

**Falls by the elderly in
Australia:
Trends and data for 1998**

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Falls by the elderly in Australia: Trends and data for 1998

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1 Introduction

One thousand and fourteen elderly people were recorded as dying from accidental falls in Australia in 1998. With hospitalisations of fall-related injuries in the elderly accounting for 45,069 episodes of care in financial year (FY)1997–98, and the total number of elderly persons aged 65 years and above increasing by 17% (n=331,033) between 1991 and 1998, prevention of falls in the elderly remains a major public health issue. Mathers and Penm (1999) estimated the cost to the health system of fall-related injuries in the elderly (aged 65 and above) to be \$406.4 million in FY1993–94.

This report presents a summary of hospital separations for accidental falls reported during FY1997–98 and deaths from accidental falls registered in 1998. It also reviews trends in hospital separations from FY1993–94 to FY1997–1998 and deaths from accidental falls from 1979–98.

Data issues are discussed in Section 4.

2 Hospitalisations due to accidental falls

This section describes hospitalisations due to accidental falls in people aged 65 years and above during the financial year (FY) 1997–98. Cases that had the following criteria were selected for inclusion in this section:

- Principal Diagnosis is in the range 800–999 (Chapter 17 ‘Injury or Poisoning’ codes);
- E-code categories of E880–E888 (External cause was an ‘Accidental fall’); and
- Length of stay which was not ‘same day’ (i.e. the person needed to have stayed in hospital at least one night).

These cases will be referred to as ‘hospitalisations due to accidental falls’. Note that the values in this section refer to episodes in acute care hospitals, not incident cases. A more detailed discussion of how cases were selected for hospital in-patient separations is presented in Section 4 Data Issues.

Hospitalisations due to accidental falls accounted for 45,069 episodes of hospital care in people aged 65 years and above, which was 54% of all injury-related hospitalisations for this age group (n=82,724 cases). With the ageing of the Australian population and an increasing life expectancy, it is expected that the growth in the size of the population at risk will result in increasing cases numbers, especially in the oldest (i.e. highest-risk) age group. Evidence for this can be seen in past trends, shown in Figures 6 and 7.

In FY 1997–1998, the female to male ratio of hospitalisations due to accidental falls in people aged 65 years and above was 3:1.

Table 1: Hospitalisations due to accidental falls in people aged 65 years and above in Australia during financial year 1997–98

Indicator	Male	Female	Persons
Number of episodes of hospital care reported	11,315	33,754	45,069
Per cent of all injury hospital separations reported in 65+ age group	46	64	54
Crude rate/100,000	1,144.8	2,655.1	1,994.5
Adjusted rate/100,000*	1,201.9	2,271.7	1,848.7

* Adjusted by direct standardisation taking the Australian population in 1991 as the standard.

In Figure 1, age-specific rates of hospitalisations due to accidental falls in people aged 65 years and above are presented for both sexes. Data for this figure are tabulated in Appendix 1, Table A1.1.

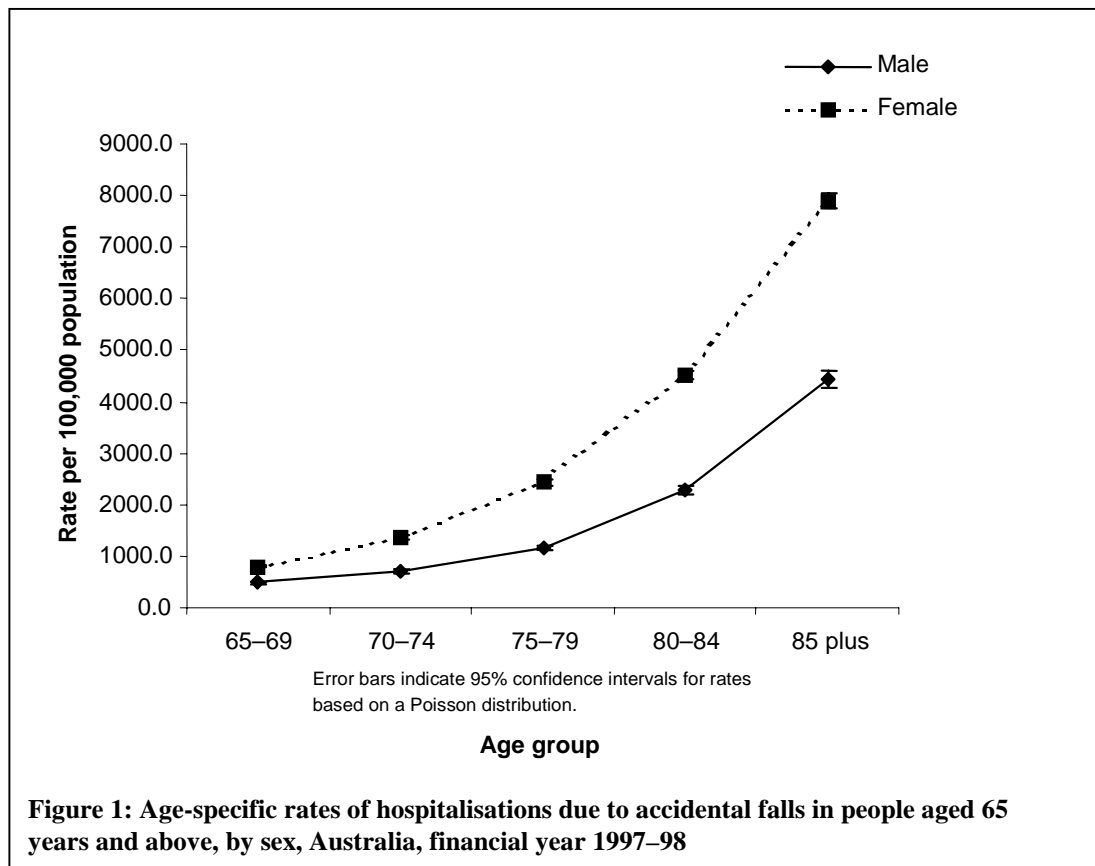


Figure 1 shows that:

- Female hospitalisation rates are significantly higher than male rates at all ages.
- Rates for both sexes increase exponentially with age, with about a 9-fold increase in the rate in males and females between ages 65 years and 85 plus years.
- Between age groups 80-84 years and 85 years and above, the rate of hospitalisations due to accidental falls doubles for males and increases by about 74% for females.

External causes of hospitalisations due to accidental falls in the elderly

Accidental falls external causes (E880–E888) accounted for 45,069 hospitalisations due to injury in people aged 65 years and above in financial year 1997–98. The mechanism or factor responsible for the fall-related injury was reported in 56 per cent (n=25,177) of the cases and were coded to E-code categories E880–E886. Case numbers and rates for male and female external causes of hospitalisations due to accidental falls are tabulated in Table 2.

Table 2: External causes of hospitalisations due to accidental falls in people aged 65 years and above: case counts and crude rates by sex, Australia, financial year 1997–98

Accidental falls	E-code	Male		Female		Persons	
		Count	Rate	Count	Rate	Count	Rate
Fall on or from stairs or steps	880	652	66.0	1,837	144.5	2,489	1,10.1
Fall on or from ladders or scaffolding	881	502	50.8	199	15.7	701	31.0
Fall from or out of building or other structure	882	134	13.6	52	4.1	186	8.2
Fall into hole or other opening in surface	883	25	2.5	37	2.9	62	2.7
Other fall from one level to another	884	1,156	117.0	2755	216.7	3,911	1,73.1
Fall on same level from slipping, tripping, or stumbling	885	3,921	396.7	13,704	1,077.9	17,625	780.0
Fall on same level from collision, pushing, or shoving, by or with another person	886	50	5.1	153	12.0	203	9.0
Fracture, cause unspecified	887	372	37.6	1,335	105.0	1,707	75.5
Other and unspecified fall	888	4,503	455.6	13,682	1,076.2	18,185	804.8
All accidental falls		11,315	1,144.8	33,754	2,655.1	45,069	1,994.5

Table 2 shows that:

- Thirty-nine per cent (n=17,625) of the cases admitted that had an E-code in the range E880–E886 were due to injuries sustained from a fall on the same level (from ‘slipping, tripping, or stumbling’; E885).
- Injury from falling on stairs or steps (E880) and falling from one level to another (E884) was common in both sexes but particularly women. Together, these E-codes accounted for 14% (n=6,400) of cases.
- Males were particularly at risk of injury from falls that could be associated with ‘handy man’-type of activities during their retirement years (E881 and E882).
- Females had a 2.8 times higher risk of fracture based on external cause category E887 ‘Fracture, cause unspecified’ than males (105.0 versus 37.6 separations per 100,000 population).
- Forty-four per cent (n=19,892) of hospitalisations due to accidental falls were coded to external causes E887 and E888. These categories provide no information about how the fall occurred and thus do not help to identify risks or assist in the development of countermeasures to decrease the risk of falls in elderly people.

Place of occurrence of accidental falls

Exposure to conditions that increase risk of falling in elderly people, particularly during daily activities, can provide a focus for interventions to decrease the incidence of falling in different settings. Such conditions are tabulated in Table 3.

Table 3: Place of occurrence of accidental fall resulting in hospitalisation in people aged 65 years and above: case numbers by age and sex, Australia, financial year 1997–98*

Place of occurrence	65–69		70–74		75–79		80–84		85 plus		Ages 65 plus	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Home	606	1,113	824	1,901	973	2,911	1,097	3,733	1,299	5,289	4,799	14,947
Farm	10	9	17	6	11	20	14	26	12	37	64	98
Mine and quarry	1	2	0	1	1	1	3	1	0	1	5	6
Industrial place	18	8	4	7	6	7	3	13	4	10	35	45
Place of recreation/sport	23	42	19	43	16	43	11	32	13	25	82	185
Street/highway	55	111	71	199	89	222	72	214	80	187	367	933
Public building	69	118	91	195	82	223	79	248	54	210	375	994
Residential institution	81	87	159	266	252	587	347	1,180	555	2,677	1,394	4,797
Other/not specified (including 'system missing')	627	1,036	651	1,429	636	1,725	609	1,866	655	2,387	3,178	8,443
All places	1,490	2,526	1,836	4,047	2,066	5,739	2,235	7,313	2,672	10,823	10,299	30,448

* South Australia not included

In Table 3, it should be noted that:

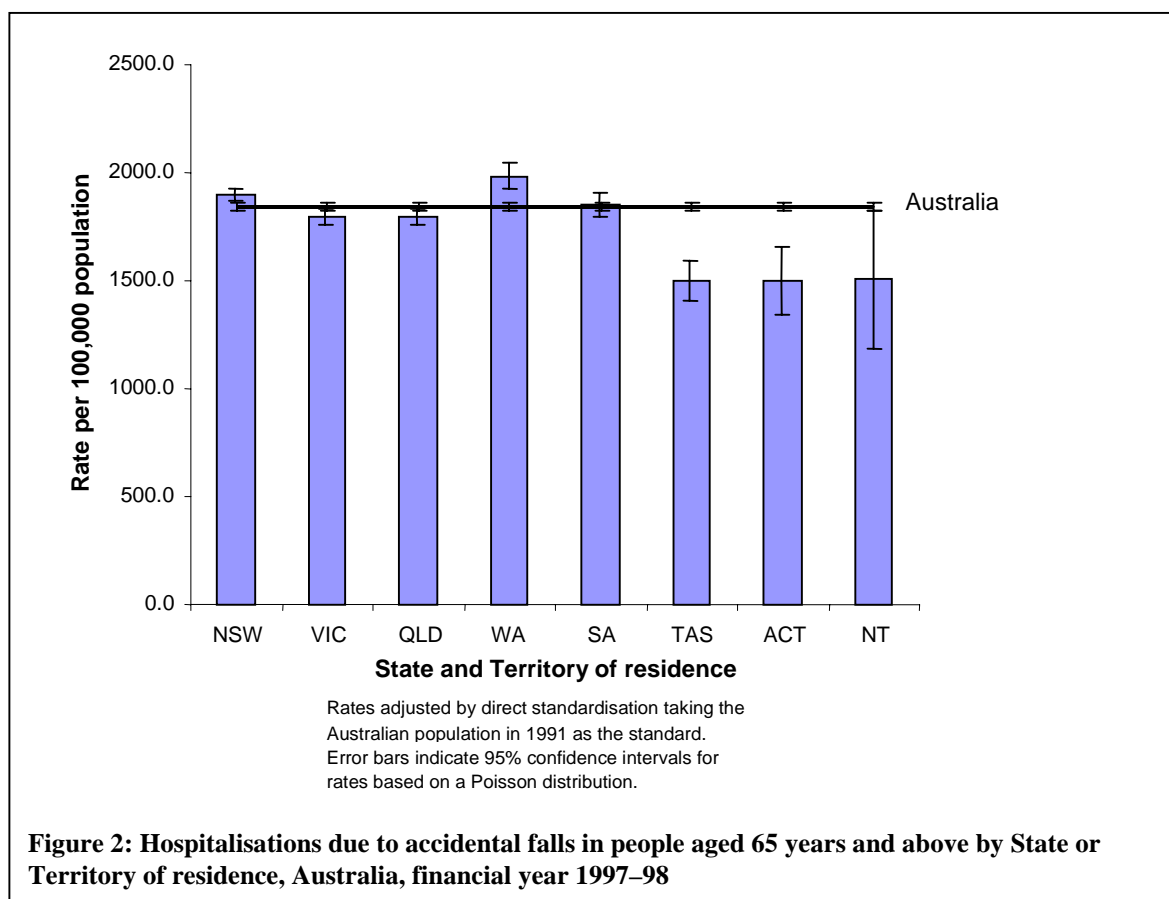
- Data from South Australia have not been included due to an error in coding 'Place of occurrence' in that state. Consequently, this table describes the place of occurrence of 40,747 cases of falls (male and female cases aged 65 years and above) out of a total of 45,069 falls Australia wide.

In Table 3, it can be seen that:

- Forty eight per cent (n=19,746) of accidental falls represented in this table that lead to hospitalisation occurred in the home.
- The number of hospitalisations due to accidental falls in the home increased with age for both males and females. It increased 2.1 times in males and 4.8 times in females between age groups 65–69 years and 85 years and above.
- The ratio of male to female hospitalisations due to accidental falls in the home (1:3.1) and in residential institutions (1:3.4) were similar, but in the oldest age group (85 years and above), proportionally more females than males were injured in residential institutions than at home (4.8:1 versus 4.1:1). This may reflect more females than males being of this age, where it is more likely that they will be residing in residential institutions.
- Hospitalisations due to accidental falls that occurred in streets or highways and in public buildings were fewer than such falls in the home (6.6%, n=2,669 versus 48%, n=19,746).

States and Territories

Age-adjusted rates of hospitalisations due to accidental falls in people aged 65 years and above by State or Territory of residence are presented in Figure 2 and in Appendix 1, Table A1.2.



It is evident from Figure 2 that:

- Rates in New South Wales, Victoria and South Australia were not significantly different from the national rate of 1,841.8 (95% CI=1,824.8 to 1,858.8).
- The rate in Western Australia (2,017.9 [95% CI = 1,955.8 to 2,080.0] hospitalisations per 100,000 population) was significantly higher than the rates in all other States and Territories.
- The rates in Queensland, Tasmania, the Australian Capital Territory, and the Northern Territory (1,783.8, 1492.1, 1,312.8, and 1,342.5, respectively) were lower than the national rate. The rates in the latter three were lower than the rates in all other States. It should be noted that data were not supplied from three small district hospitals, two private free-standing day hospitals and one recently privatised hospital in Tasmania, the private free-standing hospital in the Australian Capital Territory and the one private hospital in the Northern Territory. These issues may have artificially reduced the number of falls and hence the rate of falls in Tasmania, the Australian Capital Territory and the Northern Territory. Because these States and Territories have small populations, any effect on the rates would be amplified. It should be noted that for larger States with good ascertainment of cases, such as New South Wales, Victoria, Queensland, Western Australia and South Australia, there is little difference in the rates between States.

- State of usual residence was not recorded for 162 cases. As data in this graph are age-adjusted by each State or Territory, the rate for these 162 cannot contribute to the overall 'Australia' rate, and so have not been included.

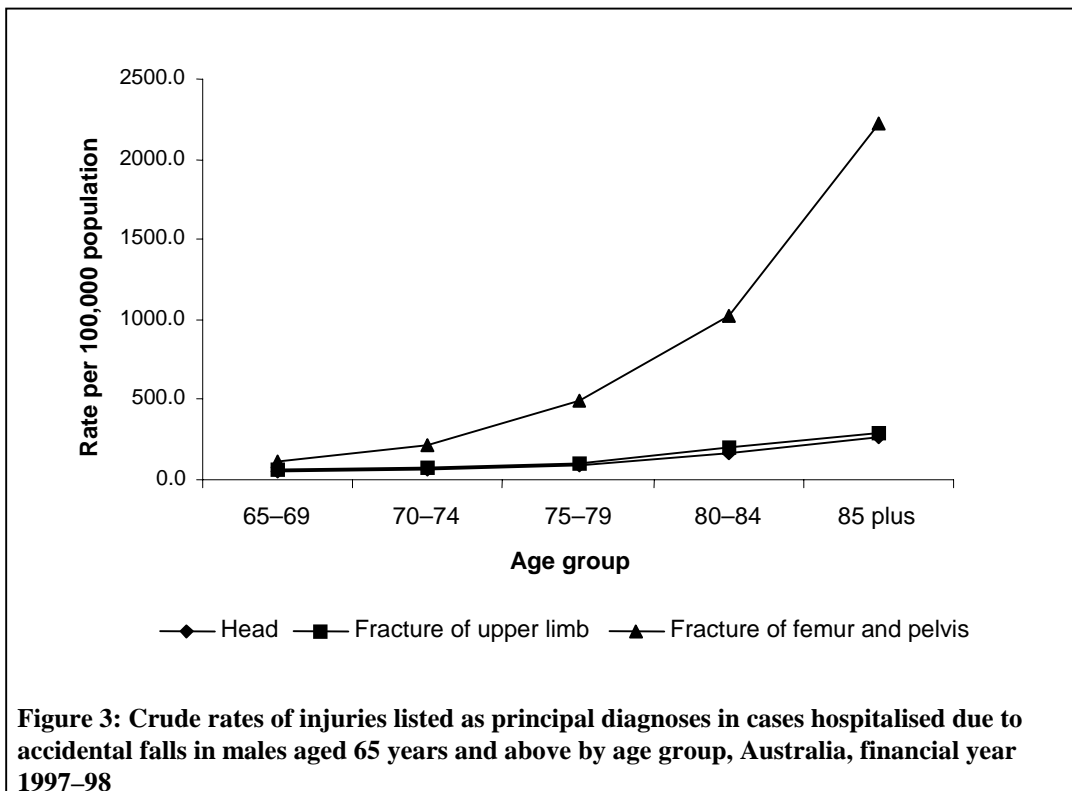
Principal diagnoses

Accidental fall-related injuries that were reported as principal diagnoses in hospital separations are tabulated in Appendix 1, Table A1.3. Other length of stay data are given in Appendix 1, Table A1.1.

Together, these tables show that:

- Accidental fall-related injuries in the elderly account for a total of 486,484 bed days, averaging 11 days of care for each of the 45,069 cases admitted.
- Length of stay increases with increasing age group, from an average of 7 and 8 days in 65–69 year old females and males, respectively, to 12 days for 85+ year old males and females.
- The most common injury diagnosed was 'fracture of lower limb' (i.e. ICD-9 codes 820–829 for fractured neck of femur [NOF] and other or unspecified fractures of the femur), responsible for 44.6 per cent (n=20,082) of the injured cases and resulting in an average length of stay of 13 days.
- A principle diagnosis of 'injury to nerves and spinal cord' had an average length of stay of 20 days.

In Figures 3 and 4, rates of the three injuries most often diagnosed in the elderly, by age and sex are presented. That is, rates for males are presented in Figure 3, with rates for females in Figure 4. The data for these are tabulated in Appendix 1, Table A1.4.



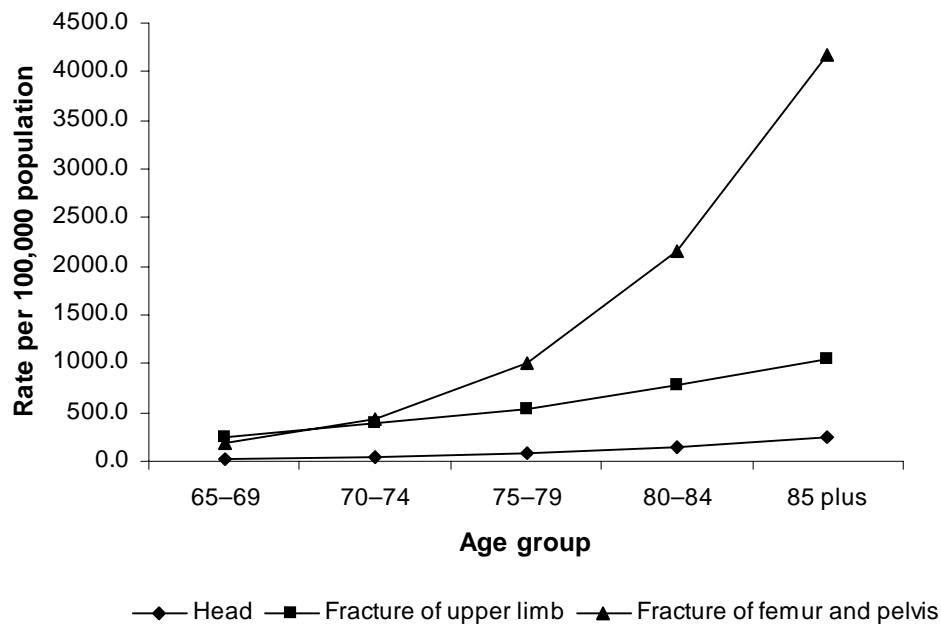


Figure 4: Crude rates of injuries listed as principal diagnoses in cases hospitalised due to accidental falls in females aged 65 years and above by age group, Australia, financial year 1997-98

It should be noted for figures 3 and 4 that:

- ‘Fracture of the upper limb’ includes fractures of the hand and arm.
- ‘Fracture of the femur and pelvis’ includes fracture of the neck of femur.

Figures 3 and 4 show that:

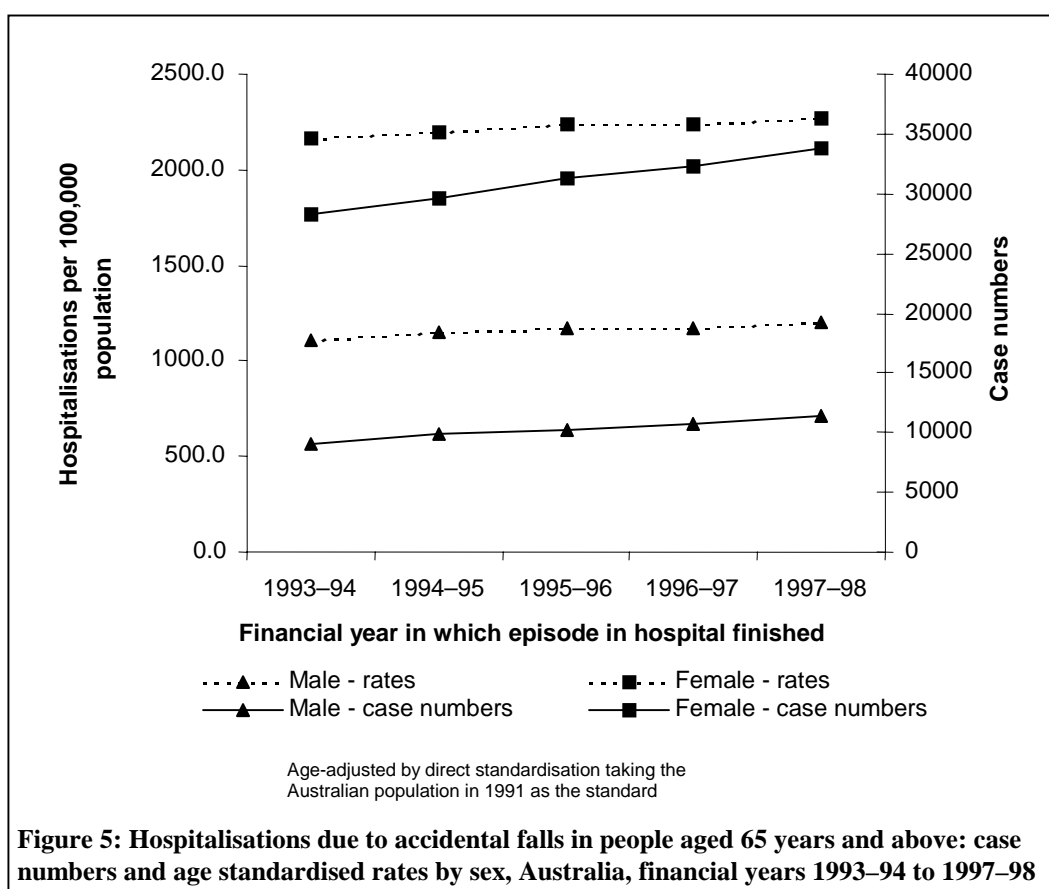
- Fractures of the femur and pelvis were higher than other fractures for both sexes and all age groups except for 65–69 year old females. Moreover, rates of this type of fracture increased exponentially with age for both sexes, to reach a rate of 2,220.1 and 4,161.7 for males and females respectively in 85+ year olds, compared to a more linear trend over ages for other fractures. Female rates of this type of fracture were consistently higher than for males for all age groups.
- Female rates for fractures of the upper limb were higher than male rates at all ages.

National trends in hospitalisations due to accidental falls

Trends in hospitalisations due to accidental falls in people age 65 years and above are presented in Figure 5 and the data are tabulated in Appendix 1, Tables A1.5 to A1.7. Trends in hospitalisations do not necessarily reflect trends in incidence of cases (see section 4, Data Issues).

During the reporting period, financial years 1993–94 to 1997–98, the number of hospitalisations increased for both males and females, by 24%, n=2,197 in males and 19%, n=5,492 in females, reflecting a growth in the population at risk, especially for the oldest and therefore highest-risk group.

The trend in age standardised rates indicates that there has been less change in the rate of hospitalisation from accidental falls once the increased numbers of elderly and the age-composition of these elderly has been taken into account, particularly for females.



Figures 6 and 7, below, show age-specific hospitalisation rates from accidental falls for males and females aged 65 years and above, respectively. Data for these figures are tabulated in Appendix 1, Tables A1.6 and A1.7.

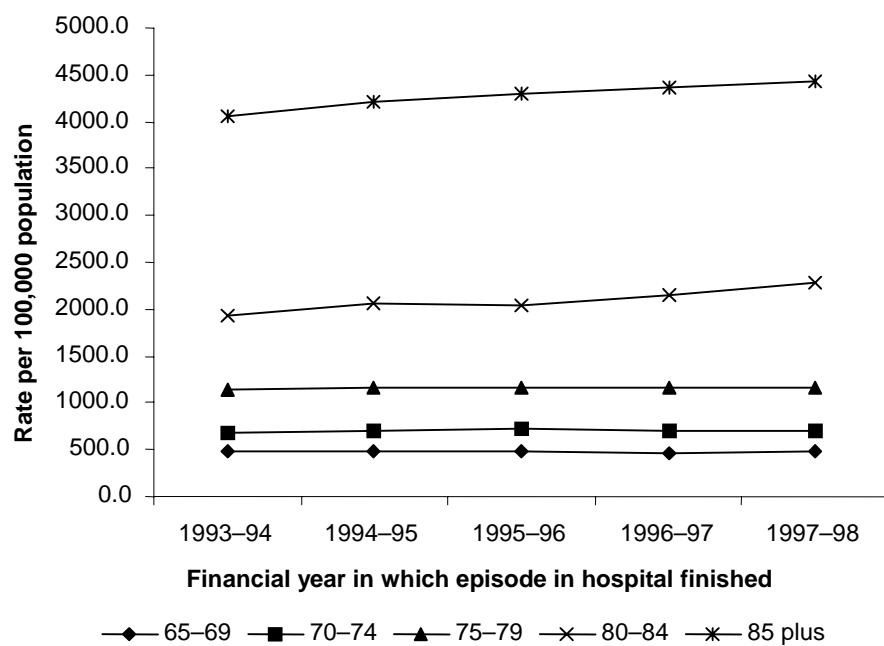


Figure 6: Age-specific hospitalisations due to accidental falls in males aged 65 years and above: crude rates, Australia, financial years 1993-94 to 1997-98

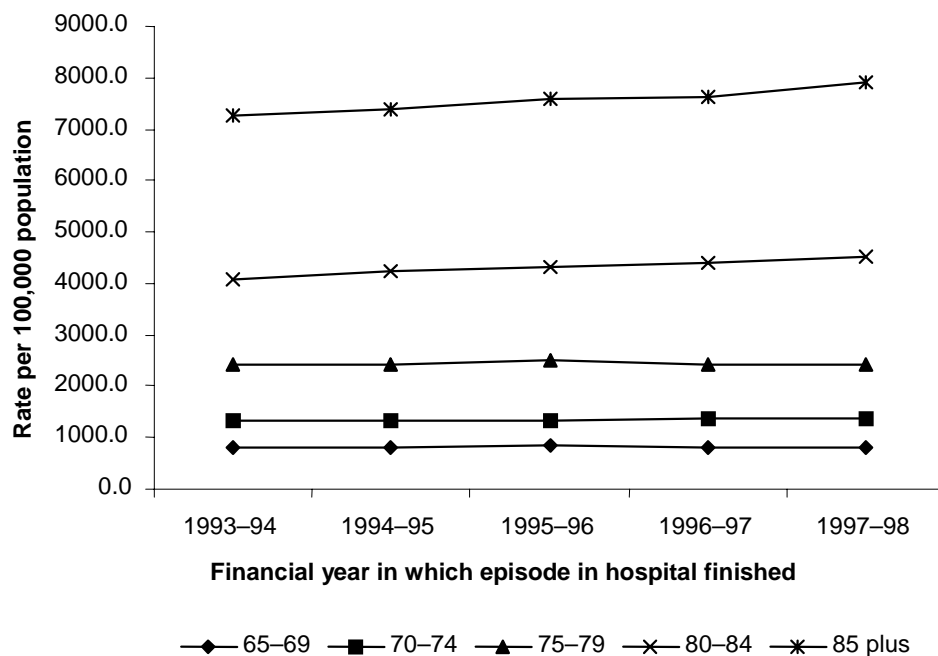


Figure 7: Age-specific hospitalisations due to accidental falls in females aged 65 years and above: crude rates, Australia, financial years 1993-94 to 1997-98

3 Deaths from accidental falls

This section summarises deaths from accidental falls in people aged 65 years and above registered in 1998.

Table 4: Deaths due to accidental falls in people aged 65 years and above, Australia, 1998

Indicator	Male	Female	Persons
Number of deaths	397	617	1,014
Per cent of all injury deaths registered in 65+ age group	37.9	61.6	49.5
Crude rate/100,000	39.7	48.1	44.4
Adjusted rate/100,000*	42.8	36.3	38.9

* Age-adjusted by direct standardisation taking the Australian population in 1991 as the standard.

It is evident from Table 4 that the crude rate is higher for females whereas the adjusted rate is higher for males. This unexpected difference is due to the way that the section of the population that is aged 65 years and older has changed since 1991. Both the sex ratio and the age distribution within that age group has changed in that time.

In 1998, the female to male ratio of deaths from accidental falls was 1.6:1.

In Figure 8, age-specific crude rates of deaths due to accidental falls in people aged 65 years and above are presented for both sexes. Data for this figure are tabulated in Appendix 2, Table A2.1.

Age-specific counts, crude rates and age-adjusted rates of deaths due to accidental falls are presented for male and females aged 65 years and above in Appendix 2, Tables A2.2 and A2.3.



Figure 8: Age-specific rates of deaths due to accidental falls in people aged 65 years and above, by sex, Australia 1998

It is evident from Figure 8 that:

- The death rate increased with increasing age, with the highest rates of death from accidental falls occurring at ages 85 years and above.
- Death rates for males and females are not different for any age range except for ages 75–79, (males: 95% CI=31.6±49.2; females: 18.0±29.7) and that a marked increase in rates occurs with increasing age in both sexes.
- A comparison of Figure 1 with Figure 8 shows that females have higher rates of hospitalisation for accidental falls at all ages, but this difference is not seen for rates of death. In fact, for the 75–79 age group, males have a higher death rate than females.

External causes of deaths from accidental falls

Table 5 shows the number and rate of deaths registered from accidental falls in people aged 65 years and above in 1998 by external cause (E-code) and age group.

Table 5: External causes of deaths from accidental falls in people aged 65 years and above: case counts and crude rates by sex, Australia 1998

Accidental falls	E-code	Male		Female		Persons	
		Count	Rate	Count	Rate	Count	Rate
Fall on or from stairs or steps	880	14	1.4	13	1.0	27	1.2
Fall on or from ladders or scaffolding	881	4	0.4	0	0.0	4	0.2
Fall from or out of building or other structure	882	4	0.4	1	0.1	5	0.2
Other fall from one level to another	884	11	1.1	9	0.7	20	0.9
Fall on same level from slipping, tripping, or stumbling	885	16	1.6	18	1.4	34	1.5
Fall on same level from collision, pushing, or shoving, by or with another person	886	1	0.1	0	0.0	1	0.0
Fracture, cause unspecified	887	253	25.3	457	35.6	710	31.1
Other and unspecified fall	888	94	9.4	119	9.3	213	9.3
All accidental falls		397	39.7	617	48.1	1,014	44.4

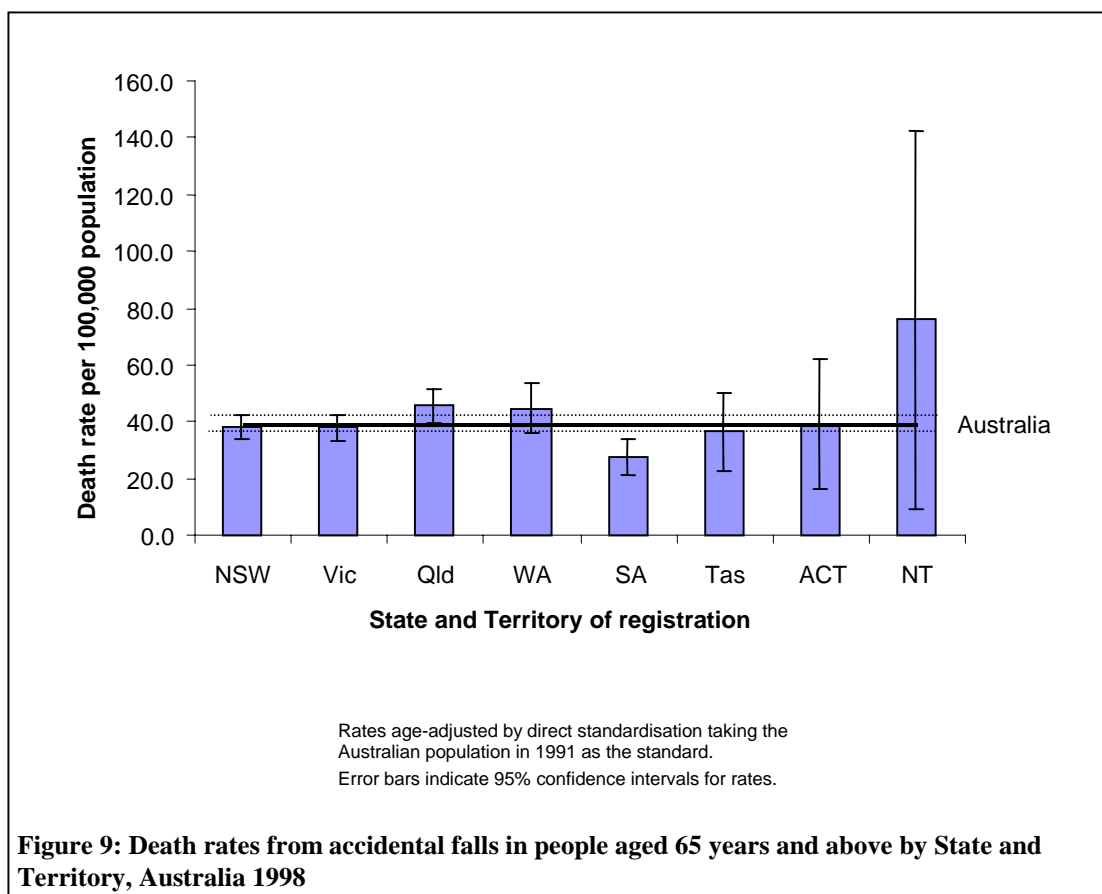
Note: No deaths from E883 'Fall into hole or other opening in surface'

It is evident from Table 5 that:

- In 1998, a total of 1,014 deaths from accidental falls were registered with 61% of the deaths (n=617) occurring in females.
- The most common external cause for accidental falls that led to death was 'fracture, cause unspecified', accounting for 70% of the deaths (n=710).
- Females had 1.8 times more deaths from accidental falls due to fractures than males (457 deaths versus 253, respectively); with advanced age in both sexes (85 years and above) accounting for 70% of these deaths in females and 53% in males.
- External causes 'Fracture, cause unspecified' (E887) and 'Other and unspecified fall' (E888) accounted for 91% (n=923) of deaths from accidental falls registered.

States and Territories

Age-adjusted rates of deaths from accidental falls in people aged 65 years and above by state and territory of death registration are presented in Figure 9 and in Appendix 2, Table A2.5.



It is evident from Figure 9 that:

- South Australia, has a death rate from accidental falls of 27.5 deaths per 100,000 population (95% CI = 21.0 to 34.0) that is statistically different from the national rate of 38.9 (95% CI = 36.5 to 41.3).
- Rates in all other States and Territories were not significantly different from the national rate. (The wide 95% confidence interval for the Northern Territory reflects its small population and low number of cases).

National trends in deaths from accidental falls

An examination of age-adjusted rates of death from accidental falls for males and females aged 65 years and above during the period 1979 to 1998 is presented in Figure 10. Data for this figure are tabulated in Appendix 2, Tables A2.2, A2.3 and A2.6.

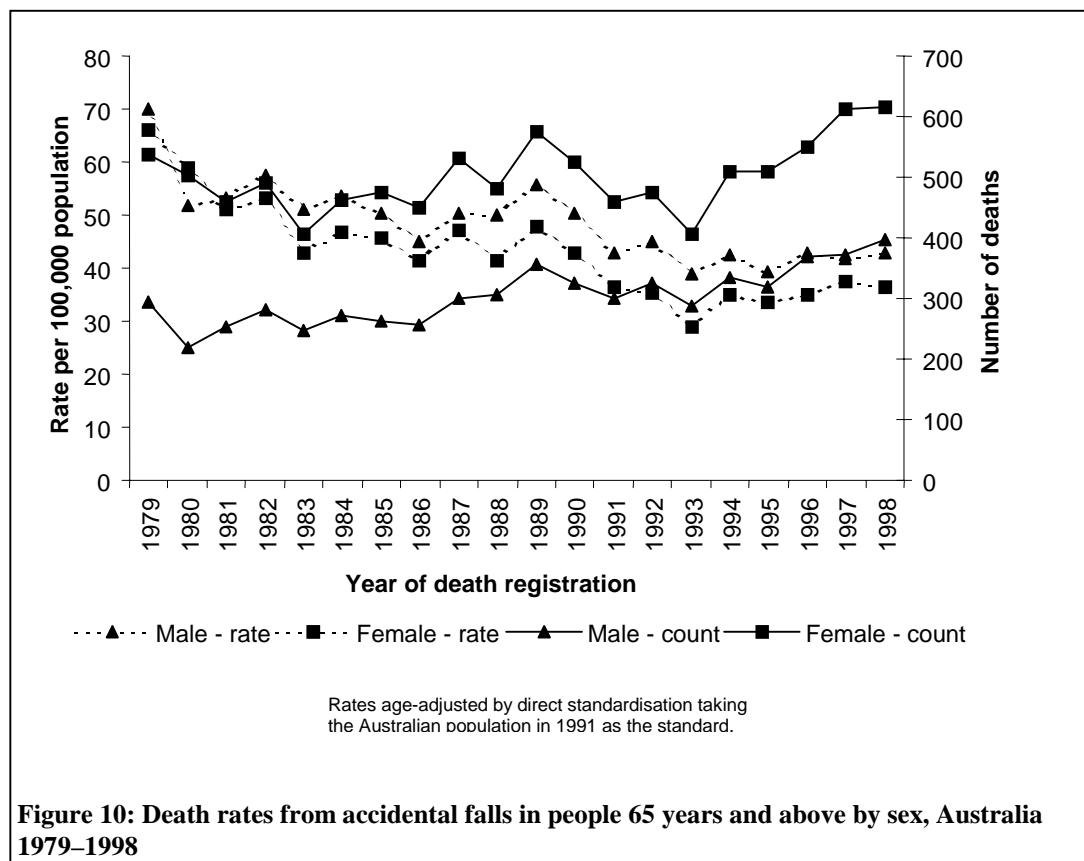


Figure 10 shows that:

- Death rates from accidental falls declined in both sexes from the late 1980s to the early 1990s.
- Death rates from accidental falls in males were higher than female rates from the early 1980s.
- Fluctuations in death rates from accidental falls occurred in both sexes during the period 1979–98. From 1994, these fluctuations have ranged within a band of about ± 4 injury deaths per 100,000 population for men and women.
- The lowest rate was achieved for both sexes in 1993 at 39.0 for male and 28.9 for female deaths per 100,000 population.
- Male and female death rates from accidental falls have trended slightly upward since 1993.
- Case numbers have risen in recent years, largely because of increasing numbers of people aged 65 years and older.

Figures 11 and 12 show age-specific death rates from accidental falls for males and females aged 65 years and above, respectively. Data for these figures are tabulated in Appendix 2, Tables A2.2 and A2.3.

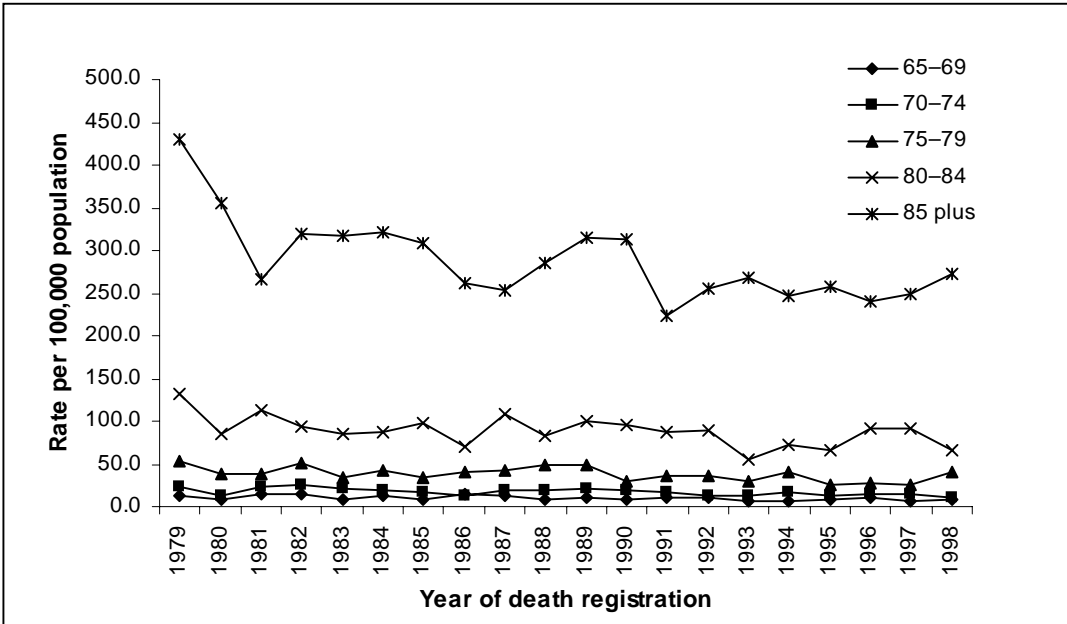


Figure 11: Age-specific crude death rates from accidental falls for males aged 65 years and above, Australia 1979–98

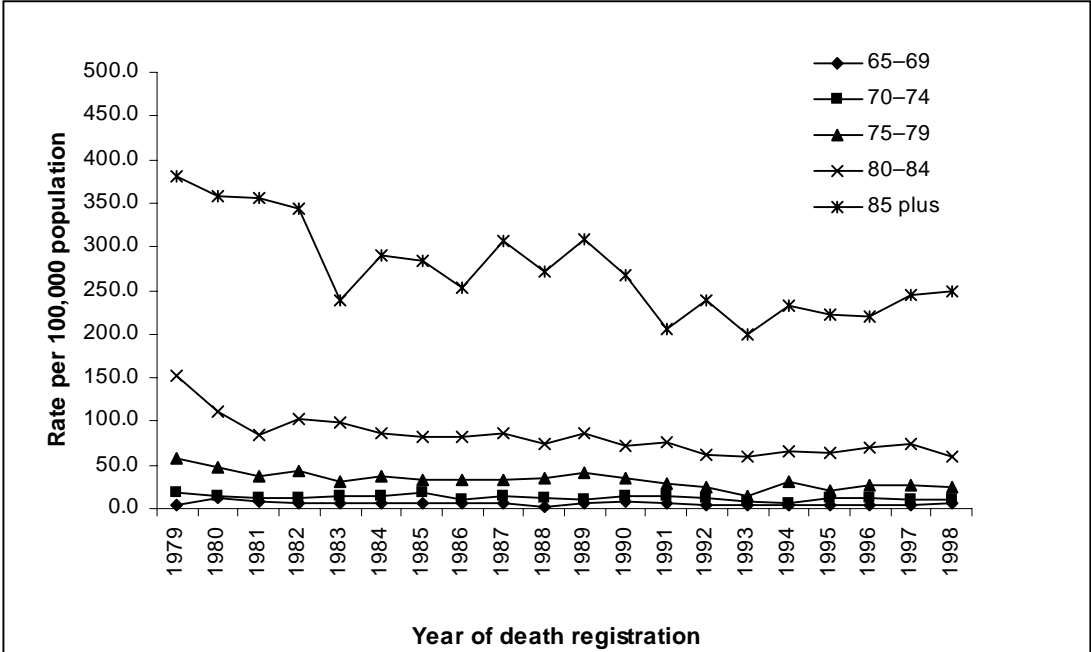


Figure 12: Age-specific crude death rates from accidental falls for females aged 65 years and above, Australia 1979–98

It is evident from these figures that:

- Rates for the oldest group (85+ years) are much higher than other age groups throughout the period 1979–1998. In the 1990s, the rate for the oldest group was around 40 times higher than the rate for the youngest group of 65–69 years.
- Over the period 1979–1998, rates have tended to decline for all age groups charted and both genders. The decline was most marked in the earlier part of this period and tended to change little during the mid to late 90's.

Multiple causes of death

The preceding sections of ‘Deaths from accidental falls’ have dealt with deaths that had ‘accidental fall’ recorded as the ‘underlying cause’ (n=1,014). Beginning with deaths registered in 1997, other morbid conditions, diseases and injuries that had been entered on the death certificate were also recorded. These are known as ‘multiple causes’, and up to 13 such multiple causes can be recorded for each death, in addition to the underlying cause. This addition by the Australian Bureau of Statistics (ABS) to their processing of these deaths data is discussed in Section 4 Data Issues. This section discusses the data obtained on these ‘multiple causes’ of death for the same 1,014 deaths where an ‘accidental fall’ was recorded as the ‘underlying cause’.

Multiple cause information is important here because it gives some insight into the types of injuries sustained in these ‘accidental fall’ cases. Table 6 summarises the most frequently mentioned injury diagnoses, by age group. A summary of all multiple causes diagnosed as underlying causes of death (CODs) from accidental falls for each age group is presented in Appendix 2, Table A2.4.

Table 6: Multiple causes of injury diagnosed in people aged 65 years and above for the underlying cause of death from accidental falls by age group, Australia 1998

Multiple causes of death diagnoses	Age groups					Ages 65 plus
	65–69	70–74	75–79	80–84	85 plus	
	Count	Count	Count	Count	Count	Count
Fracture of the skull	4	2	7	3	7	23
Intracranial injury excluding skull fracture	22	31	40	39	72	204
Fracture of humerus	1	1	2	4	20	28
Fracture of radius and ulna	1	0	2	3	3	9
Fracture of carpal bone(s)	0	0	0	2	2	4
Fracture neck of femur	14	24	74	96	343	551
Fracture other/unspecified parts of femur	0	3	5	6	57	71
Fracture of pelvis	0	1	7	11	39	58
Fracture of rib(s), sternum, larynx, and trachea	4	5	7	12	23	51
Fracture of vertebral column without mention of spinal cord	0	1	6	6	14	27
Fracture of one or more ankle, foot bones or other fractures	1	1	3	1	8	14
Fracture of tibia and fibula	2	1	2	2	3	10
Injury to other and unspecified internal organs	2	3	1	1	2	9
Injury to nerves and spinal cord	0	2	1	1	4	8
Other diagnoses	19	34	74	97	295	519
All multiple causes of death diagnoses	70	109	231	284	892	1,586

For the data in Table 6, it should be noted that:

- More than one ‘multiple cause’ may be recorded for a death. Hence the numbers in this table may be greater than the number of deaths associated with these multiple causes (n=1,586 multiple causes versus 1,014 deaths).
- The mean number of multiple causes per death, was 1.6 for each age group.
- In cases of death where the underlying cause of death (COD) was not accidental falls, 1,268 cases had accidental fall E-codes recorded in ‘multiple cause’ data fields. Ninety-three per cent of these E-codes were category E887.9 (‘Fracture, cause unspecified’).

Table 6 shows that:

- Fracture of neck of femur is the most common diagnosis in the elderly for the underlying cause of accidental fall-related deaths (551 cases).
- Fracture of neck of femur occurs 3.6 times more often as a cause of death at ages 85 years and above than in the 80–84 year old age group (343 cases versus 96 cases).
- Head injuries, including fractures, are also common in fall-related deaths, accounting for 211 cases diagnosed.
- Complications of trauma were often diagnosed as antecedent causes of death from accidental falls, accounting for 358 cases in the elderly, 61% of these cases aged 85 years and above.

Consequences of multiple cause coding

The preceding section reports on deaths in which an ‘accidental fall’ (E880–E888) was the ‘underlying cause of death’ (See Data Issues). These are the cases usually reported in past reports, and correspond to the scope of National Health Priority Area indicator 5.1. Data specified in this way have been available for many years, permitting trends to be monitored.

The recent introduction of ‘multiple cause coding’ of deaths enables the identification of deaths where an accidental fall was not coded as the underlying cause of death but where it was mentioned on the death certificate. Table 7 shows numbers and age-adjusted rates of deaths registered in 1998 for cases where an ‘accidental fall’ was the underlying cause, as well as the other cases where an ‘accidental fall’ was mentioned on the death certificate. If cases in the latter category are included, the number of deaths associated with an accidental fall is more than doubled, from 1,014 to 2,282 cases in 1998.

Table 7: ‘Accidental fall’ as an underlying cause of death and other mention on death certificates, Australia, 1998.

	Male		Female		Persons	
	Count	Rate*	Count	Rate*	Count	Rate*
Underlying cause	397	42.8	617	36.3	1,014	38.9
Other mention	452	48.7	816	48.5	1,268	48.6
Total	849	91.5	1,433	84.7	2,282	87.5

* Rates per 100,000 population aged 65 years and older. Age adjusted by direct standardisation taking the Australian population in 1991 as the standard.

Some information is available to indicate whether these two groups can in fact be grouped together in this way. First, the 1,268 additional deaths with mention of an accidental fall were similar to the 1,014 ‘underlying cause’ accidental fall cases in terms of proportions by sex, age group, and State or Territory of usual residence. Second, the external cause code was E887 (‘Fracture, cause unspecified’) for 93% of the cases in which accidental fall was mentioned but was not the underlying cause of death, and for 70% of the ‘underlying cause’ cases. Third, the Bureau of Statistics have published data from repeat coding approximately 25% of deaths registered in 1997, which indicates that cases coded before and after the introduction of multiple cause coding are comparable. However, a full understanding of whether the cases in these two categories are in fact similar enough to be grouped together cannot be resolved by the evidence we have to hand. Further research would be required, such as scrutinising death certificates and having access to source register data.

4 Data issues

General

Data sources

The work reported in this report made use of data on deaths, cases admitted to hospitals and population data. The data were provided to NISU by the AIHW.

Deaths and hospital data are described separately, below.

Population data were obtained from the Australian Bureau of Statistics (ABS). Rates were calculated using the 'final' estimates for each year.

Cause code aggregations

NISU statistical publications make use of standard aggregations of the ICD-9 and ICD-9-CM external cause (E-code) classifications (WHO 1975, NCC 1996). The main category used in this publication is 'Accidental falls', E880–E888.

Age adjustment

Rates have been adjusted for age 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. Changes in age composition are small within narrow age bands (e.g. 65–69 years) and adjustment has not been applied to 5-year age groups. Where crude rates are reported this is noted.

Confidence intervals

Nearly all deaths and hospital separations are believed to be included in the sources used for this report, so sampling errors do not apply to these data. However, the time periods used to group the cases (e.g. calendar years) are arbitrary. Use of another period (e.g. April to March) would result in different rates. Where case numbers are small, the effect of chance variation on rates can be large. The 95% confidence intervals of these rates are based on a Poisson assumption about the number of cases in a time period. Chance variation alone would be expected to lead to a rate outside the 95% confidence interval on 5% of occasions.

Deaths data

Unit record deaths data were used, which originated from the ABS mortality data collection for the years 1979 to 1998. They are reported here according to calendar year of death registration.

Case selection criteria

Except as stated in the next paragraph, the case selection criterion for mortality data in this report is as follows:

Deaths at ages 65 years and older for which the 'underlying cause of death' was coded to an ICD-9 External Cause code in the range E880–E888 ('accidental falls').

The exception to the use of this criterion is the section ‘Consequences of multiple cause coding’. The case criterion for this section is:

Deaths at ages 65 years and older for which the ‘underlying cause of death’ or any ‘multiple cause of death’ was coded to an ICD9 External Cause code in the range E880–E888 (‘accidental falls’).

Cause of death coding

The cause of each death registered in Australia is classified by the Australian Bureau of Statistics (ABS) according to the International Classification of Diseases. The 9th revision (ICD-9) was used for deaths registered from 1979 to 1998, inclusive (WHO 1975).

Until the end of 1996, the ABS coded only one cause for each death. This is the ‘underlying cause’, defined as “the disease or injury which initiated the train of morbid events leading directly to death”. The underlying cause is derived from information on the death certificate according to rules that form part of the International Classification of Diseases.

Beginning with deaths registered in 1997, other morbid conditions, diseases and injuries entered on the death certificate were also coded, as ‘multiple causes of death’. Up to 13 multiple causes may be recorded for each death, in addition to the underlying cause.

The addition of multiple cause data provides more information about morbid events that lead to death than was available in previous years. Considering deaths registered in 1998 of people aged 65 years and older where the underlying cause of death was an "accidental fall" (i.e. E880–E888), almost all (99.4%) were given at least one multiple cause code corresponding to an "Injury or Poisoning" (i.e. 800–999). Most of these deaths had only one ‘Injury or poisoning’ multiple cause code, and the mean number per death was 1.6 (this varied little by age group).

The 1,586 injury and poisoning conditions recorded as multiple causes for the 1,014 ‘accidental fall’ deaths at ages 65 and older registered in 1998 are summarised in the section ‘Multiple Causes of Death’ and in Table A2.4 in Appendix 2.

The provision of multiple cause codes also enables identification of other deaths where an ‘accidental fall’ is mentioned as a multiple cause of death but not as the underlying cause. There were 1,268 such cases registered in 1998, of which 93% were coded to Category E887.9 (‘Fracture, cause unspecified’). These cases are summarised in the section ‘Consequences of multiple cause coding’.

Time series

Trends over time are presented for the period 1979 to 1998. This is the period during which Australian death data were classified according to the 9th revision of the International Classification of Diseases (WHO 1975).

Data quality

The reliability of information about cause of death depends on the reliability of ICD codes provided by the ABS. This depends largely on the adequacy of the information provided to the ABS through Registrars of Births Deaths and Marriages, and originating from coroners and medical practitioners. Little published information is available on the quality of the data resulting from this process, particularly as it applies to injury deaths. Centralisation of mortality coding in the Brisbane office of the ABS since the mid 1990s has reduced the potential for variation due to local differences in coding practice. However, factors affecting information recording, provision, or coding could affect data in different ways for different jurisdictions, periods or population groups. Hence, apparent differences should be interpreted with caution.

Hospital separations data

Unit record data on episodes of hospital care were obtained from the AIHW National Hospital Morbidity Database for the financial years 1993–94 to 1997–98, inclusive (AIHW 1999).

Each record in the data collection refers to a ‘hospital separation’. A ‘separation’ is the event that occurs at the conclusion of an episode of inpatient care in a hospital. Most often, the person is discharged to his or her usual residence, but some separations are to another health care facility, or because the person has died.

The five annual data collections were processed and combined prior to this project, to facilitate analysis including assessment of trends.

Case selection criteria

The case selection criterion for hospital separations data used in this report is as follows. All records in the National Hospital Morbidity Database were included where:

the separation occurred from 1 July 1993 to 30 June 1998, inclusive;

age at separation was 65 years or older;

an ICD-9-CM External Cause code in the range E880–E888 (i.e. ‘Accidental falls’) is in the first non-blank data field in which an External Cause can be recorded (‘first’ means left-most in the source data file);

principal diagnosis is an ICD-9-CM code in the range 800–999 (i.e. ‘Injury and poisoning’); and

separation was not on the same day as admission.

External cause codes appearing in the ‘first’ field in which such codes can be found (rather than only the main field) were considered because the main external cause field is blank for substantial numbers of otherwise relevant records for some years in some jurisdictions.

Restriction to cases having a Principal Diagnosis of 800–999 accords with recommendations in the ‘1997 National Health Priority Areas Report: Injury Prevention and Control’ (AIHW & DHFS 1998; p 101). The main basis for this recommendation is that under coding guidelines, application of an External Cause code is mandatory only for this set of cases.

‘Same day’ separations were omitted because comparability between years and jurisdictions is improved by doing so.

Application of this criterion selected the following numbers of separations:

1993–94	37,380
1994–95	39,391
1995–96	41,505
1996–97	42,977
1997–98	45,069

Case inclusion and incidence

For the purposes of this report, the incidence of new cases of injury is of particular interest. Data on cases admitted to a hospital can provide an indication of this, but certain characteristics of the data source which limit its potential for this purpose should be taken into account when interpreting the findings reported here.

Scope of case inclusion

Only some injuries from falls result in admission to a hospital. In general, cases admitted to a hospital are serious, or require observation because they might be serious, or require particular forms of treatment.

Cases not represented in hospital separations data include those which rapidly result in death, cases that result in a visit to a general practitioner or to an emergency department (but do not result in admission to a hospital) and cases that do not result in a visit to any medical service.

Separations vs incidence

The number of 'separations' from hospital is not equivalent to the number of new incident cases of a condition that result in hospitalisation. This is because some incident cases result in more than one 'separation'. National Hospital Statistics do not presently provide a direct means to account for such multiple counting.

A partial means to do so is provided by a variable 'Mode of Separation'. Separations recorded as being to another acute care hospital can be expected to result in another separation, from the destination hospital. Similarly, 'statistical' separations are followed by another episode of care in the same hospital, and another separation. The omission of cases with these modes of separation is a way to obtain an estimate of new incident cases.

Limitations of this method are: (1) it does not allow for cases in which subsequent episodes of care in hospital due to the same injury condition if they meet selection criteria and follow separation to the person's usual residence; and (2) it may over-correct if the record of the subsequent episode of care is coded differently to the initial episode, in a way that prevents it from being counted (e.g. for this report if 'external cause' is coded as 'accidental fall' for the first separation but not for the second).

Even if good correction could be made for multiple separations per case, variation in the resulting rates is complicated by the possibility of variation in admission practice for certain types of case (e.g. falls resulting in low severity injuries). More meaningful estimates of fall injury incidence based on hospital separation data might be achieved by limiting attention to a subset of cases having injuries of types that are always, or nearly always, admitted to a hospital.

Data quality

The quality of coding of injury diagnoses and external causes in Australian hospital inpatient collections has been the subject of little published evaluation (e.g. MacIntyre et al. 1997). It is noteworthy that external cause codes are not necessary for deriving Diagnosis Related Groups and other outputs of the data source that are used for hospital funding and clinical service management.

The data used for this report were abstracted from medical records in hundreds of hospitals, coded and entered by a large number of people operating in distinct State and Territory hospital systems, including public and private hospitals, over a period of five years or longer, and further processed by the AIHW and NISU. Consequently, and despite the existence of data standards (notably the National Minimum Data Set for hospital inpatient data (AIHW 2000)), variations doubtless occur in the data between places and over time.

Much effort and funding was invested in hospital data collections in Australia during the 1990s. Accordingly, the more recent data included in this report may be of better quality and more complete than earlier data. This should be kept in mind when interpreting apparent trends in the data.

Length of stay

Length of stay values in this document are based on differences between the dates recorded for admission and separation. This differs from the 'length of stay' field data for a small proportion of cases because the latter omits days when patients are 'on leave' during an admission. For this reason, the length of stay estimates reported here are about 0.5% greater than equivalent estimates based on the length of stay field.

5 References

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Appendix 1

Table A1.1: Hospitalisation due to accidental falls by people aged 65 years and above, Australia, financial year 1997–98: case counts, age-specific rates per 100,000 population, and Average Length of Stay (days)

Age group	Male				Female			
	Count	Rate	CI*	Average LOS	Count	Rate	CI*	Average LOS
65–69	1,634	487.3	23.6	8	2,795	798.2	29.6	7
70–74	1,995	704.1	30.9	10	4,523	1,374.9	40.1	9
75–79	2,274	1,166.7	48.0	11	6,370	2,435.5	59.8	10
80–84	2,484	2,281.2	89.7	11	8,094	4,523.9	98.6	11
85 plus	2,928	4,440.3	160.8	12	11,972	7,891.1	141.4	12

*95% confidence intervals of the rate are based on a Poisson assumption about the number of cases in a time period.

Table A1.2: Hospitalisations due to accidental falls in people aged 65 years and above: case counts and age-adjusted rates per 100,000 population by State and Territory of usual residence, Australia, financial year 1997–98*

State of usual residence	Count	Rate	CI**
NSW	16,275	1,897.2	29.1
VIC	11,420	1,796.5	33.0
QLD	7,439	1,796.8	40.8
WA	4,060	1,982.5	61.0
SA	4,285	1,855.7	55.6
TAS	994	1,498.9	93.2
ACT	349	1,499.0	157.3
NT	85	1,507.8	320.5
AUST	44,907	1,841.8	17.0

*State or Territory of usual residence was not reported for an additional 162 cases.

As data are age-adjusted by each state or territory, the rate for these 162 cannot contribute to the overall 'Australia' rate and so have not been included.

**95% confidence intervals of the rate are based on a Poisson assumption about the number of cases in a time period.

Table A1.3: Principal diagnosis of fall-related injuries in people aged 65 years and above: case counts, column percentages, length of stay, and average length of stay by sex, Australia, financial year 1997–98

Principal diagnosis (Chapter 17 groups)	ICD-9 codes	Male				Female				Persons			
		Count	%	LOS	ALOS	Count	%	LOS	ALOS	Count	%	LOS	ALOS
Fracture of lower limb	820–829	4,732	41.8	60,936	13	15,350	45.5	198,457	13	20,082	44.6	259,393	13
Fracture of upper limb	810–819	1,057	9.3	8,668	8	6,518	19.3	46,452	7	7,575	16.8	55,120	7
Fracture of neck and trunk	805–809	1,793	15.8	23,340	13	4,405	13.1	60,165	14	6,198	13.8	83,505	13
Certain traumatic complications and unspecified injuries	958–959	567	5.0	4,172	7	1,468	4.3	12,460	8	2,035	4.5	16,632	8
Contusion with intact skin	920–924	497	4.4	3,957	8	1,476	4.4	11,719	8	1,973	4.4	15,676	8
Open wound to head/neck/trunk	870–879	553	4.9	2,190	4	884	2.6	4,879	6	1,437	3.2	7,069	5
Intracranial injury	850–854	613	5.4	4,725	8	725	2.1	5,471	8	1,338	3.0	10,196	8
Sprains and strains	840–848	344	3.0	2,205	6	611	1.8	5,048	8	955	2.1	7,253	8
Open wound lower limb	890–897	132	1.2	1,285	10	756	2.2	9,022	12	888	2.0	10,307	12
Dislocation	830–839	257	2.3	1,725	7	549	1.6	3,903	7	806	1.8	5,628	7
Fracture of skull	800–804	230	2.0	1,931	8	370	1.1	2,730	7	600	1.3	4,661	8
Open wound upper limb	880–887	162	1.4	1,019	6	225	0.7	1,964	9	387	0.9	2,983	8
Superficial injury	910–919	166	1.5	1,187	7	216	0.6	1,835	8	382	0.8	3,022	8
Internal injury of chest/abdomen/pelvis	860–869	116	1.0	977	8	70	0.2	666	10	186	0.4	1,643	9
Complications of surgical and medical care	996–999	50	0.4	910	18	70	0.2	1,033	15	120	0.3	1,943	16
Injury to nerves and spinal cord	950–957	19	0.2	551	29	21	0.1	241	11	40	0.1	792	20
Injury to blood vessels	900–904	14	0.1	42	3	13	0.0	82	6	27	0.1	124	5

continued

Table A1.3 (continued): Principal diagnosis of fall-related injuries in people aged 65 years and above: case counts, column percentages, length of stay, and average length of stay by sex, Australia, financial year 1997–98

Principal diagnosis (Chapter 17 groups)	ICD-9 code	Male				Female				Persons			
		Count	%	LOS	ALOS	Count	%	LOS	ALOS	Count	%	LOS	ALOS
Other and unspecified effects of external causes	990–995	6	0.1	66	11	16	0.0	194	12	22	0.0	260	12
Crushing injury	925–929	1	0.0	3	3	5	0.0	103	21	6	0.0	106	18
Burns	940–949	2	0.0	33	17	3	0.0	65	22	5	0.0	98	20
Poisoning by drugs, medicinal and biological substances	960–979	2	0.0	21	11	2	0.0	30	15	4	0.0	51	13
Foreign body through orifice	930–939	1	0.0	19	19	1	0.0	2	2	2	0.0	21	11
Toxic effects, non-medicinal	980–989	1	0.0	1	1	0	0.0	0	0	1	0.0	1	1
All principal diagnoses		11,315	100.0	119,963	11	33,754	100.0	366,521	11	45,069	100.0	486,484	11

Note: The category 'Late effects of injuries' (ICD9 codes 905–909) was not included in this table as no late effects for cases hospitalised in financial year 1997–1998 (i.e. in the last available data) have yet been reported. Such cases for that financial year may appear in subsequent financial years. Between financial years 1993–1994 and 1997–1998, a total of 27 such cases of 'late effects of injuries' were reported.

Table A1.4: Injuries diagnosed by body region in people aged 65 years and above: age-specific rates per 100,000 population by sex, Australia, financial year 1997–98

Body region injured	Male						Female					
	Age group						Age group					
	65–69	70–74	75–79	80–84	85 plus	Ages 65 plus	65–69	70–74	75–79	80–84	85 plus	Ages 65 plus
Head	44.4	57.9	86.7	169.9	266.9	85.3	28.6	47.1	79.5	150.9	238.6	86.1
Fracture of upper limb	67.7	76.6	106.2	200.2	285.1	106.9	253.3	386.0	527.2	783.0	1,042.1	512.7
Fracture neck of femur, femur, and pelvis	113.9	215.3	489.4	1,027.7	2,220.1	458.2	190.8	441.4	1,000.6	2,163.0	4,161.7	1,173.7
All the above regions	226.1	349.8	682.3	1,397.8	2,772.1	650.5	472.7	874.5	1,607.3	3,096.9	5,442.4	1,772.5

Table A1.5: Hospitalisations due to accidental falls in people aged 65 years and above: case numbers and age standardised rates per 100,000 population*, Australia, financial years 1993–94 to 1997–98

Financial year	Male		Female		Persons	
	Count	Rate	Count	Rate	Count	Rate
1993–94	9,118	1,112.9	2,8262	2,163.2	37,380	1,754.1
1994–95	9,791	1,155.5	2,9600	2,196.1	39,391	1,789.6
1995–96	10,287	1,168.1	3,1218	2,238.1	41,505	1,818.0
1996–97	10,683	1,173.0	3,2293	2,239.9	42,977**	1,818.7
1997–98	11,315	1,201.9	3,3754	2,271.7	45,069	1,848.7

* Adjusted by direct standardisation taking the Australian population in 1991 as the standard.

** Includes one case where the sex was not stated.

Table A1.6: Age-specific crude rates of hospitalisation from accidental falls in males aged 65 years and above, by age group, Australia, financial years 1993–94 to 1997–98

Financial year in which data collected	Age groups					
	65–69	70–74	75–79	80–84	85 plus	Ages 65 plus
1993–94	474.8	670.7	1,139.7	1,936.2	4,061.3	1,014.2
1994–95	482.1	706.7	1,161.0	2,057.8	4,215.2	1,062.8
1995–96	488.0	721.1	1,166.6	2,042.6	4,308.8	1,087.5
1996–97	470.5	708.3	1,158.6	2,142.8	4,360.9	1,103.1
1997–98	487.3	704.1	1,166.7	2,281.2	4,440.3	1,144.8

Table A1.7: Age-specific crude rates of hospitalisation from accidental falls in females aged 65 years and above, by age group, Australia, financial years 1993–94 to 1997–98

	Age groups					Ages 65 plus
	65–69	70–74	75–79	80–84	85 plus	
Financial year in which data collected	Rate	Rate	Rate	Rate	Rate	Rate
1993–94	820.9	1,331.9	2,422.9	4,080.0	7,255.4	2,392.6
1994–95	826.3	1,330.4	2,436.3	4,233.7	7,390.2	2,458.0
1995–96	844.0	1,326.1	2,489.4	4,337.7	7,571.0	2,538.8
1996–97	809.6	1,378.5	2,424.6	4,395.3	7,645.5	2,578.2
1997–98	798.2	1,374.9	2,435.5	4,523.9	7,891.1	2,655.1

Appendix 2

Table A2.1: Deaths from accidental falls in people aged 65 years and above by age group and sex, Australia 1998 (counts and age-specific rates per 100,000 population)

Age group	Male			Female			Persons		
	Count	Rate	CI*	Count	Rate	CI*	Count	Rate	CI*
65–69	25	7.5	2.9	19	5.4	2.5	44	6.4	1.9
70–74	33	11.5	3.9	36	10.9	3.6	69	11.2	2.6
75–79	81	40.4	8.8	64	23.9	5.9	145	31.0	5.0
80–84	72	65.4	15.1	108	60.0	11.3	180	62.1	9.1
85 plus	186	272.3	39.1	390	250.0	24.8	576	256.8	21.0
Ages 65+	397	39.7	3.9	617	48.1	3.8	1014	44.4	2.7

* 95% confidence interval assuming Poisson distribution.

Table A2.2: Deaths from accidental falls in males aged 65 years and above by age group and year of death registration, Australia 1979–98 (counts, age-specific rates per 100,000 population, and age-adjusted rates per 100,000 population)

Year of death registration	65–69		70–74		75–79		80–84		85 plus		Ages 65 plus		Age-adjusted rate
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	
1979	30	12.6	37	22.4	52	52.1	60	131.1	114	429.4	293	50.9	69.9
1980	20	8.1	22	12.9	39	38.1	42	85.4	97	355.5	220	37.0	51.9
1981	39	15.6	40	22.7	41	38.6	59	113.3	74	266.3	253	41.3	53.3
1982	36	14.3	46	25.1	56	50.5	51	92.9	91	319.7	280	44.4	57.7
1983	24	9.5	42	22.0	40	34.6	49	84.8	92	317.0	247	38.3	50.9
1984	31	12.4	38	19.1	52	43.1	53	86.7	97	321.2	271	41.0	53.4
1985	21	8.3	37	18.0	44	34.8	62	97.8	100	308.6	264	38.8	50.4
1986	37	13.9	27	12.9	53	39.9	47	70.8	91	262.2	255	36.0	45.1
1987	33	11.8	40	18.8	60	43.6	76	108.0	92	253.8	301	40.9	50.4
1988	27	9.2	40	18.8	69	48.2	61	82.7	108	285.1	305	40.1	49.9
1989	34	11.1	46	21.7	72	48.1	77	99.9	126	315.2	355	45.2	55.7
1990	30	9.6	41	18.8	47	30.4	78	96.6	130	312.8	326	40.3	50.3
1991	33	10.3	37	16.2	58	36.5	73	86.5	99	223.9	300	35.9	42.9
1992	35	10.8	31	13.0	58	35.8	79	89.4	121	255.6	324	37.6	44.9
1993	21	6.4	31	12.4	48	29.4	52	55.8	135	268.1	287	32.3	39.0
1994	19	5.7	46	17.4	65	39.8	71	72.1	132	247.7	333	36.5	42.5
1995	26	7.8	36	13.3	44	26.0	67	65.3	146	257.2	319	34.2	39.3
1996	35	10.4	41	14.8	51	28.4	96	90.7	145	240.5	368	38.4	42.8
1997	21	6.2	44	15.7	47	24.8	100	92.2	159	248.5	371	37.9	41.6
1998	25	7.5	33	11.5	81	40.4	72	65.4	186	272.3	397	39.7	42.8

Table A2.3: Deaths from accidental falls in females aged 65 years and above by age group and year of death registration, Australia 1979–98 (counts, age-specific rates per 100,000 population, and age-adjusted rates per 100,000 population)

Year of death registration	65–69		70–74		75–79		80–84		85 plus		Ages 65 plus		Age-adjusted rate
	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	Count	Rate	
1979	14	5.1	38	18.3	87	58.0	141	151.9	259	380.0	539	67.9	65.9
1980	36	12.7	32	14.9	71	46.8	109	111.6	255	357.1	503	61.5	58.9
1981	23	8.0	26	11.5	58	37.6	86	84.3	266	355.6	459	54.5	51.2
1982	17	5.9	28	11.9	70	43.5	109	103.8	267	343.5	491	56.5	53.1
1983	20	6.9	36	14.9	53	31.4	106	97.9	192	239.2	407	45.7	42.9
1984	20	6.9	38	15.1	66	37.5	98	86.8	242	290.8	464	50.8	46.9
1985	16	5.5	49	18.9	60	32.6	96	83.2	253	284.9	474	50.4	45.6
1986	20	6.6	28	10.6	63	32.9	98	82.6	240	253.7	449	46.1	41.3
1987	22	7.0	39	14.6	65	32.7	108	87.3	297	305.6	531	52.9	47.1
1988	9	2.7	31	11.6	74	35.9	95	73.6	272	272.5	481	46.6	41.3
1989	24	7.0	30	11.3	87	40.5	116	86.7	318	308.1	575	54.2	47.9
1990	26	7.5	37	13.7	79	35.8	100	71.8	283	268.0	525	48.4	42.8
1991	21	6.0	38	13.5	63	27.9	110	75.6	227	206.3	459	41.2	36.3
1992	14	4.0	34	11.6	56	24.4	93	61.4	277	239.5	474	41.5	35.4
1993	13	3.7	23	7.6	35	15.2	93	58.8	243	199.4	407	34.8	28.9
1994	13	3.7	21	6.6	70	30.7	110	65.8	296	232.1	510	42.7	35.2
1995	12	3.4	39	12.1	48	20.6	110	63.8	299	222.6	508	41.7	33.5
1996	11	3.1	41	12.5	63	25.8	123	69.6	311	219.6	549	44.1	35.0
1997	16	4.5	33	10.1	69	27.0	132	73.8	364	244.1	614	48.6	37.5
1998	19	5.4	36	10.9	64	23.9	108	60.0	390	250.0	617	48.1	36.3

Table A2.4: Multiple causes of injury diagnosed in people aged 65 years and above where the underlying cause of death was an accidental fall, by age group, Australia 1998

Multiple causes of death diagnosed	Age groups					65 plus
	65–69	70–74	75–79	80–84	85 plus	
	Count	Count	Count	Count	Count	Count
Fracture of the skull	4	2	7	3	7	23
Intracranial injury excluding skull fracture	22	31	40	39	72	204
Fracture of humerus	1	1	2	4	20	28
Fracture of radius and ulna	1	0	2	3	3	9
Fracture of carpal bone(s)	0	0	0	2	2	4
Fracture neck of femur	14	24	74	96	343	551
Fracture other/unspecified parts of femur	0	3	5	6	57	71
Fracture of pelvis	0	1	7	11	39	58
Fracture of rib(s), sternum, larynx, and trachea	4	5	7	12	23	51
Fracture of vertebral column without mention of spinal cord	0	1	6	6	14	27
Fracture of one or more ankle, foot bones or other fractures	1	1	3	1	8	14
Fracture of tibia and fibula	2	1	2	2	3	10
Injury to other and unspecified internal organs	2	3	1	1	2	9
Injury to nerves and spinal cord	0	2	1	1	4	8
Injury to blood vessels	0	0	2	1	4	7
Traumatic pneumothorax and haemothorax	0	0	1	2	3	6
Effects of foreign body entering through orifice	0	0	1	2	3	6
Contusion with intact skin surface	0	1	0	0	4	5
Late effects of injuries, poisonings, toxic effects, and other external causes	1	0	1	1	1	4
Other and unspecified effects of external causes	0	2	2	0	0	4
Fracture of clavicle	0	0	1	0	2	3
Dislocation of hip	0	0	1	1	1	3
Injury to heart and lung	0	0	1	1	1	3
Open wound of lower limb	0	1	0	1	1	3
Fracture of patella	0	0	0	2	0	2
Fracture of ankle	0	0	1	1	0	2
Open wound of other and unspecified sites, except limbs	0	0	0	2	0	2
Ill-defined and multiple fractures of upper limb	0	0	1	0	0	1
Dislocation of shoulder	0	0	0	0	1	1
Other, multiple, and ill-defined dislocations	0	0	0	0	1	1
Open wound of head and face	1	0	0	0	0	1

continued

Table A2.4 (continued): Multiple causes of injury diagnosed in people aged 65 years and above where the underlying cause of death was an accidental fall, by age group, Australia 1998

	Age groups					Ages 65 plus
	65–69	70–74	75–79	80–84	85 plus	
Multiple causes of death diagnosed	Count	Count	Count	Count	Count	Count
Superficial injury	0	0	0	0	1	1
Burns	0	0	0	1	0	1
Toxic effects of substances chiefly nonmedical as to source	0	1	0	0	0	1
Certain traumatic complications and unspecified injuries	9	17	29	44	139	238
Complications of surgical and medical care not elsewhere classified	8	12	33	38	133	224
All multicause diagnoses coded	70	109	231	284	892	1,586

Note: More than one 'multiple cause' may be recorded for a death. Hence the numbers in this table may be greater than the number of deaths associated with those multiple causes (n=1,586 versus 1,014).

Table A2.5: Deaths from accidental falls in people aged 65 years and above by State and Territory of death registration, Australia 1998 (counts and age-adjusted rates per 100,000 population)

State and Territory in which death registered	Count	Rate	CI*
NSW	353	38.1	4.0
Vic	252	37.8	4.7
Qld	203	45.5	6.3
SA	68	27.5	6.5
WA	95	44.7	9.0
Tas	27	36.5	13.8
NT	5	75.8	66.4
ACT	11	38.9	23.0
AUST	1,014	38.9	2.4

*95% confidence intervals of the rate are based on a Poisson assumption about the number of cases in a time period.

Table A2.6: Age standardised* rates of death from accidental falls in people aged 65 years and above, by sex, Australia 1979–98

Year of death registration	Male	Female	Persons
	Rate*	Rate*	Rate*
1979	69.9	65.9	67.4
1980	51.9	58.9	56.2
1981	53.3	51.2	53.1
1982	57.7	53.1	55.6
1983	50.9	42.9	45.5
1984	53.4	46.9	49.4
1985	50.4	45.6	47.2
1986	45.1	41.3	43.0
1987	50.4	47.1	49.0
1988	49.9	41.3	44.8
1989	55.7	47.9	51.1
1990	50.3	42.8	45.4
1991	42.9	36.3	38.9
1992	44.9	35.4	39.2
1993	39.0	28.9	32.6
1994	42.5	35.2	38.2
1995	39.3	33.5	35.7
1996	42.8	35.0	38.1
1997	41.6	37.5	39.2
1998	42.8	36.3	38.9

*Age adjusted by direct standardisation taking the Australian population in 1991 as the standard. Data are described as a rate per 100,000 population.