

Rate and cost of hospital admissions due to fall-related injuries among older Queenslanders, 2007-08

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Key points

- During 2007-08, there were 13,028 admissions to public and private hospitals in Queensland due to fall-related injuries among people aged 65 years and over.
- Expenditure on hospital admitted patient services due to fall-related injuries among people aged 65 years and over was estimated to be \$106.0 million in 2007-08 – almost 70% was spent on treating women and more than 40% on treating those aged 85 years and over.
- Hip fractures were the most frequent type of fall-related injury. During 2007-08, 3,572 people aged 65 years and over were admitted with a hip fracture or around 10 people every day. At an average cost of \$15,046 per episode, hip fractures accounted for around 50% of the total estimated expenditure for all fall-related admissions.
- The majority of public hospital admissions came via the emergency department (83%). Over 50% of falls occurred in or around the home, and most were discharged back to their home/usual residence. Around 1 in 20 adults aged 85 years and over died during their fall-related hospitalisation.
- The cost of hospitalisations due to fall-related injuries among people aged 65 years and over in Queensland is projected to double by the year 2015 to over \$220 million, based on projected estimates of cost, population growth and rate of falls-related admissions.

Introduction

Falls are a significant cause of hospitalisation among older adults, representing around 2.6% of all hospital admissions among Australians aged 65 years and over in 2005-06.¹ During 2005-06, an estimated 126,805 hospitalised injury cases were due to unintentional falls across Australia,² half of which were among older Australians aged 65 years and over. Furthermore, falls are the leading cause of injury-related hospitalisations among those aged 65 years and over, representing 75% of these hospitalisations.

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The direct cost to the healthcare system of fall-related hospitalisations is considerable. The estimated costs of hospitalisations due to falls in 2003-04 in Australia was \$566.0 million.³ There are also indirect costs associated with injurious falls among older adults, including expenditure on non-hospital healthcare (for example, general practitioner and physiotherapy services), loss of productivity (both paid and non-paid for carers and volunteers services) and premature death. The overall costs of falls among those aged 65 years and over in Australia, including direct and indirect costs, was estimated to exceed \$1 billion in 1995-96.⁴

This chapter reports on the number, rates and costs of hospitalisations due to unintentional falls during the 2007-08 financial year, among Queenslanders aged 65 years and over.

Methodology and data capture

The number of admissions due to fall-related injuries to public and private acute hospitals in Queensland among people aged 65 years and over during 2007-08 was extracted by the Health Statistics Centre based on the ICD-10 principal diagnosis codes (S00-T75, T79), first external cause codes (W00-W19) and excluded admissions from another hospital. Additional data was obtained by the Health Statistics Centre to examine sources of fall-related admission, place of occurrence for the fall and discharge status, although the dataset was restricted to only public acute hospitals.

The estimated expenditure on hospital admitted patient services was calculated using data from the National Hospital Cost Data Collection (2006-07) and Australian Refined Diagnosis Related Groups. Expenditure includes a range of services encountered during an episode of care, such as medical, nursing, allied-health, pharmacy, imaging and hotel services.

Data were provided according to age and gender groups. The age-specific rate of hospitalisations, expressed per 100,000 population, was calculated using the estimated age and gender-matched resident population in Queensland during 2007-08, derived from the 2006 Census.

Cost of fall-related hospitalisations

During 2007-08, there were 13,028 hospitalisations due to falls to public and private Queensland hospitals among people aged 65 years and over. The age and gender-specific rates of hospitalisations are presented in Table 1. The overall rate of hospitalisation was 2,548.6 per 100,000 population. There was a trend for increasing rate of hospitalisation with age, with higher rates for females compared to males. The estimated expenditure on admitted patient services due to fall-related hospitalisations in 2007-08 was \$106.0 million. Around 70% of the estimated expenditure was spent on treating women and more than 40% on treating those aged 85 years and over.

Table 1: Number, rate and cost of hospitalisations due to falls, adults 65+, QLD, 2007-08

Age Group	Sex	No. of Episodes	Population	Rate per 100,000	Av. length of stay	Av. \$ per episode	Total \$
65-69	Males	586	79,956	732.9	6.0	\$7,913	\$4,636,783
	Females	812	78,373	1,036.1	5.6	\$7,013	\$5,694,614
	All	1,398	158,329	883.0	5.8	\$7,390	\$10,331,397
70-74	Males	559	59,208	944.1	6.9	\$7,692	\$4,299,622
	Females	914	60,766	1,504.1	6.2	\$7,244	\$6,621,064
	All	1,473	119,974	1,227.8	6.4	\$7,414	\$10,920,686
75-79	Males	718	46,555	1,542.3	6.9	\$7,763	\$5,574,029
	Females	1,435	52,911	2,712.1	7.7	\$7,943	\$11,398,673
	All	2,153	99,466	2,164.6	7.4	\$7,883	\$16,972,702
80-84	Males	945	30,904	3,057.9	7.9	\$7,579	\$7,162,532
	Females	2,070	41,744	4,958.8	9.0	\$8,583	\$17,766,453
	All	3,015	72,648	4,150.1	8.7	\$8,268	\$24,928,985
85+	Males	1,297	20,811	6,232.3	9.1	\$8,005	\$10,382,556
	Females	3,692	39,964	9,238.3	9.7	\$8,803	\$32,502,156
	All	4,989	60,775	8,209.0	9.5	\$8,596	\$42,884,712
All ages	Males	4,105	237,434	1,728.9	7.7	\$7,809	\$32,055,522
	Females	8,923	273,758	3,259.4	8.5	\$8,291	\$73,982,960
	All	13,028	511,192	2,548.6	8.2	\$8,139	\$106,038,482

Nature of fall-related injuries

The number, rate and estimated cost of fall-related admissions to public and private Queensland hospitals among people aged 65 years and over during 2007-08 for the top 5 principal diagnosis types, by total cost, is presented in Table 2. Figure 1 shows the age and gender-specific rate according to injury type.

Hip fractures were the most frequent type of fall-related injury. In 2007-08, over 3,500 people aged 65 years and over were admitted with a hip fracture, almost 10 people each day. At an average cost of \$15,046 per episode, hip fractures accounted for almost 50% of the estimated expenditure for all fall-related admissions. All of the top 5 injury types, except intracranial injury, showed a considerably higher rate of injury in females than males.

Table 2: Top 5 falls-related principal diagnosis injuries, adults 65+, QLD, 2007-08

	Gender	No. of Episodes	Estimated Population	Rate per 100,000	Av. length of stay	Av. \$ per episode	Total \$
Fracture of femur	Males	956	237434	402.6	11.3	\$ 15,168	\$ 14,501,041
	Females	2616	273758	955.6	11.6	\$ 15,001	\$ 39,243,722
	All	3572	511192	698.8	11.5	\$ 15,046	\$ 53,744,763
Fracture of lumbar spine and pelvis	Males	271	237434	114.1	12.1	\$ 7,842	\$ 2,125,299
	Females	840	273758	306.8	12.0	\$ 8,136	\$ 6,834,259
	All	1111	511192	217.3	12.0	\$ 8,064	\$ 8,959,558
Fracture of shoulder and upper arm	Males	171	237434	72.0	8.6	\$ 7,361	\$ 1,258,765
	Females	706	273758	257.9	8.3	\$ 7,725	\$ 5,453,638
	All	877	511192	171.6	8.3	\$ 7,654	\$ 6,712,403
Intracranial injury	Males	318	237434	133.9	7.6	\$ 11,047	\$ 3,512,881
	Females	308	273758	112.5	7.4	\$ 9,010	\$ 2,775,052
	All	626	511192	122.5	7.5	\$ 10,045	\$ 6,287,933
Fracture of forearm	Males	123	237434	51.8	4.7	\$ 4,716	\$ 580,117
	Females	783	273758	286.0	4.8	\$ 5,277	\$ 4,131,704
	All	906	511192	177.2	4.8	\$ 5,201	\$ 4,711,821

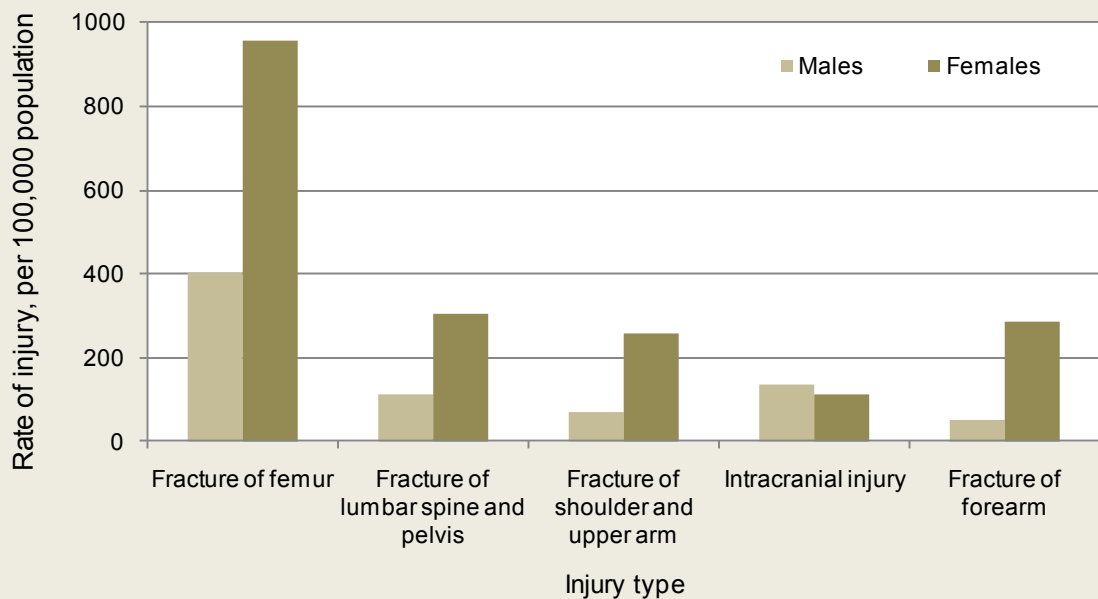


Figure 1: Rate of admission by top 5 injury types by gender, adults 65+, QLD, 2007-08

Fall-related hip fracture hospitalisations

The number, rate and estimated cost of hospitalisations due to fall-related hip fractures to public and private Queensland hospitals among people aged 65 years and over in 2007-08, by age and gender, is presented in Table 3. Figure 2 shows the age-specific rate of hip fracture in 2007-08. The age-specific rate of hip fracture increased substantially with age for both males and females. The age-specific rate of hip fracture in males aged 85 years and over was 1,821 per 100,000 population, while the rate of hip fracture in females aged 85 years and over was 3,356 per 100,000 population.

Table 3: Hip fracture hospitalisations by age and gender, adults 65+, QLD, 2007-08

Age Group	Sex	No. of Episodes	Population	Rate per 100,000	Av. length of stay	Av. \$ per episode	Total \$
65-69	Males	88	79,956	110.1	13.6	\$15,597	\$1,372,513
	Females	146	78,373	186.3	9.3	\$13,452	\$1,963,953
	All	234	158,329	147.8	10.9	\$14,258	\$3,336,466
70-74	Males	102	59,208	172.3	10.9	\$16,910	\$1,724,863
	Females	166	60,766	273.2	11.1	\$14,472	\$2,402,405
	All	268	119,974	223.4	11.0	\$15,400	\$4,127,268
75-79	Males	165	46,555	354.4	10.1	\$15,416	\$2,543,562
	Females	348	52,911	657.7	10.4	\$14,809	\$5,153,526
	All	513	99,466	515.8	10.3	\$15,004	\$7,697,088
80-84	Males	222	30,904	718.4	11.1	\$14,790	\$3,283,421
	Females	615	41,744	1,473.3	11.8	\$15,503	\$9,534,518
	All	837	72,648	1,152.1	11.6	\$15,314	\$12,817,939
85+	Males	379	20,811	1,821.2	11.5	\$14,714	\$5,576,682
	Females	1,341	39,964	3,355.5	12.2	\$15,055	\$20,189,320
	All	1,720	60,775	2,830.1	12.1	\$14,980	\$25,766,002
All ages	Males	956	237,434	402.6	11.3	\$15,168	\$14,501,041
	Females	2,616	273,758	955.6	11.6	\$15,001	\$39,243,722
	All	3,572	511,192	698.8	11.5	\$15,046	\$53,744,763

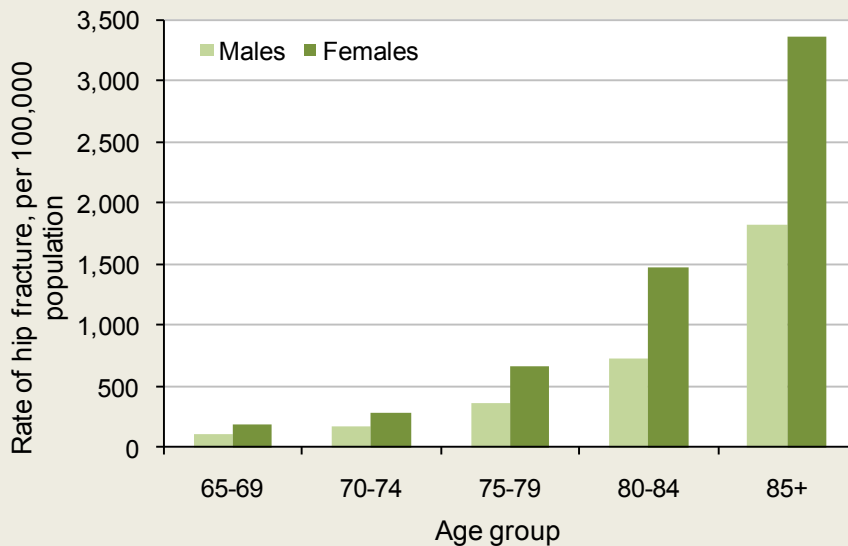


Figure 2: Hip fractures rates by age and gender, adults 65+, QLD, 2007-08

Circumstances and outcomes of fall-related public hospital admissions

During 2007-08, there were 9,707 fall-related admissions to public hospitals in Queensland among people aged 65 years and over. The mode of these admissions was predominantly via emergency departments (83%), other sources (such as episode change and transfer from another hospital; 10%) and outpatient departments (3%), as shown in Figure 3.

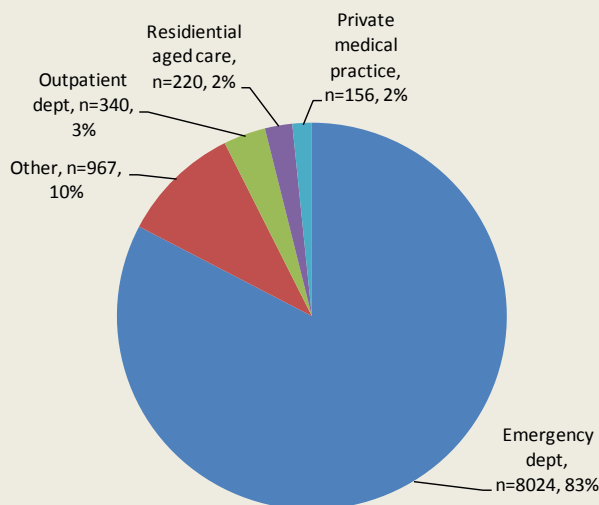


Figure 3: Admission source of fall-related public hospital admissions, adults 65+, QLD, 2007-08 (n=9,707 admissions)

The most common location for falls was in the home (51%), as shown in Table 4. The next most frequent place of occurrence was unspecified among those aged 65-74 years (25%), and was in residential aged care facilities for the older age groups (19% in those aged 75-84 years; 38% in those aged 85+ years). Figure 4 illustrates the place of occurrence of fall-related public hospital admissions, by age.

Table 4: Location of fall-related public hospital admissions, adults 65+, QLD, 2007-08

Place of occurrence	All ages, n (%)	By age group, n (%)		
		65-74	75-84	85+
Home	4926 (50.7%)	1247 (52.5%)	2071 (54.2%)	1608 (45.8%)
Residential aged care facility	2194 (22.6%)	161 (6.8%)	713 (18.7%)	1320 (37.6%)
Unspecified place of occurrence	1486 (15.3%)	584 (24.6%)	581 (15.2%)	321 (9.1%)
Street and highway, sidewalk	239 (2.5%)	84 (3.5%)	101 (2.6%)	54 (1.5%)
Trade and service area, shop and store	172 (1.8%)	50 (2.1%)	79 (2.1%)	43 (1.2%)
Health service area	152 (1.6%)	30 (1.3%)	51 (1.3%)	71 (2%)
Other specified place of occurrence	107 (1.1%)	47 (2%)	44 (1.2%)	16 (0.5%)
Street and highway, roadway	103 (1.1%)	50 (2.1%)	41 (1.1%)	12 (0.3%)
Trade and service area, cafe, hotel and restaurant	94 (1%)	37 (1.6%)	43 (1.1%)	14 (0.4%)
Other locations	234 (2.4%)	84 (3.5%)	96 (2.5%)	54 (1.5%)
Total	9707	2374	3820	3513

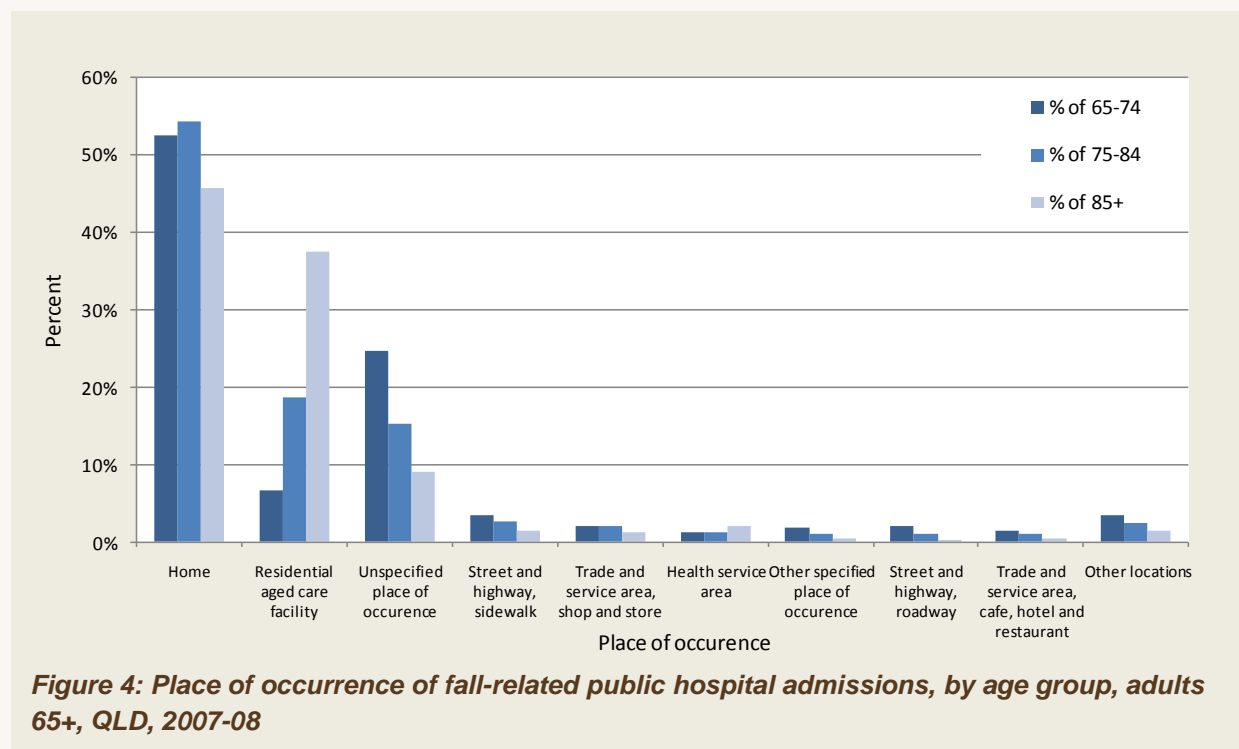


Figure 4: Place of occurrence of fall-related public hospital admissions, by age group, adults 65+, QLD, 2007-08

Of the fall-related public hospital admissions among people aged 65 years and over, the majority were discharged back to their home or usual residence (59%) or were transferred to another health care facility for further care (20%), as shown in Table 5 and Figure 5. This pattern was consistent across all age groups. Notably, there was a four-fold increase in mortality among adults aged 85 years and older, compared to those aged 65-74 years (from 1.4% to 5.4%).

Table 5: Discharge status for fall-related Queensland public hospital admissions, persons 65+, 2007-08

Discharge status	All ages, n (%)	By age group, n (%)		
		65-74	75-84	85+
Home/usual residence	5670 (58.4%)	1667 (70.2%)	2219 (58.1%)	1784 (50.8%)
Transferred	1963 (20.2%)	404 (17%)	775 (20.3%)	784 (22.3%)
Other	1395 (14.4%)	236 (9.9%)	584 (15.3%)	575 (16.4%)
Died	344 (3.5%)	34 (1.4%)	130 (3.4%)	180 (5.1%)
Residential aged care	335 (3.5%)	33 (1.4%)	112 (2.9%)	190 (5.4%)
Total	9707	2374	3820	3513

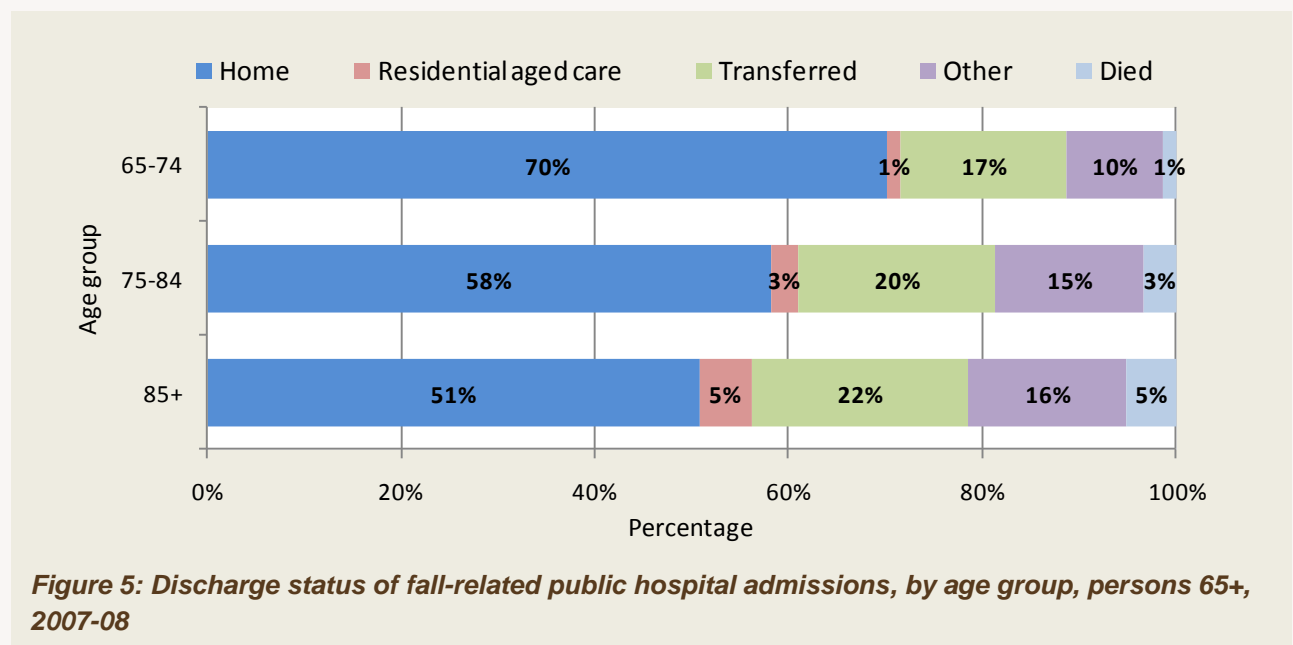


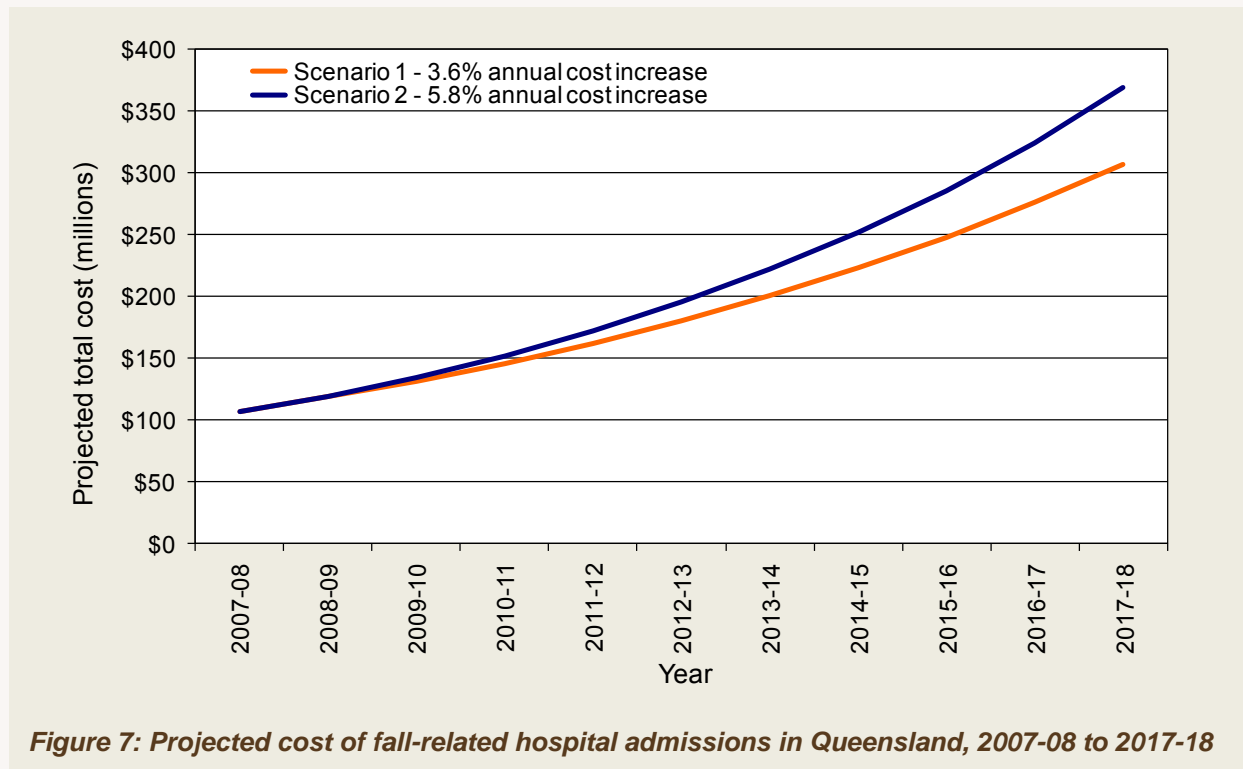
Figure 5: Discharge status of fall-related public hospital admissions, by age group, persons 65+, 2007-08

Cost projections

The projected costs of fall-related hospitalisations from 2007-08 to 2017-18 were estimated from the following information:

- The projected rates of fall-related hospitalisation based on actual admission data from 2006-07 to 2008-09 among persons aged over 65 years, in 5 year age-groups;
- The corresponding projected population increases based on the 2006 Census;
- The projected cost increases from the National Hospital Cost Data Collection, using the lowest average growth in price (3.6%) for Scenario 1 and the national average growth in price (5.8%) for Scenario 2.

From these models, the cost of fall-related hospitalisations is estimated to be in the range of \$307 to \$369 million by 2017-18. The 2007-08 cost of fall-related hospitalisations is estimated to double within the next 6 to 7 years (\$222 million by 2013-14 in Scenario 2; \$223 million by 2014-15 in Scenario 1). As 15% of the Queensland population will be aged over 65 years by the year 2017,⁵ there exists a window of opportunity in which additional resources should be focussed on the prevention of falls among older adults, to minimise the escalating costs of fall-related hospital admissions.



For additional information and resources on falls prevention, please visit Queensland Health's "Stay On Your Feet®" website at: www.health.qld.gov.au/stayonyourfeet

Suggested citation:

Black A and Begg S (2010). Rate and cost of hospital admissions due to fall-related injuries among older Queenslanders, 2007-08. Queensland Health, Brisbane.

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