

## 12. Natural and environmental factors

This section describes injury hospitalisations due to natural and environmental factors. Natural and environmental factors can contribute to injury-related hospitalisations in a number of ways, including: *excessive temperatures (i.e., very hot and very cold temperature)*, *natural events (e.g. mudslides, floods)* and *venomous plants or animals* (WHO, 1977; WHO, 1992).

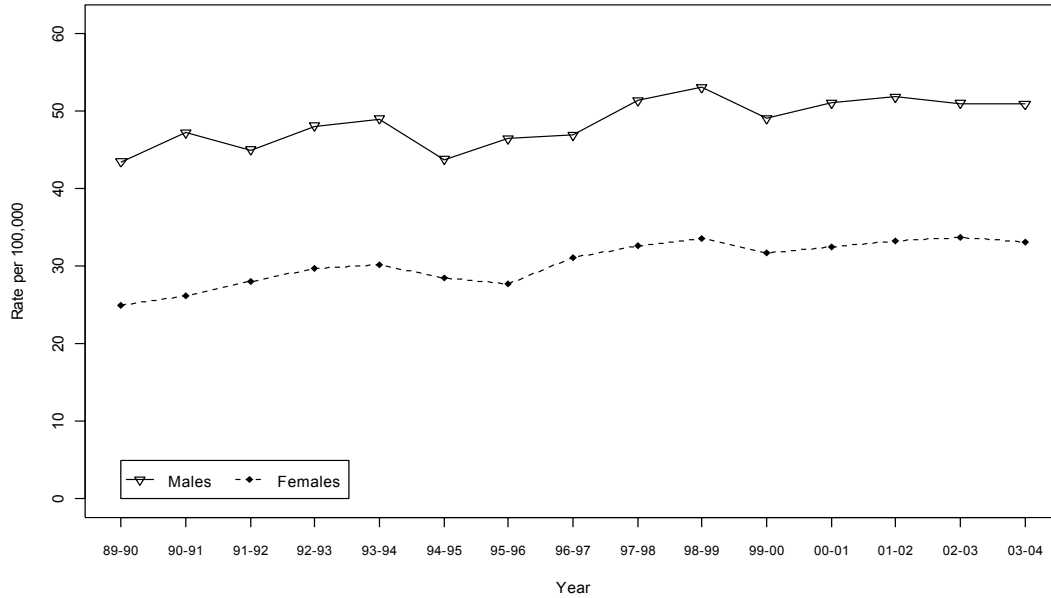
In NSW, natural and environmental factors were the twelfth leading cause of death in NSW during 1998–2002, with 67 deaths, giving a mortality rate of 0.2 per 100,000 population (Schmertmann et al, 2004). The lifetime cost of fatal and non-fatal injury associated with natural and environmental factors in NSW has been estimated at \$27.8 million—\$13.7 million in direct costs and \$14.2 million in mortality and morbidity costs (Potter-Forbes & Aisbett, 2003).

Hospitalisation data for natural and environmental factor-related injuries were used to describe the profile of natural and environmental factor-related injuries involving NSW residents. Hospitalisation data during 1999–2000 to 2003–2004 were used for the majority of the analyses, except for the trend analyses, which used data from 1989–1990 to 2003–2004.

Natural and environmental factor-related injuries were the ninth leading cause of injury hospitalisation in the period 1999–2000 to 2003–2004, and accounted for 2.7% of all injury-related hospitalisations (Table 3). During this period, there were 13,789 hospitalisations for natural and environmental factor-related injuries, at a rate of 41.9 per 100,000 population. There were approximately 2,758 hospitalisations per year due to natural and environmental factor-related injuries during 1999–2000 to 2003–2004.

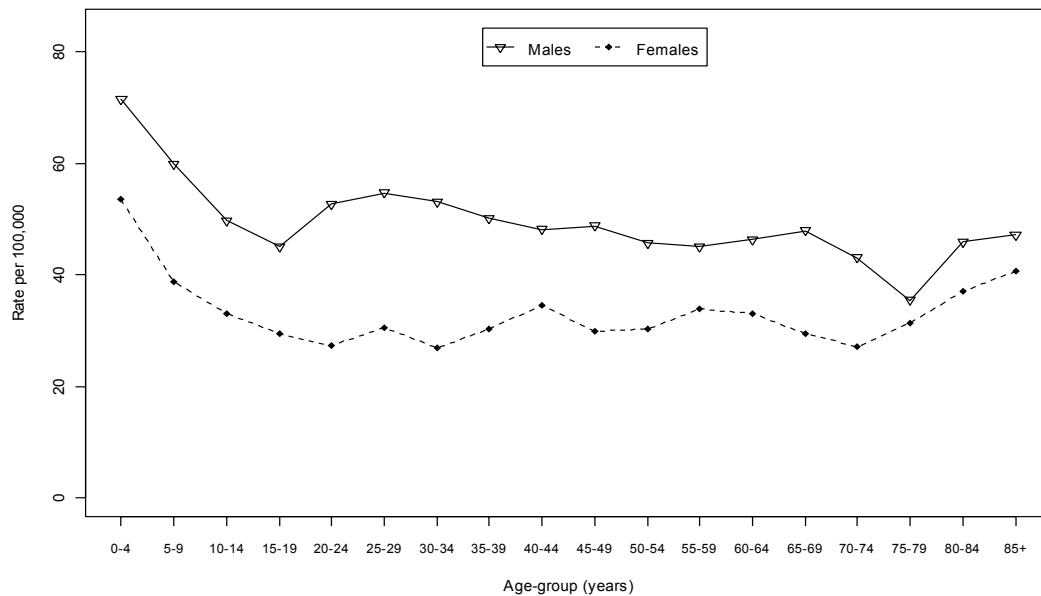
The age-adjusted hospitalisation rate for natural and environmental factor-related injuries has been gradually increasing from 34.2 per 100,000 population in 1989–1990 to 42.0 per 100,000 population in 2003–2004. The hospitalisation rate for both males and females increased significantly during 1989–1990 to 2003–2004 (Figure 19). For males the rate significantly increased by 1.1% per year (95% confidence interval for the increase: 0.7% to 1.5%) and for females the rate increased significantly by 2.0% per year (95% confidence interval for the increase: 1.5% to 2.4%).

**Figure 19. Hospitalisation rate for injury due to natural and environmental factor-related injuries by sex, NSW 1989–1990 to 2003–2004**



Children aged 0-4 and 5-9 years had the highest age-specific hospitalisation rates for natural and environmental factor-related injuries for the period 1999–2000 to 2003–2004 at 62.8 per 100,000 population and 49.6 per 100,000 population, respectively (Figure 20).

**Figure 20. Age-specific hospitalisation rate for natural and environmental factor-related injuries by sex, NSW, 1999–2000 to 2003–2004**



Almost three-quarters of hospitalisations as a result of natural and environmental factor-related injuries resulted from contact with *venomous plants and animals* (37.0%), *being bitten or struck by a dog* (19.6%), and *being bitten or struck by a mammal (excluding dogs)* (17.3%) (Table 20). The overall hospitalisation rate was about 54% higher for males than for females.

Table 21 shows the number of hospitalisations due to natural and environmental factor-related injuries by age group for the period 1999–2000 to 2003–2004. *Contact with venomous plants and animals, being bitten or struck by a dog, and contact with non-venomous insects* were common causes of natural and environmental factor-related hospitalisation for all age groups. The number of *dog bites or being struck by a dog* involving children aged 1–4 years was high compared to all other age groups.

**Table 20. Injury hospitalisations by natural and environmental factor-related cause, NSW, number, rate and CI, 1999–2000 to 2003–2004**

Cause	All Persons			Male			Female		
	N	Rate <sup>1</sup>	95%CI <sup>2</sup>	N	Rate <sup>1</sup>	95%CI <sup>2</sup>	N	Rate <sup>1</sup>	95%CI <sup>2</sup>
Venomous plants/ animals	5,097	15.5	(15.1,15.9)	3,266	19.8	(19.2,20.5)	1,831	11.1	(10.6,11.7)
Struck/bitten by dog	2,703	8.2	(7.9,8.5)	1,466	8.9	(8.4,9.4)	1,237	7.5	(7.1,7.9)
Struck/bitten by mammal (excluding dogs)	2,389	7.2	(6.9,7.5)	1,381	8.4	(8.0,8.9)	1,008	6.1	(5.7,6.4)
Non-venomous insects	1,290	3.9	(3.7,4.2)	701	4.2	(3.9,4.6)	589	3.6	(3.3,3.9)
Excess temperature	749	2.2	(2.1,2.4)	474	3.0	(2.8,3.3)	275	1.5	(1.3,1.6)
Plant thorns and spines	411	1.2	(1.1,1.4)	271	1.7	(1.5,1.9)	140	0.8	(0.7,1.0)
Reptiles	397	1.2	(1.1,1.3)	269	1.6	(1.4,1.8)	128	0.8	(0.6,0.9)
Air pressure	196	0.6	(0.5,0.7)	121	0.7	(0.6,0.9)	75	0.5	(0.4,0.6)
Contact with marine animals	139	0.4	(0.4,0.5)	114	0.7	(0.6,0.8)	25	0.2	(0.1,0.2)
Natural events	74	0.2	(0.2,0.3)	43	0.3	(0.2,0.3)	31	0.2	(0.1,0.3)
Other	344	1.0	(0.9,1.2)	226	1.4	(1.2,1.6)	118	0.7	(0.6,0.8)
All <sup>3</sup>	13,789	41.9	(41.2,42.6)	8,332	50.8	(49.7,51.9)	5,457	32.9	(32.0,33.8)

<sup>1</sup> Age-adjusted rate per 100,000 population.

<sup>2</sup> 95% confidence interval.

<sup>3</sup> The number of NSW residents hospitalised interstate during 2003–2004 was imputed and as a result the sum of submechanisms may not equal the total.

## SUMMARY

Natural and environmental factors were the ninth leading cause of injury-related hospitalisation involving NSW residents between 1999–2000 and 2003–2004, accounting for 2.7% of all injury-related hospitalisations. The yearly hospitalisation rate for natural and environmental factor-related injuries was estimated to have increased significantly by 2.0% per year for males and by 1.1% per year for females during 1989–1990 to 2003–2004.

In 2003–2004, there were 2,818 hospitalisations of NSW residents after being injured due to natural and environmental factors, giving a hospitalisation rate of 42.0 per 100,000 population. Around one-quarter (23.1%) of those hospitalised following an injury due to natural and environmental factors were aged 15 years or less.

*Venomous plants and animals, being bitten or struck by a dog and being bitten or struck by a mammal (excluding dogs)* were the types of natural and environmental factors that had the highest hospitalisation rates. The overall hospitalisation rate was about 54% higher for males than for females.

**Table 21. Number of hospitalisations for natural and environmental factor-related injuries<sup>1</sup> by age group and cause, NSW, 1999–2000 to 2003–2004**

Rank	Age Group										Total
	0-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+		
1	Struck/bitten by dog 547	Venomous plants/ animals 414	Venomous plants/ animals 416	Venomous plants/ animals 693	Venomous plants/ animals 840	Venomous plants/ animals 857	Venomous plants/ animals 682	Venomous plants/ animals 436	Venomous plants/ animals 407	Venomous plants/ animals 5,097	
2	Venomous plants/ animals 352	Struck/bitten by dog 385	Struck/bitten by dog 180	Struck/bitten by other mammal 316	Struck/bitten by other mammal 312	Struck/bitten by other mammal 375	Struck/bitten by other mammal 368	Struck/bitten by other mammal 335	Struck/bitten by other mammal 355	Struck/bitten by dog 2,703	
3	Non-venomous insects 245	Non-venomous insects 134	Non-venomous insects 113	Struck/bitten by dog 202	Struck/bitten by dog 308	Struck/bitten by dog 269	Struck/bitten by dog 277	Struck/bitten by dog 228	Excess temperature 318	Struck/bitten by other mammal 2,389	
4	Struck/bitten by other mammal 127	Struck/bitten by other mammal 94	Struck/bitten by other mammal 106	Non-venomous insects 190	Non-venomous insects 166	Non-venomous insects 172	Non-venomous insects 116	Non-venomous insects 82	Struck/bitten by dog 307	Non-venomous insects 1,290	
5	Reptiles 35	Reptiles 32	Reptiles 41	Excess temperature 86	Excess temperature 95	Excess temperature 84	Plant thorns and spines 64	Excess temperature 56	Non-venomous insects 72	Excess temperature 749	
6	Excess temperature 22	Plant thorns and spines 31	Plant thorns and spines 27	Air pressure 54	Air pressure 76	Plant thorns and spines 82	Excess temperature 60	Plant thorns and spines 48	Plant thorns and spines 58	Plant thorns and spines 411	
7	Plant thorns and spines 13	Contact with marine animals #	Excess temperature 24	Reptiles 53	Reptiles 58	Reptiles 65	Reptiles 51	Reptiles 41	Reptiles 22	Reptiles 397	
8	Natural events #	Excess temperature #	Contact with marine animals 13	Plant thorns and spines 31	Plant thorns and spines 57	Air pressure 42	Air pressure 22	Contact with marine animals 7	Contact with marine animals 7	Air pressure 196	
9	Contact with marine animals #	Natural events #	Natural events #	Contact with marine animals 25	Contact with marine animals 29	Contact with marine animals 29	Contact with marine animals 20	Natural events #	Natural events 6	Contact with marine animals 139	
10	-	-	-	Natural events 18	Natural events 15	Natural events 13	Natural events 11	Air pressure #	-	Natural events 74	
	Other 17	Other 13	Other 18	Other 52	Other 50	Other 59	Other 47	Other 33	Other 54	Other 344	

<sup>1</sup> # Cell sizes represent fewer than five hospitalisations or data have been removed to prevent identification of cell sizes less than five.