



**A U S T R A L I A N**  
**Injury Prevention**

*Bulletin*



NATIONAL INJURY SURVEILLANCE UNIT

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# Injury Mortality Australia

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# All injury deaths, Australia 1997

## Key indicators of all injury related deaths, Australia 1997

Indicator	Males	Females	Persons
<b>Cases</b>	5393	2344	7737
<b>Injury and poisoning deaths as % of all deaths</b>	8.2%	3.9%	5.9%
<b>Crude rate/100,000 pop</b>	58.50	25.17	41.75
<b>Age standardised rate/100,000 pop</b>	59.69	22.29	40.70
<b>Change in age adj. rate since 1996</b>	-2.43%	8.44%	0.47%
<b>Average years potential life lost (YPLL) before age 75 years</b>	34	24	31

## Overview

Of the 129,350 deaths from all causes registered in 1997, 7,737 (6%) were the result of an external cause of injury or poisoning, comprising 5,393 males and 2,344 females. There was an increase of less than 1% in the age-standardised death rate from all external causes of injury and poisoning, from 40.5 deaths per 100,000 in 1996 to 40.7 in 1997. The age-standardised rate rose for females by almost 9% while the rate for males fell by almost 3% over 1996. Overall, in the ten years from 1988 to 1997 the age-standardised death rate due to all external causes of injury and poisoning fell by 21% from 52 external caused deaths per 100,000 population in 1988 to 41 per 100,000 in 1997.

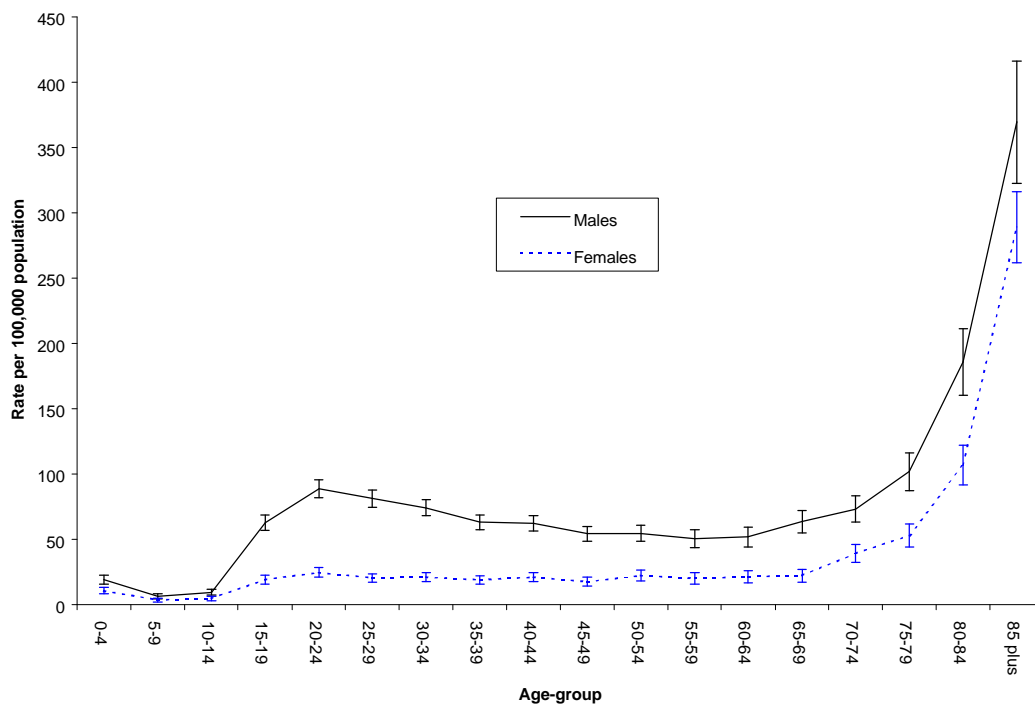
Injury and poisoning is the leading cause of death for persons aged 1-44 years. It accounted for 47% (n=4,218) of all deaths in this age group (n=8,997) in 1997. Of the 4,218 injury and poisoning deaths occurring amongst people aged 1-44 years, 77% (n=3,252) were young males.

Injury and poisoning was the sixth leading cause of death in 1997 behind malignant neoplasms, ischaemic heart disease, cerebrovascular disease, chronic obstructive pulmonary diseases and pneumonia and influenza. The impact of injury at young ages is reflected in the average of 31 years of potential life lost (YPLL) before age 75 years due to each injury or poisoning death compared with 9 YPLL for cancer and 5 YPLL for ischaemic heart disease.

## Major types of injury deaths

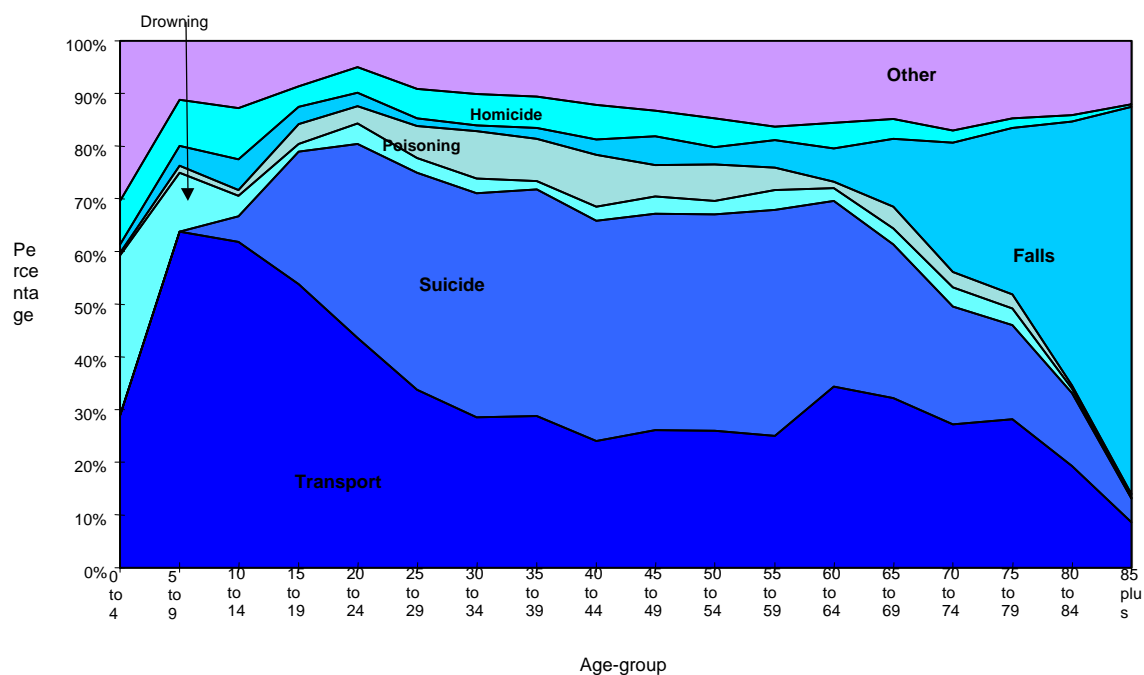
### Age and sex distribution

- Male injury death rates were much higher than female rates for all age groups, with male rates being on average around two and a half times higher than female death rates. Males aged between 20 and 34 years were almost 4 times more likely to die as a result of an external injury than females in the same age range.



**Figure 1: Age-specific rates of injury deaths from all causes, by sex, Australia 1997**

- The proportion of different types of injury deaths vary with age. Drowning was prominent in the early childhood years, transport related deaths and suicide have high rates among young adults and falls accounted for a large proportion of the deaths among the elderly.
- Injury rates were highest for old age (75 plus years), with falls (n=789), transport (n=205) and suicide (n=139) accounting for the largest number of deaths for persons aged 75 or more years.
- There were 598 “other” unintentional deaths registered in 1997. This category comprises accidental deaths as a result of various causes and spans all age groups. 7% of these unintentional deaths occurred to children aged 0 to 4 years (n=41) with choking (n=8) and mechanical suffocation (n=17) being the major causes. Six children also died as a result of being struck by a falling object. 62% of unintentional deaths occurred to people aged between 15 and 64 years (n=370). Machinery accidents (n=55), electrocutions (n=41) and being struck by a falling object (n=40) were amongst the most common causes of unintentional deaths in this age range. 28% of unintentional accidents occurred to people aged 65 or more years (n=73). Choking, food and non-food (n=51) and machinery accidents (n=6) accounted for majority of unintentional deaths in this age group.



**Figure 2: Proportions of major types of injury deaths by age-group, Australia 1997**

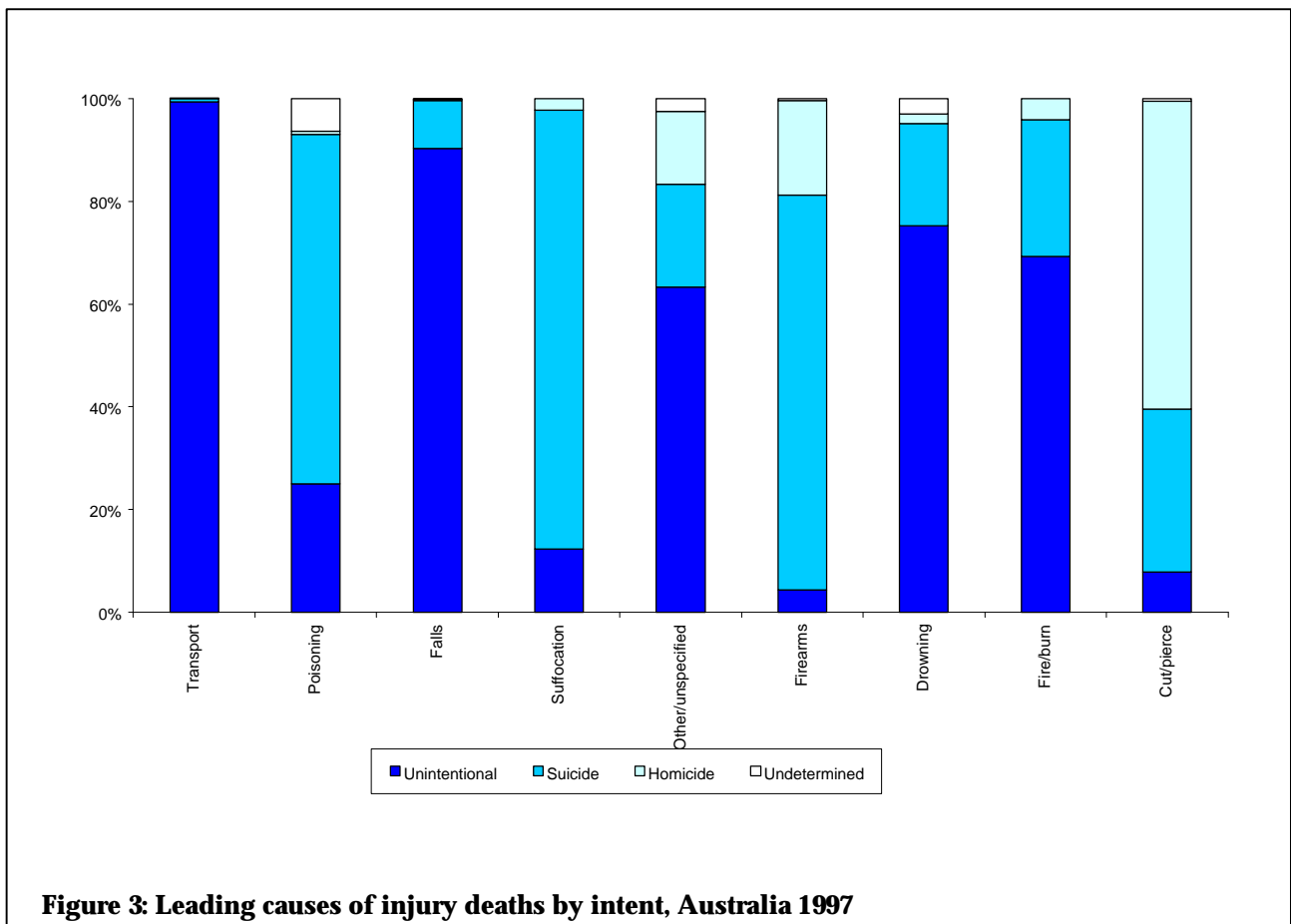
## Causes and intent

**Table 1: Number of injury deaths by intent, Australia 1996**

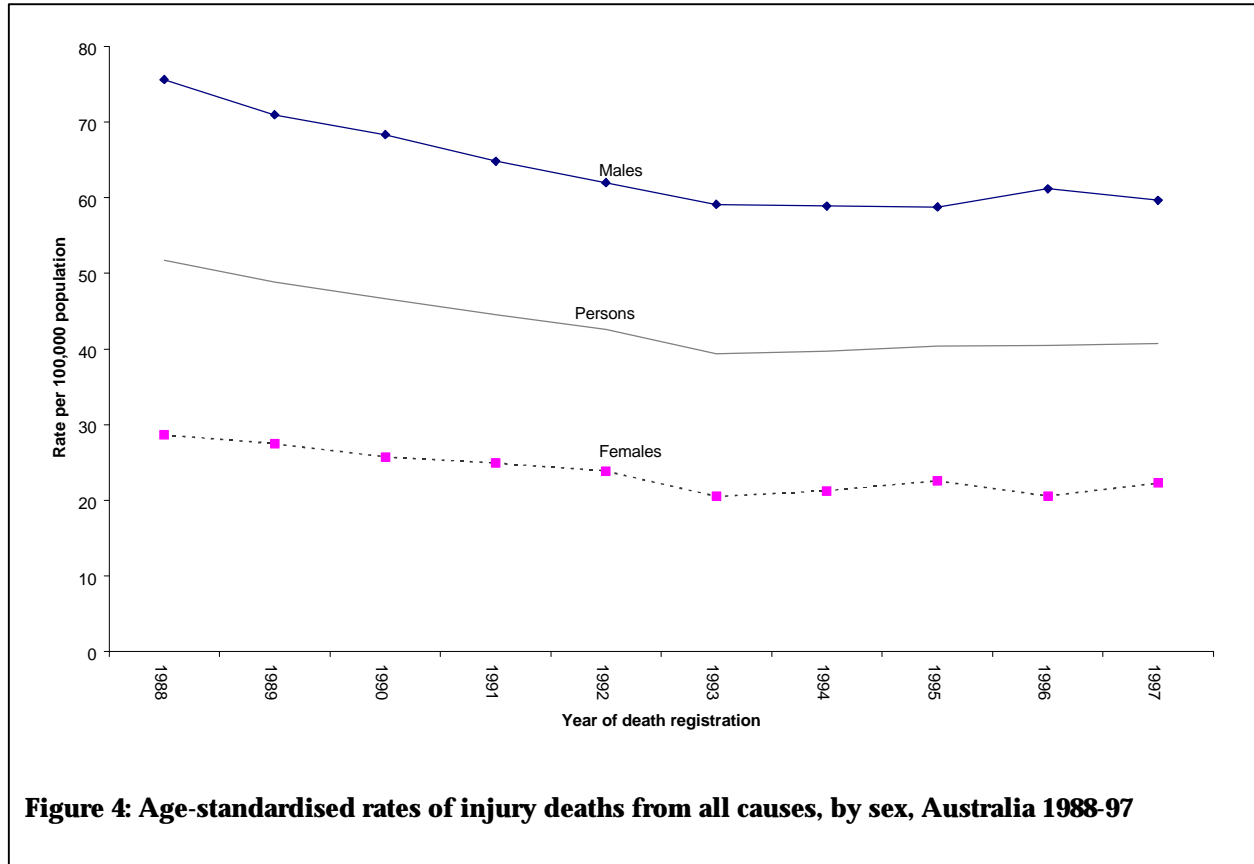
External cause	Unintentional	Suicide	Homicide	Undetermined	Total
<b>Transport</b>	2028	13	2	0	2043
<b>Poisoning</b>	360	980	10	92	1442
<b>Falls</b>	1125	116	2	3	1246
<b>Suffocation</b>	142	987	27	0	1156
<b>Other/unspecified</b>	421	133	96	17	667
<b>Firearms</b>	19	330	79	2	430
<b>Drowning</b>	276	73	7	11	367
<b>Fire/burn</b>	99	38	6	0	143
<b>Cut/pierce</b>	13	53	100	1	167
<b>Total</b>	4483	2723	327	126	7661

Note: Deaths due to 'Medical misadventure' and 'Adverse effects' (n=69) & 'Legal intervention' (n=7) are not included in the table.

- 58% of externally caused injury deaths in 1997 were classified as unintentional (n=4,483), 35% were suicides (n=2,723) and 4% were homicides (n=327).
- Transport related deaths (26%), poisoning (19%), falls (16%), suffocation and strangling (15%), firearm related deaths (6%) and drowning (5%) were the major leading causes of injury deaths in Australia in 1997, accounting for 87% of all injury deaths.
- An analysis of cause by intent presents an interesting overview of externally caused deaths in Australia. Transport related deaths were almost all unintentional (n=2,028), with a further 0.5% being classified as suicide (n=13). In contrast, only 25% of deaths due to poisoning were classed as unintentional (n=360) and 68% being classed as suicide (n=980). Of the 1,156 deaths due to suffocation or strangulation only 12% were unintentional (n=142), 85% were suicide (n=987) with the remainder being the result of an assault.
- 6% of all firearm deaths were classified as unintentional (n=19), with the majority (76%) being the result of suicide (n=330) and a further 18% were classified as homicides (n=79).

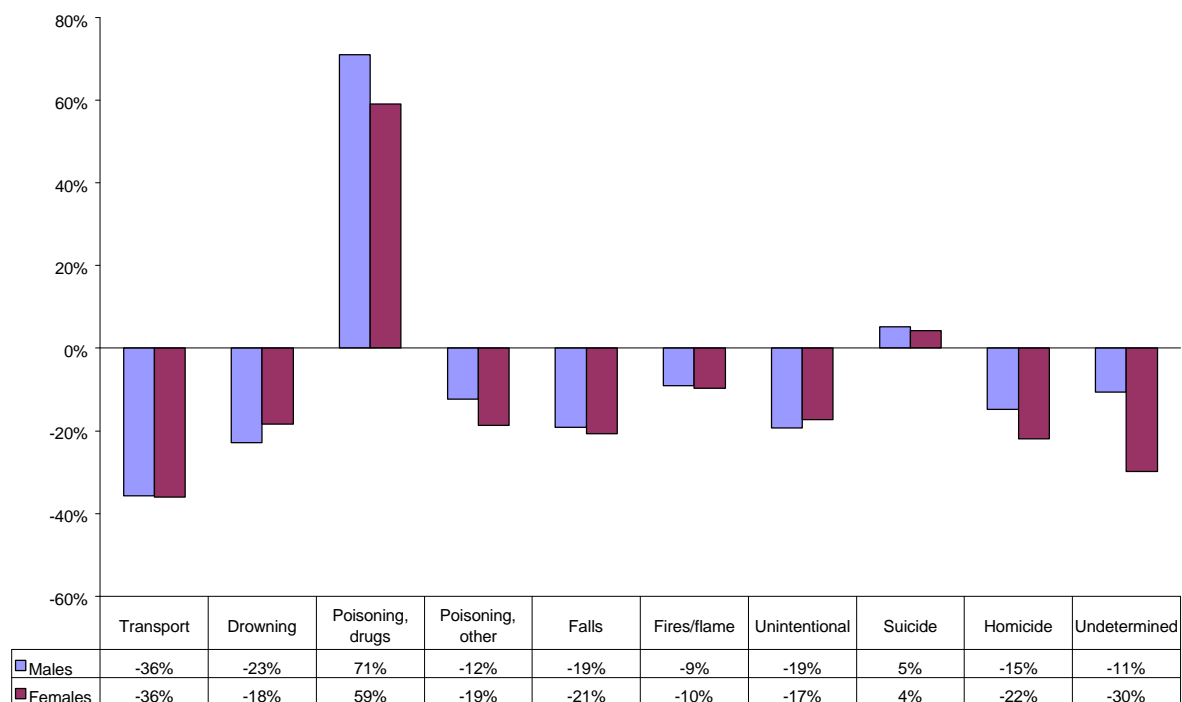


## Trends in death rates



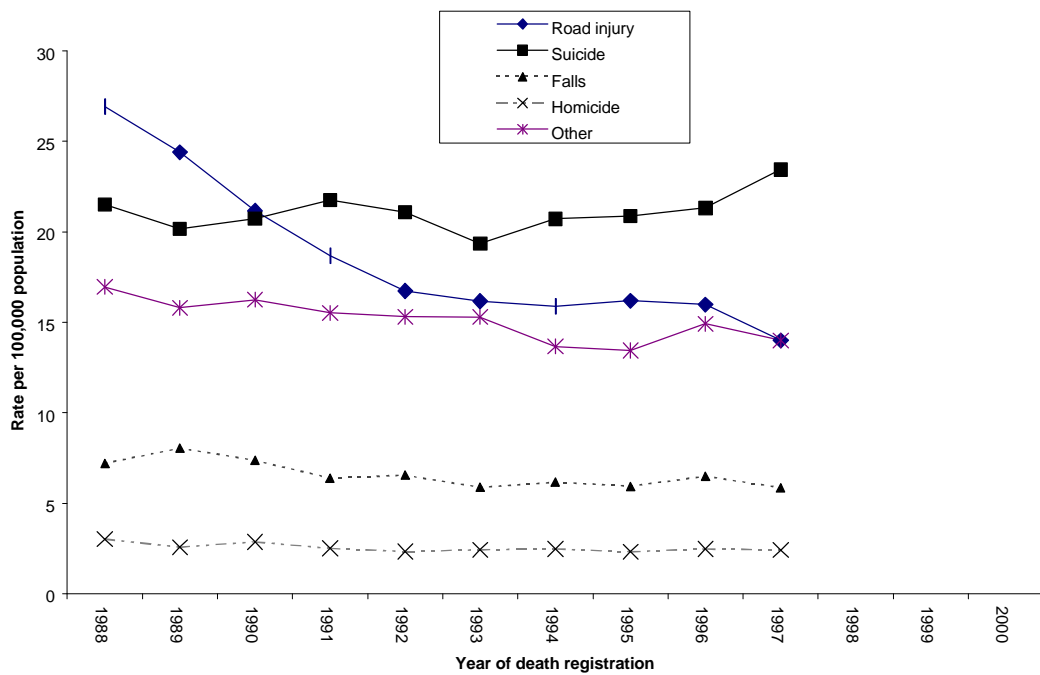
**Figure 4: Age-standardised rates of injury deaths from all causes, by sex, Australia 1988-97**

- Overall, injury death rates fell by 17% from a three year average of 49.1 deaths per 100,000 in the period 1988/90 to 40.5 deaths per 100,000 in the three year period 1995/97.
- From figure 5 it can be seen that, except for poisoning by drugs and other medicaments and suicide, injury death rates fell for all major cause categories. Transport related deaths showed the greatest improvement falling by 36% for both males and females. Drowning related deaths (-21%), homicide (-18%) and other unintentional deaths (-19%) all showed marked improvements in death rates over the ten year period 1988 to 1997.
- Of note has been the large increase in the number of deaths attributed to accidental poisoning by drugs and other medicaments. In the three year period 1988/90 there were 501 deaths registered at an average 3 year rate of 1 per 100,000 population. This figure almost doubled to 910 deaths in the three years 1995/97 for a 3 year average rate of 1.65 deaths per 100,000.

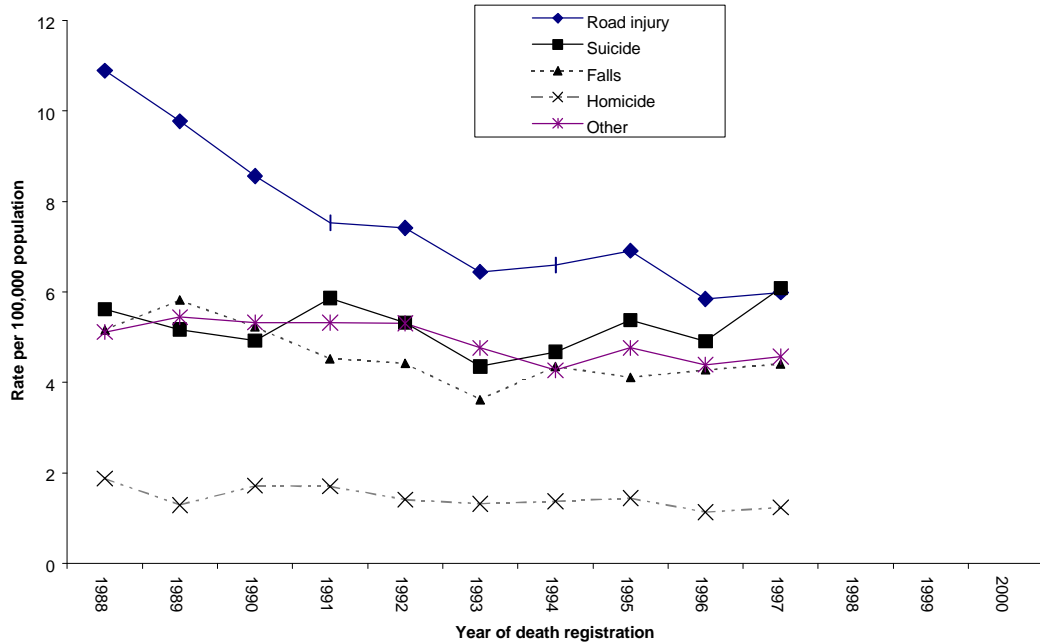


**Figure 5: Average 3 year annual percent change in injury death rates for major injury groups, Australia, 1988/90 & 1995/97**

- The number of deaths registered as suicide has also increased over the ten years from 1988 to 1997. In the three years 1988/90 there were 6,454 suicides at a 3 year average rate of 12.87 suicides per 100,000 population. This increased to 7,483 suicides for the three years 1995/97 at a 3 year average rate of 13.54 suicides per 100,000. Suicide has now replaced transport related accidents as the major cause of injury related deaths in Australia.
- Figures 6(a) and (b) present the ten year trends for males and females. The decline in road injury death rates for both males and females is evident, but this downward trend for road injury is offset by the rise in suicide rates. For males it can be seen that suicide took over from road injury as the major external cause of death around 1990. For females, the 24% rise in suicide rates from 4.91 suicides in 1996 to 6.08 suicides per 100,000 in 1997 suggests that suicide is set to overtake road injury as the major cause of external deaths for females also.
- Overall, female injury death rates rose in 1997. In contrast the injury death rate for males fell slightly overall, and in all charted categories except suicide.



**Figure 6(a): Trends in major injury death rates for Males, Australia, 1988 to 1997**



**Figure 6(b): Trends in major injury death rates for Females, Australia, 1988 to 1997**

**Table 2: Major types of injury deaths by age group, persons, Australia 1997 (number and rates per 100,000 population)**

		Age groups (years)									Age standardised rate
		0-4	5-9	10-14	15-24	25-34	35-54	55-64	65-74	75 plus	
Transportation	Cases	56	31	47	558	388	466	147	167	154	2014
	Rate	4.33	2.36	3.58	20.92	13.47	8.89	9.33	12.89	16.22	11.00
Drowning	Cases	59	12	6	41	38	73	17	19	9	274
	Rate	4.57	0.91	0.46	1.54	1.32	1.39	1.08	1.47	0.95	1.50
Poisoning, drugs and other medicaments	Cases	1	1	1	37	93	140	15	16	11	315
	Rate	*	*	*	1.39	3.23	2.67	0.95	1.23	1.16	1.69
Poisoning, other substances	Cases	0	0	0	9	10	16	2	5	3	45
	Rate	*	*	*	0.34	0.35	0.31	*	0.39	*	0.24
Falls	Cases	4	4	3	18	16	58	37	114	871	1125
	Rate	0.31	0.30	*	0.67	0.56	1.11	2.35	8.80	91.76	5.13
Fires/flame/scalds	Cases	13	2	1	5	17	15	14	13	30	110
	Rate	1.01	*	*	0.19	0.59	0.29	0.89	1.00	3.16	0.57
Other unintentional	Cases	41	7	12	58	72	179	61	62	106	598
	Rate	3.17	0.53	0.91	2.17	2.50	3.41	3.87	4.78	11.17	3.10
Intentional self harm	Cases	0	0	15	510	655	943	235	193	172	2723
	Rate	*	*	1.14	19.12	22.74	17.98	14.92	14.89	18.12	14.63
Intentional, inflicted by another	Cases	14	8	7	61	83	117	20	14	12	336
	Rate	1.08	0.61	0.53	2.29	2.88	2.23	1.27	1.08	1.26	1.82
Undetermined intent	Cases	2	0	0	23	40	46	7	3	5	126
	Rate	*	*	*	0.86	1.39	0.88	0.44	*	0.53	0.68
Medical misadventure, complications, etc	Cases	3	0	0	0	2	11	10	18	25	69
	Rate	*	*	*	*	*	0.21	0.63	1.39	2.63	0.34
All causes	Cases	193	65	92	1320	1414	2064	565	624	1398	7735
	Rate	14.94	4.94	7.01	49.49	49.10	39.36	35.87	48.15	147.27	40.70

Note: Shaded cells represent age-specific and age-standardised rates per 100,000 population  
Rates based on counts of 3 or less have large standard errors and are replaced with '\*'

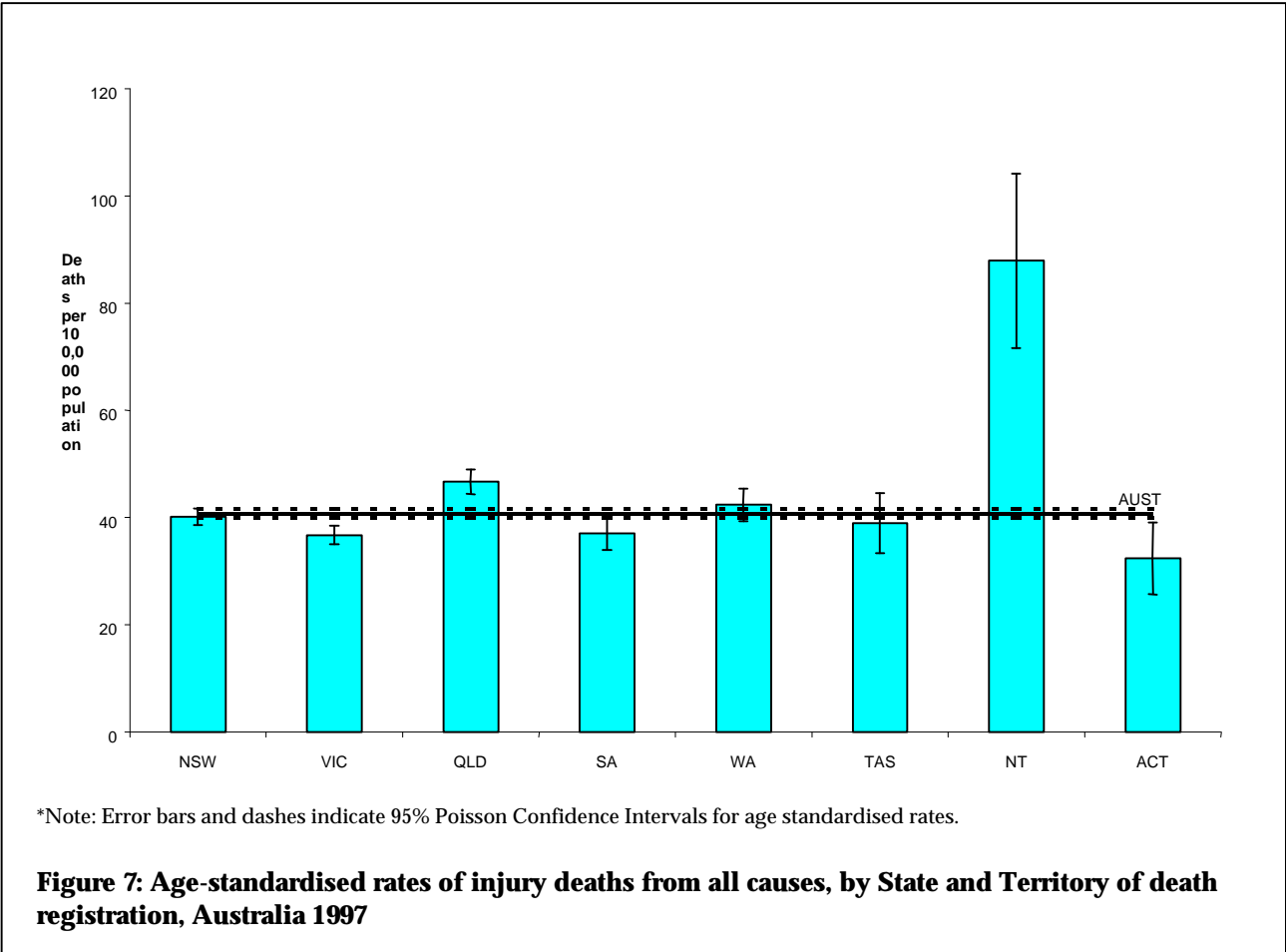
### State and Territory differences

**Table 3: Injury deaths from all causes, by sex and state and territory, Australia 1997.**

	Males		Females		Persons	
	Number	Age-adj. rate	Number	Age-adj. rate	Number	Age-adj. rate
<b>NSW</b>	1791	58.66	813	22.34	2604	40.08
<b>VIC</b>	1228	54.33	530	19.86	1758	36.73 <sup>a</sup>
<b>QLD</b>	1131	68.39	471	25.22	1602	46.69 <sup>a</sup>
<b>SA</b>	403	55.07	171	19.53	574	37.05
<b>WA</b>	534	61.25	226	23.28	760	42.39
<b>TAS</b>	136	59.90	55	19.49	191	38.92
<b>NT</b>	111	116.77	43	54.90	154	87.88 <sup>a</sup>
<b>ACT</b>	59	39.99	35	23.46	94	32.37
<b>AUST</b>	5393	59.69	2344	22.29	7737	40.70

Deaths per 100,00 age & sex specific population

<sup>a</sup> These rates differ significantly from the Australian rate (95% confidence intervals assuming Poisson distribution).



- To overcome the large year to year fluctuations that are observed as a result of small numbers in the less populous States and Territories, a three year average injury death rate was calculated for each State and Territory. Overall, all States and Territories recorded falls in injury death rates. The largest fall was recorded by the NT which fell 30% from a 3 year average of 138 injury deaths per 100,000 for the period 1988/90 to 96 injury deaths per 100,000 for the 3 year period 1995/97. Other States which recorded large drops include Victoria down 26% and NSW down 19%. Western Australia had the smallest fall, down 5% from 45 injury deaths per 100,000 for the period 1988/90 to 43 injury deaths per 100,000 for the 3 year period 1995/97.
- The large fall in injury death rates recorded in the NT was due largely to decreases in transport related deaths, down 34% from 60 to 40 deaths per 100,000, homicide (-36%), falls (-23%) and suicide (-10%).

# Data issues

## 1. Data sources

Deaths data are from the Australian Bureau of Statistics (ABS) mortality unit record data collection, 1979-97. Population data are based on ABS estimates of resident population as at 30 June 1997.

## 2. Case definition

The cause of each death registered in Australia is classified by the ABS according to the International Classification of Diseases (ICD). The 9th revision (ICD9) has been used for death registrations beginning in 1979. All deaths given an ICD9 "External Cause" code by the ABS are included in this Bulletin.

Data are presented according to the year in which deaths were registered. Nine percent of deaths registered in 1997 occurred in an earlier year. A similar proportion of deaths which occurred in 1997 will not have been registered until after 1998. Information on these cases is not yet available. State-specific data are presented on the basis of the state or territory in which death was registered. This is normally the one in which death occurred.

## 3. Age adjustment

Most all-ages rates have been standardised to overcome the effect of differences in the proportions of people of different ages (and different injury risks) in the populations that are compared. Direct standardisation was employed, taking the Australian population in 1991 as the standard.

## 4. Confidence intervals

All (or nearly all) deaths are registered, so sampling errors do not apply to these data. However, the time periods used to group the cases (ie. calendar years) are arbitrary. Use of another period (eg. July to June) would result in different rates. Where case numbers are small, the effect of chance variation on rates can be large. Confidence intervals (95%, based on a Poisson assumption about the number of cases in a time period) have been placed around rates as a guide to the size of this variation. Chance variation alone would be expected to lead to a rate outside the interval only once out of 20 occasions. An extreme rate in a single period of enumeration should not be ignored simply because of a wide confidence interval - a time series may show such a rate to be part of a more significant pattern.

## 5. Time series

Time trends have been presented for the period 1988 to 1997. Australian deaths data have been classified according to the 9th revision of the International Classification of Diseases (ICD9).

## 6. Cause code aggregations

NISU statistical publications make use of standard aggregations of the ICD9 external cause (E-code) classification. The E-code equivalents of most groups presented in this Bulletin are noted in the text.

## 7. Data reliability

The chief question concerns the reliability of information about type of injury death. This depends principally on the information available in coroner's records, and on the reliability of the application of ICD9 E-codes, generally based on that information. Little empirical information is available. There is considerable potential for factors to do with information recording or coding to affect data in different ways for different states and territories. Hence, apparent differences between jurisdictions should be interpreted with caution. Beginning with 1993 registrations, coding has been centralised at the Brisbane office of the ABS.

## References

1. Australian Institute of Health and Welfare and Commonwealth Department of Health and Family Services 1997. *First report on National Health Priority Areas, 1996.*

## Communications

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