

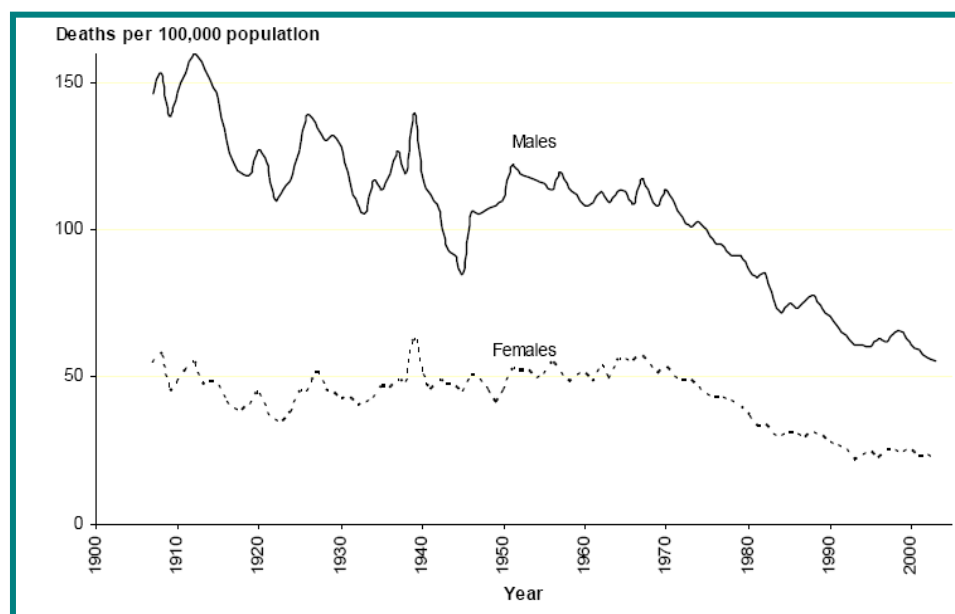
5 Preventing injury: 1970s onwards

Over the 20th century, injury was the cause of many deaths and physical, cognitive and psychological disabilities that seriously affected the quality of life of injured individuals and their families.⁴⁰⁰ It was a primary cause of death in people under 45 years of age, and a leading cause of death, illness and permanent disability in older age groups. It was also a major source of health care costs.

Many injuries are preventable, and there were substantial opportunities to reduce the incidence, impact and burden of injury on health, using effective and innovative strategies. Injury prevention and control was included as a National Health Priority Area (NHPA) at the start of the NHPA initiative in 1986.

From 1907 to 2003, there were major reductions in the rate of injury deaths (Figure 5.1). The death rate from injury and poisoning for males fell from 147 per 100,000 population in 1907, to 61 per 100,000 population in 2000.²⁵ This figure excluded deaths from Australia's engagement in wars. The rate for females also decreased, from 55 per 100,000 population in 1907, to 25 per 100,000 in 2000.²⁵

Figure 5.1: Death rates for injury and poisoning, 1907-2003

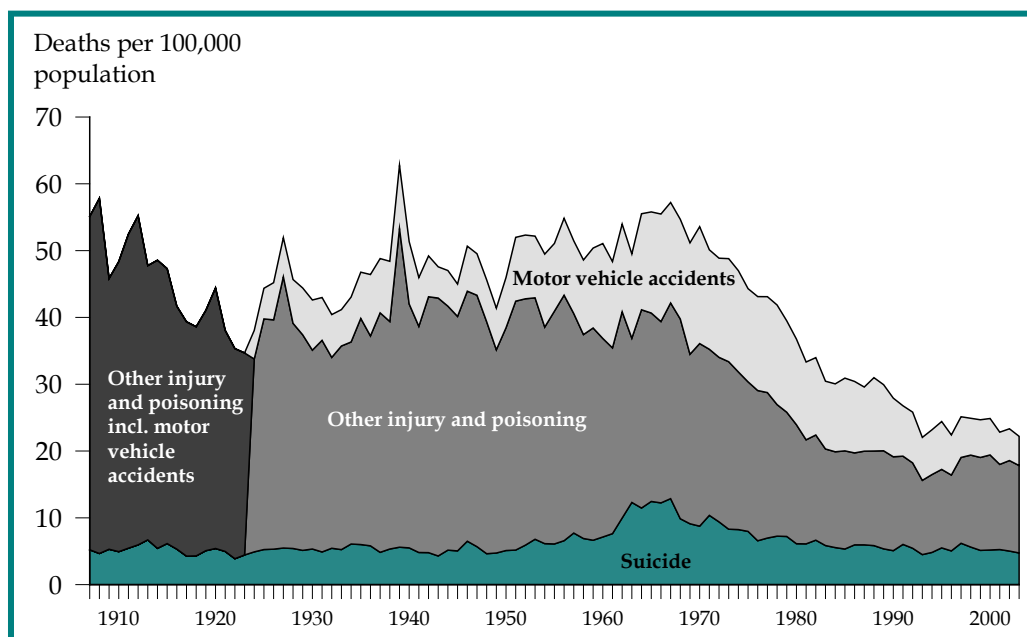


Source: AIHW, *Mortality over the twentieth century in Australia*, 2006, p. 33.

However, as there were comparable falls in the rates of death from other causes, this cause still accounted for about the same proportion of all deaths in 2003 (6.0%), as it had in 1907 (4.9%). Many more people survived and were hospitalised as a result of their injury, or suffered some form of disability.²⁵ Injury and poisoning accounted for just under 441,000 hospitalisations, slightly less than seven per cent of all hospital admissions in 2002-03.²⁵

Figure 5.2 shows the increase in motor vehicle fatalities from the 1950s, which increased steeply following the rise in motoring after World War II. Road traffic fatality was the leading cause of injury mortality, peaking in 1970, when the motor vehicle death rate for males was 49 per 100,000 population (18 per 100,000 for females). By 2000, it had dropped to 14 per 100,000 population for males and 6 per 100,000 population for females.²⁵ A range of interventions, such as the introduction of national speed limits, mandatory seat belts, alcohol limits and breathalyser testing, were put in place from the 1970s, and while motoring in terms of average distances driven continued to rise, mortality risk fell substantially.

Figure 5.2: Death rates for injury and poisoning, showing the impact of motor vehicle accidents and suicide, males, 1907-2003



Source: AIHW, *Mortality over the twentieth century in Australia: trends and patterns in major causes of death*, 2006, p. 35.

While there were reductions in suicide from specific causal agents, suicide and violence were ongoing challenges, as were the higher injury rates in some sub-populations, such as young males, Indigenous Australians and others who were exposed to alcohol-related harm and other injury risks. Some successful initiatives to reduce suicides are discussed in Section 5.3.

Public health practices

Various measures to reduce preventable injuries were identified and addressed during the latter part of the 20th century, especially in Australian homes (e.g., child-proof lids for poisons and medications, smoke alarms, fencing for domestic swimming pools) through legislation, regulation, standard setting, and public education (Box 5.1). Standards enshrined the safety requirements for numerous products, and were the mechanism for implementing those requirements. Coroners in some States accentuated their role in identifying preventable injuries (e.g., such as those from certain baby baths and cots) by highlighting potential remedies (Coroners' roles in identifying unsafe products are described in Box 5.2).

From the 1970s, public health successes included road traffic safety and the impact of related measures, such as the mandatory wearing of seatbelts, and cultural changes, such as those that occurred in relation to drink driving. The prevention of injuries in the home was another successful area, and there were numerous public health programs using measures such as product redesign, risk reduction and behavioural change (see Section 5.2).

Box 5.1 The role of public health in injury prevention

The role of public health is to identify, research, monitor and act in effective ways to prevent injuries. Methods used included:

- problem identification, description and investigation including the use of epidemiological studies to quantify the scope of problems and likely solutions;
- community education campaigns;
- social marketing of behavioural changes;
- influencing of standard setting for product safety and other public safety concerns;
- legislation to enact and regulate mandatory safety requirements; and
- product safety design and redesign to rectify unsafe products and settings.

The development of national suicide prevention strategies, including a national youth suicide prevention plan, contributed to reducing rates of youth suicide. Restricting the availability of potentially dangerous medications also prevented deaths (Sub-section 5.3.1). Box 5.5 describes the limiting of a potentially harmful drug, which was a preventable cause of analgesic nephropathy. The impact of gun control and the associated reduction in gun-related deaths (both intentional and accidental) was a later success (Section 5.4).

The National Health Priority Areas' (NHPA) report on injury prevention and control identified the following effective strategies:

- smoke detectors;
- sports' policies regarding effective protective gear;
- playground equipment safety standards and regulations;
- speed and red light cameras;
- interlock devices for vehicles of drink-driving offenders;
- mandatory standards for nursery furniture; and
- legislation to ensure a maximum bathroom delivery water temperature of 50°C for all new hot water heaters.⁴⁰¹

At the start of the 21st century, important public health injury issues included the prevention of violence, addressing the role of alcohol as a risk factor for violent behaviour including suicide, and reducing the higher rates of injury and violence in Aboriginal and Torres Strait Islander communities.

The Australian government's National Injury Prevention Program was guided by three national plans:

- the *National Injury Prevention and Safety Promotion Plan: 2004-2014*;
- the *National Falls Prevention for Older People Plan: 2004 Onward*; and
- the *National Aboriginal and Torres Strait Islander Safety Promotion Strategy*.

States and territories and many communities tailored their own injury prevention plans to local conditions. Some emerging public health issues included the prevention of sports injuries and recreational water traffic accidents (associated with increases in boat ownership and use), and the need for a proactive role in product design and faulty product recall (e.g., of baby walkers and other infant care equipment).

Cost-effectiveness

The AIHW estimated the direct costs of injuries in Australia at \$4,061 million annually in 2000-01.⁴⁰⁰ A review of the injury prevention and control area found that information on the relative cost-effectiveness of different injury programs was not available.⁴⁰¹ The authors noted that there was little 'sound evidence of effective counter-measures' with certain limited exceptions (e.g., road trauma and work-related injuries), but that the absence of evidence reflected a lack of funded research. Work on the comparative cost-benefits of various potential measures was 'at a formative stage', while that in other areas was far behind. In a later article, Moller noted that basic 'information requirements for cost-benefit and cost-effectiveness measures [could still] not be met'.⁴⁰²

Table 5.1: Historic highlights of successful injury prevention

1924	First recording of motor vehicle accident deaths.
1929	The Standards Association of Australia established to prepare standards for all types of goods and services.
1959	Australian Consumers' Association established.
1965	Seat belt legislation introduced in Victoria.
1967	Stringent restrictions placed on the prescription of barbiturates and other drugs available through the PBS, with the almost immediate effect of reducing 'drug suicides'.
1970s	Mandatory fitting of seat belts in new passenger vehicles (from 1 January 1970).
1973	Legislation in all Australian states and territories for the compulsory wearing of seat belts in motor vehicles, and protective helmets by motor cycle riders and pillion passengers.
1979	First Australian standard on fences and gates for private swimming pools published. Legislation banning the sale of 'over the counter' compound analgesics reduced the incidence of analgesic-induced kidney disease.
1976-1988	Introduction of random breath testing (RBT) in Victoria in 1976, (NT - 1980, SA - 1981, NSW and the ACT - 1982, Tasmania - 1983, Qld and WA - 1988).
1987	The National Committee on Violence recommended uniform national firearm laws after the Hoddle and Queen Street massacres in Melbourne caused the deaths of 15 people in 1987.
1988	Standards Australia established (formerly the Standards Association of Australia).
Late 1980s	Speed cameras introduced, first in Victoria and later in other jurisdictions, with other speed measuring devices and red light cameras.
1990-1992	Victoria enacted legislation that made wearing of bicycle helmets compulsory and other jurisdictions followed in 1991 and 1992.
1992	National maximum speed limit of 110 km/hour in all States, blood alcohol limit of 0.05.
1993	An interim Australian Standard in relation to swimming pool safety published on the location of fencing for private swimming pools (made final in 1994).
1995	<i>National Youth Suicide Prevention Strategy 1995-1999</i> published.
1996	Reform of gun laws in all states and territories after the Port Arthur Massacre in April. Injury prevention and control became a National Health Priority Area. First <i>National Road Safety Strategy and Action Plan</i> published.
1997	National Injury Prevention Advisory Council established. All states adhere to the Standard for the Uniform Scheduling of Drugs and Poisons.
1998	<i>National Water Safety Plan</i> introduced.
2000	National Coroners' Information System established - the world's first national collection of coronial information. The <i>National Road Safety Strategy 2001-2010</i> launched. <i>Living Is For Everyone (LIFE): a framework for prevention of suicide and self-harm in Australia</i> released.
2001	<i>National Injury Prevention Plan Priorities for 2001-2003</i> and the implementation plan published.
2003	State and territory governments agree on National Handgun Control after a multiple person shooting at Monash University in Victoria in 2002.
2004	<i>Water Safety Plan 2004-07</i> launched; ultimate goal: 'zero drowning deaths and the establishment of a culture of water safety in Australia'.
2005	The <i>National Injury Prevention and Safety Promotion Plan: 2004-2014</i> launched.

5.1 Road traffic safety

1970s onwards

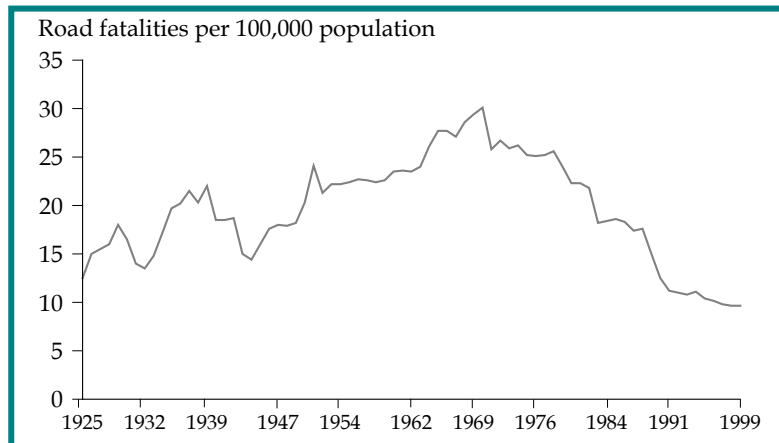
'From the first recording of deaths due to motor vehicle accidents in 1924, the rates were substantial for both sexes throughout the twentieth century, especially in the second half. In 1970, deaths from motor vehicle accidents peaked at 49 deaths for males per 100,000 population and 18 for females, then fell to 14 and 6 respectively by 2000'. – AIHW, Mortality over the twentieth century in Australia, 2006, p. 35.²⁵

At the start of the 20th century, the advent of motor vehicles brought the advantages of more rapid transport and the ability to travel longer distances, but also resulted in a substantial burden of death and disability for the population. Road deaths were responsible for a significant proportion of injury deaths for much of the century, and fatality rates rose steeply in the 1950s and 1960s, peaking in 1970.²⁵

A feature of deaths due to road accidents was their greater impact on younger people and on those in the most economically productive age groups.⁴⁰³ While road accidents in Australia caused just over two per cent of deaths around 1991, it was estimated that they made up almost seven per cent of years of life lost through all causes of death.⁴⁰³

From a peak in 1970, road accident death rates then decreased substantially (Figure 5.3). In 2000, the rates were 14 (male) and 6 (female) deaths per 100,000 population.²⁵ In 1970, this equated to a per vehicle rate of eight road accident deaths per 10,000 registered vehicles; but, by 1999, this reduced to a rate of 1.4 deaths per 10,000 registered vehicles.⁴⁰⁴ This improvement was attributed to a number of interventions, including better design of vehicles, roads and traffic flow; compulsory use of seat belts, child restraints and helmets for cyclists and motorcyclists; lower speed limits; restrictions on the use of alcohol and other drugs while driving; and public education campaigns.³

Figure 5.3: Road fatalities per 100,000 population, 1925-1999



Source: ATSB & ABS, *Year Book Australia*, 2001, 2001.

In 2000, the *National Road Safety Strategy 2001-2010* set the ambitious goal of reducing the number of road fatalities by 40%, to no more than 5.6 per 100,000 population by the year 2010.⁴⁰⁵ The 2005 progress report identified a road fatality rate of 8.0 deaths per 100,000 population in the twelve months to September 2005, which was close to the pro rata rate required to meet the goal.⁴⁰⁶

Public health practices

Contributions to the dramatic decline in road fatalities and injuries included:

- the enactment of key pieces of road safety legislation;
- improvements to roads and vehicles;
- improved emergency medical retrieval, care and treatment;
- intensive public education campaigns, leading to behavioural change; and
- enhanced police enforcement technology and strategies.⁴⁰⁶

Public health measures were largely undertaken through intersectoral partnering outside government health departments (e.g., with road transport authorities and police). Some campaigns were led by medical practitioners, such as neurologists and neurosurgeons who advocated the compulsory use of helmets to reduce brain injury. Road safety initiatives were primarily driven by the state, territory and local governments, which developed their own policies and plans tailored to their conditions, in tandem with national strategies. There was also significant input into preventive public health interventions from motoring and pedestrian organisations and a range of other stakeholders. The Australian government's role was to initiate national policy and strategy, providing incentives to jurisdictions, funding some programs and research, and road building programs (e.g., those targeting accident 'black spots').

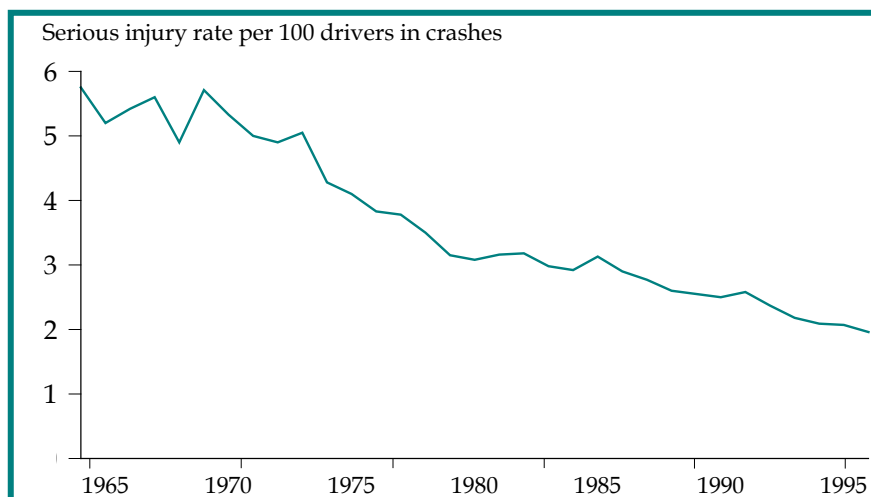
Successful public health measures included:

- compulsory seat belts from the 1970s, with enforced mandatory wearing of seat belts;
- mandatory wearing of motorcycle helmets (from 1973 for motorcycle drivers and their passengers), and of bike helmets (nationally from 1992);
- baby capsules and improved occupant restraints in motor vehicles;
- reductions in road speed limits, reduced speed zones (e.g., near schools), and traffic zones shared by motorists, cyclists and pedestrians;
- setting and monitoring blood alcohol limits (e.g., random breath testing, penalties and fines for drivers);
- driver education and testing; and
- road safety campaigns in schools and the mass media.

Random breath testing (RBT) was first introduced in Victoria in 1976, and, between 1980 and 1988, it was progressively implemented by other states and territories. From its inception, the use of RBT was intensified and refined (e.g., through the inclusion of 'booze buses' and mobile testing units) and the program was 'one of the most extensive programs for mass breath testing of drivers worldwide'.⁴⁰⁴ A number of states and territories (SA was the first in 1973) also legislated for compulsory blood testing of people involved in accidents who attended hospital.⁴⁰⁴ In 1992, the Australian government offered funding to the states (noting that the NT had not complied) if they implemented the mandatory wearing of bicycle helmets, a maximum speed limit of 110km/hour, and a maximum blood alcohol limit of 0.05%. Road deaths continued to fall across the nation from that time.

Measures to improve roads and road use included the federal funding of the National Highway around Australia, the Black Spot Program that funded improvements to known accident 'black spots', and the Roads to Recovery Program that funded local councils to improve the roads. In suburban areas, the introduction of techniques designed to lessen the impact of motor vehicle traffic by slowing it down ('traffic calming'), and other traffic management innovations also contributed. Better structural design of vehicles, improved seats, more advanced seatbelts and airbags all reduced the risk of occupants being seriously or fatally injured in a crash.⁴⁰⁸ Modern vehicles were safer than those in use 30 years earlier; and there was also a substantial reduction in serious injuries (Figure 5.4).

Figure 5.4: Trend in serious injury rate of drivers in vehicle accidents, 1964–1996



Source: NSW RTA, *Road Safety 2010, 2002*, p. 11; citing AAA, *Newer cars benefit everyone - discussion paper*, 1998.

Vehicle safety enhancements from 1970 identified by the Australian Transport Safety Bureau (ATSB) included:

- mandatory fitting of seat belts in new passenger vehicles;
- progressive extension of seat belts to other motor vehicles and the use of retractable belts;

- anchorages for child restraints;
- improved vehicle brakes, tyres, lights, indicators and glazing, head restraints and impact resistance;
- increased roll-over strength and occupant protection in buses;
- speed limiters on heavy vehicles; and
- airbags for drivers and passengers as standard elements in newer cars.⁴⁰⁴

The introduction of laminated, and the withdrawal of toughened, glass windscreens reduced the risk of facial injury and eye damage.⁴⁰⁹ *Australian Design Rules for Motor Vehicle Safety* were developed as the mechanism for implementing mandatory safety requirements as they were identified.⁴⁰⁵

Other successful measures were the implementation of nationally consistent 0.05% blood alcohol limits for drivers, zero blood alcohol limits for special driver groups, structured penalties, and mass public education and media campaigns - many with high 'shock value' to catch the attention of targeted groups (such as young drivers).⁴⁰⁴ The standard of road traffic safety was the result of more than fifty years of development and investment in motor vehicle design, roads and facilities, and responsible, trained drivers, the majority of whom complied with safety requirements.

'People have heeded the call to drive more responsibly' – National Road Safety Strategy 2001-2010, 2000.⁴⁰⁶

Factors critical to success

Public health programs to increase road traffic safety were successful because of the strong policy leadership shown at all levels of Australian, state and territory governments. As road safety initiatives were adopted and proven in one jurisdiction, they were successfully extended to other states and territories (e.g., RBT, speed cameras).

'The turnaround that has been achieved in Australia's road safety performance since 1970 has highlighted the effectiveness of a resolute, coordinated approach by government.' – ATSB & ABS, Year Book Australia 2001, 2001.⁴⁰⁴

Legislation, such as that requiring the wearing of seatbelts, enabling RBT and the enforcement of speed and alcohol restrictions for drivers, had one of the strongest effects on road safety. The campaign, which culminated in legislation in all states and territories for the compulsory wearing of seat belts in motor vehicles, was led by surgeons concerned with the high numbers of preventable traumatic injuries. The progressive extension of seat belt rules, and other occupant-restraining devices such as baby capsules, and the improved engineering and installation of such devices continued to reduce trauma from road accidents. The WA Office of Road Safety's campaign on 'Restraints' identified that drivers and passengers travelling unrestrained in a car were ten times more likely to be killed in a road crash than those wearing a seatbelt, based on analyses of road crash statistics from 1990 to 1999.⁴¹⁰

The efficacy of many of the measures described above was dependent on large-scale cultural change. For example, RBT from 1976 in Victoria, encouraged Australian men to say 'No' to 'one more for the road', by providing them with a valid reason to curtail their alcohol intake.⁷⁶ The greatest success was the attitudinal shift from a high tolerance of drink driving to its perception as a 'social crime', and acceptance by the population of a range of measures (e.g., designated driver programs) that ensured drivers were not over the alcohol limit. As a result of the many public health programs that reduced road trauma, communities had a heightened awareness of road safety, which was not a consideration in the early days of motor transport.⁴⁰⁴

After the Australian government offered additional funding to the states and territories in 1992 to implement a suite of measures across the country (including a maximum speed limit and a lower blood alcohol limit for drivers), a national approach was more evident and meant that a clear and consistent message was delivered across Australia. This reinforced the cultural shifts required to instil behavioural change (such as not drinking and driving).

National road safety policies after 1996 (the latest was the *National Road Safety Strategy 2001-2010*) set out frameworks that recognised the roles of the many other organisations that contributed to road safety, but encouraged individual governments to develop and implement road safety strategies, consistent with the national strategy but also reflecting local conditions.

Cost-effectiveness

In 2003, Abelson and colleagues costed a range of programs that addressed road trauma over the period 1970-2010, including the mandatory fitting of seat belts, campaigns against drinking and driving, reduced vehicle speed limits, enforced speed restrictions, accident black spot programs, and improved traffic management. They attributed 50% of the reduction in road accidents to these public health measures (with the remaining 50% attributed to better roads and vehicles). The benefits arising from public health programs were estimated at \$2.7 billion per annum in the late 1990s, with 1,000 lives saved and 5,000 hospital cases averted each year (there were also savings in property damages). The programs were estimated at \$600 million a year. Although the 'net present value' to government of road safety programs was estimated as negative (i.e., expenditure was greater than savings), the authors noted that this was sensitive to the definition of programs, and that the social benefits outweighed the savings to government.⁸⁷

In 2000, the Bureau of Transport Economics estimated the cost of all road accidents at around \$15 billion per year in 1996 dollars. At the time, this was an amount equivalent to Australia's total annual defence budget, and translated to over \$750 per year for every person in Australia. More than half the total costs of road accidents (56%) were directly related to victims, including costs from lost output, long-term care, rehabilitation and lost quality of life. Road accidents cost the Australian community over \$41 million daily, of which \$23 million were expenses directly related to accident victims. The study estimated the average cost of a road accident death at \$1.5 million (in 1996 dollars), while the cost of a seriously injured person was estimated at \$325,000 and a minor injury at \$12,000.⁴⁰³

A Victorian study found that programs that enforced driver alcohol and speeding limits, and were supported by publicity, were effective and cost-beneficial.⁴⁰⁷ For instance, an economic analysis that examined the impact of speed cameras, RBT, and associated publicity in the mass media in that state over four years (1990 to 1993), estimated that 10,800 'serious casualty crashes' had been averted and the social cost savings were more than twenty times the program costs.⁴⁰⁷

The *National Road Safety Strategy 2001-2010* reported that many known road safety measures had 'not yet reached the limit of their cost-effective potential for all groups and areas' and set a target for the wider implementation of measures which retained additional potential.⁴⁰⁴

Future challenges

Future challenges included the reduction of road fatalities by 40% to no more than 5.6 per 100,000 population by the year 2010 - the target of the *National Road Safety Strategy 2001-2010*.⁴⁰⁴ Strategic objectives included:

- improving road user behaviour;
- improving the safety of roads;
- improving vehicle compatibility and occupant protection;
- using new technology to reduce human error;
- improving equity among road users;
- improving trauma, medical and retrieval services;
- improving road safety policy and programs through research of safety outcomes; and
- encouraging alternatives to motor vehicle use.⁴⁰⁴

Targeted age- and sex-related (especially young, male) research and intervention programs to address the over-involvement of young drivers in casualty crashes were other challenges. For example, in NSW, although 17 to 25 year old drivers held only 16% of licences, they accounted for 26% of drivers involved in crashes in which there was a fatality or an injury.⁴⁰⁸ NSW strategies to address this included ways of improving the knowledge and ability of younger drivers, and a graduated licensing scheme requiring a progressive improvement in skills.⁴⁰⁹ Decreasing the age of Australia's vehicle fleet was also likely to deliver reductions in road trauma injuries, as modern cars were significantly safer and offered greater protection for occupants.

5.2 Preventing injuries in the home: childhood drowning

1986 onwards

Patterns of injury varied with age, and many accidents occurred in settings in and around the home.⁴¹¹ Near-drowning and drowning were major causes of injury and death in early childhood when children were unable to swim or to recognise the dangers of water. At the start of the 21st century, more toddlers drowned in swimming pools than died from any other cause in Australia.⁴¹² There was a substantial rise in drowning in children under five years of age - already a significant problem - as the popularity of home pools increased from the late 1960s.⁴¹³ In 1960, although drowning occurred at a rate of 5.3 per 100,000 children under 15 years of age, the rate in children under five years was 7.4 per 100,000 children.⁴¹² By 1973, this rate had jumped to 10.8 per 100,000 children under five years overall, while in the warmer state of Queensland, it had risen to 16.0 per 100,000 children by 1973.⁴¹²

Public health analyses of the problem were reported from the mid-1970s. A 1976 study using coroners' reports and hospital records showed that the child immersion rate (of drownings and hospitalised near-drownings) in Brisbane doubled between 1971 and 1976, and the toddler immersion rate was 50 per 100,000 children.⁴¹⁴ Half the incidents occurred in the family pool, which, in most cases (75%), had no barrier to keep children away from the water.⁴¹⁵ Other studies showed that nine out of ten incidents of pool drowning involved children under five years, and in two out of three cases, the pool in which the child drowned was located at their own home.⁴¹⁶

By 1977, public health officials, researchers and organisations (e.g., the Australian Consumers' Association) were concerned about pool safety and advocated for pool fencing.⁴¹⁷ The Standards Association produced a guideline to advise householders (and others) of the measures required for pools to be safe.⁴¹⁸ Design guidelines were sufficiently advanced by 1979 for a published Australian standard on fences and gates for private swimming pools that included a minimum fence height (1.2m), a gap between horizontal elements (90cm), and child-resistant guarding on gate latches.⁴¹⁹ By 1985, self-closure and self-latching were also recommended as part of the standard. It did not however, address the biggest failure - the location of the fence. Only in 1993, after major objections from child and safety advocates and years of struggle within the Standards Committee, was a draft standard published, indicating the differences in the degree of safety offered by different fencing configurations.⁴¹³

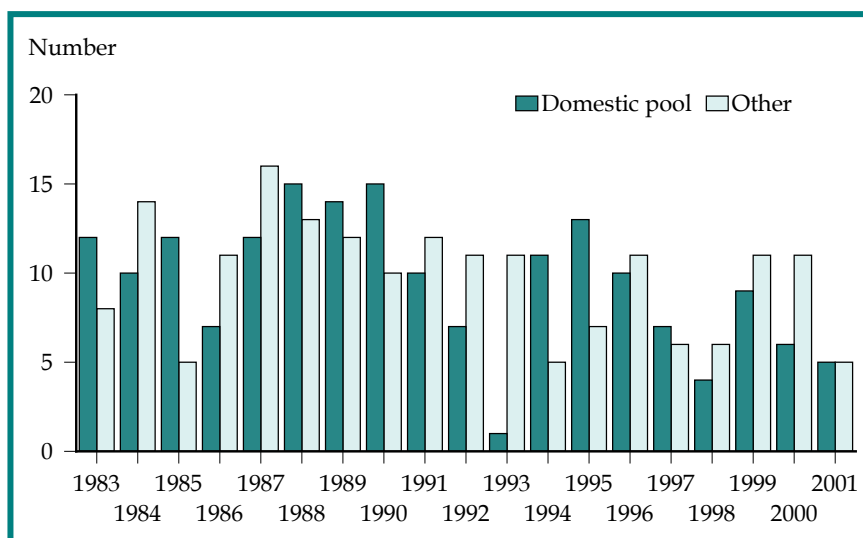
A Brisbane City Council ordinance requiring the fencing of both new and existing pools was introduced in 1977, but was struck down in 1978 by the Queensland parliament. State legislation requiring pools to be fenced was not effected until 14 years later (in 1992). In 1990 in NSW, after a Minister's child nearly drowned, an *Act* was passed requiring all domestic swimming pools to be fenced to the Australian Standard, with the fence separating the pool from the house (not then required by the Standard). New pools had to meet the provisions immediately and existing pool owners had more time to comply; however, before the compliance date, the *Act* was over-ridden (in 1992), and NSW reverted to less effective requirements.

Objections to regulation for pool fencing came from individual householders, organised anti-fencing groups and the pool construction industry. Views included doubts about the severity of the drowning problem, objections on the basis of cost, aesthetic arguments, the unfairness of additional requirements

once pools had been built, and parental responsibility for supervision. The pool industry, concerned about sales, voiced most arguments, and their representatives on the standard-setting committee opposed the development of an effective standard. It took nearly four years to develop a 'consensus' standard, which was well below the level of protection achievable by implementing the findings from research. The process illustrated some fundamental problems in setting safety provisions in standards that had no performance monitoring criteria (e.g., protection of 75% of children at risk).

By the 1990s, Australians owned more than 625,000 pools, with 20,000 new pools being built each year.⁴¹³ Much of the existing regulation was ineffective as only the property – rather than the pool itself – needed to be fenced. Council registration of pools did not include inspecting the effectiveness of pool enclosures, nor were regulations monitored for their correct application. Hence, toddlers still drowned at an alarming rate (Figure 5.5 shows the situation for Queensland, where state legislation requiring pools to be fenced came into effect in 1992).

Figure 5.5: Queensland drowning deaths by year of immersion, children 0-4 years, 1983-2001



Source: K Cunningham, R Hockey, R Pitt, E Miles, 'Ten years on: toddler drowning in Qld 1992-2001', *Injury Bulletin*, no. 75, 2002, p. 2.

There was a decreasing trend (between 1983 and 1998) in drownings of children aged from zero to four years for Australia, with the exception of the NT. In the NT, where pool fencing legislation was not introduced until 2004, the long-term trend indicated an increase in drownings of children aged up to four years, in contrast to the decreasing rate for the rest of Australia.⁴²⁰ By that time, all jurisdictions in Australia had some form of regulatory requirement for fencing domestic swimming pools. Not all offered the same level of protection for the at-risk group, however, and the practice of requiring that there be no direct access from the house to the pool was not yet universal.⁴²⁰ WA also implemented an organised inspection program.

Childhood drowning and near-drowning continued to be major public health issues, especially for the under five year age group.⁴²¹ Drowning prevention remained a national health priority, and water-safety organisations worked with all levels of government to develop a *National Water Safety Plan*. Its ultimate goal was 'zero drowning deaths and the establishment of a culture of water safety in Australia', and the objective was for a continued reduction in the number of drowning deaths, to 200 deaths by 2007.⁴²²

A comparison of data for 2003 with a benchmark (taken as the average of the five years, 1994-1998) shows that a 17% reduction from 300 to 250 drowning deaths was achieved, with a reduction from 58 to 35 deaths in children aged zero to four years (Table 5.2).⁴²²

Table 5.2: Drowning deaths, Australia, 1994-98 and 2003

Variable	1994-98*	2003
All ages		
Drowning deaths in Australia	300	250
Ranking of cause of accidental death	3 rd	4 th
0-4 year old children		
Drowning deaths	58	35
Ranking of cause of accidental death	1 st	2 nd
*Benchmark, based on five-year average, 1994 to 1998		

Source: Australian Water Safety Council, *National Water Safety Plan 2004-07*, 2004, p. 8.

The *National Drowning Report 2005* from the Royal Life Saving Society Australia (RLSSA) cited 259 drowning deaths, a large decrease from the five year average (1998–2002) of 290.⁴²³ The largest decline, however, was in the under-five year age group, in which there were 28 drowning fatalities, many fewer than the five-year average of 51.⁴²³ Serious near drownings, however, occurred at three to four times the rate of fatal drownings, and between 5% and 20% of children who experienced serious near drownings suffered some form of permanent brain damage.⁴²⁴

Public health practices

Key public health practices included water safety education and research; standards and legislation pertaining to ‘aquatic locations’ (e.g., pools); and the targeting of high-risk groups, with the primary focus on children under five years of age.⁴²² At the start of the 21st century, each state and territory had a *Water Safety Plan*, adapted for local conditions, and drawn up with the contributions of water safety stakeholders (e.g., Water Safety Councils, RLSSA, and state Departments of Sport and Recreation).

By 2005, pool-fencing legislation had been introduced in all jurisdictions, and, in most situations, pool fencing was legally required. After Queensland and NSW introduced their pool-fencing legislation in the early 1990s, the pool drowning rate fell to less than half the pre-fencing rate (despite little enforcement of the legislation, and a doubling in the number of pools built after the legislation was introduced).⁴²⁵

National water safety education campaigns received government and corporate support. The *National Water Safety Plan* identified a range of best practice programs that included:

- the Keep Watch program – an integrated public awareness and education program, developed by the RLSSA in 1996;
- a voucher system providing five free water safety lessons for 0 to 4 year olds, developed by the NT Government in 2004;
- the Home Pool Inspection service, developed by the RLSSA WA in 1999;
- in-servicing of Community Health Workers in the Keep Watch program and the provision of resources, developed by the NSW Water Safety Taskforce and the RLSSA in NSW and WA in 2003; and
- the *Child Safe Play Areas on Farms* promotion developed by Farmsafe Australia and the Australian Government Department of Health and Ageing in 2002-03.⁴²²

- In Queensland, 157 children under five years drowned from 1992 to 2002. Almost half of these deaths occurred in domestic pools.
- Pool fencing saved the lives of over 70 toddlers in Queensland in the ten years to 2002.
- The toddler pool drowning rate could be reduced further by full implementation of pool fencing with regular inspections focusing on improving compliance of gates and doors.

–K Cunningham, R Hockey, R Pitt & E Miles, ‘Ten years on: toddler drowning in Qld 1992-2001’, *Injury Bulletin*, no. 75, 2002, p. 1.

The *National Injury Prevention and Safety Promotion Plan: 2004-2014* built on previous injury prevention strategies to guide research, programs and policies, to help prevent injuries, under an injury

prevention and safety promotion framework, and guide the activities of the many partners: government agencies, local government, private sector organisations, NGOs, communities and individuals.⁴²⁶

Factors critical to success

The relative success in preventing childhood drowning was based on public health measures that included the early identification of the problem and reasonably effective interventions that were demonstrated to work. However, there was failure to the extent that interventions, once they were shown to be effective, were not introduced early or widely enough.⁴²⁶

A critical factor was the public health principle that injuries generally, and childhood drowning in particular, could be prevented. Public health research focused attention on identifying and monitoring clusters of injuries, and ways to prevent them. Action was taken by governments at all levels, but particularly by state, territory and local governments, to amend legislation, improve regulation and monitoring, and provide community education to reduce childhood drowning.

Nationally, the coordination of state and territory efforts, together with those of other key stakeholders such as NGOs involved in particular areas (e.g., water safety, consumer safety), was achieved through the promulgation of national strategies such as the *National Injury Prevention and Safety Promotion Plan: 2004-2014* and its predecessor. As injuries were preventable, there were a range of actions to be taken; and public health monitoring and evaluation of national and jurisdictional strategies helped identify those that represented best practice.

Ongoing identification of 'clusters' of fatalities, made possible through the National Coroners' Information System (Box 5.2), also assisted injury prevention efforts, and allowed monitoring to show whether coroners' recommendations had been implemented and remained effective.

Future challenges

The regulatory environment needed to be tightened to ensure pool fencing complied with the law and with Australian safety standards. For instance, WA legislation required mandatory local council inspections of pool fences every four years, resulting in increased compliance with standards. An audit of pool fencing inspection records (from a random sample of WA local councils) showed an average compliance level of 71% by the third inspection - well up from 45% at the first inspection.⁴²⁶

The Australian consumer organisation, *Choice*, nominated the following for urgent implementation in relation to childhood drowning:

- state and federal governments together to develop a mandatory product safety scheme to ensure all pool fences meet the requirements of the Australian standard (18 out of 31 pool fences assessed did not meet a key safety aspect of the Australian standard; results suggested non-standard pool fencing was still widely available);
- four-sided pool fencing be made mandatory across Australia, as it was clearly safer than fencing that allowed access to the pool from the house;
- mandatory council inspections be adopted across Australia, on a four-yearly basis at least, to help save more children's lives.

The *National Injury Prevention and Safety Promotion Plan: 2004-2014* identified safe play areas on rural properties and restricting access to hazards, including dams and rivers; safer products and environments for children that were appropriate to their age-specific development; and safe design

Survey respondent: 'It was public health pioneers such as John Pearn and Jim Nixon who first warned of the rising death rate from drowning in the mid-1970s. They also developed a standard based on good basic research to establish the most appropriate height of fencing, and drafted effective Council regulations for Brisbane which were then overturned by the state government'.

awareness, by designers, manufacturers, retailers and consumers.⁴²⁶ Finally, there was also a need to make greater use of coronial findings and recommendations as they related to specific preventable injuries (Box 5.2).⁴²⁷

Box 5.2 Role of the coroner in identifying unsafe products and practices

In Australia, almost all injury deaths are reported to and investigated by a state or territory coroner. Coroners served as advocates for injury prevention and as agents of change in identifying more effective injury prevention strategies.⁴²⁷

The National Coroners' Information System (NCIS) was a database for use by researchers to identify patterns and trends in fatalities reported to a coroner; and the world's first national database of coronial information.^{428,429} Around 7,500 of the 18,000 deaths reported annually to coronial offices were due to unnatural causes (e.g., workplace, road, and other accidents; and suicides), many of which were potentially preventable.

From its establishment in 2000, many practices and products relevant to public health and safety were identified using the NCIS, including:

- Blind cord strangulation of young children - identification of such deaths led to discussion by the Blind Manufacturers' Association of Australia regarding re-design, and a national campaign aimed at raising parents' awareness of the risk;
- All-terrain vehicle deaths - identification of the total number of fatalities involving this type of vehicle led to joint inquests, coronial recommendations, industry training programs for the agricultural sector and a review of injury rates;
- Working under vehicles - the number of deaths of 'home mechanics' crushed while working under jacked-up vehicles led to a national targeted campaign for young to middle-aged males;
- Cigarette-related fires - data about the number of house fire deaths caused by lit cigarettes led to a national manufacturing standard to produce 'self-extinguishing' cigarettes; and
- Regional suicide rates - Australian government funding was provided for mental health services in remote South Australia, influenced by data which demonstrated that suicide rates were relatively higher there than in other South Australian regions.⁴²⁹

The NCIS held information on every death reported to a coroner in Australia from July 2000 (January 2001 for Queensland). Developed as a 'death investigation and research tool' by Monash University in 1998, it was managed by the Victorian Institute of Forensic Medicine. It provided the means to 'systematically identify and retrieve clusters of similar cases' from coronial offices around Australia, enabling coroners to identify national trends and assist in the elimination of preventable hazards in the community.⁴²⁸

5.3 Preventing suicide

1907 onwards

At the start of the 21st century, deaths from suicide were one of the ten leading causes of death for males in Australia.²⁵ Over the century, the overall suicide rate remained relatively stable, fluctuating within a range of between 10-14 deaths per 100,000 population.⁴³⁰ The highest rates were recorded during the Great Depression years of the 1930s, in the 1960s and into the 1990s.⁴³¹ There was no reliable population screening tool for suicidal intention or risk.⁴³²

In 1907, age-standardised suicide rates were 27 per 100,000 population for males and five per 100,000 population for females (Figure 5.6 and Figure 5.7, respectively, in Box 5.3). The lowest rate for male suicides was 12 per 100,000 during World War II. In the latter half of the century, there were around 20 suicides per 100,000 population for males.

For females, the rate remained relatively even (at around five suicides per 100,000 population) until it rose dramatically in the 1960s, to a peak of around 13 suicides per 100,000 population. The rate returned to around five suicides per 100,000 population by the 1980s (Figure 5.7). The rise in the female suicide rate was attributed to the increased availability of barbiturates, and the subsequent fall in the rate to restrictions on their availability, which were put in place as a public health response (Sub-section 5.3.1).²⁵

The overall suicide rates discussed above do not reveal the substantial variations in rates for different age groups. For instance, suicide rates among 15 to 24 year-olds increased from six male and four female suicides per 100,000 population in 1907, to around 30 male and seven female suicides in the 1990s, before falling to 20 and six per 100,000 population in 2000.

The rates in younger males, which remained higher than at the beginning of the 20th century, were an ongoing public health concern.⁴³² In 2004, suicide deaths made up more than 20% of deaths for males aged 20-39 years; and a year later, this high proportion had expanded to the older age groups, up to 54 years for males.⁴³³ The age-standardised suicide death rate for males was about four times higher than the corresponding rate for females (Figures 5.6 and 5.7).

Background issues that contributed to suicide included individual causes (e.g., genetic predisposition to depression, personality, and sexual orientation), exposure to trauma, family-related factors, life stressors, poor social support, and wider socioeconomic, cultural and social factors.⁴³⁴ There were clear and demonstrated associations between suicide and unemployment, low socioeconomic status and low occupational prestige.⁴³⁰ Evidence also suggested that many of those attempting or completing suicide had a recognisable mental health problem, and contextual factors contributed to suicidal behaviour by influencing individual vulnerability to mental health problems and conditions (e.g., mood disorders, substance abuse, anxiety disorders and antisocial and offending behaviours).⁴³⁰

Two important contextual factors that affected rates of suicide were the availability of methods of suicide (e.g., guns, barbiturates), discussed below, and the treatment of suicide by the media.⁴³⁰

Box 5.3 Suicide rates, 1907-2003

For most of the 20th century, suicide rates (deaths per 100,000 population) were relatively constant, with male rates exceeding those of females by a ratio of four to one (note the different scales used in the figures below).²⁵

Figure 5.6: Male suicide rates, 1907-2003

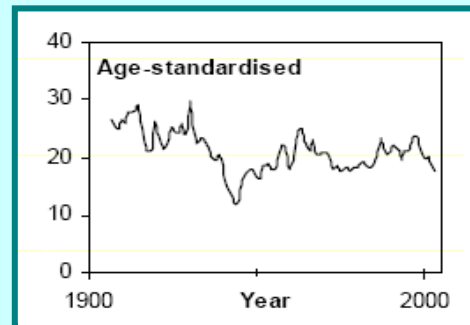
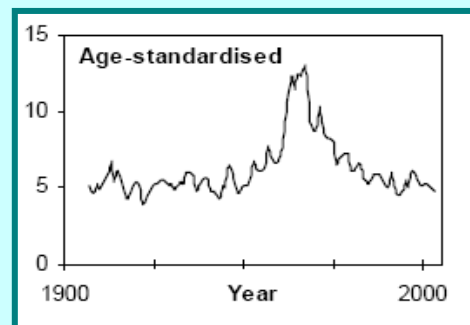


Figure 5.7: Female suicide rates, 1907-2003



Deaths per 100,000 population

Source AIHW, *Mortality over the twentieth century in Australia*, 2006, p. 74.

Public health practices

The *National Suicide Prevention Strategy* commenced in 1999 and built on the former *National Youth Suicide Prevention Strategy* (from 1995). *Living is for everyone: a framework for prevention of suicide and self harm in Australia* (the LIFE Framework) was developed by the National Advisory Council on Youth Suicide Prevention (Box 5.4). It was informed by evidence that suicide prevention required a multi-faceted approach and collaboration between all levels of government and the community.⁴³⁵ The Australian government funded the development of national and community-based models of suicide prevention.

An important public health principle for preventing suicide was to limit the availability of the means to suicide.⁴³⁵ A systematic review of suicide prevention strategies, drawing on Australian and international experience, concluded that there was good evidence that restricting population access to lethal methods could reduce suicide rates by the method in question, and at times, the total suicide rate.^{434,436} One of the review's authors concluded that this was an often under-valued approach.⁴³⁴

The findings covered a range of means, including:

- detoxification of domestic gas and of carbon monoxide emissions from vehicle exhausts;
- legislative restriction on ownership of, and access to, firearms;
- restrictions on the pack size of over-the-counter analgesics;
- installation of barriers at sites for jumping, and at subways to prevent people leaping in front of trains; and
- use of clinically safer drugs, and restricting access to highly toxic drugs, gases and pesticides that could be lethal in overdose.^{434,437}

Although restricting access to potentially lethal means of suicide did not address the problems or distress of any individual, it had the potential to reduce the proportion of suicide attempts that were made impulsively or in extreme situations of anguish and anger, thus allowing time for help to be provided.

The public health successes reported below used this approach to reduce suicides, by limiting the availability of pharmaceutical drugs and of guns.

Box 5.4 LIFE Framework: Guiding principles

- 'Suicide prevention is a shared responsibility across the community, professional groups, non-government agencies and the government sectors.
- It requires a diversity of approach, targeting the whole population, specific population subgroups and individuals at risk.
- It must be evidence-based and outcome-focused.
- It must incorporate community and carer involvement and expert input.
- Activities must be accessible to those who need them, and appropriate and responsive to the social and cultural needs of the groups or populations they serve.
- They must be sustainable, to ensure continuity and consistency of service for communities, and evaluation must be an integral part.

It is crucial that activities do no harm. Some activities that aim to protect against suicide have the potential to increase suicide among vulnerable groups. Well-meant messages may cause harm because they may be interpreted differently by different groups. Awareness of this potential is of particular importance in programs that involve schools, the media or raising awareness of suicide. All approaches need to be market-tested and carefully evaluated for negative as well as positive outcomes. Suicide risk may also be inadvertently increased by programs outside the ambit of suicide prevention, which address broad social issues.

The LIFE Framework recognises the considerable contribution to prevention of suicide achieved by people helping each other at an informal level, particularly families and friends, especially in supporting those affected by suicide and self-harming behaviours. It also recognises the importance of action and advocacy by consumer groups in enhancing service delivery systems and good practice, in ways that take into account feedback from consumers.'

Source: DoHA, *LIFE - Living Is For Everyone: a framework for prevention of suicide and self-harm in Australia – areas for action*, 2000, p. 17.

Cost-effectiveness

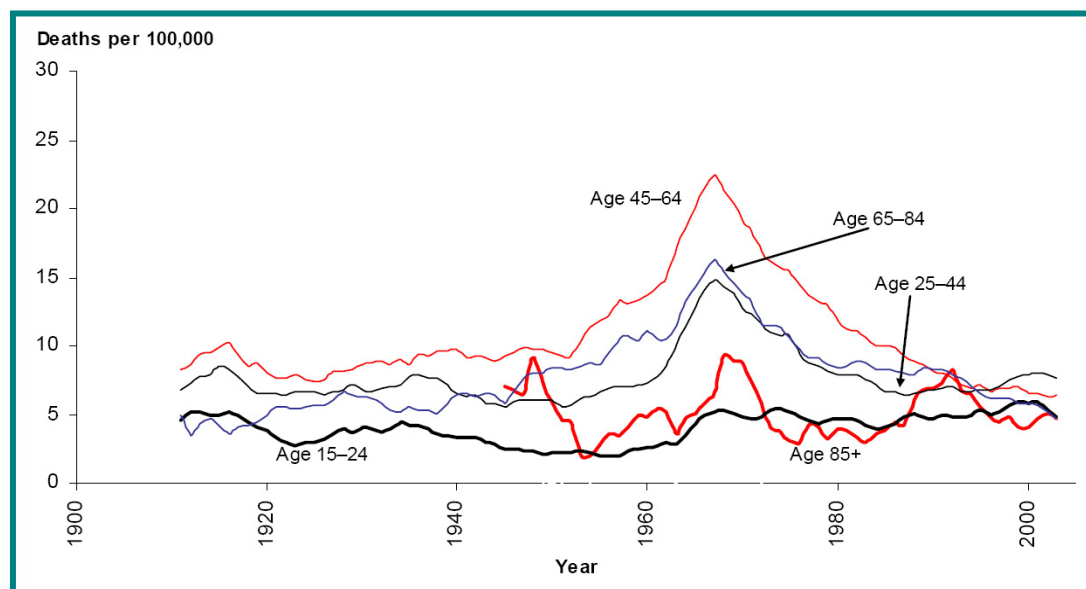
In 2006, Beautrais observed that the development of national suicide prevention plans and strategies was too recent for many of them to have been evaluated, and therefore, they had generated little information to guide their optimal use. She found that national suicide prevention strategies had proceeded largely independently, in the absence of international guidelines (although some did exist), without inter-country comparison or clear evidence of their efficacy or cost-effectiveness.^{434,438} There was evidence, however, that restricting people's access to lethal methods could reduce suicide rates. A multi-country systematic review of prevention strategies reported that there was evidence that physician education in depression recognition and treatment could also be beneficial.⁴³⁶ It concluded that more evidence of the efficacy of other intervention and program components was needed, so that the use of the limited resources dedicated to suicide prevention programs could be optimised.

5.3.1 Restricting the availability of potentially dangerous drugs

1960s onwards

In the early 1960s, suicide rates, particularly those for women and people in older age groups, accelerated in association with a high number of barbiturate poisonings.⁴³⁹ The female suicide rate, which had been fairly even at around five deaths per 100,000 population until the 1960s, rose sharply to a peak of about 13 deaths per 100,000 population (Figure 5.7 in Box 5.3).²⁵ This dramatic rise was attributed to the increased availability of prescribed barbiturates in quantities that could be lethal. After restrictions on their availability were applied in July 1967, the resulting fall in suicide rates was attributed directly to this public health response to the 'barbiturate poisoning epidemic'.⁴⁴⁰ All female age groups (Figure 5.8) showed an increase in the suicide rate, but the characteristic 'volcano-shape' - the sharp rise during the 1960s to a peak in 1967, and the subsequent fall into the 1970s - was most evident for those in the age group 25 years and above.

Figure 5.8: Arrest of the barbiturate epidemic - age-specific female suicide rates*, 1907-2003



Note: *Rates are five-year moving averages.

Source: AIHW, *Mortality over the twentieth century in Australia*, 2006, p. 75.

Initially, the observation that there had been substantial increases in the suicide rates for both men and women in Australia from 1955, led to a systematic investigation into the trend and likely causative factors. Examination revealed that the rise in female suicides from 1960 to 1967 was sharper than the rise among males, in both numbers of suicides and the proportionate increase in the rate.⁴⁴⁰ The

increases were most evident in the category of 'self-poisoning by use of therapeutic substances'. In this category, the absolute numbers of these deaths increased fourfold in males, and sevenfold in females, between 1955 and 1967.⁴⁴⁰ In 1955, 'suicide by drugs' represented seven per cent of male, and 16% of female suicides. By 1967, the proportions were 29% and 61% respectively.⁴⁴⁰

Analyses of related categories of deaths showed that, from 1960 to 1967, the increases in accidental drug deaths in adults were due to barbiturates and other sedative drugs.⁴⁴⁰ It also suggested that this category of 'accidental drug deaths' contained what were described as 'hidden suicides'. In total, it was estimated that there had been 899 drug suicides in 1967, a substantial increase over the 346 in 1961, which were already 100 more than the previous year. The number reduced to 685 in 1968, the year following restrictions on the availability of these drugs.

Public health practices

As a result of changes to the subsidisation of health care in 1960, a wide range of prescription medicines became available at a nominal set price. These included barbiturate sedatives and hypnotics, analgesics and amphetamines - at quantities of 100-300 tablets or capsules on one prescription (including repeats). Analyses showed that there was a correlation between the estimated total number of drug suicides and the number of sedative prescriptions issued on the Pharmaceutical Benefits Scheme (PBS), which was thought to represent between 80 to 90% of the total sedative supply in the community.

In July 1967, greater restrictions were placed on the prescription of barbiturates and other drugs available through the PBS. From then on, only 25 tablets of any hypnotic-strength barbiturate were able to be dispensed on a single prescription.⁴⁴⁰

Other contributing factors were pharmaceutical innovation, which had developed more effective barbiturates that were also more toxic in overdose, and the pharmaceutical practices of the day, with the subsidising of some drugs, and their aggressive marketing by pharmaceutical corporations to medical practitioners. After the prescribed amount was reduced, suicide rates from this cause started to fall over the next three years. Eventually, less toxic benzodiazepines became available, which also contributed to a reduction in suicide numbers.

Factors critical to success

Factors that were critical to the success of this initiative were elements typical of the public health cycle of observation (monitoring and surveillance), which highlighted the problem, followed by investigation to determine the cause, and whether it could be prevented, and how best to do so. Action was taken quickly, and by mid July 1967, the availability of barbiturates had been drastically curtailed by limiting the number of capsules dispensed per prescription. The decrease in the number of drug-related suicides was almost immediate and further reductions took place year by year.

The public health measure that successfully addressed this problem was to restrict the availability of potentially dangerous drugs and chemicals (including drugs of dependence) to enable their safe and effective use. Scheduling was the legal process used to achieve this. All states then adhered to the *Standard for the Uniform Scheduling of Drugs and Poisons*.⁴⁴¹ While scheduling was legally a jurisdictional matter, changes to schedules were made at a national level by the National Drugs and Poisons Schedule Committee.

Future challenges

Modern day pressures to make more drugs available to the community had to be balanced with the need to ensure that they continued to be used safely and effectively.⁴⁴¹

Box 5.5 Analgesic nephropathy – an example of limiting a potentially harmful drug

Analgesic nephropathy was a preventable cause of chronic renal failure. For nephrologists (kidney specialists), this represented an important diagnosis because it was one of the few causes of progressive chronic renal impairment that was avoidable.⁴⁴² In the 1960s, analgesic abuse (e.g., over-use of Bex and Vincent's powders) in Australia caused a fifth of all cases of end-stage renal disease requiring dialysis or kidney transplantation.⁴⁴³

'In process factories in Australia, especially in and around Newcastle, the use of Bex and Vincent's powders achieved epidemic proportions, with some women consuming as many as 30 of these powders a day. They were for women what Toohey's and Resch's pilseners were for men. This might have been regarded as a cultural habit of no consequence had it not been for the regrettable impact Bex and Vincent's had on kidneys.' P. Kincaid-Smith⁴⁴⁴

It was Priscilla Kincaid-Smith and her group in Melbourne, together with the Brisbane pathologist, A F Burry, who clearly established these compound analgesics containing phenacetin as the culprit.⁴⁴⁴ There were conspicuous geographic and regional differences in the incidence of analgesic nephropathy in Australia and across the world, and as the consumption of analgesics was partly cultural, the effect of different regulatory environments could be seen in variable rates of end-stage renal disease.^{445, 446}

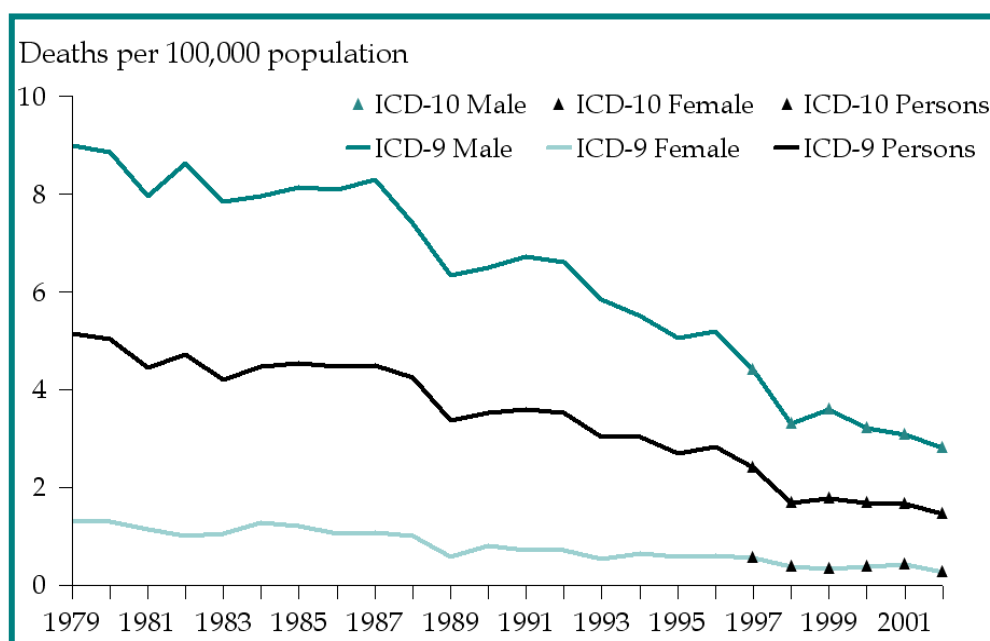
A study published in 1974 found that, in Australia, 20 to 25% of patients accepted into haemodialysis programs had analgesic nephropathy.⁴⁴⁷ After phenacetin was removed from the medications in 1967 and 1976, and legislation was enacted in 1979 banning the sale of 'over the counter' compound analgesics, there was a significant decline in phenacetin consumption.⁴⁴⁸ The legacy of analgesic nephropathy remained for decades, however, as the effects of excessive use took many years to manifest. This public health effort showed the major impact that drug regulatory environments could have on identified, but unintentional, problems arising from the widespread availability of certain potentially dangerous drugs.

5.4 Gun control and reduction in gun-related deaths

1988 onwards

From 1979-2002, suicide was consistently the most common type of firearm-related death, accounting for 77% of all firearm deaths over that period.⁴⁴⁹ Other firearm-related deaths included homicides and accidental deaths, and those of undetermined intent. For these reasons, there were strict regulations on the sale, importation, ownership, storage and handling of guns and other firearms in the Australian community. Legislative restrictions on the ownership of, and access to, firearms were acknowledged as a successful method of reducing suicide deaths by this means, and even overall suicide rates.⁴³⁴ In 2002, the rate of firearm-related deaths for Australia was less than a third of the rate it had been in 1979 (Figure 5.9).⁴⁴⁹

Figure 5.9: Firearm-related deaths, 1979–2002



Note: ICD-9 and ICD-10 are different versions of the International Classification of Disease.
 Source: Kreisfeld, *Firearm deaths and hospitalisations in Australia*, 2005, p. 3.

The marked downward trend in male firearm-related deaths preceded national gun law reforms, and indicated that other factors were at play. These included growing urbanisation and less access to guns, inter-generational declines in the ability to use firearms, and the normalising, even in rural areas, of not owning guns (e.g., less visibility because firearms were locked away and shooting skills were no longer passed on to new generations).^{434,450}

Public health practices

In 1987, after the Hoddle and Queen Street massacres in Melbourne, which resulted in the deaths of 15 people, the Australian government established a National Committee on Violence, which proposed uniform national firearm laws among its recommendations. Although two states refused to adopt a national approach at the time, Victoria tightened restrictions on semi-automatic long firearms in 1988.⁴⁵¹

In the wake of the Port Arthur massacre of 35 people in Tasmania on 26 April 1996, an agreement between Australia’s state and territory governments led to a suite of historic and radical reforms to the nation’s gun laws. The main provisions of the national gun reforms were:

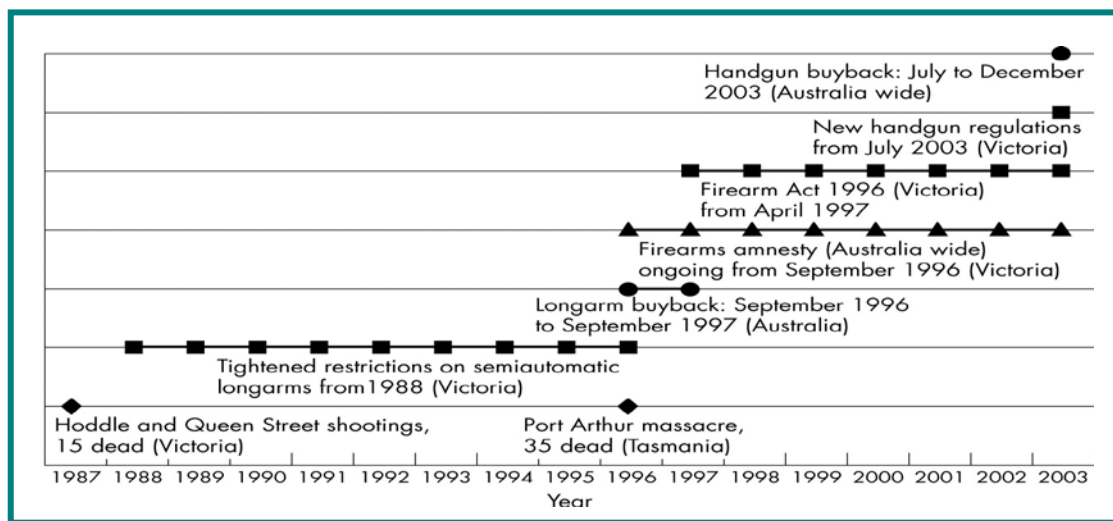
- a ban on the importation, ownership, sale, resale, transfer, possession, manufacture and use of semi-automatic and pump-action shotguns and rifles;
- a compensatory ‘buyback’ scheme, funded by an increase in the Medicare levy, which paid gun owners the market value of any prohibited guns handed in;
- the registration of all firearms, as part of an integrated shooter licensing scheme;
- shooter licensing, based on the requirement to prove a ‘genuine’ reason for owning a firearm;
- obligations to store all guns securely; and
- nationally uniform gun laws across the states and territories.⁴⁵²

The National Firearms Buyback Scheme operated for twelve months from September 1996. Over this period, 660,959 firearms were collected and destroyed nationwide, with a total compensation cost of almost \$394 million.⁴⁵²

In 1996, the Australian Police Ministers’ Council agreed to a ten-point nationwide agreement on firearms, to be implemented by each state and territory. The Victorian response, the *Firearms Act 1996*,

was implemented on 30 April 1997 (Figure 5.10).⁴⁵² Chapman documented how, in the preceding decade, reforms to the gun laws were advocated by public health, domestic violence and law reform groups.⁴⁵³ Community activism and involvement in the issue was also strong in the wake of the Port Arthur tragedy.

Figure 5.10: Timeline of various elements of the Victorian and Australia-wide interventions



Source: Ozanne-Smith et al., *Injury Prevention*, 2004, p. 280.

Both the Victorian and Australian rates of firearm-related deaths had been roughly steady from 1979. After the first Victorian reforms, however, in the period 1988 to 1995, the number of firearm-related deaths fell substantially, and by a greater proportion in Victoria (17.3%) than in the rest of Australia. A further decrease took place between 1997 and 2000, after the national reforms were implemented. Declines in firearm-related deaths for the rest of Australia occurred from 1997 (a 14.0% reduction compared with Victoria). The reduction in the rate of firearm-related suicides, in particular, was statistically significant.⁴⁵¹

Chapman highlighted the importance of the 1996 reform that banned semi-automatic and pump action shot guns.⁴⁵³ As they had the capacity to fire multiple rounds quickly, these gun types were frequently used in mass killings. After the Port Arthur tragedy, there were no mass shooting incidents (an incident in which four or more people were shot) up to 2006, whereas in the previous 18 years there were 13 mass shootings, in which 112 people were killed and another 52 people were injured.⁴⁵³

'The Australian Firearms Buyback remains the world's most sweeping gun collection and destruction program. A combination of laws making semiautomatic and pump-action shotguns and rifles illegal, paying market price for surrendered weapons, and registering the remainder were the central ingredients.' - Chapman et al., 2006.⁴⁵³

In Australia, the public health response included legislation and regulation, and, in some cases, restrictions on the sale, importation, ownership, storage and handling of guns and other firearms in the community. The comparison of Victoria with the rest of Australia showed dramatic declines in the rates of firearm-related deaths for the 22 years between 1979 and 2000, against a background of strong legislative reform. Earlier legislative reform in Victoria was associated with more rapid initial declines in that state, before the 'catch up' by the rest of Australia after nation-wide regulation. There were also declines in household ownership of firearms, firearm licences, and licensed shooters after the national firearms buyback scheme was implemented. Changes were coupled with considerable publicity, unprecedented community awareness, and accompanying advocacy for gun control reform from anti-gun groups and the community. State and territory governments entered into the National Handgun Control Agreement in the wake of a further multiple-person shooting at Monash University in Victoria in 2002.

Although it appeared likely that other changes in background factors (such as improved emergency medical responses and treatment) were also important, the reform of gun laws and tightening of gun

controls had a demonstrable impact on reductions in firearm-related deaths. Later analyses of the period 1979 to 2003 showed statistically significant declines in firearm suicides, and in total firearm deaths, after the introduction of the gun reform laws. The decline in the non-firearm suicide death rate after the gun law reforms did not support claims of 'method substitution' in suicides (e.g., the substitution of other methods - such as poison - for the use of firearms).⁴⁵⁴

Factors critical to success

The decline in gun deaths, after the gun buy-back scheme and reforms of gun ownership laws, was a public health success and was celebrated as such by the NSW Public Health Forum in 2003.⁴⁵⁵ This initiative exemplifies the injury prevention principle of limiting the availability of methods of suicide and self-harm.⁴⁰¹

Survey respondent: 'The Gun Control legislative changes [were a public health success] - after Port Arthur, the Coalition for Gun Control led by Rebecca Peters forced unparalleled changes in legislation to reduce gun deaths'.

The (then) Prime Minister, The Hon. John Howard, stated that 'we were able to persuade the states to pass very tough gun control laws because this [was] a state matter'. Each state passed their own legislation with various amendments, such as introducing minors' permits. The figures 'showed a very sharp drop in gun-related deaths. So it [was] unarguably the case that these laws saved lives'.

Incontrovertible evidence that reductions in firearm-related deaths were attributable to changes in legislation and regulation of firearms came from a study by Ozanne-Smith and colleagues, who compared the state of Victoria with Australia as a whole.⁴⁵¹

'Dramatic reductions in overall firearm-related deaths and particularly suicides by firearms were achieved in the context of the implementation of strong regulatory reform.' – Ozanne-Smith et al., *Injury Prevention, 2004, p. 280.*⁴⁵¹

Future challenges

Ozanne-Smith and colleagues speculated about whether the very low rate of firearm-related fatalities achieved in Australia by the year 2000 (less than 2 per 100,000 population) meant that 'vision zero' - the total elimination of firearm-related fatalities - was achievable.⁴⁵¹

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