

2018/19
Life Saving
Victoria
**Drowning
Report**



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157

**total drowning incidents
(fatal and non-fatal).**



Tragically, 56 people in Victoria lost their lives to drowning this year. It was the state's highest annual drowning toll in more than two decades and 17 more than the average number of drowning incidents in Victoria over the past 10 years (2008/09-2017/18). This figure represents a significant rise in the number of families coming home from a day on or around the water to live with the unfathomable reality of a lost loved one. The fatal drowning rate stands out for being the highest in 14 years; 38% higher than last year and a 29% increase on the 10-year average.

The year also saw an above average number of overall drowning incidents, with 157 incidents, including 56 fatal and 101 non-fatal drownings. Children aged 0-4 years had the highest hospital admission rate.

By any yardstick these are sobering statistics, which bring into sharp focus the ever-increasing need for water safety education among the growing number of people using Victoria's aquatic environments.

Some of the trends in 2018/19 include:

- A 29% increase on the fatal drowning rate per 100,000 persons compared to the 10-year average.
- Males continue to be overrepresented in the drowning statistics and are four times more likely to drown than females.
- People aged 65 years and above have the highest age-specific fatal drowning rate.
- 18% of drowning deaths in 2018/19 were of people from culturally and linguistically diverse (CALD) communities.
- Drowning in inland and coastal waterways continues to increase, with 49% and 46% increases, respectively, in 2018/19 compared to the 10-year average.

- A 69% increase in those walking or playing near water just prior to the fatal drowning incident compared to the 10-year average. This was also the most common activity in 2018/19 representing 21% (12) of all incidents.
- Unintentional water entry (including slips/trips/falls and attempting a rescue) accounted for 46% (26) of fatal drowning incidents this year. This is double that of the past decade with an average of 13 (33%) per year from 2008/09 to 2017/18.
- Nine drowning deaths in which alcohol and/or illicit drugs were reportedly consumed by the individual prior to drowning, representing 16% of the total number of drowning incidents in 2018/19.
- Significant increases in the drowning rates of Victorians aged 15-24 years (77%), 45-64 years (51%) and 65+ years (71%), compared to the 10-year average.
- Men in those age groups had the highest drowning rates per head of population in 2018/19.
- Those residing in regional areas were almost twice as likely to drown compared to those in metropolitan Melbourne.

In response to this year's drowning toll, the Victorian Minister for Police and Emergency Services is leading a Water Safety Round Table, looking at short, intermediate and long-term solutions to tackle drowning in Victoria.

It is important to acknowledge that since the start of the Play it Safe By the Water (PISBTW) campaign in 1998, there has been a 43% decrease in the fatal drowning rate in Victoria. Of particular note, there has been a 79% decrease in the drowning rate of children aged 0-4 years over this period. This highlights the key advancements – including changes in pool fencing legislation and multiple child supervision campaigns – that have been made since PISBTW's inception, notwithstanding the steps we must continue to take to reduce the drowning rate further.

Life Saving Victoria (LSV) is once again working together with the Victorian Government and the aquatic industry through the PISBTW working group to ensure that all Victorians are aware of water safety issues in the lead up to and during this year's summer season. This includes launching a new hard-hitting, research-guided public awareness campaign focused on water safety messages targeting key at-risk groups for drowning deaths – especially men aged 25-64.

In terms of activities geared towards drowning prevention in the future, we have continued our progress in developing swimming skills and water safety knowledge of primary school children, which is a foundation strategy for water safety in Victoria. We welcomed funding from the Department of Education and Training for the Public Water Safety Initiative, which focusses on supporting schools and aquatic facilities in delivering swimming and water safety education.

Meanwhile, the Safer Public Pools Project, delivered in partnership with the Victorian Government through Emergency Management Victoria, has seen the introduction of a new code of practice, as well as the establishment of a public pools register, allowing Victorians to check their local pool's safety classification and accreditation history.

There have been other positive developments in 2018/19, notably the steps taken to reduce toddler drownings in home pools and spas. Legislation due to come into effect in December 2019, will include mandatory registration and inspections of pools and spas in Victoria. This has been underpinned by a significant body of work undertaken by LSV and the aquatic industry in the past few years advocating for stronger measures to curb the drowning toll in backyard pools.

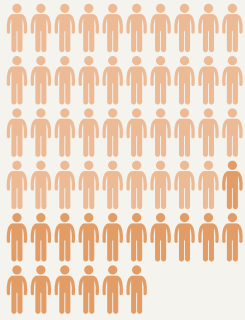
This year we've also welcomed the continued focus of the Victorian Government on water safety education within multicultural communities, which the research tells us is an ongoing area of focus for the growing demographic. This year we saw a 60% increase in the number of people from CALD backgrounds taking part in LSV's water safety programs compared to the previous five years, with more than 20,000 participants benefitting from these programs.

Every drowning death is one too many and, as we well know from the troubling increase to the drowning toll this year, more needs to be done to address emerging trends and risk factors. With this in mind, I invite you to review the findings in this report and consider the benefits of a shared dialogue that seeks to enhance the safety of all Victorians in and around the water into 2020 and beyond.

Dr Nigel Taylor ESM
CEO



Fatal Drowning in 2018/19



56

Drowning deaths

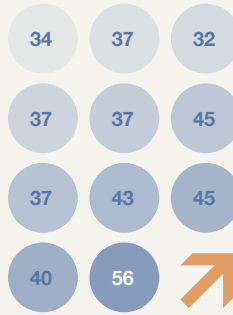


0.85

Crude fatal drowning rate per

100,000

persons



29%

Increase on the 10 year average drowning rate



\$274M

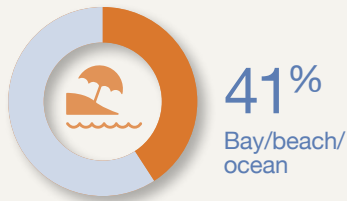
Direct cost of lives lost



80% Male

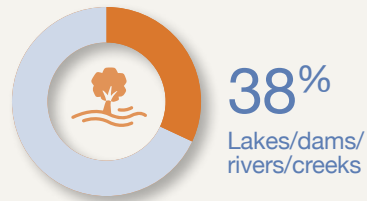
20% Female

Location (Fatal)



41%

Bay/beach/ocean



38%

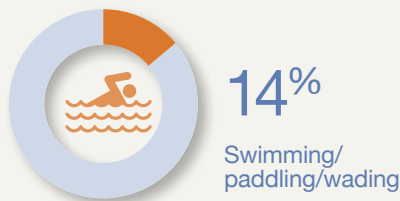
Lakes/dams/rivers/creeks

Activity (Fatal)



21%

Walking/playing near water



14%

Swimming/paddling/wading



16%

Involved alcohol or illegal drugs

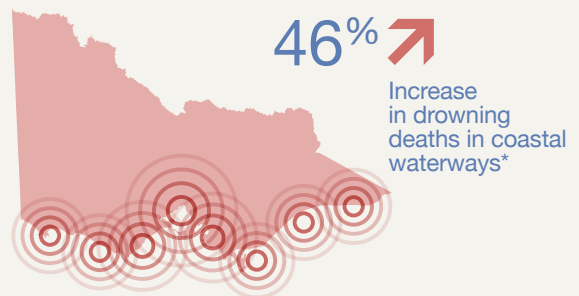
Key Fatal Drowning Statistics in 2018/19



71%



Increase in drowning rate of people aged 65 years and over*



46%

Increase in drowning deaths in coastal waterways*

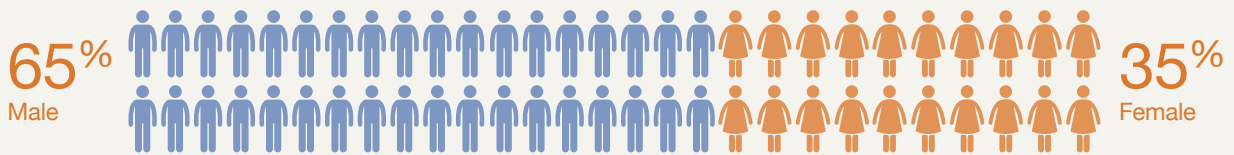
Non-fatal Drowning in 2018/19



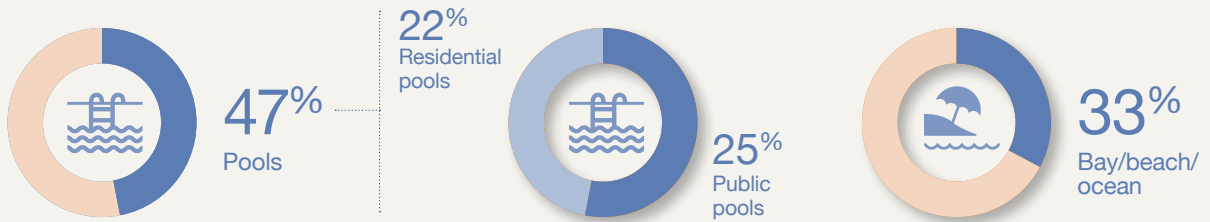
1.57
Crude non-fatal
drowning rate per
100,000
persons



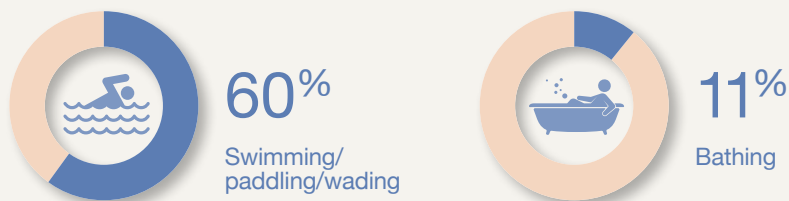
101
Non-fatal drowning incidents
attended by paramedics



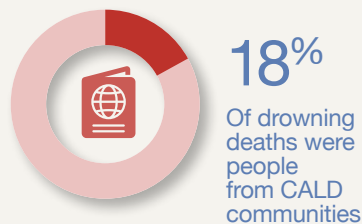
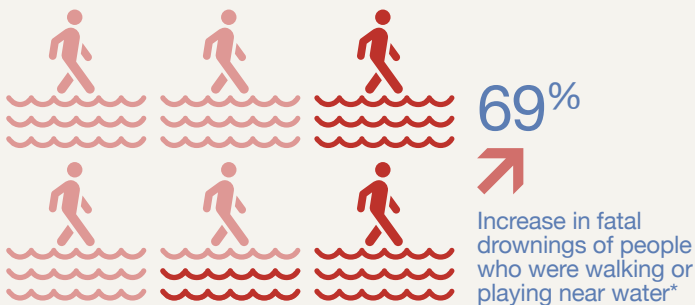
Location (Non-fatal)



Activity (Non-fatal)



Key Fatal Drowning Statistics in 2018/19



*Compared to the 10-year average (2008/09 to 2017/18)

Every day, visitors to Victoria's 811 kilometres of ocean beaches, 259 kilometres of bay beaches, 85,000 kilometres of rivers, 13,000 natural wetlands and 450 public and commercial swimming pools, engage in a wide variety of recreational aquatic activities (Short, 1996; DSE, 2011; VAIC, 2001). Our prevention efforts span this setting.

Reduce Drowning

Reduce the Victorian drowning rate



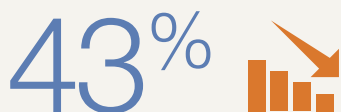
Drowning deaths in Victoria in 2018/19. This is 17 more than the 10-year average.



Crude fatal drowning rate per 100,000 persons in Victoria in 2018/19; a 29% increase compared to the 10-year average.



Non-fatal drowning incidents attended by paramedics in 2018/19. This represents a crude non-fatal drowning rate of 1.57 per 100,000 persons in Victoria in 2018/19.



Decrease in the fatal drowning rate in Victoria since the start of the Play it Safe by the Water (PISBTW) campaign in 1998 (baseline is the 3-year average 1996/97 to 1998/99 compared to the follow-up 2016/17 to 2018/19 average).



Direct cost to society of lives lost (where the value of a statistical life is estimated at \$4.9 million; Office of Best Practice Regulation, 2019).

Services

Expand to meet public need/ sustainability/ membership development, growth and support



Rescues by lifesavers and lifeguards on patrolled beaches on average per year from 2008/09 to 2017/18.



Rescues per 100,000 beachgoers on average per year from 2008/09 to 2017/18.



First Aid assistance by lifesavers and lifeguards on patrolled beaches on average per year from 2008/09 to 2017/18.



Volunteer members in 2018/19, patrolling our open waterways and providing education and training in lifesaving activities, to ensure the safety of Victoria's waterway users.



Total estimated value of coastal services in Victoria per year (PWC, 2011).

Education & Training

Continue development to ensure efficiency and expansion of delivery

182,662 

Participants took part in water safety education statewide in 2018/19; a 3.5% reduction compared to the 5-year average (2013/14 to 2017/18).

22,000 

Culturally and linguistically diverse participants took part in LSV programs in 2018/19; a 60% increase compared to the 5-year average (2013/14 to 2017/18).

21,606 

People trained in CPR or other First Aid related courses in 2018/19.

7,845 

Participants in accredited aquatic safety training courses in 2018/19.

187 


Aquatic facilities are registered Watch Around Water facilities in 2018/19. This represents an estimated 65% of aquatic facilities in Victoria.

Risk & Research

Striving for excellence in evidence-based practice

143 

Children aged 10-12 years participated in a study to determine their level of water safety knowledge following a YMCA pool-based swimming and water safety program, plus a half-day LSV Open Water Learning Experience, with demonstrated increases in water safety knowledge (Matthews et al., 2018).

38,111 

Lifesaving services analysed across 66 Victorian sites during a 10-year period. LSV partnered with the Bureau of Meteorology, as part of a project to develop an active weather warning system for Victorian beachgoers.

88% 

Average water safety knowledge score by student participants (n=23) in a pilot study for the delivery of virtual reality using the online platform, Google Expeditions, which allows a 'guide' to lead classroom-sized groups of 'explorers' through collections of 360-degree panoramas (Strugnell et al., 2019).

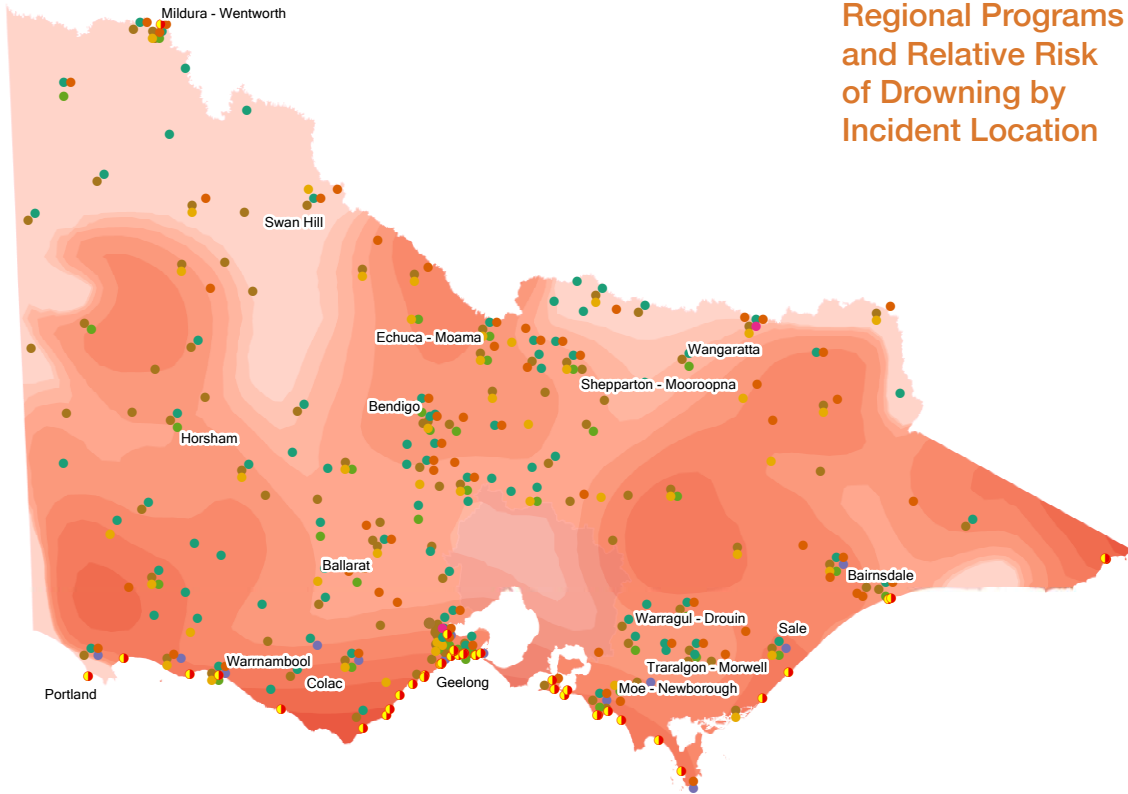
161 

Assessments conducted by LSV. Pool safety assessments of 108 aquatic centres measured performance against best practice standards, and 53 beach risk assessments were conducted within coastal drowning blackspot areas.

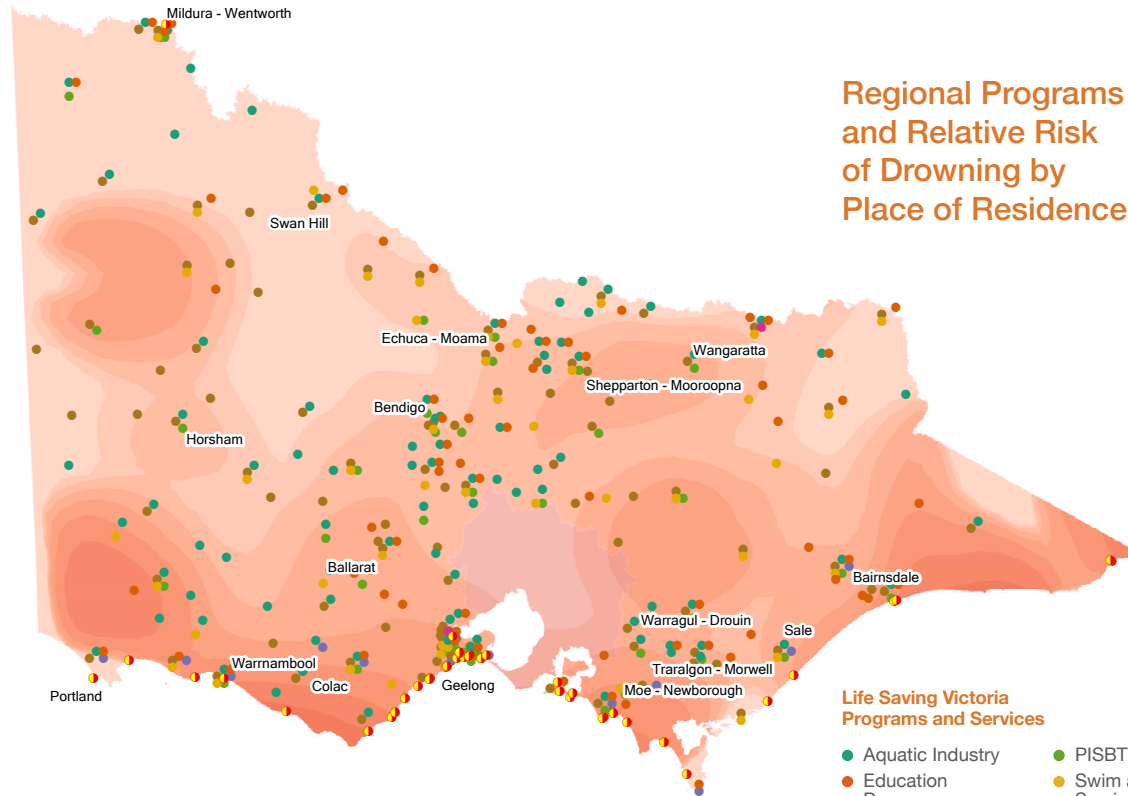
38% 

Of council-owned aquatic facilities have not completed a pool safety assessment in the past three years.

The following maps highlight the service provision that LSV directs to different areas of Victoria based on the relative risk of drowning by i) place of incident and ii) place of residence. Relative risk of drowning by place of incident is utilised to direct, for example, risk assessment prioritisation, lifesaving service provision, and public awareness raising for residents and local and international tourists. Relative risk of drowning by place of residence is utilised to direct the provision of activities such as education program delivery and further public awareness raising.



Regional Programs and Relative Risk of Drowning by Incident Location














Regional Programs and Relative Risk of Drowning by Place of Residence

Life Saving Victoria Programs and Services

- Aquatic Industry
- Education Program
- Lifeguard Service
- Multicultural Program
- PISBTW
- Swim and Survive Licensee
- Training
- Lifesaving Operations

The following table outlines Victoria’s progress against the Victorian Water Safety Strategy 2016-2020 and Australian Water Safety Strategy 2016-2020 with respect to fatal drowning incidents. Whilst the overall drowning rate has decreased by 11% from baseline, this is well short of the target of a 50% reduction in drowning by 2020.

Priority Areas and Goals		BASELINE (3-YEAR AVERAGE 2004/05 TO 2006/07)	FOLLOW-UP (3-YEAR AVERAGE (2015/16 TO 2017/18))	DIFFERENCE BASELINE TO FOLLOW-UP	PROGRESS	
Priority Area One: Taking a Life Stages Approach		Rate (per 100,000 population)	Rate (per 100,000 population)	%		
	1. Reduce drowning in children aged 0-14 years	0-4 years	1.057	0.656	-38%	Work needed
		5-14 years	0.615	0.129	-79%	On track
	2. Reduce drowning in young people aged 15-24 years		0.712	0.666	-6%	Work needed
	3. Reduce drowning in males aged 25-64 years	25-44 years	1.494	1.108	-26%	Work needed
		45-64 years	1.097	1.252	14%	Urgent work needed
	4. Reduce drowning in people aged 65+		1.134	1.194	33%	Urgent work needed
Priority Area Two: Targeting High-Risk Locations		Frequency	Frequency	%		
	5. Reduce drowning in inland waterways		16	18	15%	Urgent work needed
	6. Reduce drowning in coastal waters		14	20	46%	Urgent work needed
	7. Reduce drowning by strengthening the aquatic industry*		0	0	0%	On track
Priority Area Three: Focusing on Key Drowning Challenges		Frequency	Frequency	%		
	8. Reduce alcohol- and drug-related drowning†		13	9	-33%	Work needed
	9. Reduce boating, watercraft and recreational activity-related drowning**		9	11	19%	Urgent work needed
	10. Reduce drowning in high-risk populations***		8	10	30%	Urgent work needed
	11. Reduce the impact of disaster and extreme weather on drowning		1	1	0%	On track

* Figures include drowning deaths at public swimming pools.

** Includes boats and watercraft, rock fishing, fishing and diving.

*** Includes Aboriginal and Torres Strait Islanders, people from culturally and linguistically diverse (CALD) backgrounds, international tourists and international students. Statistics are primarily determined from Country of Birth data.

† Toxicology reports to confirm alcohol and/or drug involvement are available only once a case is closed therefore numbers may change once cases are closed.



79%

decrease in the drowning rate of children aged 0-4 years since 1998.

Play it Safe by the Water is a statewide public water safety education and awareness program, a component of which includes public awareness raising through a multi-media campaign. Research was conducted to determine the impact of the PISBTW campaign on water safety message recall and the drowning rate in Victoria (Matthews et al., 2018).

IMPLEMENTATION

Target audiences varied depending on drowning trends. Because children aged 0-4 years had the highest age-specific drowning rate, a consistent focus was prevention of drowning of this age group, targeting parents and carers. Additional work focussed on policy and legislation change, particularly regarding home pool barriers.

Public awareness and attitudes to water safety advertising were assessed pre- and post-campaign across campaign seasons from 2004-2017. Telephone and/or online surveys were

conducted with a random sample of 400-600 Victorians on each occasion. Data were collected on drownings in Victoria from 1996/97 to 2017/18.

KEY FINDINGS

Since inception of the PISBTW campaign the unintentional drowning rate in Victoria decreased by 46% (from 1.27/100,000 at baseline 3-year average 1996/97-1998/99 to 0.68/100,000 at follow-up 3-year average 2015/16-2017/18). Shifts in the drowning rate particularly in children aged 0-4 years were identified, with a 79% decrease in the drowning rate from baseline to follow-up. Baseline recall was 41%, and the highest proportion of recall of any water safety advertising by Victorian respondents was 77%.

Key achievements by the PISBTW group, currently comprising 20 organisations, include: changes in home pool barrier standards and legislation along with key public awareness campaigns and targeted

promotion and programs through maternal and child health networks.

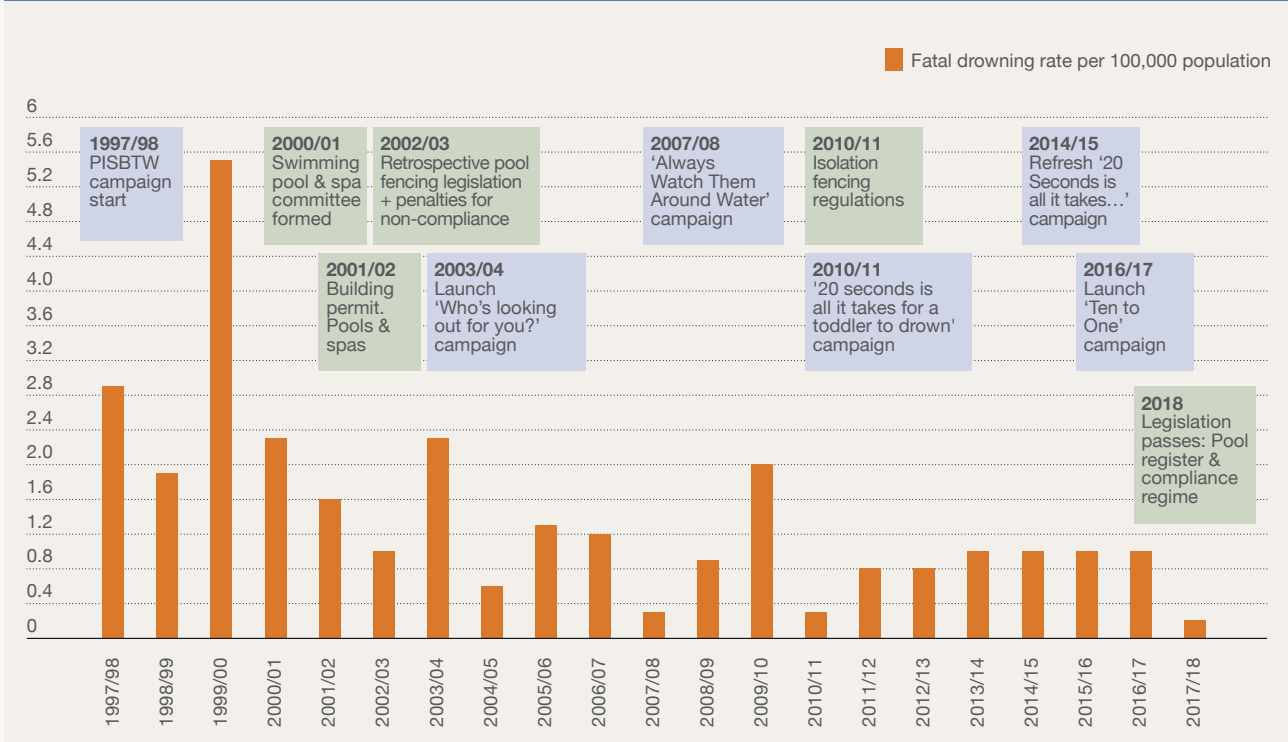
Whilst direct impact of public awareness campaigns is difficult to measure, results indicate a significant impact on drowning for young children. It also reinforces the need for awareness raising, practical interventions, legislation and enforcement to generate long-term behavioural change.

Ongoing measurement of campaign impact has enabled continual update of the campaign to ensure the most appropriate messages are delivered to the most appropriate audience.

PISBTW provides an example of a multi-focussed, multi-sectoral approach to drowning prevention and the way in which epidemiological drowning data is utilised to inform the direction for future drowning prevention strategies.



CHILDREN 0-4 YEARS DROWNING RATE 1997/98-2017/18 AND KEY PISBTW ACTIVITIES AND PUBLIC AWARENESS CAMPAIGNS





77%

increase
in the
drowning
rate of
people aged
15-24 years.

There were a total of 157 drowning incidents in Victoria in 2018/19, comprising 56 drowning deaths and 101 non-fatal incidents attended by paramedics. People aged 65 years and above had the highest age-specific fatal drowning rate in 2018/19. However, children aged 0-4 have the greatest overall risk of drowning with the highest age-specific combined rate of fatal and non-fatal drowning.

DEATHS

The 56 drowning deaths in 2018/19 represent a 45% increase (17 deaths) compared to the 10-year average. The crude fatal drowning rate was 0.85 per 100,000 persons in 2018/19, this is a 29% increase compared to the 10-year average (0.66 per 100,000 persons).

Of the 56 drowning deaths in Victoria in 2018/19, 45 (80%) were male. Males are consistently overrepresented in drowning statistics. Overall, they are four times more likely to drown than females.

Sixteen adults aged 65 years and above died as a result of drowning this year in Victoria with a drowning rate of 1.62 per 100,000 population. This is a 71% increase compared with the 10-year average and places this group at the

highest rate of drowning of all age groups. There was a 51% increase in the fatal drowning rate of those aged 45-64 years (1.04 per 100,000 population). This is the second highest drowning rate of any age group. There was also a 77% increase in the drowning rate of young people aged 15-24 years. As in 2017/18, there was a decrease in the fatal drowning rate of children aged 0-4 years and 5-14 years.

NON-FATAL INCIDENTS

There were 101 non-fatal drowning incidents attended by paramedics in 2018/19. This represents a crude non-fatal drowning rate of 1.57 per 100,000 persons in 2018/19.

One third of non-fatal incidents involved children aged 0-4 years.

Admissions, 2008/09 to 2017/18

Over the previous decade there were 1,001 hospital admissions, an average of 100 admissions for non-fatal drowning per year. The annual crude hospital admissions rate was 1.70 per 100,000 persons per year. The rate of admissions remained largely similar over the 5-year period from 2012/13 to 2016/17, with an increase to 2.24 in 2017/18.

A total of 706 males were admitted to hospital for non-fatal drowning, an average of 71 (71%) hospital admissions per year.

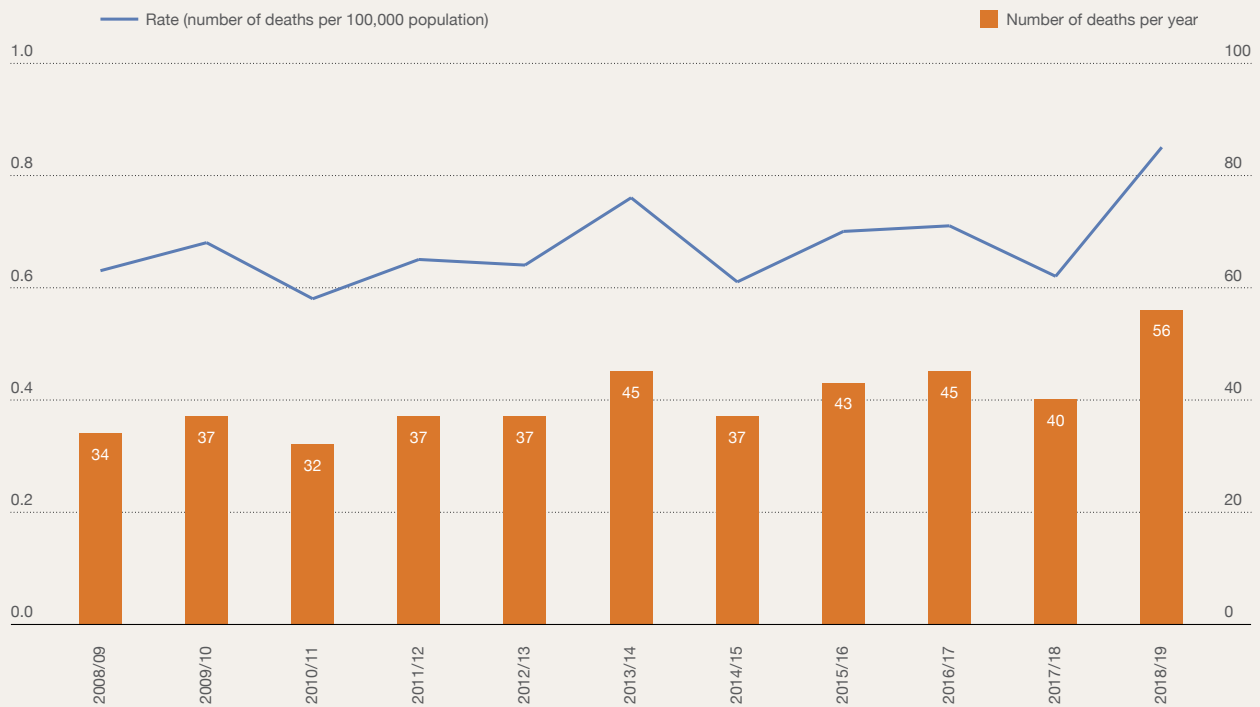
Children aged 0-4 years had the highest rates of admission, with 6.01 per 100,000 population annually, followed by those aged 15-24 years (2.23 per 100,000 population) and those in the 5-14 year age group (1.80 per 100,000 population). Those aged 65 years and above presented the lowest rate of admission at 0.96 per 100,000 population.

Emergency Department (ED) Presentations, 2008/09 to 2017/18

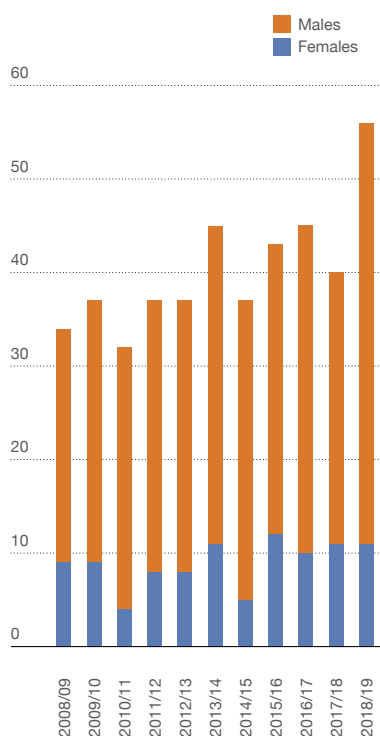
There were 901 ED presentations in the 10-year period from 2008/09 to 2017/18, an average of 90 ED presentations for non-fatal drowning annually. The average annual rate of ED presentations was 1.52 per 100,000 persons per year. Children aged 0-4 years had by far the highest rate of ED presentations, with 10.25 per 100,000 population annually. This was followed by those aged 5-14 years (2.24 per 100,000 population) and those in the 15-24 year age group (1.33 per 100,000 population).

The majority of the 901 ED presentations were males (587, 65%). Similar to hospital admissions, ED presentations decreased with increasing age.

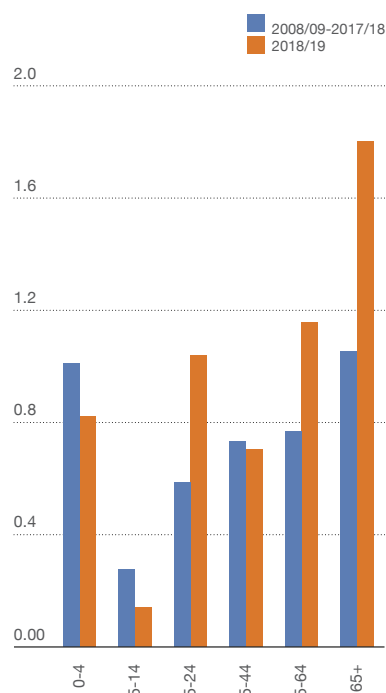
DROWNING DEATHS AND DROWNING RATE 2008/09 TO 2018/19



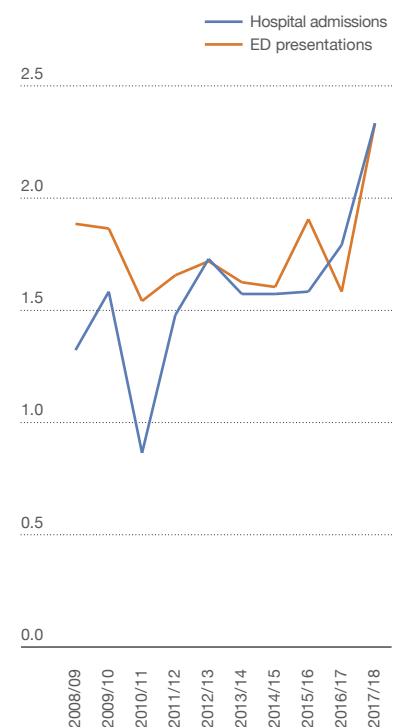
FREQUENCY OF FATAL DROWNING IN VICTORIA BY SEX, 2008/09 TO 2018/19



FATAL DROWNING RATE PER 100,000 PERSONS IN VICTORIA BY AGE, 2008/09 TO 2018/19



HOSPITAL ADMISSIONS AND EMERGENCY DEPARTMENT (ED) PRESENTATIONS RATE PER 100,000 PERSONS IN VICTORIA, 2008/09 TO 2017/18



18%

of drowning deaths in 2018/19 were of people from CALD communities.

CULTURAL AND LINGUISTIC DIVERSITY

This year 10 (18%) individuals that drowned were reported as being from culturally and linguistically diverse (CALD) communities. This is one more than the 10-year average of nine.

Due to limitations with country of birth data collected, data has also been analysed over the previous 10-year period from 2008/09-2017/18. On average, 23% of drowning deaths were of individuals known to have been born overseas (with 57% unknown country of birth).

Of those individuals where country of birth was recorded, the majority (86%) were Victorian residents. The median length of time living in Australia was six years.

The majority were males (86%), and the most common age groups were 25-44 years (46%) followed by 15-24 years (21%); the median age was 31 years. Incidents typically occurred in open waterways; with 44% at beaches and 21% in rivers/creeks/streams.

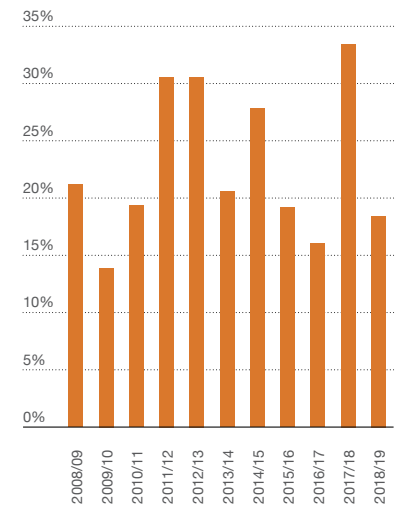
The most common activity prior to coastal drowning incidents was swimming (46%), followed by fishing (35%). Of those fishing this included fishing for abalone (typically snorkelling/diving), rock fishing, or fishing from a boat. Deaths whilst fishing for abalone have increased since 2015.

The most common activities prior to inland drowning incidents were swimming (31%) and walking/ recreating near water (31%), with 25% unknown.

When swimming ability was recorded the majority were noted to be weak or non-swimmers, followed by average or fair with very few good or reasonable swimmers.

Individuals from a CALD background are recognised as those who identify as 'having a specific cultural or linguistic affiliation by virtue of their place of birth, ancestry, ethnic origin, religion, preferred language, language(s) spoken at home, or because of their parents' identification on a similar basis' (DHSMSU, 2002).

PERCENTAGE OF FATAL DROWNING BY OVERSEAS COUNTRY OF BIRTH 2008/09 – 2018/19

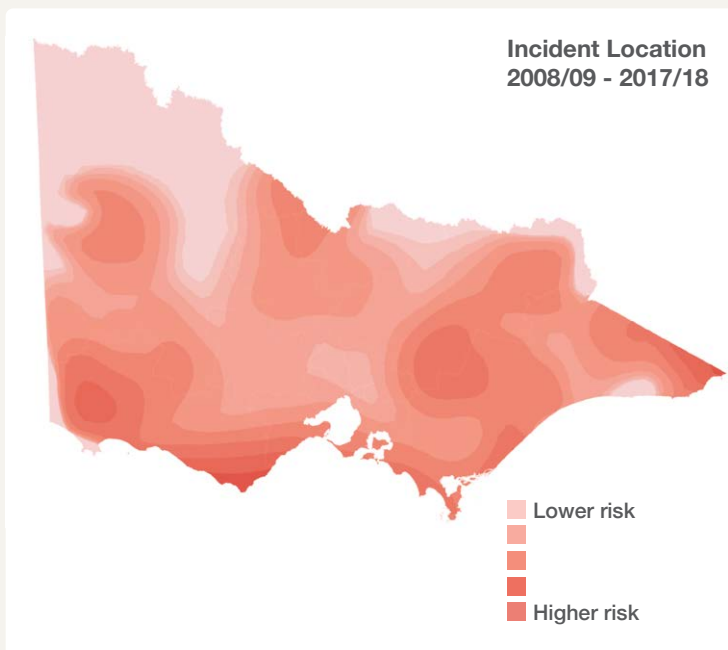
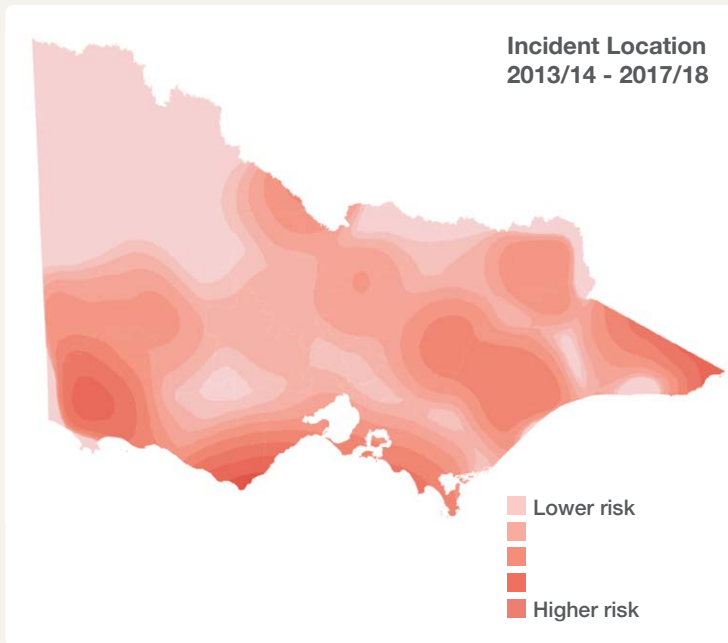
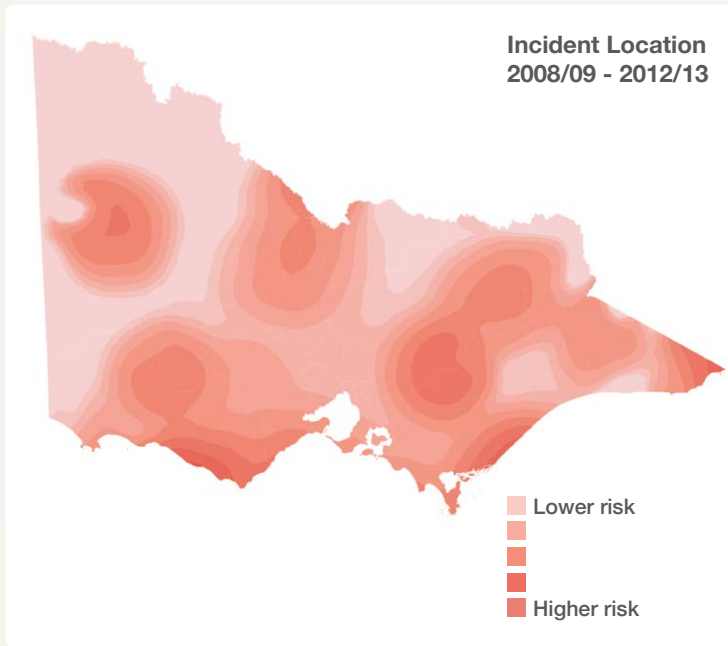


86%

of individuals from a
CALD background who
drowned over the previous
10 years were male.



Relative risk of drowning by incident location

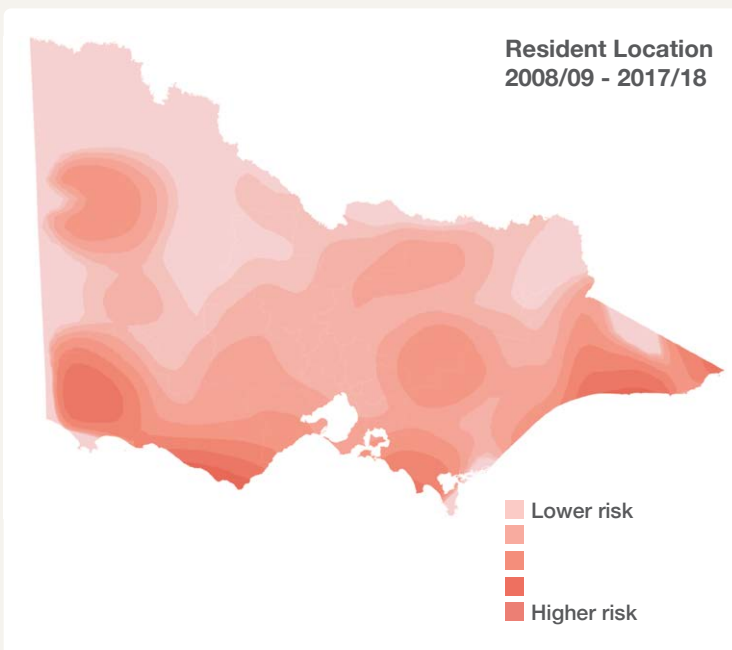
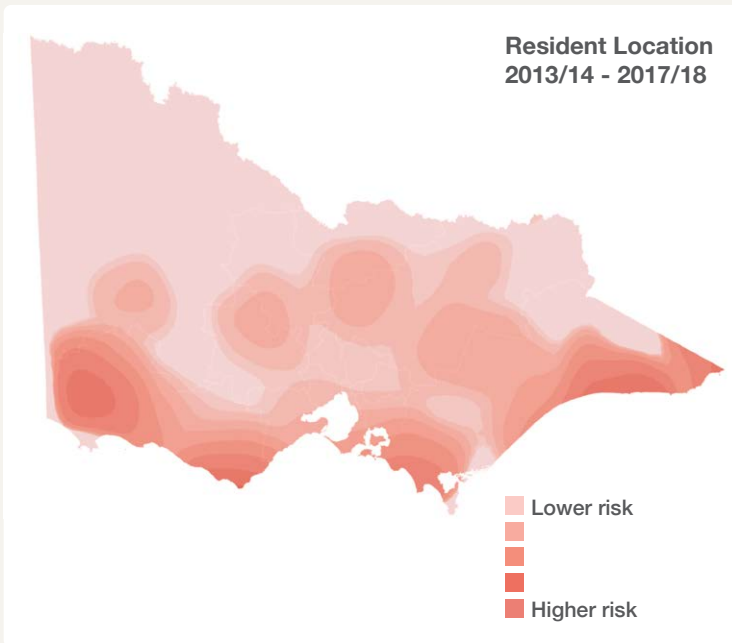
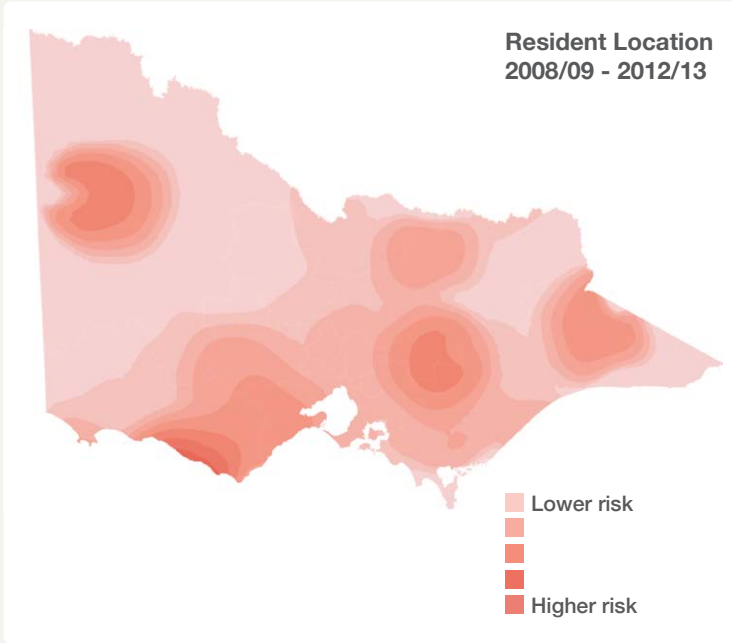


Drowning by incident location from 2008/09 to 2017/18

These maps outline the relative risk of drowning based on incident location counts within Victorian postcodes and then smoothed across the state. Dark red areas are areas of greater risk while lighter red areas indicate areas of lower risk. The relative risk values also take into consideration postcode population densities.

The relative risk maps are provided as a three-part map series. The first two maps illustrate incident ratios based on two comparative 5 year timeframes: 2008/09 to 2012/2013 and 2013/14 to 2017/18. The third map combines the incident data for these two timeframes providing a 10 year (2008/09 to 2017/18) comparative summary.

Drowning by place of residence from 2008/09 to 2017/18



The below relative risk maps are similar to incident location maps except they are based on place of residence of the person, at the time of the drowning event. They outline the relative risk of drowning based on place of residence counts and population density within each postcode area. Dark red areas are areas of greater risk while lighter red areas indicate areas of lower risk.

The relative risk maps are provided as a three-part map series. The first two maps illustrate resident ratios based on two comparative 5 year timeframes: 2008/09 to 2012/2013 and 2013/14 to 2017/18. The third map combines the resident data for these two timeframes providing a 10 year (2008/09 to 2017/18) comparative summary.

WHEN DID THEY DROWN?

Month and Season

Almost half (46%, 26) of the drowning deaths occurred in the summer months in 2018/19. This is a 59% increase compared to the five-year average (2013/14 to 2017/18) and is the highest crude number recorded in over twenty years, since 1997/98. Autumn represented the second largest number of drowning deaths, with 12 (21%), which is also a 58% increase on the five-year average. Winter and spring saw a decrease in drowning deaths in 2018/19. These figures may reflect warmer than average temperatures, with Victoria experiencing its warmest summer on record (Bureau of Meteorology, 2019a) and eighth warmest autumn on record (Bureau of Meteorology, 2019b).

In the previous decade the majority of drowning deaths occurred in summer (37%), followed by spring (24%), autumn (21%), and winter (18%). There were increases in drowning deaths in December in 2018/19 when compared with the 10-year average, with almost one-quarter (13, 23%) occurring in December.

Similar to fatal drowning, non-fatal drowning incidents were far more common in summer (46, 45%). This was followed by spring (22, 22%), autumn (20, 20%), and winter (13, 13%).

WHERE DID THEY DROWN?

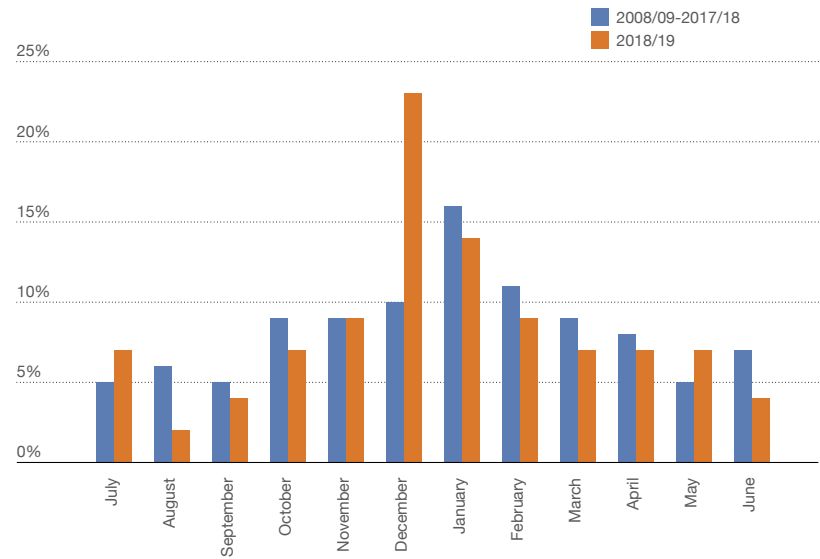
Region

This year, 55% (31) of drowning deaths occurred in major cities in Victoria, this is a 10% increase when compared with the 10-year average from 2008/09 to 2017/18.

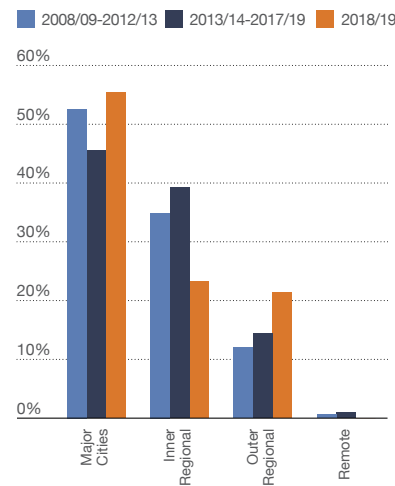
When accounting for the differences in the distribution of the residential population, the drowning rate increased for those residing in metropolitan Melbourne and regional areas in Victoria. There was a 17% increase in the drowning rate of those residing in metropolitan Melbourne this year (0.64 per 100,000 population in 2018/19) compared with the 10-year average (0.54 per 100,000 population). Regional areas of Victoria saw a 30% increase in the drowning rate (1.20 per 100,000 population in 2018/19) compared with the ten-year average (0.92 per 100,000 population).

Unlike in 2017/18, where fatal drowning rates were very similar (0.53 per 100,000 population), those residing in regional areas were almost twice as likely to drown compared to those in metropolitan Melbourne in 2018/19.

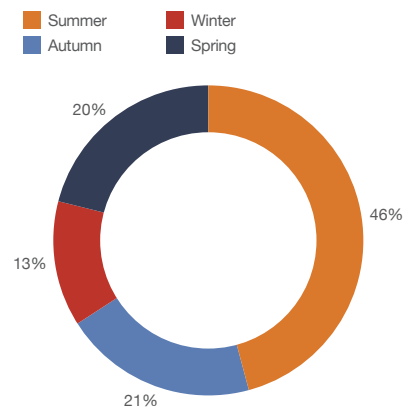
PERCENTAGE OF FATAL DROWNING BY MONTH 2008/09 – 2018/19



PERCENTAGE OF FATAL DROWNING BY REMOTEANESS AREA OF INCIDENT IN VICTORIA, 2008/09 – 2018/19



PERCENTAGE OF FATAL DROWNING BY SEASON



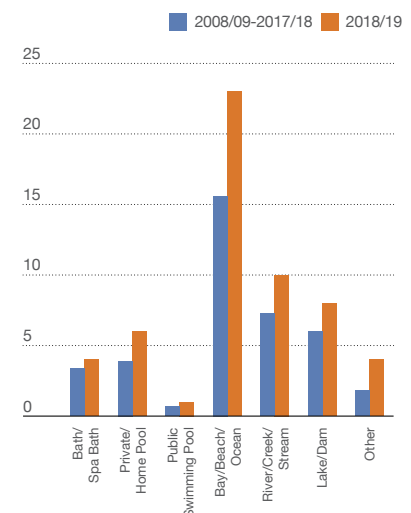
Waterways

In 2018/19, 41% (23) of all drowning deaths occurred in coastal environments (bay/beach/ocean), making it the most common location for drowning. The deaths represent a 46% increase in drowning deaths in coastal waterways compared with the 10-year average of 16.

A further 38% of people drowned in inland waterways (18 in rivers/creeks/streams and lakes/dams), which is a 49% increase on the 10-year average of 13.

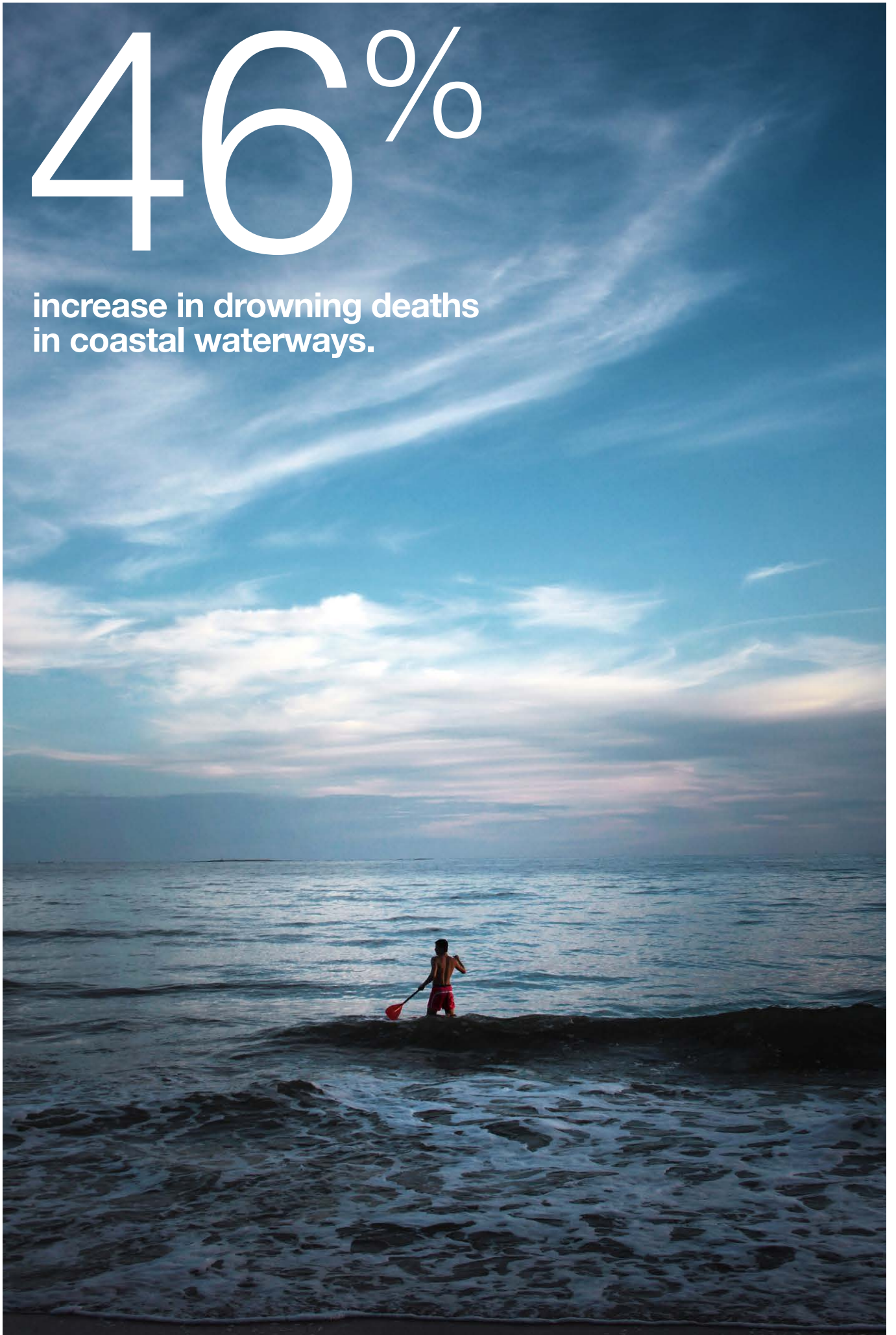
One-third of non-fatal drowning incidents in 2018/19 occurred in bay/beach/ocean environments, (33, 33%). A further 25% (25) occurred in public swimming pools. Other common waterways for non-fatal incidents were private/home pools (22%), and bath/spa baths (11%).

FREQUENCY OF FATAL DROWNING PER YEAR BY BODY OF WATER 2008/09 – 2018/19



46%

increase in drowning deaths
in coastal waterways.



69%

increase in those walking or playing near water prior to the drowning incident.



WHAT WERE THEY DOING?

Activity

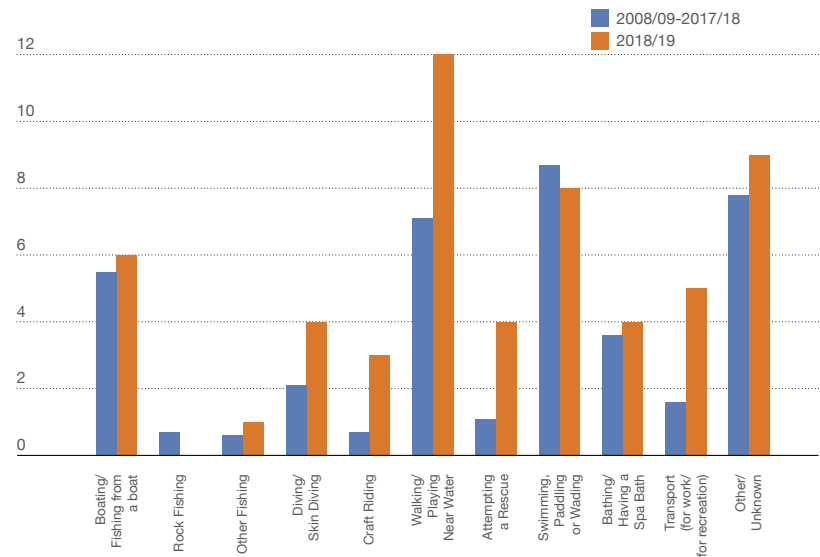
The most common activity immediately prior to a fatal drowning in 2018/19 was walking/playing near water (12, 21%), followed by swimming/paddling/wading (8, 14%), and boating/fishing from a boat (6, 11%)

There was a 69% increase in those that fatally drowned whilst walking/playing near water in 2018/19 compared to the 10-year average from 2008/09 to 2017/18 (7, 18%). By far the greatest proportion of non-fatal drowning incidents involved those swimming/paddling/wading (61, 60%). These figures again highlight the importance of children learning swimming and water safety in the school curriculum.

Additionally, 11 non-fatal incidents occurred while bathing/having a spa bath (11%), indicating that bath tubs remain a risk factor for drowning.

Unintentional water entry (including slips/trips/falls and some attempted rescues) accounted for 46% (26) of fatal drowning incidents this year. This is double that of the past decade with an average of 13 (33%) per year from 2008/09 to 2017/18.

FREQUENCY OF FATAL DROWNING PER YEAR BY ACTIVITY 2008/09 – 2018/19



Unintentional water entry (including slips/trips/falls and some attempted rescues) accounted for 46% (26) of fatal drowning incidents this year.



73%
of people that drowned in boating incidents over the past decade were not wearing a lifejacket.

ALCOHOL AND DRUGS

There were 9 drowning deaths in 2018/19 in which alcohol and/or illegal drugs were reportedly consumed by the individual prior to drowning, representing 16% of the total number of drowning incidents. This is one more than the average per year over the past decade of 8, which represents 27% of total drowning deaths.

The consumption of alcohol and/or illegal drugs prior to recreating in, on or around water increases the risk of drowning because they can impair judgment, slow reaction times, affect coordination and promote risk-taking behaviour. Prescription medications can also increase the risk of drowning as they can heighten the risk of falls and affect reaction times.

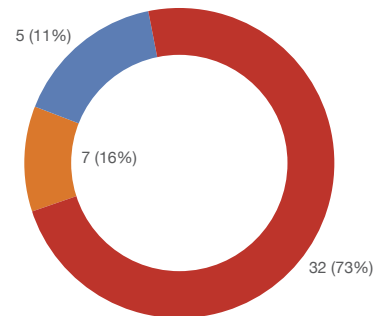
LACK OF LIFEJACKET USE

The lack of a lifejacket has potentially claimed many lives in Victoria. Of the 56 boating-related drowning deaths over the past decade (2008/09 to 2017/18), lifejacket usage was known in 44 cases. Of these 44, in 32 (73%) incidents the deceased was not wearing a lifejacket at the time. A further 7 (16%) had an incorrectly fitted lifejacket or wore the incorrect type recommended for the conditions.

Wearing a lifejacket when rock fishing could also have saved another 6 lives over the past decade with all those individuals that drowned while rock fishing not wearing a lifejacket.

LIFEJACKET WEAR WHEN BOATING 2008/09-2017/18

- Not worn
- Not worn correctly/inappropriate type for the conditions
- Worn correctly



16%

of lives lost in 2018/19 involved alcohol and/or illegal drug use prior to drowning.

The role of the coroner in Victoria is to investigate reportable deaths, which include drowning, in order to determine the identity of the person who died, the cause of the death and, in some situations, the circumstances surrounding the death. As part of this process the coroner may recommend ways to help prevent similar deaths in the future.

The following is a summary of two coronial findings in 2018/19 where recommendations were made relating to drowning deaths. Note, they are not exact replications from the findings; these should be accessed from the Coroners Court of Victoria website:

<http://www.coronerscourt.vic.gov.au/home/coroners+written+findings/>



2017

Desmond Watson, aged 65 years, died as a result of neck trauma and severe heart disease in the setting of immersion, at Gunnamatta Beach on the Mornington Peninsula. Mr. Watson was competing in the Victorian State Kneeboard Titles when he caught a powerful wave, his board flew vertically up in the air before a wave closed over it. He was seen floating with the board but did not get up. It was undetermined as to whether he suffered a heart attack or was hit by his board, or a combination of both. Conditions were described as challenging, with approximately 20-25 kilometre per hour northerly winds and waves approximately four to six foot high. In-water CPR was performed with difficulty due to the swell, before efforts were relocated to the shore where he could not be revived. Mr. Watson was an experienced kneeboarder and was reportedly confident and capable in the conditions but had a history of high blood pressure and back injuries.

Recommendation

That Kneeboard Surfing Victoria should conduct a risk assessment prior to the commencement of each day before an event to take into consideration the location, weather, wind and surf conditions, and any other relevant conditions on the day of an event.

2018

Graham Hill, aged 51 years, drowned whilst out fishing on his boat, in Port Phillip Bay near Frankston. It was a warm summer morning and ideal sea conditions for small boating. The boat carried all the required safety equipment. Lifejackets were on board and stored under the helm. The boat flooded with water and as his partner attempted to get the lifejackets, the boat capsized, and the couple was thrown into the water. After approximately 60 minutes in the water the couple were assisted by a passer-by. Mr. Hill's partner survived; however, he was unable to be resuscitated. According to the coroner, had Mr. Hill been wearing a lifejacket, his death may have been prevented.

Recommendations

1. That Transport Safety Victoria consider introducing requirements that: (a) all boats be fitted with a manual or electrical pumping mechanism to all bilge areas; and (b) when scuppers are fitted to a vessel, ensure that scuppers can be closed shut from within the vessel when they are fitted to a vessel.
2. That Transport Safety Victoria continue to explore potential models for a non-commercial vessel seaworthy inspection and certificate regime as a means to ensuring the seaworthiness of vessels at points of registration, transfer of ownership, and after a modification of the vessel.

19

Victorians drowned in the Murray River over the previous decade.

Murray River Drowning 2008/09 To 2018/19

The Murray River has been identified as the number one river drowning blackspot in Australia (Peden & Queiroga, 2014). At 2,508 km, the Murray River is Australia's longest river. It forms a majority of the border length between Victoria and New South Wales and stretches down into South Australia. Due to state government legislation, drowning incidents that occur in the Murray River are under New South Wales jurisdiction and are therefore reported in New South Wales drowning. However, many of the drowning victims resided in Victoria. Therefore, the key trends of Victorians drowning in the Murray River are a focus for this report.

Two Victorians drowned in the Murray River in 2018/19. Over the previous decade, 44 Australians drowned in the Murray River including 19 Victorians, an average of two per year over the previous decade. Of the 19, the majority, 15 (79%) were males, the most common age groups were 25-44 years (5, 26%) and 55-64 years (4, 21%), and 2 (11%) were reported as being from CALD communities.

The majority of incidents occurred on a weekday (15, 79%), and in summer (8, 42%) or spring (5, 26%). The most common activity just prior to drowning was swimming (7, 37%). Other activities included boating, kayaking, water-skiing, driving and recreating on a houseboat. In 9 (47%) of the drowning deaths the person had reportedly consumed alcohol prior to the incident.



Respect the River
Saving lives in Australian Rivers

AN INITIATIVE OF



EVERYONE CAN BE A LIFESAVER

Life Saving Victoria

SUPPORTED BY



Australian Government

47%

of Victorians that drowned in the Murray River had reportedly consumed alcohol prior to the incident.

48

individual beaches risk assessed (70 km of coastline) in Bass Coast Shire.

AN INITIATIVE OF




SUPPORTED BY



Australian Government

Coastal Blackspot Projects

In order to address drowning and aquatic-related injury in concentrated areas along Victoria's coastline, LSV has conducted projects in key blackspot drowning locations as part of the Surf Life Saving Australia (SLSA) Beach Drowning Black Spot Reduction Program, thanks to federal government funding.

Since 2016, projects have been conducted in three key blackspot drowning locations: Bass Coast Shire, Mornington Peninsula Shire, and Surf Coast Shire.

The intention of these projects was to improve water safety for residents and visitors to these regions and ultimately reduce the drowning rate within these areas.



BASS COAST

A coastal risk assessment including 48 beaches (70 km of coastline) in Bass Coast Shire was conducted and a detailed signage strategy was produced in line with international signage standards. This project also outlined additional multifactorial treatment options such as pre-arrival public awareness raising methods and safety instruction, to guide land managers in order to remove Bass Coast Shire from the national drowning blackspot list.

MORNINGTON PENINSULA

Surveys of 437 visitors on Mornington Peninsula beaches and 620 online respondents provided insights to gain a better understanding of the behavioural and attitudinal characteristics of beach goers on the Mornington Peninsula. In addition, site assessments of 100 beach areas (including The Pillars in Mount Martha) were conducted to propose a shire-wide signage strategy, taking into account beach goer perceptions.

Multicultural messaging around beach safety and parent/carer supervision was developed and collateral produced for tourists visiting the Mornington Peninsula as part of the project.

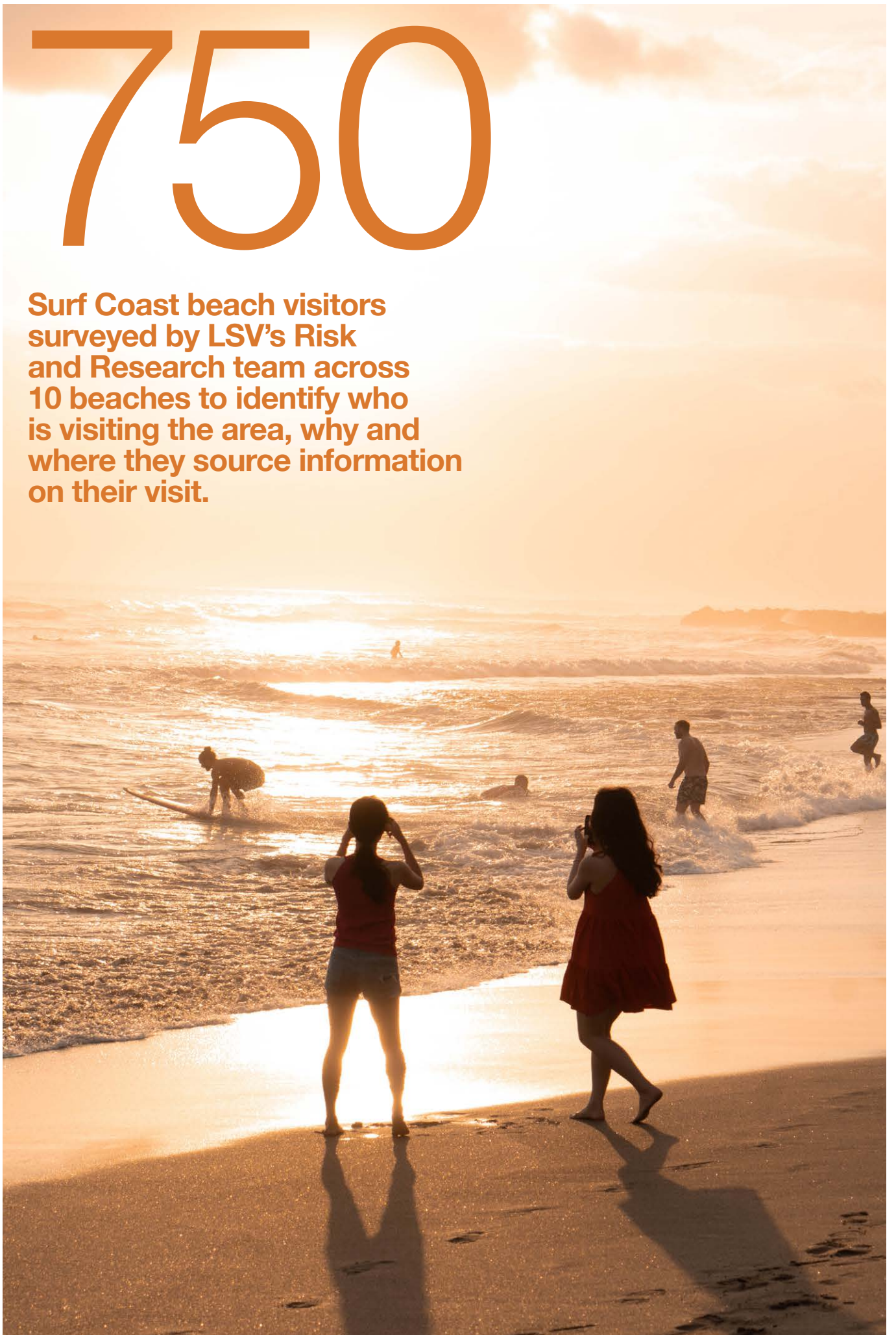
SURF COAST

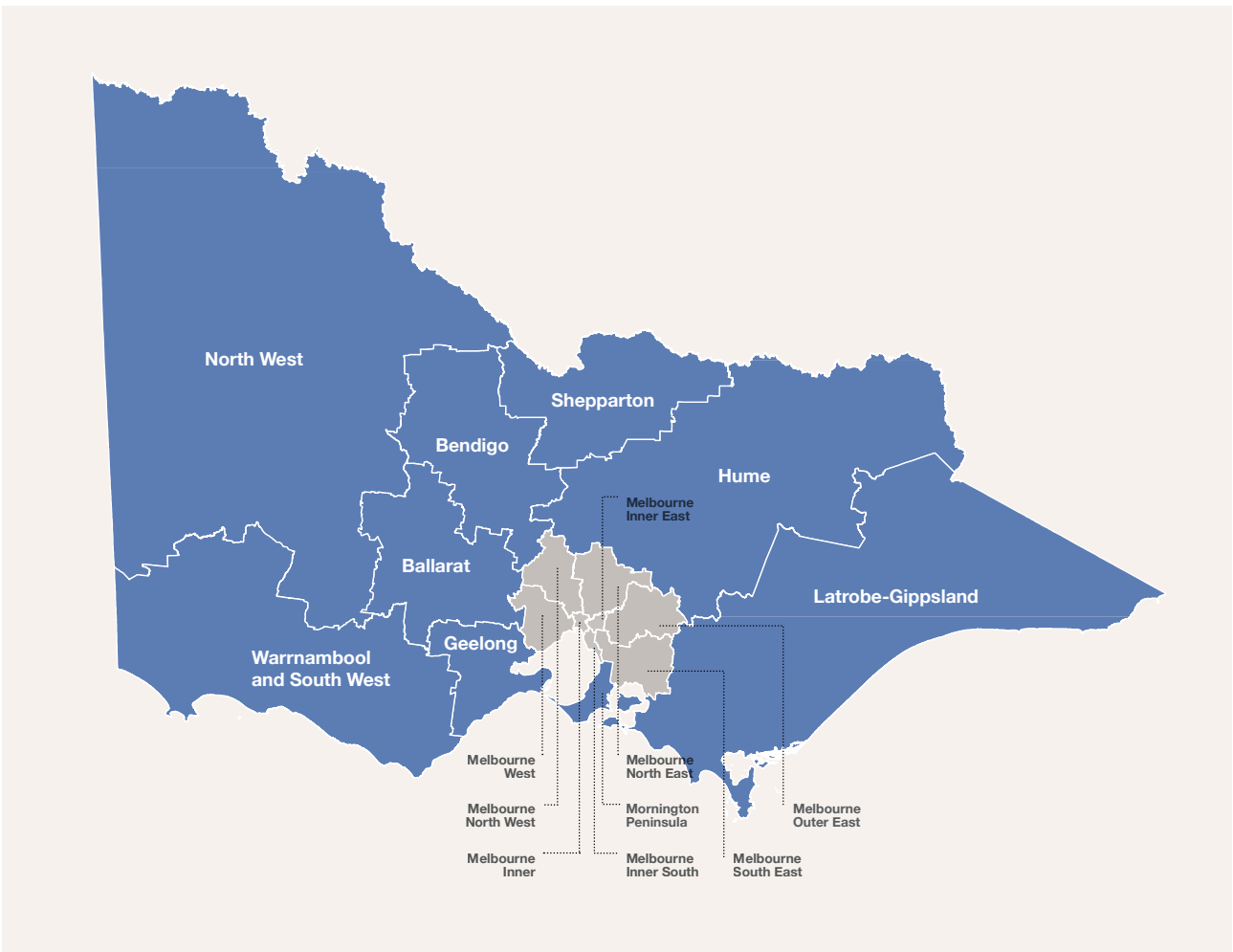
The Surf Coast Shire VISIT (Victorian Information on Safety Initiative for Tourists) project included research into how best to integrate key water safety and drowning prevention messaging effectively into the tourism sector. LSV's Risk and Research team surveyed 750 beach visitors across 10 beaches to identify who is visiting the area, why and where they source information on their visit. Sixty-eight local businesses and tourism operators were engaged to identify possible relationships to promote beach safety to visitors. From this, QR codes linking visitors to beach-specific safety information, local businesses and points of interest were trialled at five Surf Coast beaches in 2019.

In addition, LSV's Risk and Research team evaluated the impact of a multifaceted water safety campaign at Eastern Beach in Geelong during the 2016/17 summer. The campaign engaged 1,070 beach patrons, particularly children aged 5-14 years and their parents/carers to provide education on key water safety messages. Additionally, over 250 beach goers were reached via discussions with lifesavers around the dangers of partaking in high-risk activities around water, including alcohol consumption and pier jumping.

750

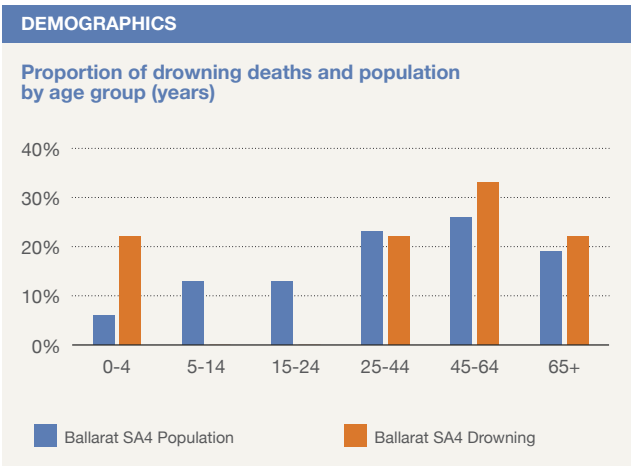
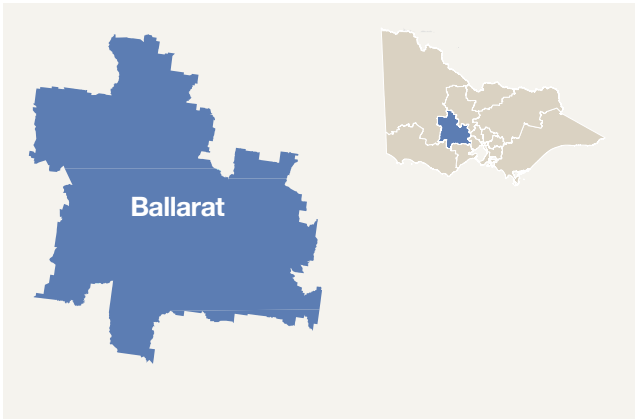
Surf Coast beach visitors surveyed by LSV's Risk and Research team across 10 beaches to identify who is visiting the area, why and where they source information on their visit.





Ballarat Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

9 Drowning Deaths	20 Ballarat SA4 residents hospitalised due to non-fatal drowning
8 Ballarat SA4 Residents Drowned in Victoria	21 Emergency Department presentations of Ballarat SA4 residents for non-fatal drowning
	59% Likelihood of one or more drowning deaths occurring in Ballarat SA4 in any given year
	55% Likelihood of one or more residents of Ballarat SA4 drowning in any given year



- LOCATION AND ACTIVITY**
- Lakes
 - Other inland (dams, rivers/creeks/streams)
 - Bathtubs/spa baths
 - Bathing
 - Walking/recreating near water
 - Transport (for work/recreation)

Males were 2.0 times more likely to drown than females.

Bendigo Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

7

Drowning Deaths

33

Bendigo SA4 residents hospitalised due to non-fatal drowning

15

Emergency Department presentations of Bendigo SA4 residents for non-fatal drowning

3

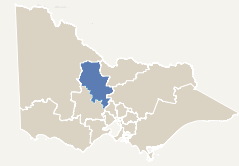
Bendigo SA4 Residents Drowned in Victoria

50%

Likelihood of one or more drowning deaths occurring in Bendigo SA4 in any given year

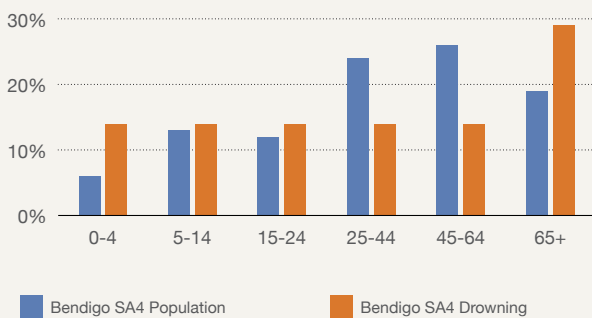
26%

Likelihood of one or more residents of Bendigo SA4 drowning in any given year



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



LOCATION AND ACTIVITY

- Dams
- Lakes, rivers/creeks/streams
- Home swimming pools
- Walking/recreating near water
- Boating/fishing
- Transport (for work/recreation)

Males were 7.0 times more likely to drown than females.

Geelong Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

29

Drowning Deaths

80

Geelong SA4 residents hospitalised due to non-fatal drowning

50

Emergency Department presentations of Geelong SA4 residents for non-fatal drowning

24

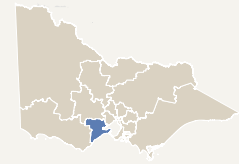
Geelong SA4 Residents Drowned in Victoria

94%

Likelihood of one or more drowning deaths occurring in Geelong SA4 in any given year

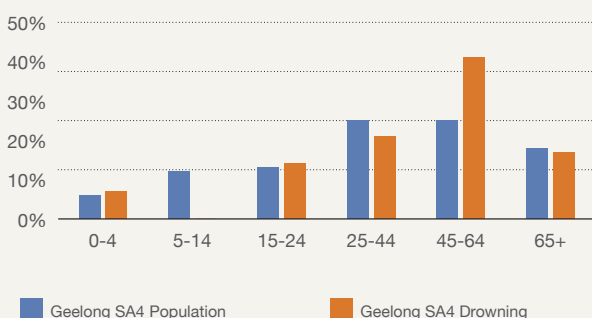
91%

Likelihood of one or more residents of Geelong SA4 drowning in any given year



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



LOCATION AND ACTIVITY

- Beaches
- Ocean
- Dams, rivers/creeks/streams
- Swimming/attempting a rescue
- Walking/recreating near water
- Diving (SCUBA/snorkelling)

Males were 1.9 times more likely to drown than females.

Hume Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

27

Drowning Deaths

24

Hume SA4 residents hospitalised due to non-fatal drowning

27

Emergency Department presentations of Hume SA4 residents for non-fatal drowning

18

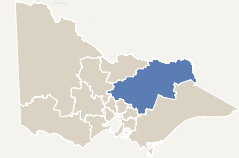
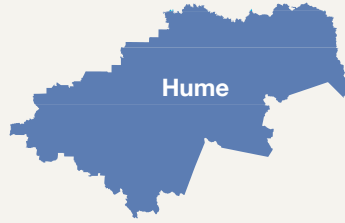
Hume SA4 Residents Drowned in Victoria

93%

Likelihood of one or more drowning deaths occurring in Hume SA4 in any given year

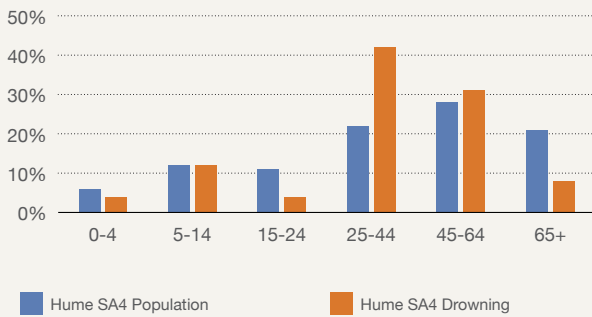
83%

Likelihood of one or more residents of Hume SA4 drowning in any given year



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



LOCATION AND ACTIVITY

- Rivers/creeks/streams
- Lakes/dams
- Home swimming pools
- Swimming/paddling/wading
- Boating
- Fishing

Males were 3.3 times more likely to drown than females.

Latrobe-Gippsland Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

55

Drowning Deaths

77

Latrobe-Gippsland SA4 residents hospitalised due to non-fatal drowning

54

Emergency Department presentations of Latrobe-Gippsland SA4 residents for non-fatal drowning

28

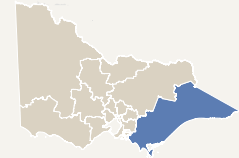
Latrobe-Gippsland SA4 Residents Drowned in Victoria

99%

Likelihood of one or more drowning deaths occurring in Latrobe-Gippsland SA4 in any given year

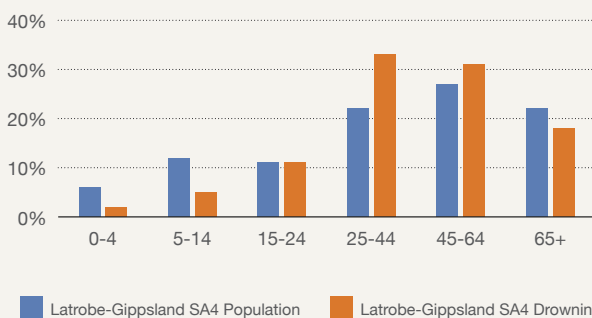
94%

Likelihood of one or more residents of Latrobe-Gippsland SA4 drowning in any given year



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



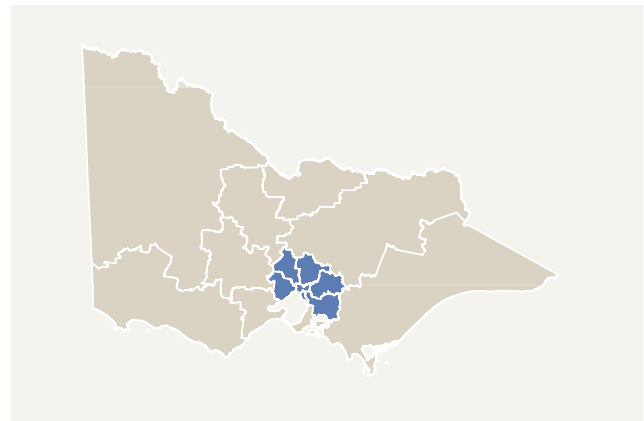
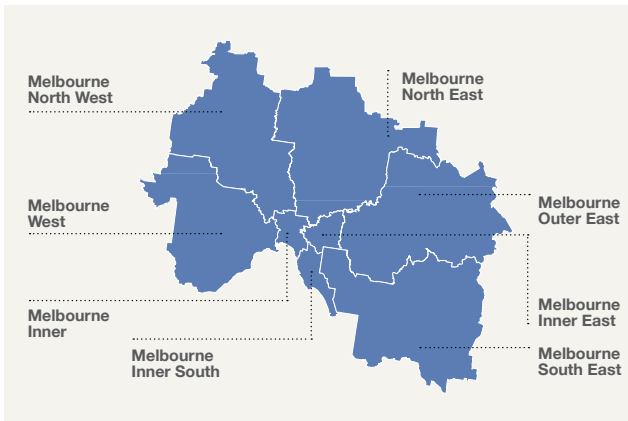
LOCATION AND ACTIVITY

- Beaches
- Ocean
- Rivers/creeks/streams
- Swimming/attempting a rescue
- Boating/fishing
- Walking near water/rock walking

Males were 3.6 times more likely to drown than females.

Melbourne

Inner, Inner East, Inner South, North East, North West, Outer East, South East, West
Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

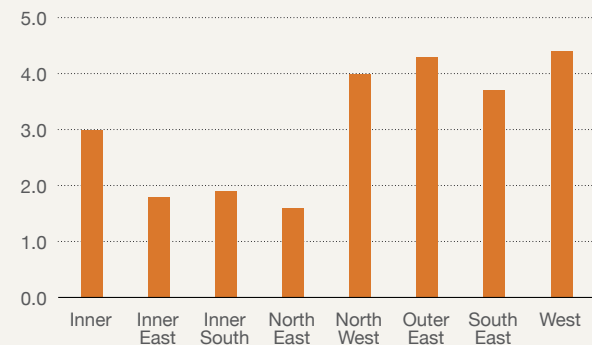


DROWNING STATISTICS FOR ALL MELBOURNE SA4S

Statistical Area 4	Drowning deaths	Drowning deaths of residents	Hospital admissions of residents	Emergency department presentations of residents	Likelihood of one or more drowning deaths in any given year	Likelihood of one or more residents drowning in any given year
Melbourne – Inner	40	33	77	68	98%	96%
Melbourne – Inner East	11	19	63	54	67%	85%
Melbourne – Inner South	23	18	70	54	90%	83%
Melbourne – North East	12	21	47	52	70%	88%
Melbourne – North West	10	15	40	44	63%	78%
Melbourne – Outer East	16	35	66	63	80%	97%
Melbourne – South East	14	38	116	91	75%	98%
Melbourne – West	27	39	82	96	93%	98%

DEMOGRAPHICS

Male : Female Drowning Ratio in Melbourne SA4s



LOCATION AND ACTIVITY

- Rivers/creeks/streams
- Beaches/ocean
- Swimming pools
- Bathtubs/spa baths
- Walking/recreating near water
- Swimming/paddling/wading
- Bathing

PROPORTION OF DROWNING DEATHS AND POPULATION BY AGE GROUP (YEARS) FOR ALL MELBOURNE SA4S

Statistical Area 4	0-4		5-14		15-24		25-44		45-64		65+	
	Population	Drowning	Population	Drowning	Population	Drowning	Population	Drowning	Population	Drowning	Population	Drowning
Melbourne – Inner	5%	3%	7%	0%	16%	13%	42%	43%	20%	30%	11%	13%
Melbourne – Inner East	5%	0%	12%	18%	15%	0%	27%	18%	25%	9%	17%	55%
Melbourne – Inner South	6%	9%	12%	4%	12%	9%	27%	35%	26%	9%	16%	35%
Melbourne – North East	7%	23%	12%	8%	13%	38%	30%	15%	24%	0%	14%	15%
Melbourne – North West	8%	30%	13%	10%	13%	0%	30%	10%	23%	30%	13%	20%
Melbourne – Outer East	6%	13%	12%	13%	13%	19%	27%	19%	26%	19%	16%	19%
Melbourne – South East	7%	29%	13%	0%	15%	0%	30%	14%	22%	50%	13%	7%
Melbourne – West	8%	15%	13%	0%	13%	11%	33%	15%	22%	33%	10%	26%

Mornington Peninsula Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

50

Drowning Deaths

72

Mornington Peninsula SA4 residents hospitalised due to non-fatal drowning

85

Emergency Department presentations of Mornington Peninsula SA4 residents for non-fatal drowning

24

Mornington Peninsula SA4 Residents Drowned in Victoria

99%

Likelihood of one or more drowning deaths occurring in Mornington Peninsula SA4 in any given year

91%

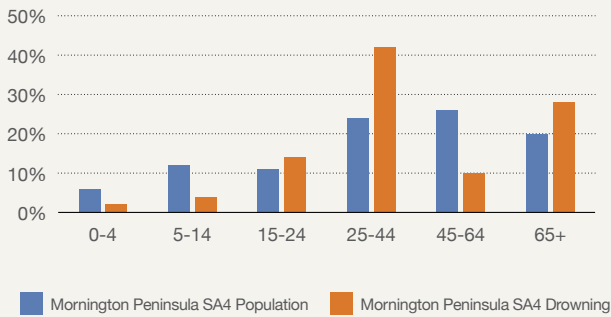
Likelihood of one or more residents of Mornington Peninsula SA4 drowning in any given year

Mornington Peninsula



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



LOCATION AND ACTIVITY

- Beaches/rocky outcrops
- Ocean
- Home swimming pools
- Swimming/paddling/wading
- Diving (SCUBA/snorkelling)
- Boating/fishing/rock fishing

Males were 4.6 times more likely to drown than females.

North West Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

10

Drowning Deaths

28

North West SA4 residents hospitalised due to non-fatal drowning

36

Emergency Department presentations of North West SA4 residents for non-fatal drowning

7

North West SA4 Residents Drowned in Victoria

63%

Likelihood of one or more drowning deaths occurring in North West SA4 in any given year

50%

Likelihood of one or more residents of North West SA4 drowning in any given year

North West



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



LOCATION AND ACTIVITY

- Lakes/dams/irrigation channels
- Rivers/creeks/streams
- Home swimming pools
- Swimming
- Boating
- Transport (for work/recreation)

Males were 10.0 times more likely to drown than females.

Shepparton Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

12 Drowning Deaths

34 Shepparton SA4 residents hospitalised due to non-fatal drowning

33 Emergency Department presentations of Shepparton SA4 residents for non-fatal drowning

14 Shepparton SA4 Residents Drowned in Victoria

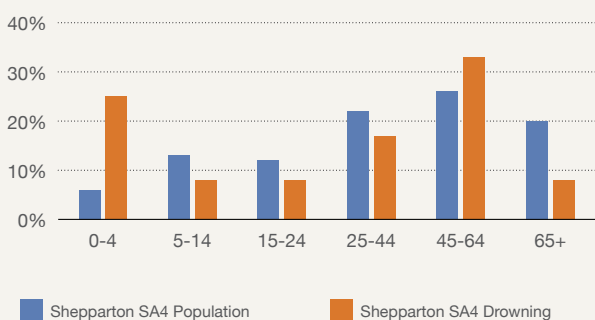
70% Likelihood of one or more drowning deaths occurring in Shepparton SA4 in any given year

75% Likelihood of one or more residents of Shepparton SA4 drowning in any given year



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



LOCATION AND ACTIVITY

- Bathtubs/spa baths
- Lakes/dams/irrigation channels
- Rivers/creeks/streams
- Bathing
- Walking/recreating near water
- Swimming

Males were 5.0 times more likely to drown than females.

Warrnambool and South West

Statistical Area 4 – Drowning Statistics 2008/09 to 2017/18

32 Drowning Deaths

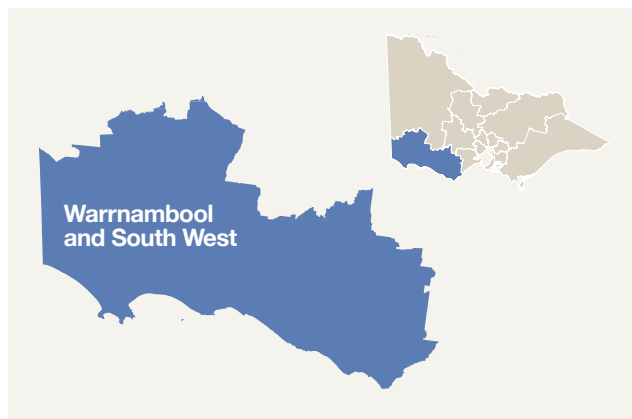
21 Warrnambool and South West SA4 residents hospitalised due to non-fatal drowning

16 Emergency Department presentations of Warrnambool and South West SA4 residents for non-fatal drowning

22 Warrnambool and South West SA4 Residents Drowned in Victoria

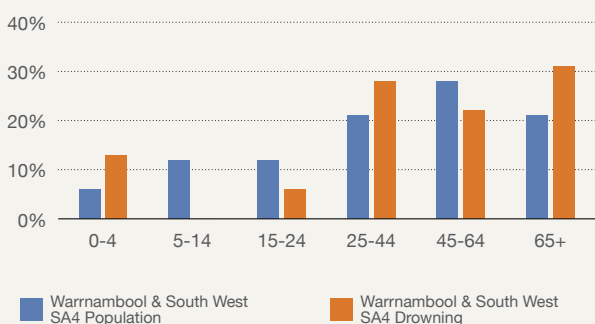
96% Likelihood of one or more drowning deaths occurring in Warrnambool and South West SA4 in any given year

89% Likelihood of one or more residents of Warrnambool and South West SA4 drowning in any given year



DEMOGRAPHICS

Proportion of drowning deaths and population by age group (years)



LOCATION AND ACTIVITY

- Ocean
- Beaches
- Rivers/creeks/streams
- Boating
- Swimming/attempting a rescue
- Walking/recreating near water

Males were 9.7 times more likely to drown than females.

AGENCY

Life Saving Victoria
 Aquatics and Recreation Victoria
 Australian Sailing
 Australian Volunteer Coast Guard
 AUSTSWIM
 Belgravia Leisure
 Boating Industry Association
 Coroners Prevention Unit
 Dragon Boating Victoria
 Kidsafe Victoria
 Kiteboarding Australia
 Landscaping Victoria
 Outdoors Victoria
 Paddle Victoria
 Surfing Victoria
 Swimming Pool and Spa
 Association of Victoria
 Swimming Victoria
 Triathlon Victoria
 Victorian Municipal Building
 Surveyors Group
 Victorian Recreational Fishing
 World Wide Swim School
 YMCA Victoria

GOVERNMENT ENTITIES

Ambulance Victoria
 Country Fire Authority
 Department of Education
 and Training
 Department of Environment,
 Land, Water and Planning
 Department of Justice and
 Community Safety
 Emergency Management Victoria
 Emergency Services
 Telecommunications Authority
 Municipal Association of Victoria
 Parks Victoria
 Royal Children's Hospital
 Safety Centre
 Sport and Recreation Victoria
 Transport Safety Victoria
 Tourism Victoria
 Victoria Police
 Victoria State Emergency Service
 Victorian Building Authority
 Victorian Coastal Council
 Victorian Fisheries Authority
 Victorian Institute of Forensic
 Medicine
 Victorian Multicultural Commission

LOCAL GOVERNMENT AREAS AND LAND MANAGERS

*Contributors to the
 Victorian Paid Lifeguard Service*
 Barwon Coast Committee
 of Management INC
 Bass Coast Shire Council
 Borough of Queenscliffe
 Colac Otway Shire Council
 Corangamite Shire Council
 East Gippsland Shire Council
 Frankston City Council
 Glenelg Shire Council
 Great Ocean Road Coast Committee
 Greater Geelong City Council
 Greater Geelong City Council –
 Waterfront
 Hobsons Bay City Council
 Mornington Peninsula Shire Council
 Moyne Shire Council
 Parks Victoria Wilsons Promontory
 National Park
 Port Phillip City Council
 South Gippsland Shire Council
 Surf Coast Shire Council
 Warrnambool City Council
 Wellington Shire Council

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This report includes unintentional fatal and non-fatal drowning incidents reported in Victoria, Australia. An overview of fatal drowning for 1 July 2018 to 30 June 2019 is provided and compared with non-fatal drowning incidents for the same period. Comparisons between the latest financial year and 5, 10 or 15-year averages were calculated from fatal and non-fatal drowning data in Victoria from 1 July 2003 to 30 June 2018. For example, the 10-year average spans the 2008/09 to 2017/18 financial years.

FATAL INCIDENTS

Information on fatal drowning incidents was collected from the Coroners Court of Victoria, and the National Coronial Information System (NCIS). Deaths due to natural causes, suicide, or homicide are excluded from this report.

Coronial information relates to both open and closed cases. While all care is taken to ensure that the results are as accurate as possible, these figures are provisional only as coronial investigations and findings relating to open cases may alter the reported drowning figures. At the time of compilation 86% of suspected unintentional drowning cases in 2018/19 remained open on the NCIS.

NON-FATAL INCIDENTS

Information on non-fatal drowning in 2018/19 was provided by Ambulance Victoria (AV). Cases of non-fatal and immersion related injuries attended by AV paramedics were extracted from the VACIS® clinical information system. Potential drowning data for this report were identified via a database search for all drowning related dispatch codes identified at the emergency call-taker level, as well as cases in which paramedics reported a final assessment of 'post immersion'. Only patients reported as suffering respiratory compromise or vomiting as a result of immersion were included in analyses.

Information on non-fatal drowning from 2008/09 to 2017/18 was provided by the Victorian Injury Surveillance Unit (VISU). Data included non-fatal and immersion related injuries extracted from the Victorian Emergency Minimum Dataset (VEMD) and Victorian Admitted Episodes Dataset (VAED) for the period 1 July 2008 to 30 June 2018.

The VEMD is a dataset containing records of emergency department presentations in Victorian hospitals with 24-hour emergency services. 100% state wide coverage of these hospitals applies from 2004. Data was selected if the cause of injury was 'drowning/near drowning' or the terms 'drown', 'submerged',

'immersion' and their variations were included in the "Description" variable. Further, all injuries with an injury coded to drowning or immersion were also selected. Finally, any injury coded to a drowning or non-fatal drowning cause code with the mention of 'decompression illness' in the description was also chosen. These cases were then manually screened to ensure that they were submersion or non-fatal drowning cases. Cases were retained if the "Human Intent" was coded to "Non-intentional harm". Cases were limited to incidence (excludes return visits and pre-arranged admissions).

The VAED is a record of all hospital admissions in the state of Victoria. VAED data is coded to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modifications (ICD-10-AM). VAED records were initially extracted if the principal diagnosis was a community injury (S00-T75 or T79 ICD 10 AM code). Cases were then extracted if there was a drowning injury diagnosis (ICD 10 AM code of T75.1 "Drowning and non-fatal submersion") anywhere in the 40 diagnosis codes or the external cause code was in the range W65-W71 (accidental drowning and submersion) or V90 (accident to water craft causing drowning and submersion) or V92 (water-transport-related drowning and submersion without accident to watercraft). Admissions as a result of transfer from another hospital or due to a statistical separation from the same hospital were excluded. Readmissions for day-treatments within 30 days of initial admission were excluded.

Drowning deaths from either AV or VISU data were excluded to avoid an overlap with Life Saving Victoria (LSV) fatal drowning data.

INCIDENCE CALCULATIONS

Incidence calculations were performed using population figures published by the Australian Bureau of Statistics, 2019 (Australian Bureau of Statistics [ABS], 2019).

RELATIVE RISK MAPS

Relative risk maps were created to illustrate geographical variation of risk across Victoria. The compiled smoothed relative risk maps show areas of higher and lower risk relative to overall risk rate of Victoria. Darker red areas indicate a higher risk rate relative to the overall state rate. Relative risk ratios were calculated using grouped event counts (incident and residence) and population counts within each postcode. This method was applied across multiple timeframes for time-based comparative analysis.

The maps illustrate excess risk rates using postcode and population counts for consecutive 5-year periods, as well as an overall 10-year timeframe (2008/09 to 2017/18). The underlying population counts were taken from two censuses, 2011 and 2016. The following population counts were used for the aggregate event timeframes:

- 2011 and 2016 censuses for events from 2008/9 – 2012/13 (ABS, 2016a)
- 2016 census for events from 2013/14 – 2017/18 (ABS, 2016a)

For the overall 2008/09 to 2017/18 relative risk calculation an average of the two censuses was used. This approach was used in order to factor changing population counts across the 10 years specific to each postcode.

STATISTICAL AREA 4 PROBABILITIES

Probabilities for Victorian Statistical Area Level 4 (SA4) regions were created demonstrating the likelihood of at least one drowning event occurring within each of the 17 Victorian statistical regions. Probabilities were calculated based on yearly means (spanning 10 years from 2008/09 to 2017/18) for each SA4 region. Using yearly means provides the ability to devise the likelihood of one or more drowning events in each SA4 in any given year.

GEOGRAPHICAL CLASSIFICATION

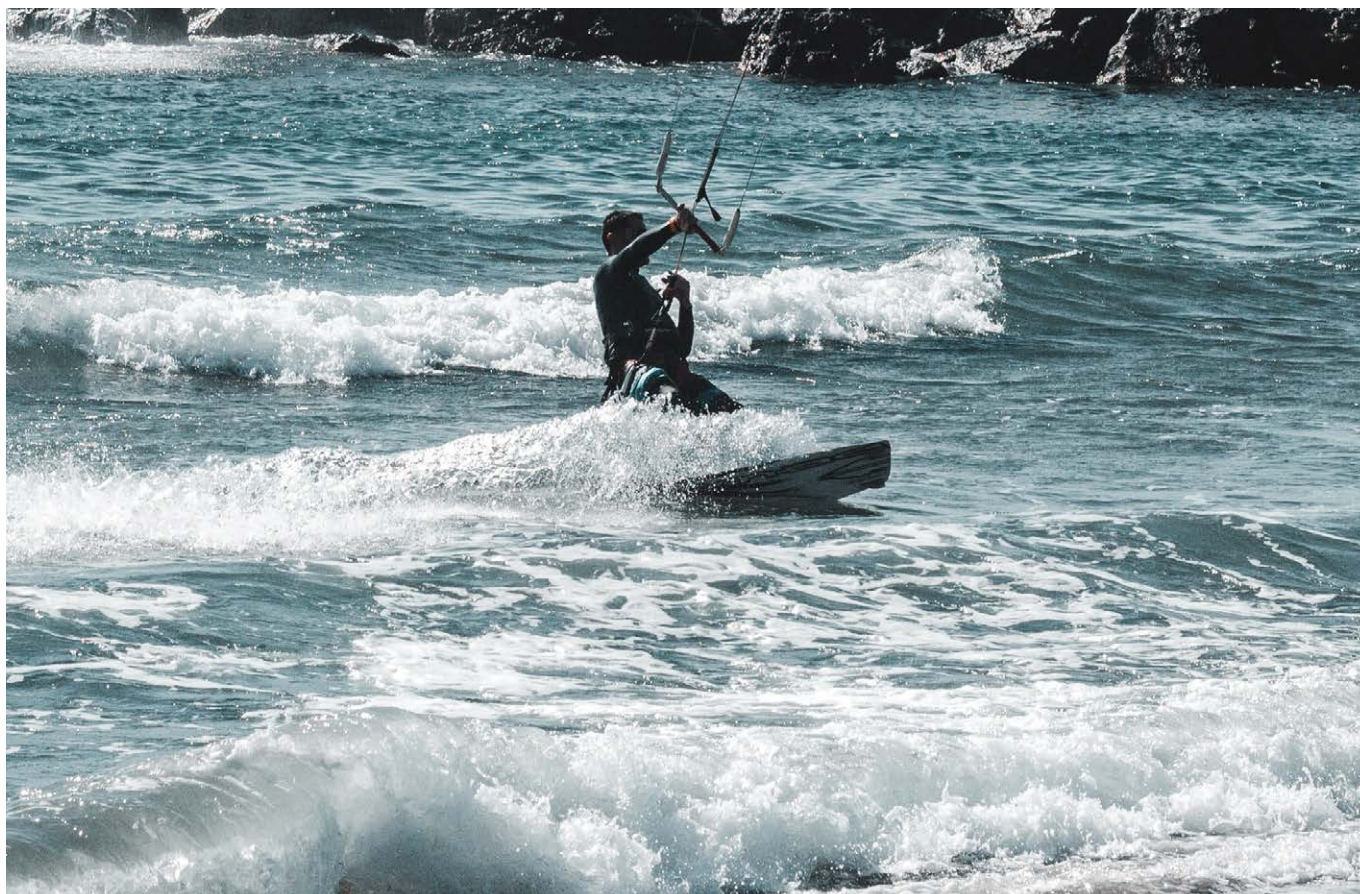
Geographical classification of fatal and non-fatal drowning variables utilised the Australian Statistical Geography Standard (ASGS; ABS, 2016b). The ASGS is the Australian Bureau of Statistics' geographical framework. Data was categorised into Remoteness Areas and Statistical Areas. Data was extracted from the Census DataPack applicable to each census period. These can be accessed from the Australian Bureau of Statistics website:

<https://datapacks.censusdata.abs.gov.au/datapacks/>

MURRAY RIVER FATAL DROWNING ANALYSIS

This year's report includes analysis of Victorians who drowned in the Murray River from 2008/09 to 2018/19. This research was conducted as part of the Inland Waterways Drowning Prevention project by Royal Life Saving Society – Australia and funded by the Australian Government.

Information on incidents was collected from the Royal Life Saving National Fatal Drowning Database and the NCIS. Methods for reporting these incidents is as per all Victorian fatal drowning incidents as reported above.



ACKNOWLEDGEMENTS

Life Saving Victoria gratefully acknowledges the assistance of the following organisations in the production of the Victorian Drowning Report:

- Ambulance Victoria
- Coroners Prevention Unit, Coroners Court of Victoria
- Emergency Management Victoria, Department of Justice and Community Safety
- National Coronial Information System
- Royal Life Saving – Australia
- Surf Life Saving Australia
- Victorian Injury Surveillance Unit

SUGGESTED CITATION

Life Saving Victoria. (2019). *Victorian Drowning Report 2018/19*. Life Saving Victoria: Melbourne.

COMPILED BY:

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Rhiannon Birch is the Manager – Research for Life Saving Victoria. Rhiannon assists in the management and undertaking of LSV's research on injury prevention and water safety issues, including: swimming and water safety education programs; water competency among children and older adults; inland waterways drowning prevention; coastal risk assessments; public pool safety; multicultural water safety campaigns and international drowning prevention research. Rhiannon holds a Bachelor of Environmental Science and Graduate Diploma in Education.

Robert Andronaco is the Risk and Spatial Analysis Specialist at Life Saving Victoria. In his role he focuses on quantifying drowning risk and assisting land managers in mitigating assessed risks specific to recreational drowning and injury. Robert uses both traditional statistical approaches and spatial statistical analysis approaches in quantify drowning risks. Robert holds a Masters in Sport and Recreation Management and a Post Graduate Diploma in Risk Management.

Grace Strugnell is the Coordinator – Research at Life Saving Victoria. Grace assists with coordination of research studies conducted through extensive data collection, literature review, monitoring, evaluation, reporting and ethical storage, for a range of water safety and drowning prevention initiatives. This encompasses a vast range of environments and demographics, including controlled and open waterways, metropolitan and remote communities, and vulnerable groups to drowning. Grace is nearing completion of her Bachelor of Public Health and Health Promotion at Deakin University, Melbourne.

Dr Bernadette Matthews is the General Manager – Research and Communications for Life Saving Victoria. Bernadette specialises in aquatic injury prevention research, from epidemiology of fatal and non-fatal drowning, injuries at public swimming pools and patrolled beaches, aquatic safety signage recognition and recall, through to evaluation of education programs and major public awareness campaigns. Bernadette leads LSV's Risk and Research as well as the Media and Communications teams.

“The fatal drowning rate stands out for being the highest in 14 years; 38% higher than last year and a 29% increase on the 10-year average.”

Dr Nigel Taylor ESM
CEO



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