

WESTERN AUSTRALIAN DROWNING REPORT 2016-17

Towards a nation free
from drowning



ROYAL LIFE SAVING
WESTERN AUSTRALIA

Partner:



Government of Western Australia
Department of Health



SUMMARY REPORT

39

DROWNING DEATHS

105

HOSPITAL ADMISSIONS

94

EMERGENCY DEPARTMENT PRESENTATIONS



65%



35%

TOP 3 LOCATIONS



31% OCEAN/HARBOUR



31% BEACH



28% RIVER/CREEK /STREAM

TOP 3 REGIONS

01 KIMBERLEY

02 MIDWEST

03 PILBARA

TOP 3 ACTIVITIES

21% FISHING

21% BOATING

21% SWIMMING

TOP 3 FACTORS

26% ALCOHOL

26% LOW SOCIO-ECONOMIC STATUS

22% BORN OVERSEAS)

HELP MAKE YOUR COMMUNITY FREE FROM DROWNING



WEAR A LIFEJACKET



AVOID ALCOHOL AROUND WATER



LEARN TO SWIM AND SURVIVE



CHECK CONDITIONS BEFORE HEADING OUT ON THE WATER



SUPERVISE CHILDREN



LEARN HOW TO SAVE A LIFE

DROWNING TRENDS

Overall, there were 238 Western Australians (WA) affected by drowning (both fatal and non-fatal) between 1 July 2016 and 30 June 2017 at a rate of 8.9 incidents per 100,000 population.

This represents a 9.2% decrease in the number of drowning deaths and an 11.9% decrease in the rate of drowning from 2015-16 (Figure 1). It is important to note that this is likely an underestimation, given that emergency department presentations are currently only collected at hospitals located in the Perth metropolitan area and don't include those recorded in regional areas of WA.

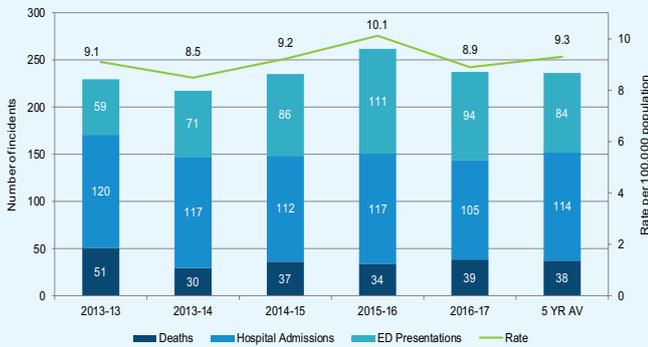


Figure 1: Total drowning burden, WA 2012-13 to 2016-17

FATAL DROWNING

There were 39 fatal drowning incidents recorded in WA waterways between 1 July 2016 and 30 June 2017 which was a 14.7% increase from 2015-16 and remains above the 10-year average. The crude rate of fatal drowning was 1.5 deaths per 100,000 population. While this was a 15.4% increase from 2015-16, it remains consistent with the 10-year average for WA (Figure 2).

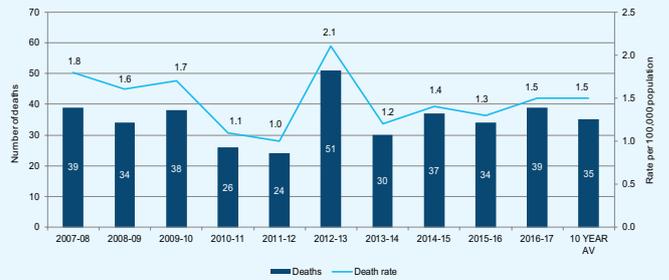


Figure 2: Fatal drowning, WA 2007-08 to 2016-17

Nationally, 14.4% of all fatal drowning incidents recorded in 2016-17 occurred in WA with the highest proportion occurring in New South Wales (32.0%) followed by Queensland (25.1%) and Victoria (15.5%). When taking in account population distribution, WA recorded the equal third highest rate of fatal drowning behind the Northern Territory (2.5 deaths per 100,000 population) and Tasmania (2.1 deaths per 100,000 population) (Figure 3).



Figure 3: Fatal drowning by state, 2016-17

NON-FATAL DROWNING

While fatal drowning increased in 2016-17 in WA, non-fatal drowning decreased from 2015-16. Overall, there were 105 people admitted to hospital following a non-fatal drowning incident in 2016-17 at a rate of 3.9 admissions per 100,000 population. This represents a 10.3% decrease in the number of hospital admissions and a 13.3% decrease in the rate of hospital admissions from 2015-16 (Figure 4). There has been an average annual decrease of 5.0% in hospital admissions from 2012-13 to 2016-17, but this was not statistically significant.

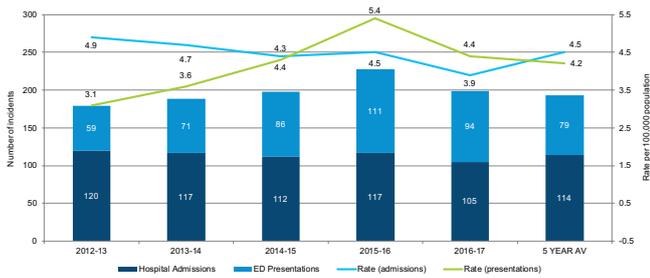


Figure 4: Non-fatal drowning, WA 2012-13 to 2016-17

Overall, 8.6% (n=9) of hospital admissions due to non-fatal drowning in 2016-17 resulted in brain injury, with a crude rate of 0.3 cases per 100,000 population. This is significantly higher than the previous five-year trend (2012-13 to 2015-16), where on average there were 5.4 hospital admissions resulting in brain injury at a rate of 0.2 cases per 100,000 population.

The average length of hospital stay was 3.06 days in 2016-17 (Figure 5). This increased with age, with older adults over 65 years of age recording the longest hospital stay (8.00 days) and toddlers aged 0-4 years recording the shortest hospital stay (1.16 days).

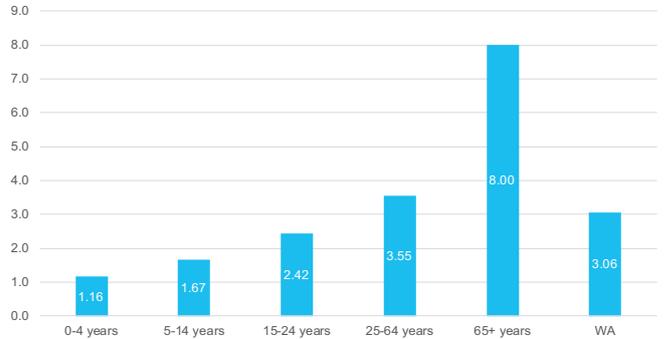


Figure 5: Average length of hospital stay by age, WA 2016-17

In addition, 94 people presented to a hospital emergency department in the Perth metropolitan area following a non-fatal drowning incident in 2016-17 at a rate of 4.4 presentations per 100,000 population (Figure 4). This represents a 15.3% decrease in the number and a 18.5% decrease in the rate of emergency department presentations from 2015-16. Despite this, over the past five years (2012-13 to 2016-17), there has been an average annual increase in the rate of emergency department presentation of 11.0% which was statistically significant.



WHO DROWNS?

Gender

Overall, 65.1% (n=155) of people involved in drowning incidents (both fatal and non-fatal) recorded between 1 July 2016 and 30 June 2017 in WA were male and 34.9% (n=83) were female (Figure 6). This is similar to gender breakdowns reported in 2015-16. Males were almost twice as likely to be involved in a drowning incident (11.5 incidents per 100,000 population) than females (6.3 incidents per 100,000 population) in 2016-17. While males remained at a much greater risk of drowning compared to females, the rate of drowning amongst males decreased by 11.5%, while the rate of drowning amongst females remained similar to 2015-16.

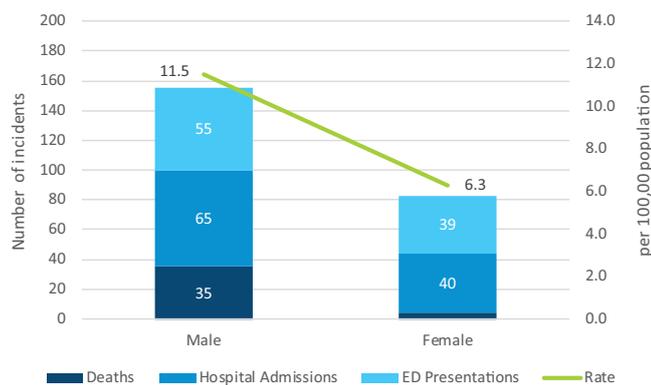


Figure 6: Drowning by gender, WA 2016-17

FATAL DROWNING

Similar to overall drowning trends, males were at a significantly greater risk of fatal drowning than females in 2016-17. Overall, 89.7% (n=35) of drowning deaths involved males and 10.3% were female. Males were 8.7 times more likely to be involved in a fatal drowning incident (2.6 deaths per 100,000 population) than females (0.3 deaths per 100,000 population). Unlike overall trends, the rate of fatal drowning amongst males increased in 2016-17 by 13.0% from 2015-16. Fatal drowning rates amongst females remained the same.

NON-FATAL DROWNING

Males were also at a greater risk of non-fatal drowning, although not to the same extent as for fatal drowning. Of the 105 hospital admissions recorded in 2016-17, 61.9% (n=65) were male and 38.1% (n=39) were female. Males were 1.6 times more likely to be admitted to hospital following a non-fatal drowning incident (4.8 admissions per 100,000 population) than females (3.0 admissions per 100,000 population) in 2016-17. Rates of hospital admissions decreased by 11.1% for males and 6.3% for females compared to 2015-16.

In addition, of the 94 people that presented to an emergency department in the Perth metropolitan area, 58.5% (n=55) were male and 41.5% (n=39) were female. Rates were similar with males only slightly more likely to present to the emergency department (9.4 presentations per 100,000 population) than females (6.8 presentations per 100,000 population).

Age

In a continuing trend, toddlers aged 0-4 years were at the greatest risk of drowning (both fatal and non-fatal) in WA in 2016-17, accounting for 39.5% (n=94) of incidents with a crude rate of 52.7 incidents per 100,000 population. Adults aged 25-64 years recorded the lowest rate of drowning (fatal and non-fatal) with a crude rate of 4.5 incidents per 100,000 population (Figure 7).

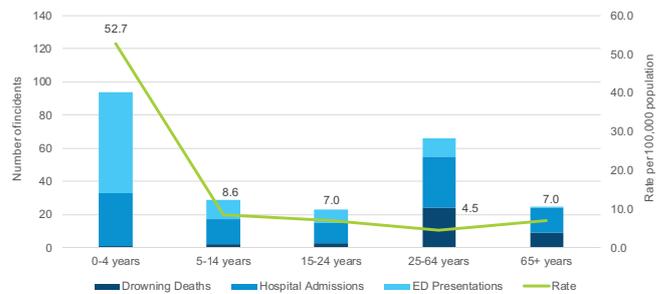


Figure 7: Overall drowning rates by age, WA 2016-17

Rates of drowning amongst young people aged 15-24 years increased significantly in 2016-17, with a crude drowning rate of 7.0 incidents per 100,000 population, almost double that recorded in 2015-16. Toddlers aged 0-4 years and children 5-14 years recorded decreased rates of drowning in 2016-17 (30.8% and 16.5% decrease respectively).

FATAL DROWNING

Fatal drowning risk increased with age in 2016-17 with older adults over 65 years of age at the greatest risk (2.5 deaths per 100,000 population) followed by adults aged 25-64 years (1.6 deaths per 100,000 population). The lowest rates of fatal drowning were recorded amongst toddlers aged 0-4 years and children aged 5-14 years (0.6 deaths per 100,000 population each).

The average age of those involved in a fatal drowning incident was 44.8 years and ranged from 9 months to 86 years of age. The average age was similar for males (44.5 years) as for females (44.8 years).

NON-FATAL DROWNING

In contrast to fatal drowning, non-fatal drowning risk decreased with age in 2016-17 with toddlers aged 0-4 years and young children aged 5-14 years at the greatest risk. Toddlers recorded the highest rates of both hospital admissions (17.9 admissions per 100,000 population) and emergency department presentations (42.8 presentations per 100,000 population). Trends over the past five years (2012-13 to 2016-17) show an average annual decrease in the rate of hospital admissions for all age groups except for children aged 5-14 years who recorded a 9.0% increase during this time. The greatest change was recorded amongst adults aged 25-64 years (11.0% decrease). In addition, over the same time period, all age groups recorded an average annual increase in the rate of emergency department presentations, except for adults aged 25-64 years (8.0% decrease). Older adults over 65 years of age recorded the greatest change with an average annual increase of 31.0%.

Socio-Economic Status

Socio-economic status was determined using the socio-economic index for areas (SEIFA) which ranks areas of residence according to relative advantage or disadvantage. Data relating to the socio-economic status was only available for fatal drowning incidents. The majority of people involved in fatal drowning incidents in 2016-17 were from areas of high socio-economic advantage, with 46.2% (n=18) of people residing in areas classified in the highest quintile for socio-economic advantage. Overall, 25.6% (n=10) of people were from areas classified in the lowest quintile for socio-economic advantage, a 15.9% increase from 2015-16.

Aboriginal Status

Data relating to Aboriginality was only available for fatal drowning incidents in 2016-17. This is due to 2016 and 2017 estimated resident population (ERP) having been delayed due to 2016 being a census year and projected Aboriginal population figures have been deemed unreliable. Overall, 7.7% of drowning deaths involved Aboriginal Australians in 2016-17. This is an over-representation given that Aboriginal Australians only make up 3.0% of the WA population.

Born Overseas

Overall, 21.8% (n=52) of drowning incidents (fatal and non-fatal) recorded in 2016-17 involved people that were born overseas and 75.6% (n=180) involved people born in Australia (Figure 8). Data relating to country of birth was missing for six cases.

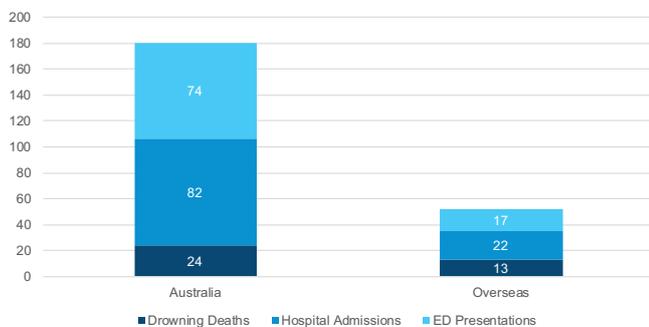


Figure 8: Overall drowning by country of birth, WA 2016-17

FATAL DROWNING

Country of birth was known in 94.9% (n=37) of fatal drowning cases, with 61.5% (n=24) of drowning deaths recorded in 2016-17 involving people born in Australia and 33.3% (n=13) of people born overseas. This is similar to data recorded in 2015-16. Of those who were born overseas, 61.5% (n=8) were born in a non-English speaking country, including European and Asian countries. This was an 11.5% increase from 2015-16. On average, people born overseas had been in Australia for 18 years, with the majority (n=5; 38.5%) having been in Australia for the more than 10 years (Figure 9). Overall, 30.8% of those born overseas, were new arrivals having only lived in Australia for less than five years (10.8% of the total drowning deaths).

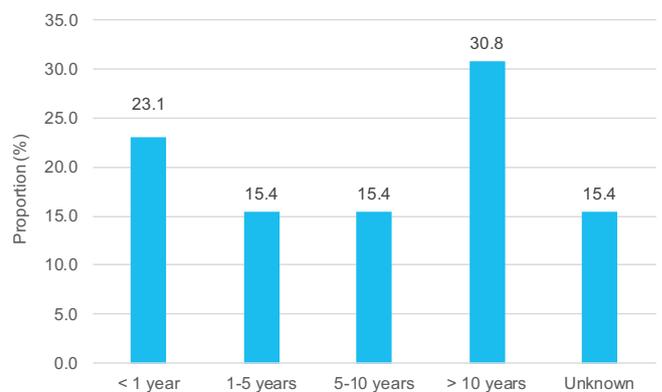


Figure 9: Fatal drowning by length of time in Australia, WA 2016-17

NON-FATAL DROWNING

People born in Australia were also a greater risk of non-fatal drowning than those born overseas with 78.1% (n=82) of hospital admissions and 78.7% (n=74) of emergency department presentations involving people born in Australia. Country of birth was unknown in 1.0% (n=1) and 3.2% (n=3) of hospital admissions and emergency department presentations respectively.

WHEN DO THEY DROWN?

Drowning occurs throughout the year, however in 2016-17 the highest proportion of drowning incidents (fatal and non-fatal) occurred during the summer months (n=94; 39.5%). Similarly, the rate of drowning was greatest in summer (3.5 incidents per 100,000 population) (Figure 10). Drowning was least likely to occur during winter months (n=20; 8.4%) with a crude rate of 0.7 incidents per 100,000 population occurring during these months. These trends were similar for both fatal and non-fatal drowning incidents.

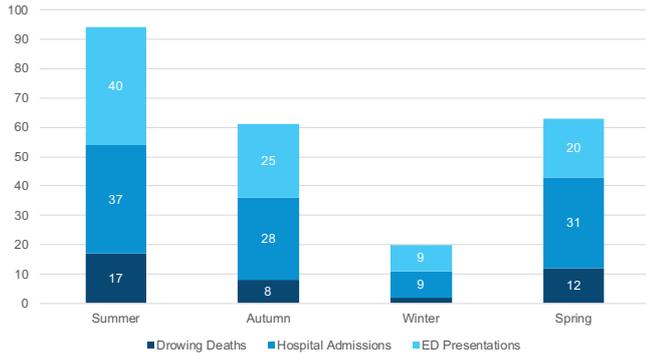


Figure 10: Overall drowning by season, WA 2016-17

Data relating to month, day of the week and time the incident occurred was only available for fatal drowning cases. The highest number of drowning deaths were recorded in January, November and December (n=6; 15.4%) and the lowest was recorded in June (n=0). Over half (n=22; 56.4%) of fatal drowning incidents occurred on the weekend, a 13.6% increase from 2015-16.

In addition, 12.8% (n=5) occurred on a public holiday or over a long weekend, with 60.0% of these occurring over the Christmas and New Year period in 2016-17.

Similar to previous years, drowning deaths were most likely to occur in the afternoon between 4:00 and 5:00pm (n=6; 20.7%) and in the morning between 11:00 and 11:30am (n=4; 13.8%). Time of the incident was unknown in 25.6% (n=10) of fatal drowning cases as the person was participating in activities in, on or around the water alone or where other participants involved in the same incident also died, making it difficult to determine the time of the incident (Figure 11).

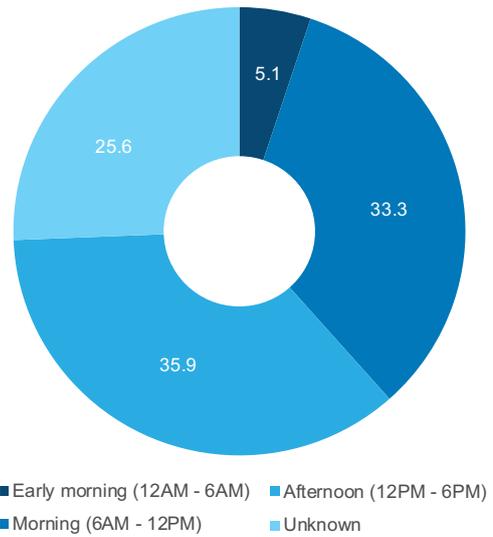


Figure 11: Fatal drowning by time of day, WA 2016-17





WHERE AND HOW DO THEY DROWN?

Region

The rate of drowning in regional and remote areas of WA continued to be significantly higher than the Perth metropolitan area. Overall, 66.0% (n=95) of drowning incidents (fatal and hospital admissions only) occurred in the Perth metropolitan area in 2016-17. However, when taking population distribution into account, people were 1.9 times more likely to drown in a regional or remote area (8.7 incidents per 100,000 population) than in the Perth metropolitan area (4.5 incidents per 100,000 population). The Kimberley, Midwest and Pilbara regions recorded the highest rates of overall drowning in 2016-17 (Figure 12).

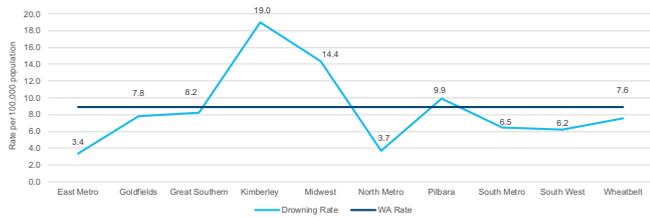


Figure 12: Overall drowning by region, WA 2016-17

FATAL DROWNING

Overall, 51.3% (n=20) of fatal drowning incidents were recorded in the Perth metropolitan area and 48.7% (n=19) occurred in regional WA. When taking population distribution into account, people were 3.8 times more likely to drown in regional WA (3.4 deaths per 100,000 population) than in the Perth metropolitan area (0.9 deaths per 100,000 population). The rate of fatal drowning in regional WA increased by 13.3% from 2015-16 while rates in the Perth metropolitan area remained stable. The highest rates of fatal drowning were recorded in the Kimberley, Midwest and Great Southern regions in 2016-17 (Figure 13).

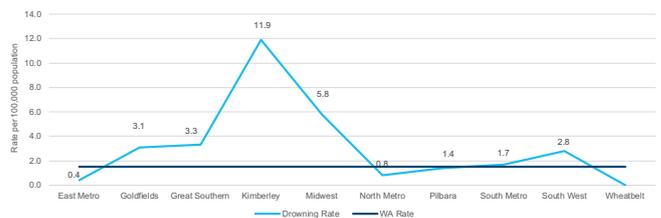


Figure 13: Fatal drowning by region, WA 2016-17

Data relating to remoteness of the location where the drowning incident occurred was only available for fatal drowning cases. While the majority of drowning deaths occurred in major cities in 2016-17 (n=15; 38.5%), a significant proportion occurred in remote (n=7; 17.9%) or very remote (n=7; 17.9%) locations (Figure 14), most of which were in regional WA (n=12; 85.7%). This has implications for drowning outcomes as most of these locations have limited access and mobile phone coverage meaning that there are often delays in emergency services attendance.



Figure 14: Fatal drowning by remoteness classification, WA 2016-17

NON-FATAL DROWNING

A greater proportion of hospital admissions following a non-fatal drowning incident occurred in the Perth metropolitan area in 2016-17 (n=75; 71.4%). Despite only 28.6% (n=30) of hospital admissions occurring in regional WA, people were 1.5 times more likely to be hospitalised in these areas (5.3 admissions per 100,000 population) than in the Perth metropolitan area (3.5 admissions per 100,000 population). The highest rates of hospital admission were recorded in Midwest, Pilbara and Wheatbelt regions (Figure 15).

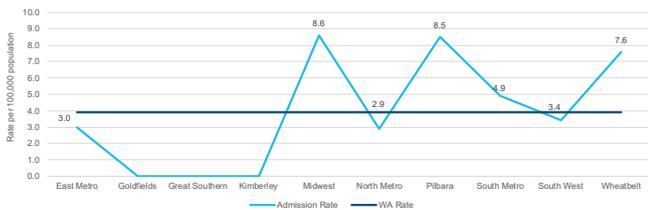


Figure 15: Rate of hospital admissions by region, WA 2016-17
*rates for Goldfields, Great Southern and Kimberley regions have not been included as counts were <5

Emergency department presentations were only recorded in the Perth metropolitan area, therefore comparisons with regional WA wasn't possible. The South Metropolitan region recorded the highest rate of emergency department presentations following a non-fatal drowning incident in 2016-17 with a crude rate of 5.2 presentations per 100,000 population. This was the only region to record an increased rate compared to 2015-16 (10.6% increase). Presentation rates for the North and East metropolitan regions decreased from 2015-16 by 5.6% and 43.9% respectively (Figure 16).

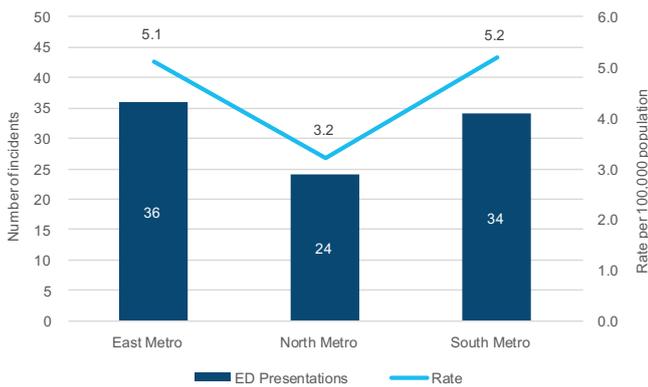


Figure 16: Emergency department presentations by region, WA 2016-17

Aquatic Location

Data relating to the aquatic location where the incident occurred is only available for fatal drowning and hospital admissions following a non-fatal drowning incident.

FATAL DROWNING

Overall, the most common aquatic location for fatal drowning was ocean/harbour and beaches (n=12; 30.8%), followed by rivers/creeks/streams (n=11; 28.2%) (Figure 17).

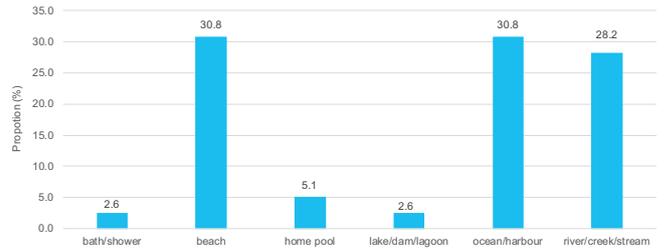


Figure 17: Fatal drowning by aquatic location, WA 2016-17

Similar to previous years, drowning deaths were most likely to occur at coastal locations with 61.5% (n=24) of deaths recorded along the WA coastline. This was similar to 2015-16. Of these, half (n=12; 50.0%) occurred at ocean/harbour locations, and half (n=12; 50.0%) occurred at beaches.

There was a significant increase in the proportion of drowning deaths occurring at inland waterways in 2016-17. Overall, 30.8% (n=12) of drowning deaths occurred at inland waterway locations, a 22.2% increase from 2015-16. Of these, the majority (n=11; 91.7%) occurred in rivers/creeks/streams which increased by 22.5% from 2015-16.

There was a 20.6% decrease in drowning deaths occurring at home swimming pools in 2016-17 with only 5.1% of drowning deaths occurring at these locations.

Fatal drowning incidents were most likely to occur at locations within 10 kilometres of the person's place of residence (n=16; 41.0%) in 2016-17 (Figure 18).

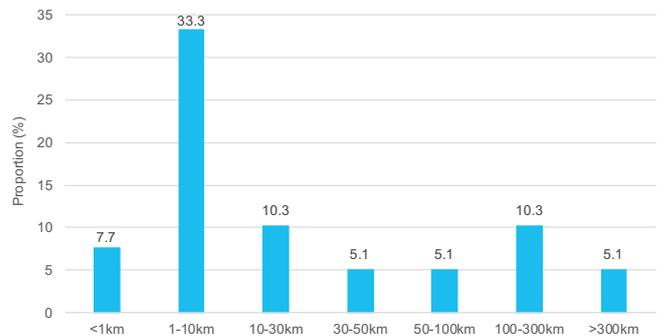


Figure 18: Fatal drowning by distance from home, WA 2016-17

NON-FATAL DROWNING

Aquatic location was recorded in 88.6% (n=93) of hospital admissions following a non-fatal drowning. Where the aquatic location was specified, incidents resulting in hospital admission were most likely to occur in a large area of water such as the ocean or a lake (n=27; 29.0%) or at a location in and around the home (n=25; 26.9%). In addition, 9.7% (n=9) of incidents occurred at the beach. Locations where the number of incidents was less than five were categorised as 'other' and include areas of still water, health service area, industrial/construction area, trade/service area, other specified countryside and other specified public administration/institution area (Figure 19).

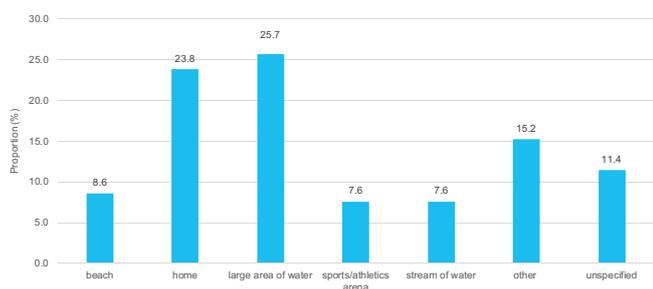


Figure 19: Hospital admissions by aquatic location, WA 2016-17

Activity

Data relating to the activity being undertaken at the time of the incident was only available for fatal drowning and hospital admissions following a non-fatal drowning incident.

FATAL DROWNING

Fishing, swimming and boating (n=8; 20.5%) were the most common aquatic activities being undertaken at the time of the incident in 2016-17. Other common activities included recreating around an aquatic environment, diving and watercraft including kayaking and surfing (Figure 20). In 2016-17 there were a number of fatal drowning incidents involving non-aquatic transport with people driving through floodwater. In addition, there were a number of drowning deaths which occurred while the person was performing a rescue. Further education on flood and rescuer safety is required to prevent these from occurring.

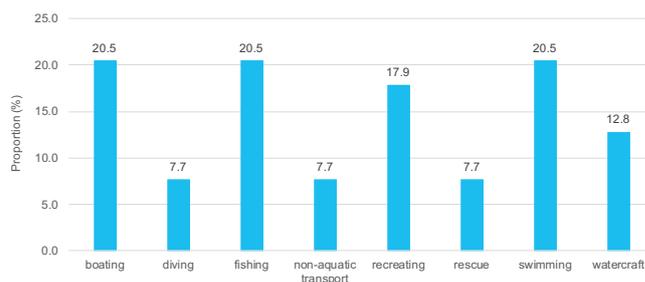


Figure 20: Fatal drowning by activity, WA 2016-17

Of the drowning deaths recorded in 2016-17, entry into the water was intentional in 53.8% (n=21) of fatal drowning incidents with the person either participating in an aquatic based activity or jumping into the water. The remaining 46.2% (n=18) occurred when the person unintentionally entered the water after slipping, falling, being swept in or becoming submerged in a vehicle. This means that they were unprepared to enter the water which affects their ability to get themselves to safety following the incident.

A rescue was attempted in 61.5% (n=24) of fatal drowning incidents, with it most likely to have been performed by someone known to the person (n=13; 54.2%) including family members, friends or neighbours. Where there was no rescue attempted, common reasons included that the person was participating alone, the conditions were unsafe to perform a rescue or that people at the location at the time of the incident didn't possess the necessary skills to perform a rescue.

Cardiopulmonary resuscitation (CPR) was performed in 87.5% (n=21) of fatal drowning incidents where a rescue was attempted. Where CPR wasn't performed, it was due to the rescuers being unable to locate the person.

NON-FATAL DROWNING

The most common activity being undertaken at the time of an incident resulting in the person being admitted to hospital was resting, sleeping, eating or other vital activity (n=57; 54.3%) which includes activities such as bathing followed by water sports (n=27; 25.7%) and leisure activities (n=16; 15.2%).



LOCATION IN FOCUS – INLAND WATERWAYS

In 2016-17, 30.8% (n=12) of drowning deaths occurred at inland waterway locations, a 22.2% increase from 2015-16. The average proportion of drowning deaths occurring at inland waterway locations has increased by 3.2% over the past five years (2012-13 to 2016-17) and the proportion recorded this year was the highest of any year during this time period making it a high-risk location for drowning (Figure 21).



Figure 21 – Fatal drowning – Inland waterways, WA 2012-13 to 2016-17

Of the 12 drowning deaths occurring at inland waterway locations in 2016-17, the majority (n=11; 91.7%) occurred at a river, creek or stream.

Overall, 83.3% (n=10) of fatal drowning incidents at inland waterways involved males with a crude drowning rate of 0.7 deaths per 100,000 population, making them 3.5 times more likely to drown at these locations than females (0.2 deaths per 100,000 population). The age of people who fatally drowned at inland waterways in 2016-17 ranged from 6 to 85 years with an average of 45.1 years. Older adults over 65 years of age were at the greatest risk of drowning at inland waterways (1.1 deaths per 100,000 population) followed by adults aged 25-64 years (0.5 deaths per 100,000 population) and children aged 5-14 years (0.3 deaths per 100,000 population).

Overall, 41.7% (n=5) of fatal drowning incidents occurring at inland waterway locations involved people from a low socio-economic area compared to 25.6% for all drowning deaths recorded in 2016-17.

Aboriginal Australians were at a greater risk of drowning at inland waterways than any other location, with all drowning deaths recorded amongst this community group occurring at inland waterway location in 2016-17.

People were six times more likely to drown at an inland waterway in regional WA (1.2 deaths per 100,000 population) than in the Perth metropolitan area (0.2 deaths per 100,000 population) with the Ord River in the Kimberley region highlighted as a particularly high-risk location in 2016-17. In addition, all drowning deaths recorded at inland waterways in regional WA were classified as either remote or very remote.

The most common activities being undertaken at the time of the incident were recreating around water, non-aquatic transport and swimming. Interestingly, 41.7% (n=5) of fatal drowning incidents recorded at inland waterways in 2016-17 were related to recent flooding again highlighting the need for flood safety education programs in regional areas subject to flooding during the wet season with a specific focus on driving through floodwater.



CASE STUDY RESPECT THE RIVER

As part of the national Respect the River program, Royal Life Saving WA has been delivering a range of river safety education and training programs including local risk audits, river bronze rescue programs and community information sessions to raise awareness of the potential hazards at river location, while also providing community members with the skills to participate safely and perform a rescue if required. In 2016-17:

- 5 safety and risk assessments were conducted at inland waterways on behalf of local government
- 12 river Bronze Rescue community safety programs were run with 184 participants
- 495 children participated in Swim and Survive programs on the Swan River
- 120 people attended a community information session
- 208 lifejackets were upgraded as part of the Old4New Lifejacket Upgrade program
- 300 lifejackets were provided to sea scouts groups to assist with river safety education and activities.

LIFE STAGE IN FOCUS – CHILDREN 0-14 YEARS

Overall, toddlers and young children were at the greatest risk of both fatal and non-fatal drowning of any age group in WA in 2016-17.

Toddlers aged 0-4 years

In 2016-17, there were 94 toddler drowning incidents recorded within WA accounting for 39.5% of the total drowning incidents recorded. The crude drowning rate for toddlers was 52.7 incidents per 100,000 toddlers, the highest of any age group. This represents a 31.4% decrease in the number of toddler drowning incidents and a 33.3% decrease in the rate of toddler drowning from 2015-16.

Despite decreases recorded in 2016-17, over the past five years (2012-13 to 2016-17) the average rate of drowning amongst toddlers aged 0-4 years has increased by 15.9% (Figure 22).

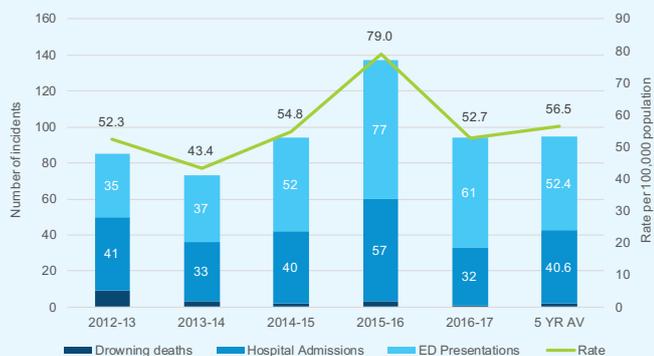


Figure 22: Overall drowning – toddlers 0-4 years, WA 2012-13 to 2016-17

Overall, 58.5% (n=55) of toddler drowning incidents (fatal and non-fatal) involved boys and 41.5% (n=39) involved girls (Figure 23). This means that boys were 1.3 times more likely to be involved in a drowning incident (60.3 incidents per 100,000 population) than girls (44.8 incidents per 100,000 population).

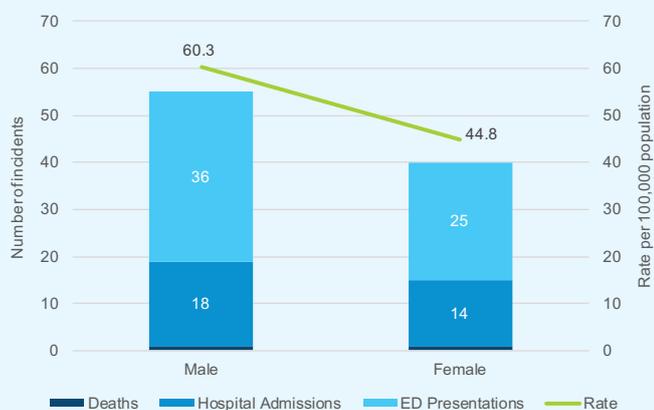


Figure 23: Overall drowning by gender – Toddlers 0-4 years, WA 2016-17

FATAL DROWNING

Due to the small number of fatal drowning deaths involving toddlers aged 0-4 years in 2016-17, only data trends over the past five years have been included in this report. There have been 18 fatal toddler drowning incidents recorded between 2012-13 and 2016-17 at a rate of 2.1 deaths per 100,000 population. During this time the average number of toddler drowning deaths has more than halved (57.4% decrease), as has the average rate of toddler drowning (57.1% decrease) (Figure 24).

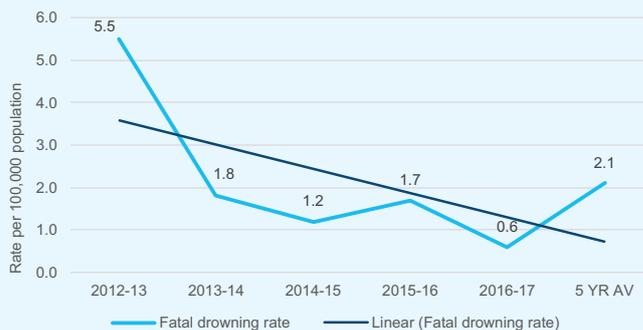


Figure 24: Fatal drowning – Toddlers 0-4 years, WA 2012-13 to 2016-17

Fatal drowning incidents amongst this age group most commonly occurred at locations in and around the home (n=16; 88.9%) with the greatest proportion occurring in the home pool (n=11; 68.8%) followed by the bath/shower (n=4; 25.0%). The average proportion of toddler drowning deaths in home pools has decreased by 22.8% over the past five years (2012-13 to 2016-17). Lack of adult supervision and having faulty or absent pool barrier in place were the most common factors contributing to fatal toddler drowning incidents over this time period.

NON-FATAL DROWNING

Toddlers aged 0-4 years recorded the highest rate of non-fatal drowning of any age group in WA in 2016-17. In total, 32 toddlers aged 0-4 years were admitted to hospital following a non-fatal drowning incident at a rate of 17.9 admissions per 100,000 toddlers. This was a 43.9% decrease in the number of hospital admissions and a 45.6% decrease in the rate of hospital admissions from 2015-16. In addition, this was the lowest rate recorded in the past five years for this age group in WA.

Despite decreases from 2015-16, the average rate of toddlers admitted to hospital following a non-fatal drowning incident has increased by 8.8% over the past five years (Figure 25).

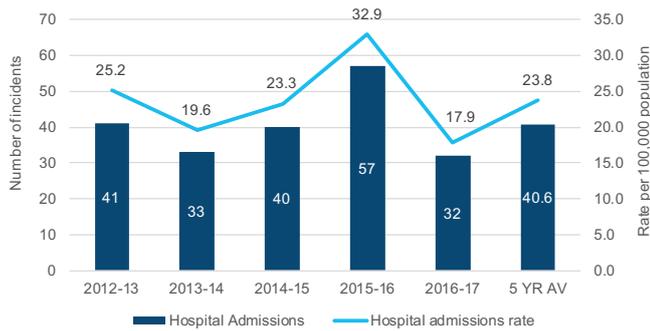


Figure 25: Hospital admissions – Toddlers 0-4 years, WA 2012-13 to 2016-17

Of these, the majority (n=20; 62.5%) occurred at locations in and around the home, with outdoor areas (including home swimming pools) the most common location (n=16; 88.9%).

On average, toddlers admitted to hospital following a non-fatal drowning incident were required to stay in hospital for 1.16 days, the lowest of any age group.

In addition, there were 61 toddlers aged 0-4 years who presented to a hospital emergency department in the Perth metropolitan area in 2016-17 at a rate of 42.8 presentations per 100,000 toddlers. This was a 20.8% decrease in the number of emergency department presentations and a 24.1% decrease in the rate of presentations from 2015-16. Similar to trends seen for hospital admissions, despite decreases from 2015-16, the average rate of emergency department presentations for this age group has increased by 45.6% with an average annual increase of 16.0% which is statistically significant (Figure 26).

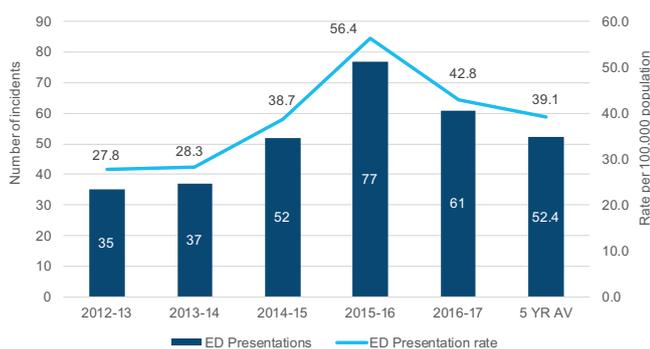


Figure 26: Emergency department presentations – Toddlers 0-4 years, WA 2012-13 to 2016-17

Children aged 5-14 years

Children aged 5-14 years recorded the second highest overall rate of drowning (fatal and non-fatal) of any age group in 2015-16. In total, there were 29 child drowning incidents recorded within WA in 2016-17 with a crude drowning rate of 8.6 incidents per 100,000 children. This is a 12.1% decrease in the number of drowning incidents and a 15.7% decrease in the rate of drowning from 2015-16 and remains slightly below the five-year average for this age group.

Despite decreases recorded in 2016-17, over the past five years (2012-13 to 2016-17) the average rate of drowning amongst children aged 5-14 years has increased by 26.8% (Figure 27).

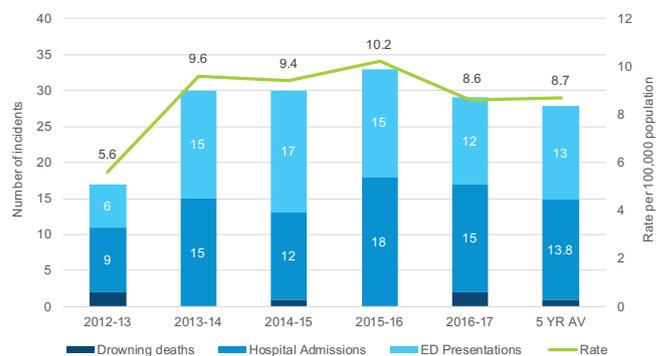


Figure 27: Overall drowning – Children 5-14 years, WA 2012-13 to 2016-17

Overall, 51.7% (n=15) of drowning incidents (fatal and non-fatal) involved boys and 48.3% (n=14) involved girls (Figure 28). Drowning rates were similar for boys (8.8 incidents per 100,000 children) and girls (8.5 incidents per 100,000 children).

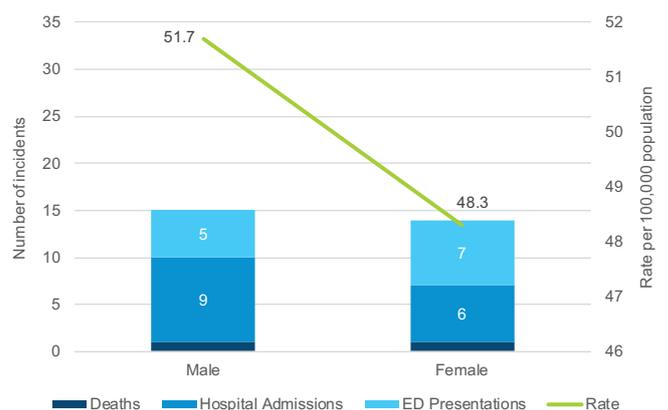


Figure 28: Overall drowning by gender – Children 5-14 years, WA 2016-17

FATAL DROWNING

Due to the small number of fatal drowning deaths involving children aged 5-14 years in 2016-17, only data trends over the past five years have been included in this report. There have been 5 fatal drowning incidents involving children recorded between 2012-13 and 2016-17 at a rate of 0.3 deaths per 100,000 population. During this time there has been no change in the average rate of child drowning deaths (Figure 28).

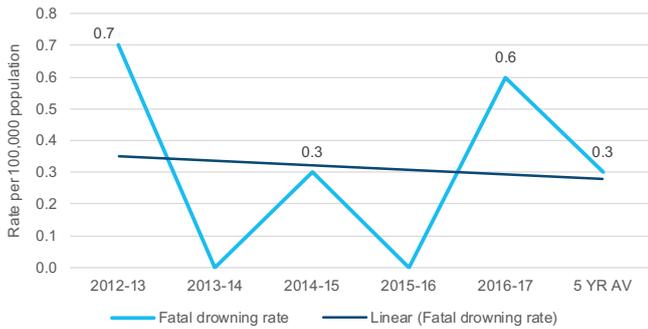


Figure 29: Fatal drowning – Children 5-14 years, WA 2012-13 to 2016-17

NON-FATAL DROWNING

Children aged 5-14 years recorded the second highest rate of non-fatal drowning of any age group in WA in 2016-17. In total, 15 children were admitted to hospital following a non-fatal drowning incident at a rate of 4.5 admissions per 100,000 children. This was a 16.7% decrease in the number of hospital admissions and a 19.6% decrease in the rate of hospital admissions from 2015-16.

Despite decreases from 2015-16, the average rate of children admitted to hospital following a non-fatal drowning incident has increased by 21.1% over the past five years, with an average annual increase of 9.0% (Figure 30).

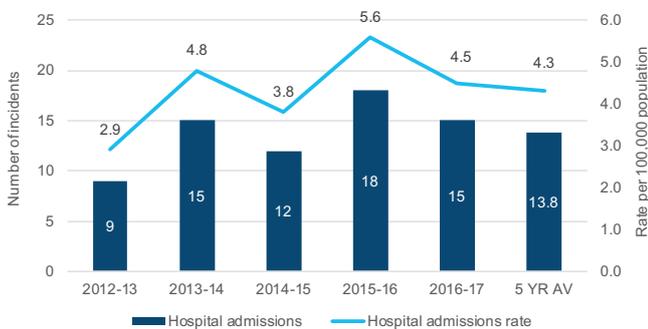


Figure 30: Hospital admissions – Children 5-14 years, WA 2012-13 to 2016-17

On average, children admitted to hospital following a non-fatal drowning incident were required to stay in hospital for 1.67 days.

In addition, there were 12 children aged 5-14 years who presented to a hospital emergency department in the Perth metropolitan area in 2016-17 at a rate of 4.7 presentations per 100,000 children. This was a 20.0% decrease in the number of emergency department presentations and a 21.7% decrease in the rate of presentations from 2015-16. Similar to trends seen for hospital admissions, despite decreases from 2015-16, the average rate of emergency department presentations for this age group has increased by 13.5% with an average annual increase of 7.0% (Figure 31).

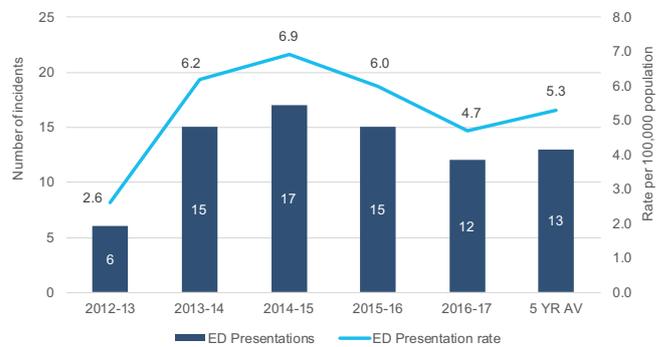


Figure 31: Emergency department presentations – Children 5-14 years, WA 2012-13 to 2016-17



LIFE STAGE IN FOCUS – YOUNG PEOPLE 15-24 YEARS

In 2016-17, there were 24 drowning incidents recorded involving young people aged 15-24 years within WA accounting for 10.1% of the total drowning incidents recorded. The crude drowning rate for young people was 7.0 incidents per 100,000 young people, the third highest of any age group. This represents a 71.4% increase in the number of drowning incidents and a 70.7% increase in the rate of drowning amongst this age group from 2015-16.

Despite the increases seen this year, over the past five years (2012-13 to 2016-17) there has been no change in the average rate of drowning amongst young people aged 15-24 years in WA (Figure 32).

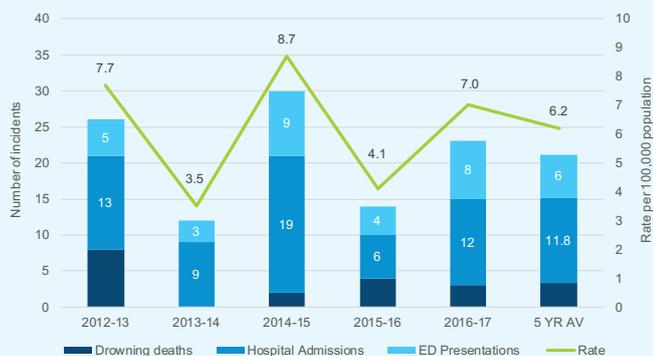


Figure 32: Overall drowning – Young people 15-24 years, WA 2012-13 to 2016-17

Overall, 86.7% (n=13) of drowning incidents (fatal and hospital admissions) recorded amongst young people involved males. Due to small numbers (<5) gender for emergency department presentations wasn't available to include within this report. This means that males were 6.2 times more likely to be involved in a drowning incident (7.4 incidents per 100,000 young people) than females (1.2 incidents per 100,000 young people).

FATAL DROWNING

Due to the small number of fatal drowning deaths involving young people aged 15-24 years in 2016-17, only data trends over the past five years have been included in this report. There have been 17 fatal drowning incidents recorded amongst young people between 2012-13 and 2016-17 at a rate of 1.0 death per 100,000 young people. During this time, the average number and rate of fatal drowning has decreased by 10.0% (Figure 33).

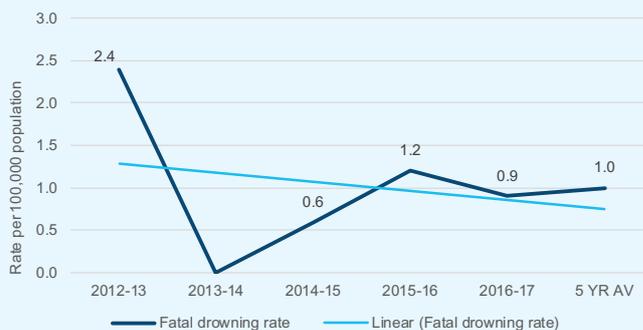


Figure 33: Fatal drowning – Young people 15-24 years, WA 2012-13 to 2016-17

Young people aged 22-24 years were at greatest risk of fatal drowning during this time period (n=10; 58.8%). The majority of young people were employed at the time of the incident (n=11; 64.7%) with 45.5% employed within the trade industry and 27.3% had only been in WA for less than six months on working visas and employed in the farming industry in regional WA.

During this time, fatal drowning incidents were most likely to occur on the weekend (n=9; 52.9%), during the spring and/or winter months (n=5; 29.4% each) in the afternoon (n=10; 58.8%) during 3:30 and 4:30pm. These incidents were 9.3 times more likely to occur in regional WA (3.7 deaths per 100,000 young people) than the Perth metropolitan area (0.4 deaths per 100,000 young people). This was the greatest difference of any age group in 2016-17. The highest rates were recorded in the Great Southern, Pilbara and Midwest regions (Figure 34).

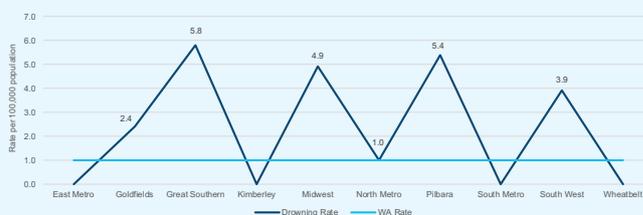


Figure 34: Fatal drowning by region – Young people aged 15-24 years, WA 2012-13 to 2016-17

Drowning deaths most commonly occurred at coastal locations (n=13; 76.5%), with swimming and fishing the most common activities being undertaken at the time of the incident.

Of those cases where a toxicology report was available (n=13; 76.5%), 46.2% (n=6) of persons had alcohol in their system at the time of the incident, with two thirds recording a BAC exceeding 0.05. The average BAC was 0.094 and ranged from 0.018 to 0.181. Where a toxicology report wasn't available, it was as a result of the body of the victim not being located after being reported as missing at sea.

NON-FATAL DROWNING

Young people aged 15-24 years recorded the second lowest rate of non-fatal drowning of any age group in WA in 2016-17. In total, 12 young people aged 15-24 years were admitted to hospital following a non-fatal drowning incident at a rate of 3.5 admissions per 100,000 young people. This was a 50.0% increase in the number of hospital admissions and a 94.5% increase in the rate of hospital admissions from 2015-16.

Despite significant increases from 2015-16, the average rate of young people admitted to hospital following a non-fatal drowning incident has decreased by 10.0% over the past five years, with an average annual decrease of 4.0% (Figure 35).



Figure 35: Hospital admissions – Young people 15-24 years, WA 2012-13 to 2016-17

On average, young people admitted to hospital following a non-fatal drowning incident were required to stay in hospital for 2.42 days

In addition, there were eight young people aged 15-24 years who presented to a hospital emergency department in the Perth metropolitan area in 2016-17 at a rate of 2.9 presentations per 100,000 young people. This was a 50.0% increase in the number of emergency department presentations and the rate of presentations more than doubled from 2015-16 (1.4 compared to 2.9).

Over the past five years (2012-13 to 2016-17), the average rate of emergency department presentations for this age group has increased by 10.0% with an average annual increase of 9.0% (Figure 36).



Figure 36: Emergency department presentations – Young people 15-24 years, WA 2012-13 to 2016-17

LIFESTAGE IN FOCUS - ADULTS AGED 25-64 YEARS

ADULTS 25-64 YEARS

In 2016-17, there were 66 drowning incidents recorded involving adults aged 25-64 years within WA accounting for 27.7% of the total drowning incidents recorded. The crude drowning rate for adults was 4.5 incidents per 100,000 adults, the lowest of any age group. This represents a 4.8% increase in the number of drowning incidents recorded amongst this age group from 2015-16. There was no change in the rate of drowning from 2015-16.

Over the past five years (2012-13 to 2016-17) the average rate of drowning amongst adults aged 25-64 years in WA has decreased by 19.6 (Figure 37).

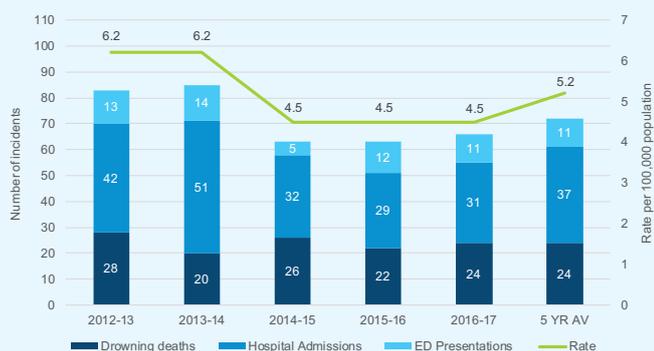


Figure 37: Overall drowning – Adults 25-64 years, WA 2012-13 to 2016-17

Overall, 72.7% (n=40) of drowning incidents (fatal and hospital admissions) recorded amongst adults aged 25-64 years in 2016-17 involved males and 27.3% (n=15) were female. Due to small numbers (<5) gender for emergency department presentations wasn't available to include within this report. Males were 2.6 times more likely to be involved in a drowning incident (5.4 incidents per 100,000 adults) than females (2.1 incidents per 100,000 adults).

FATAL DROWNING

In 2016-17, there were 24 fatal drowning incidents recorded amongst adults aged 25-64 years within WA with a crude drowning rate of 1.6 deaths per 100,000 adults. While this was a 9.1% increase in the number of drowning deaths recorded for this age group from 2015-16, the rate of fatal drowning remained the same and slightly lower than the five-year average (Figure 38).



Figure 38: Fatal drowning – Adults 25-64 years, WA 2012-13 to 2016-17

In a continuing trend, the majority of drowning deaths in 2016-17 involved males (n=22; 91.7%) The average age of people drowning in this age group was 41.2 years in 2016-17 with adults aged 35-44 years at the greatest risk (n=8; 33.3%) followed by those aged 25-34 years (n=7; 29.2%)

Overall, 54.2% (n=13) of drowning deaths in this age group occurred in regional WA with 45.8% (n=11) occurring in the Perth metropolitan area. Adults were 4.5 times more likely to drown in regional WA (0.9 deaths per 100,000 adults) than in the Perth metropolitan area (0.2 deaths per 100,000 adults). The highest rates were recorded in the Kimberley, Midwest and Great Southern regions (Figure 39).

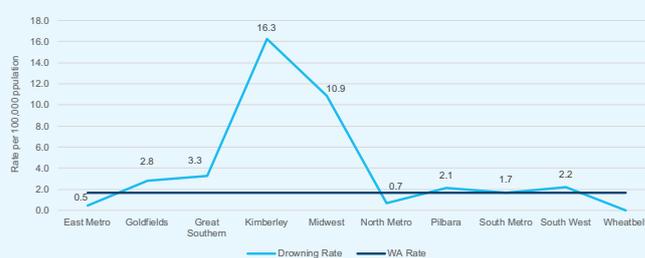


Figure 39: Fatal drowning rates by region – Adults 25-64 years, WA 2016-17

Overall, 37.5% (n=9) of adult drowning deaths involved a person who was born overseas, with 55.6% (n=5) from non-English speaking countries. On average, people born overseas had been living in Australia for 16.1 years and one third of people born overseas were classified as new arrivals having only lived in Australia for less than five years.

In addition, 29.2% (n=7) of incidents in this age group involved tourists, with the majority of these (n=6; 85.7%) involving people travelling within WA. Drowning deaths involving tourists most commonly occurred on the weekend during the spring months at coastal locations in regional WA while the person was fishing and/or boating. Common factors contributing to these incidents included alcohol consumption, poor swimming ability and lack of familiarity with the local area.

The most common locations for drowning deaths amongst this age group were ocean/harbour (n=9; 37.5%), beaches (n=8, 33.3%) and rivers/creeks/streams (n=6; 25.0%). Boating and fishing (n=6; 25.0%) were the most common activities being undertaken at the time of the incident. Other common activities included diving, watercraft, swimming and recreating around a water environment.

Medical conditions contributed to 25.0% (n=6) of incidents amongst adults in 2016-17 with cardiac conditions the most common. Half of people with medical conditions had multiple conditions which may have contributed to the incident.

A toxicology report was available for 75.0% (n=18) of incidents recorded in this age group. Of these, alcohol was found to be a factor in 33.3% (n=6) deaths, similar to trends seen over the past five years. The average BAC was 0.113, which is higher than for the overall population in 2016-17. Other common contributing factors included not wearing a lifejacket while boating, participating in unsafe behaviours, inexperience with the activity being undertaken at the time of the incident, being unfamiliar with the aquatic location and its conditions and environmental factors such as poor weather and water conditions.

NON-FATAL DROWNING

Adults aged 25-64 years recorded one of the lowest rates of non-fatal drowning of any age group in WA in 2016-17. In total, 31 adults aged 25-64 years were admitted to hospital following a non-fatal drowning incident at a rate of 2.1 admissions per 100,000 adults. This was a 6.9% increase in the number of hospital admissions from 2015-16. There was no change in the rate of hospital admission from 2015-16 in this age group.

The average rate of adults being admitted to hospital following a non-fatal drowning incident has decreased by 29.0% over the past five years, with an average annual decrease of 13.0%, which is statistically significant and the greatest average annual change of any age group during this time in WA (Figure 40).

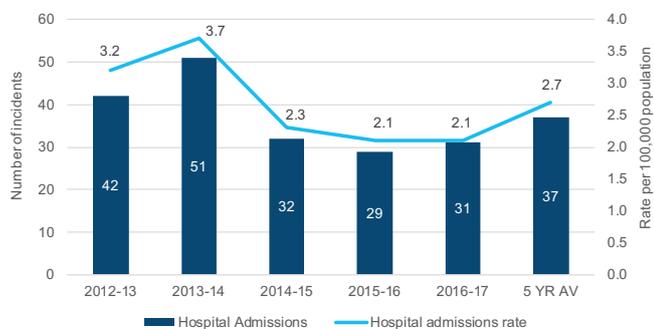


Figure 40: Hospital admissions – Adults 25-64 years, WA 2012-13 to 2016-17

On average, adults admitted to hospital following a non-fatal drowning incident were required to stay in hospital for 3.55 days

In addition, there were 11 adults aged 25-64 years who presented to a hospital emergency department in the Perth metropolitan area in 2016-17 at a rate of 0.9 presentations per 100,000 adults. This was an 8.3% decrease in the number of emergency department presentations and an 18.2% decrease in the rate of presentations from 2015-16.

Over the past five years (2012-13 to 2016-17), the average rate of emergency department presentations for this age group has decreased by 20.0% with an average annual decrease of 8.0% (Figure 41). This was the only age group that recorded an average annual decrease in emergency department presentations during this time period.

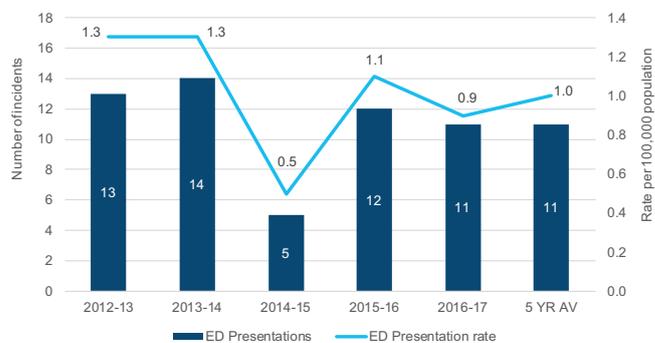


Figure 41: Emergency department presentations – Adults 25-64 years, WA 2012-13 to 2016-17

LIFE STAGE IN FOCUS – OLDER ADULTS 55+ YEARS

In 2016-17, there were 25 drowning incidents recorded involving older adults over 65 years of age within WA accounting for 10.5% of the total drowning incidents recorded. The crude drowning rate for older adults was 7.0 incidents per 100,000 older adults, the equal third highest of any age group. This represents a 66.7% increase in the number of drowning incidents and a 59.1% increase in the rate of drowning recorded amongst this age group from 2015-16.

Over the past five years (2012-13 to 2016-17) the average rate of drowning amongst older adults aged over 65 years in WA has decreased by 3.4% (Figure 42).

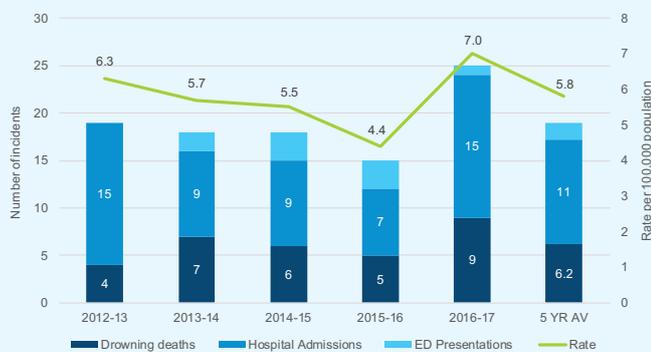


Figure 42: Overall drowning – Older adults 65+ years, WA 2012-13 to 2016-17

Overall, 75.0% (n=18) of drowning incidents (fatal and hospital admissions only) recorded amongst older adults involved males and 25.0% (n=6) were female. Males were 3.4 times more likely to be involved in a drowning incident (10.8 incidents per 100,000 older adults) than females (3.2 incidents per 100,000 older adults).

FATAL DROWNING

In 2016-17, there were nine fatal drowning incidents recorded amongst older adults aged over 65 years within WA with a crude drowning rate of 2.5 deaths per 100,000 older adults. This was almost double the number of drowning deaths and a 66.7% increase in the rate of fatal drowning from 2015-16 (Figure 43).



Figure 43: Fatal drowning – Older adults 65+ years, WA 2012-13 to 2016-17

In a continuing trend, the majority of drowning deaths involved males (n=8; 88.9%). Males were 9.6 times more likely to be involved in a fatal drowning (4.8 deaths per 100,000 older adults) than females (0.5 deaths per 100,000 older adults), the greatest difference of any other age group. The average age of people drowning in this age group was 75.4 years in 2016-17 with older adults aged 65-74 years and 75-84 years at the greatest risk (n=4; 44.4% each).

Overall, 77.8% (n=7) of drowning deaths in this age group occurred in the Perth metropolitan area. However, when taking into account population distribution, rates of fatal drowning were similar for the Perth metropolitan area (2.5 deaths per 100,000 older adults) and regional WA (2.7 deaths per 100,000 older adults).

Overall one-third (33.3%) of older adult drowning deaths involved a person who was born overseas, with 66.7% from non-English speaking countries. In addition, 33.3% of incidents in this age group involved tourists, all of which involved people travelling within WA.

The most common location for drowning deaths amongst this age group were rivers/creeks/streams (44.4%). Other common locations included ocean/harbour and beach locations. There was a range of activities being undertaken at the time of the incident including boating, fishing, swimming, non-aquatic transport such as driving and swimming.

Medical conditions contributed to more than half (n=5; 55.5%) of fatal incidents amongst older adults in 2016-17. Other common factors contributing to drowning deaths in this age group included alcohol, environmental factors such as fast flowing water, sometimes as a result of recent flooding, not wearing a lifejacket while boating and participating in activities alone.

NON-FATAL DROWNING

Older adults over 65 years of age recorded the third highest rate of hospital admission and lowest rate of emergency department presentations of any age group in WA in 2016-17. In total, 15 older adults over 65 years of age were admitted to hospital following a non-fatal drowning incident at a rate of 4.2 admissions per 100,000 older adults. This was a more than double the number and rate of hospital admission recorded in 2015-16 in this age group.

The average rate of adults being admitted to hospital following a non-fatal drowning incident has decreased by 19.4% over the past five years, with an average annual decrease of 6.0% (Figure 44).

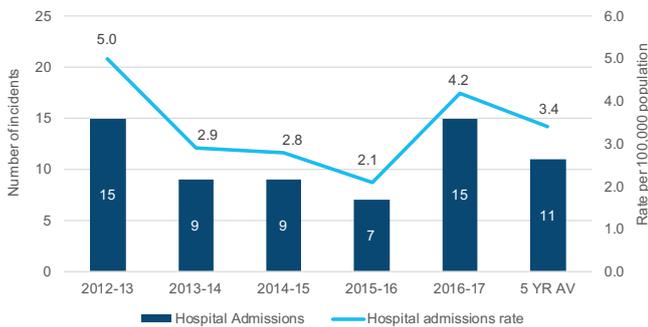


Figure 44: Hospital admissions – Older adults 65+ years, WA 2012-13 to 2016-17

On average, older adults admitted to hospital following a non-fatal drowning incident were required to stay in hospital for 8.00 days, the longest of any age group.

Due to the small number of older adults presenting to a hospital emergency department in the Perth metropolitan area in 2016-17, only data trends over the past five years have been included in this report. Over the past five years (2012-13 to 2016-17), the average rate of emergency department presentations for this age group has increased by 28.6% with an average annual increase of 31.0%, the highest of any age group during this time period (Figure 45). However, it is important to note that while the percentage increase is large, it only represents a small number of incidents.

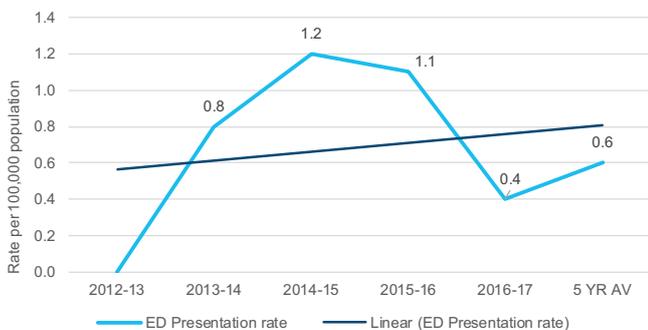


Figure 45: Emergency department presentations – Older adults 65+ years, WA 2012-13 to 2016-17

CASE STUDY GREY MEDALLION

Royal Life Saving Society WA's motto is "Everyone Can Be a Lifesaver" and as an organisation, we are determined to see this become a reality across our state. People of all ages, from children right through to seniors, are capable of learning vital swimming and lifesaving skills.

The Grey Medallion program is a water safety and lifesaving skills initiative for older adults. It aims to encourage a healthy, independent and active lifestyle through the development of essential skills in order to participate in aquatic recreation activities safely.

This practical program provides older adults with personal survival techniques, improved swimming skills, skills to deal with emergency situations and a thorough understanding of water safety knowledge in order to reduce the likelihood of drowning. These programs have been piloted in a number of aquatic centres in both the Perth metropolitan area and regional WA with very positive outcomes for the WA community.

'We gained and regained information and confidence in our abilities to assist ourselves and others in difficulties in and near the water. The course was fun whilst being instructive and encouraging learning about resuscitation and improving our strokes whilst swimming.' - **Grey Medallion participant**



DROWNING RISK FACTORS

1. PRE-EXISTING MEDICAL CONDITIONS

Of the 39 drowning deaths recorded in 2016-17, 30.8% (n=12) were contributed to by the presence of a pre-existing medical condition. This continues the decreasing trend seen in 2015-16, with a 6.3% decrease in the proportion of drowning deaths contributed to by a medical condition compared to the previous year. The most common medical conditions contributing to these incidents were cardiac events (n=8; 66.7%), followed by mental health conditions including dementia and intellectual disabilities (n=5; 41.7%) and physical conditions/disabilities which affected the person's mobility and balance (n=4; 33.3%). Some people had multiple medical conditions.

Older adults aged 65 years and over were at the greatest risk (1.4 deaths per 100,000 population), followed by adults aged 25-64 years (0.4 deaths per 100,000 population) and young adults aged 15-24 years (0.3 deaths per 100,000 population).

Drowning rates where medical conditions were a contributing factor were similar in the Perth metropolitan area (0.4 deaths per 100,000 population) and regional WA (0.5 deaths per 100,000 population). In previous years the majority of drowning deaths contributed to by a medical condition occurred at locations in and around the home. However, in 2016-17, these incidents were most likely to occur at the beach (33.3%) and river/creek/stream locations (25.0%). People were commonly participating in a recreational activity such as swimming, diving or boating at the time of the incident rather than falling into the water while recreating around an aquatic environment as seen in previous years.

2. ALCOHOL CONSUMPTION

The consumption of alcohol prior to undertaking activities in, on or around the water has been found to increase the risk of drowning as it impairs a person's judgement, slows reaction times, impairs coordination and results in greater risk-taking behaviour.

Of the drowning deaths recorded in 2016-17, 25.6% (n=10) were found to have had alcohol in their bloodstream at the time of the incident. This is a 2.7% increase from 2015-16. Of these, the majority (n=6; 60.0%) recorded a blood alcohol concentration greater than 0.05 and the remaining 40.0% recorded less than 0.05. The average blood alcohol concentration recorded was 0.140 and ranged from 0.010 to 0.207, which is more than four times the legal limit for driving.

The highest rate of alcohol-related drowning occurred amongst young males aged 15-24 years and older adults over 65 years of age (0.6 deaths per 100,000 population) followed by those aged 25-54 years (0.4 deaths per 100,000 population).

Males were seven times more likely to be involved in an alcohol-related drowning death (0.7 deaths per 100,000 population) compared to females (0.1 deaths per 100,000 population). People born in Australia were also at greater risk of alcohol-related drowning (0.2 deaths per 100,000 population) compared to those born overseas (0.1 deaths per 100,000 population).

Similar to 2015-16, alcohol-related drowning deaths were 5.5 times more likely to occur in regional and remote areas of the state (1.1 deaths per 100,000 population) than in the Perth metropolitan area (0.2 deaths per 100,000 population). The Kimberley region recorded the highest rate of alcohol-related drowning of any region.

These incidents were most likely to occur on the weekend (n=5; 50.0%), in the afternoon (n=6; 60.0%), at coastal locations (n=9; 90.0%) while people were swimming, boating or fishing.

3. VISITOR STATUS

Overall, 30.7% (n=12) of people involved in a fatal drowning incident in 2016-17 were classified as visitors to the location, a 12.2% decrease from 2015-16. Of these, the majority (n=10; 83.3%) were intrastate visitors travelling to other locations within WA.

The majority of drowning deaths involving intrastate visitors occurred in regional areas (n=9; 75.0%), with the South West, Kimberley and Great Southern regions identified as the highest risk areas. Travellers aged 25-44 years recorded the highest number of drowning deaths followed by those aged 45-64 years and those over 65 years of age. Incidents commonly occurred at ocean/harbour locations, rivers/creeks/streams and beach locations, while people were boating and/or fishing.

Alcohol was a factor in one-third of drowning deaths amongst tourists/visitors (33.3%). Other common factors that contributed to the incident included inexperience with the activity being undertaken at the time of the incident, lack of familiarity with the aquatic location and the location being in remote or very remote areas with limited mobile phone coverage and access resulting in delayed emergency responses.

METHODS

This report includes information on fatal and non-fatal drowning incidents recorded in Western Australian waterways between 1 July 2016 and 30 June 2017. Information presented in this report was collated using a number of data sources including the WA Coroner's Office, the National Coronial Information System and the Department of Health WA, Epidemiology Branch.

Fatal drowning cases were identified through media reports, notifications from the National Coronial Information System, reports provided for non-boating related aquatic deaths from WA Police and searches run through the WA Coroner's Office. Individual case files were reviewed including the coronial finding, police reports, witness statements, expert reports, autopsy reports and toxicology reports. All data was checked against the Royal Life Saving National Drowning Database to ensure consistent reporting at a national level.

Only unintentional drowning deaths were included within this report. Exclusions from this report include: deaths as the result of suicide or homicide, deaths from natural causes, shark attacks or deaths involving asylum seekers.

At the time of this report 89.7% (N=35) of cases had been closed by the WA Coroner. Of the remaining cases, the majority had not been closed at the time of reporting due to inquests into the circumstances surrounding the deaths being scheduled later in the year. However, sufficient information was available for inclusion within the report.

Non-fatal drowning data was collated by the Department of Health WA Epidemiology Branch and included hospital admissions and emergency presentations data. ICD codes were used to identify cases and included ICD-10 coding for near-drowning (T75.1; W65; W66; W67; W68; W69; W70; W73; W74; V90; V92) and brain injury (striking the head S06.xx; anoxic brain damage G93.1; and cerebral complications G93.x). While hospital admissions data is collected state-wide, emergency presentations data from the metropolitan area only has been included within this report due to most regional emergency departments not using the ICD-10 coding system. Therefore, non-fatal drowning numbers may be under-represented within this report.

Drowning rates were calculated per 100,000 population using ABS data provided by the Department of Health WA Epidemiology Branch. These rates do not take into account the population structure. Therefore, the comparison of crude rates among health regions should be attempted with caution as different regions have different population structures which may influence the data. Due to delays in the release of the official ABS 2016 and 2017 estimated resident populations following the census conducted in 2016, projected population rates have been used to calculate drowning rates based on previous population growth trends. In addition, drowning rates for Aboriginal populations hasn't been included within this report due to projected Aboriginal population figures being deemed unreliable. Therefore, rates are subject to change following the release of the ABS official estimated resident population.

All care is taken to ensure that the information included within this report is as accurate as possible; however, statistics may change due to ongoing coronial enquiries and investigations.

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