ATSB Australian Transport Safety Bureau

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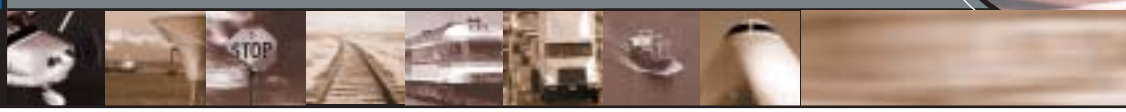
Monograph 13

Older pedestrians



Road fatalities among older pedestrians

Pedestrians represent a significant component of Australia's total road deaths. Of 1,737 deaths throughout Australia in 2001, about one-in-six (290) were pedestrians. This monograph provides a statistical overview of a major contributor to the pedestrian toll – people aged 65 years and older.

Figure 1 shows the age and gender profile of total pedestrian road fatalities during the past five years in Australia. It shows that the major contributors have been males aged 15 to 54 and males and females aged 65 and older.

The contribution from persons aged 65 and older is well in excess of what might be expected on the basis of their population share. Figure 2 shows the average rates of pedestrian fatalities per 100,000 population for individual age and gender groups during the past five years in Australia. Compared with average annual fatality rates of 0.6 or 0.7 fatalities per 100,000 persons for the safest groups – females aged below 55 – the rates for older people ranged up to 13.7 for males aged 85 and older.

Although people aged 65 and older represent less than one-eighth of the Australian population, they have contributed about one-third of total pedestrian deaths in recent years (93 of the 290 pedestrian fatalities in 2001).

This high toll reflects the greater reliance of older people on pedestrian travel, the perceptual, cognitive and physical deteriorations associated with ageing, and the older person's greater frailty and risk of death if hit by a motor vehicle.

Further, fatalities among older pedestrians are potentially set to grow substantially as Australia's population ages over the next few decades. Recent population projections by the Australian Bureau of Statistics indicate that the share of Australia's population aged 65 years and older will double to about 24% by the year 2041.

These facts demonstrate how important it is for Australian road safety practitioners to identify the characteristics of motor vehicle collisions involving older pedestrians and to reflect this knowledge in standards for roadway design and in other road safety countermeasures.

In time, such planning will need to focus most of all on the very elderly pedestrian. Projected population increase is greatest for this age group. If other factors remain unchanged, by the year 2041 about one-in-three fatally injured older pedestrians will be aged 85+ compared with about one-in-five at present.

Figure 1: Australian pedestrian road fatalities by age and gender, 1997 to 2001

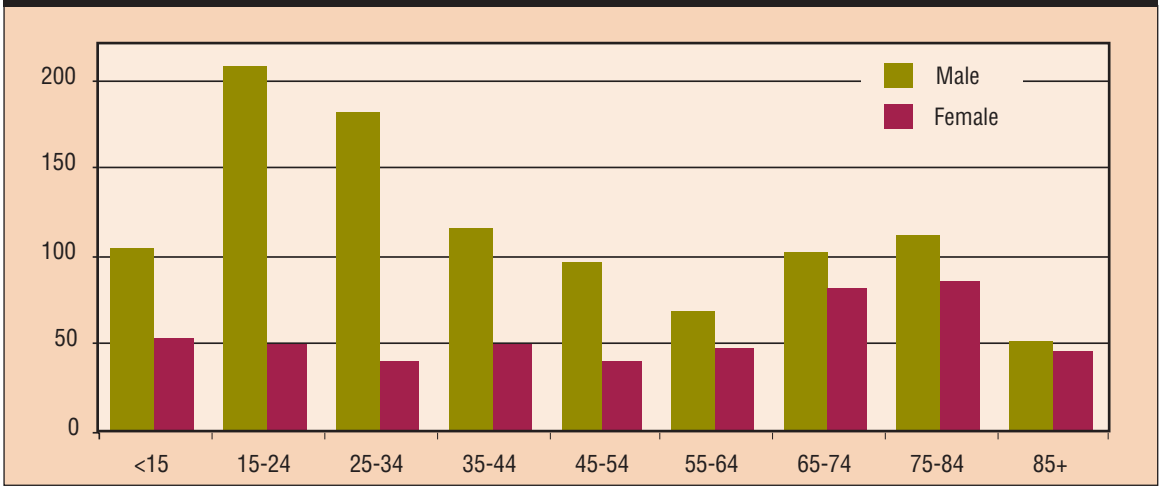


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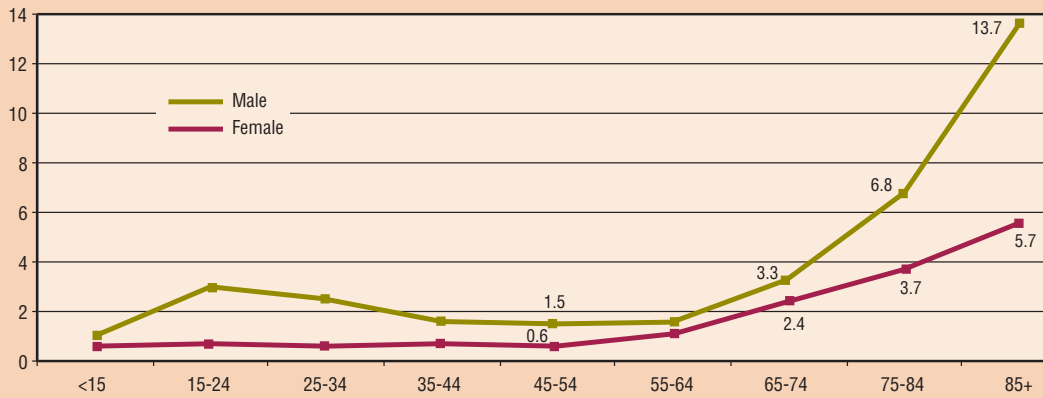
Figure 2: Australian pedestrian fatalities per 100,000 population* by age and gender: 1997 to 2001



* Average rates based on average annual deaths 1997–2001 and population at 30 June 1999.

A comprehensive table of information on older pedestrian fatalities is provided here, based on information extracted from the ATSB's holdings of coronial documentation about road crashes. The summary covers 393 of the 405 pedestrians aged 65 and older who were killed (in 402 collisions) on Australian roads between 1996 and 1999. The following key facts emerge from this material.

Key facts

- People aged 65 and older feature prominently among Australia's pedestrian road deaths.
- Pedestrian fatalities in this age group are potentially set to increase substantially as Australia's population ages over the next few decades.
- The greatest population increase is projected for the very elderly. If other factors remain unchanged, by the year 2041 about one in every three older pedestrian fatalities will be aged 85 and older compared with about one in every five at present.
- Examination of coronial records between 1996 and 1999 indicates that older pedestrians were generally killed after coming into collision with a vehicle while attempting to cross the road in an urban area – either on the far side of the road from the point entered (43%) or on the near side (43%).
- The deaths tended to be associated with complex traffic environments. They occurred predominantly in urban areas (96% of cases), commonly took place on carriageways with undivided streams of opposing traffic (64% of cases), and were mostly at locations subject to speed limits of 60 km/hr or less (81%).
- Only a small proportion of the deaths (5%) stemmed from risky road use on the part of the driver.
- Primary responsibility for the collision was fully attributable to the pedestrian in 72% of cases and partly attributable to the pedestrian in an additional 14% of cases.
- There was little evidence, however, of deliberately risky road use on the pedestrian's part other than alcohol intoxication. About 11% of pedestrians had a blood alcohol concentration that would have made them ineligible to be in control of a motor vehicle, a much lower incidence than among their younger adult counterparts (60%).
- The deaths were predominantly attributed to unexplained unintentional errors on the pedestrian's part. Although difficult to prove, perceptual, cognitive and physical deteriorations were probably implicated in many of these errors.
- These difficulties would have been exacerbated by the fact that only a small

proportion of fatal road crossings had been attempted at a traffic control – 15% at an intersection or pedestrian crossing controlled by traffic lights and 4% at a pedestrian crossing without lights.

- In at least 18% of cases, an intersection controlled by traffic lights or a pedestrian crossing had been available within 100 metres of the pedestrian attempting to cross the road but had not been used.
- Pedestrian errors would be expected to have more serious consequences in conditions of reduced visibility. Although the deaths occurred predominantly on straight stretches of road (86%) and in fine weather (88%), about one-third occurred at night, dawn or dusk, mostly in circumstances of poor street lighting or no street lighting at all. This contrasts with the fact that the majority of travel by older pedestrians occurs during daylight hours.

Characteristics of Australian road fatalities involving pedestrians aged 65 and older, 1996-1999

General characteristics of the collisions

	Number dead	Per cent (known cases)
Pedestrian gender and age		
Males aged 65 to 74	88	22.4
Females aged 65 to 74	70	17.8
Males aged 75 to 84	99	25.2
Females aged 75 to 84	56	14.2
Males aged 85 and older	41	10.4
Females aged 85 and older	39	9.9
Geographic region		
In a city of population 100,000 or greater	300	76.7
In an urban centre of population 1,000 to 99,999	70	17.9
In a locality of population 200 to 999	6	1.5
In a rural area	15	3.8
Unstated region	2	-
Day of week of collision		
Monday	48	12.2
Tuesday	71	18.1
Wednesday	65	16.5
Thursday	66	16.8
Friday	65	16.5
Saturday	50	12.7
Sunday	28	7.1
Time of day of collision		
6:00 am to 11:59 am	131	33.3
12:00 noon to 5:59 pm	145	36.9
6:00 pm to 11:59 pm	107	27.2
12:00 midnight to 5:59 am	10	2.5
Pedestrian road manoeuvre		
Person proceeding from kerb/median hit on far side of road	168	42.7
Person proceeding from kerb hit on near side of road	148	37.7
Collision on near side of road after pedestrian emerged from in front of vehicle at kerb	20	5.1
Collision involving pedestrian walking along road	12	3.1
Collision involving pedestrian standing/lying on road	7	1.8
Pedestrian on footway hit by vehicle in driveway	5	1.3
Person hit while boarding or alighting from bus, taxi or tram	2	0.5
Other type of pedestrian collision with road vehicle	31	7.9

Type of vehicle involved in the collision	Number dead	Per cent (known cases)
Car, stn wagon, passenger van, 4WD passenger vehicle etc	278	73.9
Light truck, panel van or utility	45	12.0
Heavy rigid truck	18	4.8
Articulated truck	10	2.7
Bus	10	2.7
Motor cycle	9	2.4
Bicycle	4	1.1
Tram	2	0.5
Unknown vehicle type	17	-

Collision environment

Type of road		
Urban arterial or highway	183	47.3
Other urban road	189	48.8
Rural highway	11	2.8
Other rural road	4	1.0
Unstated type of road	6	-
Road configuration		
Two-way undivided road	243	63.9
Divided road with a median strip	130	34.2
Other	7	1.8
Unstated configuration	13	-
Speed limit		
0 to 60 km/hr	293	81.4
70 to 90 km/hr	56	15.6
100+ km/hr	11	3.1
Unstated speed limit	33	-
Proximity to an intersection		
Mid-block	293	74.9
At T intersection	52	13.3
At X or Y intersection	44	11.3
At roundabout	2	0.5
Unstated location	2	-

Presence of traffic controls where pedestrian attempted to cross	*Number dead*	*Per cent (known cases)*
Pedestrian attempted to cross at an intersection or pedestrian crossing with traffic lights	52	15.5
Pedestrian attempted to cross at a pedestrian crossing uncontrolled by traffic lights	13	3.9
Pedestrian had not attempted to cross at a traffic control:		
- within 100 metres of a traffic control	59	17.6
- more than 100 metres from a traffic control	133	39.6
- unstated whether or not a traffic control in the area	79	23.5
Pedestrian had not been crossing the road when hit	57	-
Horizontal road alignment		
Straight	333	86.5
Curved within 100 metres of collision site	52	13.5
Unstated alignment	8	-
Weather conditions		
Fine	324	87.8
Rain, fog or other adverse conditions	45	12.2
Unstated weather conditions	24	-
Time of day and season		
Daytime – October to March	119	30.3
Night-time, dawn, dusk – April to September	106	27.0
Night-time, dawn, dusk – October to March	28	7.1
Lighting		
Daytime	259	65.9
Night, dawn, dusk:		
- with poor street lighting or no street lighting	71	18.1
- with good street lighting	31	7.9
- with street lighting of unstated effectiveness	19	4.8
- presence of street lighting unstated	13	3.3

Causal factors and overall responsibility

Major causal factor		
Unexplained error or misjudgment by pedestrian	249	63.4
Pedestrian alcohol/drug intoxication	26	6.6
Pedestrian sensory impairment	15	3.8
Deliberately dangerous action by pedestrian, eg ignore signals	11	2.8
Pedestrian emotional state	7	1.8
Pedestrian blackout	4	1.0
Driver error, misjudgment or failure to observe	60	15.3
Dangerous driving, speeding, intoxication or ignoring signals	18	4.6
Critical vehicle malfunction	3	0.8
Pedestrian blood alcohol concentration (BAC)		
Below 0.050 gm/100ml	253	88.8
0.050 to 0.149 gm/100ml	15	5.3
0.150 gm/100ml or greater	17	6.0
Unstated blood alcohol reading	108	-

Age and gender of pedestrians having a BAC of 0.05 gm/100ml or greater	*Number dead*	*Per cent (known cases)*
Males aged 65 to 74	21	65.6
Males aged 75 and older	8	25.0
Females	3	9.4
Overall responsibility		
Pedestrian primarily responsible	278	72.2
Driver primarily responsible	55	14.3
Both pedestrian and driver responsible	52	13.5
Unknown responsibility	8	-
Responsibility where pedestrian attempted to cross road at an intersection or pedestrian crossing with traffic lights		
Pedestrian primarily responsible	31	59.6
Driver primarily responsible	18	34.6
Both pedestrian and driver responsible	3	5.8
Responsibility at pedestrian crossings without traffic lights		
Pedestrian primarily responsible	2	18.2
Driver primarily responsible	8	72.7
Both pedestrian and driver responsible	1	9.1
Unknown responsibility	2	-

Collision and injury details

Point of fatal impact with vehicle		
Fatal impact with windscreen	130	36.9
Other/unspecified frontal impact or impact with wheel	200	56.8
Fatal non-frontal impact	22	6.3
Unknown point of impact	41	-
Location of severe [a] injuries		
Severe head injuries alone	76	21.2
Severe head & chest injuries	83	23.1
Severe head, chest & abdomen injuries	20	5.6
Severe head & other injuries	41	11.4
Severe chest injuries alone	34	9.5
Other severe injuries	40	11.1
No severe injuries	26	7.2
Death from secondary effect of injuries [b]	39	10.9
Unstated injuries	34	-
Timing of death		
Before hospitalisation	134	34.4
In hospital	255	65.6
Unstated time of death	4	-
Total pedestrians killed of age 65 and older included in table	**393**	**100**
Cases for which information is currently unavailable	12	-
Total pedestrians killed of age 65 and older	405	-

[a] Injuries have been classified as 'severe' if scoring 4 or greater on the Abbreviated Injury Scale.

[b] Deaths resulting some time after the collision from the failure of an organ or system other than that directly injured in the collision as a secondary effect of those initial injuries.