YOUNG MEN & DROWNING: AN ANALYSIS OF DROWNING DEATHS AMONG MEN AGED 25-34 YEARS

Supported by

Australian Government

EVERYONE CAN BE A LIFESAVER

Royal Life Saving

ROYAL LIFE SAVING SOCIETY - AUSTRALIA

royallifesaving.com.au

ABOUT ROYAL LIFE SAVING

Royal Life Saving is focused on reducing drowning and promoting healthy, active and skilled communities through innovative, reliable, evidence based advocacy; strong and effective partnerships; quality programs, products and services; underpinned by a cohesive and sustainable national organisation.

Royal Life Saving is a public benevolent institution (PBI) dedicated to reducing drowning and turning everyday people into everyday community lifesavers. We achieve this through: advocacy, education, training, health promotion, aquatic risk management, community development, research, sport, leadership and participation and international networks.

Printed copies of this document are available upon request.
Please contact:
PO Box 558 Broadway
NSW 2007 Australia
Phone: 02 8217 3111
Email: info@rlssa.org.au

Royal Life Saving Society – Australia
The drowning prevention research of the Royal Life Saving Society – Australia is proudly supported by the Australian Government.

Australian Government

Suggested Citation:
Mahony, A, Peden, AE (2016) Young men and drowning: An analysis of drowning deaths among men aged 25-34 years. Royal Life Saving Society – Australia. Sydney.

royallifesaving.com.au

355

Men aged 25-34 years drowned between 1 July 2005 and 30 June 2015

TOP 3 LOCATIONS

- **28%** RIVER / CREEK / STREAM
- **23%** BEACH
- **17%** OCEAN / HARBOUR

TOP 3 ACTIVITIES

- **33%** SWIMMING & RECREATING
- **14%** BOATING
- **8%** ROCK FISHING

Alcohol was known to be involved in 36% of cases, with large amounts often consumed

In fact, 60% of cases were over the legal driving limit

Drugs were known to be involved in 26% of cases

Of these, 41% medications, 38% illegal drugs, 21% both

PREVENTION STRATEGIES

- WEAR A LIFEJACKET
- AVOID ALCOHOL AROUND WATER
- DO NOT SWIM OR TAKE A BOAT OUT UNDER THE INFLUENCE OF DRUGS
- CHECK CONDITIONS BEFORE HEADING OUT ON THE WATER
- NEVER SWIM ALONE
- LEARN HOW TO SAVE A LIFE

EVERYONE CAN BE A LIFESAVER

Royal Life Saving

ROYAL LIFE SAVING SOCIETY - AUSTRALIA

Supported by

Australian Government

royallifesaving.com.au

YOUNG MEN AND DROWNING: AN ANALYSIS OF DROWNING DEATHS AMONG MEN AGED 25-34 YEARS

Table of Contents

Table of Figures

DID YOU KNOW?

- Between 1 July 2005 and 30 June 2015 (a period of 10 financial years), 355 men aged 25-34 years drowned in Australian waterways
- Rivers, creeks and streams were the leading location for drowning, accounting for 28.5% of deaths
- The most common activity being undertaken prior to drowning was swimming and recreating (32.7%)
- Over a third of all drowning deaths were known to involve alcohol (36.1%)
- Drowning deaths involving alcohol were significantly more likely to occur at rivers, creeks and streams (X^2=16.1, p<0.05) and significantly less likely to occur at beaches (X^2=11.5, p<0.05)
- Drowning deaths involving alcohol were significantly more likely to occur following an incident related to non-aquatic transport (X^2=6.3, p<0.05) or boating (X^2=6.9, p<0.05) and significantly less likely to occur while rock fishing (X^2=7.8, p<0.05)
- Drowning deaths among Aboriginal or Torres Strait Islander people were significantly more likely to involve alcohol (X^2=12.9, p<0.05) than non-Indigenous people
- Alcohol was significantly more likely to be involved in deaths occurring in the early morning (X^2=22.9, p<0.05) and evening (X^2=5.6, p<0.05) and significantly less likely to be involved in fatalities during the morning (X^2=14.5, p<0.05) and afternoon (X^2=4.3, p<0.05)
- Of those drowning deaths which were known to involve alcohol, the amount of alcohol detected was deemed contributory in 60.2% of cases (BAC greater than or equal to 0.05)
- Of the 25.6% of cases which were known to involve drugs, 40.7% were legal drugs, 38.5% were illegal substances and 20.9% of cases involved both legal and illegal drugs
- Among men who were boating, only 2.0% were wearing a compliant lifejacket and only 3.4% of rock fishers were wearing a lifejacket
- Over a third of drowning incidents occurred in major cities (34.9%), with the majority of people who drowned not visitors to the location of the incident (61.4%)
- In 15.5% of cases, more than one person drowned during the incident, resulting in a multiple fatality event
- Multiple fatality events were significantly more likely to occur following a non-aquatic transport (X^2=32.2, p<0.05) or boating incident (X^2=18.2, p<0.05) and significantly less likely to occur while swimming and recreating (X^2=17.5, p<0.05)

EXECUTIVE SUMMARY

On average, 287 people drown in Australian waterways every year, with males accounting for 80% of all drowning deaths. Although males are overrepresented in all age groups, the burden is most pronounced in the adolescent and early adult years and least pronounced among young children and older adults. Injury is a leading cause of death among young people, with injury and poisoning fatalities three times higher among males than females in this demographic.

Existing work has examined the role of alcohol in injuries among young males, specifically addressing the increased risk of drowning, while further work has explored the risk factors for drowning deaths in men, including alcohol consumption, increased exposure, underestimation of risk and overestimation of ability.

This study focused on unintentional drowning deaths among men aged 25-34 years, examining the circumstances of drowning in this age group, including risk factors, in order to propose more targeted evidence-based prevention strategies.

All unintentional, fatal drowning deaths in Australian waterways among males aged 25-34 years between 1 July 2005 and 30 June 2015 were included. A year round media monitoring service was used to identify drowning deaths reported in the media, which were then corroborated with information sourced from ethical access to the National Coronial Information System (NCIS), State and Territory police services and Royal Life Saving State and Territory Member Organisations (STMOs). Data was analysed using SPSS Version 20. Descriptive statistics were utilised, as well as chi squared analysis. Statistical significance was deemed p<0.05.

Between 1 July 2005 and 30 June 2015 (a period of 10 financial years), 355 men aged 25-34 years drowned in Australian waterways. This represents 12.5% of all drowning deaths during this time period with a crude drowning rate of 2.23 per 100,000 men aged 25-34 years.

NSW recorded more drowning deaths than any other state, with 121 fatalities (34.1%) over the study period. Over a third of drowning incidents occurred in major cities (34.9%), with the majority of people who drowned being local (i.e. not visitors) to the location of the drowning incident (61.4%). The highest number of deaths occurred in the Summer months of January (16.3%), February (11.3%) and December (11.3%). The afternoon hours (between 12:01pm and 6pm) were the most common time for people to drown, with almost half (46.2%) of incidents occurring in this time band.

Rivers, creeks and streams were the leading location for drowning, accounting for 28.5% of deaths, followed by beaches (22.8%). The most common activity being undertaken prior to drowning was swimming and recreating (32.7%), followed by boating (13.8%).

There was also a relatively high proportion of men who drowned following an unknown activity (6.5%), suggesting they were alone at the time they drowned and the incident was unwitnessed. Almost half of these incidents occurred at rivers, creeks or streams, suggestive of a more isolated environment.

Over a third of all drowning deaths were known to involve alcohol (36.1%), with almost twice as many drowning deaths at rivers, creeks and streams known to involve alcohol (16.3%) as not (7.9%). Drowning deaths involving alcohol were significantly more likely to occur at rivers, creeks and streams (X^2=16.1, p<0.05) and significantly less likely to occur at beaches (X^2=11.5, p<0.05). In the context of a stricter regulatory environment that is often enforced at beaches, it is not surprising that alcohol consumption is more of an issue around rivers.

Drowning deaths involving alcohol were significantly more likely to occur following an incident related to non-aquatic transport (X^2=6.3, p<0.05) or boating (X^2=6.9, p<0.05) and significantly less likely to occur while rock fishing (X^2=7.8, p<0.05). Unlike many other activities, alcohol does not appear to be a significant factor in rock fishing deaths.

Drowning deaths among Aboriginal or Torres Strait Islander people were significantly more likely to involve alcohol (X^2=12.9, p<0.05) than non-Indigenous people. It is important that any interventions designed to combat this problem are evidence based and developed in consultation with Indigenous communities, to ensure they are culturally sensitive and appropriate to the local context.

Alcohol was significantly more likely to be involved in deaths occurring in the early morning (X^2=22.9, p<0.05) and evening (X^2=5.6, p<0.05). It is likely that evening entertainment activities involving alcohol extend into the early morning, suggesting a broad, community-wide approach may be required to curb unsocial drinking habits that influence the safety of aquatic activity among this demographic.

Of those drowning deaths which were known to involve alcohol, the amount of alcohol detected was deemed relevant in 60.2% of cases (BAC ≥0.05), leading to impaired alertness, vision, perception, balance and reaction times. Drowning deaths involving a contributory amount of alcohol (i.e. a BAC ≥0.05) were significantly more likely to occur at swimming pools when compared to those who were known not to have recorded contributory levels of alcohol (X^2=4.1, p<0.05).

Approximately one quarter of drowning deaths were known to involve drugs (25.6%), including both legal and illegal substances. Of the cases which were known to involve drugs, 40.7% were legal drugs and 38.5% were illegal substances. In 20.9% of cases, the person had consumed both legal and illegal drugs. The most commonly recorded illegal drugs were cannabis and methamphetamine. An underlying medical condition was known to be present in just over a fifth of drowning deaths (21.7%), with commonly identified conditions including cardiovascular disease, epilepsy and depression.

Flooding was related to 4.5% of cases, while in 15.5% of cases, more than one person drowned. Alcohol was significantly more likely to be involved in drowning deaths related to flooding (X^2=6.9, p<0.05) and multiple fatality events (X^2=4.9, p<0.05). Multiple fatality events were significantly more likely to occur at an ocean or harbour location (X^2=8.3, p<0.05) and significantly less likely to occur at a beach (X^2=4.9, p<0.05) or swimming pool (X^2=4.5, p<0.05). They were also significantly more likely to occur following a non-aquatic transport (X^2=32.2, p<0.05) or boating incident (X^2=18.2, p<0.05).

Lifejacket use was examined amongst those drowning deaths which occurred while boating (49 deaths). Of these, only one person (2.0%) was wearing a compliant lifejacket correctly, 8.2% were using a lifejacket which was either not worn correctly or was unsuitable and just under a third of people (32.7%) were not wearing a lifejacket. It was not known whether the person who drowned was wearing a lifejacket in the remainder of cases. Lifejacket usage was also examined among men who drowned while rock fishing (29 deaths), with a lifejacket only worn in one case (3.4%). Despite research showing that wearing a lifejacket doubles the change of survival once immersed in water, it is clear that usage rates are low in this demographic. Royal Life Saving advocates for correctly fitted and regularly serviced (if required) lifejackets to be worn by all people onboard a boat.

Another recurring theme was the issue of boat safety. A lack of preparation and planning was a common occurrence, leading to insufficient safety equipment onboard a vessel, as well as poor weather and sea conditions during trips. In addition to a lack of experience among some men, unseaworthy vessels which had been modified or altered presented as an issue. As well as wearing a lifejacket, it is important for anyone intending to take a boat out to check weather reports before departing and during activity, as well as informing others of the intended destination and time of return.

The study revealed key risk factors for drowning among males aged 25-34 years, including alcohol and drug consumption, as well as unsafe boating practices and recreating alone. Further research is warranted in a number of areas to gain a more thorough understanding of these risk factors, allowing the development of evidence-based prevention strategies, targeted at high risk areas, activities and populations.

NEXT STEPS

Policy, Programs and Advocacy

- Focus drowning prevention messages regarding alcohol consumption on key, high risk areas for men aged 25-34 years, including those recreating:
  - At inland waterways, specifically river, creek and stream locations
  - At aquatic locations in the evening, often extending into the early morning hours
  - Whilst boating
  - At swimming pools (specifically home and hotel/resort swimming pools).
- Explore ways to reduce the number of men drinking alcohol around rivers, creeks and streams, including potential partnerships with river user organisations, youth, sporting or men's organisations and relevant government authorities
- Recognise the increased risk for Indigenous males and tailor alcohol messaging accordingly to ensure cultural acceptability and increase the likelihood of sustainable behaviour change
  - Ensure messages are developed in consultation with Indigenous people to ensure cultural appropriateness and relevance
- Continue widespread safety messaging warning of the dangers of crossing floodwater, particularly following alcohol consumption, with a particular focus on men in the 25-34 years age group
- Convey the potential for drowning incidents following alcohol consumption to end in a multiple fatality event with more than one life lost in a single incident
- Investigate partnerships with boating regulators to promote and strengthen existing boating safety legislation
  - Highlight the legal ramifications to those who skipper a boat whilst under the influence of a contributory level of alcohol (BAC ≥0.05)
- Explore opportunities to deliver targeted education to new arrivals or temporary visitors to Australia who are on student or work visas
- Continue to communicate the importance of checking local conditions and hazards at all aquatic locations, including familiar sites as conditions can change rapidly

Research Agenda

- Complement existing fatal drowning data by obtaining non-fatal drowning data to gain a more complete understanding of the full burden of drowning in this age group
- Examine the role of alcohol and drugs in drowning deaths across all age groups, including both legal and illegal substances
- Extend this study to include all men aged 25-64 years (as identified in the Australian Water Safety Strategy 2016-2020), focusing on the circumstances of the drowning death and relevant risk factors
- Investigate drowning deaths following boating and watercraft incidents among all age groups, including both males and females, in all types of waterways
- Explore the decision making processes of men in this age group through the use of behavioural research in order to gain a better understanding of why men engage in risky behaviours around water and the motivations behind this

BACKGROUND

Each year, an average of 287 people drown in Australian waterways [1]. People of all ages drown, from very young children through to older people. However, males drown at a far higher rate than females in Australia, with males accounting for 80% of all deaths in the last year (2014/15) [2]. The male burden of drowning varies by age group but it is most pronounced in the adolescent and early adult years. Among 15-17 year olds, males accounted for 89.5% of drowning deaths, 85.3% among 18-24 year olds and 86.0% among 25-34 year olds [1]. By comparison, males accounted for 62.7% of deaths among young children aged 0-4 years and 67.2% of deaths in people aged 75 years and over [1].

The burden of male drowning is also high in other countries, with Canada reporting 82% of all deaths occurring in males and the burden most pronounced in the 20 to 34 years age bracket where males accounted for 90% of deats [3]. Similarly, males comprise approximately 80% of deaths in the USA [4]. This ratio is even higher in Finland, where males drowned at a rate over eight times that of females [5].

The period of adolescence and early adulthood is known as a time of risk-taking, with behaviours such as drinking at harmful levels, consuming illicit drugs and dangerous driving becoming increasingly more likely [6]. Consequently, injury is a leading cause of death among young people [7]. Injury and poisoning fatalities are three times higher among males than females in this demographic [7], indicating risk-taking behaviour is more common among young males than females.

Injury, as a cause of death, continues to feature prominently among males aged 25 to 44 years but this trend does not continue as age increases, with chronic diseases becoming more prevalent among older men [8]. In males, the largest proportion of injuries requiring hospitalisation occurred between the ages of 25 and 44 years [9]. This age bracket accounted for 28.3% of all such injuries in males [9], a compelling argument for promoting injury prevention as a priority among this group.

Existing work has examined the role of alcohol in injuries among young males, specifically addressing the increased risk of drowning while participating in aquatic activities following alcohol consumption [10]. Additionally, the beliefs underlying alcohol consumption by young adult males have also been investigated, with thoughts around relaxation and having fun found to be important in predicting the intent to drink while swimming [11].

Research from New Zealand explored the risk factors associated with male drowning deaths, suggesting possible issues such as increased exposure, alcohol consumption, as well as an underestimation of risk and overestimation of ability [12]. This study found targeted intervention strategies were necessary as risk factors for drowning deaths varied by age subgroup and ethnicity, with these variables leading to different trends in drowning locations and activities [12].

In order to design more targeted educational messages, better information is needed, particularly around achieving a greater understanding of the number of young adult males drowning. This includes the circumstances under which they drown and the common risk factors for drowning in this demographic. Although previously published research addresses some of these issues, further study is warranted to provide more detail in an Australian context.

This report will focus on unintentional, fatal drowning deaths among males aged 25 to 34 years across the last ten financial years (2005/06 to 2014/15). The circumstances of drowning in this group will be examined, with a focus on risky behaviour, including alcohol and drug consumption, unsafe boating practices and recreating alone.

AIMS

This study aimed to:

- Gain a better understanding of the scale of drowning among males aged 25-34 years across the last 10 financial years (1 July 2005 to 30 June 2015), including the circumstances of drowning deaths in this demographic and risk factors
- Propose recommendations going forward, including future directions and prevention strategies targeting males aged 25-34 years

METHODS

All unintentional, fatal drowning deaths among males aged 25 to 34 years, which occurred between 1 July 2005 and 30 June 2015 were included in this report. Fatalities in all Australian waterways were investigated.

Information for this report has been collected from State and Territory Coronial Offices, the National Coronial Information System (NCIS) and media reports. It has been collated and analysed by the Royal Life Saving Society – Australia.

Royal Life Saving uses a media monitoring service (both electronic and print media) all year round to identify drowning deaths in the media. The information is then corroborated with information from the NCIS, police and Royal Life Saving State and Territory Member Organisations before being included in this report.

All care is taken to ensure that the information is as accurate as possible. Please note that the figures from more recent financial years may change depending upon the outcomes of ongoing coronial investigations and findings. This report contains information correct as at 16 February 2016. As of this date, 87.3% of cases were closed (i.e. no longer under coronial investigation).

Exclusions from this data include: drowning deaths known to be as a result of suicide or homicide, deaths from natural causes, shark and crocodile attack, or hypothermia where known. All information presented is about drowning deaths or deaths where drowning was a factor.

The crude drowning rate was calculated using ten year Australian population figures for men aged 25-34 years between June 2006 and June 2015 from the Australian Bureau of Statistics (ABS) [13].

Information on visa type was obtained directly from police reports or 'finding' documents within the NCIS. As such, the language used (regarding the type of visa) in the document was also used in this report. In cases where a visa was discussed, they fell into the categories of "student visa", "working visa", "tourist visa" or "student and working visa".

The remoteness classification was defined by the Australian Standard Geographical Classification – Remoteness Area (ASGC-RA) system [14]. The distance between the incident and residential postcode was determined using Google Maps [15]. A distance of less than 100km was considered 'not a visitor', more than 100km but within the same state was 'visitor - intrastate', a different state was 'visitor - interstate' and an overseas residential postcode as 'visitor – overseas'. In cases where the incident or resident postcode was unknown, this was entered as 'unknown'.

The time of drowning was coded into four bands: early morning (12:01am to 6am), morning (6:01am to 12pm). Afternoon (12:01pm to 6pm) and evening (6:01pm to 12am).

Some locations and activities with only a small number of applicable cases were grouped for the purposes of reporting. The location of 'bathtub/spa bath' was grouped with 'other'. The activities of 'bathing', 'swept away' and 'swept in' were grouped with 'other'.

A Blood Alcohol Concentration (BAC) greater than or equal to 0.05 (0.05 grams of alcohol per 100 millilitres of blood) was considered relevant and contributory to the drowning death. Additionally, for the purposes of this report, all prescribed medications and over the counter medicines were considered to be legal. Illicit drugs, such as cannabis and methamphetamine, were considered illegal drugs.

Lifejacket use was considered in cases where a drowning death involved boating or rock fishing, with information on usage and suitability taken from the coronial finding or inquest finding and police reports on the NCIS.

Data were analysed using SPSS Version 20 16. Descriptive statistics were utilised, as well as chi squared analysis. Statistical significance was deemed $p<0.05$. Chi squared analysis was conducted without the 'unknown' variable (e.g. the presence of alcohol was calculated using the 'yes' and 'no' variables only).

RESULTS

Between 1 July 2005 and 30 June 2015 (a period of 10 financial years), 355 men aged 25-34 years drowned in Australian waterways. This represents 12.5% of all drowning deaths during this time period with a crude drowning rate of 2.23 per 100 000 men aged 25-34 years [17].

Drowning deaths occurred in all years of the study period, with a high of 42 deaths (11.8%) in 2009-10 and a low of 24 deaths (6.8%) in 2007-08 (Figure 1). The average number of deaths per financial year was 36.

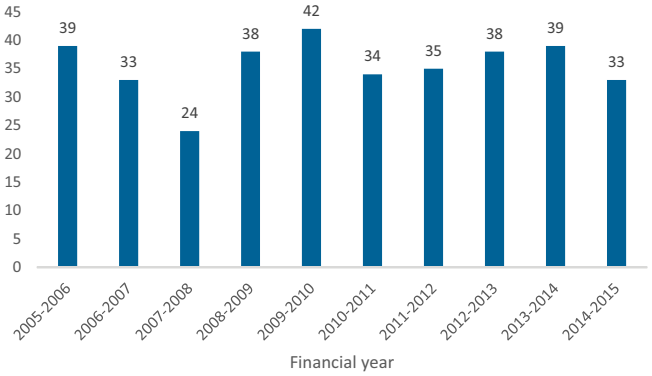

Figure 1: Drowning deaths among men aged 25 to 34 years by financial year

Overall demographic information

The highest number of drowning deaths occurred in males aged 28 (11.8%) or 30 years (11.8%), with the lowest number occurring in males aged 33 years (6.2%) (Figure 2).

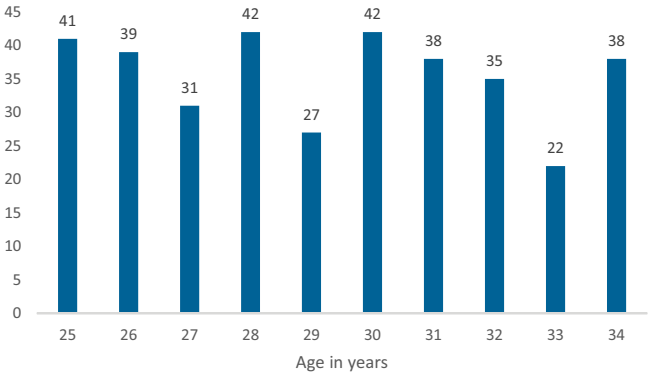

Figure 2: Drowning deaths among men aged 25 to 34 years by age in years

NSW recorded more drowning deaths than any other state, with 121 fatalities (34.1%) recorded over the study period. Queensland recorded 86 deaths (24.2%), followed by Victoria with 52 deaths (14.6%) and Western Australia with 50 deaths (14.1%) (Figure 3).

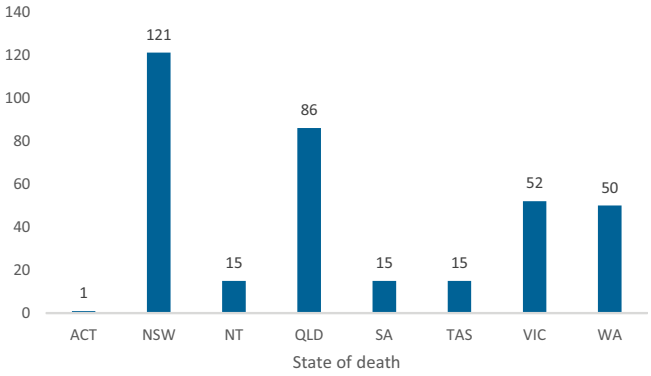

Figure 3: Drowning deaths among men aged 25 to 34 years by state of death

The majority of people who drowned did not identify as either Aboriginal or Torres Strait Islander (82.5%). However, 3.7% were Aboriginal and 0.3% were Torres Strait Islander. The status of the remaining 13.5% was either unknown or the information was missing (Figure 4).

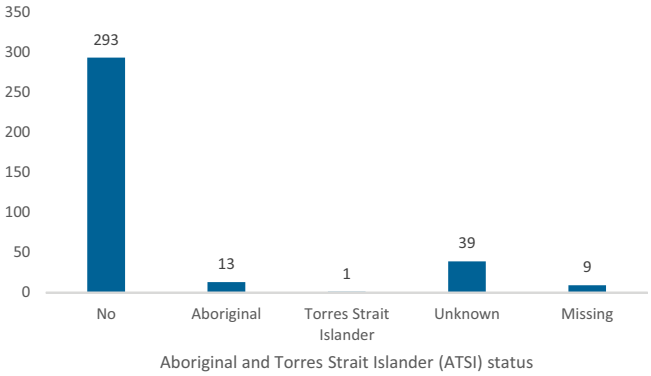

Figure 4: Drowning deaths among men aged 25 to 34 years by Aboriginal and Torres Strait Islander (ATSI) status

A number of people who drowned were in Australia on either a student or working visa, with 2.8% of people on a student visa and 3.9% on a working visa. A further 0.3% were described as being on a tourist visa and 0.3% on both a student and working visa (Figure 5).

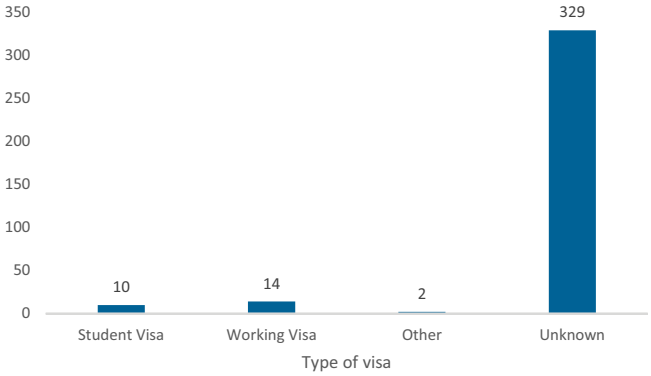

Figure 5: Drowning deaths among men aged 25 to 34 years by type of visa

Over a third of drowning incidents occurred in major cities (34.9%), with 23.9% occurring in inner regional areas and 20.3% in outer regional areas. A smaller proportion of incidents took place in remote (9.3%) and very remote (9.3%) locations. The remoteness classification of the remaining 2.2% of incidents was unknown (Figure 6).

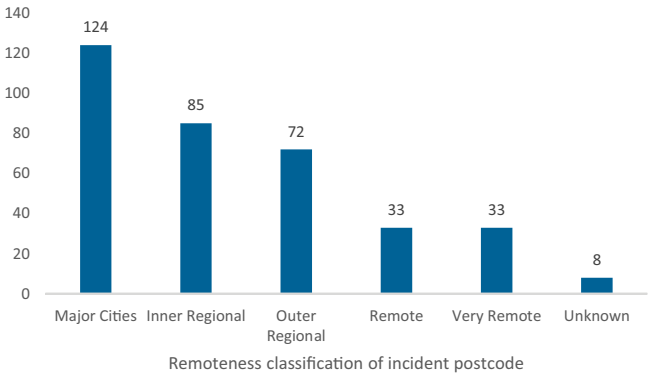

Figure 6: Drowning deaths among men aged 25 to 34 years by remoteness classification of incident postcode

The majority of people who drowned were not visitors to the location where they drowned (61.4%). Intrastate visitors accounted for 16.6% of deaths, with 7.3% classified as interstate visitors and 11.5% overseas visitors. This information could not be obtained in the remaining 3.1% of cases (Figure 7).

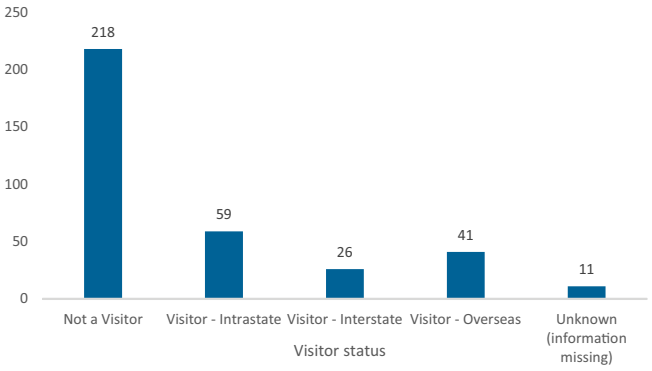

Figure 7: Drowning deaths among men aged 25 to 34 years by visitor status

Time of drowning deaths

Season

Drowning deaths occurred all year round, with more than a third occurring in Summer (38.9%). Autumn was the second most common season for drowning incidents (26.8%), followed by Spring (19.2%) and Winter (15.2%) (Figure 8).

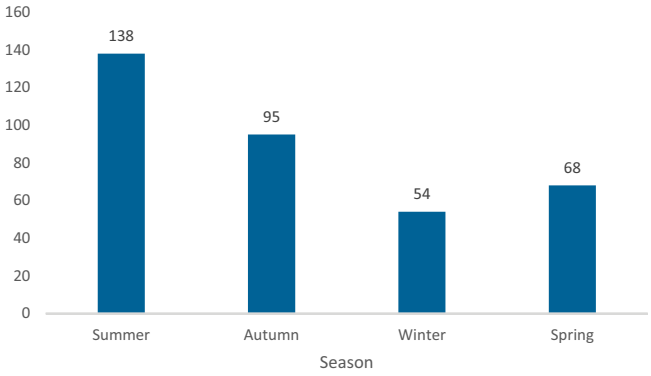

Figure 8: Drowning deaths among men aged 25 to 34 years by season

Month

Aligning with the seasonal trends for drowning, the highest number of deaths occurred in January (16.3%), February (11.3%) and December (11.3%). The lowest number of deaths occurred in June (4.5%) and August (4.5%) (Figure 9).

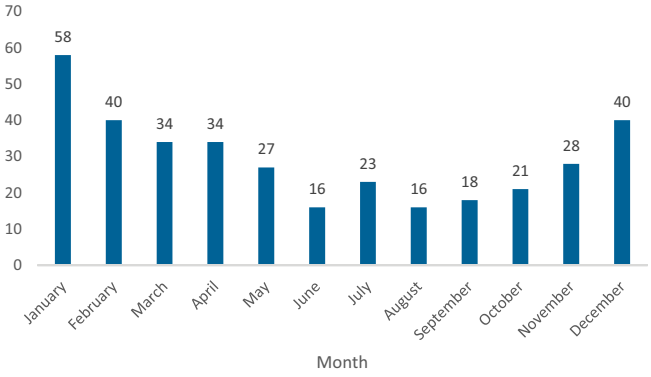

Figure 9: Drowning deaths among men aged 25 to 34 years by month

Day of the week

More people drowned on weekends than weekdays, with Saturdays accounting for 23.1% of deaths and Sundays accounting for 22.5%. The lowest number of deaths occurred on Tuesdays (9.3%) and Thursdays (9.9%) (Figure 10).

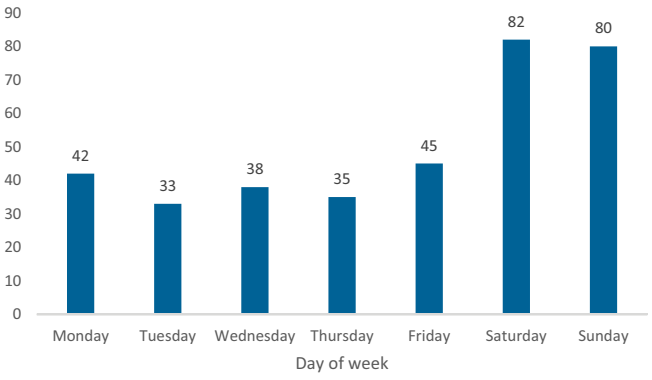

Figure 10: Drowning deaths among men aged 25 to 34 years by day of week

Time of day

The afternoon between 12:01pm and 6pm was the most common time for people to drown, with almost half (46.2%) of incidents occurring in this time band. A similar proportion of people drowned in the morning (17.2%) as the evening (17.7%), with a further 10.4% of incidents occurring in the hours of the early morning. The time of drowning was unknown in 8.5% of cases (Figure 11).

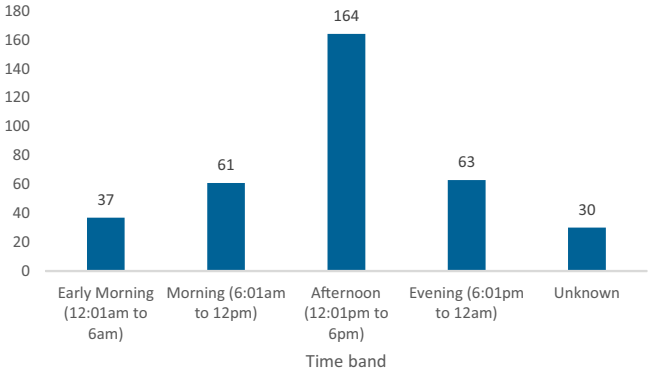

Figure 11: Drowning deaths among men aged 25 to 34 years by time of day grouped

Location and activity related to drowning deaths

Location

Rivers, creeks and streams were the leading location for drowning, accounting for 28.5% of deaths. Beaches accounted for the second highest number of deaths (22.8%), followed by ocean/harbour locations (17.2%). Other common locations for drowning included rocks (11.3%) and lakes, dams and lagoons (10.7%) (Figure 12).

Among those who drowned at rivers, creeks and streams, the leading activities were swimming and recreating (30.7%), and boating (12.9%), followed by a fall, non-aquatic transport and an unknown activity (all 10.9%). Among those who drowned at the beach, most were swimming and recreating (65.4%) or using watercraft (16.0%). Almost three-quarters of men who drowned at rocks were rock fishing (72.5%).

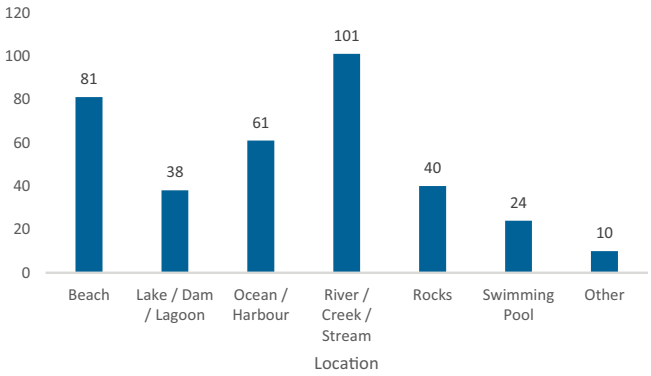

Figure 12: Drowning deaths among men aged 25 to 34 years by location

Activity

The most common activity being undertaken prior to drowning was swimming and recreating (32.7%), followed by boating (13.8%), rock fishing (8.2%) and using watercraft (7.3%). Other common activities included an unexpected fall into water (6.8%) and an unknown activity (6.5%) (Figure 13).

Of those who drowned while swimming and recreating, 45.7% were at the beach and 26.7% were at a river, creek or stream. For those who were boating, 51.0% were at an ocean or harbour location, 26.5% were at a river, creek or stream and 20.4% were at a lake, dam or lagoon. Of those who were involved in an unknown activity, almost half (47.8%) drowned at a river, creek or stream.

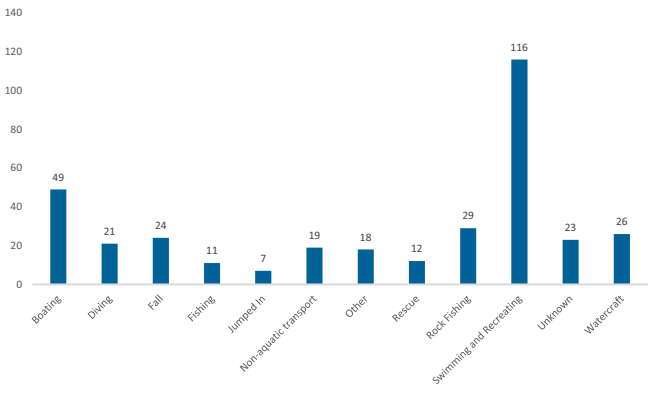

Figure 13: Drowning deaths among men aged 25 to 34 years by activity

Risk factors related to drowning deaths

Alcohol

Over a third of all drowning deaths were known to involve alcohol (36.1%). A similar proportion did not involve alcohol (36.3%), with this information unknown in the remaining 27.6% of cases (Figure 14).

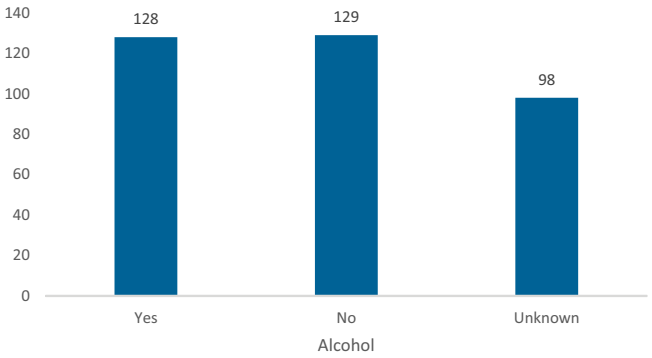

Figure 14: Drowning deaths among men aged 25 to 34 years by presence of alcohol

The presence of alcohol was examined by different locations. Almost twice as many drowning deaths at rivers, creeks and streams were known to involve alcohol (16.3%) as not (7.9%). There were two other locations where alcohol was involved in more drowning deaths than not; lakes, dams and lagoons (yes: 5.4%, no: 3.9%), as well as oceans and harbours (yes: 5.1%, no: 4.8%). In all other aquatic locations more cases did not involve alcohol than those which did. Beaches (8.2%) and oceans and harbours (7.3%) both had a high proportion of cases with unknown alcohol involvement (Figure 15).

Drowning deaths involving alcohol among men in this age group were significantly more likely to occur at rivers, creeks and streams (X^2=16.1, p<0.05) and significantly less likely to occur at beaches (X^2=11.5, p<0.05).

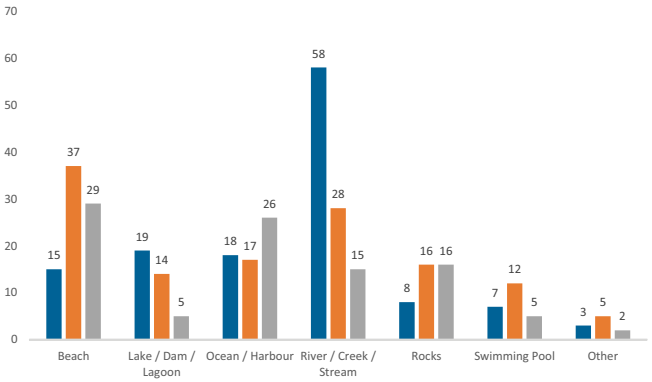

Figure 15: Drowning deaths among men aged 25 to 34 years by presence of alcohol and location

Focusing on activities undertaken prior to drowning, alcohol was found to be present in more cases than not for those deaths related to boating (yes: 5.6%, no: 2.3%), an unknown activity (yes: 3.9%, no: 1.7%), an unexpected fall into water (yes: 3.1%. no: 2.8%), non-aquatic transport (yes: 2.8%, no: 0.6%) and jumping in (yes: 1.4%, no: 0.3%). Of those who were swimming and recreating, an equal number of deaths did and did not involve alcohol (11.8%) (Figure 16).

Drowning deaths involving alcohol were significantly more likely to occur following an incident related to non-aquatic transport (X^2=6.3, p<0.05) or boating (X^2=6.9, p<0.05) and significantly less likely to occur while rock fishing (X^2=7.8, p<0.05).

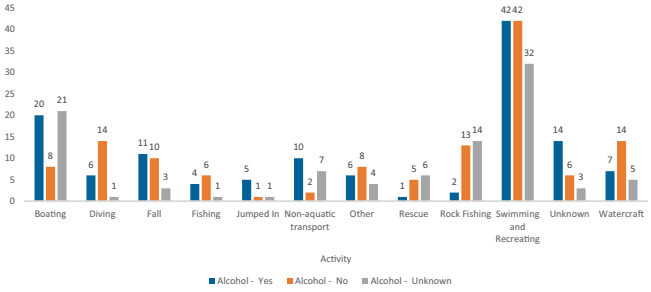

Figure 16: Drowning deaths among men aged 25 to 34 years by presence of alcohol and activity

The presence of alcohol was also examined in relation to a number of other variables, including overall demographics. Drowning deaths among Aboriginal or Torres Strait Islander people were significantly more likely to involve alcohol (X^2=12.9, p<0.05) than non-Indigenous people.

No differences were observed in relation to seasonality, with no season statistically more likely to be associated with drowning deaths involving alcohol.

When examining days of the week, drowning deaths which occurred on Wednesdays were significantly less likely to involve alcohol (X^2=6.5, p<0.05). No other differences were recorded.

Several differences were noted regarding the time of day when people drowned, with alcohol significantly more likely to be involved in deaths occurring in the early morning (X^2=22.9, p<0.05) and evening (X^2=5.6, p<0.05) and significantly less likely to be involved in fatalities during the morning (X^2=14.5, p<0.05) and afternoon (X^2=4.3, p<0.05).

Alcohol was significantly more likely to be involved in drowning deaths related to flooding (X^2=6.9, p<0.05) and multiple fatality events (X^2=4.9, p<0.05).

Of those drowning deaths which were known to involve alcohol, the amount of alcohol detected was deemed relevant in 60.2% of cases (BAC greater than or equal to 0.05). Alcohol was deemed non-contributory in 32.8% of cases, with the remaining 7.0% of cases not offering enough information to determine whether or not the presence of alcohol was contributory to the drowning death (Figure 17).

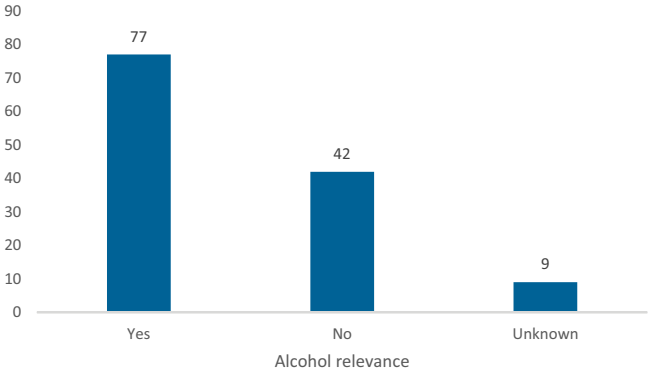

Figure 17: Drowning deaths among men aged 25 to 34 years by alcohol relevance

The amount of alcohol detected was relevant more often than not for all locations except for oceans and harbours (yes: 5.5%, no: 7.0%). All cases known to involve alcohol in swimming pools were related to a relevant amount of alcohol (Figure 18).

Drowning deaths involving a contributory amount of alcohol were significantly more likely to occur at swimming pools (X^2=4.1, p<0.05).

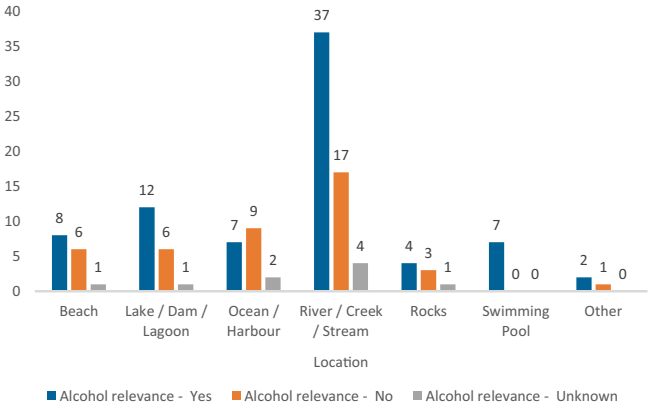

Figure 18: Drowning deaths among men aged 25 to 34 years by alcohol relevance and location

The amount of alcohol detected was relevant more often than not for all activities except for diving (yes: 1.6%, no: 3.1%), rock fishing (yes: 0.0%, no: 1.6%) and watercraft (yes: 0.8%, no: 4.7%). For all other activities, more cases which involved alcohol recorded a contributory BAC (greater than or equal to 0.05) than those which did not (Figure 19).

Drowning deaths involving a contributory amount of alcohol were significantly less likely to occur while using watercraft (X^2=8.0, p<0.05).

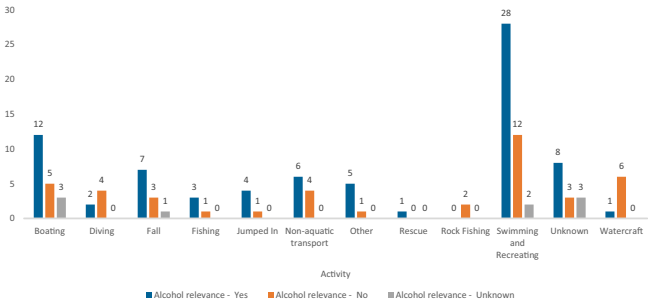

Figure 19: Drowning deaths among men aged 25 to 34 years by alcohol relevance and activity

Relevant alcohol levels were also associated with a number of other variables, including Aboriginal and Torres Strait status, with drowning deaths among Indigenous people significantly more likely to involve a contributory amount of alcohol (X^2=6.8, p<0.05).

A contributory amount of alcohol was significantly more likely to be involved in deaths which occurred in the early morning (X^2=4.9, p<0.05). No other differences were observed in regards to time of day, day of week or seasonality. Similarly, no association was noted between contributory alcohol levels and deaths related to flooding or multiple fatality events.

Drugs

Approximately one quarter of drowning deaths were known to involve drugs (25.6%), including both legal and illegal substances. Almost half of cases did not involve drugs (44.5%), while 29.9% of cases did not provide toxicology information (Figure 20).

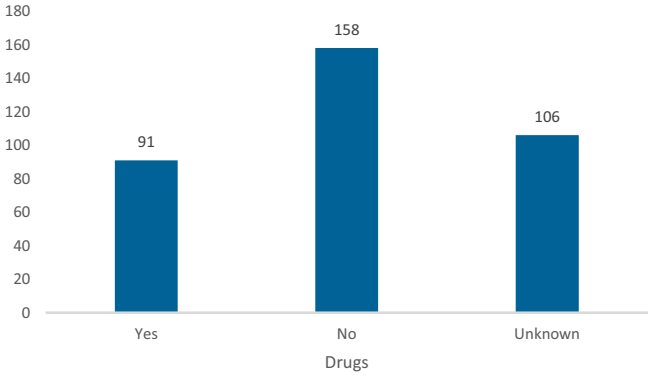

Figure 20: Drowning deaths among men aged 25 to 34 years by presence of drugs

Most aquatic locations recorded more cases not involving drugs than those which did. Beaches (8.2%) and oceans and harbours (7.9%) both had a high proportion of unknowns (Figure 21).

There were no statistically significant differences between locations when the presence of drugs was considered.

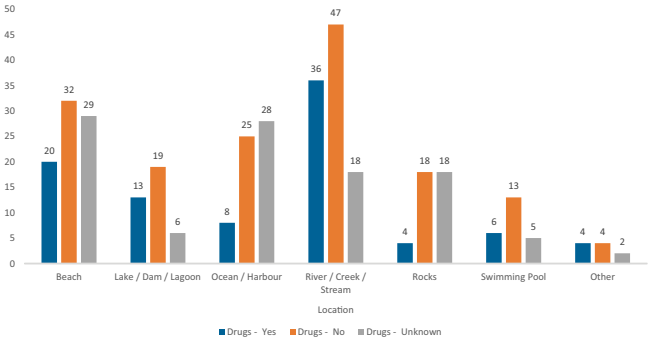

Figure 21: Drowning deaths among men aged 25 to 34 years by presence of drugs and location

Focusing on activities undertaken prior to drowning, drugs were found to be present in more cases following an unknown activity (yes: 2.5%, no: 2.0%) than not. Of those who were using watercraft, an equal number of deaths did and did not involve drugs (3.1%). For all other activities, more cases did not involve drugs than those which did (Figure 22).

Drowning deaths involving drugs were significantly less likely to occur while diving (X^2=6.1, p<0.05). No other significant differences were observed.

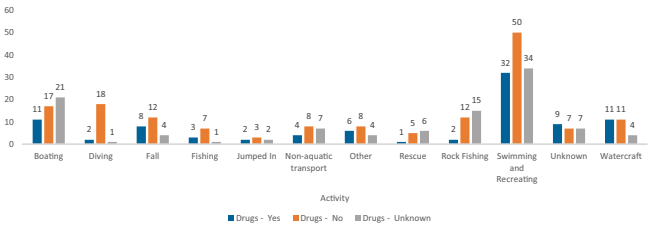

Figure 22: Drowning deaths among men aged 25 to 34 years by presence of drugs and activity

Drowning deaths involving drugs were analysed in relation to other variables to highlight any statistically significant difference within this group. No such differences were noted regarding Indigenous status. Nor were any differences apparent in the day of the week people drowned, or the time of day. However, drowning deaths in Autumn were significantly less likely to involve drugs (X^2=4.1, p<0.05).

There were no statistically significant differences in flood-related deaths or multiple fatality events between those incidents which did and did not involve drugs.

Of the cases which were known to involve drugs, 40.7% were legal drugs and 38.5% were illegal substances. In 20.9% of cases the person who drowned had consumed both legal and illegal drugs (Figure 23). The most commonly recorded illegal drugs were cannabis and methamphetamine.

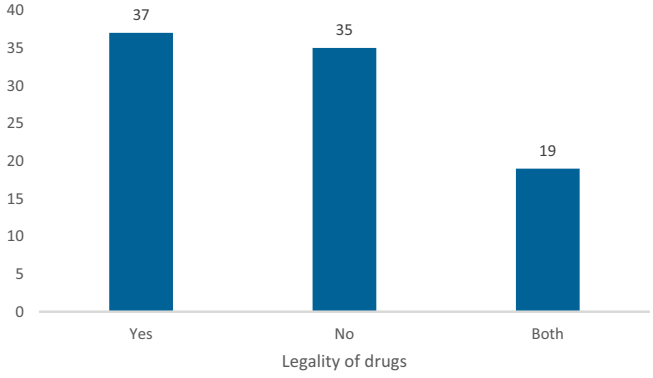

Figure 23: Drowning deaths among men aged 25 to 34 years by legality of drugs

When examining drug classification by location, beaches (legal: 12.1%, illegal: 6.6%, both: 3.3%) and swimming pools (legal: 4.4%, illegal: 1.1%, both: 1.1%) were the only locations to record more deaths involving legal drugs. Lakes, dams and lagoons (legal: 3.3%, illegal: 9.9%, both: 1.1%) and rivers, creeks and streams (legal: 15.4%, illegal: 16.5%, both: 7.7%) both had high proportions of illegal drugs (Figure 24).

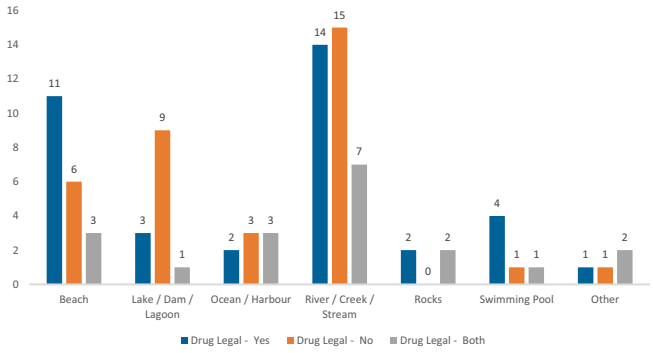

Figure 24: Drowning deaths among men aged 25 to 34 years by drug legality and location

Drowning deaths while rock fishing which involved drugs only involved legal drugs, while deaths while swimming and recreating more often involved legal drugs than illegal substances (legal: 20.9%, illegal: 13.2%, both: 1.1%). A number of other activities including boating (legal: 3.3%, illegal: 6.6%, both: 2.2%), non-aquatic transport (legal: 0.0%, illegal: 3.3%, both: 1.1%) and an unknown activity (legal: 3.3%, illegal: 4.4%, both: 2.2%), recorded more cases involving illegal drugs than legal, while falls into water were often proceeded by the consumption of both legal and illegal drugs (legal: 1.1%, illegal: 2.2%, both: 5.5%) (Figure 25).

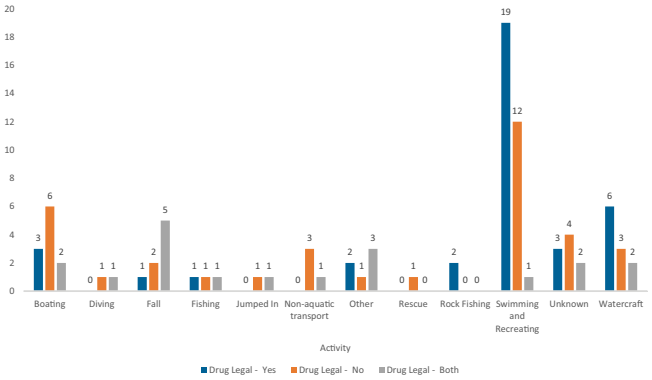

Figure 25: Drowning deaths among men aged 25 to 34 years by drug legality and activity

Statistical significance testing regarding legal and illegal drugs found that drowning deaths involving legal drugs were significantly less likely to occur at lakes, dams and lagoons (X^2=6.1, p<0.05) but no significant associations were observed between legal drugs and any activity.

Drowning deaths involving illegal drugs were significantly less likely to occur while swimming and recreating (X^2=6.9, p<0.05) but no significant associations were observed between illegal drugs and location.

When investigating any associations between legal or illegal drugs and Aboriginal or Torres Strait Islander status, no significant differences were observed. Similarly, no differences were apparent in drowning deaths by season, day of week or time of day when drug classification was considered.

However, legal drugs were significantly less likely to be involved in drowning deaths which were related to flooding (X^2=7.4, p<0.05) or multiple fatality events (X^2=5.2, p<0.05).

Alcohol and drugs

When examining alcohol consumption by drug use, it was found that 13.2% of drowning deaths involved both alcohol and drugs, while 24.2% involved neither. In a further 19.7% of cases alcohol was known to be present but not drugs and in 12.1% of cases drugs were known to be present but not alcohol. In 26.8% of cases, toxicology information on both alcohol and drugs was missing (Figure 26).

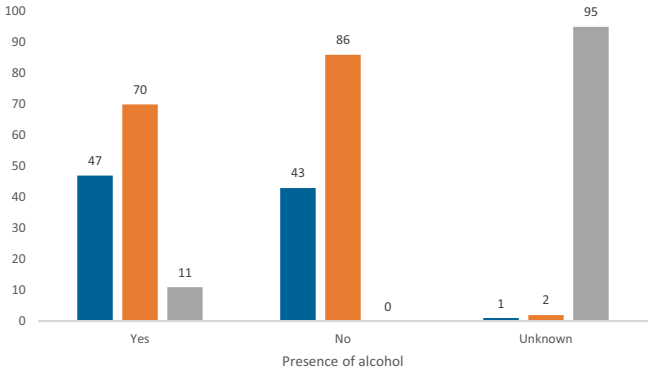

Figure 26: Drowning deaths among men aged 25 to 34 years by presence of alcohol and/or drugs

Pre-existing Medical conditions

A pre-existing medical condition was known to be present in just over a fifth of drowning deaths (21.7%). There were no known medical conditions in 36.6% of cases, with medical history or autopsy results not available in 41.7% of cases (Figure 27). Common medical conditions identified included: cardiovascular disease, epilepsy, depression and other mental health disorders.

There were no significant differences in relation to the presence of medical conditions and any aquatic location or activity undertaken prior to drowning.

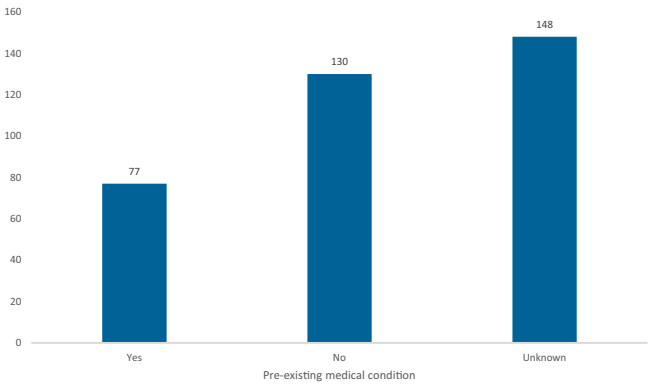

Figure 27: Drowning deaths among men aged 25 to 34 years by presence of pre-existing medical condition

Lifejacket usage

Lifejacket use was examined amongst those drowning deaths which occurred while boating (49 deaths). Of these, only one person (2.0%) was wearing a compliant lifejacket correctly, while a further 8.2% were using a lifejacket which was either not worn correctly, was not suitable for the situation or did not meet the required standards. Just under a third of people (32.7%) who drowned while boating were not wearing a lifejacket, while this information not known in the remaining 57.1% of cases (Figure 28).

There were no significant differences regarding the location of drowning when lifejacket use among those who were boating was considered.

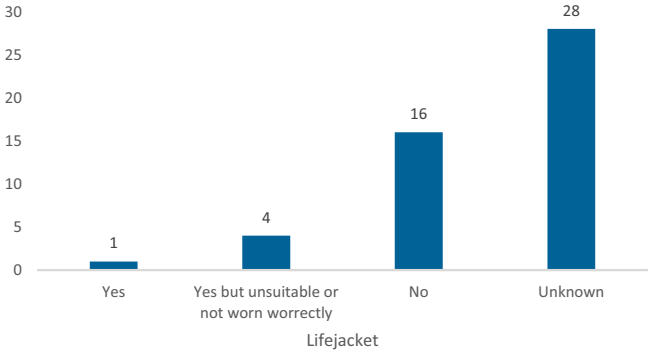

Figure 28: Drowning deaths among men aged 25 to 34 years by lifejacket usage while boating

Lifejacket usage was also examined among men who drowned while rock fishing (29 deaths), although this information was missing in over half of cases (62.1%). A lifejacket was only worn in one case (3.4%), while the remaining 34.5% of men who drowned were not wearing a lifejacket (Figure 29).

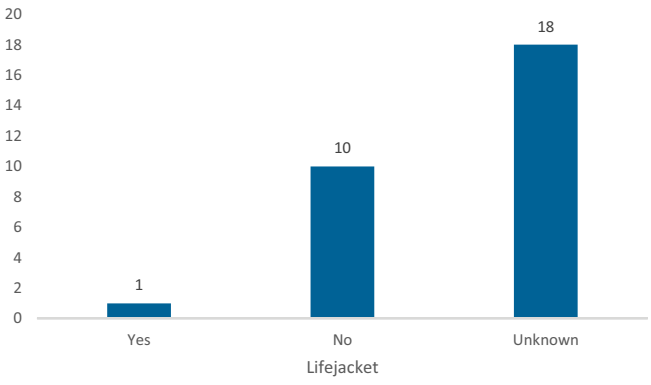

Figure 29: Drowning deaths among men aged 25 to 34 years by lifejacket usage while rock fishing

Other factors

Flood-related

Although the majority of drowning incidents were not flood-related, 4.5% of deaths did involve flooded waterways. In a further 4.5% of cases, it was not known whether the death was flood-related, commonly due to a lack of circumstantial detail (Figure 30).

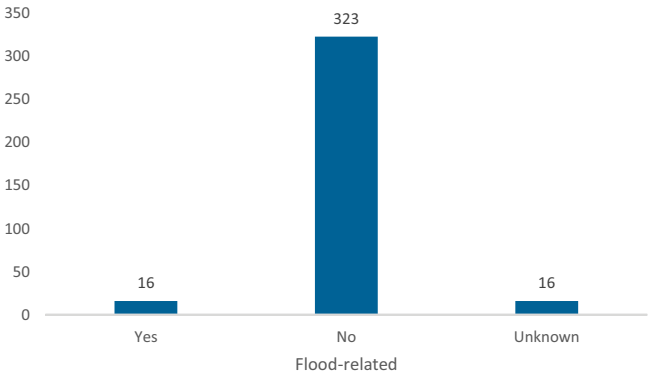

Figure 30: Drowning deaths among men aged 25 to 34 years by flooding

Multiple fatality event

In 15.5% of cases, more than one person drowned during the incident, resulting in a multiple fatality event. In most cases (81.7%), the incident resulted in one fatality. However, this information was not available in the remaining 2.8% of cases (Figure 31).

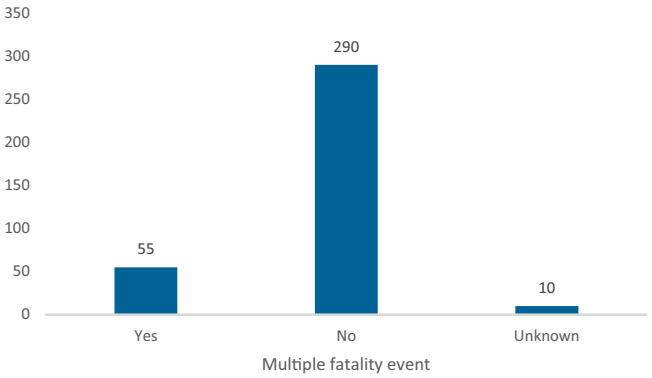

Figure 31: Drowning deaths among men aged 25 to 34 years by multiple fatality event

Of those involved in a multiple fatality event, 38.2% drowned at a river, creek or stream, 30.9% at an ocean or harbour and 12.7% near rocks (Figure 32).

Multiple fatality events were significantly more likely to occur at an ocean or harbour (X^2=8.3, p<0.05) and significantly less likely to occur at a beach (X^2=4.9, p<0.05) or swimming pool (X^2=4.5, p<0.05).

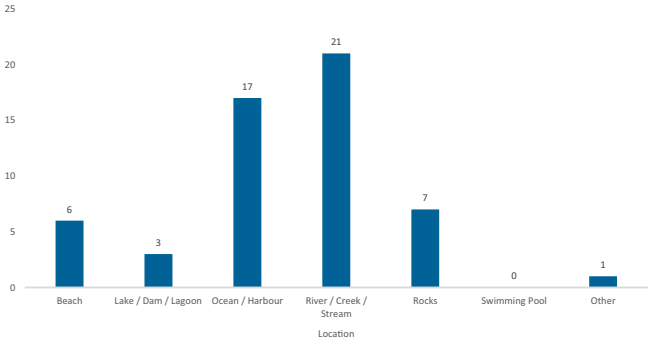

Figure 32: Drowning deaths among men aged 25 to 34 years by multiple fatality event and location

The leading activity prior to drowning in a multiple fatality event was boating (32.7%), followed by non-aquatic transport (21.8%) and swimming and recreating (9.1%) (Figure 33).

Multiple fatality events were significantly more likely to occur following a non-aquatic transport (X^2=32.2, p<0.05) or boating incident (X^2=18.2, p<0.05) and significantly less likely to occur while swimming and recreating (X^2=17.5, p<0.05).

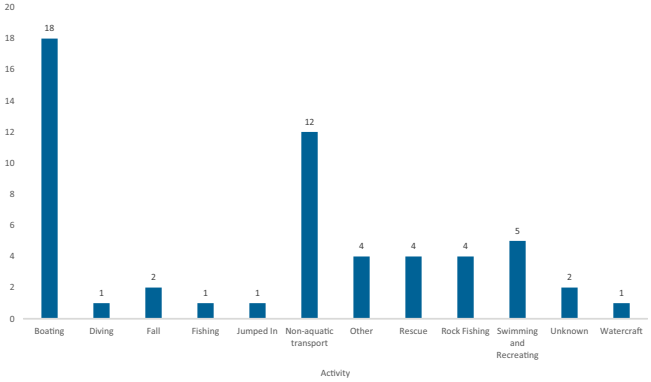

Figure 33: Drowning deaths among men aged 25 to 34 years by multiple fatality event and activity

DISCUSSION

By analysing drowning deaths of men aged 25 to 34 years, risk factors which are especially pertinent to this demographic have been identified. Although fatalities occurred in a variety of aquatic locations, clear trends emerged, specifically regarding alcohol and drug use, boating incidents and common activities.

Rivers, creeks and streams were the leading location for drowning deaths, with swimming and recreating found to be the most common activity undertaken prior to drowning, followed by boating. Perhaps surprisingly, rock fishing was the third most common activity, highlighting its popularity among males in this age group. Given the risks involved in rock fishing, this finding is of the utmost importance. It is interesting to note that alcohol consumption does not appear to be a significant factor in rock fishing deaths, unlike many other activities.

Previous coronial recommendations into rock fishing deaths have highlighted high risk groups, such as the overrepresentation of people from culturally and linguistically diverse (CALD) communities, as well as suggesting further investigation into the notion of compulsory lifejacket usage and collaborative safety plans involving relevant coastal safety authorities. It is likely that multiple strategies will need to be utilised in order to reduce the number of men drowning while rock fishing.

Alcohol consumption and drug use are clear risk factors for drowning in this demographic. Toxicology reports revealed the presence of alcohol in over a third of people who drowned, with more than half of these having a BAC greater than or equal to 0.05. At these levels alcohol is known to affect alertness, perception, vision, balance, reaction time and psychomotor skills [18]. Excessive consumption of alcohol not only impairs the decision making process while swimming or recreating around water but also the thought process required to manage any dangerous situation which may occur if someone gets into difficulty. It is evident that alcohol consumption, particularly excessive alcohol consumption, is a key issue among males in this age group.

The issue of alcohol consumption among Aboriginal or Torres Strait Islander people is also of high importance, with drowning deaths in this group significantly more likely to involve alcohol. It is important that any interventions designed to combat this problem are targeted solutions to ensure they are culturally sensitive and appropriate to the local context.

Drowning deaths involving alcohol were significantly more likely to occur at rivers, creeks and streams and significantly less likely to occur at beaches. This could be explained by the stricter regulatory environment which is often found at beaches, particularly patrolled beaches within densely populated areas. By comparison, rivers are often found in regional and remote areas, which do not impose the same restrictions.

Drowning deaths involving alcohol were more likely to occur in the early morning and evening, suggesting alcohol consumption may be tied to entertainment activities in the evenings, which often extend into the early hours of the morning. In this regard, limiting alcohol intake during these hours may be part of a broader, community-wide movement to minimise injuries as a result of excessive consumption. This information should be used to ensure targeted prevention messages are received at a time when they are likely to be most relevant.

Alcohol consumption was also associated with drowning deaths related to flooding, as well as multiple fatality events which resulted in the death of more than one person. Such events were significantly more likely to occur at an ocean or harbour and significantly less likely to occur at a beach or swimming pool, which are often more controlled environments. Multiple fatality events were also more likely to occur following a non-aquatic transport or boating incident. Both these activities often involve a group of people, either in a vehicle or vessel. The role of peer influences should be explored in these cases to provide greater understanding of the circumstances leading up to a multiple fatality event, particularly the decision making process of the driver or skipper.

Drug use was also a significant problem in this demographic. Just over a quarter of people who drowned were known to have consumed drugs prior to the incident, with more than half of these involving illegal drugs, most commonly cannabis and methamphetamine. Ideally, the drugs classified as ‘legal’ would be further categorised to capture the proportion of these that are likely obtained and used illegally. Although not possible for this study, it would be worth investigating for future research.

The analysis of a number of variables was limited by the availability of data, with some variables often not recorded, or not recorded in sufficient detail to be useful for this study. For example, a number of the investigated risk factors had a relatively large proportion of ‘unknowns’, including alcohol and drug consumption, underlying medical conditions and lifejacket usage. These variables were all analysed using the available data but any conclusions drawn are limited by this lack of completeness. More complete coronial reporting, specifically in regards to attached documentation, would assist in data analysis and the subsequent design of prevention strategies and future recommendations.

Another recurring theme was the issue of boat safety. While some drowning deaths occurred in men who were described as experienced, other incidents occurred among men who had little experience in boating and therefore, did not have the necessary equipment or knowledge of safe boating practices. In many cases men were not adequately prepared, with a lack of safety equipment and poor conditions common occurrences.

In addition to unsafe boating practices, some boats were not seaworthy. In some cases do-it-yourself modifications, or "back yard alterations", had been conducted to parts of the boat, leading to unseaworthy vessels. There were also issues regarding correct registration and licensing in a proportion of cases.

Lifejacket usage was not explicitly reported in over half of the drowning deaths as a result of boating and rock fishing. Among cases where this information was available, the majority of people who drowned were not wearing a lifejacket, with an additional proportion of people not wearing a suitable lifejacket correctly. Research has shown that wearing a lifejacket doubles the chance of survival once immersed in water [19]. An understanding of the motivations underlying lifejacket usage, or lack thereof, would be beneficial in this context, particularly to ascertain the reasons why men choose not to wear one, despite the inherent risks.

Royal Life Saving advocates for correctly fitted lifejackets to be worn by all people onboard a boat. It is important to ensure weight is centred when entering or leaving a small boat, comply with boat traffic rules and stow all gear safely and securely. Anyone intending to take a boat out should check weather reports before departing and during activity, as well as informing others not on board of the destination and intended time of return.

There was also a relatively high proportion of men who drowned following an unknown activity, suggesting they were alone at the time they drowned and the incident was unwitnessed. Almost half of these incidents occurred at rivers, creeks or streams, suggestive of the more isolated environment where these are often located. Undertaking any type of aquatic activity alone is dangerous, as no one will be available to assist if a dangerous situation arises. All people, even otherwise fit and healthy men, should avoid swimming or recreating near water alone.

Future research would benefit from improved data regarding visa status. Although analysed where available, it is likely that more men in this age group were in the country on student or work visas. New arrivals and temporary visitors may be unaware of the hazards posed by Australian waterways, suggesting a need for improved targeted education. This may be particularly true for visitors to inland areas of Australia, who may receive even less exposure to safety information on rivers, lakes and dams than coastal waterways when they arrive.

However, it is clear that the majority of drowning deaths examined in this study still occur among local residents, or those not considered visitors to the location where they drowned. Although local residents may feel they are familiar with an area, conditions can change rapidly, particularly with rivers. Additionally, the consumption of alcohol may lead to a person underestimating the risks associated with an activity. To avoid complacency, it is important that the local conditions and hazards are considered on every occasion a person visits a waterway, regardless of how many times they may have visited in the past.

LIMITATIONS

- A proportion of cases (12.7%) within this report were open (ie. case still under investigation) and as such, a number of variables remain unknown until the case is closed following the completion of any coronial investigation. It should be noted there may be a higher number of unknown variables among cases in regional / rural areas or more recent years where a larger proportion of cases may still be under investigation.

- Amongst cases which were closed, some were still missing information, either because the information was unknown or it was not made available electronically. In such cases, variables were entered as 'unknown', limiting the completeness of the data.

CONCLUSION

Drowning deaths of males aged 25-34 years occurred throughout the year, with rivers, creeks and streams the leading location for drowning among this demographic. A number of key risk factors emerged, including alcohol and drug use. Although risky alcohol consumption is relevant to all aquatic locations, it was significantly more likely in river, creek and stream drowning deaths. Similarly, there was a strong association between alcohol consumption and fatalities related to non-aquatic transport and boating incidents. By examining risk factors, evidence-based prevention strategies can be developed to target excessive alcohol consumption around water, including high risk areas (rivers, creeks and streams), activities (boating) and populations (Indigenous Australians).

Drowning deaths as a result of unsafe boating practices were also a common occurrence, with poor conditions, a lack of planning and absent or deficient safety equipment all contributing to a number of deaths. Promotion of lifejacket usage is an important strategy to decrease not only deaths related to boating but also rock fishing. Any successful strategy in this area will need to be multi-faceted and inclusive, in order to bring about meaningful change.

REFERENCES

1. Royal Life Saving Society - Australia. Royal Life Saving Society - Australia National Fatal Drowning Database 2002/03 to 2014/15. Sydney, 2015.
2. Royal Life Saving Society - Australia. Royal Life Saving National Drowning Report 2015. Sydney, 2015.
3. Drowning Prevention Research Centre Canada. Canadian Drowning Report 2015 Edition. Canada: Lifesaving Society Canada, 2015.
4. Centers for Disease Control and Prevention. Drowning - United States, 2005-2009. MMWR Morbidity and Mortality Weekly Report 2012;61(19):344-47.
5. Lunetta P, Smith GS, Pentilã A, et al. Unintentional drowning in Finland 1970-2000: a population-based study. International Journal of Epidemiology 2004;33(5):1053-63.
6. Australian Bureau of Statistics. 4102.0 - Australian Social Trends: Risk Taking by Young People. Secondary 4102.0 - Australian Social Trends: Risk Taking by Young People 2008. http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter5002008.
7. Australian Institute of Health and Welfare. Young Australians: Their Health and Wellbeing 2011. Canberra: Australian Institute of Health and Welfare, 2011.
8. Australian Institute of Health and Welfare. The Health of Australia's Males: 25 Years and Over. Canberra: Australian Institute of Health and Welfare, 2013.
9. Pointer S. Trends in hospitalised injury, Australia: 1999-00 to 2012-13. Injury research and statistics series no 95 Cat no INJCAT 171. Canberra: Australian Institute of Health and Welfare, 2015.
10. Steenkamp M, Harrison J, Allsop S. Alcohol-related injury and young males. Injury Technical Paper Series Number 1. Adelaide: National Injury Surveillance Unit, AIHW (AIHW cat no. INJCAT42), 2002:97.
11. Hamilton K, Schmidt HJ. Critical beliefs underlying young Australian males' intentions to engage in drinking and swimming: School of Applied Psychology, Griffith University, 2013:19.
12. Croft JL, Button C. Interacting Factors Associated with Adult Male Drowning in New Zealand. Plos One 2015;10(6).
13. Australian Bureau of Statistics. 3101.0 - Australian Demographic Statistics, Jun 2015. Secondary 3101.0 - Australian Demographic Statistics, Jun 2015 2015. http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/BCDDE4F49C8A3D1ECA257B8F00126F77?opendocument.
14. Australian Government: Department of Health. Australian Standard Geographical Classification - Remoteness Area (ASGC-RA). Secondary Australian Standard Geographical Classification - Remoteness Area (ASGC-RA) 2015. http://www.doctorconnect.gov.au/internet/otd/Publishing.nsf/Content/RA-intro#.
15. Google. Google Maps (www.google.com.au/maps). Secondary Google Maps (www.google.com.au/maps) 2015. www.google.com.au/maps.
16. IBM SPSS Statistics 20.0 [program]. Chicago, Illinois: IBM, 2010.
17. Australian Bureau of Statistics. 3101.0 - Australian Demographic Statistics, Sep 2015. Table 59. Estimated Resident Population by Single Year of Age, Australia. Secondary 3101.0 - Australian Demographic Statistics, Sep 2015. Table 59. Estimated Resident Population by Single Year of Age, Australia 2015. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Sep%202015?OpenDocument.
18. Transport Accident Commission. Effects of Alcohol. Secondary Effects of Alcohol 2016. http://www.tac.vic.gov.au/road-safety/statistics/summaries/drink-driving-statistics/effects-of-alcohol.
19. O'Connor P. National Assessment of Boating Fatalities in Australia 1999 – 2004: The findings of phase 3 of the assessment of fatal and non-fatal injury due to boating in Australia. Australia: National Marine Safety Committee Inc., 2008.

FOR MORE INFORMATION ABOUT THIS REPORT CONTACT:

Royal Life Saving Society - Australia

Phone 02 8217 3111
E-mail info@rlssa.org.au
Visit www.royallifesaving.com.au

CONTACT ROYAL LIFE SAVING IN YOUR STATE OR TERRITORY:

ACT	Phone	02 6260 5800
	E-mail	act@rlssa.org.au
NSW	Phone	02 9634 3700
	E-mail	nsw@royalnsw.com.au
NT	Phone	0408 857 808
	E-mail	nt@rlssa.org.au
QLD	Phone	07 3823 2823
	E-mail	admin@rlssq.com.au
SA	Phone	08 8210 4500
	E-mail	training@royallifesavingsa.com.au
TAS	Phone	03 6243 7558
	E-mail	tas@rlssa.org.au
VIC	Phone	03 9676 6900
	E-mail	mail@lifesavingvictoria.com.au
WA	Phone	08 9383 8200
	E-mail	info@rlsswa.com.au

facebook.com/RoyalLifeSaving

twitter.com/royallifesaving

youtube.com/RoyalLifeSavingAust

www.royallifesaving.com.au

EVERYONE CAN BE A LIFESAVER

Royal Life Saving

ROYAL LIFE SAVING SOCIETY - AUSTRALIA

Supported by

Australian Government