How can we reduce alcohol-related road crash deaths among young Australians?

Wayne D Hall, Angela L Wallace, Linda J Cobiac, Christopher M Doran and Theo Vos

Between 1974 and 1994, road crash deaths in Australia reduced by nearly two-thirds,[1] and the decline has continued since then at a slower rate.[2] Reasons for the decline probably include introducing random breath testing, to deter drivers from driving while intoxicated, and passing compulsory seatbelt laws.[1] Most Australian states have recently introduced roadside drug testing to reduce road crash deaths among young adults.[3]

An additional strategy that has not been considered in Australia is increasing the minimum legal drinking age (MLDA) to 21 years. The MLDA in Australia has been 18 years in all states and territories since 1974 (when Queensland became the last state to reduce it to 18 years). In the United States, by contrast, a series of policy experiments in different states over a 20-year period have demonstrated that road crash deaths among young adults can be substantially reduced by raising the MLDA to 21 years.[4-7]

The MLDA was 21 years in most states of the US until the federal government lowered the voting age to 18 years in 1970, after which the MLDA was also lowered to 18 years in 30 states. Studies showed that road crash deaths increased by 10% among young adults in states that had lowered the MLDA.[5] Similar increases in road crash deaths were also observed in New Zealand after 1999, when the MLDA was reduced from 20 years to 18 years.[8]

Lobby groups in the US, such as Mothers Against Drunk Driving, used these findings to campaign for a return to an MLDA of 21 years. In US states that subsequently raised the MLDA, there was an average 12% reduction in road crash deaths among young adults.[5] In 1984, federal legislation that withheld federal highway funding unless states adopted an MLDA of 21 years was passed. By 1989, all US states had an MLDA of 21 years.[9]

An econometric analysis of road crash deaths between 1982 and 1997 in the US assessed the effects of raising the MLDA on the odds of alcohol-related deaths among young adults while controlling for other factors that may have affected the rates of these deaths.[9] The latter factors included state differences in average fatality rate; trends in alcohol use over time; unemployment rates; economic growth; and other road safety measures, such as compulsory seatbelt laws and laws that specify a blood alcohol concentration (BAC) of zero for drivers younger than 21 years. Increasing the MLDA to 21 years was associated with a 19% reduction in the odds of an alcohol-related road crash death in young adults. The effect of raising the MLDA was similar to those of setting a zero BAC for drivers until age 21 (24% reduction), laws that defined a BAC of 0.10% as driving while intoxicated (18% reduction), and compulsory seatbelt laws (21% reduction).

A recent Australian project evaluated the cost-effectiveness of a range of policies for reducing alcohol-related harm in Australia (Box).[10] The impact of these interventions was assessed in terms of the number of disability-adjusted life-years (DALYs) that each intervention averted. A DALY is a composite of the number of years of life lost prematurely as a result of death and the number of years lived with disability. The estimated proportions of the causes of death and disability attributed to alcohol were based on data

ABSTRACT

- In the United States, policy experiments over a 20-year period have demonstrated that road crash deaths among young adults can be substantially reduced by raising the minimum legal drinking age to 21 years.

- A recent evaluation of the cost-effectiveness of policies for reducing alcohol-related harm in Australia found that, if the US experience were to be replicated in Australia, raising the minimum legal drinking age would be more cost-effective than random breath testing and drink-driving campaigns.

- Given the major political obstacles to increasing the minimum legal drinking age, we propose another policy that could achieve a similar reduction in road crash deaths — requiring licensed drivers to maintain a blood alcohol concentration (BAC) of zero until at least the age of 21 years (close to the current policy of zero BAC until age 22 years in Victoria), and preferably until 25 years. This would allow young Australians to drink or drive but not to combine these activities for at least the first several years of driving.

- If all Australian jurisdictions had adopted this policy in 2003, 17 deaths could have been be averted among young Australians as they aged from 18 to 21 years and many more serious injuries could have been prevented each year. If we had enforced a zero BAC until age 25, the number of deaths averted until age 25 years could have been as high as 50.

published by the Australian Institute of Health and Welfare (AIHW).[11] Estimates of the effectiveness of the interventions were based on international and Australian evidence relating to how much each intervention reduces hazardous alcohol use. These estimates were used to model the number of DALYS that each intervention would avert over the lifetime of adults in the Australian population in 2003. The estimated costs of implementing these interventions were obtained from costing studies, and estimates of the economic costs averted were obtained from the AIHW.

The economic outcome used to assess cost-effectiveness was the incremental cost-effectiveness ratio (ICER). This is the ratio of the difference between the cost-effectiveness of each policy and current policy and the difference between the economic costs of the two policies. Simulation methods were used to produce uncertainty intervals around these estimates that reflected uncertainty about their effectiveness and economic costs.

Changes to alcohol taxation and bans on alcohol advertising were the most cost-effective policies for reducing alcohol-related harm, because they target whole populations using effective, low-cost interventions. These interventions are dominant — that is, they produce a net cost saving and have a high probability of being cost-effective. Among the interventions targeted at high-risk populations, the most cost-effective were increasing the MLDA and brief

Cost-effectiveness of alcohol interventions compared with current practice in reducing disability-adjusted life-years (DALYs)[10]

Intervention	Health gain: DALYs averted*	Cost-effectiveness: ICER ($/DALY)†
Volumetric taxation of alcohol	11 000 (6000–16 000)	Dominant (Dominant–Dominant)
Bans on alcohol advertising	7800 (5500–11 000)	Dominant (Dominant–$1100)
Licensing controls to restrict operating hours for sale of alcohol	2700 (1700–4000)	$3300 (Dominant–$8300)
Brief intervention by general practitioner	160 (92–250)	$6800 ($1200–$17 000)
Brief intervention by GP, plus telemarketing and GP support	340 (190–530)	$10 000 ($3900–$22 000)
Residential treatment	190 (130–260)	$190 000 ($134 000–$270 000)
Residential treatment plus naltrexone	460 (320–640)	$120 000 ($84 000–$170 000)
Increase minimum legal drinking age to 21 years	150 (79–260)	Dominant (Dominant–$3700)
Mass media "drink-driving" campaigns	1500 (80–2300)	$14 000 ($7200–$460 000)

ICER = incremental cost-effectiveness ratio. * Results are mean (95% uncertainty interval). † Results are median (95% uncertainty interval); the term "dominant" is used to indicate ICER values that are both cost saving and more effective. ◆

interventions by general practitioners.[10] If the average percentage reduction in road crash deaths observed in the US after raising the MLDA from 18 years to 21 years were replicated in Australia, raising the MLDA would be as effective as and more cost-effective than drink-driving campaigns and random breath testing.

Major political obstacles to increasing the MLDA exist in Australia, which did not apply in the US during the 1980s. First, Australia has had an MLDA of 18 years for more than 30 years (and for a century in New South Wales and Victoria). A return to an MLDA of 21 would therefore be a much larger policy change in Australia than was the case in the US in the mid 1980s. Second, young adults who can vote at 18 years are likely to oppose any such proposal. Third, it is not clear whether the community would support such a policy change. Fourth, even if politicians were persuaded to raise the MLDA, compliance would probably be poor in the absence of the broad public support that this policy received in the US during the late 1980s. Fifth, any such policy would be vigorously opposed by the alcohol industry, whose best customers are aged 15–25 years.[12]

Fortunately, there are other ways in which Australia could achieve a similar reduction in road crash deaths among young adults.[13] One option would be to extend existing zero-tolerance laws for newly licensed drivers until the age of 22 years, as is the policy in Victoria.[14] Such a policy would have two major advantages over raising the MLDA to 21 years. First, it is a less restrictive measure that would allow young Australians to drink or drive; they would be prohibited from combining these activities for the first 3–5 years of driving. Second, the strong actuarial rationale for this option weakens any claims of unfair discrimination: this is the age group within which road crashes take 336 lives each year, with alcohol involved in 31% of these deaths.[11] If all Australian jurisdictions had required a zero BAC for drivers until the age of 21 years in 2003, then 17 deaths could have been averted (95% uncertainty interval, 9–31 deaths) among young Australians as they aged from 18 to 21 years. If we had increased the age to 25 years, as many as 50 deaths could have been averted by the age of 25 years (95% uncertainty interval, 27–89 deaths).[10]

The Australian community should be prepared to pay the price of the modest restrictions that this policy would impose on young adults to allow them to drink at the age of 18 years. This policy would be a component of a more comprehensive policy package that would include increasing taxes on alcoholic beverages, restricting the promotion of alcohol to young adults, and building support for more moderate alcohol consumption by sustained education campaigns directed at parents and young drinkers. Within such a policy mix, imposing a zero BAC until age 21 years would be one way of achieving reductions in alcohol-related road crash deaths among young adults on a similar scale to that achieved in the US by increasing the MLDA to 21 years.

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Competing interests

None identified.

Author details

Wayne D Hall, PhD, NHMRC Australia Fellow[1,2]
Angela L Wallace, BSc, MPH, Associate Lecturer[1]
Linda J Cobiac, BEng, MEngSc, MPhil, Research Officer[1]
Christopher M Doran, PhD, Associate Professor in Health Economics[3]
Theo Vos, MSc, PhD, Professor of Public Health and Evidence-Based Policy[1]

1 School of Population Health, University of Queensland, Brisbane, QLD.
2 University of Queensland Centre for Clinical Research, Royal Brisbane and Women's Hospital, Brisbane, QLD.
3 National Drug and Alcohol Research Centre, University of New South Wales, Sydney, NSW.
Correspondence: w.hall@uq.edu.au

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