

COSTS OF DROWNING IN AUSTRALIA



ROYAL LIFE SAVING
AUSTRALIA

DROWNING COSTS AUSTRALIA MORE THAN \$1.5 BILLION EVERY YEAR

FATAL DROWNING

\$1.24
BILLION

PER YEAR
FATAL INCIDENTS

\$4.64
MILLION

AVERAGE COST TO
AUSTRALIAN SOCIETY

4,285

INCIDENTS
2002/03-2016/17

185
THOUSAND

YEARS OF LIFE LOST

46
YEARS

AN AVERAGE OF 46
LIFE YEARS LOST

2,488

PRE-MORTALITY
HOSPITAL BED DAYS

NON-FATAL DROWNING

\$328
MILLION

PER YEAR
NON-FATAL INCIDENTS

\$690
THOUSAND

AVERAGE COST TO
AUSTRALIAN SOCIETY

6,158

INCIDENTS
2002/03-2014/15

7.4%

OF NON-FATAL VICTIMS
EXPERIENCE LONG
TERM COMPLICATIONS

\$48,500

HOSPITAL COSTS FOR
SEVERE COMPLICATIONS

\$5,200

HOSPITAL COSTS FOR
MILD COMPLICATIONS

COSTS OF DROWNING IN AUSTRALIA

Based on research conducted by Royal Life Saving, the combined effects of fatal and non-fatal drowning cost Australia more than \$1.5 billion each year. These costs combine the health system, emergency services, coronial and productivity effects of an average of 286 fatal and 474 non-fatal incidents each year.

The largest share of costs from drowning, for both fatal and non-fatal incidents, come from the value of years of life lost to death and disability. We calculate that fatal drowning lead to the loss of 185,000 years of life over a 15 year period, while non-fatal drowning lead to complications and disability equivalent to nearly 11,000 years of life lost over a 13 year period.

The sections below outline the methodology and results for fatal and non-fatal drowning in more detail.

Fatal drowning

Background

Figures for the costs of fatal drowning incorporate all unintentional drowning deaths over the 15 financial years from 2002-03 to 2016-17 as per the Royal Life Saving National Fatal Drowning Database. By measuring the full costs of fatal drowning, including its impact on the health system, emergency services and economic productivity, as well as the value to society of the years of life lost, we can gain a clearer sense of the size of the challenge posed by fatal drowning, and the drowning prevention strategies required to reduce this burden.

Between 1 July 2002 and 30 June 2017, 4,285 Australians drowned. The cost of these lives lost to Australian society was \$18.63 billion, measured in 2017 dollars.

Methods

Information on the number and age at death of those who die from drowning has been sourced from the Royal Life Saving National Fatal Drowning Database, which collates data from the Australian National Coronial Information System (NCIS), State and Territory Coronial Offices and media reports. Royal Life Saving uses a media monitoring service (electronic and print media) throughout the year to identify all drowning cases reported in the media.

The cost associated with each fatal drowning is calculated based on an updated Value of a Statistical Life Year provided by the Commonwealth Office of Best Practice Regulation¹ and the victim's projected remaining life years.² Estimates from literature³⁻⁶ were used to determine the costs of emergency services and search and rescue response, hospitalisation in cases of delayed mortality, forgone economic productivity and coronial enquiry costs.

Results

The total cost of the 4,285 cases of fatal drowning over 15 years was calculated as \$18.63 billion, a yearly average of \$1.24 billion (all figures are 2017 dollars). This implies an average cost per fatal incident of \$4.64 million, with fatalities involving younger victims or delayed mortality leading to higher per-incident costs.

Hospitalisation, emergency services, search and rescue and coronial costs were found to play a relatively minor role, totaling \$92 million over 15 years, most of which is due to hospitalisation costs. Most of the burden of fatal drowning stems from the value that Australia, as a society, places on avoiding preventable loss of life, in the form of the Value of a Statistical Life Year.

Areas where the average age of the victim was lower, including swimming pools and bathtubs, led to more costly incidents, reflecting the higher number of years of life lost per incident.

Non-fatal drowning

Background

Figures for the costs of non-fatal drowning incorporate persons admitted to hospital due to drowning and submersion over the 13 financial years from 2002-03 to 2014-15. By measuring the full costs of non-fatal drowning, including its long term impacts on an individual's health, and on the health system, emergency services and economic productivity, we can understand the scale of the problem, how it compares to the impact of fatal drowning, and where to direct investment in prevention.

Between 1 July 2002 and 30 June 2015 (a period of 13 financial years), 6,158 Australians were admitted to hospital as a result of non-fatal drowning. The cost of these incidents to Australian society was \$4.3 billion, measured in 2017 dollars.

Methods

Non-fatal drowning incidents that occurred in Australia between 1 July 2002 and 30 June 2015 were identified using Hospital separations in the National Hospital Morbidity Database where the principal diagnosis was in ICD-10-AM Chapter XIX, Injury, poisoning and certain other consequences of external causes (S00-T98) and the first reported external cause of morbidity was Accidental Drowning and Submersion (W65-W74), though this approach likely excludes some cases of drowning where the hospital coded the incident differently.

The cost associated with each non-fatal incident is calculated based on rates of complications in survivors,⁷ the degree of disability associated with each level of injury,⁸ and the costs from hospitalisation, loss of productivity and emergency response.⁶ These figures update the cost estimates provided in earlier Royal Life Saving publications⁹ based on additional research into rates and consequences of brain injury among victims.¹⁰⁻¹³

Results

The total cost of the 6,158 cases of fatal drowning over 13 years was estimated at \$4.3 billion, or \$328 million annually. This means that the average cost per non-fatal incident is \$690,000, with the 7.4% of incidents leading to long term complications generating the vast majority of these costs.

Average hospital costs vary heavily depending on the severity of the incident, with severe incidents costing, on average, \$48,500 and incidents leading to mild disability costing \$5,200.

These estimates are conservative since they exclude non-fatal drowning victims hospitalised under another ICD code. Including these victims could raise the annual cost to \$463 million per year.

Policy Implications

Royal Life Saving calculates that drowning costs Australian society more than \$1.5 billion each year, and that each fatal drowning averted is worth, on average, \$4.64 million.

These figures give us a basis from which to analyse potential drowning prevention interventions: a policy which permanently reduced the rate of drowning by 1% would be worth, conservatively, \$500 million to Australian society. This provides a lens through which to consider funding for programs like Swim and Survive and policies like improved enforcement of pool fencing regulations.

More specifically, the relative costs of fatal and non-fatal drowning incidents enable us to put a value on measures which lead to a rescue following a period of submersion in what would otherwise have been a fatal drowning (\$3.95 million) and the value of a quick response (such as timely rescue and effective cardiopulmonary resuscitation) to a non-fatal drowning which helps the victim avoid long term complications (\$10.7 million).

Obviously, dollars and cents aren't the only way, or even the most useful way to talk about how much drowning costs us as a society. The Australian public already has a clear understanding of what a tragedy every drowning is, and recognises that we need to work together to prevent them. But policy decisions often do come down to dollars and cents, and it's worth our trying to understand the burden of drowning in those terms, so we can talk sensibly about the tradeoffs we're willing to make to reduce it.

Further reading

The following publications provide additional detail on fatal and non-fatal drowning in Australia:

A 13 Year National Study of Non-Fatal Drowning In Australia
<https://www.royallifesaving.com.au/about/news-and-events/news-items/just-launched-a-13-year-national-study-of-non-fatal-drowning-in-australia>

Royal Life Saving Fact Sheet on Non-Fatal Drowning
https://www.royallifesaving.com.au/__data/assets/pdf_file/0018/19350/RLS_FactSheet_31_Non-Fatal-Drowning.pdf

Royal Life Saving National Drowning Report
<https://www.royallifesaving.com.au/facts-and-figures/research-and-reports>

For further information on how the burden of disease and injury is calculated in other contexts:

Australian Institute of Health and Welfare Burden on Disease Studies
<https://www.aihw.gov.au/reports-statistics/health-conditions-disability-deaths/burden-of-disease/overview>

Incidence and Costs of Injury in Western Australia
http://ww2.health.wa.gov.au/~/_media/Files/Corporate/Reports%20and%20publications/Cost-of-injury/Incidence-and-costs-of-injury-in-wa.pdf

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