the Australian Transport Federation Conference, Hobart.

⁹ Mobility Needs and Safety Problems of an Ageing Society, Chapter 1: The Ageing Society.

¹⁰ Mobility Needs and Safety Problems of an Ageing Society, Chapter 3: Safety of Older Road Users.

¹¹ Maycock G, (1997). The safety of older car drivers in the European Union. European Road Safety Federation, AA Foundation for Road Safety Research, Basingstoke.

¹² Wylie J, (1996). Variation in relative safety of Australian drivers with age. Federal Office of Road Safety, OR19 Canberra.

It has been claimed that high-distance drivers have lower accident rates per kilometre than short-distance drivers¹³. Because older drivers commonly make shorter trips than other age groups, risk estimates based on distance driven also exaggerate older drivers' crash rates. Once trip length is controlled for, there is no age-related crash risk increase.

The extent to which the short-distance bias exaggerates older driver risk is problematic and may be at least partly counterbalanced by other qualitative and quantitative exposure factors. At the very least however, there is the need for further caution in accepting the conventional association between age and poor driving performance.

4. THE CASE FOR KEEPING OLDER DRIVERS ON THE ROAD

4.1 The economic benefits of maintaining older driver mobility

By 2030, retired baby boomers may be responsible for a dwindling tax base whereby the ratio of tax-paying workers to non-working pensioners will drop from 3:1 to around 1.5:1¹⁴. This is likely to lead to reduced economic activity and shrinking domestic markets.

On the other hand, baby boomers have grown up expecting (and getting) more services and social facilities than arguably, any other cohort in recent history. As older people, they will continue to be vigorous in pursuing their needs and at least in terms of appetite and capacity, have the potential to be the new economic mainstay.

The inroads of e-commerce notwithstanding, spending generally requires mobility. Indeed, mobility itself represents a major source of expenditure. If tomorrow's older people have restricted access to their cars, their contribution to the national economy will diminish.

4.2 The individual benefits of maintaining older driver mobility

The 'urban sprawl' has led to a wide dispersal of essential services, commercial enterprises and social networks¹⁵, with the result that for many (including older people), the car has become necessary for organising and carrying out everyday activities. Even though older people generally make fewer trips, they have substantial travel needs which may well intensify as more people defer retirement and/or become more active in their leisure time¹⁶.

It remains that the car is the preferred option for tackling the distance problems associated with urban sprawl. For some, it is the only option, as public transport or other alternatives are not available in their area of residence. For others, walking and use of public transport are physically too difficult, relative to the ease of using a private car¹⁷.

For older people (as for others), any loss of driving privilege can result not just in access difficulties but also in considerable distress and a lowering of self-esteem and dignity. The loss may also be associated with increased depressive symptoms and a range of other social and health disadvantages^{18,19}.

4.3 Transferring the problem

One of the few evaluations of existing driver testing programs has compared the Finnish and Swedish licensing practices²⁰. Finland requires regular medical checks in connection with licence renewal starting at age 70, whereas Sweden has no age-related controls. No crash-reduction effects of the Finnish program could be

¹³ Hakamies-Blomqvist L (2001). Personal communication.

¹⁴ Mobility Needs and Safety Problems of an Ageing Society, Chapter 1: The Ageing Society.

¹⁵ Mobility Needs and Safety Problems of an Ageing Society, Chapter 7: Land use.

¹⁶ Mobility Needs and Safety Problems of an Ageing Society, Chapter 2: Travel Patterns.

¹⁷ Ibid.

¹⁸ Marottoli RA et al, (1997). Driving cessation and increased depressive symptoms: Prospective evidence from the New Haven EPESSE. *Journal of the American Geriatrics Society*, 202-6.

¹⁹ Marattoli RA et al, (2000). Consequences of driving cessation: decreased out-of-home activity levels. *Journal of the Gerontological Society*, 55B, S334-40.

²⁰ Hakamies-Blomqvist L et al, (1996). Medical screening of older drivers as a traffic safety measure – a comparative Finnish-Swedish evaluation study. *Journal of the American Geriatrics Society*, 44, 650-653.

detected compared to Sweden. However Finland had a higher unprotected older road user fatality rate – arguably, the result of an increase in the number of older pedestrians who had lost driving licences.

Policies that cause older people to increase their walking to maintain mobility may thus increase the overall accident risk. Closer to home, 1997/98 crash and travel survey data from New Zealand found that per kilometre travelled, swapping from driving to walking has a road safety disbenefit for older people. For 80-plus year-olds, a walk of 1 km will incur, on average, 3 casualties per million such trips, but only 0.3 casualties if the same trip were driven.²¹

4.4 Are older drivers a threat to others?

Recent research in both the US²² and the UK²³ shows that older drivers do not represent an excessive risk to other road users. Relative to other drivers, they are more likely to be their own victims, largely because of their greater physical frailty. Arguably, this relative lack of threat to others makes the older driver problem not a public health issue but one of individual freedom of choice²⁴.

5. THE STATUS OF MANDATORY TESTING OF OLDER DRIVERS

5.1 A theoretical argument against mandatory testing

Assume that the acceptable risk of a road fatality is 1 per 10,000 drivers a year. Further assume that a factor which doubles the risk, making it 1 per 5,000 drivers a year, is targeted. Finally assume that a test with 100 percent sensitivity and specificity for this risk factor exists.

To prevent one fatality per year, 5,000 at-risk drivers would need to cease driving. In other words, 4,999 ex-drivers would be required to use other transport modes, perhaps incurring greater fatality risk than they did as drivers.²⁵

5.2 A practical argument against mandatory testing: it cannot be shown to work

An Australian study conducted during the 1980s reached a similar conclusion to the Swedish/Finnish comparison already discussed²⁶. Despite having no age-related licensing controls, the State of Victoria had no worse older driver crash statistics than other States with established testing programs.²⁷ Interim results from an update of this study also fail to show any safety benefits for mandatory assessment programs²⁸.

This lack of supportive evidence should not surprise. Most if not all of the assessment procedures used by licensing authorities remain unvalidated against crash risk. Further, gerontological research has demonstrated that inter-individual variance in performance increases with age, further confounding the assessment task²⁹.

Mandatory medical assessment of all drivers at a certain age to detect those who are unfit to drive, has particularly been criticised³⁰ because a driver's health does not necessarily equate to fitness to drive. When a health problem has been identified, the question of whether to continue driving depends not on a medical diagnosis but rather, on the functional consequences of the illness. And for different people, a given condition may affect fitness to drive in different ways and to different degrees.

5.3 Another practical argument against mandatory testing: it precipitates immobility

²¹ Frith WJ, (2001). Personal communication.

²² Dulisse B, (1997). Older drivers and risk to other road users. *Accident Analysis and Prevention*, 29, 573-582.

²³ Maycock, G. (1997).

²⁴ *Mobility Needs and Safety Problems of an Ageing Society*, Chapter 3: Safety of Older Road Users.

²⁵ based on an example given in *Mobility Needs and Safety Problems of an Ageing Society*, Chapter 6: Managing Older Road Users.

²⁶ Hakamies-Blomqvist L et al, (1996).

²⁷ Torpey SE, (1986). Licence re-testing of older drivers, Road Traffic Authority, Hawthorn, Melbourne.

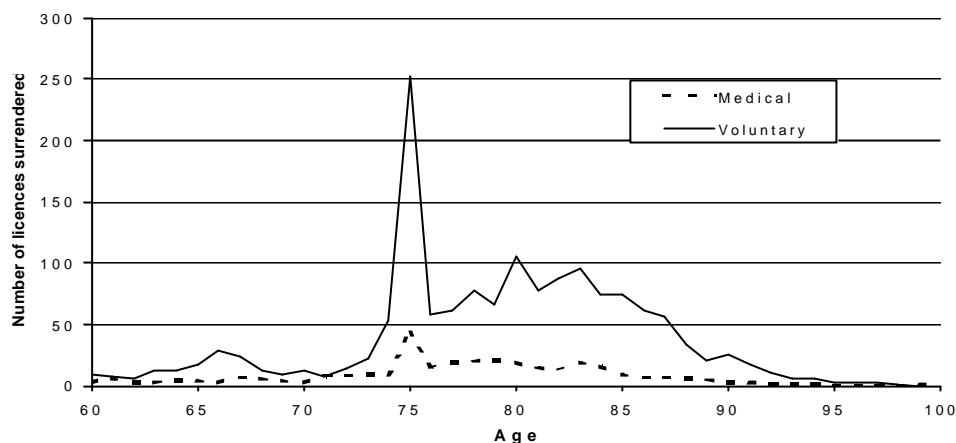
²⁸ Langford J, (study in progress) Re-examining the road safety benefits of Australasia's older driver assessment programs.

²⁹ *Mobility Needs and Safety Problems of an Ageing Society*, Chapter 1: The Ageing Society.

³⁰ *Mobility Needs and Safety Problems of an Ageing Society*, Chapter 6: Managing Older Road Users.

If the safety outcomes of mandatory testing are at best, inconclusive, one other outcome is clear. Many drivers voluntarily stop driving rather than undergo mandatory assessment.^{31,32} The figure below shows for the State of Queensland, the numbers of drivers who failed a medical assessment for licensing purposes, compared to the numbers who allowed their licences to lapse³³. (In Queensland, licence renewal requires a medical assessment once every five years from age 75 onwards.)

Figure 2: Number of medical and voluntary surrenders of licence, Queensland, 1998.



The subsequent loss of mobility may be justified if it reduced the number of unsafe older drivers. With comparative crash data failing to support this outcome, it is more likely that substantial numbers of older drivers are unnecessarily ceasing to drive as a direct result of mandatory testing – a contention that has been supported by an interpretation of the crash data³⁴.

6. LICENSING OPTIONS TO MANAGE THE SAFETY AND MOBILITY OF OLDER DRIVERS

*Given its convenience and relative safety, driving remains the preferred mobility option for older people. At least for the immediate future, the main purpose of any older driver program should be to support continued driving as long as is compatible with specified safety requirements.*³⁵

In dismissing mandatory assessment, the OECD Group recognised that nonetheless, licensing jurisdictions are responsible for ensuring that licensed drivers are indeed fit to drive. The Group recommends that older driver safety can best be managed by targeting those discernibly at risk, leaving ‘safe’ drivers with the maximum mobility options.

The proposed licensing model for managing older driver safety currently being developed in Australasia³⁶, complies with the stance taken by the OECD Group. Its features include:

- ?? the establishment of a network of community notification sources, whereby only drivers suspected to have a high crash risk are identified and referred for formal assessment;
- ?? the use of multi-tiered assessment, involving general practitioners, occupational therapists and other health specialists at more elaborate levels of assessment;
- ?? the use of assessment instruments of known validity for testing safe driving.

³¹ Levy DT, (1995). The relationship of age and State licence renewal policies to driving licensure rates. *Accident Analysis and Prevention*, 27(4), 461-467.

³² Hakamies-Blomqvist L and Wahlstrom B, (1998). Why do older drivers give up driving?. *Accident Analysis and Prevention*, 30(3), 305-312.

³³ Fildes B et al, (in press). Self-regulation of older drivers: a review of the literature.

³⁴ Lange JE and McKnight AJ, (1996). Age-based road test policy evaluation, *Transportation Research Record*, 1550, 81-87.

³⁵ *Mobility Needs and Safety Problems of an Ageing Society*, Chapter 6: Managing Older Road Users, p1.

³⁶ Fildes B et al, (2000). *Model Licence Re-Assessment Procedures for Older and Disabled Drivers*. Austroads Report AP-R176, Sydney.

7. CONCLUSIONS

There will always be older (and other) drivers who because of various disabling conditions represent an unacceptable risk on the road, to others or to themselves. However in keeping with the position adopted by the OECD Working Group³⁷, the following procedures are considered necessary before licences are revoked:

- ?? determine whether the disabling condition can be treated;
- ?? if treatment is not feasible, determine whether the condition has functional consequences relevant to driving;
- ?? if there are functional consequences, determine whether the individual can compensate for their impact;
- ?? if substantial injury risk remains, where feasible implement countermeasures to reduce the risk;
- ?? if the injury risk remains, balance injury costs against the costs of reducing the individual's mobility.

Unless this process has been followed, safety measures intended as safety advances may well be ineffective whilst having considerable and unnecessary mobility costs for many older drivers.

The Group also recognised that if there is a deliberate policy to keep older people driving safely longer, social support is necessary – through improved land use, highway design, traffic management and vehicle design, as well as through improved road user behaviour. These requirements will invariably require government leadership and funding and have an urgency as the greying of our society not only continues but intensifies.

8. REFERENCES

- Dulisse B, (1997). Older drivers and risk to other road users. *Accident Analysis and Prevention*, 29, 573-582.
- Evans L, (1991). *Traffic Safety and the Driver*, New York: Van Nostrand Reinhold.
- Fildes B et al, (2000). Model Licence Re-Assessment Procedures for Older and Disabled Drivers. Austroads Report AP-R176, Sydney.
- Fildes B et al, (2001). Older driver safety – a challenge for Sweden's 'Vision Zero'. Paper presented to the Australian Transport Federation Conference, Hobart.
- Fildes B et al, (in press). Self-regulation of older drivers: a review of the literature.
- Hakamies-Blomqvist L et al, (1996). Medical screening of older drivers as a traffic safety measure – a comparative Finnish-Swedish evaluation study. *Journal of the American Geriatrics Society*, 44, 650-653.
- Hakamies-Blomqvist L and Wahlstrom B, (1998). Why do older drivers give up driving?. *Accident Analysis and Prevention*, 30(3), 305-312.
- Hauer E, (1988). The safety of older persons at intersections. In Transportation Research Board, *Transportation in an Ageing Society*, Special Report 218, vol. 2, 194-252, Washington D.C.
- Hu PS et al, (1998). Crash risk of older drivers: a panel data analysis, *Accident Analysis and Prevention*, 30, 5.
- Janke MK, (1994). Age-related disabilities that may impair driving and their assessment. Report CAL-DMV-RSS-94-156, Sacramento, California.
- Lange JE and McKnight AJ, (1996). Age-based road test policy evaluation, *Transportation Research Record*, 1550, 81-87.
- Langford J, (study in progress) Re-examining the benefits of Australasia's older driver assessment programs.
- Levy DT, (1995). The relationship of age and State licence renewal policies to driving licensure rates. *Accident Analysis and Prevention*, 27(4), 461-467.
- Marottoli RA et al, (1997). Driving cessation and increased depressive symptoms: Prospective evidence from the New Haven EPESSE. *Journal of the American Geriatrics Society*, 202-6.
- Marattoli RA et al, (2000). Consequences of driving cessation: decreased out-of-home activity levels. *J Gerontol Soc*, 55B, S334-40.
- Maycock G, (1997). The safety of older car drivers in the European Union. European Road Safety Federation, AA Foundation for Road Safety Research, Basingstoke.
- Morris JC, (1997). Alzheimer disease and driving: clinical, research and public policy In *Alzheimer Disease and Associated Disorders*, Philadelphia: Lippincott-Raven.
- OECD Expert Group (in press). *Mobility Needs and Safety Problems of an Ageing Society*.
- Torpey SE, (1986). Licence re-testing of older drivers, Road Traffic Authority, Hawthorn, Melbourne.
- US Department of Transportation, (1997). *Improving Transportation for a Maturing Society*, Washington, DC.
- Wylie J, (1996). Variation in relative safety of Australian drivers with age. Federal Office of Road Safety, OR19 Canberra.

³⁷ Mobility Needs and Safety Problems of an Ageing Society, Chapter 1: The Ageing Society.