2021 – 22
Life Saving Victoria

Drowning report

Life Saving Victoria

Compiled by

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Acknowledgement of Traditional Owners

Life Saving Victoria respectfully acknowledge the Traditional Owners of the land and waterways in which we swim, explore, play and meet.

We wish to specifically acknowledge the Bunurong People of the South Eastern Kulin Nation as the Traditional Owners of the lands on which this report was compiled. We also acknowledge the Traditional Owners of the various lands on which many of our activities take place throughout the state of Victoria.

We pay our respect to Elders past, present and emerging.

Acknowledgements

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- Ambulance Victoria,
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- National Coroners Information System,
- Royal Life Saving – Australia,
- Surf Life Saving Australia, and
- Victorian Injury Surveillance Unit.

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Contents

CEO's report

After experiencing the worst drowning toll in 20 years last year, we approached 2021 – 22 with renewed determination to fulfill our purpose of saving lives and empowering people to enjoy water safely, albeit with a sense of trepidation for what could unfold in Victorian waters.

In the wake of the pandemic and its ongoing impacts on water safety and armed with the insights uncovered in the previous iteration of this report, we strategically mobilised our drowning prevention efforts across the state, targeting the areas, activities, and age groups at highest risk in a bid to prevent further tragedies.

While this year's drowning statistics did not reach or exceed the record-breaking toll of 2020 – 21, the fact remains that 53 people lost their lives to drowning in Victoria; 10 more than the average number of fatal drowning incidents during the past decade, representing an 18 per cent increase on the drowning rate during this period. That's 53 lives cut short, and 53 families and communities that will forever feel the loss of a loved one. I send my deepest condolences to everyone who has been affected by drowning. Even one life lost to drowning is one too many.

In addition to the fatal drowning toll, a further 111 people experienced a non-fatal drowning incident that was attended by paramedics, with many acquiring permanent injuries – both physical and emotional; these carry lifelong impacts. The number of people getting into trouble in Victorian waters remains unacceptably high and continues to buck what had, until recently, been a downward trend. This is why the findings detailed within the pages of this report are so incredibly valuable; they provide us with insights into those key moments before people found themselves in trouble, the decisions they made or didn't make and the risks they took; moments we may be able to influence moving forward to save lives.

Among the most significant of the findings in this year's report was the doubling of the number of fatal drowning incidents involving people aged 65 and older when compared to the 10-year average. Within this age group, five females and 17 males drowned, with males aged 65 and older making up almost one third of all fatal drownings reported in Victoria this year.

While males continue to be overrepresented in the drowning statistics, we have also seen a steady increase in the number of females drowning, with the drowning rate for females now 19 per cent higher than the past decade's average. Sadly, this increase also included children aged four years and younger, where the fatal drowning rate of girls was double the 10-year average and the largest increase seen across all groups this year. A total of five children aged 14 years and younger died by drowning in 2021 – 22, accounting for nine per cent of all reported fatalities.

There was a 17 per cent reduction in the number of fatal drownings in coastal waters this year. Conversely, there was a 48 per cent increase in the number of fatal drowning incidents in inland waterways when compared to the 10-year average, with 40 per cent of all fatal drowning incidents occurring in rivers, creeks, streams or lakes; once again highlighting the dangers of inland waterways.

We again saw a shocking number of people drowning within their own postcode, with 40 per cent of fatalities occurring close to, or in the home. This has included in bathtubs, where the rate of drowning has more than doubled during the past 10 years; proof that we can never relax our vigilance around water and that despite decades of awareness raising, there's still much work to be done to highlight the risks in this space.

As I leave you to learn about these insights and more, I ask you to keep in mind that while this report contains numerous statistics, each number represents a person who has drowned; a life lost too soon or forever changed and the devastating consequences of that drowning on families and communities. In compiling this report, our team has meticulously reviewed each tragic incident to paint a picture of water safety risks in Victoria with the purpose of working with our aquatic partners and communities to help prevent future drownings.

While anyone can drown, no one should.

Catherine Greaves
CEO
Life Saving Victoria

Progress to reduce fatal drowning

The following table outlines Victoria's progress in reducing fatal drowning by 50% against national and Victorian priority areas*.

The most recent three-year period is compared against the baseline years 2004 – 05 to 2006 – 07 to gauge progress. Of the priority areas, two areas are on track, but urgent work is required across seven other areas, especially in priority areas 4, 5 and 6 (reduce drowning among people aged 65+ years, among high-risk populations and in inland waterways); which have increased by 24 per cent, 30 per cent and 30 per cent respectively, since baseline.

Priority areas		Baseline (3-year average 2004 – 05 to 2006 – 07)	Follow-up (3-year average (2019 – 20 to 2021 – 22)	Difference baseline to follow-up (target -50%)	Progress
PEOPLE AND POPULATIONS		Rate (per 100,000 population)	Rate (per 100,000 population)	%	
1 Reduce drowning in children aged 0-14 years	0-4 years	1.057	1.013	-4%	Urgent work needed
	5-14 years	0.615	0.369	-40%	Work needed
2 Reduce drowning in young people aged 15-24 years		0.712	0.683	-4%	Urgent work needed
3 Reduce drowning in males aged 25-64 years	25-44 years	1.494	1.089	-27%	Work needed
	45-64 years	1.097	0.867	-21%	Work needed
4 Reduce drowning in people aged 65+ years		1.134	1.408	+24%	Urgent work needed
5 Reduce drowning in high-risk populations•		0.704	0.916	+30%	Urgent work needed
PLACES		Fatalities per year	Fatalities per year	%	
6 Reduce drowning in inland waterways		16	20	+30%	Urgent work needed
7 Reduce drowning in coastal waterways		14	16	+17%	Urgent work needed
8 Reduce drowning by strengthening the aquatic industry•		0	1	0%	On track
ACTIVITIES AND RISK FACTORS		Fatalities per year	Fatalities per year	%	
9 Reduce alcohol and drug-related drowning•		14	10	-29.3%	Work needed
10 Reduce boating, watercraft and recreational activity-related drowning•		8.7	9.3	+7.7%	Urgent work needed
11 Reduce the impact of disaster and extreme weather on drowning		1	0	-50%	On track

• Includes Aboriginal and Torres Strait Islander people, people from culturally and linguistically diverse backgrounds, international visitors and international students. Statistics are primarily determined from country of birth data. Follow-up average from most recent period where country of birth known – 2016 – 17 to 2018 – 19.

• Figures include drowning deaths at public swimming pools.

• 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.

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

* Australian Water Safety Council (2021) and Department of Justice and Community Safety (2021).

Summary of fatal drowning incidents

In 2021 – 22, **53 people fatally drowned** within Victorian waterways, representing a crude rate of 0.81 per 100,000 population. This was an **18 per cent increase** on the 10-year average of 0.69 per 100,000 population. The direct cost to society of these lives lost equates to $281 million.

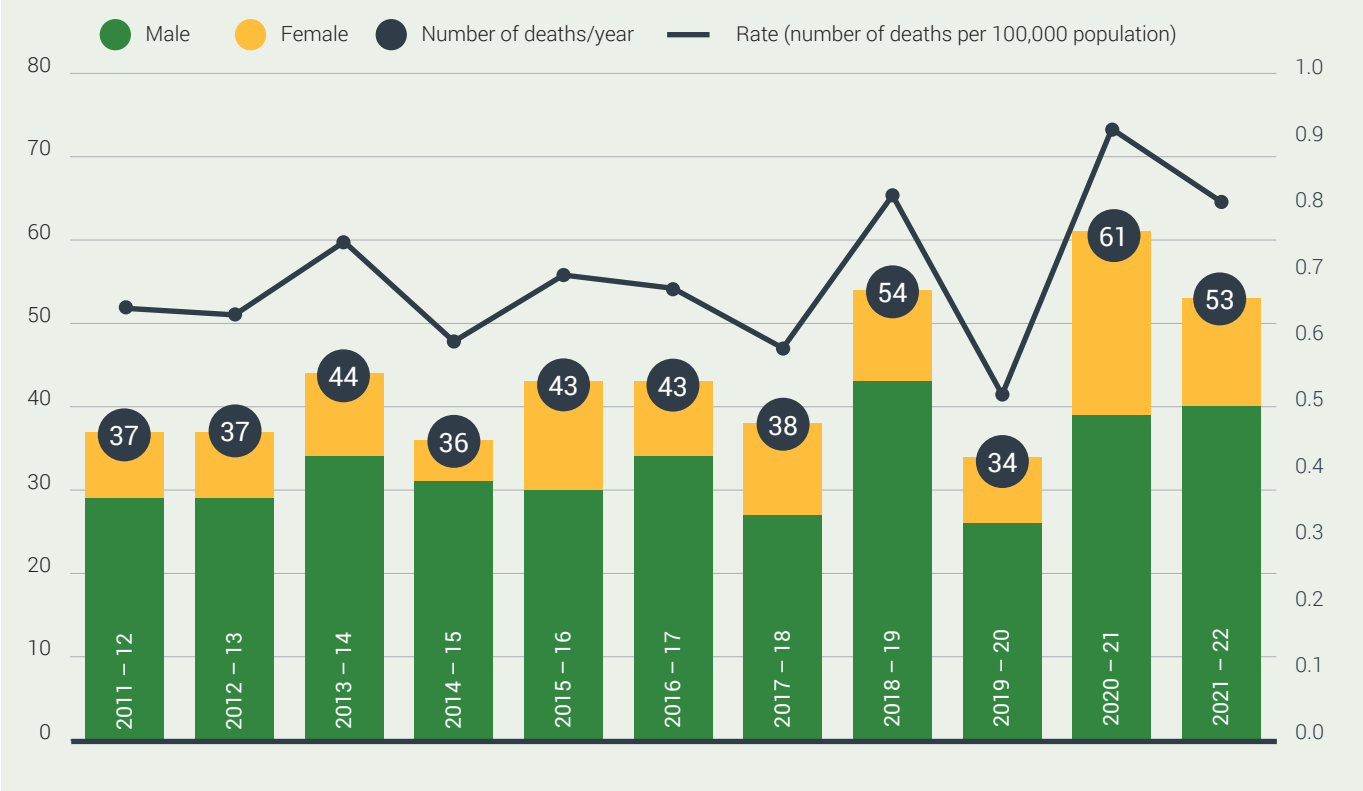
Among the people who fatally drowned, 40 (75 per cent) were male and 13 (25 per cent) were female. While during the past decade (2012 – 13 to 2021 – 22) males have been over three times more likely to drown than females, the female drowning rate has increased gradually in this time. In 2021 – 22, females drowned at a rate of 0.39 per 100,000 population, which is 19 per cent higher than the 10-year average. Comparatively, this year the male drowning rate of 1.24 is 17 per cent higher than the decade average.

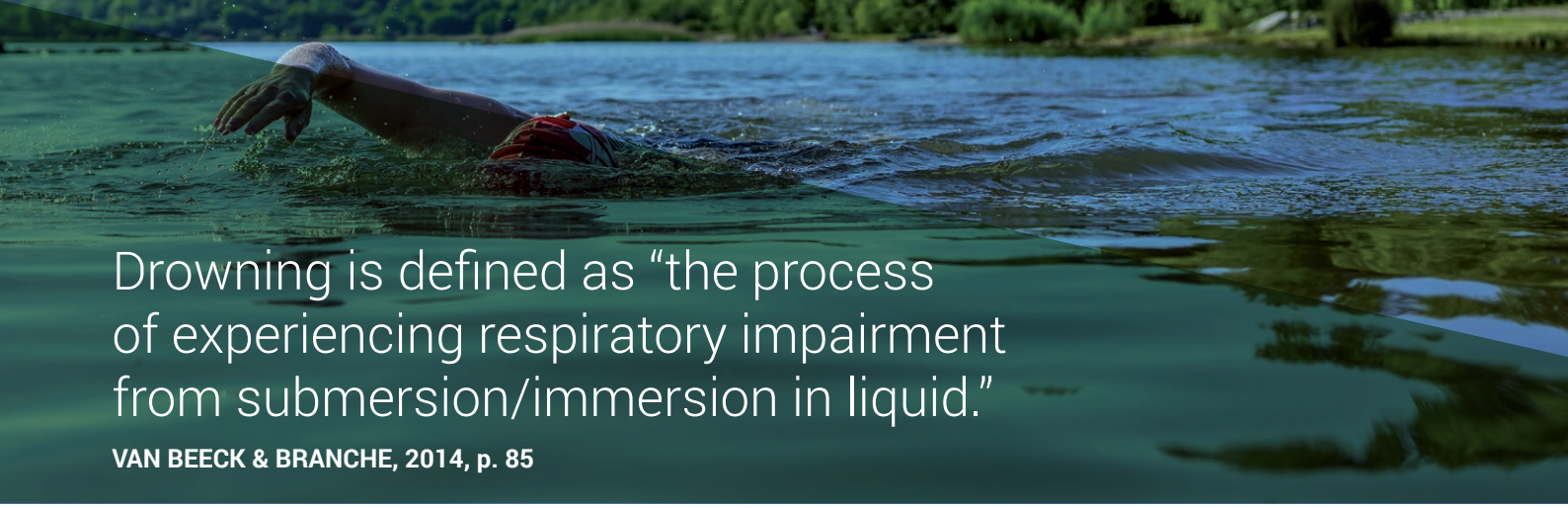
The age group recording the most fatal drownings in 2021 – 22 were those aged 65+ years: 22 fatalities (17 male, 5 female), equating to a drowning rate of 2.05 per 100,000 population – an 85 per cent increase compared to the decade average. Males aged 65+ recorded the highest drowning rate of 3.43 per 100,000 population – a 92 per cent increase on the 10-year average.

Two other age groups recorded increases in drowning rates in 2021 – 22 compared to the decade average. Children aged 0-4 years recorded a 19 per cent increase; this was due to the drowning rate among females in this group more than doubling from the decade average of 0.74 to 1.59 in 2021 – 22. Five people aged 15-24 years fatally drowned this year (0.63 per 100,000 population) – a five per cent increase in the drowning rate compared to the decade average. All five incidents involved males, which represented a 40 per cent increase on the 10-year average drowning rate for males in this age group.

In 2021 – 22, 24 (38 per cent) fatal drownings occurred in inland waterways (rivers, creeks, streams, and lakes), making it the most common location for drowning. These 24 deaths were 48 per cent more than the 10-year average of 16 within inland waterways. More than two-thirds (67 per cent, 16) of inland drowning deaths occurred in rivers, creeks, and streams, which is eight above the 10-year average, and represents 30 per cent of all drowning deaths this year. Twenty-six per cent of fatal drownings occurred in coastal waterways

Drowning fatalities and rate since 2011-12, by sex





Drowning is defined as “the process of experiencing respiratory impairment from submersion/immersion in liquid.”

VAN BEECK & BRANCHE, 2014, p. 85

(14 at beaches, oceans and bays), which is 17 per cent less than the 10-year average of 17.

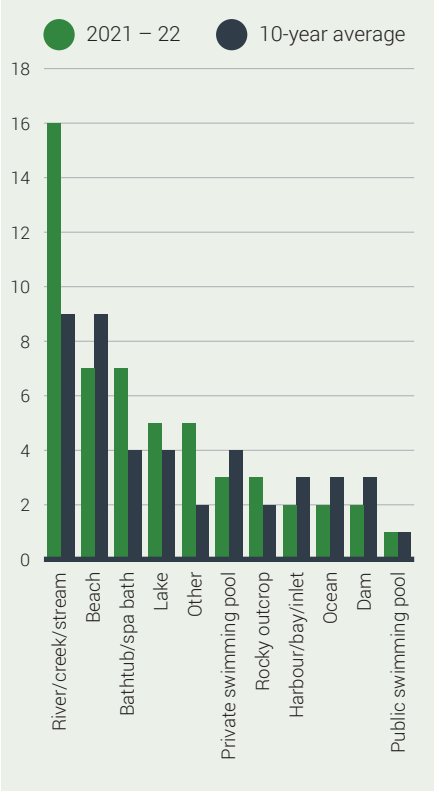
Almost one-fifth (19 per cent, 10) of fatal drowning incidents in 2021 – 22 occurred in waterways around the home, including bathtubs and home pools, and this is 24 per cent higher than the 10-year average of eight.

In 2021 – 22, the most common activities which preceded a fatal drowning incident were walking or playing near water (21 per cent, 11) and swimming, paddling or wading (19 per cent, 10). There were also notable increases in incidents while fishing, rock fishing, craft riding and bathing which all more than doubled in 2021 – 22 compared to the 10-year average.

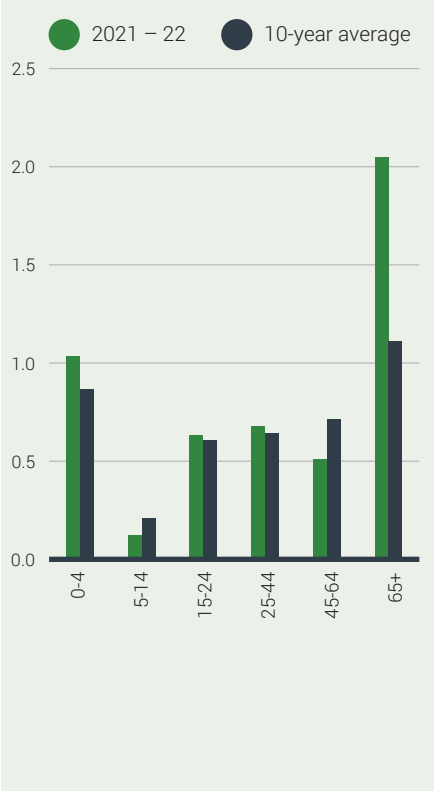
Almost one third (32 per cent, 17) of drowning fatalities occurred in summer in 2021 – 22, followed by 26 per cent (14) of incidents in autumn. This somewhat aligns with the decade average where summer was the leading season (38 per cent), followed by spring (24 per cent), autumn (21 per cent) and winter (17 per cent).

This year, 32 (60 per cent) drowning fatalities occurred in major cities in Victoria. This is 11 more than the 10-year average. When accounting for the differences in the distribution of the residential population compared to the decade average, the drowning rate per 100,000 population this year increased by 26 per cent to 0.68 for people in metropolitan Melbourne, and by three per cent to 1.02 for people residing in regional Victoria.

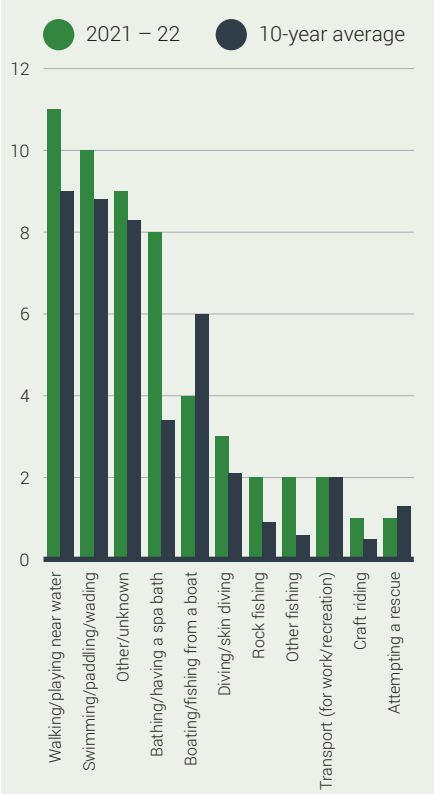
Number of drowning fatalities per year by body of water 2011 – 12 to 2021 – 22



Fatal drowning rate per 100,000 persons in Victoria by age, 2011 – 12 to 2021 – 22



Number of drowning fatalities per year by activity, 2011 – 12 to 2021 – 22



Summary of non-fatal drowning incidents

A **non-fatal drowning incident occurs when a person survives an experience of respiratory impairment from submersion/immersion in liquid**. People who experience non-fatal drowning incidents can acquire both physical and psychological injury, and these can have **lifelong impacts on the individual and their loved ones**, as well as emergency service providers responding to the incident.

Hospital admissions and emergency department presentations rate per 100,000 persons in Victoria, 2011 – 12 to 2020 – 21

111

non-fatal drowning incidents attended by paramedics in 2021 – 22

1,104

emergency department presentations for non-fatal drowning in the 10-year period from 2011 – 12 to 2020 – 21

2.05

hospital admissions for non-fatal drowning per 100,000 population in 2020 – 21: the highest since 2017 – 18

Incidents requiring paramedic attendance

There were 111 non-fatal drowning incidents attended by paramedics in 2021 – 22. This represents a crude non-fatal drowning rate of 1.70 per 100,000 population. Almost a quarter (24 per cent) of non-fatal incidents involved children aged 0-4 years.

Similar to fatal drowning, non-fatal drowning incidents were far more common in summer (57 per cent, 63). This was followed by autumn (18 per cent, 20), spring (14 per cent, 16) and winter (11 per cent, 12).

The most common activities which preceded non-fatal drownings were swimming, paddling, or wading (57 per cent, 63). These figures again highlight the importance of swimming and water safety education as well as skills maintenance across all age groups. Almost one-third (32 per cent) of non-fatal incidents occurred in coastal locations, followed by 22 per cent in public pools.

Emergency department presentations

In the 10-year period from 2011 – 12 to 2020 – 21 there were 1,104 emergency department (ED) presentations for non-fatal drowning, an average of 110 ED presentations annually. The average annual rate of ED presentations was 1.76 per 100,000 population per year.

Children aged 0-4 years had by far the highest rate of ED presentations, with 12.55 per 100,000 population annually. This was followed by those aged 5-14 years (2.82 per 100,000 population) and those in the 15-24 year age group (1.50 per 100,000 population).

The majority of the 1,104 ED presentations were males (63 per cent, 699). Where information was known about the incident preceding the ED presentation, 30 per cent occurred in the home and 24 per cent involved swimming pools.

Hospital admissions

Over the previous decade (2011 – 12 to 2020 – 21) there were 1,053 hospital admissions for non-fatal drowning, an average of 105 per year. The annual crude hospital admissions rate was 1.69 per 100,000 population per year. The rate of admissions in 2020 – 21 was the highest since 2017 – 18, at 2.05 per 100,000 population.

In the past decade, a total of 728 males were admitted to hospital for non-fatal drowning. This equates to an average of 73 hospital admissions per year and 69 per cent of all non-fatal drowning hospitalisations.

Children aged 0-4 years had the highest rates of admission, with 6.39 per 100,000 population annually, followed by those aged 15-24 years (2.26 per 100,000 population) and those in the 5-14 year age group (1.90 per 100,000 population). People aged 65 years and above presented the lowest rate of admission at 0.93 per 100,000 population.

Of hospital admissions where the location of drowning was specified, 18 per cent occurred in the home. Sporting activities, such as swimming, preceded 37 per cent of non-fatal drowning hospitalisations – the most among all known activities.

Drowning incidents by age group

People aged 0-14 years old

In 2021 – 22, five children aged 0-14 years old fatally drowned in Victorian waterways, equal to the 10-year average for this age group, and a rate of 0.42 per 100,000 population.

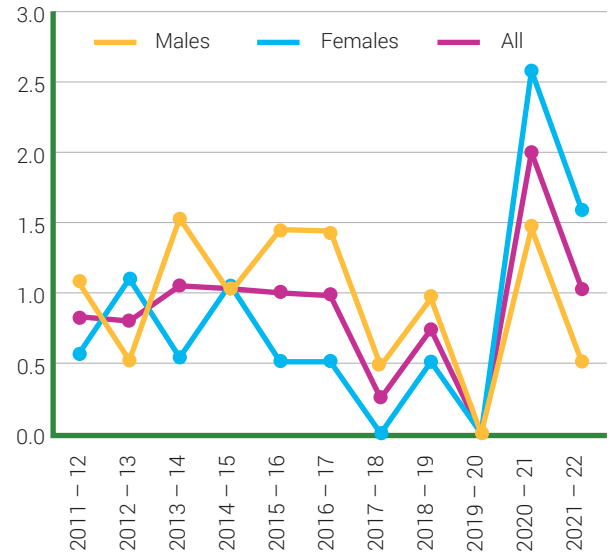
Females aged 0-4 years recorded the largest increase in the fatal drowning rate this year among all groups, with the rate of 1.59 more than double the 10-year average of 0.74.

A further 51 children aged 0-14 years experienced a non-fatal drowning requiring paramedic attendance, equating to 46 per cent of all non-fatal incidents in 2021 – 22. Children aged 0-4 years recorded a non-fatal drowning rate of 6.98 per 100,000 population, and children aged 5-14 years recorded a rate of 2.98; a six per cent reduction and a 59 per cent increase respectively on the 10-year averages.

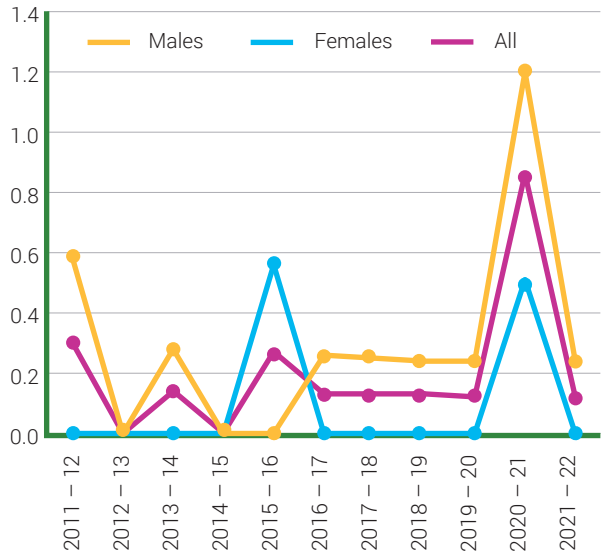
The table below indicates the most common trends seen in 2021 – 22 compared to previous years.

	Fatal drowning		Non-fatal drowning	
	10-year average	2021 – 22	3-year average	2021 – 22
Key activity	Walking or playing near water	Swimming, paddling, wading; walking near water	Swimming, paddling, or wading	Swimming, paddling, or wading
Key location	Private swimming pools	Inland waterways	Swimming pools – public and private	Swimming pools – public and private
Key season	Summer	Spring and summer	Summer	Summer
Key time of day	Afternoon (12pm – 6pm)	Evening (6pm – 12am)	–	–
Key day	Weekday	Weekday	Weekday	Weekday
Were they supervised?	With others, no supervision	With others, no supervision	Supervisor distracted	With others
Was the incident within their home postcode?	Within home postcode	Outside home postcode	–	–

Fatal drowning rate among 0-4 year olds, all and by sex



Fatal drowning rate among 5-14 year olds, all and by sex



Drowning incidents by age group [continued]

People aged 15-24 years old

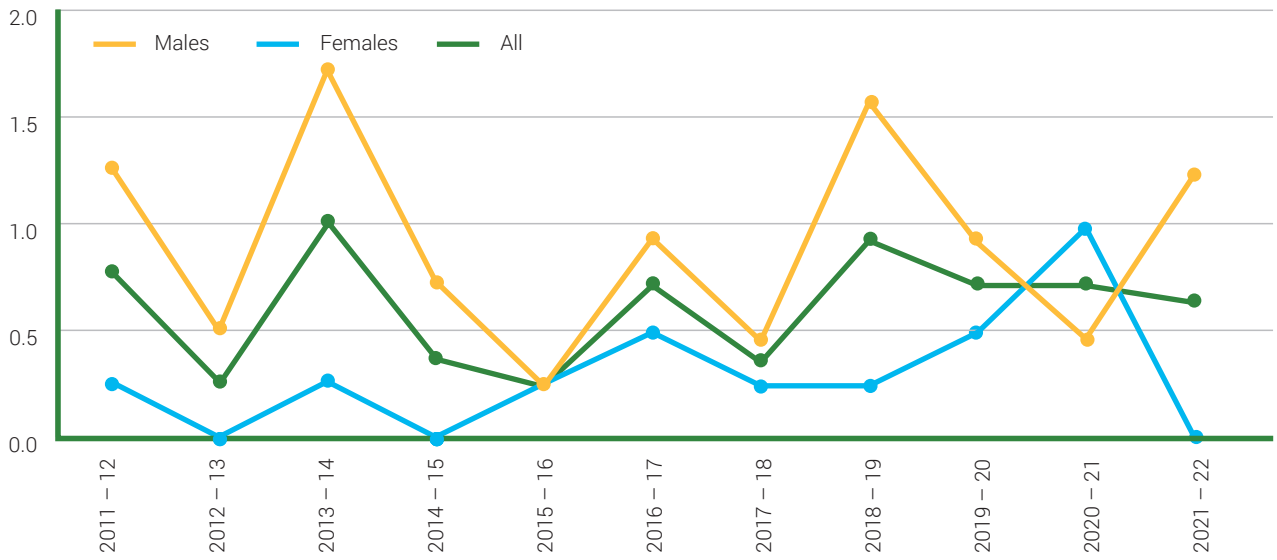
In 2021 – 22, five people aged 15-24 years old fatally drowned in Victorian waterways; all were male and equated to a male rate of 1.23 per 100,000 population – 40 per cent higher than the decade average of 0.88.

Twenty-six additional 15-24 year olds experienced a non-fatal drowning where paramedics attended, equating to 13 per cent of all non-fatal drownings this year. For this age group, the non-fatal drowning rate in 2021 – 22 was 1.78 per 100,000 population, a 12 per cent increase on the decade average.

The table below indicates the most common trends seen in 2021 – 22 compared to previous years.

	Fatal drowning		Non-fatal drowning	
	10-year average	2021 – 22	3-year average	2021 – 22
Key activity	Swimming, paddling, or wading	Swimming, paddling, or wading; walking near water	Swimming, paddling, or wading	Swimming, paddling, or wading
Key location	Beach; river, creek, or stream	River, creek, or stream	Bay, ocean, or sea	Bay, ocean, or sea
Key season	Summer	Spring	Summer	Summer
Key time of day	Afternoon (12pm – 6pm)	Afternoon (12pm – 6pm)	–	–
Key day	Weekday	Weekend	Weekday	Weekday
Were they alone or with others?	With others	With others	–	–
Was the incident within their home postcode?	Outside home postcode	Outside home postcode	–	–
Where known, were alcohol and/or drugs recorded?	Alcohol and illegal drugs	Alcohol and illegal drugs	–	–

Fatal drowning rate among 15-24 year olds, all and by sex



Drowning incidents by age group [continued]

People aged 25-44 years old

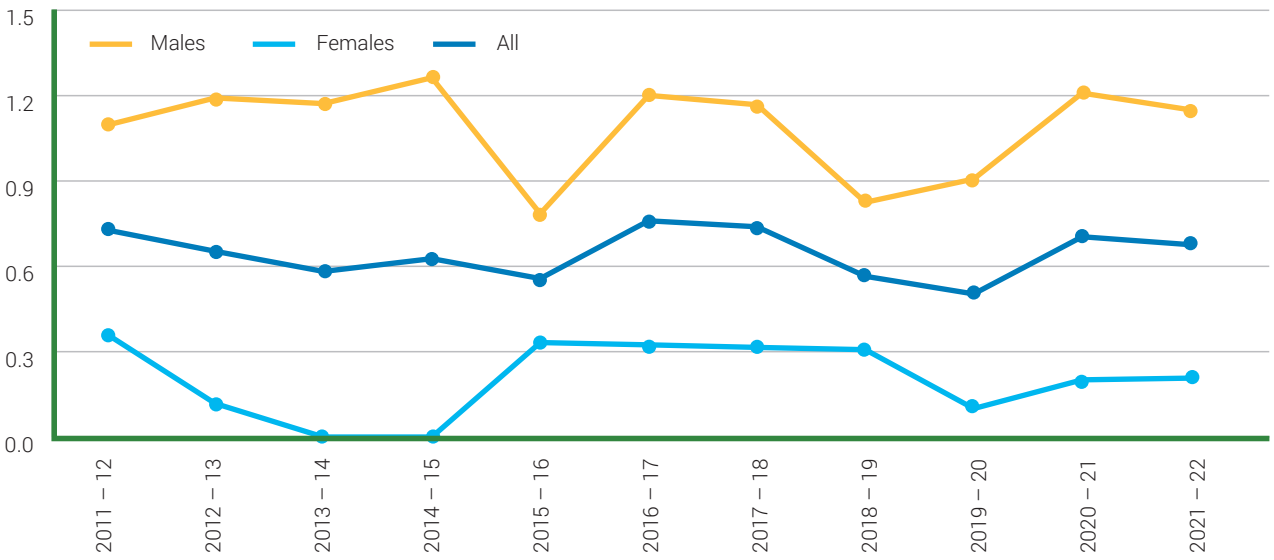
In 2021 – 22, 13 people (82 per cent male) aged 25-44 years fatally drowned in Victoria: one more than the annual average recorded over the past decade, and a five per cent increase in the rate to 0.68 per 100,000 population.

Paramedics attended to a further 25 people in this age group this year who experienced a non-fatal drowning incident. This equated to 23 per cent of all non-fatal drownings and a rate of 1.30 per 100,000 population, which is 75 per cent higher than the 10-year average.

The table below indicates the most common trends seen in 2021 – 22 compared to previous years.

	Fatal drowning		Non-fatal drowning	
	10-year average	2021 – 22	3-year average	2021 – 22
Key activity	Swimming, paddling, or wading	Swimming, paddling, or wading	Swimming, paddling, or wading	Swimming, paddling, or wading
Key location	Beach	Beach; river, creek, or stream	Bay, ocean, or sea	Bay, ocean, or sea
Key season	Summer	Summer	Summer	Summer
Key time of day	Afternoon (12pm – 6pm)	Morning (6am – 12pm)	–	–
Key day	Weekend	Weekday	Weekday	Weekend
Were they alone or with others?	With others	With others	With others	With others
Was the incident within their home postcode?	Outside home postcode	Outside home postcode	–	–
Where known, were alcohol and/or drugs recorded?	Alcohol and illegal drugs	Alcohol	–	–

Fatal drowning rate among 25-44 year olds, all and by sex



Drowning incidents by age group [continued]

People aged 45-64 years old

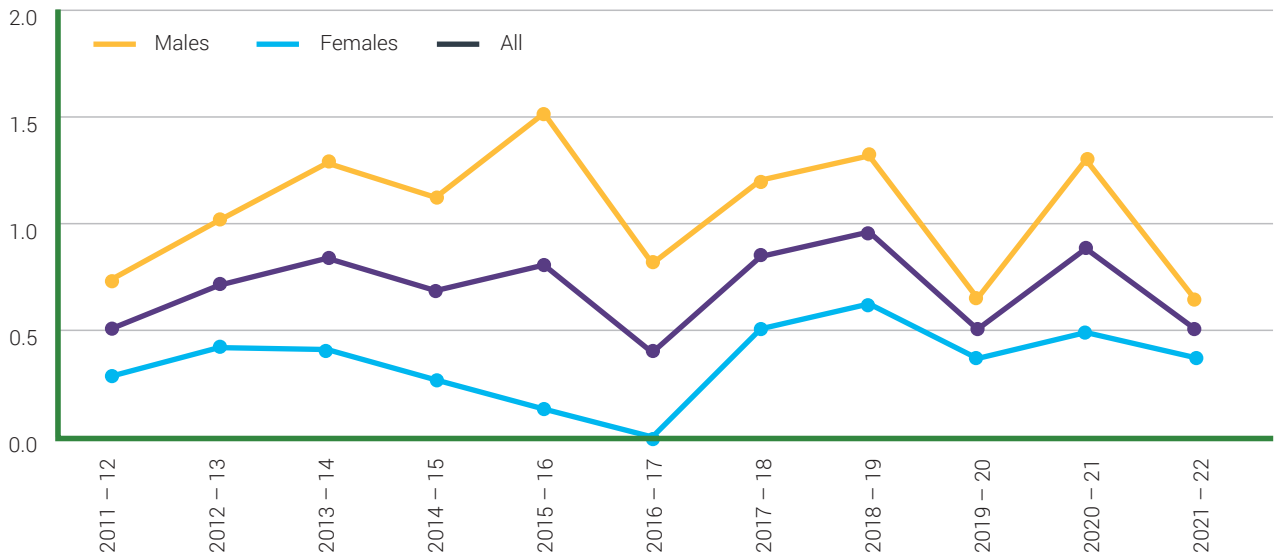
In 2021 – 22, eight people (63 per cent male) aged 45-64 years fatally drowned in Victoria, a 25 per cent reduction compared to the 10-year average of 11 per year, and a 29 per cent reduction in the rate to 0.51 per 100,000 population.

A further 16 people aged 45-64 years experienced a non-fatal drowning where paramedics attended: approximately 14 per cent of non-fatal drownings this year. This equated to a non-fatal drowning rate for this age group of 1.02, 89 per cent higher than the 10-year average.

The table below indicates the most common trends seen in 2021 – 22 compared to previous years.

	Fatal drowning		Non-fatal drowning	
	10-year average	2021 – 22	3-year average	2021 – 22
Key activity	Swimming, paddling, or wading	Bathing	Swimming paddling, or wading	Swimming paddling, or wading; attempting a rescue
Key location	River, creek, or stream	Bathtub	Bay, ocean, or sea	Bay, ocean, or sea
Key season	Summer	Autumn	Summer	Summer
Key time of day	Afternoon (12pm – 6pm)	Afternoon/evening (12pm – 12am)	–	–
Key day	Weekday	Weekday	Weekday	Weekday
Were they alone or with others?	Alone	Alone	–	–
Was the incident within their home postcode?	Outside home postcode	Within home postcode	–	–
Where known, were alcohol and/or drugs recorded?	Alcohol and illegal drugs	Unknown	–	–

Fatal drowning rate among 45-64 year olds year olds, all and by sex



Drowning incidents by age group [continued]

People aged 65+ years old

In 2021 – 22, 22 people (77 per cent male) aged 65+ years fatally drowned in Victoria. This is double the decade average, and a rate of 2.05 per 100,000 population.

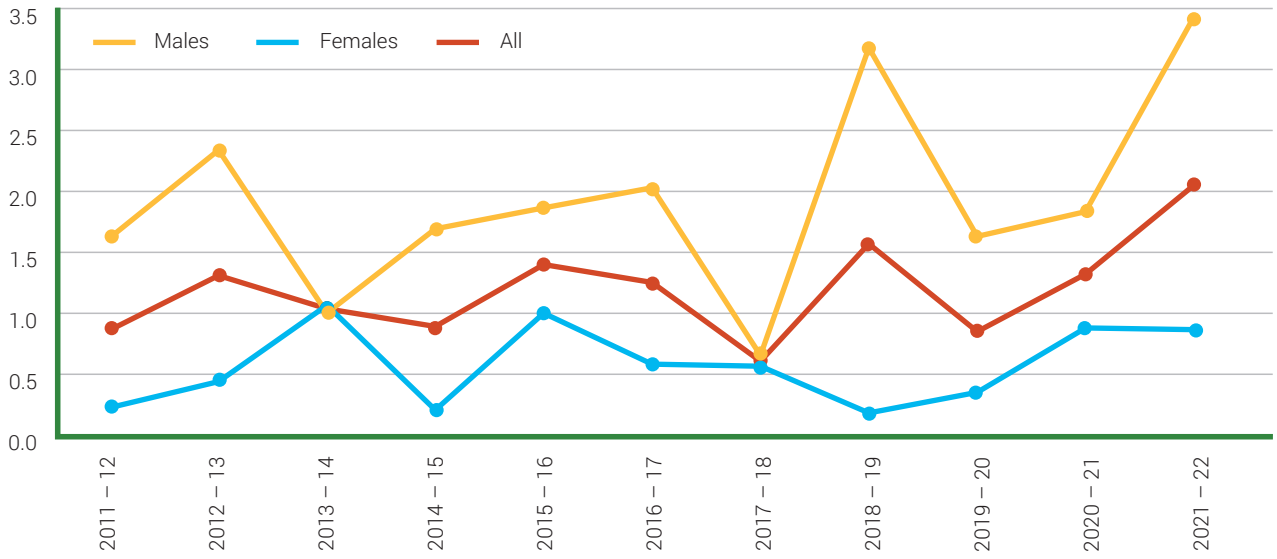
Males aged 65+ years were the most common group to be represented in this year's fatal drowning statistics, making up 32 per cent of all incidents and recording the highest rate of 3.43 per 100,000 population.

In contrast, in 2021 – 22 there was a six per cent reduction in the non-fatal drowning rate among people aged 65+ years old (0.47 per 100,000 population). Five people in this age group experienced a non-fatal drowning requiring paramedic attendance, equating to five per cent of all non-fatal drownings this year.

The table below indicates the most common trends seen in 2021 – 22 compared to previous years.

	Fatal drowning		Non-fatal drowning	
	10-year average	2021 – 22	3-year average	2021 – 22
Key activity	Walking near water	Walking near water; bathing	Swimming, paddling, or wading	Swimming, paddling, or wading
Key location	River, creek, or stream	River, creek, or stream	Bay, ocean, or sea; lake, dam, or pond	Bay, ocean, or sea; river, creek, or stream
Key season	Autumn	Autumn	Summer	Autumn
Key time of day	Afternoon (12pm – 6pm)	Afternoon/evening (12pm – 12am)	–	–
Key day	Weekday	Weekday	Weekday	Weekend
Were they alone or with others?	Alone	Alone	–	–
Was the incident within their home postcode?	Within home postcode	Within home postcode	–	–
Where known, were alcohol and/or drugs recorded?	Legal drugs	Unknown	–	–

Fatal drowning rate among 65+ year olds, all and by sex



Victoria's multicultural populations

Multiculturalism promotes a just, inclusive and socially cohesive society, where services are responsive to the needs of Australians from culturally and linguistically diverse backgrounds.

ETHNIC COMMUNITIES' COUNCIL OF VICTORIA, 2012

Victoria is one of the most culturally diverse societies in the world with 30 per cent of Victorians born overseas and representation from over 200 countries (Australian Bureau of Statistics [ABS], 2022b).

This year, four individuals (eight per cent) who fatally drowned were known to be from culturally and linguistically diverse (CALD) communities. However, at the time of publication, country of birth was unknown for the remaining 49 people who fatally drowned this year.

Due to this limitation, data from the previous 10-year period (2012 – 13 to 2021 – 22) was analysed, where approximately 50 per cent of country of birth data was known. Over this time, people born overseas accounted for 42 per cent of drowning deaths, and were almost two-and-a-half (2.42) times more likely to fatally drown when comparing rates per head of population and cultural background. The data revealed that 132 people from CALD communities fatally drowned over this most recent 10-year period.

76% were male

40% aged 25-44 years

24% aged 45-64 years

Mean age of 43 years

82% resided in major cities in Victoria

8% resided in regional Victoria

Mean length of time living in Australia 21 years

COMMON ACTIVITIES

32% swimming, paddling, or wading

21% fishing*

51% of all fishing*-related deaths were of CALD individuals

14% walking or recreating near water

34% alcohol and/or drugs recorded

COMMON WATERWAYS

34% beaches **17%** rivers, creeks, or streams

*Fishing includes fishing for abalone (typically snorkelling or diving), rock fishing, and fishing from a boat.

Key trends

The following sections show information about **drowning incidents over the 2021 – 22 financial year**, as well as the past five and 10 years, and is presented by the key trends observed.

Location

This graphic describes the distribution of fatal drowning incidents by location, in coastal waterways, inland waterways or around the home.

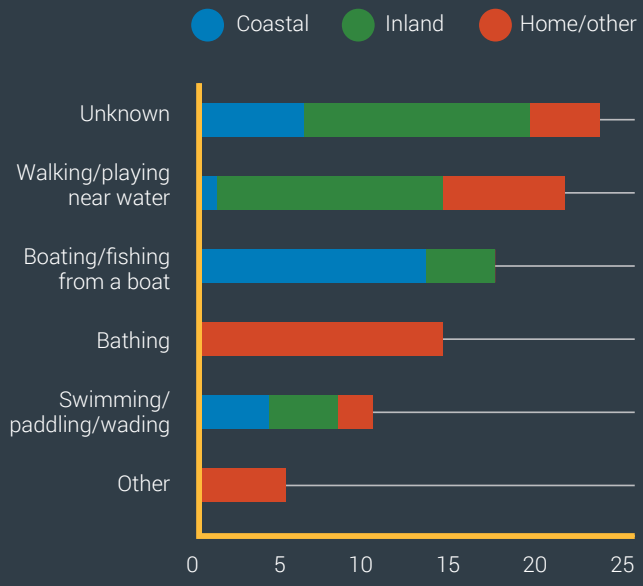
	Coastal waterways	Inland waterways	Home/other
OVERALL	**14** FATAL DROWNINGS coastal waterways, 17% reduction* **32%** NON-FATAL DROWNINGS in bay, beach, or ocean locations, 58% increase^	**24** FATAL DROWNINGS inland locations, 48% increase* **20%** NON-FATAL DROWNINGS in rivers, creeks, streams, lakes, or dams, 100% increase^	**15** FATAL DROWNINGS home/other locations, 52% increase* **22%** NON-FATAL DROWNINGS in public swimming pools, 20% increase^
SEASON	**57%** FATAL DROWNINGS occurred in summer	**29%** FATAL DROWNINGS occurred in winter and 29% in summer	**40%** FATAL DROWNINGS in home/other waterways occurred in autumn
ACTIVITY AND LOCATION	**122%** INCREASE* in rock fishing fatal incidents **43%** INCREASE* diving or snorkelling incidents **44%** NOT WEARING A LIFEJACKET in rock fishing fatal drownings over the past decade **17%** REDUCTION* in fatal incidents occurring in bay, beach, or ocean environments **90%** INCREASE* in the fatal drownings within the individuals' residential postcode	**50%** INCREASE* in boating and fishing-related fatal drownings **90%** INCREASE* fatal drownings in rivers, creeks, or streams **92%** INCREASE* in swimming, paddling or wading fatal incidents **80%** FATAL INCIDENTS involving alcohol and/or illegal drugs were in inland waterways **33%** REDUCTION* fatal drownings within the individuals' residential postcode	**7** FATAL DROWNINGS in bathtubs which is more than double the decade average of 3 **36%** REDUCTION* in home pool fatal drownings Examples of locations for home/other incidents include home dams and waterways on private property, bathtubs and private pools.

In 55 per cent of the 59 boating-related drowning deaths over the past decade lifejackets were not worn, and **23 per cent had an ill-fitting or incorrect lifejacket** for the activity or conditions

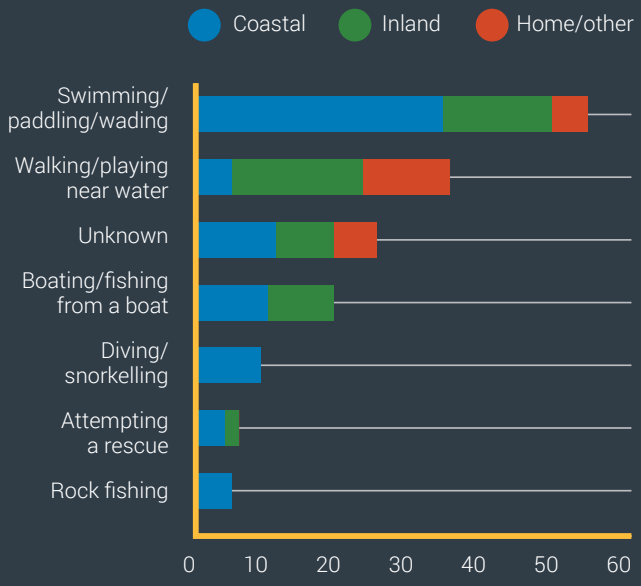
***** compared to the 10-year average 2011 – 12 to 2020 – 21

^ based on 5-year average 2016 – 17 to 2020 – 21

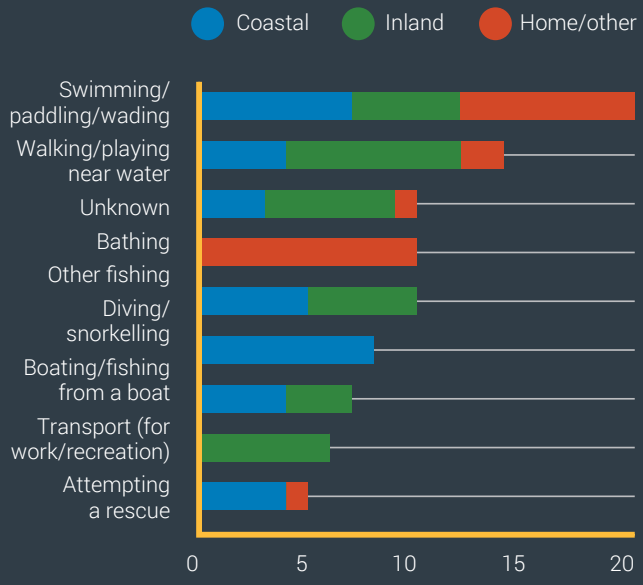
Spring fatal drownings 2012 – 13 to 2021 – 22, by activity and location



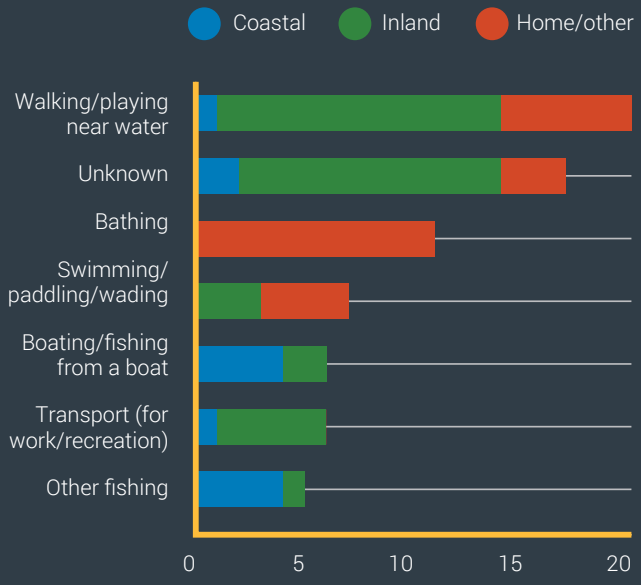
Summer fatal drownings 2012 – 13 to 2021 – 22, by activity and location



Autumn fatal drownings 2012 – 13 to 2021 – 22, by activity and location



Winter fatal drownings 2012 – 13 to 2021 – 22, by activity and location



Other key trends

10

drowning deaths in 2021 – 22 involving consumption of alcohol and/or illegal drugs

49%

Victorians made up almost half (49 per cent, 24) of the 49 Murray River drowning victims over the previous decade (2012 – 13 to 2021 – 22)

60%

of fatal drowning incidents occurred within major cites of Victoria

Alcohol and drugs

There were 10 drowning deaths in 2021 – 22 in which alcohol and/or illegal drugs were reportedly consumed by the individual prior to drowning, representing 19 per cent of the total number of drowning incidents this year.

At the time of this report's compilation, the presence of alcohol and/or illegal drugs were unknown in 68 per cent of cases.

Over the previous decade, alcohol and/or illegal drugs were consumed prior to 34 per cent of all drowning deaths of people aged 15 years and above.

Legal drugs (e.g., prescription medication) have been recorded in 18 per cent of drowning fatalities in the past decade, and 48 per cent of these cases have involved people aged 65 years and older.

The Murray River

The Murray River, Australia's longest river, is a primary location in Australia for drowning incidents (Peden & Queiroga, 2014).

State government legislation requires drowning incidents in the Murray River to be reported within New South Wales jurisdiction, however, incidents often involve Victorian residents. Victorians made up almost half (49 per cent, 24) of the 49 Murray River drowning victims over the previous decade (2012 – 13 to 2021 – 22).

Among these 49 drownings, 90 per cent were males, the majority were aged 18-44 years, almost half were affected by alcohol and/or drugs and 41 per cent of incidents were preceded by swimming and/or recreating in the water.

Region

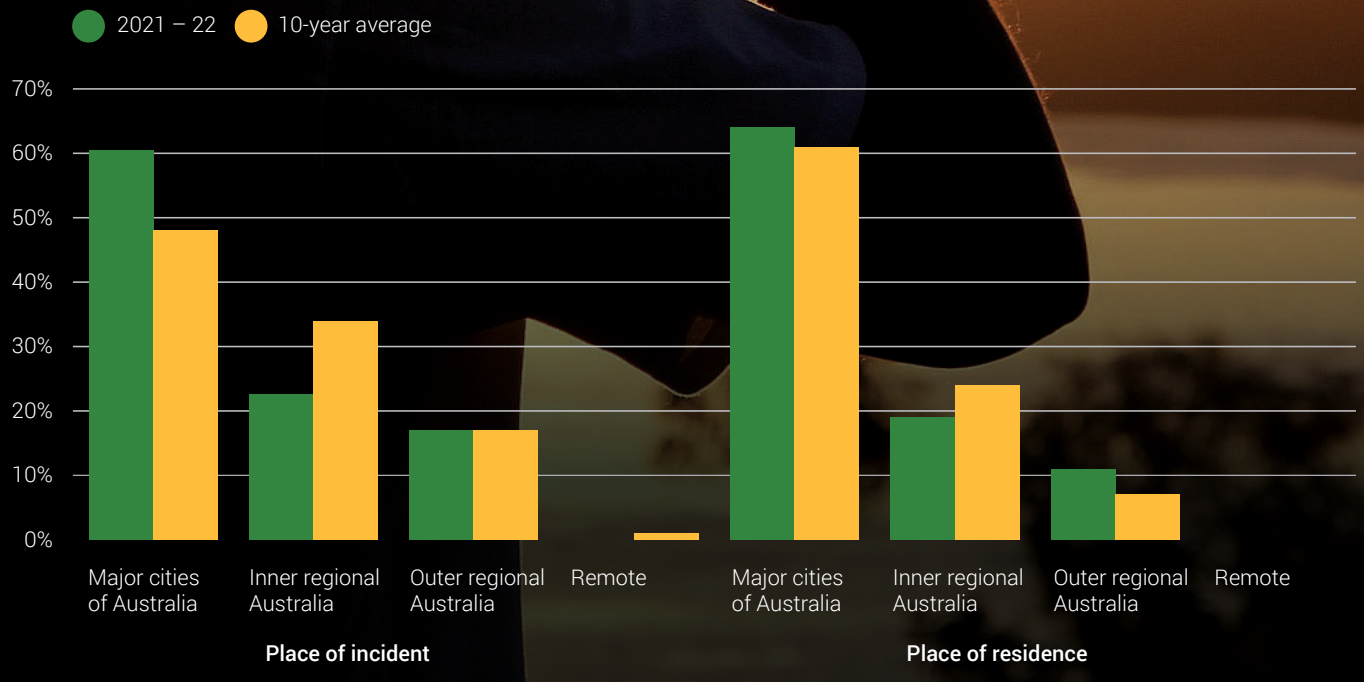
This year, the majority (60 per cent, 32) of fatal drowning incidents occurred within major cities of Victoria, which is 11 more than the 10-year average (2011 – 12 to 2020 – 21).

People who lived in metropolitan areas also accounted for 64 per cent of incidents this year, recording a fatal drowning rate of 0.68 per 100,000 population – 26 per cent higher than the past decade.

In comparison, regional residents recorded a fatal drowning rate this year of 1.02 per 100,000 population, and over the past decade have been almost twice as likely to fatally drown than metropolitan residents.

In 2021 – 22, 40 per cent of people fatally drowned at a waterway within their residential postcode, which is similar to the decade average of 41 per cent.

Percentage of fatal drowning by remoteness of area of incident and residence in Victoria, 2011 – 12 to 2021 – 22

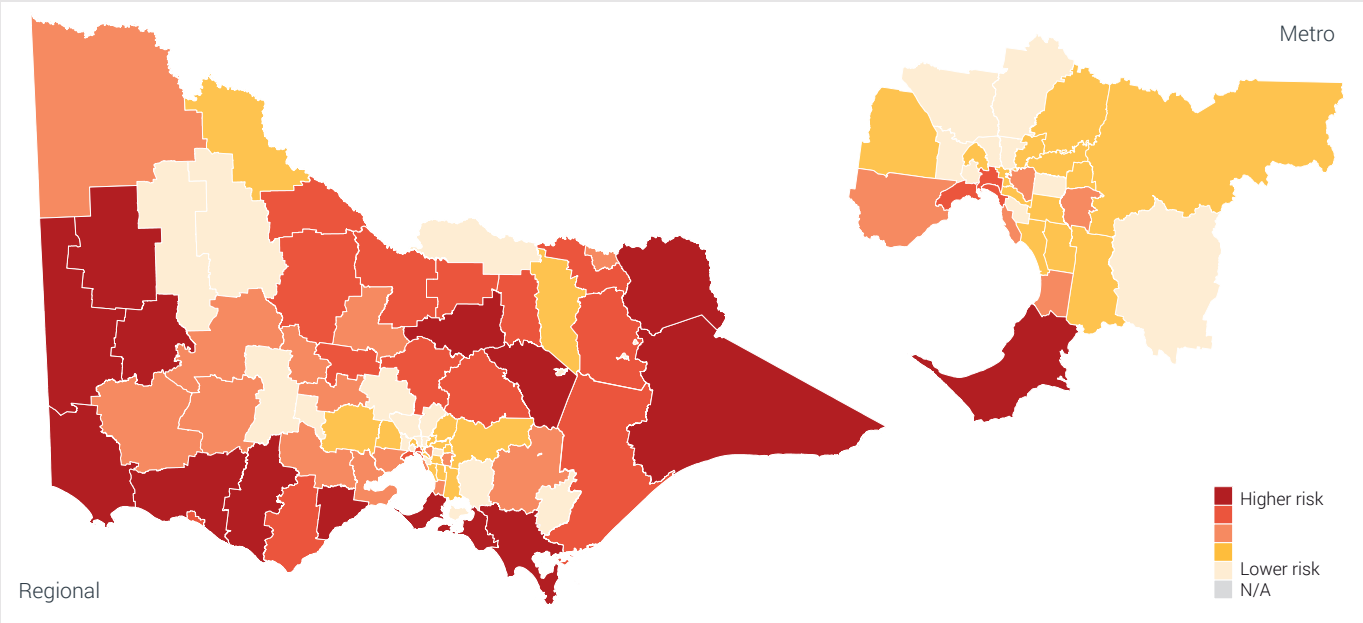


Relative drowning risk by location and residence 2011 – 12 to 2020 – 21

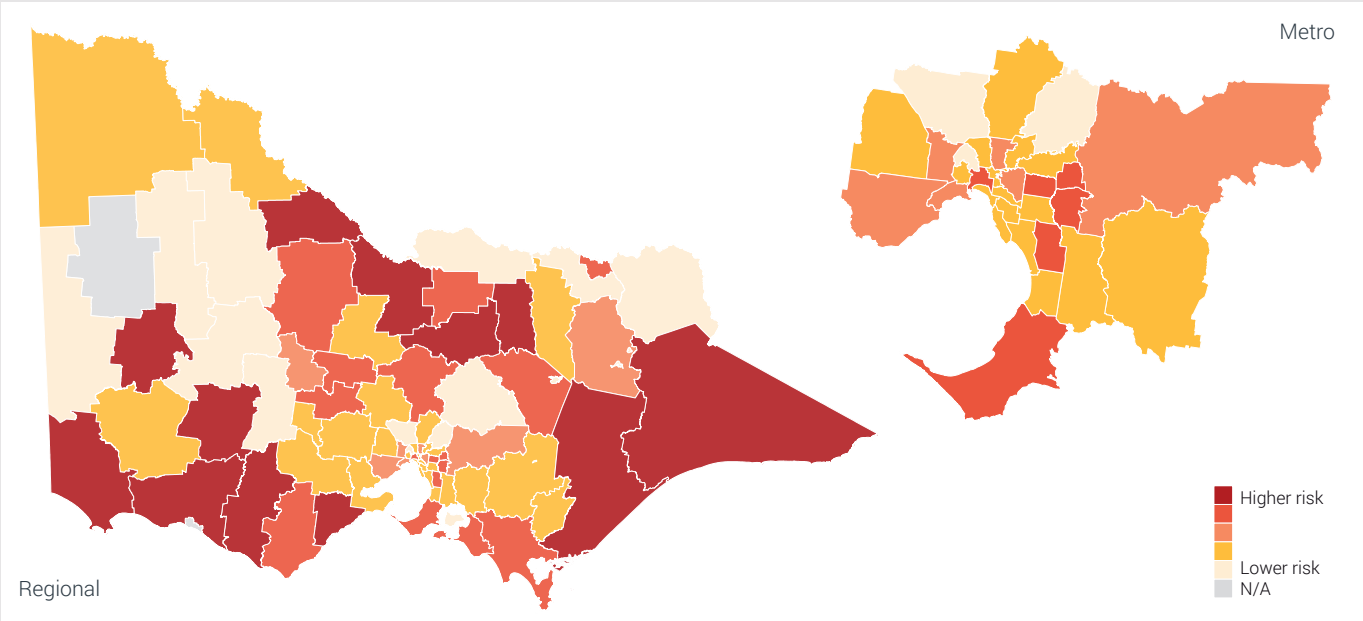
The following maps outline the relative risk of drowning for a person based on a) incident location, b) their place of residence, and c) both incident and place of residence combined.

All maps illustrate relative risk within Victorian local government areas (LGAs) using postcodes of drowning incident locations over a 10-year period (2011 – 12 to 2020 – 21). The first two maps provide relative risk ranging from low (light yellow) to high (dark red). Lower risk areas are light yellow, while increasing risk is signified by changes from dark orange for moderate risk areas to dark red for higher risk areas. Geographical changes to drowning risk by incident and place of residence are also shown.

Incident location relative risk, based on postcode



Place of residence relative risk, based on postcode



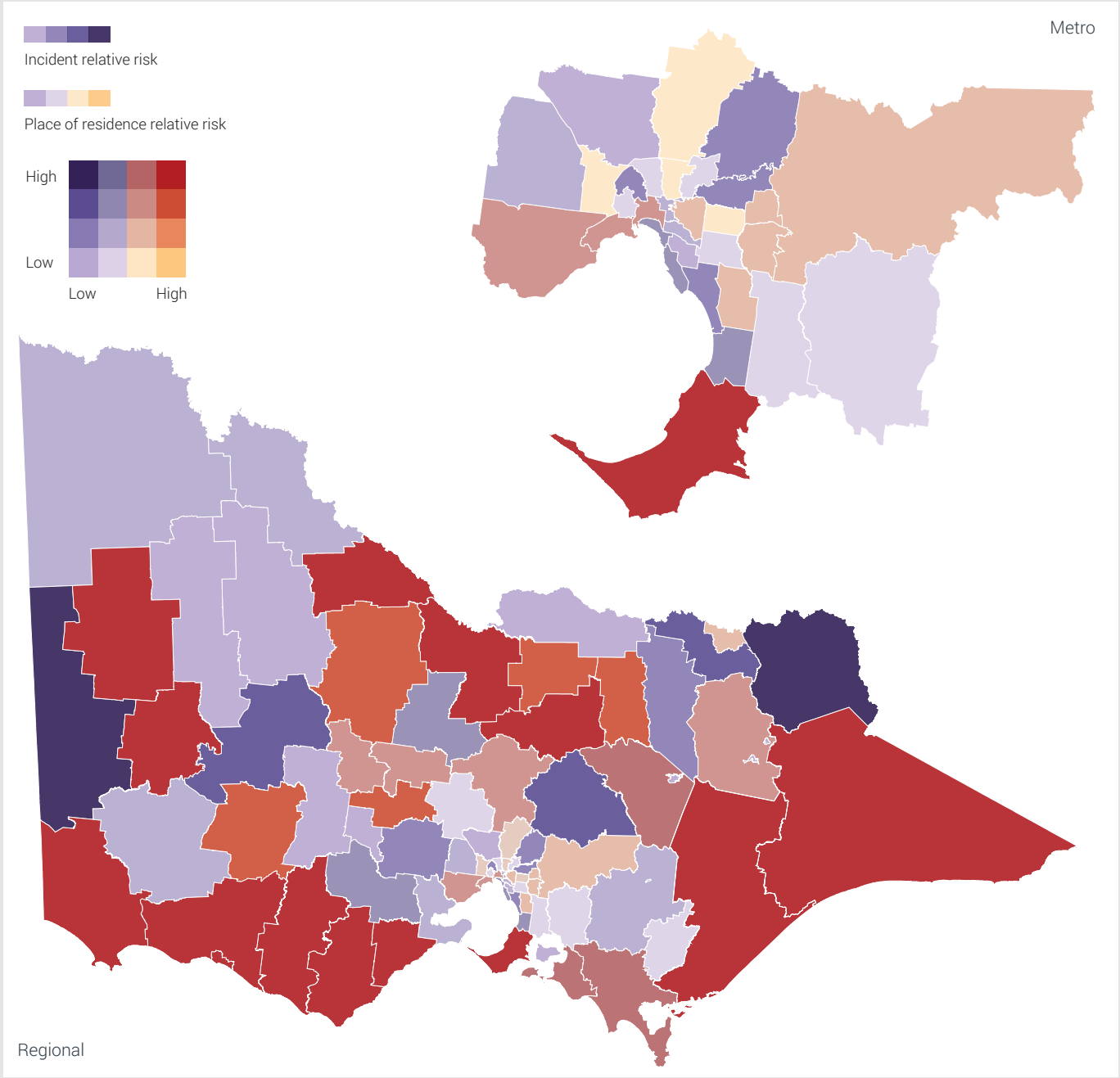
Combined relative drowning risk 2011 – 12 to 2020 – 21

Another approach to compare relative risk of drowning, is to combine location and place of residence into a combined risk.

Light red and darker red areas highlight that incident and resident relative risk ratios are both moderate to high within those specific LGAs.

Light purple signifies low risk based on incident and resident location. Dark purple highlights locations with high relative risk based on incident location but low resident location risk. Light yellow signifies high risk based on resident location but low for incident location.

Combined incident and place of residence relative to risk, based on postcode



Drowning summary
by Victorian local government areas 2012 – 13 to 2021 – 22

The following table summarises **key trends in the fatal drowning incidents over the past 10 years (2012 – 13 to 2021 – 22) within Victorian LGAs** where there have been more than five fatal drowning incidents. These key trends are not necessarily related and should be interpreted independently of one another. The LGAs are listed by the number of fatal drownings in descending order, from most to least incidents recorded.

LGA (ordered by frequency of fatal drowning)	Key age groups (years)	Key waterway	Known key activity
Mornington Peninsula (S)	25-44	Beach	Skin diving or snorkelling
Bass Coast (S)	25-64	Beach	Swimming, paddling, or wading
Greater Geelong (C)	45-64	Beach	Swimming, paddling, or wading
Melbourne (C)	25-64	River, creek, or stream	Walking or playing near water
Hobsons Bay (C)	25-44	Beach	Swimming, paddling, or wading
East Gippsland (S)	65+	River, creek, or stream	Swimming, paddling, or wading
Wyndham (C)	65+	River, creek, or stream	Walking or playing near water
Port Phillip (C)	25-64	Beach; harbour, bay, or inlet	Fishing from a boat
Surf Coast (S)	45-64	Rocky outcrop	Rock fishing; swimming, paddling, or wading

LGA (ordered by frequency of fatal drowning)	Key age groups (years)	Key waterway	Known key activity
Corangamite (S)	25-44	Ocean	Attempting a rescue; swimming, paddling, or wading
Frankston (C)	15-24	Beach	Swimming, paddling, or wading
Campaspe (S)	25-64	Lake; river, creek, or stream	Walking or playing near water; fishing from a boat; motorised watercraft
Warrnambool (C)	45-64	Ocean	Motorised watercraft
Bayside (C)	65+	Beach	Swimming
Casey (C)	65+	River, creek, or stream; bathtub or spa bath	Walking or playing near water
Greater Shepparton (C)	65+	River, creek, or stream	Walking or playing near water
Knox (C)	45-64	Lake	Swimming, paddling, or wading; walking or playing near water
South Gippsland (S)	25-64	Beach	Swimming, paddling, or wading
Boroondara (C)	65+	River, creek, or stream	Walking or playing near water
Glenelg (S)	45-64	Rocky outcrop; harbour, bay, or inlet; dam	Rock fishing
Kingston (C) (Vic.)	65+	Beach	Still water fishing; attempting a rescue; swimming, paddling, or wading; craft riding
Mansfield (S)	25-44	Lake	Motorised watercraft
Moyne (S)	65+	Ocean	Motorised watercraft
Yarra Ranges (S)	25-64	Private swimming pool	Walking or playing near water
Brimbank (C)	0-4	River, creek, or stream	Walking or playing near water
Greater Bendigo (C)	65+	Dam	Walking or playing near water
Manningham (C)	65+	River, creek, or stream	Swimming, paddling, or wading
Strathbogie (S)	25-44 & 65+	Lake	Still water fishing; walking or playing near water
Wellington (S)	25-44	Beach; ocean	Sailing
Yarra (C)	25+	River, creek, or stream	Bathing
Banyule (C)	n/a	Bathtub or spa bath	Swimming, paddling, or wading; bathing
Colac-Otway (S)	25-44	Beach	Swimming, paddling, or wading
Greater Dandenong (C)	0-4 & 45-64	Other	Swimming, paddling, or wading
Horsham (RC)	25-44	River, creek, or stream	Swimming, paddling, or wading
Hume (C)	0-4 & 45-64	Private swimming pool	Walking or playing near water
Maroondah (C)	0-4 & 15+	Bathtub or spa bath	Bathing
Monash (C)	65+	Bathtub or spa bath	Bathing

Coronial recommendations

Life Saving Victoria recognises that every life lost to drowning is a tragedy and causes devastation to all who are impacted. We pay our heartfelt respects to those who have lost their lives and send our condolences to their loved ones.

The role of the coroner in Victoria is to investigate reportable deaths, which include drowning, 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 seven coronial findings released in 2021 – 22 where a recommendation was made related to a drowning death. These are not an exact replication of the findings; these can be accessed from the Coroners Court of Victoria website.

Inland waterways

ANG
5 years old

On 9 December 2018, ANG and his family (including his parents and two younger brothers), were holidaying at Bonnie Doon, spending some of their time recreating on Lake Eildon. While his father wake boarded, his mother drove the boat with ANG kneeling in the bow of the vessel. All three children and their father wore personal flotation devices (PFDs). ANG lost balance, fell overboard, and due to the engine not being turned off immediately, his PFD became caught in the boat propellor. By the time ANG was found he had been submerged for approximately five minutes. Tragically, he was unable to be revived.

Recommendations:

1 Maritime Safety Victoria consider advising boat users of the possible consequences of not being in a fully seated position on a vessel, particularly in a bow rider, in any pamphlets or similar that are provided to registered boat users.

2 Maritime Safety Victoria consider reinforcing boat users to practise man overboard procedures and, in particular, the requirements to stop engines, where appropriate to prevent injury, in any pamphlets or similar that are provided to registered boat users.

Hunter Patrick Boyle
2 years old

On 12 August 2020, Hunter Patrick Boyle was being cared for by his grandfather while his parents were working. After feeding horses on the acreage lot, his grandfather lost sight of Hunter for no longer than a minute, and Hunter was discovered face-down in the property's dam. Hunter's grandfather began cardiopulmonary resuscitation (CPR), and emergency services arrived at the property, transporting Hunter to hospital. While hours of care went into trying to save his life, Hunter passed away later that evening in his parents' arms.

Recommendations:

Water safety campaigns run by relevant organisations such as Farmsafe, KidSafe, LSV [Life Saving Victoria] and local government in Victoria, continue to promote public awareness of:

1 How quickly children can get into danger around water, with a particular focus on waterbodies around the home and the differences between rural and urban water hazards,

2 the importance of fencing and/or safety barriers where appropriate to restrict access to water hazards and serve as a visual and physical barrier for children,

3 the wearing of high visibility clothing for children on rural properties to aid the visibility of children when on the property and to potentially decrease the search time for victims,

4 the removal of any items floating in dams that may attract children into the water, and

5 having an emergency action plan in place where inland water bodies are present.

Coastal waterways

Ross William Powell 71 years old and Andrew Francis Powell 32 years old

On 21 April 2019, Ross William Powell and Andrew Francis Powell lost their lives while performing a lifesaving operation in rough waters. Ross Powell was a founding member of Port Campbell Surf Life Saving Club (PCSLSC) and his son, Andrew, was also a member. The fatal incident occurred after a tourist went swimming in the ocean and was unable to exit deep water with high waves. Multiple emergency services responded to the incident, including Ross and Andrew Powell, and a third PCSLSC member, Phillip Younis. They launched the offshore rescue boat to assist. A large wave capsized the rescue boat sending the three men into the water. Tragically, both Ross and Andrew Powell lost their lives, and Mr Younis suffered serious injuries.

Recommendations:

1 The coroner commends Life Saving Victoria for conducting an independent and thorough review of the events of 21 April 2019. The coroner strongly supports all of the recommendations made and recommends Life Saving Victoria take immediate action to complete the implementation of all of the recommendations made in the Critical Incident Review Report, dated July 2019. To that end, Life Saving Victoria's response to this recommendation pursuant to section 72(3) of the Coroners Act 2008 should provide an update regarding the implementation of the 32 individual recommendations made in the Critical Incident Review Report.

2 Parks Victoria work with Life Saving Victoria to develop adequate signage warning of risks of swimming along the Port Campbell coastline. Particular consideration should be paid to size, location, audience, and the provision of information in languages other than English. Signs should also provide unique emergency location markers or codes to quote to emergency services in the event emergency services are required.

3 Parks Victoria consider providing rescue/flotation aids along non-patrolled areas of the Port Campbell coastline so that they can be deployed while patients await the assistance of a Marine Search and Rescue service.

Thi Minh Tam Nguyen 62 years old

Thi Minh Tam Nguyen was born in Vietnam and became an Australian citizen in 1993. She was an able swimmer with diving experience and owned a Victorian Marine License. On 20 February 2021, Ms Nguyen and her partner Mr Dao planned to dive for abalone. Conditions that were initially calm soon developed into choppy waves, but they continued with their trip. After anchoring, Ms Nguyen removed her lifejacket to assist Mr Dao in donning his wetsuit; they then lost balance and tipped the boat, causing water to enter the vessel. The bilge pump worked somewhat but was unable to keep up with increasing waves causing the engine to sink.

The pair ended up in the water, where Ms Nguyen became overwhelmed and started cramping in the legs. They were eventually rescued by nearby boaters, however Ms Nguyen sadly passed away.

The coroner directed their recommendations towards the Secretary, Department of Transport:

1 A vehicle inspection process at the time of registration and acquisition, or transfer, of vessel ownership be developed and implemented to proactively identify deficiencies and carry out remedial work where required, akin to relevant sections in the *Road Safety (Vehicles) Interim Regulations 2020 (Vic)*,

2 All boats fitted with electrical bilge pumps in enclosed bilge areas have automated switches or floats, or alarms if a manual bilge pump exists; and

3 As part of the seaworthy inspections, builders' plates are retrospectively attached which determine the number of people, the conditions for which the vessel is suited, and the maximum engine capacity of the vessel.

Hotel/motel pools

Choon Jie Chai
18 years old

On 25 May 2019, Choon Jie Chai, a Malaysian resident, arrived in Australia for a work trip. On the evening of his arrival, Mr Chai and his colleague Mr Tee swam in the hotel pool. The pool was otherwise deserted, and neither were strong swimmers. Mr Chai was unable to surface properly in the deep end (1.9m) after attempting to rescue Mr Tee, who then made several unsuccessful efforts to rescue him. Due to a lack of accessible emergency communication in the pool environment, it was difficult to quickly alert others, and by the time Mr Chai was recovered from the pool and CPR administered, he had suffered hypoxic brain injury and passed away six days later.

Recommendations:

1 In the interests of public health and safety and with the aim of preventing similar deaths, Emergency Management Victoria review and extend the Safer Public Pools Code of Practice to include pools in Residential Class 3 buildings, including specifically hotels, motels, camping grounds and caravan parks.

2 As an alternative to recommendation 1, Emergency Management Victoria lead the development of a new Safer Hotel, Motel, Camping Ground and Caravan Park Pools Code of Practice to be modelled on the existing Safer Public Pools Code of Practice.

3 When producing the revised (recommendation 1) or new (recommendation 2) Code of Practice, Emergency Management Victoria consider the circumstances in which Choon Jie Chai drowned, and the issues relating to signage and pool supervision and emergency communication. All operators of swimming pools situated within hotels, motels, caravan parks and camping grounds should be encouraged to explore the options and means for best communicating with patrons who have English language challenges and ensuring that these patrons inform a staff member if they are not a confident swimmer before entering the water.

4 In the interests of public health and safety and with the aim of preventing similar deaths Emergency Management Victoria convene an advisory group that includes representatives drawn from the hotel, motel, camping ground and caravan park industries, along with Life Saving Victoria, to assist with developing, launching and disseminating the Code of Practice and supporting these industries to implement its advice.

KW
4 years old

On 13 December 2020, KW's family held a gathering in the entertainment area of their accommodation site, which incorporated two fenced pools, including one with a slide. Eight adults were in attendance. During the gathering, the pool gate was left open to allow easy access throughout the area. KW was fitted with a vest to provide a buoyancy aid in the pool however at some stage the vest was removed. There was no active adult supervision in the deeper pool, and KW was later found sunken below the surface. Sadly, attempts to resuscitate and revive KW were unsuccessful.

The coronial report did not include any official recommendations; however, the comments provided have been included, with omission of details that do not relate directly to the purpose of this report (e.g., comment 'c').

a The use of life vests or other buoyancy aids are not a substitute for close, focussed and active supervision. The Royal Children's Hospital considers supervision to be "constant visual contact, not the occasional glance" and advise that children under five must be within arm's reach.

b Kidsafe Australia recommends that: "when there are lots of adults around (e.g., at a BBQ or pool party) it can be easy to assume that someone is watching the kids, when in fact, nobody is. That's why it's a good idea to have designated adult supervisors whose role it is to actively supervise the kids in and around water – this role can be shared throughout the day so that everyone gets a chance to relax and enjoy themselves".

d Kidsafe Australia also recommend that pool gates never be propped open… the existence of the extra barrier would have provided a further opportunity to trigger further adult awareness of exactly which children were using the large pool.

e The importance of ensuring the safety of children around water cannot be overstated and it should be discussed and planned by caregivers beforehand… As a result [of lockdowns imposed to manage the COVID-19 pandemic] … few of those children would have had the opportunity over the last couple of years to develop and improve their swimming skills with organised lessons.

Our preventative efforts

Victoria has **811 kilometres of ocean beaches, 259 kilometres of bay beaches, 85,000 kilometres of rivers, 13,000 natural wetlands** and **588 public and commercial swimming pools**.

Every day, locals and visitors engage in a wide variety of recreational aquatic activities including swimming, boating, bathing, diving, sporting and other leisure activities (Matthews et al., 2017; Short, 1996; Department of Sustainability and Environment, 2011). The prevention efforts of LSV span these settings.

733
Rescues by lifesavers and lifeguards on patrolled beaches in 2021 – 22.

20.3
Rescues per 100,000 beachgoers on average per year from 2012 – 13 to 2021 – 22.

11,360
First aids performed by lifesavers, lifeguards and support services on patrolled beaches in 2021 – 22.

43,000+
Volunteer members, patrolling our coastlines and inland waterway locations while providing education and training in lifesaving activities, to ensure the safety of waterway users in Victoria.

Volunteer proficiencies

5,655
Bronze Medallion qualifications

1,261
Accredited in CPR

57
Advanced Resuscitation Training

1,213
First aid

2,422
Inflatable Rescue Boat (IRB) crew

1,235
Inflatable Rescue Boat (IRB) drivers

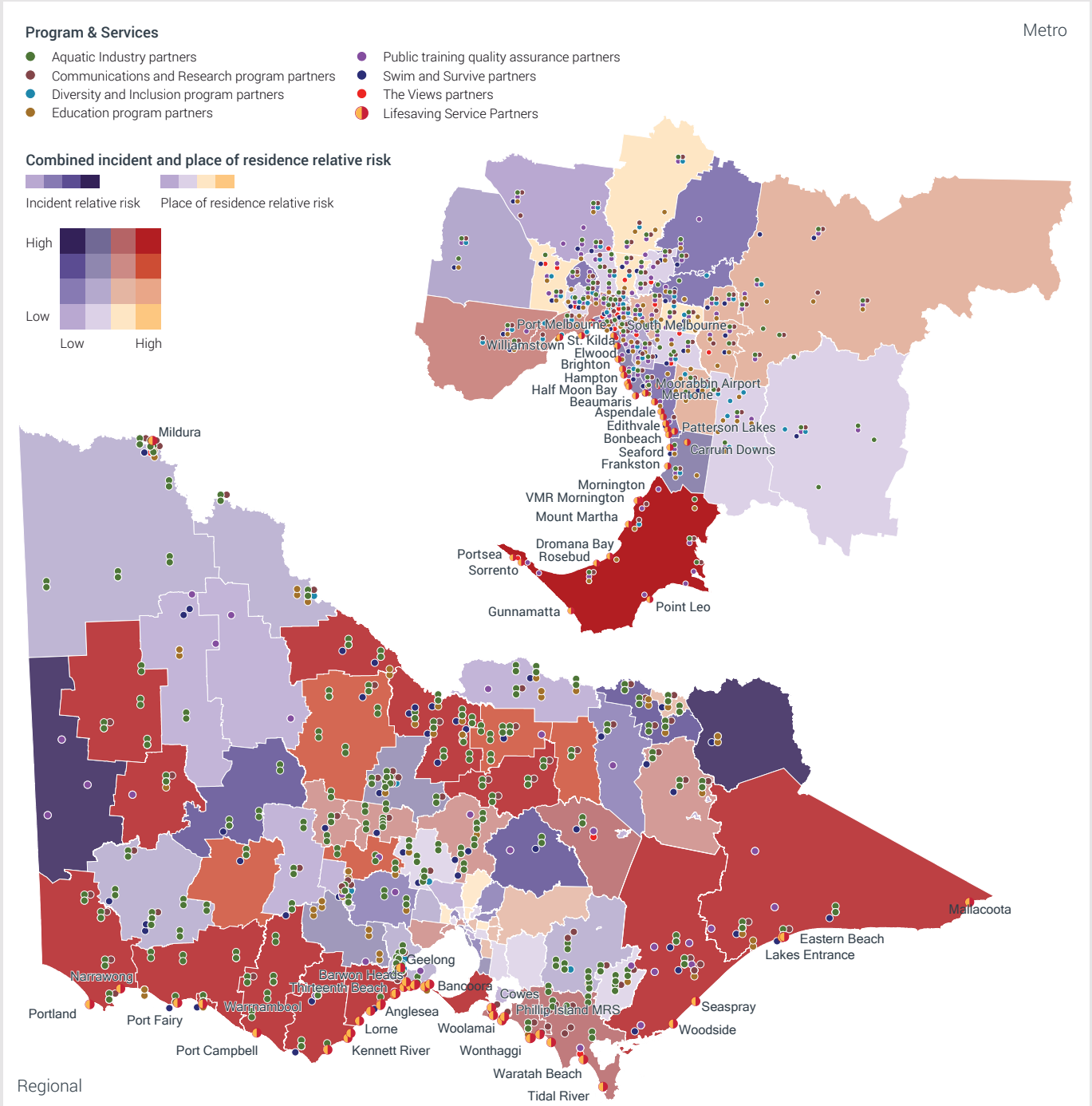
$6.5 billion

Estimated **value of coastal safety and lifesaving services** per year in Australia (Deloitte Access Economics, 2020).

The following maps highlight the geographical distribution of LSV programs and services in response to the risk of drowning based on incident and resident locations. Understanding how risk exposure varies geographically, based on place of incident, place of residence or a combination of both, better informs current and future program and service resource allocation.

This information allows for more targeted drowning prevention approaches, including risk assessment prioritisation, lifesaving service provision and public awareness raising for local residents and/or international visitors. Relative risk of drowning by place of residence is utilised to direct the provision of, for example, education program delivery and drowning prevention campaigns.

LSV programs and services and relative risk of drowning by incident location and place of residence



Safety tips

Who are you?	
Parent or caregiver of children	• 20 seconds is all it takes for a child to drown • Keep children under five years within arms' reach and children under 10 years should always be in sight • Make a supervision plan so there is always an adult actively supervising children around water during gatherings or parties • Restrict children's access to water by installing fencing around pools and spas and having a child safe play area • Ensure your child learns to swim • Learn CPR and First Aid
Person who is culturally or linguistically diverse	• Always swim and fish with a friend or family member • Swim at patrolled beaches between the red and yellow flags, where lifesavers and lifeguards can help in an emergency • If you visit an unfamiliar waterway, or you're not a confident swimmer, speak to a lifesaver or lifeguard before you enter the water • Read safety signs to understand dangers • Learn how to see and avoid rips and know how to get out of one • Always wear a lifejacket when boating or fishing, including rock fishing
Young person under the age of 15 years	• Visit locations patrolled by lifesavers or lifeguards • Always swim with a friend or family member • Understand that weather and water conditions can change suddenly • Understand how your swimming ability might change in different open water environments • Ask your parents/caregivers to enrol you in swimming lessons
Person aged 65+ years	• Be aware of your current swimming ability – fitness declines with age • Be careful around the water's edge and avoid slippery surfaces or uneven ground, particularly when walking or cycling • Be aware of conditions, read safety signs and refresh your swimming and water safety skills • Understand how the side effects of your medication and health conditions might impact your capabilities in, on and around water • Prevent falls in your bathroom, for example by installing handrails and alert systems
Male aged 15-45 years	• Postpone alcohol until after your aquatic activity • Enter the water safely, slowly and feet first • Always swim and recreate with a friend • Look after your friends by encouraging safe decisions in, on and around water, including not entering water if they have been drinking • Resist peer-pressure
A person who goes boating or fishing	• Always wear a lifejacket and make sure it is appropriate for the waterway and activity • Always fish with a friend • Carry communication and safety equipment, such as a distress beacon • Properly maintain your vessel, engine and safety equipment • Check the weather before you go, but understand the conditions can change suddenly • Do not jump in the water if someone else falls in. Instead, throw them something that floats, call 000, report your exact location and ask for police • Always tell someone where you are going and when you will return, regardless of your experience

Where do you recreate?

Around the home

- Fence off areas between the house and any bodies of water and have a fenced safe play area for children
- If there are bodies of water on your property, have an emergency action plan in place, including calling 000 and knowing CPR
- Never leave your child alone in the bath, or in the care of an older child; if you must leave the bathroom, take your child with you
- Always empty the bath, buckets, portable pools, sinks and eskies immediately after use
- Remove floating objects that may attract children to dams
- Remove climbable objects from the pool area and never leave pool gates open

Open waterways

All open waterways

- Always swim and recreate with a friend
- Check local weather conditions on the bureau of meteorology app before heading out
- Always tell someone where you are going and when you will return
- Always wear a lifejacket and make sure it is appropriate for the waterway and activity
- Read safety signs to understand dangers
- Postpone alcohol until after your activity

Inland

- Take care around the water's edge, including crumbling riverbeds and slippery surfaces
- Dress children in brightly coloured clothing so they are easier to see
- Enter the water safely, slowly and feet first
- Never drive through floodwaters

Coastal

- Swim at patrolled beaches between the red and yellow flags whenever possible, where lifesavers and lifeguards can help if you get into trouble
- Use the BeachSafe app to choose a safe beach and the VicEmergency app to check for beach closures
- You can escape a rip by knowing your options: stay calm, raise an arm to seek help, float with the current until it releases you, swim parallel to the shore or towards breaking waves and use them to help you to shore

What can you do?

The information in **LSV's 2021 – 22 Drowning Report** should be leveraged to achieve the following goals:

1. **Raise awareness** about the importance of water safety and drowning risk
2. **Effect changes across sectors** to enable safer aquatic behaviours
3. **Reduce the number of drownings** and aquatic-related injuries

Call to action

Aquatic facilities	• Display key information from this report in your facility and discuss it with your staff • Develop swimming and water safety programs for people and communities who have been identified in this report as high-risk of drowning • Encourage facility patrons to adopt safe aquatic behaviours when visiting nearby open waterways • Use the key messages from this report to help develop your programs, such as activities for water safety week
Government entities (including councils and land managers)	• Promote shared responsibility in communities; empower communities to better assess and respond to water safety risks • Work with local partners to manage local risk • Improve coordination and collaboration between agencies and with community members • Refer to Victorian Water Safety Strategy 2021 – 25 for specific actions (Department of Justice and Community Safety, 2021)
Water safety industry agencies	• Distribute this report within your organisation and to wider audiences • Utilise this report to inform future programs and activities • Empower communities to better assess and respond to water safety risks • Promote opportunities for subsidies, funding and grants to at-risk communities
Media outlets and journalists	• Prioritise reporting drownings of underrepresented groups through traditional and social media, such as older people. • Where feasible, promote key drowning prevention messages in accessible and inclusive ways
Lifesaving clubs	• Print out key pages of this report to display around your club • Circulate the report to your members • Utilise this report to inform future programs and activities
School principals and teachers	• Sign up for water safety education programs, including incursions and excursions • Ensure the swim school where your students attend school swimming lessons integrates the competencies of the Victorian Water Safety Certificate • Integrate lessons about water safety into the classroom, by teaching about aquatic risks and encouraging safe behaviours • Encourage parents to deliver constant and effective supervision
Parents and caregivers of children	• Discuss the importance of water safety with other parents/caregivers, educate them on the need for active adult supervision, and call out poor supervision when you see it • Actively discuss water safety, drowning risk factors and safe aquatic behaviours with your child • Share this report with your child's school, and advocate for water safety lessons to be delivered in the classroom
Healthcare practitioners	• Educate patients on the importance of water safety, particularly to parents/caregivers of children with disabilities or with medical conditions • Alert older patients to the side effects of prescription medication and medical conditions and the risks these pose to their safety in aquatic environments and during aquatic-based activities

Victorian water safety industry

Non-government agencies

- Aquatics & Recreation Vic
- AUSTSWIM Vic
- Belgravia Leisure
- Dragon Boat Victoria
- Kidsafe Victoria
- Kiteboarding Australia
- Life Saving Victoria
- Paddle Victoria
- Surfing Victoria
- Swimming Victoria
- Triathlon Australia
- World Wide Swim School
- YMCA Victoria

Government entities

- Ambulance Victoria
- Community Safety Building Authority
- Country Fire Authority
- Department of Education and Training
- Department of Environment, Land, Water and Planning
- Department of Justice and Community Safety
- Department of Justice and Regulation
- Department of Sport and Recreation
- Emergency Management Pride Network Victoria
- Emergency Management Victoria
- Emergency Services Telecommunications Authority
- Federal Government
- Fire Rescue Victoria
- Maritime Safety Victoria
- Office for Women in Sport and Recreation Victoria
- Parks Victoria
- Safe Transport Victoria
- State Emergency Service
- Tourism Victoria
- Vic Health
- Victorian Building Authority
- Victorian Fisheries Authority
- Victorian Institute of Forensic Medicine
- Victorian Marine and Coastal Council
- Victorian Multicultural Commission
- Victoria Police

Local Government Areas and Land Managers

Contributors to the Victorian Paid Lifeguard Service

- Banyule City Council
- Barwon Coast Committee of Management Inc.
- Bass Coast Shire Council
- Borough of Queenscliffe
- Brimbank City Council
- Colac Otway Shire Council
- Corangamite Shire Council
- East Gippsland Shire Council
- Frankston City Council
- Glenelg Shire Council
- Great Ocean Road Coastal and Parks Authority
- City of Greater Geelong
- Hobsons Bay City Council
- Mornington Peninsula Shire Council
- Moyne Shire Council
- Parks Victoria Wilsons Promontory
- Port Phillip City Council
- South Gippsland Shire Council
- Surf Coast Shire Council
- Warrnambool City Council
- Wellington Shire Council
- City of Wyndham

Methods

This report includes unintentional fatal and non-fatal drowning incidents reported in Victoria, Australia.

An overview of fatal drowning for 1 July 2021 to 30 June 2022 is provided and compared with non-fatal drowning incidents for the same period. Comparisons between the latest financial year and 5 and 10-year averages are calculated from fatal and non-fatal drowning data in Victoria from 1 July 2011 to 30 June 2021.

The 10-year average spans 2011 – 12 to 2020 – 21 financial years, and the 5-year average spans 2016 – 17 to 2020 – 21 financial years.

Fatal incidents

Information on fatal drowning incidents was collected from the Coroners Court of Victoria, and the National Coroners Information System (NCIS). Deaths due to natural causes, suicide or homicide were 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, all suspected unintentional drowning cases in 2021 – 22 remained open on the NCIS.

Non-fatal incidents

Information on non-fatal drowning in 2021 – 22 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 2011 – 12 to 2020 – 21 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 2011 to 30 June 2021.

The VEMD is a dataset containing records of emergency department presentations in Victorian hospitals with 24-hour emergency services. One hundred per cent state-wide coverage of these hospitals applied 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 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 watercraft 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. Re-admissions 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 ABS (ABS, 2021).

Relative risk maps

Choropleth relative risk maps were created to illustrate the risk of drowning across the geographical extent of Victoria. These maps outline the relative risk of drowning based on: a) incident location, b) place of residence, and c) a composite index of both incident and place of residence. All maps illustrate relative risk within Victorian LGAs (ABS, 2022a).

The compiled relative risk maps show areas of higher or lower risk relative compared to the overall Victorian drowning event-to-population ratio. Relative risk ratios were calculated using grouped event counts (incident and residence) and population counts within each LGA. Population totals were taken from the Victorian 2021 timeseries census tables for LGAs (ABS, 2022a).

The maps illustrate the relative risk as a snapshot across a 10-year study period (2011 – 12 to 2020 – 21). Given the 10-year timeframe, LGA population counts from three census periods (2011, 2016 and 2021) were averaged to account for changing population counts across the study-timeframe.

Geographical classification

Geographical classification of fatal and non-fatal drowning variables utilised the Australian Statistical Geography Standard (ASGS; ABS, 2016a, 2016b). The ASGS is the ABS' 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 https://datapacks.censusdata.abs.gov.au/datapacks/ on the ABS website.

Murray River fatal drowning analysis

The 2021 – 22 report included analyses of Victorians who drowned in the Murray River from 2011 – 12 to 2021 – 22. 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.

References

Australian Bureau of Statistics. (2016a). *Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, July 2016 (cat. no. 1270.0.55.001)*. Australian Bureau of Statistics: Canberra.

Australian Bureau of Statistics. (2016b). *Australian Statistical Geography Standard (ASGS): Volume 5 - Remoteness Structure, July 2016 (cat. no. 1270.0.55.005)*. Australian Bureau of Statistics: Canberra.

Australian Bureau of Statistics. (2021). *Australian National, state and territory population statistics, Mar 2021. Cat. No. 31010*, Australian Bureau of Statistics: Canberra.

Australian Bureau of Statistics. (2022a). *Census DataPacks. Census DataPacks*. www.abs.gov.au/census/find-census-data/datapacks?release=2016&product=GCP&geography=LGA&header=S

Australian Bureau of Statistics. (2022b). *Cultural diversity of Australia, September 2022*. www.abs.gov.au/articles/cultural-diversity-australia#measuring-cultural-and-ethnic-diversity (accessed Sep 2022). Australian Bureau of Statistics: Canberra.

Australian Bureau of Statistics. (2022c). *Digital boundary files: Australian Statistical Geography Standard (ASGS) Edition 3* [Statistics]. Australian Bureau of Statistics (ABS). www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/access-and-downloads/digital-boundary-files

Australian Water Safety Council. (2021). *Australian Water Safety Strategy 2030*. Australian Water Safety Council: Sydney.

Deloitte Access Economics. (2020). *Between the red and yellow flags: The social and economic value of Surf Life Saving Australia*. Deloitte Access Economics: Sydney.

Department of Justice and Community Safety. (2021). *Victorian Water Safety Strategy 2021 – 25*. Department of Justice and Community Safety: Melbourne.

Department of Sustainability and Environment. (2011). *My Victorian Waterway: Personal Connections with Rivers, Estuaries and Wetlands in Victoria*. Victorian Department of Sustainability and Environment: Melbourne.

Ethnic Communities' Council of Victoria. (2012). *ECCV Glossary of Terms*. Ethnic Communities' Council of Victoria: Melbourne.

Matthews, B.L., Andrew, E., Andronaco, R., Cox, S., & Smith, K. (2017). Epidemiology of fatal and non-fatal drowning patients attended by paramedics in Victoria, Australia. *International Journal of Injury Control and Safety Promotion*, *24*(3), 303-310. doi.org/10.1080/17457300.2016.1175479

Office of Best Practice Regulation. (2022). *Best Practice Regulation Guidance Note Value of statistical life*. Department of the Prime Minister and Cabinet: Canberra.

Peden, A., & Queiroga, A.C. (2014). *Drowning deaths in Australian rivers, creeks and streams: A 10 year analysis*. Royal Life Saving Society – Australia: Sydney.

Short, A. (1996). *Beaches of the Victorian Coast & Port Phillip Bay: A guide to their nature, characteristics, surf and safety*. University of NSW: Sydney.

van Beeck, E., & Branche, C. (2014). Definition of drowning: A progress report. In J. J. L. M. Bierens (Ed.), *Drowning Prevention, rescue, treatment* (2nd ed., pp. 85-89). Springer.

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