

# A 10 YEAR NATIONAL STUDY OF OVERSEAS BORN DROWNING DEATHS

2005/06 to 2014/15



**ROYAL LIFE SAVING**  
AUSTRALIA

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

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# A 10 YEAR NATIONAL STUDY OF OVERSEAS BORN DROWNING DEATHS

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# AN OVERVIEW OF DROWNING DEATHS IN AUSTRALIA OF PEOPLE BORN OVERSEAS

1 JULY 2005 - 30 JUNE 2015



## 27%

OF DROWNING DEATHS OVER THE TEN YEAR PERIOD WERE OF PEOPLE BORN OVERSEAS

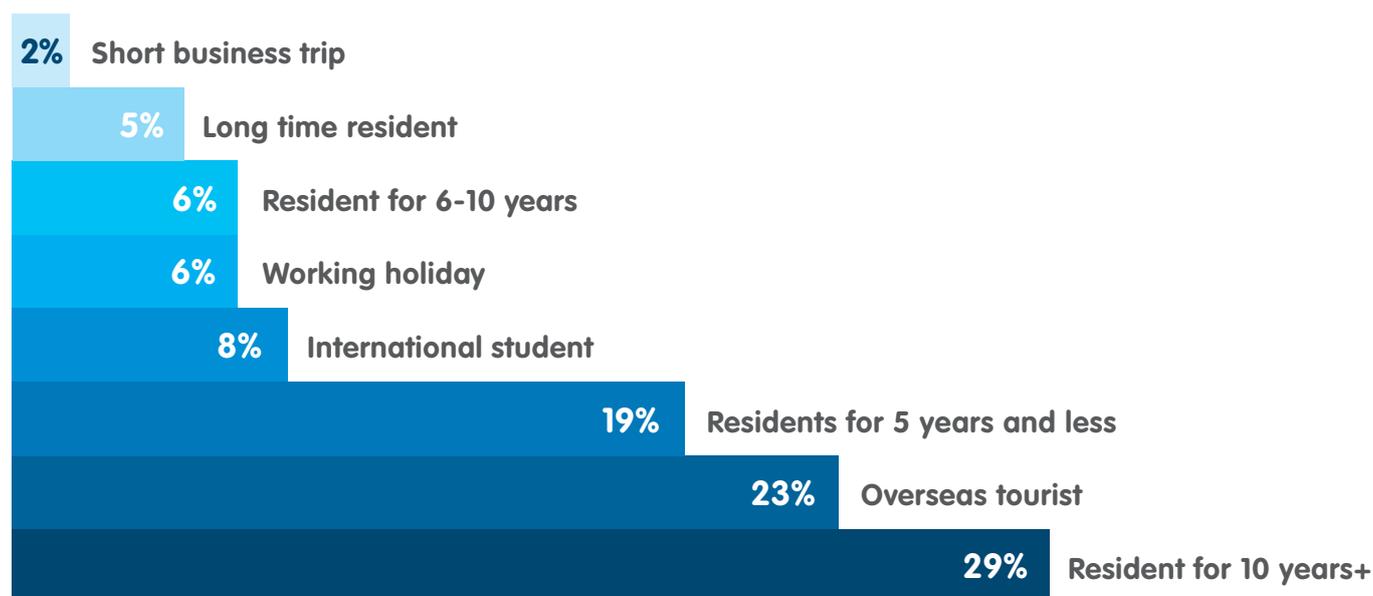
## 762

DROWNING DEATHS OVERALL

### AGE BREAKDOWN OF OVERSEAS BORN DROWNING DEATHS



### TIME OR CIRCUMSTANCES IN AUSTRALIA WAS KNOWN IN 56% OF CASES, OF WHICH:



### TIME IN COUNTRY LEADING CATEGORIES SUMMARY

	RESIDENTS FOR 10 YEARS OR MORE	OVERSEAS TOURIST
Total number	<b>128</b>	<b>102</b>
Country of birth	31% United Kingdom 7% New Zealand	19% United Kingdom 10% China
Location	22% River, creek, stream	46% Beach
Activity Prior	20% Swimming & recreating 18% Fall into water	43% Swimming & recreating 28% Diving
Risk Factor	58% had a pre-existing medical condition	41% had a pre-existing medical condition



**76**

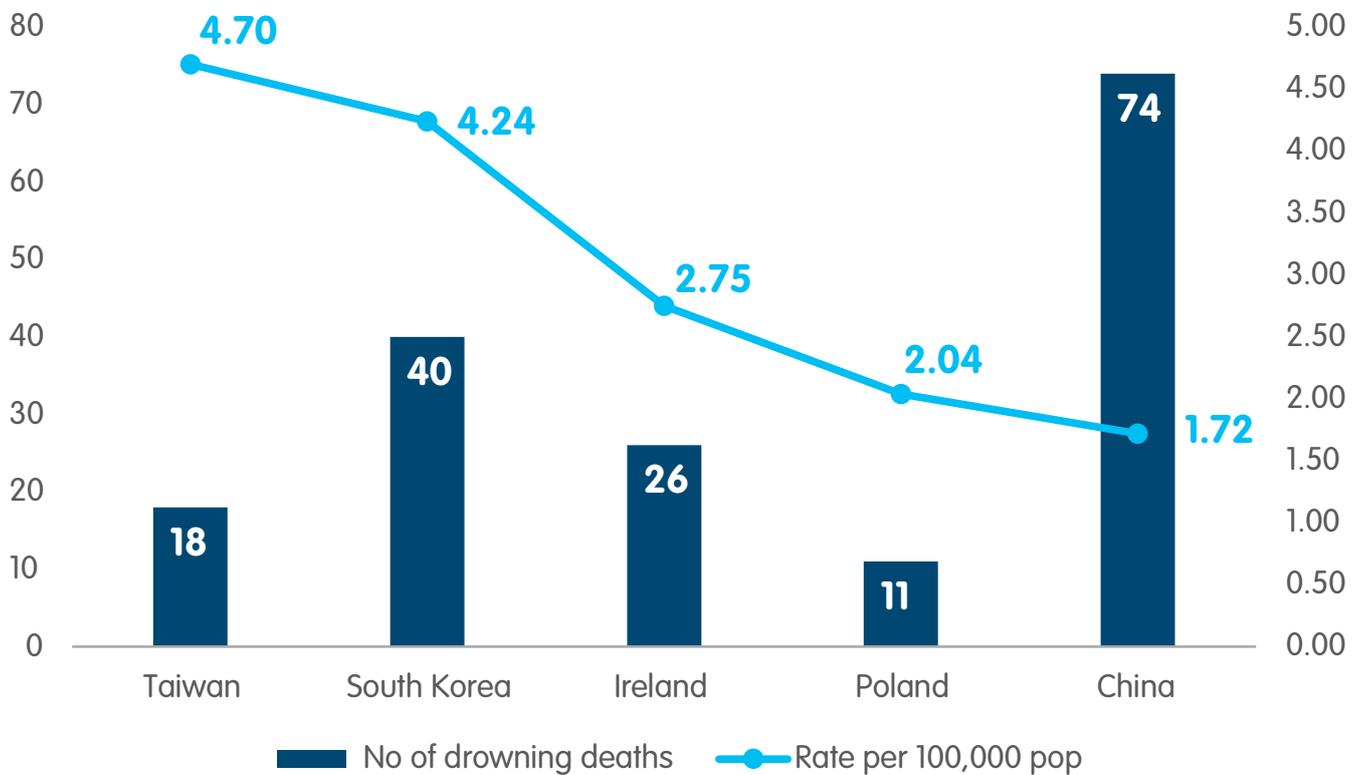
**DROWNING DEATHS EACH YEAR ARE OF PEOPLE BORN OVERSEAS**



**86%**

**WERE LIVING IN AUSTRALIA AT THE TIME OF DEATH**

**THE TOP FIVE COUNTRIES THAT RECORDED THE HIGHEST CRUDE DROWNING RATES PER 100,000 POPULATION RESIDING IN AUSTRALIA**



	RESIDENTS FOR 5 YEARS OR LESS	INTERNATIONAL STUDENT
<b>Total number</b>	<b>83</b>	<b>32</b>
<b>Country of birth</b>	10% South Korea 8% United Kingdom & India	29% India 27% China
<b>Location</b>	31% Beach	29% Around rocks
<b>Activity Prior</b>	45% Swimming & recreating 15% Rock fishing	44% Swimming & recreating 12% Swept in
<b>Risk Factor</b>	31% Recorded a positive reading for alcohol	38% Poor or non-swimmers

## DID YOU KNOW?

- Between 1 July 2005 and 30 June 2015, 27% (n = 762) of total drowning deaths were of people born overseas, an average of 76 per year.
- Males accounted for 81% of drowning cases, with females accounting for 19%. More females than males drowned from the age of 45 years.
- The leading age group for drowning was people aged 25 – 34 years (22%), followed by people aged 55 – 64 years (14%).
- The highest number overseas born drowning deaths occurred in New South Wales (37%), followed by Queensland (28%) and Western Australia (18%).
- Drowning deaths most commonly occurred in locations within a major city (46%), at a beach (24%) or at a river, creek or stream (21%).
- Risk factors for drowning included pre-existing medical conditions (38%), alcohol consumption (25%, 58% BAC  $\geq$  0.05%), drugs (25%, 23% were illegal), swimming ability (where recorded, 65% were considered to be poor or non swimmers).
- The leading countries where people originated were: China (10%), New Zealand (6%), England (6%), and South Korea (5%).
- The top three populations found to be at highest risk of drowning (crude drowning rate based on 100,000 population in Australia): Taiwan (4.70), South Korea (4.24) and Ireland (2.75).
- 86% were living in Australia at the time of death, of which time in country was known in 58% of cases.
- 29% were residents for 10 years or more, and were most commonly born in the United Kingdom or New Zealand. Drowning most frequently occurred in WA (46%), at a river, creek or stream (22%), when swimming and recreating (20%) or from a fall (18%).
- 19% were residents for 5 years or less, and were most commonly born in India, South Korea or China. Drowning most frequently occurred in NSW (33%), at a beach (31%), when swimming and recreating (45%) or when rock fishing (15%).
- 23% were overseas tourists, most likely from the United Kingdom, China, Germany and Japan. Drowning most frequently occurred in Queensland (50.0%), at a beach (46%), when swimming and recreating (43%) or diving (28%).
- 8% were international students, over half (57%) were born in India and China. Drowning most frequently occurred in Queensland (35%), at rocks (29%), when swimming or recreating (44%), or after being swept in (12%).
- 6% were residents for 6 -10 years, and were most commonly born in New Zealand and China. Drowning most frequently occurred in WA (39%), either at a beach, rocks or a river/creek or stream (25.0% each), when swimming (36%) or when risk fishing (25%).
- 6% were people in Australia for a short business trip e.g. for a conference or meetings. Most were from the United States. Drowning most frequently occurred in Tasmania or Queensland (29% each), either at a beach, an ocean/harbour location or at a river/creek or stream (29% each), when swimming or diving (29%) each



## EXECUTIVE SUMMARY

### Background

Whilst the Royal Life Saving National Drowning Report provides a comprehensive overview of key factors of drowning deaths in Australia on an annual basis, a key weakness is the ability to separate out 'high – risk' populations for drowning, including those from culturally diverse backgrounds, from the data. Country of birth, cultural background, and language in relation to drowning deaths in Australia has not been well documented, if at all. This project specifically relates to Goal 10 of the Australian Water Safety Strategy 2016-2020: Reduce drowning deaths in high - risk populations: vi Improve data collection to more accurately describe the burden of drowning in high - risk communities [1]. With an increasing migrant and visitor population, preventing drowning deaths among overseas born residents and tourists into the future is extremely vital.

The aims of this study are to determine the burden of drowning among high - risk populations, specifically those from culturally diverse populations and, to identify key risk factors to better inform drowning prevention strategies for these populations.

### Methods

All unintentional, drowning deaths in Australian waterways between 1 July 2005 and 30 June 2015 of people born in a country other than Australia were included. Country of birth was used as a proxy for cultural background. Cases where country of birth was unknown were also cross-checked against the National Coronal Information System (NCIS) and with Royal Life Saving State and Territory member organisations (STMOs) where possible. This report contains information correct as at 30 April 2018. As of this date, 95.1% of cases were closed (i.e. no longer under coronial investigation).

The analysis of the findings is largely based on time in country or circumstances of residency, known in 57.7% of cases. Cases were classified into 10 categories:

- Resident for 10 years or more (10 years+)
- Long-time resident (exact time unknown)
- Resident for 6 – 10 years
- Resident for 5 years or less
- Overseas tourist
- International student
- Working holiday
- Short business trip
- Commercial fisherman
- Child living with family.

An average crude rate for drowning was calculated for the top 20 countries represented in the data, based on population living in Australia and overseas tourists, according to 2011 census statistics.

### Results and discussion

Between 1 July 2005 and 30 June 2015, a total of 762 people drowned in Australia that were born overseas, representing 27.3% of total drowning deaths during this period and an overall crude rate of 1.15 per 100,000 overseas born population (residents and overseas tourists). Men accounted for 80.7% of drowning deaths among this study population, the largest number of drowning deaths were of people aged 25 – 34 years (21.9%). New South Wales (NSW) recorded the highest number of drowning deaths (37.1%), followed by Queensland (27.6%).

When broken down by country of birth, people originated from 100 different countries. The highest number of drowning deaths in this study were of people born in China (9.7%), New Zealand (6.3%), England (5.5%) and South Korea (5.3%).

An overall crude rate for overseas born drowning deaths per 100,000 population living in Australia was calculated, the top five countries with the highest rates were: Taiwan (4.70), South Korea (4.24), Ireland (2.75), Poland (2.04) and China (1.72).

When combining the average population of residents and overseas tourists, the countries with the highest crude rates were: Taiwan (3.94), South Korea (3.72), Ireland (3.16), followed by Japan (2.25) and Germany (2.12).

Most drowning deaths occurred in locations classified as major cities (46.3%). The leading location was at a beach (24.3%) or a river/creek/stream (21.4%). Drowning deaths most frequently occurred in the summer (38.1%), 40.5% took place on a Saturday or Sunday, 45.7% during the afternoon (12:01pm to 6pm). Overall, the most frequent activity prior to drowning was swimming and recreating (31.0%). For males, the second leading activity was rock fishing and for females a fall into water. Eight percent (8.9%) of cases were multiple fatality events where more than one person drowned during the same incident. Multiple fatality events occurred most frequently when boating and rock fishing.

A pre-existing medical condition was recorded in 37.7% of cases. Females were more likely to have a pre-existing medical condition than males (44.9% versus 35.9%).

Alcohol was present in 25.3% of cases, of which 57.5% recorded a blood alcohol concentration (BAC)  $\geq$  0.05%. More males than females recorded alcohol present (33.1% versus 28.4%). The 18 – 24 years age group recorded the highest percent of cases with alcohol present (43.6%). When analysed by activity and alcohol, over 50.0% of people who jumped into the water, fell into the water and were bathing recorded alcohol present.

Drugs were present in 24.8% of cases, of which 75.9% were considered to be legal (medication), 20.1% recorded illegal substances, and 2.6% had consumed both prior to drowning.

More than one quarter (26.4%) of cases recorded swimming ability, of which 64.7% were deemed to either poor or non-swimmers.

Most people (85.7%) in this study were considered residents in Australia at the time of death.

Circumstances or time of residency were known in 57.7% of cases. Most had been living in Australia for 10 years+ (29.0%), an additional 4.8% were long-time residents (exact time unknown). Overseas tourists accounted for 23.1%, and 18.8% were residents for 5 years or less, with the fourth leading category being international students (7.7%).

Differences were apparent when analysed by State/Territory. Residents for 10 years+ accounted for the highest proportion of drowning deaths in the Australian Capital Territory (ACT), Northern Territory (NT), Tasmania and Western Australia (WA). In Queensland, drowning deaths most frequently occurred among overseas tourists, whereas Victoria had highest number of deaths among residents 5 years or less. South Australia (SA) had the highest number of cases with residency time unknown (83.3%).

Residents for 10 years+ and long-time residents most commonly drowned when swimming and recreating or as a result of a fall into water. A river, creek or stream was the most common location for drowning, followed by a swimming pool. Over half recorded a pre-existing medical condition.

Residents for 6 – 10 years were most commonly from New Zealand. The most common location for drowning among males in this category was at rocks or a river, creek or stream (27.3% each), and at a beach for females (33.3%). The leading activities prior to drowning were swimming and recreating (35.7%), followed by rock fishing (25.0%). One quarter (25.0%) recorded alcohol present, with 71.3% recording a BAC  $\geq$ 0.05%.

Residents for 5 years or less were most likely to be from India or South Korea. Residents 5 years or less most frequently drowned at a beach (31.3%). Overall, the leading activity prior to drowning was swimming and recreating (44.6%). For males, the second leading activity was rock fishing and for females a fall into water. The highest proportion with illegal drugs recorded were among residents 5 years or less (28.6%).

Overseas tourist most frequently drowned in Queensland (50.0%), at a beach (46.1%), and 34.3% occurred in outer regional locations. The leading activity was swimming and recreating (43.1%), followed by diving (28.4%).

International students that drowned were mostly from India (29.4%) and China (26.5%). Drowning most commonly occurred in Queensland (35.3%), at a major city location (47.1%), around rocks (29.0%). The leading activity was swimming and recreating (44.1%) followed by being swept in (11.8%). Where swimming ability was recorded, 92.3% were considered poor or non swimmers.

Six percent of people drowned whilst on a working holiday, 22.2% were from South Korea and 14.8% were from Ireland. A river, creek or stream was the most common location (46.4%) and swimming and recreating was the leading activity.

A small number (n=7) of people drowned whilst on a business trip in Australia. Most were from the United States. An equal number drowned when swimming and recreating, and diving. Over half (57.1%) had alcohol present at the time of death, 75.0% recorded a BAC  $\geq$  0.05%.

People who drowned in this study were in Australia for varying time period and reasons. Contributing risk factors for drowning among people born overseas ranged from having a pre-existing medical condition, consuming alcohol and drugs (including both medication and illegal drugs), and poor swimming ability and/or experience. Due to limited information around language, it was difficult to ascertain if language was indeed an issue. However, key water safety messages should be made available in a range of languages and mediums to ensure that people of all cultural backgrounds can easily access essential water safety information and programs. Current drowning prevention programs and campaigns, including alcohol and drugs, may need to be tailored to better meet the needs of overseas born populations, including residents, international students and overseas tourists.

## Conclusion

This study has improved the accuracy of drowning statistics and information relating to high - risk populations, especially those born overseas. Whilst coronial data is limited by the way of recognising cultural background and language, the study has identified key risk factors for drowning which differ across sub-populations, allowing tailored drowning prevention strategies specific to the needs of each community. With an increasingly diverse population, and Australia being a key tourist destination, it is essential to gain a broader understanding of the risk factors pertaining to drowning among high - risk populations, and tailor strategies appropriately.

## NEXT STEPS

### Policy

- Recommend additional information to be added to police and/or coronial reports, such as country of birth, length of time and/or purpose in country and language barriers.
- Work with NCIS to improve accuracy of data being collected and entered, particularly for country of birth and time in country.
- Drowning prevention and water safety organisations work in partnership with agencies such as settlement support, migrant services, tertiary institutes and government departments, to ensure greater opportunities to increase water safety knowledge and skills are made available to high - risk populations in a culturally appropriate and relevant manner.

### Research Agenda

- Utilise these findings to inform policy and practice targeting different demographics and populations.
- Conduct qualitative research among culturally diverse populations to improve understanding of water safety knowledge, attitudes, cultural beliefs and participation (or lack of) in aquatic activities.
- Improve participation data to include broader demographic information where possible such as, country of birth, and length of time in country, ethnicity and language.
- Consultation with water safety agencies, community organisations and government departments to develop a culturally appropriate strategy for engaging with a range of culturally diverse communities.
- Revise current drowning prevention campaigns targeting culturally diverse populations (including overseas tourists) and evaluate their effectiveness in raising awareness and knowledge of water safety practices.
- Strategies and interventions from other injury prevention sectors should be explored in the absence of effective and evaluated water safety strategies, e.g. road safety.
- Qualitative research is required to identify when is the right time, and the best method, to provide information in a meaningful manner.
- Future drowning prevention strategies targeted to culturally diverse communities need to be piloted and evaluated, with findings made publicly available.

### Programs and Advocacy

#### General

- Advocate the value of learning swimming and water safety skills, and knowledge for drowning prevention among culturally diverse populations of all ages, including new arrivals, international students, working holiday makers/seasonal employees and international conference attendees.
- Ensure sector wide consistency of key messages that are available in a range of languages.
- Continue to increase awareness and promotion of the dangers of consuming alcohol and drugs around water (including side effects of medication and illegal drugs), tailored to high - risk populations.

#### Migrant communities

- Increase engagement with ethnic media to ensure that key messages are being disseminated effectively and in a culturally appropriate manner to a range of culturally diverse communities
- Industry should consider programs to train (and employ) swimming teachers, instructors and lifeguards from high – risk populations.

#### Overseas Tourists

- Accommodation providers should consider supplying guests with water safety information.
- Accommodation providers with on-site pools or private beaches should install clear safety signage, emergency phones and defibrillators, and consider ways to restrict entry of intoxicated people into the pool/beach area (as per relevant industry guidelines).

#### International Student Institutions/Agencies

- Programs to increase swimming and lifesaving knowledge and skills should be offered to international students should be considered, including practical programs.
- Aquatic risk assessments should be conducted prior to any aquatic activities taking place, especially when organising international student activity programs.

#### Employers and Conference Organisers

- Employers and conference organisers should provide water safety information in induction or registrations packs, especially if located near aquatic environments and promoting aquatic activities.
- Aquatic risk assessments should be conducted prior to any aquatic activities taking place, especially when organising activities as part of conference programs.

## BACKGROUND

The Australian Water Safety Strategy (AWSS) 2016-2020 outlines eleven goals identifying high priority areas for drowning prevention in order to achieve the goal of a 50% reduction in drowning by 2020 [1].

This project specifically relates to Goal 10 – Reduce drowning deaths in high - risk populations: vi. Improve data collection to more accurately describe the burden of drowning in high - risk communities. Identified high - risk populations for drowning include culturally diverse population, migrants, international students and international tourists. Aboriginal and Torres Strait Islander people are also over-represented in drowning statistics and acknowledged as a high - risk population for drowning. This report focuses on those born in a country other than Australia. Drowning risk among Aboriginal and Torres Strait Islander people will be addressed separately.

Australia is becoming increasingly diverse. The 2016 Census revealed that 26% of people currently living in Australia were born overseas, an increase of almost one million people from 2011 [2]. One-fifth (21%) speak a language other than English at home, most commonly Mandarin. Whilst those born in England still make up the highest proportion of migrants, growing numbers of people from Asian countries are settling in Australia. Nearly half of all Australians were either born overseas or had at least one parent who was born overseas, posing challenges for drowning prevention [2]. The estimated annual growth of the population overseas born is 5.1%, compared to a 1.5% growth of the population as a whole [2].

Overseas visitors increase substantially every year, it is expected that this trend will continue into the future, especially people aged 25 – 34 years [4]. Additionally, Australia has a National Strategy for International Education, aiming to encourage international students to Australia. Currently Australia has the third highest number of international students in the world [2].

Whilst annual drowning reports do include the number of overseas tourists and proportion of overseas born, these statistics do not distinguish between long-term residents and new arrivals. Previously international students have been considered residents as they are living in Australia at the time of death. Rationale for improving statistics on country of birth and time in country is to accurately identify populations considered more 'at-risk' of drowning compared to the general population and to enable resources to be allocated where they are most needed. More often than not, those considered to be of a culturally diverse background, an international tourist or an international student has largely been reliant on media rather than actual statistics. This can result in data being under or over-represented, with reports often being presumed on a person's appearance, without further background information.

Drowning prevention and water safety funding is increasingly being allocated towards programs for migrant communities in response to community members being rescued or drowning (both fatal and non-fatal). Therefore, it is important to clarify statistics and tailor prevention strategies accordingly. Prevention strategies may be different based on current levels of knowledge and awareness and aquatic experience, thus different messages may be required for 'new arrivals' versus someone who has lived in Australia for 20 years and for overseas tourists.



## Review of literature and current practice

Water safety and drowning prevention organisations across Australia offer a variety of programs for culturally diverse communities and international students including presentations, practical pool or open-water sessions and resources. However, the lack of publicly available evaluation reports and published material makes it difficult to identify 'best practice' or effective strategies to learn from. This section discusses research and highlights current strategies from Australia and worldwide, addressing drowning among 'high - risk' populations.

### Tourists and International students

Several Australian studies report on the water safety knowledge, awareness, behaviour and aquatic participation among international and domestic tourists. A survey of Sydney beachgoers found that both international tourists and rural residents were less likely able to recognise a rip current or a safe place for swimming at a beach compared to a local resident [5]. Similarly, a study of Queensland beachgoers aged 18-24 years found that overseas tourists were less likely to drink alcohol and swim at the beach compared to interstate visitors and locals, however were more likely to report lower water safety knowledge such as being able to identify and how to escape a rip current and identify the meaning of the red and yellow patrol flags. Overseas tourists reported lower perception of the dangers when swimming at the beach in such situations as being alone, swimming at night or after alcohol consumption compared to residents [6]. Another study implied that whilst international students reported low levels of water safety awareness, especially beach safety, overall a low awareness of beach safety practices was found among the university students surveyed, indicating that water safety attitudes, knowledge, and behaviour of university students in general, need addressing [7]. These findings are consistent with a New Zealand study among overseas tourists and residents. More tourists agreed that they would swim at a non-patrolled beach than residents; 40% were confident that they could identify a rip current at a beach, and more overseas visitors than residents believed that wearing lifejackets on a boat is unnecessary [8].

Strategies addressing beach safety knowledge and awareness among international tourists have largely been ad-hoc and have previously included beach safety videos on some airlines inbound to Australia [9]. Surf Life Saving Queensland currently delivers a beach safety program aimed at domestic and overseas visitors to the Gold Coast [10]. Research has suggested travel doctors could become a source of water safety information prior to tourists leaving their home country, especially those travelling with pre-existing medical conditions [11].

### Water safety knowledge and skills of migrant populations

Research regarding the water safety knowledge, attitudes, behaviour and participation among culturally diverse populations is scarce. A New Zealand study of Asian migrants found that 52% of survey participants had increased their participation in aquatic activity compared to when they lived in their home country, with males and those under 30 years most likely to participate. The most frequent activity was swimming in a public swimming pool. Most respondents reporting having no previous water safety education or CPR knowledge, and reported low levels of swimming and floating skills. Females reported a higher awareness of water safety principles including beach safety, wearing a lifejacket on a boat and supervising children around water. This research suggested that whilst Asian migrants had increased participation in aquatic activity since living in New Zealand, they may be at greater risk of drowning due to their limited aquatic experience and water safety knowledge [12].

A qualitative study of American-Vietnamese teenagers and their parents explored cultural beliefs and attitudes towards water safety and aquatic participation. Findings revealed that the Vietnamese community generally do not recreate or socialise around the water, and that they have limited knowledge of drowning risk and have poor skills to keep themselves or their community safe around water. Findings from this study recommended the importance of understanding and accounting for cultural beliefs and attitudes when planning drowning prevention campaigns that target migrant populations [13].

## Rock fishing

On average, 12 people drown while rock fishing annually in Australia [1]. Rock fishing is considered a popular activity for people from culturally diverse backgrounds. Drowning risk when rock fishing is a hot topic across Australia, with several coronial inquests targeting rock fishing safety (outcomes from these inquests will be discussed later). Previous research and safety interventions have attempted to address rock fishing safety, such as the 'Don't put your life on the line' campaign, conducted over the 2009-2010 summer in three States (NSW, WA and Victoria). This project entailed rock fishing workshops and a media campaign in various languages [14]. Evaluation of the campaign concluded that 22% of participants had viewed or heard the advertisement and could recall the general 'Fish Safely' key message, and some agreed that they would consider changing their behaviour after seeing the advertisements. However, the advertisement did not provide the specifics of how to fish safely, which may explain the low percentage of lifejacket wearing reported in the evaluation. Interview participants reported a low level of risk perception towards drowning, and poor knowledge of first aid and CPR skills [14]. Fishing safety information is available in a range of languages, and community safety fishing safety workshops are delivered by various agencies, evaluation reports were unavailable. Therefore it is difficult to assess outcomes and effectiveness of these strategies in reducing drowning of rock fishers or an increased level of knowledge and awareness among the target populations.

A ten-year rock fishing safety project in New Zealand appears to have been successful in increasing lifejacket wear and safety knowledge among rock fishers in one geographical location. At the start of the project (2006), 4% of fishers surveyed reported always wearing lifejackets, to 40% by the end (2015). Reduction of drowning deaths of fishers and an increase of rescues was also reported during the 10 year period. The educational component included safety material available in a range of languages from fishing retailers and discount vouchers to purchase lifejackets. Rock fishers were surveyed each year, with a high proportion being of a culturally diverse population. Surveys were conducted in English, Mandarin and Korean. The project was improved each year based on survey results [15].

## Instructor training

An adapted delivery model to engage and train people from multi-cultural communities as swimming and water safety teachers was trialled by AUSTSWIM in 2012 [16]. Course participation and completion was encouraged by a combination of strategies, including making the course more practical and focusing more on the water safety element as essential skills rather than swimming. Recommendations from the trial included assessing knowledge throughout instead of an exam at the end; providing a mentor to assist or overcome language or cultural barriers; consideration of traditions and cultural respect; use of visual aids; and understanding the language translation alone is not effective [16].

## Boating safety

Boating safety strategies targeted to culturally diverse communities seem to be scarce, other than translated materials, which may depend on demand, such as the case in Victoria. The Victorian Boating Safety Handbook [17] was printed in a range of languages until 2007, and then available to download until 2011. The test for a boat operator licence was offered in Arabic, Chinese, Turkish and Vietnamese until 2011. From 2012, translators are available to translate the multiple choice test required to obtain a boat licence. Private training providers are accredited to teach the Marine licence course in a number of languages (Maritime Safety Victoria, personal communication).

## Aquatic facilities

Aquatic facilities are increasingly meeting the needs for their local community, for example signage in the languages of their clients and women's only swimming sessions [18]. Whilst some facilities were initially addressing the need for Muslim women to swim without males, many programs have evolved to include women and girls of all cultural and religious backgrounds, recognising that there are many reasons women may wish to swim without men present. Facilities have installed curtains to retain privacy to create a multi-use area for people with disabilities/hydrotherapy and medical reasons. Other facilities offer use of the entire facility after normal operating hours.

## OBJECTIVES

This study aimed to:

- To determine the actual proportion of drowning deaths of people from high - risk communities
- Identify risk factors for drowning to better inform programs and interventions targeting high - risk communities, specifically migrant communities
- Explore means of improving data collection, particularly country of birth and time in country information

## METHODS

All unintentional, drowning deaths in Australian waterways of people who were born overseas between 1 July 2005 and 30 June 2015 were included. All unintentional drowning cases during the study period were checked against country of birth in the National Coronial Information System (NCIS).

A year round media monitoring service was used to identify drowning deaths reported in the media, which were then corroborated with information sourced from ethical access to the NCIS, State and Territory police services and Royal Life Saving State and Territory Member Organisations (STMOs).

All care is taken to ensure that the information is as accurate as possible. Please note that the figures from more recent financial years may change depending upon the outcomes of ongoing coronial investigations and findings. This report contains information correct as at 30 April 2018. As of this date, 95.1% of cases were closed (i.e. no longer under coronial investigation).

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



Image source: Life Saving Victoria

## Definitions

Definitions and terms are consistent with the Australian Water Safety Strategy 2016-2020[1] and the Royal Life Saving Society – Australia’s Drowning Database Definitions:

- 1. Overseas born:** Anyone who fatally drowned during the study period that was born in a country other than Australia, including overseas tourists, international students and those in Australia for working purposes at the time of death.
- 2. Country of birth:** Extrapolated by individual country of birth. Data were not grouped into regions or like countries due to different trends emerging. The United Kingdom (U.K) (country unspecified), and countries within the U.K – England, Scotland, Wales and Northern Ireland, were treated individually for the overall data analysis as per the most current Australian Bureau Statistics (ABS) census data [4] which was used to populate crude rate per 100,000 people living in Australia. It could not be assumed that everyone with a country of birth recorded to be U.K was from England. However at a State/Territory level, ABS reports on U.K as a whole rather than individual countries, therefore State/Territory analysis has been presented accordingly.
- 3. Age groups:** Classified as per the Australian Water Safety Strategy to align with key life stages. Due to the small number of children aged 0 -17 included in the dataset, all cases aged 0 – 17 years have been combined into a ‘child’ category for the purposes of data analysis.
- 4. Time in country:** Time in country or circumstance of residency, was broken down into ten categories to further understand characteristics and for developing appropriate prevention strategies (Table 1).
- 5. Remoteness classification:** The remoteness classification of the drowning location was defined using the Australian Standard Geographical Classification – Remoteness Area (ASGC-RA) system [18].
- 6. Season of drowning:** The season when the drowning incident occurred: Summer (December – February), Autumn (March – May), Winter (June to August), Spring (September – November).
- 7. Time of drowning:** The time of drowning was coded into four bands: early morning (12:01am to 6am), morning (6:01am to 12pm). Afternoon (12:01pm to 6pm) and evening (6:01pm to 12am).
- 8. Day of the week:** day of the week the drowning incident occurred.
- 9. Activity:** The specific primary activity the drowning victim was undertaking immediately prior to the drowning incident, causing the drowning victim to be in, on, or near the water.
- 10. Blood Alcohol Concentration (BAC):** Greater than or equal to 0.05g/mL (0.05 grams of alcohol per 100 millilitres of blood) was considered relevant and contributory to the drowning death, presented as BAC  $\geq$ 0.05% in the data.
- 11. Drugs:** For the purposes of this report, all prescribed medications were considered to be legal. Illicit drugs, such as cannabis and methamphetamine, cocaine and ecstasy were considered illegal drugs.
- 12. Swimming ability:** Where recorded or mentioned in coroner’s or police reports this was included in data analysis. Swimming ability was based on a family member or friends’ assessment, not actual ability and could be over- or under estimated. Categorised as: 1) Non Swimmer – could not swim 2) Weak swimmer - weak, poor, not a good or competent swimmer 3) Strong/confident swimmer – strong, competent, very good swimmer 4) Good swimmer – good, reasonable, competent 5) Average swimmer 6) Experienced at aquatic activity, including diving, paddling, fishing, kite surfing, and surfing and 7) Not experienced but certified.

## Data analysis

Crude rate of drowning by country was calculated using the 10 year average population residing in Australia between 2006 and 2014, based on census data [19]. To more accurately reflect an overall drowning rate by country of birth, an average crude rate was calculated combining the 10 year average resident population and an estimated 10 year average overseas tourist population by country (REF Tourism Stats). An estimated 10 year average crude rate for tourists was calculated based on tourism arrival statistics available from 2007 – 2016, these years cover most of the study period therefore were used as a proxy. This data was then adjusted based on the average number of nights (35) that overseas tourists spend in Australia [4] (Table 2).

For the case of the United Kingdom (U.K), crude rates for resident populations were able to be calculated for each country (England, Northern Ireland, Scotland and Wales), but due to tourism data being aggregated for the U.K, a combined was provided for a total crude rate of residents and tourists. For the specific time in country analysis, resident time unknown has been removed from analysis as we were unable to gauge any useful trends from this category, and to avoid skewing the data.

Data analysis by State/Territory was reported as a percentage rather than raw numbers for ethical reasons; in some instances numbers were very small and it may be possible for cases to be identified. Reporting percentages also allowed for comparison across States/Territories.

Data were analysed using IBM SPSS Version 24.4. Descriptive statistics were utilised, as well as chi squared analysis. Statistical significance was deemed  $p < 0.05$ . Chi squared analysis was conducted without the 'unknown' variable (e.g. the presence of alcohol or drugs was calculated using the 'yes' and 'no' variables only).

Table 1: Definition of time in country category

Time in country category	Definition
Resident for 5 years or less	Someone who has been living in Australia for a period of 5 years or less, as documented in coronial and police reports.
Resident for 6 – 10 years	Someone who has been living in Australia for a period between 6 and 10 years or less, as documented in coronial and police reports.
Resident for 10 years or more (10 years+)	Someone who has been living in Australia for a period of 10 years or more, as documented in coronial and police reports.
Long-time resident (exact time unspecified)	Someone who had been living in Australia for a long period of time as indicated by the police/coroner's report, but exact date, time or age when moved to Australia was not specified. In some cases people were noted to be Australian citizens.
Residency time unknown	Resident time unknown is where a residential address or postcode was provided in the NCIS or mentioned in the police/coroner's reports however no further information was available
International student	Living and studying in Australia, usually in Australia on a study visa for 1 – 2 years.
Overseas tourist	In Australia temporarily for holiday or leisure purposes
Short business trip	In Australia for business purposes such as a conference or meeting
Working holiday	In Australia on a working holiday visa, allowing people aged 18-30 from eligible countries to work and holiday in Australia for up one year.
Child living with family	Child living with family refers to a child born in another country, now living with their family in Australia, information on time in country unavailable, and does not fit into any other category, note that not all children are included in this category, only where there was limited information, important to distinguish for prevention strategy purposes (e.g. parents may speak another language at home).
Commercial fisherman (international)	Someone who drowned whilst working on a commercial fishing vessel, usually an international crew in Australian waters.



# RESULTS

## Overall

Between 1 July 2005 and 30 June 2015 a total of 2787 people drowned in Australia, 27.3% (N= 762) were born overseas (Figure 1).



Figure 1: Drowning deaths by country of birth, 2005/06 to 2014/15

The number of drowning deaths among people born overseas ranged from a low of 65 in 2010/11, to a high of 98 in 2009/10 (Figure 2). Overall, the 10 year average crude drowning rate was 1.15 per 100,000 overseas born population (including residents and overseas tourists).



Figure 2: Drowning deaths among overseas born by financial year with crude drowning rate, 2005/06 to 2014/15

The highest proportion of overseas drowning deaths occurred in NSW (37.1%), followed by Queensland (27.6%) and WA (18.0%) (Figure 3).

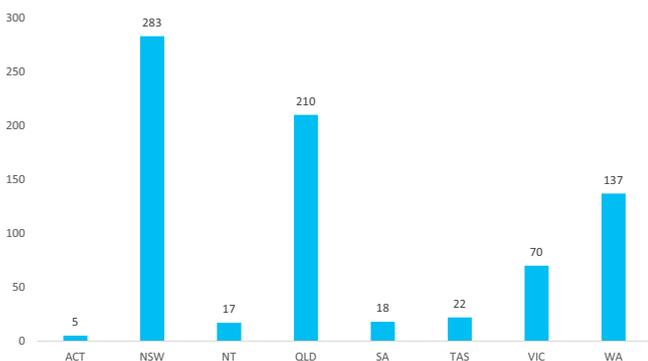


Figure 3: Drowning deaths among overseas born by State/Territory, 2005/06 to 2014/15

## Demographics

Males accounted for 80.7% (n = 615) of overseas born drowning deaths, and 19.3% were female (n = 147). The largest number of drowning deaths occurred among those aged 25 – 34 years (21.9%), followed by the 55 – 64 years age group (13.9%). Children accounted for the lowest number (3.8%) (Figure 4).

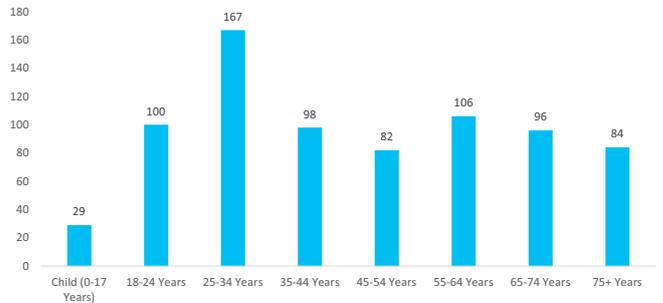


Figure 4: Drowning deaths among overseas born by age, 2005/06 to 2014/15

When analysed by age, more females than males drowned from 45 years of age (Figure 5).

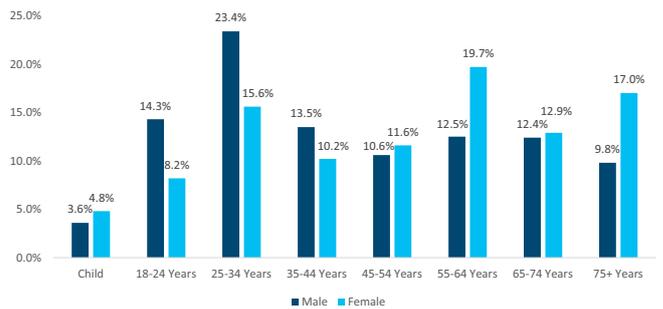


Figure 5: Drowning deaths among overseas born by age and sex, 2005/06 to 2014/15

When compared to Australian born drowning deaths over the same period, the highest proportion occurred among children (22.8% of total drowning deaths), whereas the highest proportion of overseas born drowning deaths was among the 25 – 34 age group (21.9% vs. 11.7%) (Figure 6).

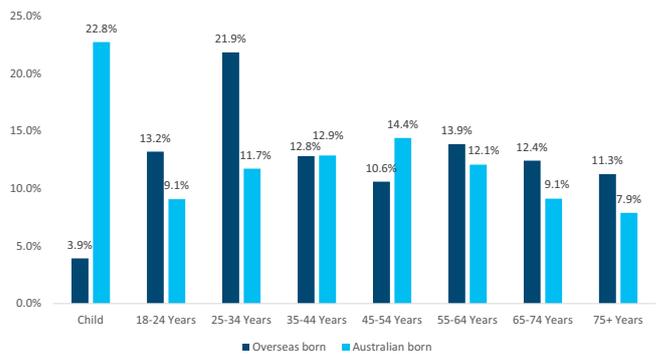


Figure 6: Drowning deaths comparing Australian born and overseas born by age 2005/06 to 2014/15

One hundred (100) countries were represented in this study (excluding the U.K country not specified). The highest proportion of people were born in China (9.7%), followed by New Zealand (6.3%), England (5.9%), and South Korea (5.2%). Overall, 7.0% recorded the U.K unspecified as country of birth (Figure 7).

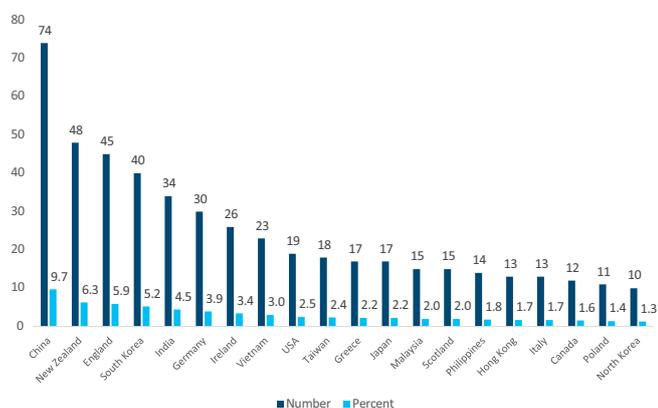


Figure 7: Drowning deaths among overseas born by top 20 countries, 2005/06 to 2014/15

An overall crude rate for overseas born drowning deaths per 100,000 population living in Australia was calculated, the top five countries with the highest rates were: Taiwan (4.70), South Korea (4.24), Ireland (2.75), Poland (2.04) and China (1.72).

When combining the average population of residents and overseas tourists, the top countries were Taiwan (3.94), South Korea (3.72), Ireland (3.16), followed by Japan (2.25) and Germany (2.12) (Table 2).

Table 2: Countries with the highest crude rate for drowning based per 100,000 residents and tourists in Australia

Country of birth	Total number of drowning	Overall %	Total 10yr avg crude rate/100,000 overseas born pop in Australia (Residents & Tourists)	N Residents drowned	10yr avg crude rate/100,000 overseas born pop residing in Australia
China	74	9.7	1.73	64	1.72
New Zealand	48	6.3	0.74	41	0.72
England	45	5.9	NA see U.K combined	32	0.33
South Korea	40	5.2	3.72	35	4.24
India	34	4.5	0.99	32	1.01
Germany	30	3.9	2.12	21	1.67
Ireland	26	3.4	3.16	21	2.75
Vietnam	23	3.0	1.06	22	1.07
United States	19	2.5	1.41	7	0.79
Taiwan	18	2.4	3.94	17	4.70
Japan	17	2.2	2.25	7	1.68
Greece	17	2.2	1.29	16	1.30
Malaysia	15	2.0	0.98	12	0.92
Scotland	15	2.0	NA see U.K combined	15	1.06
Philippines	14	1.8	0.71	14	0.74
Hong Kong	13	1.7	1.51	10	1.16
Italy	13	1.7	0.59	13	0.63
Canada	12	1.6	2.10	7	1.55
Poland	11	1.4	2.01	12	2.04
South Africa	10	1.3	0.62	9	0.52
United Kingdom (U.K) combined*	119	15.6	0.80	98	0.82

(\*Channel Is, England, Northern Ireland, Scotland, Wales)

## Time and Location

Drowning deaths occurred most frequently during summer (38.1%), followed by autumn (26.1%) (Figure 8). The most common months for drowning were in January (13.5%) and December (12.7%).

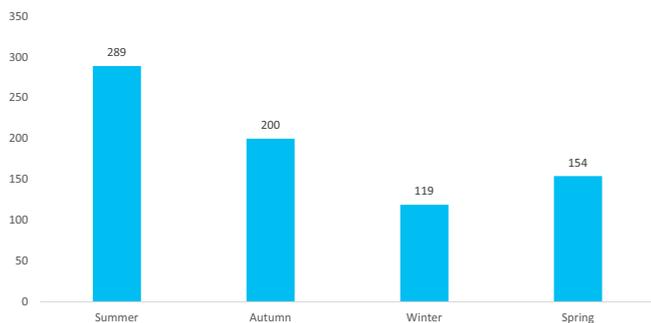


Figure 8: Drowning deaths among overseas born by season, 2005/06 to 2014/15

Drowning deaths most commonly occurred during the weekend, 20.2% on a Sunday and 20.1% on a Saturday. The most common time of day for drowning deaths to occur was in the afternoon (12:01pm to 6pm) (45.7%). A very small proportion occurred in the early morning hours (8.0%) (Figure 9).

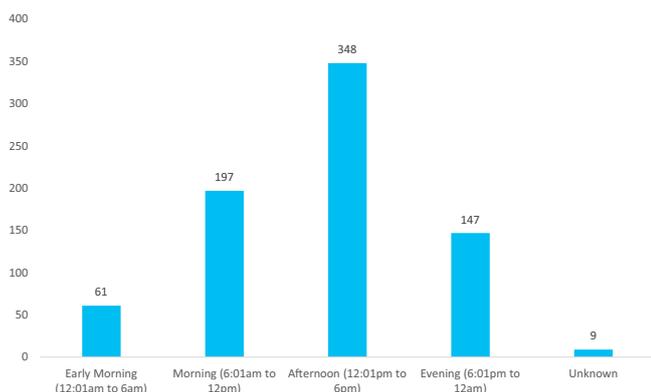


Figure 9: Drowning deaths among overseas born by time of the day, 2005/06 to 2014/15

Most drowning deaths occurred in locations classified as major cities (46.3%), followed by inner regional locations (20.6%). The least occurred in remote and very remote locations (11.5% combined) (Figure 10). When comparing location of drowning deaths between Australian and overseas born, 10% more overseas born drowning deaths occurred in major city locations compared to Australian born (46.2% vs. 36.2%).

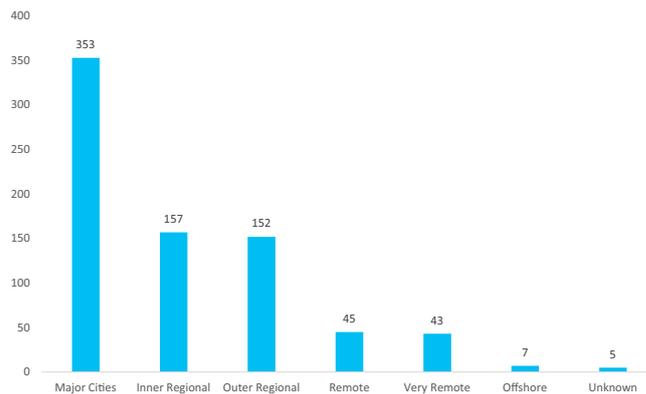


Figure 10: Drowning deaths among overseas born by remoteness classification, 2005/06 to 2014/15

When analysed by location, drowning deaths most commonly occurred at a beach (24.3%), at a river/creek/stream (21.4%), followed by the an ocean/harbour location (15.9%) (Figure 11).

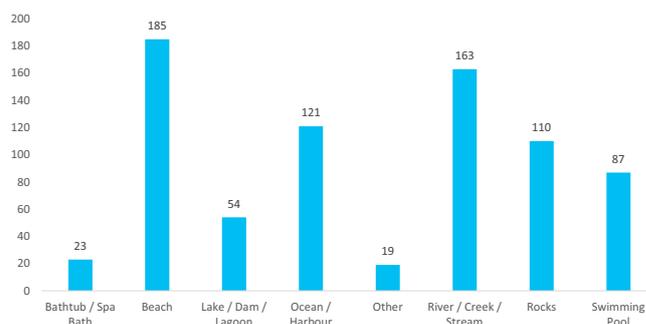


Figure 11: Drowning deaths among overseas born by location, 2005/06 to 2014/15

When compared to Australian born, overseas born drowning deaths most frequently occurred at the beach (23.7%) or a river/creek/stream (21.5%), whereas Australian born drowning deaths most commonly occurred at a river/creek/stream location (29.4%) followed by a swimming pool (15.6%) (Figure 12).

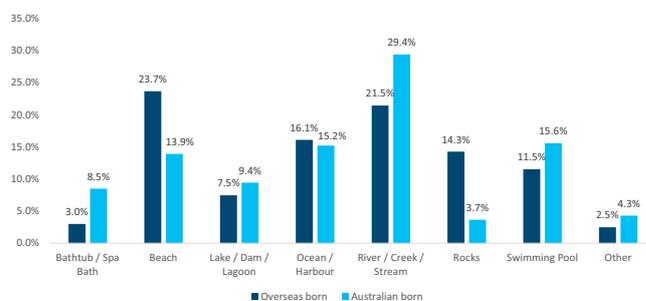


Figure 12: Drowning deaths analysed by Australian born and overseas born and location 2005/06 to 2014/15

## Activity

Drowning deaths most frequently occurred when swimming and recreating (31.0%), followed by a fall into the water (12.6%) and rock fishing (10.9%) (Figure 13). When analysed by sex and activity prior to drowning, swimming and recreating was the most common activity for males (32.7%) and females (25.2%). The second and third leading activities for males were rock fishing (12.6%) and a fall into water (10.4%). Leading activities prior to drowning for females after swimming, was a fall into water (21.2%) and diving (14.3%).

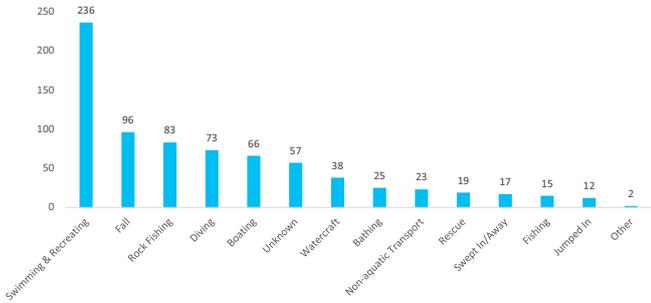


Figure 13: Drowning deaths among overseas born by activity, 2005/06 to 2014/15

When comparing activity prior to drowning between Australian and overseas born, swimming and recreating was the most frequent activity among overseas born (31.2%), and a fall into the water was the most common activity for Australian born (23.1%) (Figure 14).

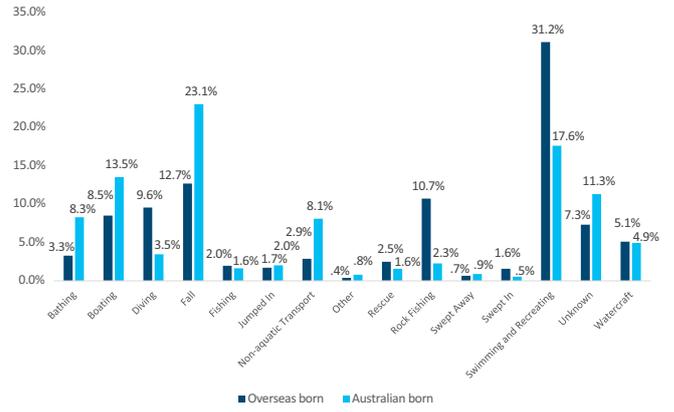


Figure 14: Drowning deaths compared by Australian born and overseas born by activity 2005/06 and 2014/15

Differences were evident when analysed by activity and age group. Those aged 75+ years accounted for 36.0% of all bathing drowning deaths, followed by the 55-64 years age group (28.0%). Those aged 18 – 24 years accounted for the highest group that ‘jumped in’ (58.3%) and were swept in (58.3%). Of those who drowned whilst attempting a rescue, 36.8% were aged 35 – 44 years (Figure 15).

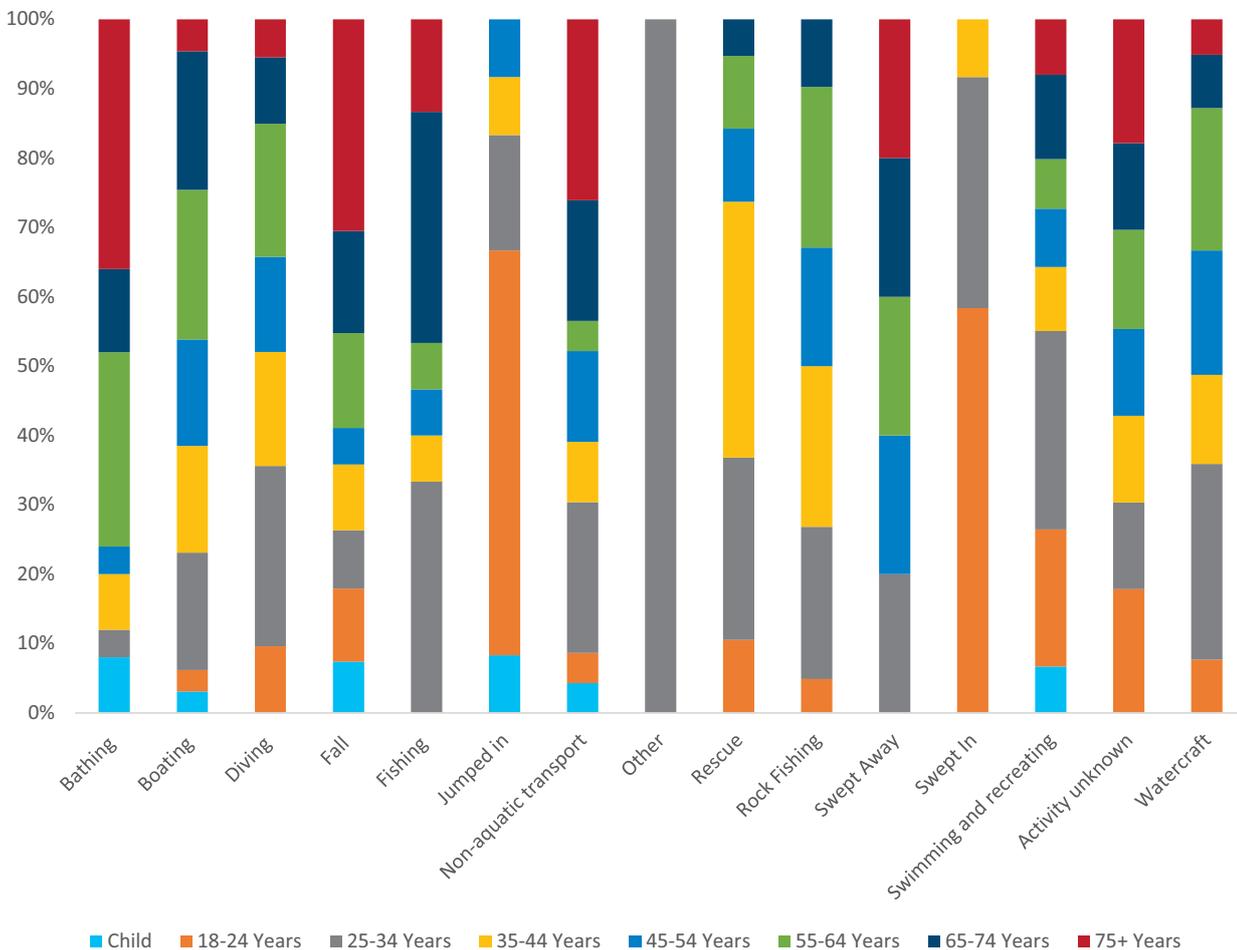


Figure 15: Drowning deaths among overseas born by activity and age, 2005/06 to 2014/15

## Risk factors

### Alcohol

Alcohol was involved in 25.3% of drowning deaths, presence of alcohol was unknown in 21.9% of cases (Figure 17).

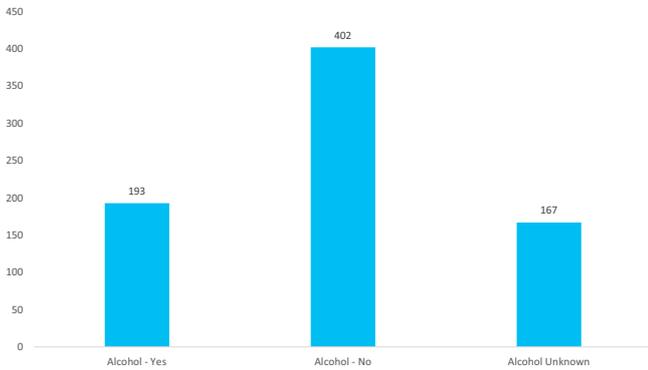


Figure 16: Drowning deaths among overseas born by presence of alcohol, 2005/06 to 2014/15

Of those who had alcohol in their system at the time of death (n=193), 57.5% had a BAC  $\geq$  0.05%. Only 12.4% of cases did not record a BAC level. Of total drowning deaths in this study, 14.6% were found to have a BAC  $\geq$  0.05% (Figure 18).

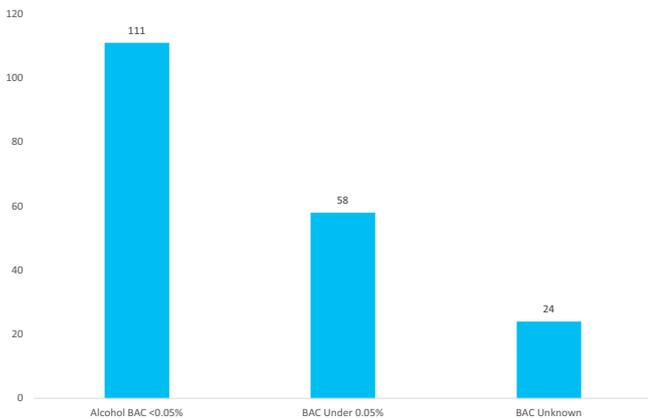


Figure 17: Drowning deaths among overseas born by alcohol relevance, 2005/06 to 2014/15

When analysed by sex and presence of alcohol, one-third (33.1%) of males and 28.4% of females had consumed alcohol prior to drowning. A similar proportion of males and females recorded a BAC  $\geq$  0.05% (66.7% males, 65.7% females). A similar proportion of overseas drowning deaths involved alcohol (25.6%) when compared to Australian born drowning deaths (27.3%).

When analysed by age and presence of alcohol, the 18-24 year age group had the highest proportion of alcohol present compared to all other age groups (43.6%) (p < 0.05), followed by those aged 25-34 years (41.1%) (p < 0.05). From the age of 45 years, people were less likely to have consumed alcohol prior to drowning (Figure 19).

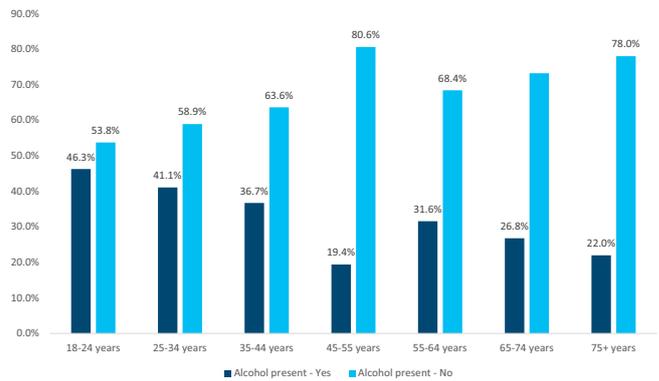


Figure 18: Drowning deaths among overseas born by age and presence of alcohol, 2005/06 to 2014/15

When analysed by activity and presence of alcohol, 63.6% of people who jumped into the water, 52.0% of people who fell into the water and 50.0% of people bathing had alcohol present at the time of death. Those who drowned whilst performing a rescue did not record any alcohol present. People participating in rock fishing and using watercraft were least likely to have consumed alcohol (12.5% each).

## Drugs

Drugs were present in 24.8% (n = 189) of drowning deaths (Figure 20). Of cases involving drugs, 75.9% had consumed legal drugs (medication), 20.1% had consumed illegal substances and 2.6% were found with both legal and illegal drugs in their system at the time of death. Overall, illegal drugs were present in 5.6% of overseas born drowning deaths.

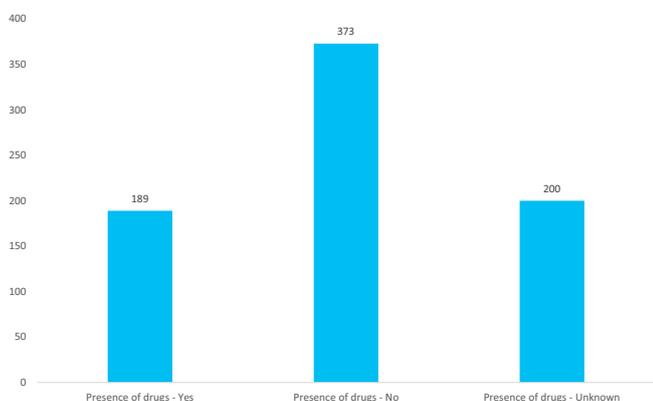


Figure 19: Drowning deaths among overseas born by presence of drugs, 2005/06 to 2014/15

## Medical conditions

A pre-existing medical condition was present in 37.7% of cases (Figure 16), of which 57.8% were considered to be a cardiac-related condition. More females recorded a pre-existing medical condition than males (44.9% vs. 35.9%).

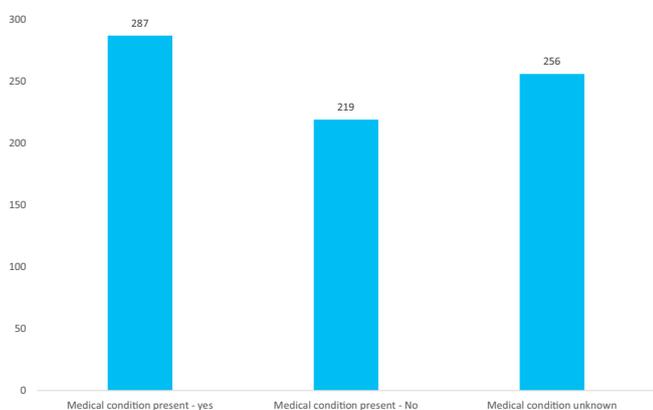


Figure 20: Drowning deaths among overseas born by presence of a pre-existing medical condition, 2005/06 to 2014/15

## Swimming ability

Swimming ability was recorded in 201 cases (26.4%). Of these cases, 37.8% were described as being a weak swimmer and 26.9% were non swimmers (Figure 21).

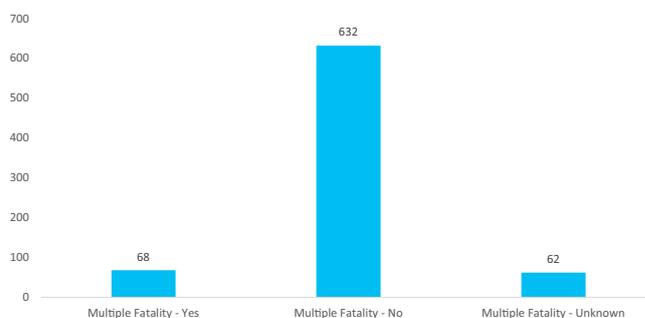


Figure 21: Drowning deaths among overseas born by swimming ability, 2005/06 to 2014/15

## Multiple fatality

Where known, 8.9% of cases (n = 68) were multiple fatalities where more than one person drowned during the same incident (Figure 22). Multiple fatality events most frequently occurred when boating (25.0%), rock fishing (17.6%) and 10.3% occurred when using non-aquatic transport.

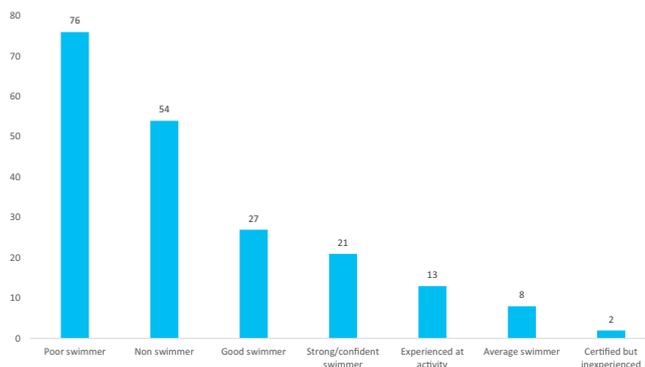


Figure 22: Drowning deaths among overseas born by multiple fatality event, 2005/06 to 2014/15

## Time in country analysis

Most people in this study (85.7%) were recorded as residing in Australia and 14.3% were overseas visitors at the time of their death. Time period of residency, was known in 57.7% of cases. Of these cases, 29.0% had resided in Australia for 10 years+, 23.1% were overseas tourists on holiday in Australia at the time of death, and 18.8% had been residents for 5 years or less (Figure 23). Trends by time in country were evident when analysed by sex, country of birth, location, activity and presence of alcohol.

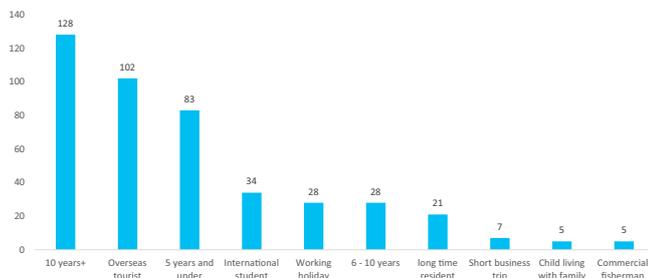


Figure 23: Drowning deaths among overseas born by time in country categories, 2005/06 to 2014/15

### Residents for 10 years+

The highest proportion of people in this study had resided in Australia for 10 or more years (28.9%, n = 128), 78.1% were male, and 21.9% female. One quarter (25.8%) were aged 55 – 64 years, 23.4% 65 – 74 years and 18.8% were aged 75+ years (Figure 24).

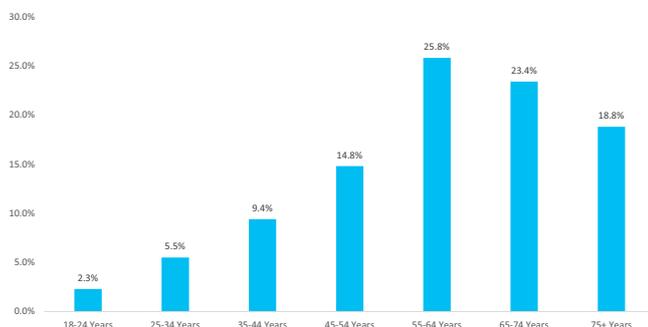


Figure 24: Drowning deaths among overseas born residents 10 years+, 2005/06 to 2014/15

The most common countries of birth for this group were: England (14.1%), U.K unspecified (10.2%), New Zealand (7.0%), and Vietnam (5.5%). Most (43.8%) had resided in Australia between 21 and 39 years, 35.9% had resided in Australia for 40 years or more and 20.3% had resided in Australia between 11 and 20 years.

People in this group most commonly drowned in WA (46.1%), followed by NSW (20.3%) and Victoria (12.5%). Drowning deaths among this group most frequently occurred in the summer (31.3%), and 32.8% occurred in the afternoon. A river/creek/stream was the most common location for drowning (21.9%), followed by an ocean/harbour location (17.2%) (Figure 25). Males were more likely to drown at a river/creek/stream (24.0%) or an ocean/harbour (19.0%) and females were more likely to drown at a swimming pool (21.4%).

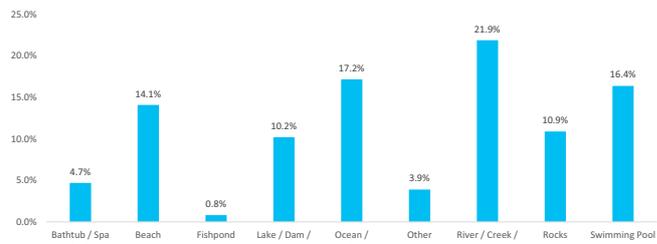


Figure 25: Drowning deaths among overseas born residents 10 years+ by location 2005/06 to 2014/15

The most common activity prior to drowning was swimming and recreating (19.7%), followed by a fall into water (18.1%) and boating (13.4%). For males, the leading activities were swimming and recreating (21.2%), followed by boating (15.2%) and for females it was a fall into the water (35.7%), following by swimming and recreating (14.3%) (Figure 26).

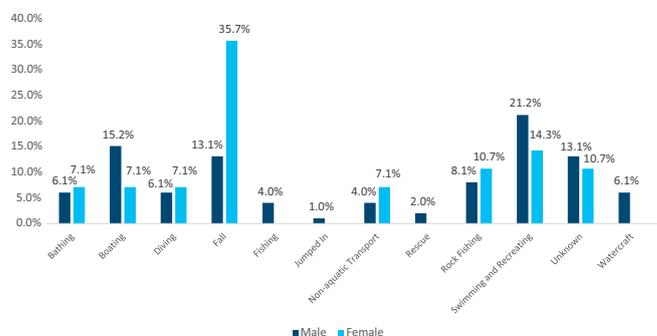


Figure 26: Drowning deaths among overseas born residents 10 years+ by activity and sex, 2005/06 to 2014/15

### Risk factors

Over half (57.8%) recorded a pre-existing medical condition. Alcohol was known to be present in 28.9% of cases (Figure 27), of which 64.7% recorded a BAC  $\geq 0.05\%$ . A similar proportion of males and females had alcohol present (males 32.6%, females 36.4%). Of those that recorded alcohol, a higher proportion of females recorded a BAC  $\geq 0.05\%$  (71.4%) compared to males (63.0%).

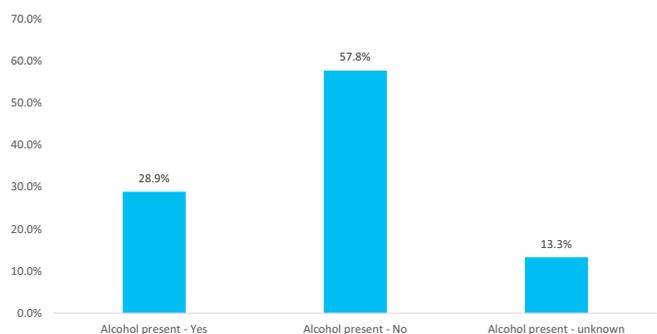


Figure 27: Drowning deaths among overseas born residents 10 years+ by presence of alcohol, 2005/06 to 2014/15

Drugs were recorded in 45.8% of cases, of which 11.8% involved illegal drugs. More females recorded drugs present than males (59.1% vs. 42.4%). A higher proportion of males recorded illegal drugs (10.5% vs. 7.7%).

Swimming ability was recorded in 26.6% of cases (n=34), of which 29.4% were thought to be non-swimmers, 20.6% weak swimmers and 23.5% strong/confident swimmers. Where known, 10.3% of cases were related to a multiple-fatality event.

### Long-time residents (exact time unknown)

An additional 4.8% (n = 21) were long-time residents in Australia (exact time unknown), 66.7% were male, and 33.3% female. Most (42.9%) were aged 75+ years, 23.8% were aged 65 – 74 years (Figure 28).

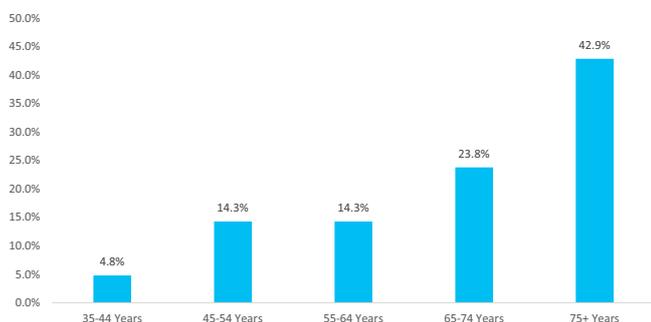


Figure 28: Drowning deaths among overseas born long-time residents by age 2005/06 to 2014/15

The most common countries of birth among this group were: China and Greece (14.3% each). Among this group, most drowning deaths occurred in NSW (61.9%), followed by Queensland (28.6%), and with 71.4% occurred in a location classified as a major city. Drowning deaths most commonly occurred in the summer (33.3%) and in the morning (47.6%).

The most common location for drowning was in a swimming pool (28.6%), followed by a river/creek/stream (23.8%) and ocean/harbour (19.0%). When analysed by sex and location, females were more likely to drown at inland waterways lake/dam/lagoon or a river/creek/stream than males (Figure 29).

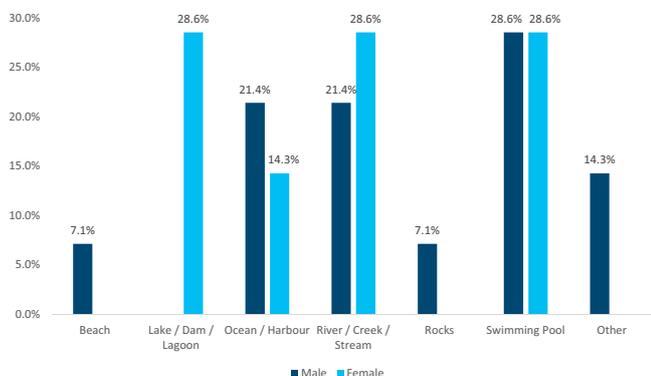


Figure 29: Drowning deaths among overseas born long-time residents by location and sex, 2005/06 to 2014/15

The most common activity prior to drowning was falling into the water (38.1%), followed by swimming and recreating (19.0%). When analysed by sex and activity, a fall into the water was the most common activity prior to drowning for males and females. The second leading activity for males was swimming and recreating (28.6%), for females, in 28.6% of cases activity prior to drowning was unknown (Figure 30).

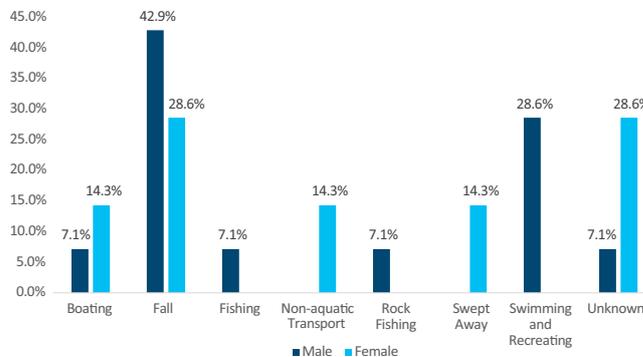


Figure 30: Drowning deaths among overseas born long-time residents by activity and sex, 2005/06 to 2014/15

### Risk factors

A pre-existing medical condition was recorded in 66.7% of cases. Alcohol was known to be present in 28.6% of cases (Figure 31), of which 50.0% recorded a BAC  $\geq 0.05\%$ . Over half (56.3%) recorded drugs present, of which 11.1% involved illegal drugs.

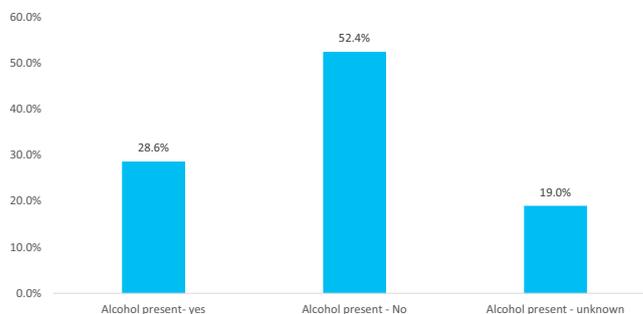


Figure 31: Drowning deaths among overseas born long-time residents by alcohol 2005/06 to 2014/15

Swimming ability was recorded in two cases, of which one was deemed to be a good swimmer and the other a non-swimmer. A multiple facility event was related to 14.3% of cases.

## Residents for 6 – 10 years

Overall, 6.3% had resided in Australia between 6 and 10 years. Most were male (78.6%), one-fifth (21.4%) female. Among this group, the 25 – 34 year age group accounted for the highest number of drowning deaths (32.1%), followed by the 35 – 44 year age group (21.4%) (Figure 32).

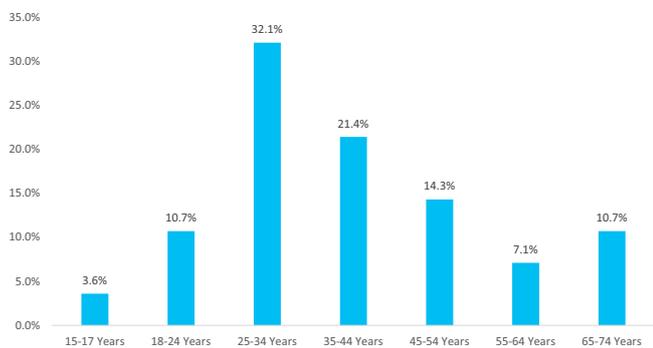


Figure 32: Drowning deaths among overseas born residents 6 - 10 years by age, 2005/06 to 2014/15

Residents 6 -10 years were most commonly born in New Zealand and China (10.7% each), followed by England, Philippines and Taiwan (7.1%). In total, 46.4% were born in Asian countries. The highest number of drowning deaths occurred in WA (39.3%), followed by NSW (25.0%) and Victoria (21.4%). Over half (53.6%) occurred in locations classified as major cities. Drowning deaths most commonly occurred in the summer (35.7%), and in the afternoon (53.6%).

An equal number of drowning deaths occurred at a beach, river/creek/stream or rocks (25.0% each) (Figure 33). The most common location of drowning for males was at rocks or a river/creek/stream (27.3% each), and for females was a beach (33.3%).

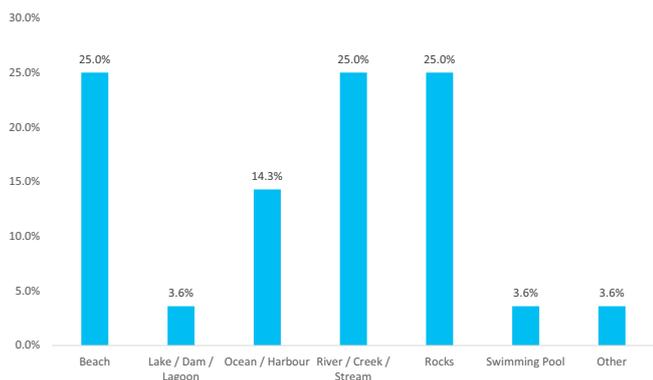


Figure 33: Drowning deaths among overseas born residents 6 - 10 years by location, 2005/06 to 2014/15

The most common activity prior to drowning was swimming and recreating (35.7%), followed by rock fishing (25.0%) (Figure 34). The most common activity prior to drowning for females was swimming and recreating (66.7%) and an equal number of males drowned when rock fishing and swimming /recreating (27.3% each).

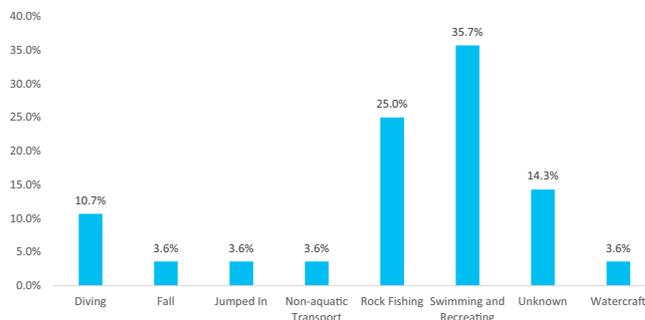


Figure 34: Drowning deaths among overseas born residents 6 - 10 years by activity, 2005/06 to 2014/15

## Risk factors

A pre-existing medical condition was recorded in 39.3% of cases. Alcohol was involved in 25.0%, of which 71.3% recorded a BAC  $\geq 0.05\%$ . Drugs were recorded in 13.0%, of which one case involved illegal drugs. Ten (10.0%) percent of cases were related to a multiple fatality event. Swimming ability was recorded in 60.7% of cases, of which 47.1% were considered to be weak swimmers and 23.5% were strong/confident swimmers (Figure 35).

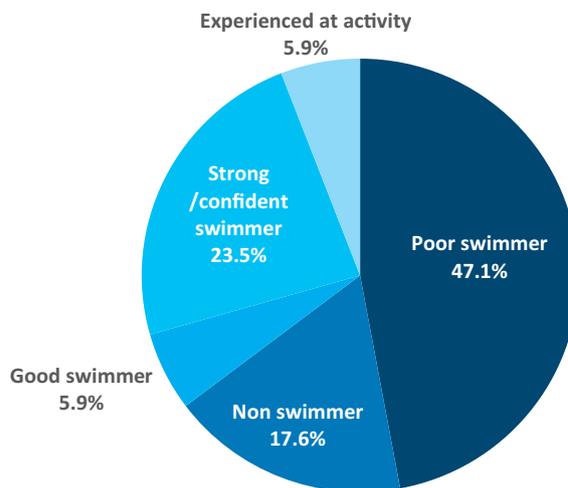


Figure 35: Drowning deaths among overseas born residents 6 - 10 years by swimming ability, 2005/06 to 2014/15

## Residents for 5 years or less

Overall, 18.9% of overseas born drowning deaths had resided in Australia for five years or less. Most (83.1%) were male, 16.9% female. Those aged 25 – 34 years (33.7%) accounted for the highest proportion, followed by the 18 – 24 year age group (19.3%) (Figure 36).

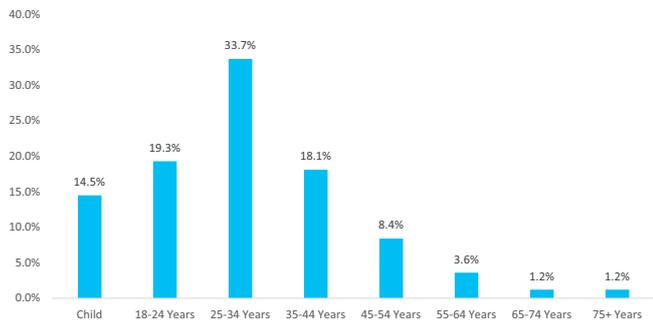


Figure 36: Drowning deaths among overseas born residents 5 years or less by age, 2005/06 to 2014/15

The most common countries of birth were: South Korea (9.6%), India (8.4%), and China (7.2%) Over half (57.8%) had resided in Australia for between 13 months and five years, and 42.2% had been residents for 12 months or less.

Among this group, most drowning deaths occurred in NSW (32.5%), followed by WA (25.3%), and Victoria (20.5%). Most occurred in summer (43.4%) and in the afternoon (48.2%).

Beaches were the most common location for drowning (31.3%), followed by rocks (16.9%) (Figure 37). Females were more likely than males to drown in a swimming pool or at a beach (35.7% each), while males were more likely to drown at a beach (30.4%), followed by rocks (18.8%).

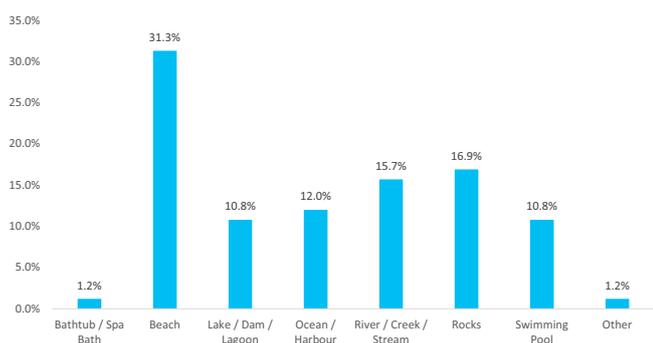


Figure 37: Drowning deaths among overseas born residents 5 years or less by location 2005/06 to 2014/15

Overall, the most common activity prior to drowning was swimming and recreating (44.6%). The second leading activity prior to drowning for males was rock fishing (15.9%) and for females, a fall into water (21.4%) (Figure 38).

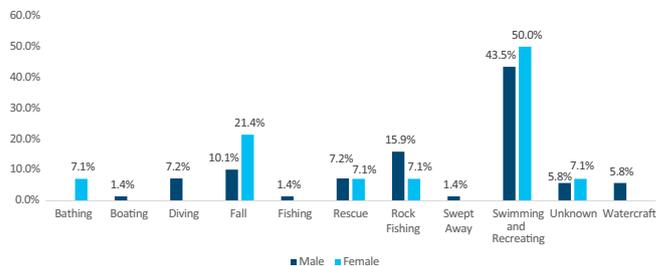


Figure 38: Drowning deaths among overseas born residents 5 years or less by activity and sex, 2005/06 to 2014/15

## Risk factors

A pre-existing medical conditions were reported in 19.3% cases. Alcohol was known to be present 30.8% of cases, of which 63.2% recorded a BAC  $\geq 0.05\%$ . More males than females recorded alcohol present (32.7% males versus 23.1% female). Drugs were recorded in 23.8%, of which 61.6% involved illegal drugs; residents 5 years or less reported the highest proportion of illegal drugs out of all categories. Eleven percent (11.0%) of cases related to a multiple fatality event. Swimming ability was recorded in 40.9% cases, of which 47.1% were deemed to be weak swimmers and 35.3% were non swimmers (Figure 39).

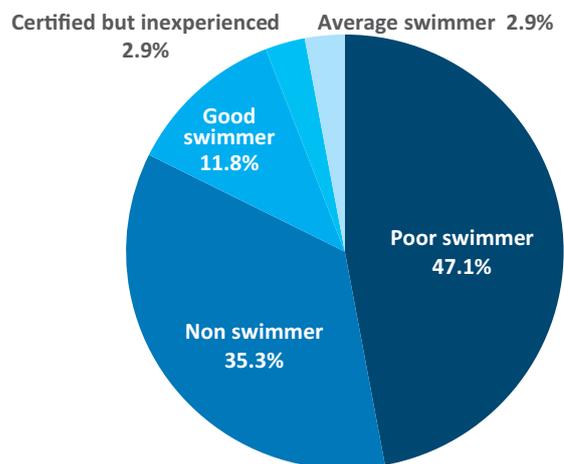


Figure 39: Drowning deaths among overseas born residents 5 years or less by swimming ability, 2005/06 to 2014/15

## Overseas Tourists

Overall, 23.2% were of tourists on holiday in Australia at the time of death, most were males (82.4%). Those aged 25 – 34 years (23.5%) accounted for the highest proportion of drowning deaths in this group, followed by the 55 – 64 years and 65 – 74 year age groups (17.6% each) (Figure 40).

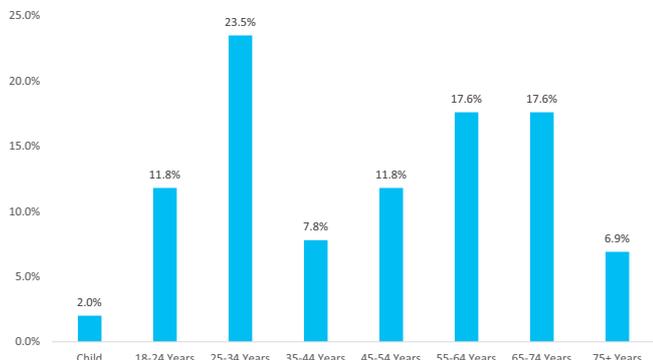


Figure 40: Drowning deaths among overseas tourists by age, 2005/06 to 2014/15

Of overseas tourists that drowned, 28.4% had been in Australia for 1 week or less. Overseas tourists were most commonly from China and the U.K (country unspecified) (9.8% each), followed by England, Germany, Japan and the United States (8.8% each).

Half (50.0%) of all overseas tourist drowning deaths occurred in Queensland, followed by WA (24.5%) (Figure 41). Just over a third (34.3%) occurred in outer regional locations, followed by major cities (25.5%).

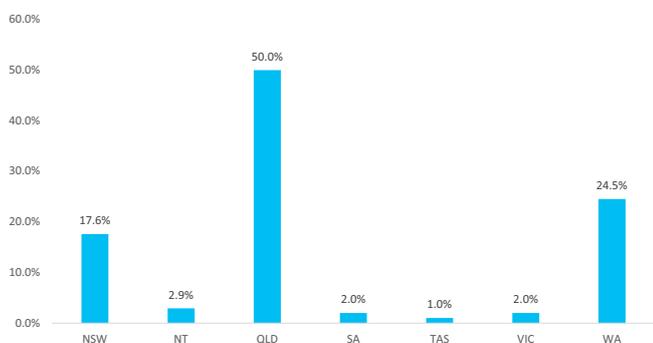


Figure 41: Drowning deaths among overseas tourists by State/Territory of drowning incident, 2005/06 to 2014/15

Drowning deaths most commonly occurred in summer (36.3%), and over half (53.9%) occurred in the afternoon. Beaches were the most common location for overseas tourist drowning deaths (46.1%), followed by ocean/harbour (20.6%) (Figure 42). The most common location for drowning for males was a beach (50.0%), and for females, an ocean/harbour location (38.9%).

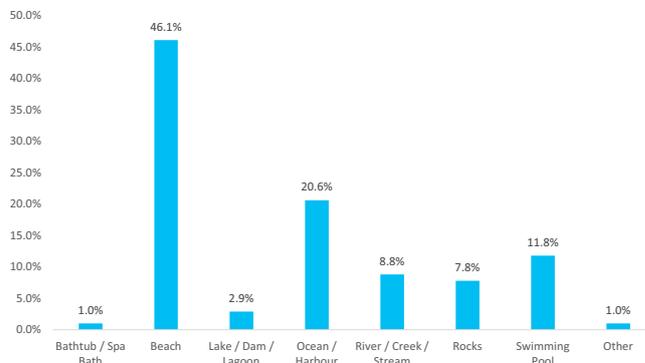


Figure 42: Drowning deaths among overseas tourists by location, 2005/06 to 2014/15

The most common activity prior to drowning was swimming and recreating (43.1%), followed by diving (28.4%). The most common activity prior to drowning for males was swimming and recreating (44.0%) and for females was diving (50.0%).

## Risk factors

A pre-existing medical condition was recorded in 41.2% of cases. Alcohol was present in 17.6%, of which 69.2% recorded a BAC  $\geq 0.05\%$ . Drugs were recorded in 30.1%, of which 21.7% involved illegal drugs. Two percent (2.1%) of cases were related to a multiple-fatality incident. Swimming ability was recorded in 28.4% cases, of which 41.4% were considered to be weak swimmers and 20.7% were considered to be good swimmers.

### International Students

Overall, international students accounted for the fourth highest category of overseas born drowning death (7.7%), most were male (88.2%). Most (64.7%) were aged 18 – 24 years, followed by those aged 25 – 34 years (29.4%). International students were most commonly from: India 29.4%, China 26.5%, and South Korea 11.8% (Figure 43). Where time in country was known, half (50.0%) had been in Australia for one year or less.

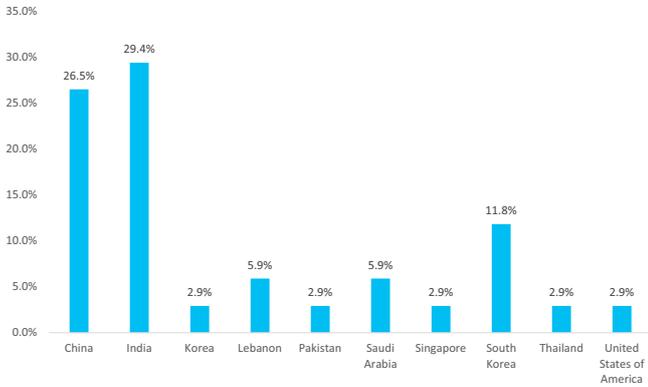


Figure 43: Drowning deaths among international students by country of birth, 2005/06 to 2014/15

Drowning deaths among international students most commonly occurred in Queensland (35.3%), followed by NSW (32.4%), and Victoria (20.6%). Most (47.1%) occurred in locations classified as major cities. Rocks were the most common location (29.4%), followed by the beach and river/creek/stream (23.5% each) (Figure 44). The most common activity prior to drowning was swimming and recreating (44.1%), followed by being swept in (11.8%).

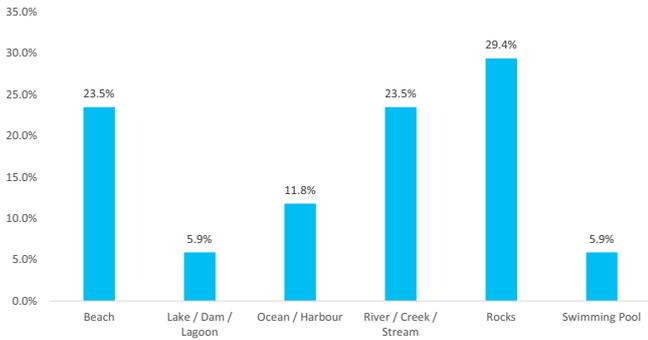


Figure 44: Drowning deaths among international students by location, 2005/06 to 2014/15

### Risk factors

A pre-existing medical condition was recorded in 14.7% of cases. Alcohol was recorded in 27.6%, of which 57.1% recorded a BAC  $\geq 0.05\%$ . Drugs were recorded in 22.2%, which 33.3% involved illegal drugs. A multiple fatality event was related to 17.6% of cases. Swimming ability was recorded in 38.2%, of which 53.8% considered to be non swimmers and 38.5% were poor swimmers (Figure 45).

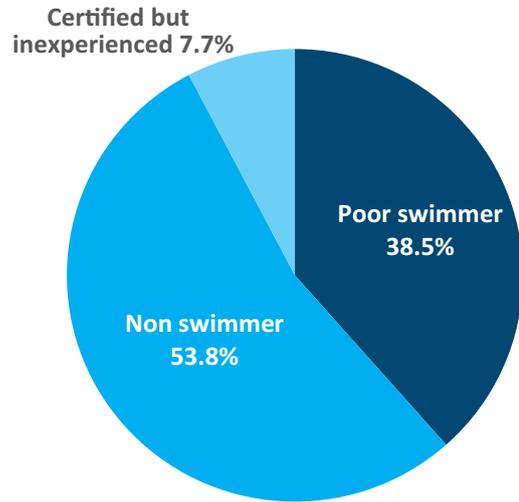


Figure 45: Drowning deaths among international students by swimming ability, 2005/06 to 2014/15

## Working Holiday

Overall, those in Australia on a working holiday accounted for 6.3% of overseas born drowning deaths, most were male (85.7%). The highest proportion were aged 25 – 34 years (60.7%), followed by the 18 – 34 year age group (39.3%). The most common country of birth were: Taiwan (25.0%), South Korea (21.4%), Ireland and North Korea (14.3% each) (Figure 46). Most (64.3%) had been in Australia for one year or less.

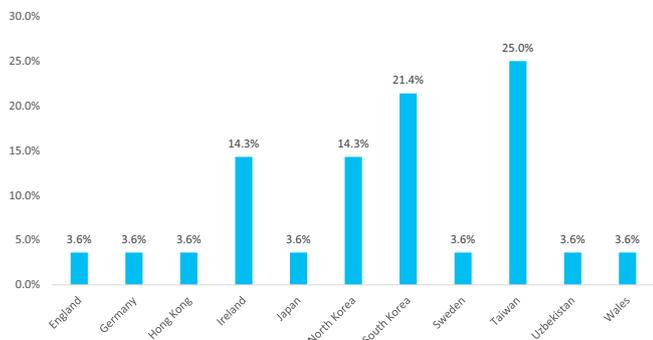


Figure 46: Drowning deaths among working holiday makers by country of birth 2005/06 to 2014/15

Drowning deaths most frequently occurred in Queensland (32.1%), followed by NSW and WA (28.6% each). One quarter (25.0%) occurred in outer regional locations, followed by major cities and inner regional locations (21.4% each). The most common location for drowning was a river/creek/stream (46.4%), followed by a beach (21.4%) (Figure 47). Drowning most commonly occurred in the spring months (32.9%), and in the afternoon (53.6%).

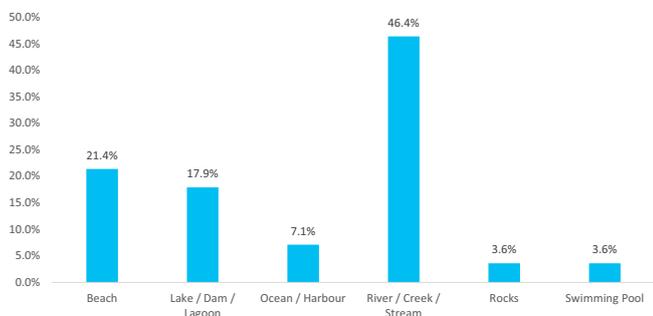


Figure 47: Drowning deaths among working holiday makers by location, 2005/06 to 2014/15

The most common activity prior to drowning was swimming and recreating (53.6%) (Figure 48).

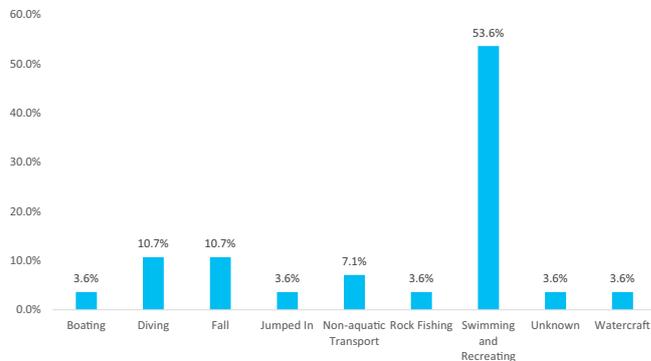


Figure 48: Drowning deaths among working holiday makers by activity, 2005/06 to 2014/15

## Risk factors

A pre-existing medical condition was recorded in 10.7% of cases. Alcohol was present in 42.3%, of which 72.7% recorded a BAC  $\geq 0.05\%$ . Drugs were recorded in 26.1%, of which 33.3% involved illegal drugs. A small percentage (8.0%) of cases were related to a multiple fatality event. Swimming ability was recorded in 28.5%, of which 50.0% were recorded as poor swimmers, and 25.0% non swimmers (Figure 49).

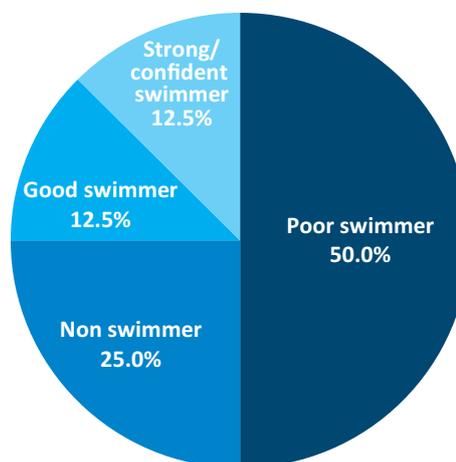


Figure 49: Drowning deaths among working holiday makers by swimming ability, 2005/06 to 2014/15

### Short Business Trip

A small number (n = 7) were people who were in Australia for business purposes, such as a conference or meetings. All, except one, were male (85.7%), the highest number occurred among those aged 18 – 24 years and 45 – 64 years (28.6% each). People in this group were most commonly from the United States (42.9%) (Figure 50).

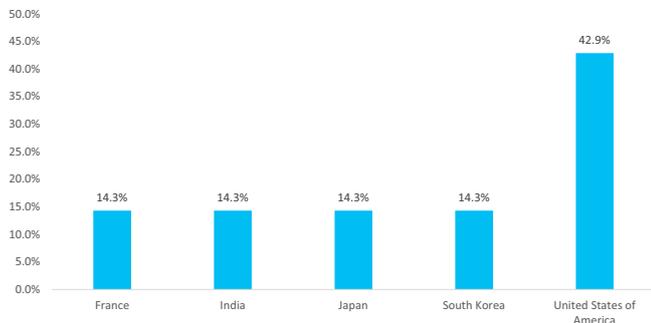


Figure 50: Drowning deaths among people on a business trip by country of birth 2005/06 to 2014/15

Drowning deaths in this group most commonly occurred in Tasmania and Queensland (28.6% each).

Drowning occurred most frequently occurred in major cities and inner regional locations (28.6% each), in autumn (42.9%), and in the afternoon (42.9%). The most common location for drowning was at a beach, river/creek/stream or ocean/harbour (28.6% each) and the leading activity prior to drowning was swimming and recreating and diving (28.6% each).

### Risk factors

A pre-existing medical condition was recorded in 28.6% of cases. Overall, the only category that reported more cases of alcohol present than not, was among this category (57.1% yes, 42.9% no) (Figure 51), of which, 75.0% recorded a BAC  $\geq 0.05\%$ . Drugs were not recorded in any cases. Swimming ability was recorded in three cases, of which all were considered to be experienced at the activity (66.7%) or a strong/confident swimmer (33.3%).

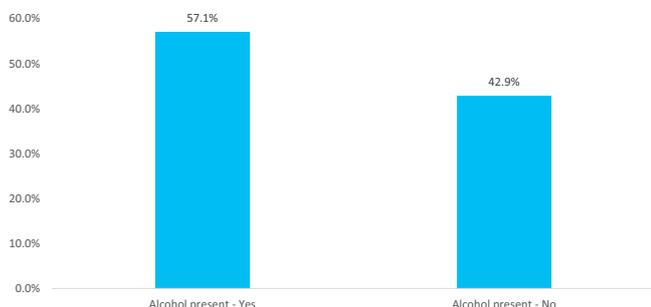


Figure 51: Drowning deaths among people on a business trip by present of alcohol, 2005/06 to 2014/15

### Commercial fisherman

A small number of cases (n = 5) were among commercial fishermen in Australia waters, all from international crews. Unsurprisingly all of drownings occurred offshore, in the ocean. Three cases occurred offshore from Queensland, one off the coast of NSW and the other off the coast of WA.

Alcohol was known to be involved in one case. No cases recorded drugs present.

### Child living with family

A small number of cases (n=5) were of children that were born overseas and were considered residents, however there was limited information regarding time in country. An equal number were within the 0 – 4 years and, 5 – 9 years age group (two each) and one was aged 10 – 14 years. All cases occurred in Queensland, one of the children was visiting intra-state. Four out of the five children were born in Asian countries (China, Vietnam, Thailand), and one from Africa. An equal number of cases occurred in a swimming pool or a dam (two each) and one occurred in an ocean/harbour location. The most frequent activity prior to drowning was a fall into water. All were considered to be non swimmers.

## STATE SUMMARIES

### Australian Capital Territory (ACT)

Between 2005/06 and 2014/15, 16 people unintentionally drowned in the ACT, of which 31.3% (n=5) were born overseas. The 10 year average crude rate of overseas born drowning deaths in the ACT was 0.52 per 100,000 overseas born population residing in the ACT.

All were males, aged between 18 and 75 years of age. All were residing in Australia at the time of death, 60% were residents for 10 years+. Two people had lived in Australia for five years or less. All five people were from different countries.

#### Time and location

The majority of drowning deaths occurred in summer (80.0%), and in the afternoon (60.0%). The most common location was a lake/dam/lagoon (60.0%), 40.0% occurred when swimming and recreating.

#### Risk Factors

One case recorded a pre-existing medical condition. Alcohol was present in 40.0% of cases, both recorded a BAC  $\geq 0.05\%$ . One cases recorded drugs present, deemed to be legal (medication). Swimming ability was known in three cases, of which two were considered non-or poor swimmers (Figure 52).

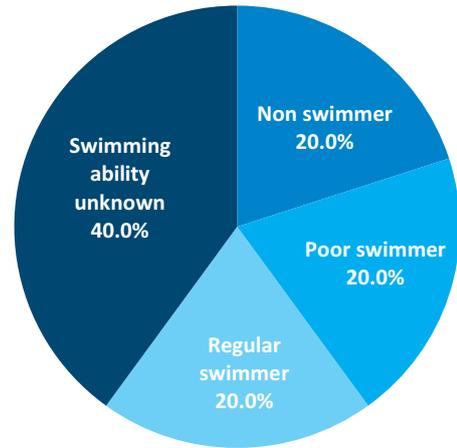


Figure 52: Drowning deaths in the ACT among overseas born by swimming ability, 2005/05 to 2014/15



## New South Wales (NSW)

Between 2005/06 and 2014/15, 1014 people drowned in NSW, of which 28.1% (n=284) were born overseas, in 12.7% (n=129) of cases country of birth was unknown. The 10 year average crude rate for overseas born drowning deaths in NSW 0.56 per 100,000 people (residents and overseas tourists). The highest number of drowning deaths occurred in 2006/07 (14.1%), and the lowest in 2007/08 (6.0%) (Figure 53).

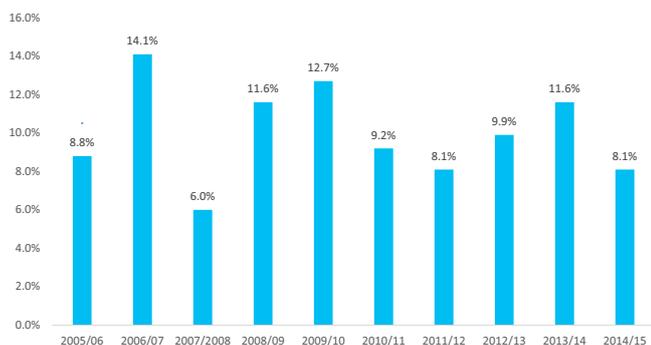


Figure 53: Drowning deaths in NSW among overseas born by financial year, 2005/06 to 2014/15

Males accounted for 79.2% and females 20.8%. Drowning occurred most commonly among the 25 - 34 age group (22.2%), followed by those aged 55 – 64 years (15.5%) (Figure 54).

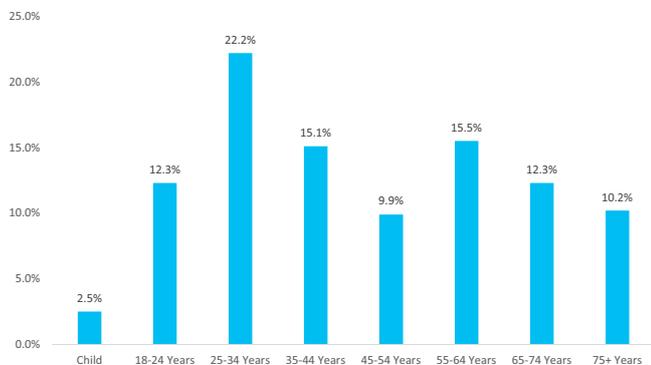


Figure 54: Drowning deaths in NSW among overseas born by age, 2005/06 to 2014/15

The most common countries of birth were: China (13.7%), South Korea (8.1%) and the U.K (country not specified) (6.3%). Most people (93.7%) were residing in Australia at the time of death. Time in country was known in 38.4% of cases, of which 24.8% had resided in Australia for 5 years or less, 23.9% for 10 years+, and 16.5% were international tourists (Figure 55).

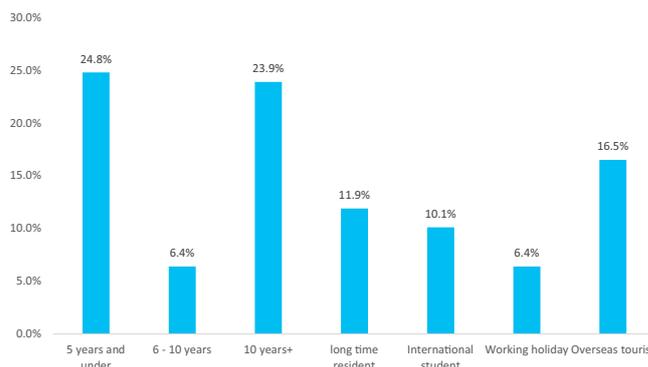


Figure 55: Drowning deaths in NSW among overseas born by time in country, 2005/06 to 2014/15

Residents 5 years or less were most likely to be from China or South Korea (14.8% each) or India (11.1%). Residents 10 years+ were most commonly born in Hong Kong (19.2%) and Macedonia (11.5%). Over half of international students who had drowned in NSW were from China or India (27.3% each). The highest number of international tourists that drowned were from Germany and the U.K (country unspecified) (27.8% each).

## Time and location

Most drowning deaths among people born overseas occurred in summer (38.0%), 14.4% in January and February (13.0%), and on a Saturday (22.2%) or Sunday (20.8%), and 41.9% occurred in the afternoon. Drowning deaths most commonly occurred at a major city location (58.3%), at a beach (27.8%) or around rocks (21.8%).

## Activity

The leading activity being undertaken at the time of death was swimming and recreating (29.9%) followed by rock fishing (19.0%). When analysed by time in country and activity, 36.6% of people who drowned when swimming or recreating were residents 5 years or less. Of those who drowned when diving, 40.0% were overseas tourists. Of those that drowned rock fishing, 44.5% were residents for 10 years+. Multiple fatality event were related to 8.5% of cases, where more than one person drowned during the incident.

## Risk factors

A pre-existing medical condition was present in 31.3% of cases. Alcohol was present in 26.8%, of which 59.2% recorded a BAC  $\geq 0.05\%$ . Drugs were present in 18.3% of cases, of which 17.0% recorded presence of illegal substances. Those aged 18 - 24 years were most likely to have consumed alcohol (45.7%). Swimming ability was recorded in 26.4% cases, of which 32.0% were deemed to be non-swimmers and 16.0% were poor swimmers.

## Northern Territory (NT)

Between 2005/06 and 2014/15, 88 people drowned in the NT, of which 19.3% (n=17) were born overseas. The highest number of deaths occurred in 2009/10 (29.4%). The 10 year average crude rate for overseas born drowning deaths in the NT was 0.50 per 100,000 (overseas born and overseas tourists). All (except one) were male, aged between 18 and 75 years of age. Countries of birth included: Czech Republic, England, Greece, Indonesia, Ireland, Malaysia, New Zealand, Poland, Scotland, Taiwan and the United States. Most people had resided in Australia for 10 years+ (42.2%), 17.6% were overseas tourists (Figure 56).

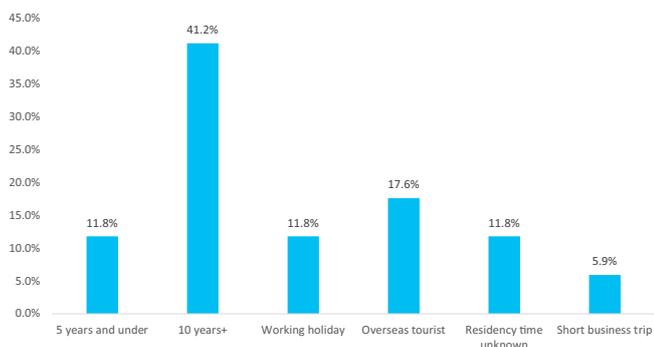


Figure 56: Drowning deaths in the NT among overseas born by time in country, 2005/06 to 2014/15

Residents for 10 years+ were from a range of countries, including: England, Greece, Indonesia, New Zealand, Poland, and Scotland. Overseas tourists were from Malaysia, New Zealand and the United States. Both cases of people who drowned whilst on a working holiday were from Taiwan.

## Time and location

Most drowning deaths occurred in April, July and October (17.6%), 29.4% occurred on a Sunday, 64.7% occurred in the afternoon. The most common location for drowning was at a river/creek/stream (41.2%), followed by a lake/dam/lagoon (17.6%) (Figure 57). The leading activity prior to drowning was swimming and recreating (58.8%), and a fall into water (17.6%).

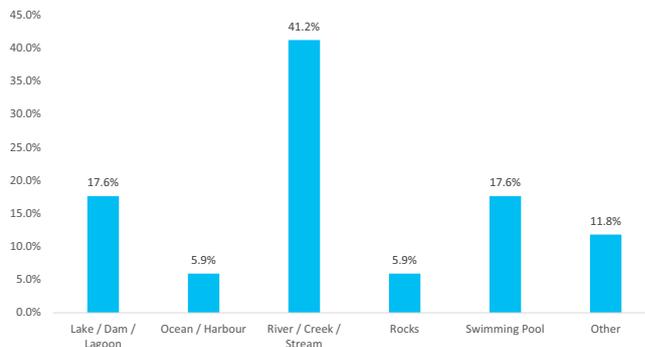


Figure 57: Drowning deaths in the NT among overseas born by location, 2005/06 to 2014/15

## Risk factors

A pre-existing medical condition was recorded in 64.7% of cases. Alcohol was present in 23.5%, of which 66.7% recorded BAC  $\geq$  0.05%. Drugs were present in 41.2%, of which 28.6% recorded illegal drugs. Swimming ability was recorded in three cases, of which two were deemed to be a poor swimmer.



## Queensland (QLD)

Between 2005/06 and 2014/15, 678 people drowned in Queensland, of which 31.0% (n=210) were born overseas, country of birth was unknown in 9.1% of cases. The 10 year average crude rate for overseas born drowning deaths in Queensland was 0.67 per 100,000 people (residents and overseas tourists). The highest number of drowning deaths occurred in 2009/10 (12.4%), and the lowest in 2010/11 (6.7%) (Figure 58).

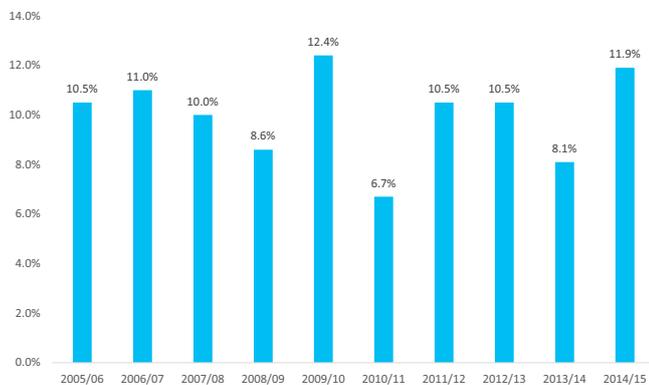


Figure 58: Drowning deaths in QLD among overseas born by financial year, 2005/06 to 2014/15

Males accounted for 78.1% and females 21.9%. The highest number occurred within the 25 - 34 year age group (23.3%) (Figure 59).

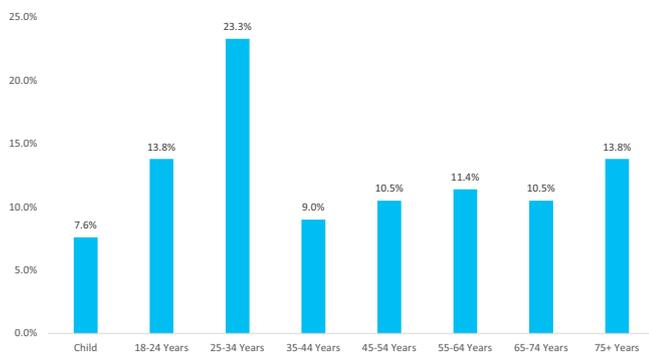


Figure 59: Drowning deaths in QLD among overseas born by age group, 2005/06 to 2014/15

Countries people were most commonly born in were: China (11.0%), New Zealand (10.0%) and England (7.1%) Three quarters (75.7%) were residing in Australia at the time of death. Where time of residency was known, 46.2% were overseas tourists, followed by resident five years or less (12.3%), and international students (11.3%) (Figure 60).

Overseas tourists were most likely to be from China (16.3%), Japan (14.3%) and the United States (10.2%). Residents 5 years or less were from 12 individual countries; 53.8% were from countries within the Asian region (Japan, Malaysia, North Korea, South Korea, Philippines and Vietnam). The highest number of international students were from China (25.0%), and Vietnam (16.7%).

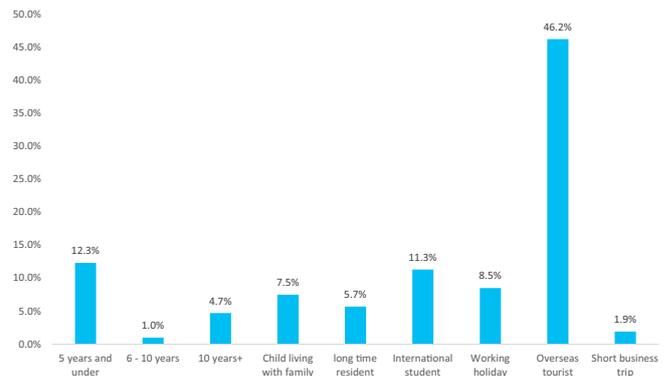


Figure 60: Drowning deaths in QLD among overseas born by time in country, 2005/06 to 2014/15

### Time and location

Drowning deaths most frequently occurred in the summer (39.5%) and spring (22.4%), on a Saturday (19.0%) or a Sunday (18.6%), and 47.6% occurred on in the afternoon. Drowning deaths most commonly occurred at a major city location (41.0%). The most common location was at a river/creek or stream (25.2%) followed by an ocean/harbour location (22.9%).

### Activity

The leading activity prior to drowning was swimming and recreating (32.9%). When analysed by time in country and activity, 30.4% of people who drowned when swimming or recreating were international tourists. Of those who drowned when diving, 63.6% were international tourists. Both cases of people being swept into the water were of international students.

### Risk factors

A pre-existing medical condition was present in 41.4% of cases. Alcohol was present in 24.3%, of which 52.9% recorded a BAC  $\geq$  0.05%. Drugs were present in 23.3%, of which 32.7% recorded illegal drugs. Those aged 25 - 34 years were most likely to have consumed alcohol (31.4%). Swimming ability was recorded in 22.4% cases, of which 36.2% were deemed to be a poor swimmer and 29.8% a non swimmer (Figure 61).

### Experienced diver 4.3%

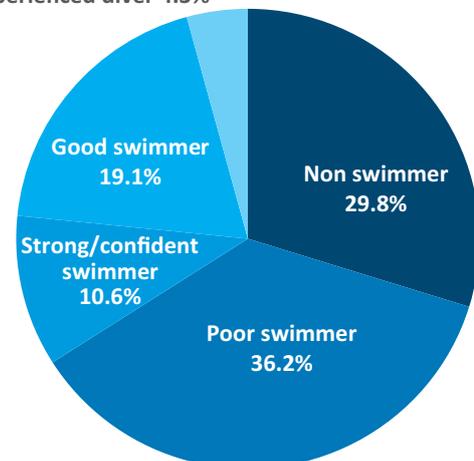


Figure 61: Drowning deaths in QLD among overseas born by swimming ability, 2005/05 to 2014/15

## South Australia (SA)

Between 2005/06 and 2014/15, 156 people drowned in SA, of which 11.5% (n=18) were born overseas, country of birth was unknown in 53.2% of cases. The 10 year average crude rate for overseas born drowning deaths was 0.24 per 100,000 (overseas born and overseas tourists). The highest number of drowning deaths occurred in 2012/13 (22.2%), and the lowest in 2008/09 (5.6%) (Figure 62).

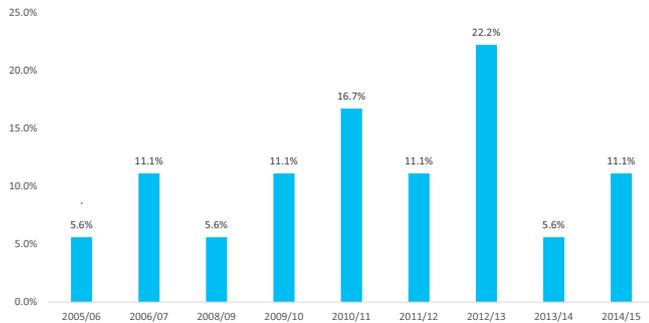


Figure 62: Drowning deaths in SA among overseas born by financial year, 2005/06 to 2014/15

Most drowning deaths were of males (77.8%), 22.2% were females. The highest proportion occurred among those aged 75+ years (22.2%), followed by those aged 55 - 64 years and 25 - 34 years (16.7% each) (Figure 63).

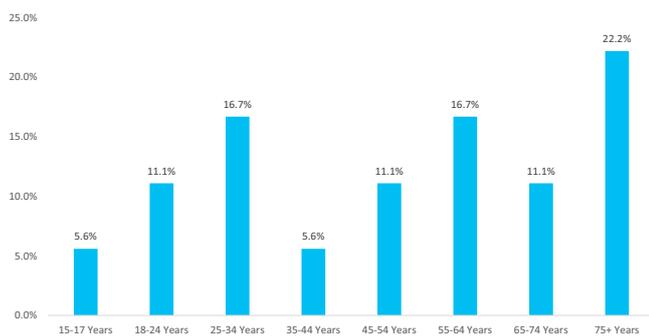


Figure 63: Drowning deaths in SA among overseas born by age, 2005/06 to 2014/15

Countries people were most commonly born in were: The U.K (country unspecified) (16.7%), Germany (11.1%) and India (11.1%). Time of residency was unknown in 83.3% of cases. Two people (11.1%) were international tourists. One person was recorded to have been a resident for 45 years.

## Time and location

Most drowning deaths occurred in summer (44.4%), most occurred on a Tuesday (27.8%) and 50.0% in the afternoon. The most common location was at a beach (38.9%) (Figure 64). The leading activity prior to drowning was swimming and recreating (38.9%).

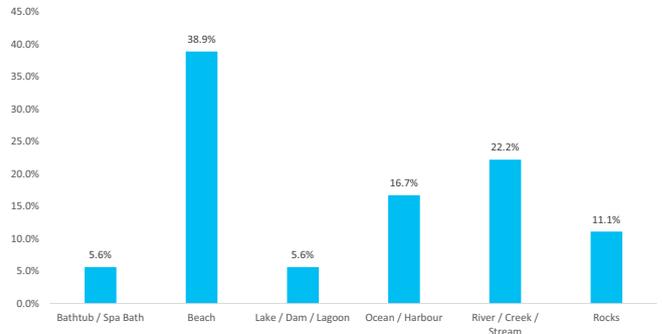


Figure 64: Drowning deaths in SA among overseas born by location, 2005/06 to 2014/15

## Risk factors

A pre-existing medical condition was present in 27.8% of cases. Alcohol was present in 16.7%, of which 66.7% recorded a BAC  $\geq 0.05\%$ . Drugs were present in two cases, of which one case recorded illegal drugs. Swimming ability was recorded in two cases, of which both were described as being experienced at their activity (fisherman and free diver). Two cases (11.1%) related to a multiple fatality event.

## Tasmania (TAS)

Between 2005/06 and 2014/15, 107 people drowned in Tasmania, of which 20.6% (n=22) were born overseas. The 10 year average rate for overseas born drowning deaths in Tasmania was 0.11 per 100,000 (overseas born and overseas tourists). The highest number of drowning deaths occurred in 2009/10 (27.3%), and the lowest in 2012/2013 (4.5%) (Figure 65). Males accounted for 72.7% and females 27.3%. The highest proportion of drowning among overseas born occurred within the 55 - 64 years age group and those aged 75+ years (22.7% each).

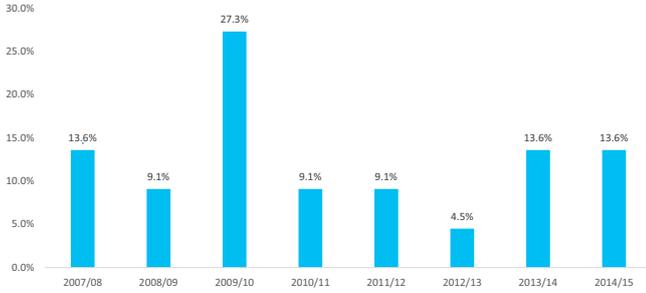


Figure 65: Drowning deaths in TAS among overseas born by financial year 2005/06 to 2014/15

The most common countries of birth were: England, Netherlands, New Zealand, U.K (unspecified country) (13.6%). Residency time was unknown in 22.7% of cases, 50.0% had been residents for 10 years+ (Figure 66). Two people were on a business trip when they drowned, one from India and one from the United States.

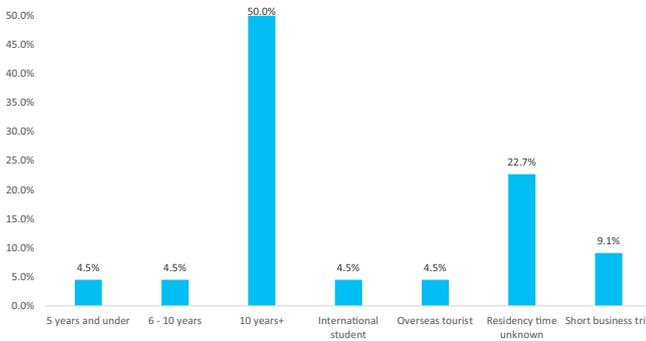


Figure 66: Drowning deaths in TAS among overseas born by time in country, 2005/06 to 2014/15

Most drowning deaths occurred in summer (50.0%), on a Friday (22.7%), and 72.7% occurred in the afternoon. The most common location for drowning deaths was at a river/creek/stream (27.3%), followed by an ocean/harbour location (18.2%) (Figure 67). The leading activity prior to drowning was swimming and recreating (18.2%), followed by bathing (13.6%).

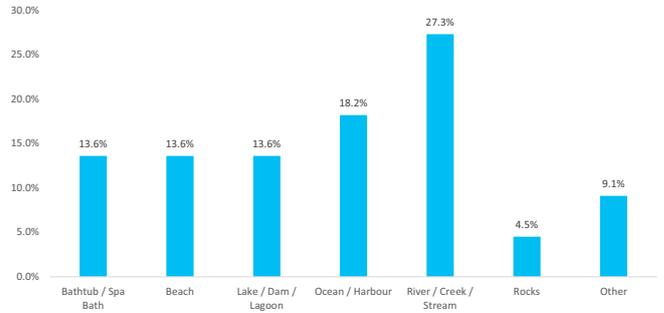


Figure 67: Drowning deaths in TAS among overseas born by location, 2005/06 to 2014/15

## Risk factors

A pre-existing medical condition was present in 63.6% of cases. Alcohol was present in 27.3%, of which 50.0% recorded a BAC  $\geq 0.05\%$ . Drugs were present in 40.9% of cases, one case recorded illegal drugs. Swimming ability was recorded in 13.5% of cases, of which two were described as being experienced at their activity (paddling and diving), and one was deemed as a poor swimmer.

## Victoria (VIC)

Between 2005/06 and 2014/15, 381 people drowned in Victoria of which 18.1% (n = 70) were born overseas, country of birth was unknown in 61.9% of cases. The 10 year average crude rate of overseas born drowning deaths in Victoria was 0.20 per 100,000 population (including residents and international tourists) (Figure 68).

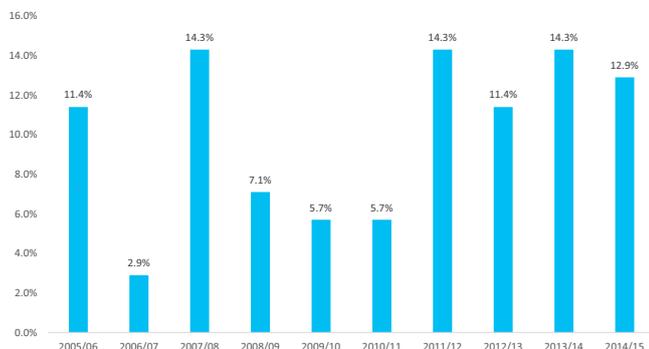


Figure 68: Drowning deaths in VIC among overseas born by financial year, 2005/06 to 2014/15

Males accounted for 88.6% and females 11.4%. Drowning most commonly occurred among the 18 – 24 year age group (27.1%), followed by the 25 – 34 age group (24.3%) (Figure 69).

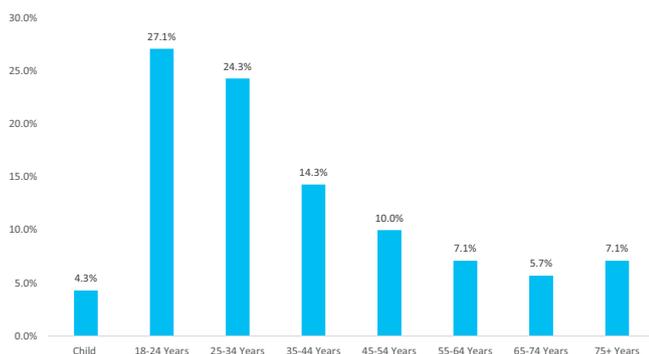


Figure 69: Drowning deaths in VIC among overseas born by age group, 2005/06 to 2014/15

Countries people were most commonly born in were: Vietnam (12.9%), India (11.4%) and China (10.0%). Time in country was known in 74.2% of cases, of which 32.7% had been residing in Australia for 5 years and under, 30.8% were residents for 10 years+, and 13.5% were international students (Figure 70).

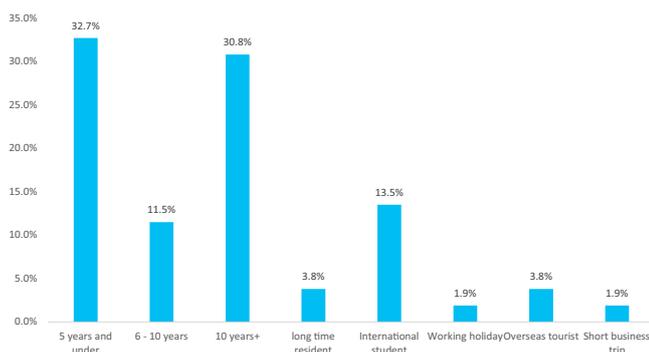


Figure 70: Drowning deaths in VIC among overseas born by time in country, 2005/06 to 2014/15

Residents for 5 years or less were from 13 different countries. When broken down into regions, 41.2% were from countries in the Asian region (China, India, Myanmar, Nepal and South Korea) and 29.4% were from African countries (Ethiopia, Kenya, Sudan and Tanzania). Those who had been living in Australia for 10 years+ were most commonly from Vietnam (25.0%). International students were from India (71.4%) and China (28.6%).

### Time and location

An equal number of drowning deaths occurred in summer and autumn (32.9% each), 18.6% in March, 22.9% on a Saturday and 38.6% occurred in the afternoon.

Drowning deaths most commonly occurred at a major city location (58.6%), at a river/creek or stream (25.7%) or a beach (24.3%).

### Activity

The leading activity prior to drowning was swimming and recreating (31.4%). When analysed by time in country and activity, 50.0% of those who drowned when swimming or recreating were residents for 5 years or less. Of those who drowned when diving, 60.0% had been residents for 10 years+. A multiple fatality event was related to 15.7% of cases, where more than one person drowned during the incident.

### Risk factors

A pre-existing medical condition was present in 30.0% of cases. Alcohol was present in 24.3%, with 64.7% recording a BAC  $\geq$  0.05%. The highest proportion of cases with alcohol present was among the 25 – 34 years age group (41.2%). Drugs were present in 17.1%, of which 58.3% were legal drugs, 16.7% were illegal drugs and 25.0% recorded both legal and illegal drugs. Swimming ability was recorded in 38.6% of cases, of which 41.0% were considered to be poor swimmers and 37.0% non swimmers (Figure 71).

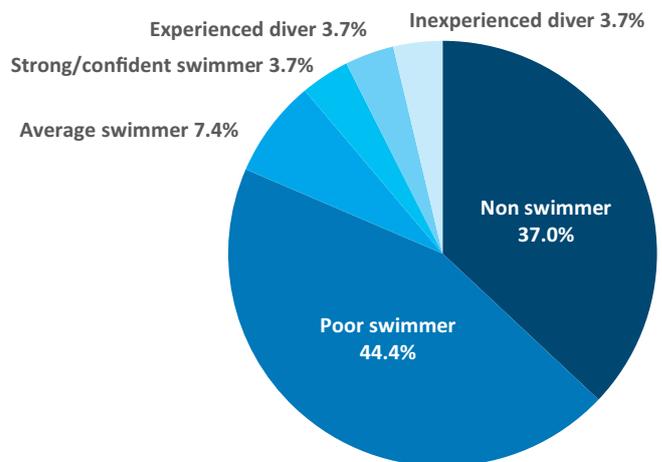


Figure 71: Drowning deaths in VIC among overseas born by swimming ability, 2005/06 to 2014/15

## Western Australia (WA)

Between 2005/06 and 2014/15, 347 people drowned in WA, of which 39.5% (n=137) were born overseas. Country of birth was unknown in 1.7% of cases. The average 10 year crude drowning rate for overseas born in WA was 0.52 per 100,000 (residents and overseas tourists). The highest number of drowning deaths occurred in 2012/13 (13.9%), and the lowest in 2013/14 (6.6%) (Figure 72).

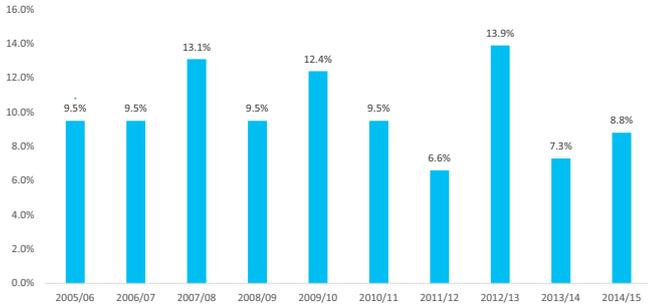


Figure 72: Drowning deaths in WA among overseas born by financial year, 2005/06 to 2014/15

Males accounted for 83.2% and females 16.8%. The highest proportion occurred among the 25 - 34 years age group (20.4%), followed by those aged 65 - 74 years (19.0%) (Figure 73).

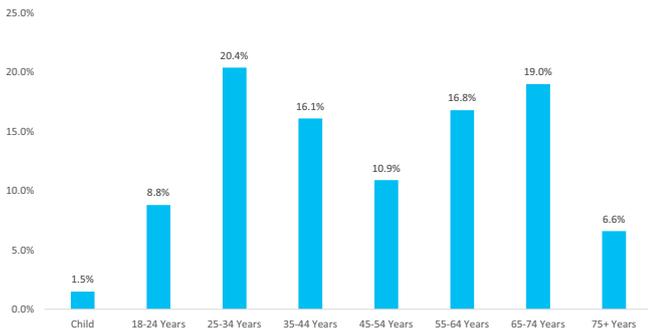


Figure 73: Drowning deaths in WA among overseas born by age group, 2005/06 to 2015/16

A large proportion had been residents for 10 years+ (43.1%) (Figure 74), mostly likely to be from the U.K combined (48.3%) (England 20.3%, U.K unspecified 18.6%, Scotland 6.8%, Wales 1.7%). Overseas tourists accounted for 18.2%, and were most likely to be holidaying from England (16.0%). Residents 5 years or less accounted for 15.3%, of which an equal number were from India, Ireland, Malaysia, and the U.K unspecified (9.5% each).

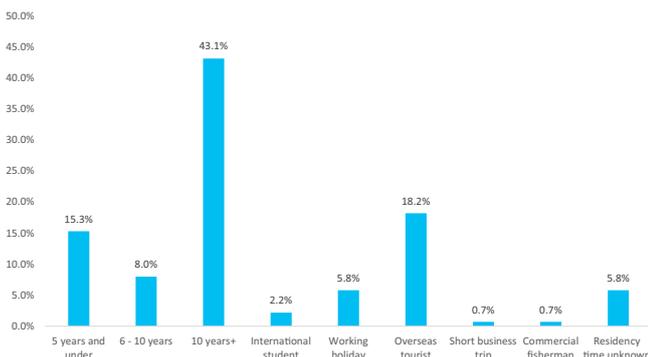


Figure 74: Drowning deaths in WA among overseas born by time in country, 2006/05 to 2014/15

## Time and location

Most drowning deaths occurred in summer (37.2%), on a Sunday (24.8%) and 43.8% in the afternoon. The most common location was at a beach (27.0%), followed by ocean/harbour (20.4%).

## Activity

The leading activity prior to drowning was swimming and recreating (27.0%), followed by rock fishing (13.9%) and diving (13.1%)

When analysed by time in country and activity, residents for 10 years+ accounted for the highest proportion when boating (77.8%), falling into water (63.6%); swimming and recreating (42.1%) and using watercraft (54.5%). Of those who drowned whilst rock fishing, 43.8% were residents for 5 years or less. Overseas tourists accounted for the highest proportion of diving related drowning deaths (38.9%). Ten percent (10.2%) were involved in a multiple fatality event where more than one person drowned during the incident.

## Risk factors

A pre-existing medical condition was recorded in 43.1% of cases. Alcohol was present in 23.4%, of which 62.5% recorded a BAC  $\geq 0.05\%$ . Drugs were present in 41.6%, of which 16.3% recorded illegal drugs. Swimming ability was recorded in 35.8% cases, of which 42.9% were considered to be a poor swimmer, 16.3% as non swimmers. One fifth (20.4%) were thought to be confident/strong swimmers (Figure 75)

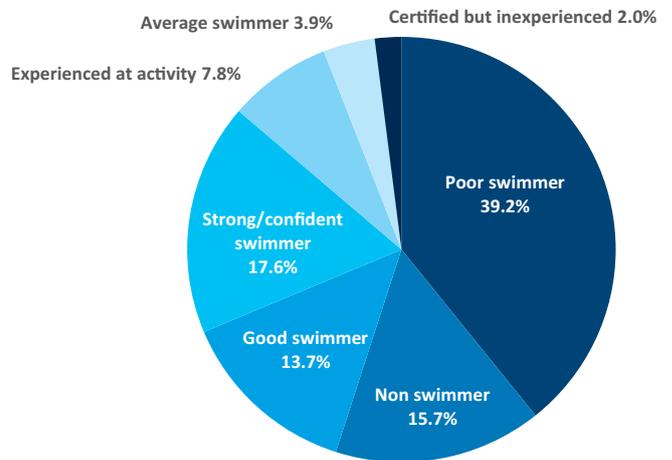


Figure 75: Drowning deaths in WA among overseas born by swimming ability, 2005/06 to 2014/15

## DISCUSSION

### Overview of results

Overall, 27% of people who drowned in Australia between 2005 and 2015 were born outside of Australia. The 10 year average crude rate of drowning among overseas born people was 1.15 per 100,000 population (residents and tourists combined). These findings suggest that the rate of overseas born drowning deaths has declined over the 10 year study period, from 1.25 per 100,000 population at the start of the study period, to 0.91 per 100,000 population by the end. This mirrors the overall fatal drowning trend during this period of 1.45 per 100,000 in 2005/06 to 1.16 by 2014/15 [1].

The top five countries found to have the highest crude rate of drowning per 100,000 overseas born population overall were Taiwan, South Korea, Ireland, Poland and China. When combining the population of overseas born residents and tourists, the highest three countries remained same, followed by Japan and Germany.

Contrary to perceptions that language and cultural barriers may be the most important issue to address drowning among migrants and overseas tourists, this study suggests that contributing factors for drowning among high - risk populations may also include level of swimming and water safety skills, knowledge of the environment and risk taking behaviour (such as alcohol and drug consumption).

Males accounted for the most number of drowning deaths in this study, consistent with previous drowning research. The highest age group represented in the data was 25 – 34 years (22%), only 4% of the cohort were children (17 years and under). Overall, 61% of drowning deaths were among those aged 35 years and over. From the age of 45 years, more females drowned than males. One explanation may be that more females recorded having a pre-existing medical condition than males (45% vs. 36%). Royal Life Saving recommends being aware of medical conditions and any side effects of medications, which may affect ability in the water or the likelihood of falling into the water, and regular health check-ups are advised. Given the high number of people falling into the water reported in this study, especially among older people, knowledge of how to get help and what to do in an emergency is vital.

Drowning deaths most frequently occurred in major city locations (46%) with substantially fewer incidents recorded in all other remoteness classifications. Beaches were the leading location (24%), followed by rivers/creek/stream (21%), and ocean/harbour locations (16%).

### Risk factors

#### Alcohol and Drugs

A quarter (25%) had alcohol present at the time of death, of which 58% recorded a BAC  $\geq$  0.05%, indicating that people who consume alcohol when in, on or around the water, are drinking in excess of the upper legal limit for driving. Surprisingly, a similar proportion of males and females with alcohol present, recorded a BAC  $\geq$  0.05% (~66% each). Those aged between 18 – 34 years were most likely to have recorded alcohol present compared to any other age groups. As already discussed, 57% of those in Australia on a short business trip had alcohol present. In this study, 64% of those who jumped into the water had alcohol present; all of whom recorded had a BAC  $\geq$  0.05%. Half (50%) of those who drowned when bathing had alcohol present, over half recorded a BAC  $\geq$  0.05%, indicating the dangers of drinking around water, even when in the home environment. Alcohol has been found to inhibit coordination, balance; decrease survival time in the water and increase risk-taking behaviour [20]. Strategies advising of the dangers of drinking alcohol around all aquatic environments should be considered and messages tailored accordingly to all high - risk populations.

Almost a quarter (24%) were found with drugs in their system, 25% of those cases recorded illegal drugs present, indicating 6% of the total cohort had consumed illegal drugs prior to drowning. Illegal drugs were highest among residents 5 years or less, international students and people on a working holiday. The higher number of people with legal drugs (i.e. medication) may be reflective of the 38% who recorded a pre-existing medical condition. Royal Life Saving recommends being aware of any side effects of their medication, such as drowsiness, when participating in aquatic activities, and when mixing with alcohol and/or illegal substances.

### Swimming ability

Swimming ability was recorded in 26% of all cases, with 67% considered to be either a 'weak' or a 'non swimmer'. Whilst swimming ability is not always a contributing factor to drowning (e.g. medical, risk-taking, alcohol consumption); it is considered to be protective against drowning [21, 22]. A small proportion of drowning deaths occurred as a result of trying to rescue someone else, despite possessing poor swimming and rescue skills. The majority of drowning deaths in this study were of adults, suggesting that people may not have had the opportunity to learn swimming and water safety skills earlier in life.

Strategies to increase swimming and lifesaving skills among all ages should be considered by swimming and water safety organisations. Engaging with culturally diverse populations is vital in order to increase understanding of the value of learning and participating in swimming and water safety programs (theory or practical) for themselves and their families. Some aquatic facilities and organisations already do cater for different cultural and language needs, by the way of signage and safety messages in the key languages reflecting their community. However more needs to be done to encourage greater participation among adults from culturally diverse backgrounds. Training (and employment) of swimming teachers/instructors and/or lifeguards that are reflective of the local community may assist to increase greater community participation. Further research to understand the enablers and barriers to aquatic participation for culturally diverse communities is required, especially for adults.

### Rock fishing

Overall, 11% of people in this study drowned whilst rock fishing; with 14% drowning in a location classified as rocks. Rock fishing was the second leading activity prior to drowning for residents 5 years and under and residents for 6 – 10 years. The risk of drowning when rock fishing is a current issue in NSW and WA, with coronial inquests being held in NSW (2015) and in WA (2018) to determine key factors contributing to the drowning deaths whilst rock fishing. Coronial recommendations in NSW have led to the introduction of legislation requiring the use of lifejackets when engaged in rock fishing, alongside a dedicated education campaign [23]. A trial of mandatory wearing of lifejackets for rock fishers is currently underway in the Randwick Council area in Sydney.

Whilst findings from this study provide further insight into the demographic background of some rock fishers, a recent study from WA highlights that more work is required to address safety attitudes and behaviour among rock fishers. Only 6% 'always' or 'often' wore a life jacket while fishing, despite 92% agreeing that drowning was life threatening when fishing off rocks, and 53% thought that they would drown if swept into the sea. Over half of fishers surveyed believed that their swimming ability would allow them to get themselves out of trouble. Respondents born in Asia were more likely to agree with the statement 'I would drown if I was swept into the sea'. One-fifth (21%) reported being aware of the dangers of rock fishing, and agreed that they would drown if swept into the sea, yet still chose to fish off the rocks [24]. Further research is required to determine any long-term change in lifejacket wear, other behaviour or increased awareness as a result of introducing legislation.



## Trends by Country of birth and time in country

People who drowned in this study were born in 100 different countries (U.K excluded), with the highest number of drowning deaths among people born in China (10%), New Zealand (6%), England (6%), South Korea (5%) and India (5%). Where time/circumstances of residency was known, trends were evident.

### Residents for 10 years or more and long term-residents

The highest proportion of drowning deaths (34%) occurred among people who had resided in Australia for at least 10 years, also including long-time residents. It is possible that this could be under-reported due to the high number of cases with residency time unknown. Those born in predominately English speaking countries (England, Ireland, Scotland, Wales, United States, Canada, South Africa and New Zealand), and European countries (Greece, Germany, Italy, Netherlands and Poland), accounted for the highest proportions for both groups combined. Drowning most frequently occurred when swimming and recreating, followed by a fall, with boating as the third leading activity. Compared to other categories, a high number drowned in a swimming pool, or an inland location. Over 50% recorded a pre-existing medical condition, with approximately half recording drugs present (medication), and approximately 25% recorded alcohol present, with about half of these cases recording a BAC  $\geq 0.05\%$ . One explanation for the high number of drowning deaths in this group is perhaps that people may have had more opportunities to pursue aquatic activity, or an aquatic lifestyle, later in life compared to when they first migrated to Australia. Some people in this category may have never learnt swimming and water safety skills. For those that had learnt to swim, their skills, health and fitness may not have been as good as when they were younger. Royal Life Saving recommends being aware of medical conditions and limitations of swimming skills when undertaking aquatic activity. It is difficult to determine if these residents had grown up in Australia, had assimilated in Australian culture, or were from a non-English speaking background, however it is important that key water safety messages are made accessible to people of all ages, from a range of sources and in a range of languages.

### Residents for 6 – 10 years

Most people in this group were aged between 25 – 44 years (54%), the majority (46%) had originated from Asian countries. Risk factors for this group differed for males and females. Males were most likely to drown around rocks and females at the beach. The leading activity for females was swimming/recreating and for males an equal number drowned when swimming and recreating and rock fishing. Alcohol was involved in a quarter of cases, over 80% recorded a BAC  $\geq 0.05\%$ , indicating that although it may only be a small proportion in this group drinking, they are drinking to excess. Swimming ability was known in 61% of cases, with most (65%) considered to be poor or non swimmers. Consuming alcohol when in, on and around water, paired with limited swimming and water safety skills can increase the risk of drowning, especially when participating in activities such as rock fishing. Current drowning prevention messages regarding alcohol around water, especially when participating in activities such as rock fishing, should be revised to ensure they are appropriate and effective across a range of communities.

### Residents for 5 years or less

People who had most recently arrived to Australia (residing for 5 years or less) were most likely to be from the Asian region (44%); with the top three countries being South Korea, India (8% each) and China (7%). South Korea presented the highest 10 year average crude rate of drowning deaths overall, indicating that the Korean-born population maybe at higher risk of drowning compared to other populations currently living in Australia. The statistics reported in this study are reflective of migration statistics as per the 2016 census data; the biggest increase among overseas born populations between 2011 and 2016 were those born in China (6.0% to 8.3%) and India (5.6% to 7.4%) [2]. Risk factors for this group included alcohol and drugs; 30% had reported alcohol present, and had the highest proportion of cases with illegal drugs present of all categories. Where swimming ability was reported, 80% were deemed to be either poor swimmers or non swimmers. Information on language barriers (if any), was unavailable. Further research is required to understand the knowledge, behaviour and cultural beliefs of culturally diverse communities settling in Australia in regards to water safety and drowning risk. Water safety information, as well as practical swimming and water safety programs, should be made available to migration settlement agencies, community groups and language schools to ensure that new arrivals are provided with an opportunity to gain vital safety information and skills for themselves and their families. However research is required as to when is the right time, and best method to provide information in a meaningful and effective manner.

### Overseas tourists

Almost a quarter (23%) of cases in this study were of overseas tourists. Overall, 30% of overseas tourists were from Asian countries, 25% were from European countries and 19% were from the U.K combined (England, Scotland and U.K country not specified). Half (50%) of all overseas tourists drowned in Queensland. Most (46%) drowned at the beach, and the leading activity was swimming/recreating (43%) followed by diving (30%). Overseas tourists recorded the lowest proportion of alcohol present (18%) among all categories. Where swimming ability was known, 52% were considered as a strong, or a good swimmer, or experienced at the activity and may not be a risk factor for this category. Relaxed attitudes and complacency when are on holiday may mean people are not as attentive to risks. One strategy to increase awareness and knowledge of water safety among tourists is for accommodation providers, (including rental properties), to supply guests with water safety information upon check-in. Other safety measures accommodation providers should consider, includes relevant safety signage, installation of emergency phones and defibrillators near the pool area, and restricting entry by intoxicated people into the pool area (such as at hotels, caravan parks and holiday complexes) [25].

Considering that the second leading activity for this group was diving, commercial providers and tour operators, should have comprehensive safety guidelines and procedures in place, especially if people are presenting with no or low swimming ability and with medical conditions. Given that overseas tourists come from a range of regions worldwide, reviewing and evaluating the effectiveness of current water safety strategies targeting overseas tourists is recommended. Tourists are a transient population, therefore it is difficult to measure increases in awareness and knowledge of water safety among this population.

### International students

International students made up 7% of overseas born drowning deaths. The majority (85%) originated from Asian countries, with Indian and Chinese students accounting for 56%. Interestingly, the leading location for drowning was at rocks (29%), followed by a beach (24%). The second leading activity after swimming and recreating was being swept into the water (12%), indicating that they may not have intended to be in the water. Swimming ability was recorded in 38% of cases, of which most (92%) were deemed as non swimmers or poor swimmers. Whilst some organisations do offer water safety education to international student groups, this is largely on an ad-hoc basis when requested by the tertiary provider as part of a start of year/intake orientation program. Tertiary providers have a responsibility to ensure that their students receive vital safety education whilst in Australia. However, the challenge for drowning prevention practitioners is knowing the right time to provide information and, how to best deliver information in an effective way, considering the influx of new information international students receive upon arrival. Consistency of simple key messages across the sector is needed, that are available in a range of languages. Practical swimming and water safety or lifesaving courses tailored to university students should be also considered. Many external activities offered to international students are aquatic-based (e.g. surfing, whale watching, snorkelling etc.), therefore international student program organisers should be aware of students experience and swimming ability, and provide the necessary basic safety information before embarking on these activities. Royal Life Saving recommends an aquatic risk assessment of the location and activity to be undertaken prior to students participating in aquatic activities.

### Those who drowned in Australia whilst here for work purposes

A number of people who drowned whilst in Australia for work purposes. Three categories emerged, with alcohol as a common risk factor for drowning.

**Working holiday:** Almost half (46%) of all drowning deaths among this category occurred at a river/creek/stream. This may be indicative of unfamiliarity of the environment in which they are working and living. A high level of alcohol was also reported, 42% had alcohol present, of which 73% recorded  $\geq$ BAC 0.05%.

**Short business trip:** Those on a business trip were found to have the highest proportion of people recorded as competent swimmers or being experienced at the aquatic activity being undertaken at the time of death, suggesting that other factors may have contributed to drowning. Over half (57%) of cases in this group had alcohol present, all of which recorded  $\geq$ BAC 0.05%, therefore alcohol was considered contributory to death.

**Occupational:** Five people drowned off commercial fishing boats, mostly international vessels offshore in Australian waters. This group is difficult to address, as most would not be Australian companies. Occupational health and safety laws should outline the safety equipment and regulations vessels and their crews are supposed to abide by to avoid accidents such as drowning.

These findings raise the question of whose responsibility is it to provide water safety education and/or information in an employment context. Conference organisers should consider including water safety information in conference information packs, especially if the conference is located near the water or aquatic activities are being organised. Induction or safety briefings should include information on the local environment, especially those new to the area (and those that have water on-site or nearby e.g. dams or waterholes). Working holiday makers pose a challenge for targeting drowning prevention messages, as they are a hard to reach population that is very a transient due to working seasonally. Visa requirements mean that they can usually only work for one employer for a maximum of six months at a time [26]. Royal Life Saving recommends promotion of key water safety messages for employees new to Australia, especially avoiding alcohol and drugs around the water.

### Children living with family:

Of the 29 cases of children that drowned in this study, a very small number (n=5) were residing with their families, however were unable to be grouped by time in country. Age ranged from 0 years to 14 years, and all children were born in non-English speaking countries. Swimming pools and dams were the leading locations for drowning. This highlights the importance of educating parents and caregivers on water safety practices. Royal Life Saving's Keep Watch program has four key drowning prevention actions that should all be actioned when children are around water: supervise, restrict access, water awareness and resuscitate. It is important that these message are explained and are made available to parents and caregivers from all cultural backgrounds and made available in a range of languages.

## CASE STUDY

### Royal Life Saving Society WA's Multicultural Steering Committee

For many of the more than 680,000 migrants living in Western Australia swimming and water safety education is something that usually is not a priority in their country of birth, and now is starting to be reflected in drowning statistics. In 2014/15, 24.3% of drowning deaths involved people born overseas. Of these, two thirds were from non-English speaking backgrounds [27].

As a result, Royal Life Saving WA established a Multicultural Steering Committee to ensure that all West Australians, no matter where they come from, learn vital swimming and water safety skills. RLSS WA has partnered with a range of cultural groups including the Chinese (Chung Wah Association Inc.), Vietnamese (Vietnamese Community in Australia – WA Chapter), Indian (Indian Society of WA) and African (Organisation of African Communities of WA) communities, and settlement agencies including ISHAR, Communicare. In addition, RLSS-WA has partnered with State and local government, to better understand the barriers, cultural understandings and adaptations needed to increase swimming and water safety participation. The approach taken has fostered shared leadership, distributed amongst the Committee Members. Royal Life Saving facilitates the committee's collective purpose, provides social support to members and organises opportunities for team learning. The benefit of this leadership approach has been greater engagement and activation by participating organisations, swift coordination and program innovation.

Each partner organisation contributes the following;

- Promotes and provides access to program participants from their community
- Represents on the Multicultural Swimming & Water Safety Steering Committee
- Advocates for participation in swimming and water safety education and assists with marketing/promotion of messages within their community
- Consults with, and provides advice to Royal Life Saving on tailoring programs to be culturally appropriate

Outcomes include:

- Distribution and promotion of a Women's swimwear guide to communities and aquatic facilities to better understand what is culturally appropriate dress for enjoying different type of aquatic environments
- Improvements and ideas for cultural awareness training for the aquatic industry
- Review of Keep Watch program and materials to ensure that messages are being delivered effectively and in a culturally appropriate manner.



Image source: Royal Life Saving Society - Western Australia

## CASE STUDY

### Life Saving Victoria's Multicultural Programs

Victoria becomes more culturally diverse each day and unfortunately many new Australians have not received water or swimming education prior to coming to Australia. Prioritising aquatics has often been difficult in their countries of birth due to factors such as residing in land locked regions or growing up in areas involved in economic or political uncertainty. Once in Australia, participation barriers include distance to facilities, lack of transport, difficulty with language and costs.

To overcome these barriers, LSV has developed four key water safety programs tailored to the needs of migrant communities, designed to introduce migrants and new arrivals to Victoria's beaches and waterways:

- **Meet a lifeguard:** An interactive session designed to educate multicultural students and community groups about how to be safe around water, tailored to suit the cultural and language requirements of each group. In 2017/18, 123 programs were delivered to 8,329 participants.
- **Resuscitate a Mate:** A practical CPR program designed to introduce multicultural communities to emergency response management (DRSABCD). In 2017/18, 15 programs were delivered to 485 participants.
- **Beach Program:** A practical program delivered at a local lifesaving club, designed to educate participants on life saving techniques and water safety messages, including a variety of wet and dry activities specifically tailored for multicultural groups. In 2017/18, 103 programs were delivered to 5,136 participants.

- **Seniors Water Recreation Program:** A version of the RLSSA Grey Medallion program, which has been re-designed to suit Multicultural Seniors. The program is aimed at improving participants' water awareness, health, wellbeing, and overall settlement, with an emphasis on health promotion via ongoing visits to the aquatic centre. Over a 3 year pilot period, 11 courses delivered to approximately 200 participants.

In addition to these programs, LSV funds swimming lessons for approximately 2,000 children, youth and adults from multicultural backgrounds per year, resulting in an estimated 20,000 swimming lessons across Victoria annually. In addition, around 150 people are trained in the areas of first aid, volunteer surf lifesaving, pool lifeguarding and as swim teachers each year.

Since 2007 over 110,000 multicultural participants have been involved in activities, with approximately 14,000 CALD community members engaged each year in a variety of LSV programs. One aim of these programs are to increase diversity within the lifesaving and aquatics communities, by developing influential aquatic role models from a range of multicultural backgrounds. These role models can then influence swimming, water safety and lifesaving knowledge within their communities. Ultimately these programs are working to reduce drowning within migrant and multicultural communities in Victoria.



Image source: Life Saving Victoria

## LIMITATIONS

- Due to using information from coronial files to inform this report, gaps in data and inaccuracies in reporting country of birth, time of residency, and specific country rather than region (e.g. the United Kingdom, Ireland, and Korea) were evident.
- Of total drowning deaths over the study period, country of birth was unknown in 18% of cases, therefore, actual numbers of drowning deaths among people born overseas may in fact be higher than reported.
- Due to limited information recorded regarding ethnicity, or cultural background recorded in coronial files, it was difficult to ascertain if cultural and/or language barriers are a contributing factor for drowning, especially if someone was born in Australia (unable to be distinguished).
- Difficulties arose in distinguishing those born in another country but moved to Australia very young and have spent their whole life in Australia. Documents may imply a person has lived in Australia for many years or grown up in Australia without any dates, therefore were classified as 'long-time' residents.
- Generally English as a second language was not recorded or mentioned, therefore it was difficult to ascertain if language and/or communication barriers are actually an issue, especially among long-term residents.
- Very rarely Australian citizenship was mentioned in the documents, however it was insinuated in some cases, such as being a member of the Australian Defence Force.
- The lack of detail regarding country of birth, time in country, residential status and language in coroners or police reports makes it difficult to tailor drowning prevention strategies to specific populations.

## CONCLUSION

Over a quarter (27%) of drowning deaths in Australia during this 10 year study were among overseas born. This includes recent arrivals, long-term residents, and overseas tourists, international students, working holiday makers and those in Australia for business purposes. This figure could potentially be higher due to the number of cases where country of birth was unknown (18%).

The results presented in this study shows that everyone, regardless of age and time in country, needs to be educated on water safety. Males continue to be over-represented, however findings revealed that more females compared to males, were likely to drown from the age of 45 years. Key risk factors for drowning among this study population were found to be: poor swimming ability, alcohol, and drugs (including medication & illegal substances), and presence of pre-existing medical conditions. Key differences were found based on time in country, including location and activity prior to drowning, indicating that specific messages and campaigns may be required for different groups.

The absence of literature pertaining to swimming and water safety programs targeting culturally diverse populations makes it difficult to draw upon effective strategies for this high - risk population. Program evaluation and follow up over time is imperative to measure and report on successful approaches targeting diverse populations, including overseas tourists. In order for drowning prevention strategies to effectively target diverse communities, collaboration between water safety organisations, government departments and community agencies is vital.

Despite the limitations in the data around country of birth, time in country and language, this is the first step in addressing Goal 10 of the Australian Water Safety Strategy focussing on high - risk populations. In order to enable a range of injury prevention strategies to be better tailored into the future, working with key partners is essential in order to improve and understand the relevance of reporting information regarding country of birth, cultural background and circumstance of residency.

Whilst the results of this study show a decline in drowning deaths among overseas born, certain populations were found to be at higher risk of drowning than others, with differences between residents and tourist populations. With population projections estimating a substantial growth in migration over the next 10 years, including international students and overseas tourists, a drowning prevention plan directed to these high - risk populations is essential.

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