



Promoting Public Rescue Equipment on Venus Bay Beaches

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WPI

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Report Submitted to:
Professor Lorraine Higgins and Jonathan Chee

This report represents the work of Worcester Polytechnic Institute (WPI) undergraduate students, submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review. For more information about the projects program at WPI, see <http://wpi.edu/Academic/Projects>

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ABSTRACT

Drowning is the third leading cause of accidental death in the world (World Health Organization, 2023). In Venus Bay, Victoria, Australia, drownings have increased over the past decade. Because of this, Surf Life Saving Australia has identified Venus Bay Beach Number 1 to 5 as a drowning “blackspot”. Many of these drowning incidents are linked to well-intentioned bystanders who expose themselves to danger by attempting a rescue. The limited patrol of the beaches, lack of quick access to rescue and communication equipment, and insufficient swimming ability of many who attempt rescues can lead to tragedy. In response to this pressing issue, Life Saving Victoria and its partners are working to install public rescue equipment stations across the beaches. These stations are equipped with an emergency call button featuring two-way communication technology, a rescue tube, and informational signage. Our project was conducted a few months before the installation of these stations as a drowning “blackspot”. Many of these drowning incidents are linked to well-intentioned bystanders who expose themselves to danger by attempting a rescue. The limited patrol of the beaches, lack of quick access to rescue and communication equipment, and insufficient swimming ability of many who attempt rescues can lead to tragedy. In response to this pressing issue, Life Saving Victoria and its partners are working to install public rescue equipment stations across the beaches. These stations are equipped with an emergency call button featuring two-way communication technology, a rescue tube, and informational signage. Our project was conducted a few months before the installation of these stations and aimed to *raise awareness and understanding of the PRE and its correct and safe usage through a safety campaign to reduce drowning death and injury on Venus Bay beaches*. Interviews and focus groups with the beachgoer audience informed the creation of our campaign materials, a strategic dissemination plan, and recommendations for future outreach materials.

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INTRODUCTION

Drowning is the world's third leading cause of accidental deaths with roughly 236,000 fatalities a year (World Health Organization, 2023). Individuals spending time near recreational bodies of water should possess the ability to assess potentially hazardous water conditions, strong swimming skills, and the capacity to assist others. Water safety and rescue training are especially urgent in Victoria, Australia where there has been an 18% increase in fatal drownings in recent years (Calverley et al., 2022).

Life Saving Victoria (LSV), an organization that operates extensively throughout the state of Victoria, dedicates its mission to reducing aquatic-related deaths and injuries. During their research, they identified Venus Bay beaches in the South Gippsland area of Victoria as drowning "blackspots" or areas where there is a high concentration of hazardous incidents in the water. Our project addresses the critical need for water safety and drowning prevention knowledge and equipment in Venus Bay. In particular, swimmers tend to overestimate their abilities and underestimate the waters of Venus Bay beaches, which can result in dangerous situations. Moreover, because it is difficult for lifeguards to cover the full 4km length of Venus Bay's five beaches, bystanders often put their own lives at risk in attempts to save others. This was the case during one water-related incident on January 13, 2021, when a high school teacher saved a 14-year-old girl and a man from drowning but did not make it back to shore alive (Koob & Dexter, 2021).

One way to address this situation is to deploy public rescue equipment (PRE) across the beaches so that civilians can safely intervene when individuals are at risk. LSV's Blackspot Project at Venus Bay will implement such equipment by early 2024 to reduce the frequency of fatal bystander rescues. The Blackspot Project for Venus Bay focuses on implementing six PRE stations along the five

Venus Bay beaches, each equipped with a rescue tube, a call box linked with a 24/7 emergency operator, and instructional guidelines. However, as this initiative is a new development to both Venus Bay and Victoria, at the start of this project there was minimal public attention and awareness surrounding it. This project aimed to reduce the high number of fatalities on Venus Bay beaches by creating a campaign that raises awareness and understanding of the new PRE and its correct and safe usage.

To understand how to create an effective campaign, we researched campaign development and analyzed LSV's campaign-related content. We determined the most effective safety campaign development processes and what a campaign's metrics for success are by understanding the success of other safety campaigns such as Dumb Ways to Die by Metro Trains Melbourne. From this process, we determined the four objectives and planned the methods we used to complete them. Firstly, we developed an understanding of our target audience through literature review and examining community-based studies LSV had already conducted in the area, as well as intercept surveys of Venus Bay beachgoers. Secondly, we created our campaign slogans and materials through a rapid prototyping process. Thirdly, we tested and revised our campaign materials through a series of focus groups with LSV employees and members of the Venus Bay Surf Life Saving Club (VBSLSC). Finally, we established the metrics for the success of the campaign and developed a dissemination plan based on the data gathered throughout the project.

CHAPTER 2: BACKGROUND

The rise in fatal drownings and water-related injuries worldwide is an extremely prominent issue, demanding immediate attention and global concern. The expansion of water safety training, information, and equipment is crucial to the reduction of drowning incidents. In this section, we discuss the severity of the drowning problem and who is affected both worldwide and within Victoria. We then introduce Venus Bay beaches and describe their conditions. Our focus then shifts to the public rescue equipment (PRE) stations our sponsor, Life Saving Victoria (LSV), plans to launch. Finally, we review the definition of a safety campaign, the process of developing a successful campaign, the metrics used to assess whether a campaign is successful, social media as a tool for impact and outreach, and examples of successful PSAs.

2.1 Understanding the drowning problem



Figure 1: Drowning fatalities in Victoria over the past decade categorized by gender (Calverley, 2021)

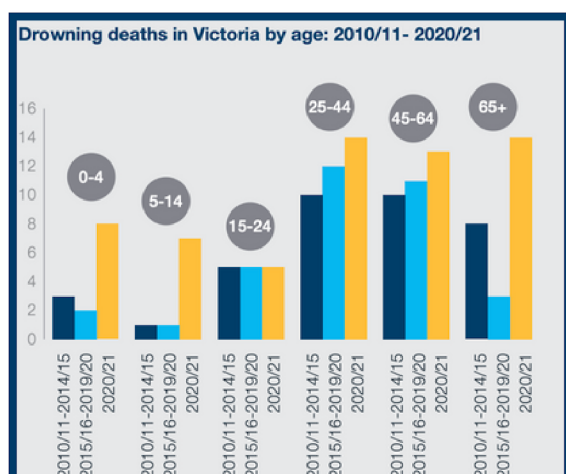


Figure 2: Drowning fatalities in Victoria over the past decade categorized by age range (Calverley, 2022)

Drowning is often swift and tragically silent, with drowning incidents unfolding in as little as 20 to 60 seconds (National Drowning Prevention Alliance, 2022). Unfortunately, these events are frequent, claiming the lives of hundreds of thousands globally each year and allowing drowning to be named the third leading cause of accidental deaths (World Health Organization, 2023). While it is important to note, as the National Drowning Prevention Alliance emphasizes, that no one is completely immune to the risk of drowning and certain populations are at a higher risk (2022). Among these vulnerable groups, children aged one to four years old are particularly susceptible, with drowning being the leading cause of accidental deaths in this age category. In addition to age, gender is a factor in drowning risk. The World Health Organization underlines in their 2014 global drowning report that men are twice as likely as women to fall victim to drowning (2014).

These key drowning trends are reflected in data collected from communities in Victoria, Australia, an area that has emerged as a hotspot for drowning incidents. Victoria has witnessed an alarming loss of 61 lives as a result of drowning during the period spanning 2021-2022 (Calverley et al., 2022). Similar to global patterns, in Victoria, the primary demographic groups that demand attention for drowning reduction efforts are children aged zero to 14 years old and men aged 25 to 44 years old.

Of the fatal drownings reported in Victoria during the 2021-2022 financial year, 26% occurred in coastal waterways (Calverley, 2022). Of non-fatal drownings reported in Victoria during this same period, 32% occurred in coastal waterways (Calverley, 2022). This is indicative of the popular bays and beaches throughout Victoria frequented by both locals and visitors.

In South Gippsland, an area within the Latrobe-Gippsland region of Victoria, eight fatal drownings have occurred in the period

spanning between 2013-14 and 2022-23. Of these fatal drownings, 88% were not local residents, highlighting the dangers faced by visitors unfamiliar with the area's waterways. A significant majority, 88%, of these drowning victims were male, aligning with broader, national trends. A concerning 38% of these incidents were also attributed to intentional water entry, such as swimming or attempting rescues. Figure 3 contrasts the age-related drowning statistics of South Gippsland with all other Victorian local government areas.

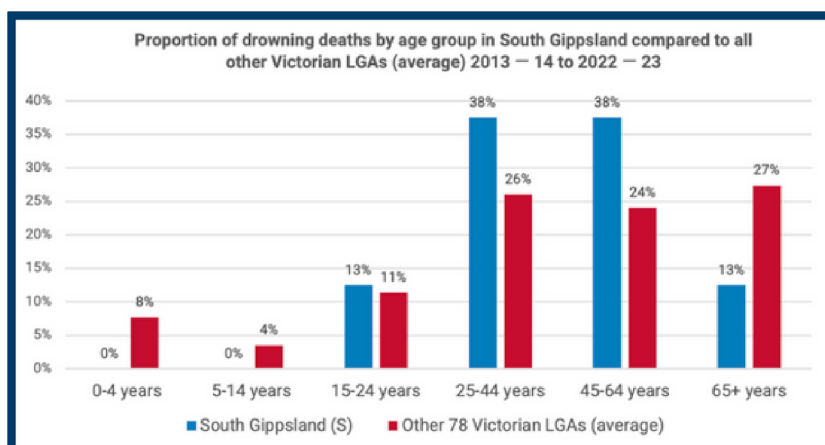


Figure 3: Drowning deaths by age in South Gippsland vs. other Victorian LGAs (LSV, 2023)

In terms of environment, 75% of these fatalities occurred in coastal settings and 63% took place during the summer months, underlining the heightened risk associated with seasonal beach going. Additionally, 38% of the drowning victims in South Gippsland were from culturally and/or linguistically diverse backgrounds, and 25% involved alcohol and/or drug use.

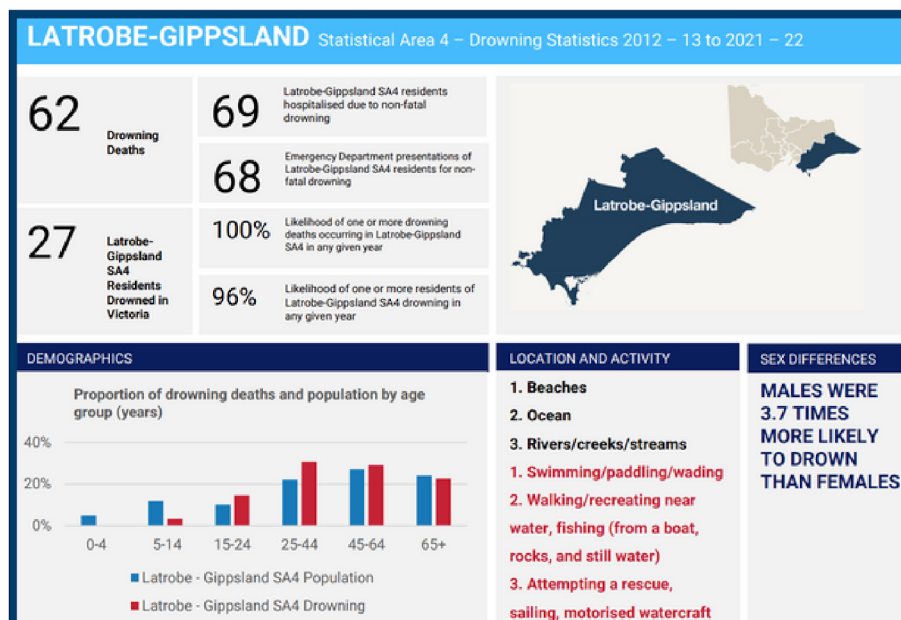


Figure 4: Latrobe-Gippsland Statistical Area 4 Drowning Statistics (LSV, 2023)

residents. Notably, attempting a rescue emerged as the third most common activity leading to drownings in these areas. Figure 4 visualizes these statistics.

In comparison, the broader Latrobe-Gippsland areas exhibit different trends. Here, 48% of drowning victims were not residents, and 74% were male. The region recorded 62 drowning fatalities, with 27 involving local residents. Also according to the drowning profile, there is a 100% likelihood of at least one drowning death occurring each year, and a 96% likelihood to involve

2.2 Venus Bay: a drowning blackspot

Venus Bay, located in South Gippsland, has gained notoriety for its alarming number of drowning incidents. This has led to its classification as a “blackspot” by Surf Life Saving Australia (SLSA) which is defined as an area “with a high concentration of coastal/ocean incidents and a high probability/risk of ongoing recurrence” (SLSA, 2021).

During the holiday season towards the end of 2022, lifesavers at Venus Bay found themselves overwhelmed with rescues. This reached its pinnacle on December 31st when lifesavers had to rescue five individuals consecutively in difficult surf conditions resulting in a temporary beach closure. An eleven-year-old boy and his father were rescued from the dangerous surf just outside the designated swimming area around 12:30 pm. The young boy, subsequently, had to be airlifted to the Royal Children’s Hospital where he was stabilized. Later that day, three more individuals were caught in strong currents at a nearby beach, only a few kilometers away. This was part of a grim week on Victoria’s coastline, where 21 people had to be rescued across the state (Eddie, 2022).

Venus Bay’s beaches span over 24km, 4km of which are accessible. This sprawling expanse poses a significant challenge to the Venus Bay Life Saving Club (VBSLSC) lifeguards, especially considering their main base of operations, the clubhouse, is located on beach number 1 as seen in Figure 5. The accessible beaches are divided between Venus Bay Beach Number 1 to 5, each with its own parking lot and access points (Figure 5).

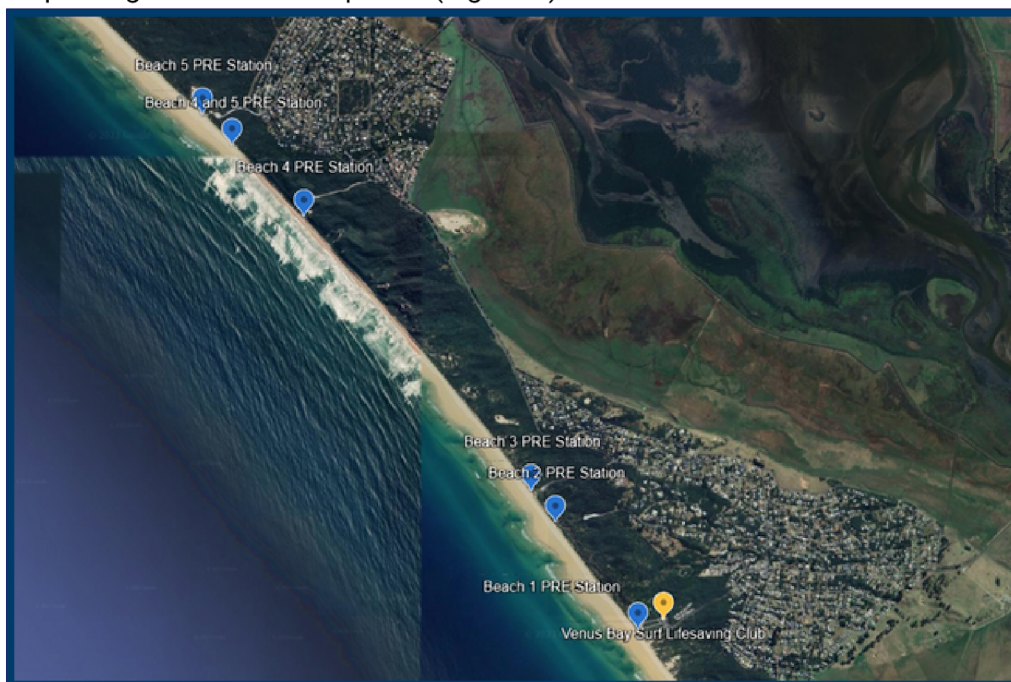


Figure 5: VBSLSC and proposed PRE beach locations (Google Earth, 2023)

VBSLSC has played an instrumental role in ensuring the safety of beachgoers. The club has been serving the Venus Bay community since 1961. As of today, they have nearly 750 members, most of whom are volunteers. In terms of operational achievements, VBSLSC executed over 1,200 rescues. Additionally, they’ve enacted over 25,000 preventative actions and have dedicated over 125,000 volunteer patrol hours. One of their most noteworthy incidents between the 2001/2002 seasons was when a single patrol managed to rescue 29 people in a single day (VBSLSC, 2023).

Venus Bay Beach Number 1 to 5 are all located within Victoria’s Cape Liptrap Coastal Park. Each beach comes with its own parking lot and beach access. Parks Victoria, the government agency that operates Victoria’s state parks, has pages on their website for each beach. Each page has safety tips and warnings of dangerous beach conditions that visitors should be aware of.

The Australian Bureau of Meteorology describes several coastal hazards that beachgoers should be aware of including tides, changing weather, wind, swells, and riptides. Multiple conditions and hazards have increased the drowning risk in Venus Bay, and one of the most formidable challenges is the prevalence of riptides. These powerful, narrow currents move away from the shore, preventing swimmers from coming ashore, and they are particularly dangerous because of their difficulty to identify, a hazard explicitly illustrated through a demonstration by LSV. On the anniversary of a double drowning at Cape Woolamai, LSV undertook an initiative to vividly demonstrate the flow of a riptide, casting a dye from a helicopter to trace the currents' path. As Figure 6 shows, the dye rapidly crept further out to sea (LSV, 2017).



Figure 6: Riptide highlighted with dye demonstration (LSV, 2017)

Greg Scott, the Operations Manager at LSV, underscores the danger of riptides, “Riptides can occur at all beach locations, including bays and they are the number one beach hazard for swimmers” (LSV, 2017). Scott also noted a survey conducted by Surf Life Saving Australia that revealed a concerning gap in public awareness: 75% of individuals are unable to identify a riptide, and amongst those who believe they can, two-thirds are mistaken (LSV, 2017).

Although a riptide is difficult to spot, there are a few key signs to look for according to the National Oceanic and Atmospheric Administration (NOAA). Riptides form in lower areas of the sand and shore as the waves pushing towards the shore need a way back out into the ocean. Areas of water that are surrounded by breaking waves and whitewater are a good indication of a riptide when trying to spot it from shore. These currents also kick up sand and sediment along the bottom and pull it out to sea (NOAA, 2023). If caught in a riptide, victims should remain calm and swim parallel to the shore. This avoids exhaustion from swimming against the rip current, giving the victim a higher likelihood of survival.

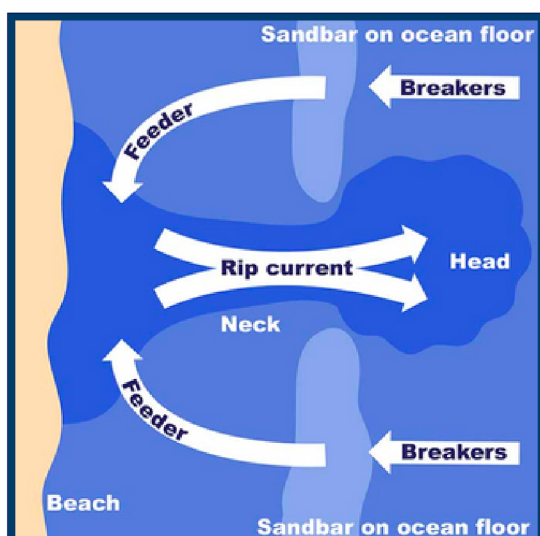


Figure 7: Riptide infographic (NOAA SciJinks, 2023)

The number of drowning incidents in Venus Bay due to riptides also poses a significant risk to bystanders who attempt to rescue those in distress. LSV has observed a trend of bystander drownings, where individuals succumb to the dangerous water while attempting to rescue others pulled out. Research by LSV highlighted that 28 people have drowned in such scenarios since 2000 (Ranges, 2022). “If you believe you have the right skills, it is also imperative you have equipment such as a surfboard or boogie board to keep yourself and the patient afloat,” warns LSV Lifesaving Services General Manager, Liam Krige (Ranges, 2022).

Additionally, beachgoers must be aware of shore breaks. They are caused by large waves breaking on a steep shore. These powerful waves can knock people off their feet and cause injuries, or even pull them into deeper water.

Many fatal drownings are also traced back to alcohol and drug consumption on the beach. LSV's 2021-22 Annual Drowning Report stated that ten people who died from drowning that year had been consuming alcohol or drugs. Additionally, they point out that "over the previous decade, alcohol and/or illegal drugs were consumed before 34 percent of all drowning deaths of people aged 15 years and above" (LSV, 2022).

Understanding the nature of dangerous beach conditions will help in preventing these deaths. Implementing preventative measures and educating the public can transform the identification of Venus Bay from a "blackspot" to a much safer environment.

2.3 Public rescue equipment

PRE are flotation devices used by bystanders to help safely perform aquatic rescues. There are many different types of PRE. Their design and capabilities vary depending on their location. Some examples of this equipment include rescue tubes, throw bags, rescue poles and flotation rings. This equipment is usually attached to a station which includes instructional signage and other emergency equipment such as communication devices and first aid. An example of a PRE station is the Rescue Tube Foundation's rescue tube (Figure 8). In response to alarming drowning statistics in Hawaii, USA, the Rescue Tube Foundation launched its initiative to install these stations across the islands to aid in emergency rescues on its beaches. The station is simple and only consists of a rescue tube mounted to a pole. The rescue tube instructions are on the back of the tube. Additionally, their website features instructional videos on safe and correct equipment usage (Figure 9).

Since its installation in Hawaii, rescue tubes have aided in 200+ rescues and all known rescues using the tube have been successful. Given the increasing occurrence of fatal bystander rescues and drowning in Venus Bay, rescue tubes will be invaluable in aiding bystanders and individuals in distress.

LSV's project to implement PRE stations on Venus Bay beaches is groundbreaking for Victoria, both because of its first time implementation in the state, and its utilization of a call box. LSV's version of the station is unique in its combination of both rescue equipment and telecommunications. They will be strategically placed at beach entrances at each of the five beaches, with an extra PRE station between Venus Bay Beach Number 4 and Number 5. Each PRE station will have an emergency call button that directly connects to an LSV operator, a rescue tube, instructional signage, a unique emergency marker code, and QR codes for in-language translation and beachgoer feedback (Project Description, 2023; see Figure 10).



Figure 8: An installed rescue tube station on the island of Hawaii (dronepicr, 2018)

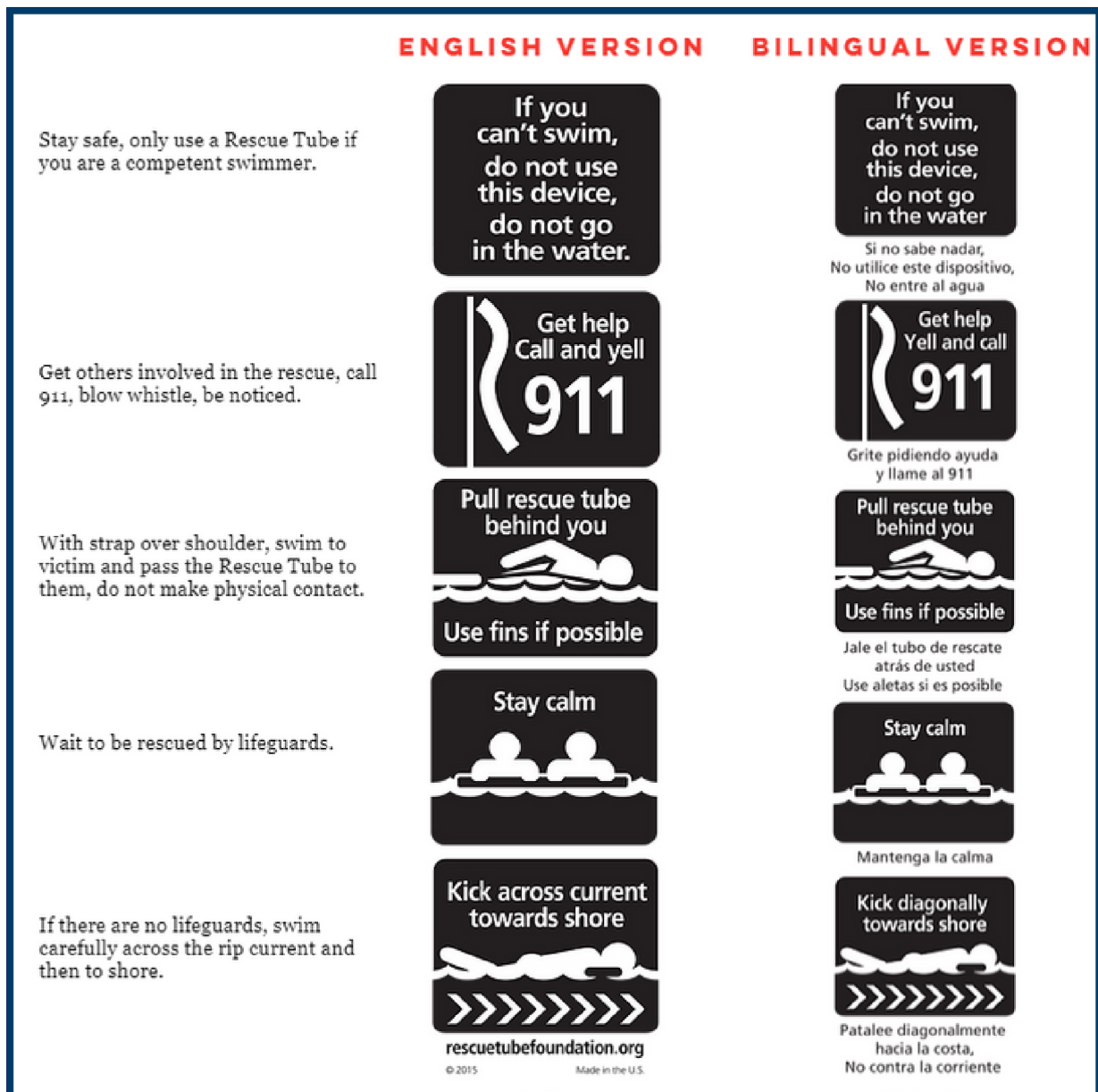


Figure 9: Instructions on how to use a rescue tube (Rescue Tube Foundation, n.d.)



Figure 10: Prototype of PRE station to be implemented at Venus Bay (LSV, 2023)

In case of distress, the initial step is to locate the nearest PRE station and press the call button. This triggers an alert to emergency services which indicates the origin of the alert through the station's marker code. Simultaneously, it connects the caller to an LSV operator who evaluates the caller's capabilities, to ascertain if they are confident and skilled enough to attempt a rescue (Project Description, 2023). If uncertain about their swimming abilities, bystanders are advised to refrain from rescue attempts and encouraged to attempt to find another beachgoer who is capable. If nobody is confident in their ability to perform the rescue, bystanders should simply wait for lifesavers to arrive.

To use the rescue tube effectively, individuals should remove it from the pole and wear the connecting strap across their body while swimming to the person in distress. Once they are a tube's length away from the victim, they should give them the tube, ensuring that they maintain distance to avoid being pulled under. Depending on the situation, either stay afloat together, swim together to shore, or loop the tube around an exhausted victim to keep them afloat during the return to shore.

2.4 Crafting an effective safety campaign

Safety campaigns are purposeful communication attempts to inform, persuade, and motivate a population to change its behaviors around a specific topic, in this case drowning and water safety (Hoekstra, 2011). To accomplish this, these campaigns usually disseminate materials called public safety announcements (PSA).

According to the Purdue Global Writing Center, a PSA is "a form of communication used by non-profit organizations, grassroots movements, and government/military divisions to campaign for social change or educate the public about resolving specific issues" (2020). PSAs are the main materials used by a safety campaign whose goal is to inspire its audience to act or change their behavior (Hampton, n.d.). It achieves this by disseminating information about a specific cause, warning people of danger, or asking for help in the form of donations, volunteering, and other acts of service depending on the subject of the safety campaign.

Typical mediums for a PSA are video advertisements or short films, radio advertisements, and infographics.

Successful safety campaigns start with three foundations: identifying the purpose and message, analyzing the target audience, and choosing the mediums through which to circulate the message. These must be considered in all stages of the campaign development process. In general, the campaign creation process follows these few steps (Life Saving Victoria, 2023).

To begin a campaign, goals and objectives of the campaign must be identified. The goal of a safety campaign is defined by identifying a specific problem or need within a community and the objectives act as the steps that need to be taken to address the gap (Creating a PSA, 2020). Every safety campaign shares the goal of informing and educating as many people as possible about their issue with a strong message, however, there is always a target



Figure 11: Key steps to take when developing a campaign

audience that a campaign should focus on. Identifying this target audience and understanding their specific needs, interests, and concerns helps to further define a campaign's brand, materials, and which channels of communication would most effectively reach them.

When developing a campaign it is important to understand behavioral change in an audience. Behavioral change refers to the long-term adjustment, addition, or deduction of behavior (Celestine, 2023). In the context of public safety, the Transtheoretical (Stages of Change) Model is an appropriate model to explore behavior change. This model divides an individual's behavior change journey into five distinct stages: precontemplation, contemplation, preparation, action, and maintenance. By identifying the stage that our audience, or segments of our target audience are at, we can more effectively determine the most suitable communication strategies.

In the precontemplation stage, individuals may be unaware of a problem or lack information regarding its severity. The contemplation stage marks a crucial shift where individuals acknowledge the issue, evaluate its significance, and contemplate change. Transitioning into the preparation stage, individuals fully recognize the problem and make the initial commitments to modify their behavior. It's at this point that they begin seeking information and formulate a plan of action. Subsequently, in the action stage, individuals execute their plans, ideally resulting in behavioral change.

Finally, in the maintenance stage, individuals focus on actively sustaining this newfound behavior (Raihan et al., 2023).

Figure 12 illustrates the outline of the Transtheoretical (Stages of Change) Model, offering insight into how each stage applies to our campaign's audience accompanied by outlined strategies to engage and support individuals at each stage of their behavioral change journey.

The next step to developing a campaign is ideation, forming the message, and branding. The goal of this step is to create an identity for the campaign to make it recognizable and memorable. The message should be compelling and clear while communicating the importance of its cause (Life Saving Victoria, 2023). It should also invoke emotion from the audience, though the specific emotion invoked may vary. Part of this could be identifying potential benefits of the campaign or associating with a recognizable location, mascot, or item to make it easier to understand. The main message of a campaign typically comes in the form of a slogan which is generally short and easy to remember. It can be creative and punny, but has to encapsulate the original meaning. There are many examples of creative campaign identities, each with unique mediums for story-telling, brands, and slogans.

Choosing a medium is the most important step of the campaign process because, besides branding, the campaign's content is the main aspect its audience will engage with. Campaigns can comprise a variety of advertisements, announcements, stories,

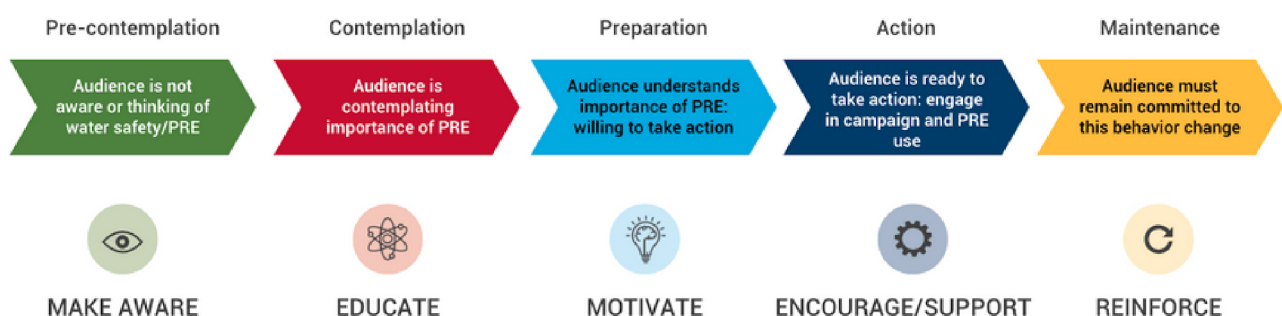


Figure 12: Outline of Transtheoretical Model regarding PRE campaign audience

games, and other events that make up the majority of its content. While the specific contents can be unique, they need to educate and engage the community (ibid). Making sure the content is easy to understand and accessible to a wide variety of audiences is crucial when creating content because it makes it easier to spread and share. Content may include a variety of different mediums, however for PSAs, the most common mediums are often audio like songs or radio advertisements, video advertisements or short films, and visual media like posters, banners, or flyers. Different mediums will work better for different campaigns, so they need to be chosen to match the campaign's brand, the target audience's interests, and the most effective communication channels to reach those target audiences.

Dissemination, engagement, and monitoring success are the final steps of a campaign, once all of the materials have been prepared, prototyped, tested, and iterated. Platforms need to be evaluated to identify which would best fit the content. There is no definite way to know how a campaign will perform, so consistent monitoring and evaluation of its effectiveness is crucial. Metrics such as website traffic, social media engagement, public feedback, and other predetermined metrics can be used to evaluate campaigns. Multiple metrics can be used to evaluate what is working well for the campaign versus what isn't to provide direction in any necessary reiteration.

The metrics for success change depending on the action the campaign wants its audience to take. They can also be categorized by when these metrics can be evaluated: either in the short term or long term. For example, a food bank campaign could measure its success by comparing the number of food donations it receives before and after the campaign. Another example would be a transit authority promoting safe practices around their trains measuring their success by seeing if the number of train-related incidents decreased in their city after the campaign was put in place.

Social media has quickly made its way to the forefront of today's society, with an estimated 4.9 billion social media users globally and researchers anticipate this number will surge to 5.85 billion in the next five years (Wong, 2023). Social media has become the primary form of communication for businesses, politicians, organizations, and individuals worldwide. Social media is a quick and efficient way to disseminate information to a large population with 77% of businesses using social media to advertise their brands (ibid).

The wide reach that social media offers is an important factor when considering channels for public campaigns and communicating information to a wider audience. Online social media platforms can connect with broad and diverse communities spanning different geographical locations. The most frequently used social media platforms according to the Apple App Store are Facebook, Instagram, X, TikTok, and YouTube, each having its pros and cons. These channels have been utilized to create many effective campaigns and reach the largest audience possible. It is important to note that while social media platforms may be effective, there is never a guarantee that content shared through social media campaigns will "go viral" and achieve the anticipated result. That being said, there are many reasons why social media is crucial to engaging with today's audience, and why the tools it provides make it easy to develop a structured and interactive campaign.

Not only does social media reach a broad audience, it also offers tools for audience engagement and measuring that engagement. For instance, Instagram, a popular platform linked with Facebook, offers a 'professional account' feature. Anyone can create a professional account to access valuable metrics about their followers, such as the most active times of day and the most active days of the week. It also allows users to track the number of interactions with a post, going beyond likes, comments, and shares with extensive insights through Instagram's analytics tools.

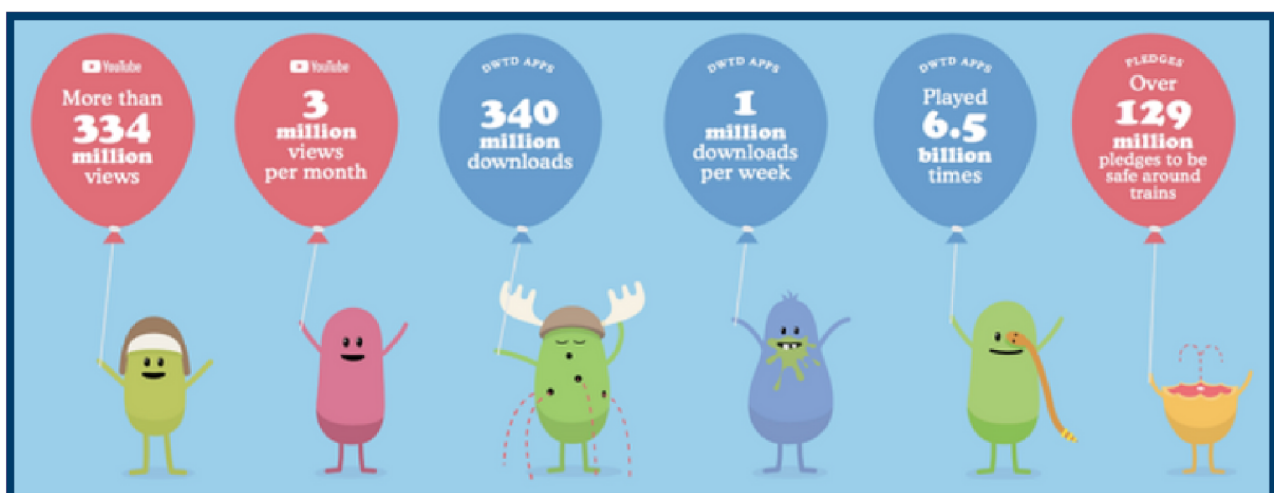
Instagram Insights allows users to see metrics for individual posts, including accounts reached through the post, accounts that engaged with the content, interactions, video content views, and additional data on boosted Instagram Ads (Meta, 2023). Similar features are available on various social media platforms like Facebook, TikTok, and X. These tools are useful in a campaign when analyzing the success of a post and using this data to determine the most effective way to engage with an audience.

A notable instance of an effective PSA is the campaign conducted by Metro Trains Melbourne to promote safety around trains, as mentioned earlier. This campaign, famously known as “Dumb Ways to Die,” initially launched with a catchy and humorous music video. It creatively illustrated various absurd ways to die, culminating in scenarios involving train accidents, thus emphasizing the foolishness of unsafe behavior around trains. The campaign’s memorable tagline, “be safe around trains,” resonated with the audience.

Dumb Ways to Die is now known as one of the most shared PSA campaigns and has won countless awards because of its success. Some of the reasons this campaign was so successful was because of the genre of their message and the shareability of their mediums.

By utilizing humor and keeping their media family-friendly, they were able to appeal to all age ranges which widened their audience. Access to the campaign materials also contributed to their success since it was posted on the public video-sharing site, Youtube, which has features such as comments and likes which helped to boost its popularity and provide ways for their audience to interact with and share the media. Finally, the campaign materials were attractive due to their simplicity which made the concepts easy to understand.

The effectiveness of this campaign was evident in its measurable outcomes. According to statistics released in a Brand News article in 2013, the campaign led to a substantial “21% reduction in accidents and deaths” related to train incidents in Melbourne. This was a direct result of the campaign’s innovative approach to raising awareness and changing public behavior. Additionally, the campaign’s global impact was highlighted by over 129 million people worldwide taking the safety pledge. These impressive figures, along with other detailed success metrics, are presented in Figure 13 below, showcasing the powerful role of creative and engaging PSAs in promoting public safety.



Courtesy of Dumb Ways to Die's PSA page
Figure 13: Dumb Ways to Die campaign result statistics

CHAPTER 3: METHODS

This project aimed to create a safety campaign that raises awareness and understanding of the new PRE and its correct and safe usage to reduce the high number of fatalities on Venus Bay beaches. The strategic communications strategy offered by Life Saving Victoria (LSV) in collaboration with the Venus Bay Surf Life Saving Club (VBSLSC) presented a blueprint for our methodology. Using this plan, we identified the following objectives for our campaign:

1. Understand our audience
2. Draft materials and key messages
3. Test and revise campaign materials
4. Create a dissemination plan and define metrics for success

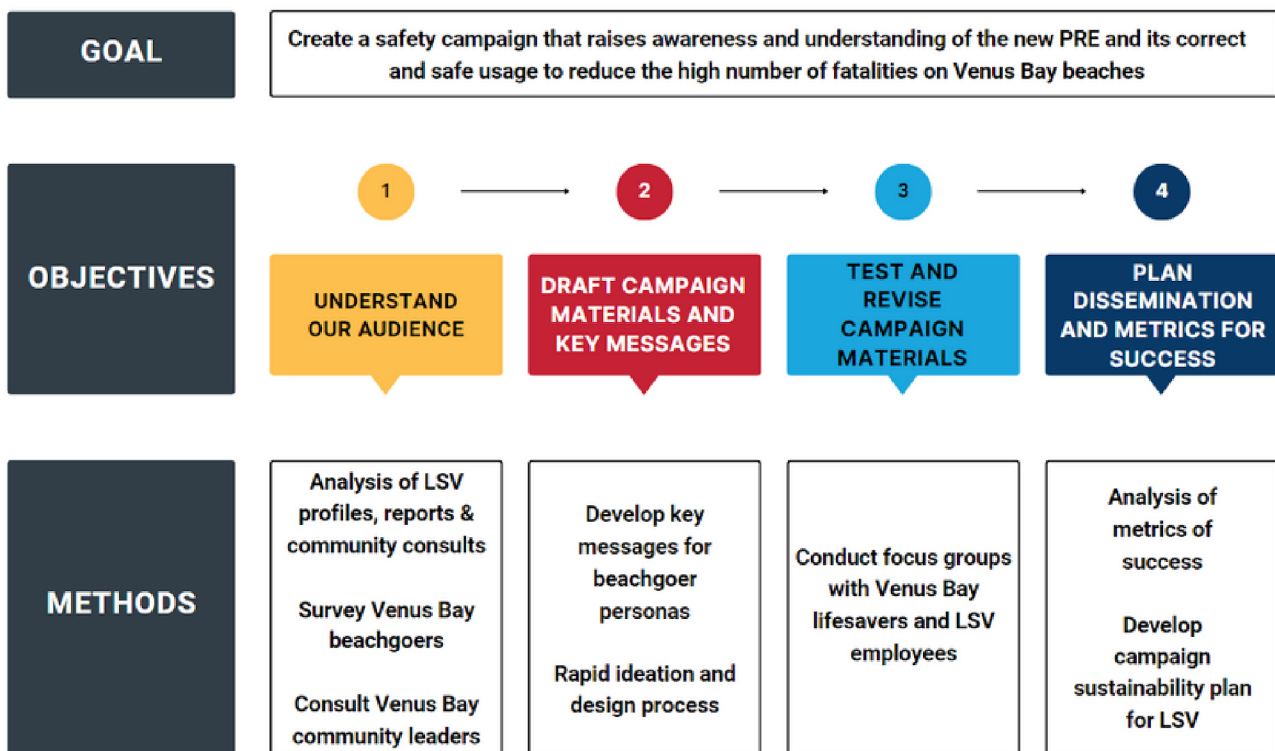


Figure 15: Overview of project goal, objectives, and associated methods

3.1 Understand our audience

Understanding our audience was a pivotal step in effectively tailoring our messaging, strategies, and communication channels to them. To accomplish this objective, we:

- Met with VBSLSC to gauge the community's current awareness and expectations regarding PRE and to identify common communication channels.
- Analyzed LSV documents
 - Their 2022 Venus Bay Community Consultation was used to categorize our audience into three separate personas, each detailing methods of communication and outreach.
 - The Transtheoretical (Stages of Change) Model was used to further categorize our audience, helping determine the campaign's focus during each stage.

- The 2022 Venus Bay Visitor Report provided an overview of the demographics of people who visit Venus Bay. It also divided beach visitors into three Roy Morgan Helix Personas that best described them.
- Conducted intercept interviews with beachgoers to address missing information on visitors in the LSV's Community Consultation, and to gather feedback on participant's willingness to use the PRE stations' different features.

Our team held a meeting with the current and former presidents of the VBSLSC and learned the following.

Existing knowledge & expectations: Discussion with VBSLSC leaders indicated that the Venus Bay community initially exhibited a strong interest in the PRE. Although people were unaware of the PRE's features and functionality, they simply wanted something to address the issue. However, the delayed implementation has led to impatience and frustration. As a result, our campaign strategy adapted to prioritize educating the community on the correct usage of PRE, rather than solely raising awareness.

Communication channel suggestions: The leaders identified community-centered channels, such as local Facebook groups, community notice boards, and town hall meetings. They also suggested leveraging community events and workshops as platforms to demonstrate PRE usage and facilitate direct interaction with community members. Finally, they recommended that we use a mix of digital and print mediums to communicate with the older residents of Venus Bay more effectively.

We analyzed a community consultation conducted by LSV in September 2022 to understand the Venus Bay community's experience with life-saving, needs regarding PRE, and feedback on what a PRE station should include.

The consultations involved 67 participants, representing a wide range of residents and visitors. 67% of the participants



identified as part-time residents and holidaymakers. The second largest population was residents who made up 27% of the participants. However, the distinction between returning and new visitors was not made, nor shown in the data. We wondered whether these two types of visitors might have different levels of awareness, so we decided to ask that in our follow-up intercept survey discussed later in this chapter.

The consultations also revealed a notable knowledge gap within the community regarding PRE. Approximately 40% of participants said that they were not familiar with PRE, placing them into the pre-contemplation stage of the transtheoretical behavior change model. Of those who were familiar with PRE, 68% had never used these devices before. Most of those who had some experience had encountered PRE during training.

The community showed a range of behavioral intentions in response to the questions about what they would do in water-related emergencies. 63% of participants expressed their willingness to call for help by ringing 000 or alerting a lifeguard when faced with an emergency. Almost one-third of participants indicated a readiness to perform a water rescue using PRE, underlining the importance of making rescue equipment readily accessible. A smaller group, 13%, revealed that they would or might attempt a rescue, but would be cautious before entering the water, opting to perform a risk assessment. One individual expressed willingness to perform a rescue even when no one else was around, highlighting a sense of community responsibility. In relation to the Transtheoretical (Stages of Change) Model for behavior change, this data suggested the audience was in the pre-contemplation and preparation stage. The majority of people were identified as pre-contemplation because this was their first time hearing about the PRE stations. However, they are immediately designated to the preparation stage after learning about it due to the extremely high rate of support. Therefore it would be useful to educate, encourage, and support them with our campaign materials.

Local participants also offered insight into effective promotion methods outlined in Figure 16:

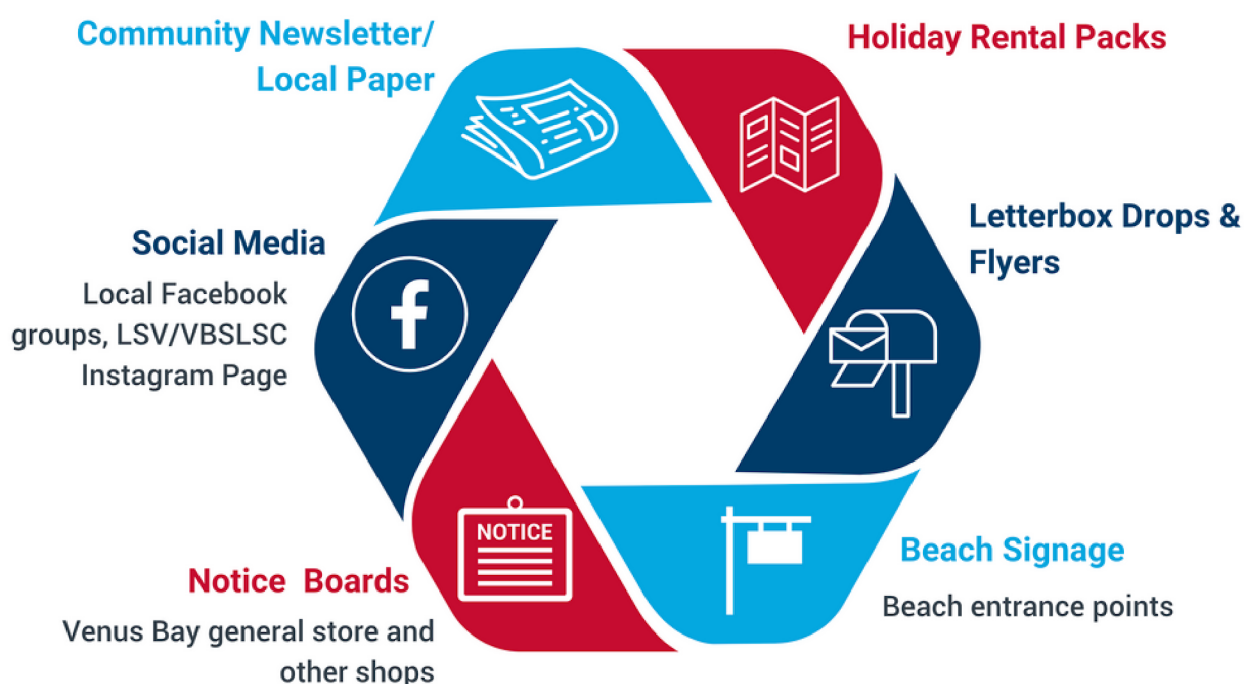


Figure 16: Promotional methods suggested by local participants

In summary, the community consultations revealed the necessity for comprehensive awareness campaigns to bridge the beachgoer's PRE knowledge gap and highlighted traditional media channels as the most promising.

The 2022 Venus Bay Visitor Report provided us an overview of the type of people who visit Venus Bay. Some key statistics we noted were:

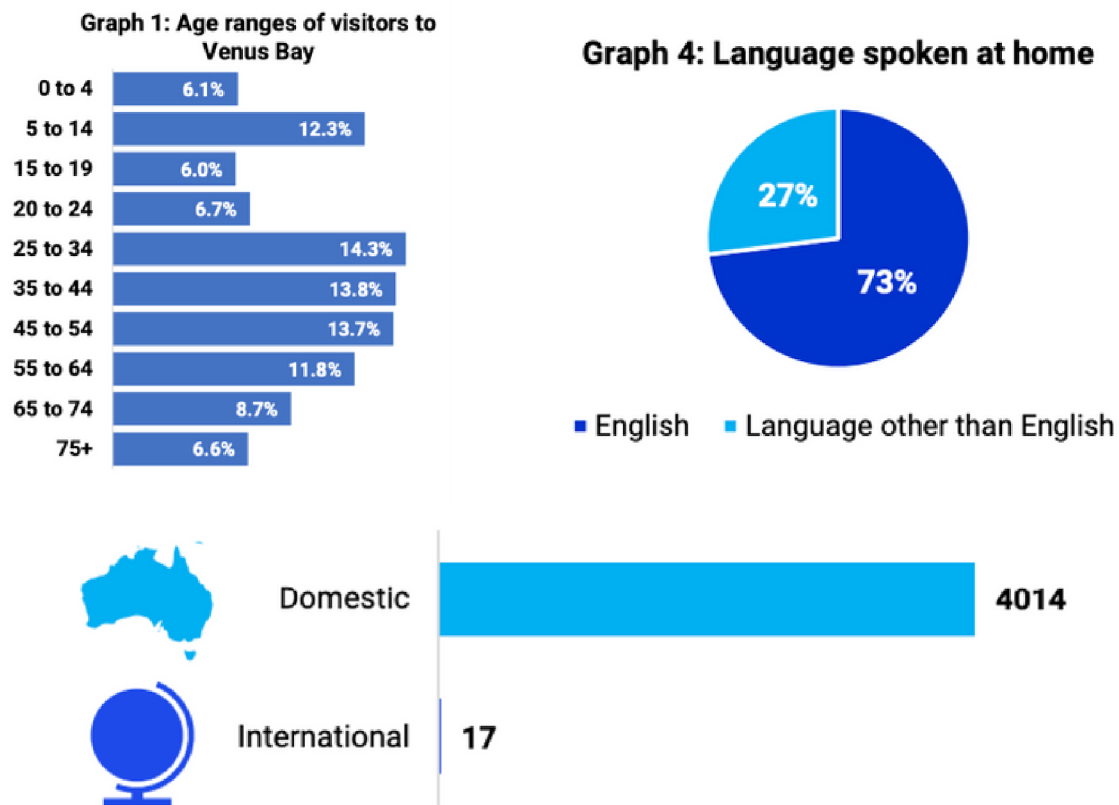


Figure 17: Key data trends found in the 2022 Venus Bay visitor report.

While these statistics provided valuable insights, what we found most useful in aiding our creation of four audience personas were the Roy Morgan Helix Personas detailed in the report. These personas provide an in-depth look into the psychographics, attitudes, and behaviors of a group. Specifically, it classifies the Australian population into 54 distinct Helix Personas which are then grouped into six communities. This tool is intricately designed to weave in values, beliefs, and attitudes, thus predicting the behaviors of individuals visiting aquatic locations. Specifically, understanding these personas better informed us about the type of content they prefer or the best channels of communication to use with them. Notably, among the visitors to Venus Bay Beaches, the key Helix Personas that LSV identified were “Seasoned life-stylers”, “Relaxed living”, and “Getting ahead”.



Figure 18: Helix Personas LSV identified through the 2022 visitor report

Our site visit to Venus Bay and its beaches coincided with Melbourne Cup Day, a public holiday in Victoria, and the last public holiday before the summer holiday season. This period typically sees an increase in beach visitors, providing an ideal opportunity for our research. During the first half of our visit, we carefully observed beach access points and existing signage, identifying potential locations for our campaign materials.

Afterward, we conducted 42 intercept surveys along Venus Bay's beaches with beachgoers. Equipped with clipboards and surveys, we approached individuals, offering them the choice to complete the survey independently or with our assistance. These surveys were crucial in understanding the attitudes, behaviors, and knowledge about PRE among the beachgoers, particularly those who did not own or rent a home in Venus Bay - a group not extensively covered in the community consultation.

The prior community consultation did not include many infrequent visitors. It only classified its data from "holidaymakers" and "part-time residents" together, making up 68% of respondents. To ensure that we more thoroughly measured the visitor demographic, we surveyed beachgoers during a holiday and asked them to report the frequency of their visits to Venus Bay. In total, we approached 53 individuals and received 42 responses. Half of the participants did not frequent the area, with 13 only visiting a few times a year, and nine visiting for the first time. The remaining 20 people were either part-time or full-time residents of Venus Bay. Of the nine people who were rejected, seven were unable to participate due to language barriers. Our beachgoer survey questions can be found in Supplemental Materials A.¹

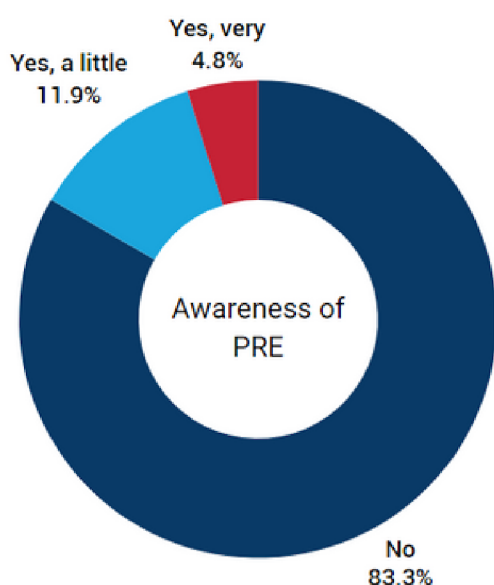


Figure 19: Participant responses when asked if they are familiar with the PRE that will soon be installed

We also surveyed beachgoers' knowledge of the public rescue equipment stations. The results showed that more than 80% of individuals were not aware of upcoming installation of PRE stations prior to being surveyed as shown in Figure 19. Additionally, the majority of those who were aware of the equipment had only heard of it once or twice. This finding highlights the need for clear instructions and education about its use in our campaign materials as well as an emphasis on the emergency call button. Notably, some participants initially opposed the PRE stations, but their stance changed favorably upon understanding how the call button feature worked. This shift stresses the power of informed communication and underscores the necessity of educating the public not just about the implementation of PRE but also about its functionality and steps to follow with activating the call button.

¹ Supplemental Materials for this Project may be found at <https://digital.wpi.edu/> by typing the title of this project into the searchbar.

Additionally, beachgoers reported on their willingness to use the features of the public rescue equipment stations (see Figure 20). Notably, the emergency call button emerged as the crucial component with eighty-five percent of respondents indicating they would use it and a quarter of respondents indicating they would use it exclusively. This positive response aligns with the project's aim of encouraging Venus Bay beachgoers to press the button during a water emergency. However, just under half of all respondents would use both the call button and the rescue tube under certain conditions. The majority of those conditions being if the wave and weather conditions appropriately match their swimming abilities.

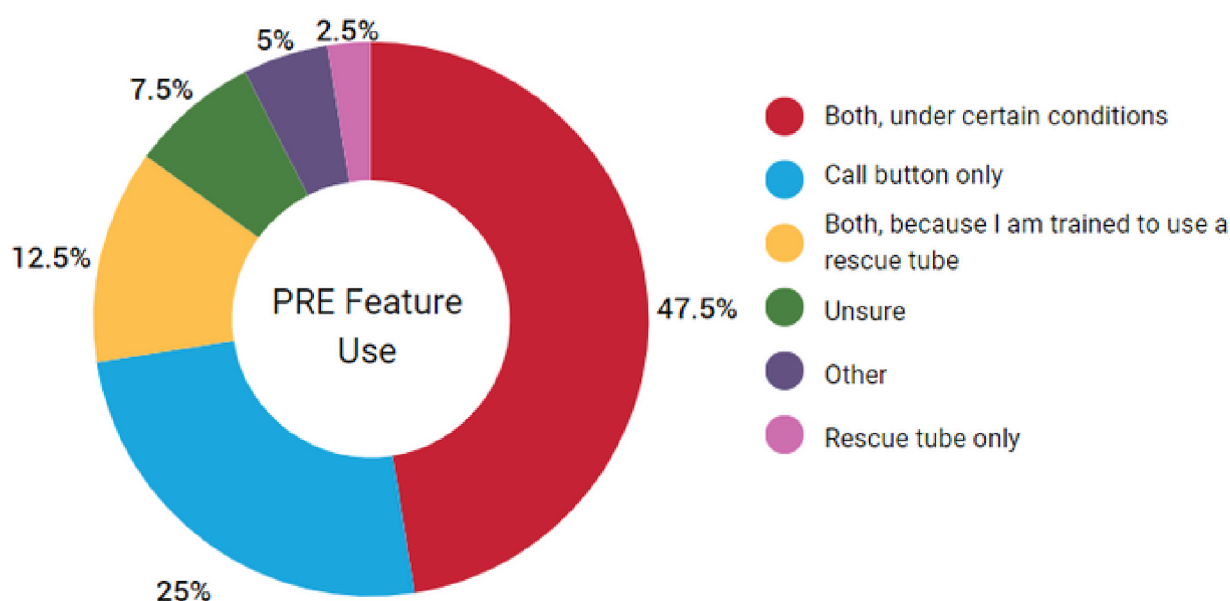


Figure 20: Public rescue equipment features that participants said they would use in an emergency

Taking a closer look at the swimming ability of the individuals that would use both the button and rescue tube under certain conditions raises concern (see Figure 21). The majority of these respondents reported having less than good swimming ability. This is alarming as we discourage individuals who are not competent swimmers to attempt rescues, and rather only to press the button. Consequently, our materials should focus on letting the audience know that utilizing the button is sufficient for initiating a rescue, and next steps will be determined by the operator on the call box.

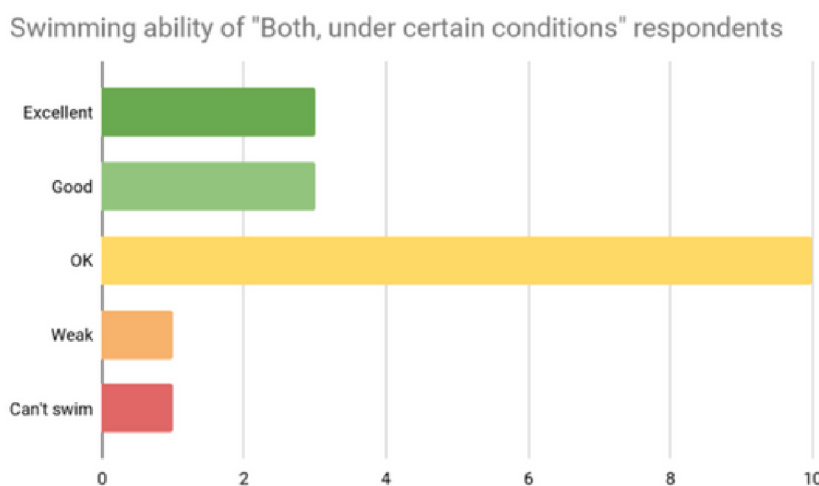


Figure 21: Self-reported coastal swimming ability of individuals who would use both the call button and the rescue tube under certain conditions

An additional question from the survey that provided valuable insight into Venus Bay beachgoers was their main activity at the beach (see Figure 22). This information was particularly useful to identify what beachgoers typically did on their day at the beach. This helped guide our materials to target a specific activity and the people who participate in these activities. Not surprisingly, swimming/paddling/wading was the most frequented activity. This was followed by walking and fishing.

Drawing inspiration from the Helix Personas outlined in the Visitor Report, four primary campaign personas were created with help from LSV's media and communications team to separate Venus Bay beachgoers into four target personas: Beachgoing families, Retired residents, Young adventurers, and Pipi hunters (see Figure 23). These are based on both the outlines provided by the Helix Personas and the specific needs and behaviors identified in the intercept interviews. For

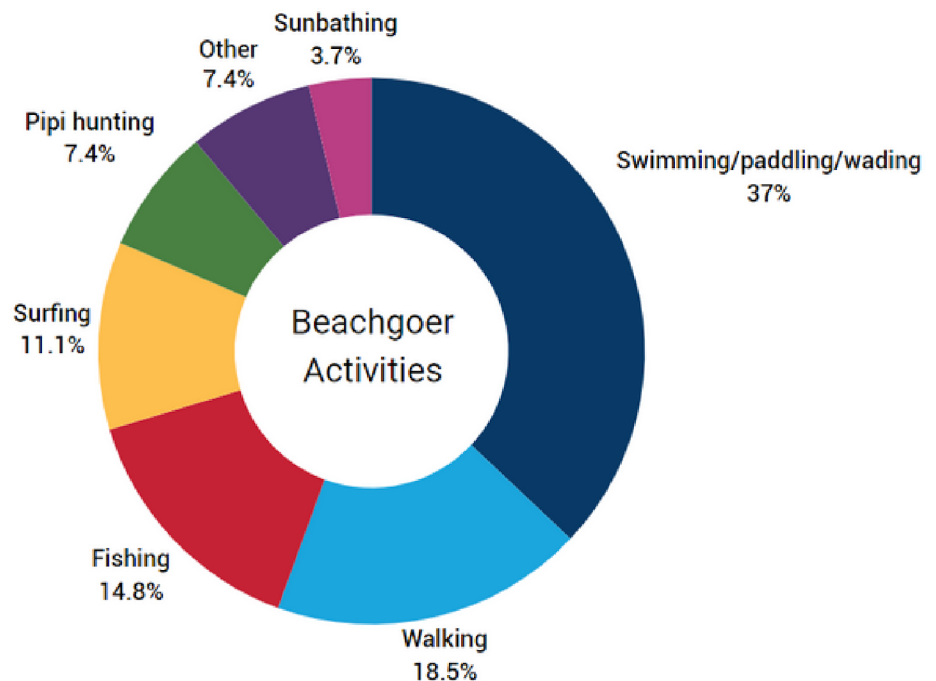


Figure 22: Respondents' main activities at Venus Bay beaches

example, the "Beachgoing families" persona represents the multiple younger couples with children we encountered, while "Retired residents" aligns with the older demographic expressing a

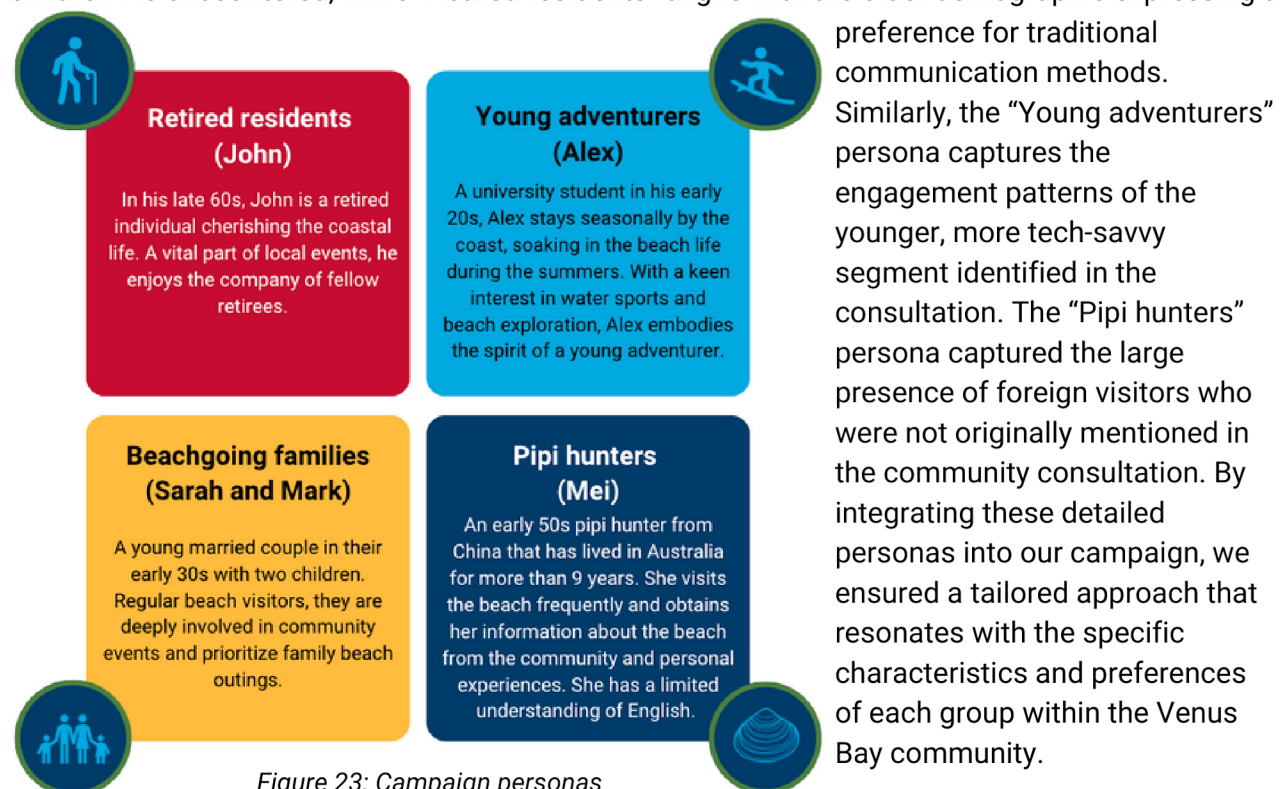


Figure 23: Campaign personas

Beachgoing families (Sarah and Mark):

Concentration on family safety, with the introduction of child-centric safety guidelines. Initiatives include interactive workshops and resources tailored for kids, emphasizing beach safety.

Retired residents (John):

Emphasis will be on ensuring preparedness against adverse weather conditions, fostering community engagement in safety initiatives, and organizing events that merge learning with community bonding.

Young adventurers (Alex):

The campaign will design compelling safety content, utilize social media for maximum outreach, offer safety workshops, and share genuine stories to highlight the need to be prepared.

Pipi hunters (Mei):

The campaign will focus on providing easily understandable water safety materials for non-English speakers who are not aware of PRE. Emphasize materials on pressing the button and provide translations of DL flyers, posters, etc.

By framing our campaign around these personas, we ensured that we met the unique needs, concerns, and behaviors of our target audiences. These personas served as guiding pillars, helping inform content creation, channel selection, and engagement tactics.

3.2 Draft campaign materials and key messages

Before beginning ideation we identified key messages and goals to meet our audience at different stages of the transtheoretical behavior change model. These key messages are outlined below in Figure 24.

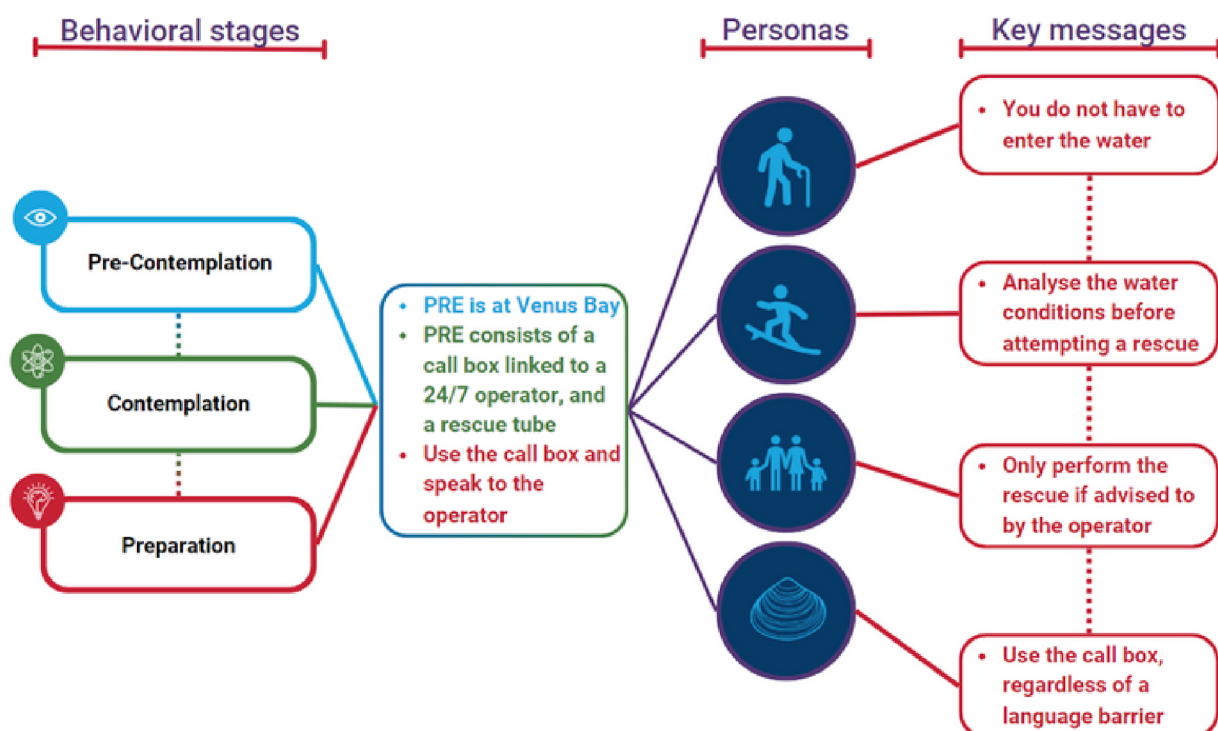


Figure 24: Key messages for campaign materials in accordance to each stage of the behavioral change model and person

We proceeded to draft ideas for campaign branding, slogans, and materials via brainstorming, rapid prototyping, and getting informal feedback as shown in Figure 25.

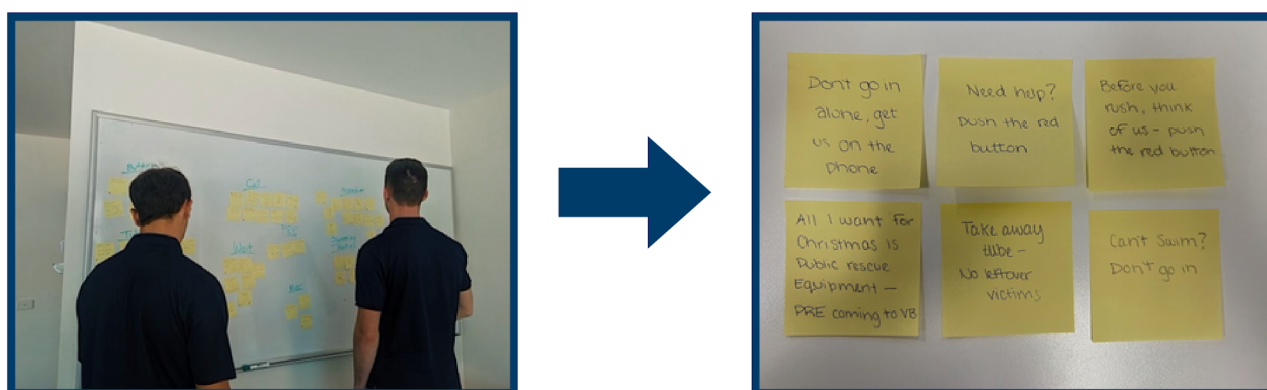


Figure 25: Image of rapid ideation process and resulting potential campaign slogans

The first phase of our process was brainstorming. For slogans and messages, we generated as many ideas as possible, then eliminated ideas that did not meet criteria such as appealing to our audience personas, fitting our desired mediums, and complying with LSV's media and communication guidelines. For campaign materials, we brainstormed ideas per persona based on the key messages and mediums defined for each. We also cut ideas that were too expensive, specifically those that cost more than \$2000. These constraints were determined based on LSV's budget for the campaign, the media and communications style guide, and direct feedback from the LSV communications and media team.

The rapid prototyping phase included creating drafts and getting informal feedback from LSV staff and others involved in the project periodically to determine if the idea should be pursued further. One of our key prototypes was a DL flyer, intended primarily for beachgoing families staying for the holidays at rental properties (Supplemental Materials B). This flyer, focusing on awareness, understanding, and usage of PRE, was designed to be distributed through rental vacation homes.

Our campaign concepts also included multiple posters, each tailored to specific behavior stages and personas. One of our initial concept posters, the 3-Point poster, aimed at the contemplation and preparation stages, provided a how-to guide on using the call button, emphasizing that entering the water is not necessary for an effective response (Supplemental Materials F). This was particularly targeted towards Beachgoing families and Retired residents, who are more likely to avoid entering the water.

Another simpler yet effective poster, the "PUSH THE RED BUTTON" poster, was designed to instantly capture attention with its eye-catching slogan (Supplemental Material D). This poster, also aimed at the contemplation and preparation stages, was instead for a broader audience consisting of all our personas. We intentionally used more imagery and minimal text to accommodate our Pipi hunter persona and others with language barriers and to make the message more accessible.

Overall, we created over 10+ drafts and narrowed our initial drafts to six concepts by obtaining informal feedback from LSV staff, primarily from the media and communications team

3.3 Test and revise materials

Once the initial drafts were decided upon and finished, we received feedback from VBLSLSC lifesavers and LSV employees through a total of 4 focus groups and 20 participants. Participants were shown the following drafts of our campaign material (Figure 26) and were then asked a series of questions to gain feedback regarding the material's content and visuals. Close-ups of all these drafts can be found in our Supplemental Materials B, D, F, H, I, and J. The participants were presented with the following six concepts:



Figure 26: Campaign draft concepts for VBSLSC and LSV focus groups

The focus groups identified the importance of maintaining uniform icons across the materials and signage to reinforce their association with one another. An abundance of visuals is especially important when helping non-English speakers understand our content, however, translated versions of our materials will be available on the campaign's landing page to further address this concern. The larger text was preferred on the posters to aid with its readability, but it was noted that it should be increased in moderation to not distract from the main message.

In terms of content, participants strongly recommended that we include detailed information about patrol times and messaging about swimming between the flags on our DL flyer. Specifically, they cautioned against giving beachgoers a false sense of security about swimming areas once the PRE is installed and emphasized that PRE is meant to be a last resort, not as their primary safety measure. Finally, on our posters, participants noted that the shorter content often lacked context and made our messaging unclear. To remedy this, they suggested that we include more relevant visuals or simply add more text to provide additional context. We also got other feedback such as more general comments as well as their thoughts on who the target audience should be for each campaign material. Finally, they provided recommendations for our material dissemination methods. Additional information regarding this, including a diagram of our thematic analysis, can be found in Figure 27.

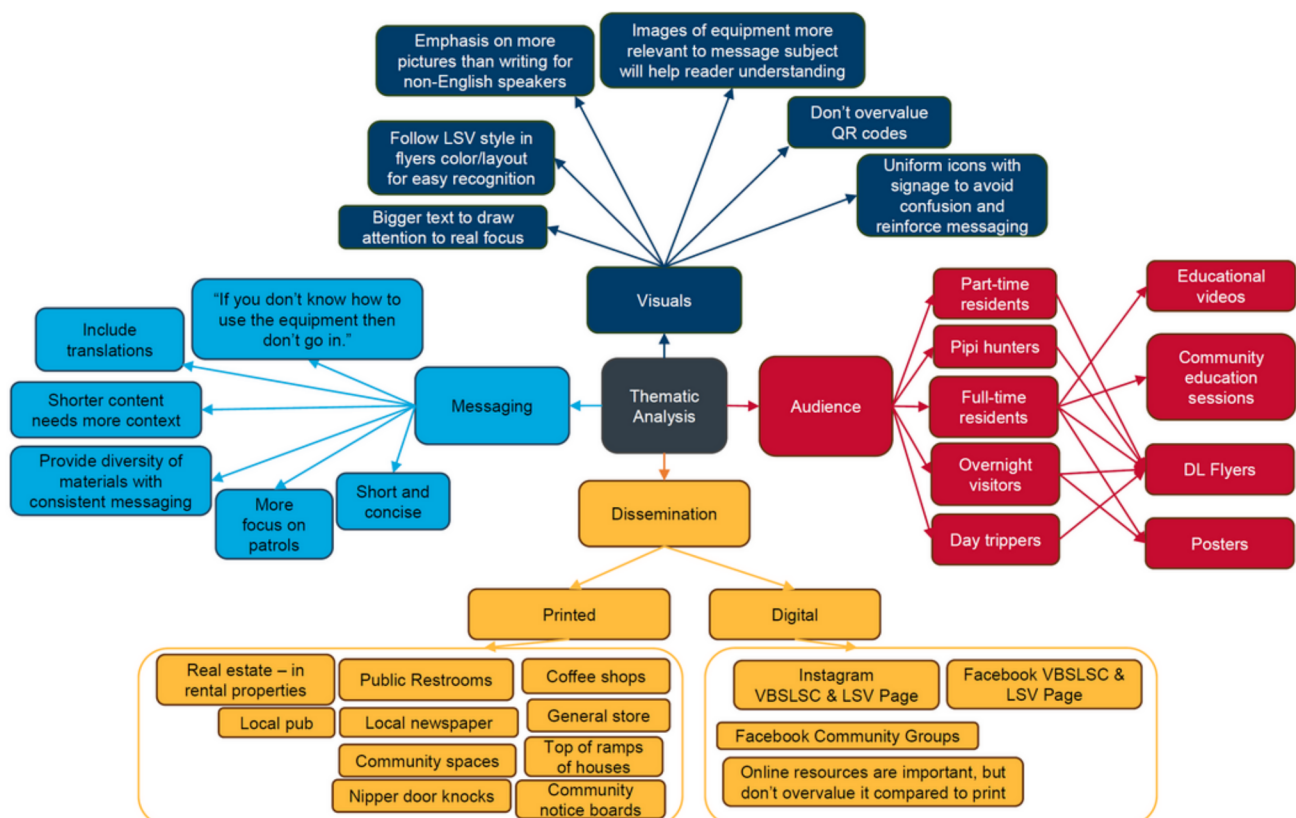


Figure 27: Thematic analysis of focus group feedback

Based on all of the feedback we got from our focus groups, we were able to revise our initial concepts to create our final campaign drafts below (Figures 28-31) with changes outlined in Supplemental Materials R, S, and T.



Figure 28: Final "Push the red button" poster



Figure 29: Final 3-point poster



Figure 30: DL flyer page 1

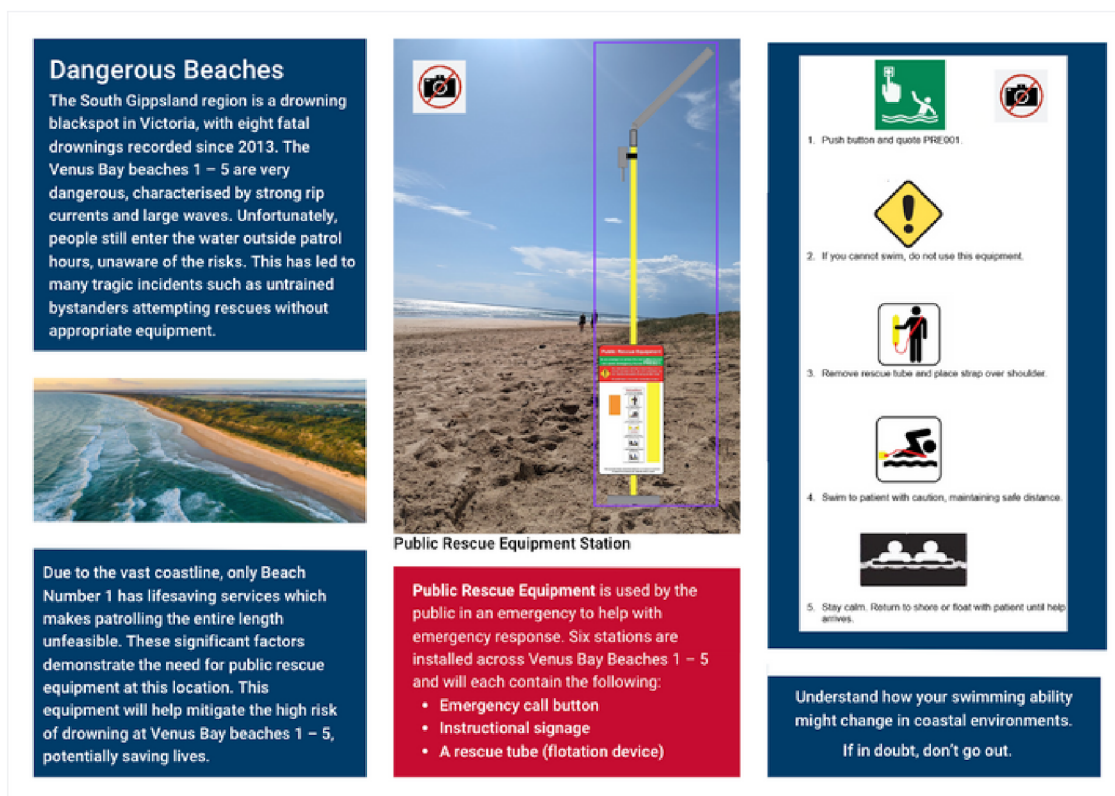


Figure 31: DL flyer page 2

At the end of our process, we finished with two posters, the 3-Point poster (Supplemental Materials G) and the “PUSH THE BUTTON” poster (Supplemental Materials E). We also finalized one DL flyer (Supplemental Materials C).

In addition to our finalized materials, our team also drafted a Campaign Concept Rationale document (Supplemental Materials P). This document details some basic information such as key messages, intended audience, and intended behavioral stage. Each element of the materials is outlined and explained to help LSV understand our design choices and recommendations and apply a similar rationale when designing future materials.

3.4 Plan dissemination and metrics for success

In developing Objective 4, our goal was to create a detailed plan for disseminating our materials and defining clear ways to measure its success. This plan included a mix of traditional and digital dissemination methods. The traditional methods involved handouts and public displays, while digital methods utilized online platforms like social media and websites. The effectiveness of these methods will be assessed through various metrics, including direct observation, social media engagement, and feedback from the community. This section outlines the specifics of these traditional and digital methods, explaining how they will be used and how their impact will be measured.

One of our main dissemination methods for our traditional materials was their inclusion in holiday rental packs. Venus Bay has many homes for rent during the busy summer season on popular sites like Airbnb and Stayz. This method ensures that every group or family renting a home receives the flyer upon arrival. Our primary material for this method was the DL flyer, but also included the button poster in addition. This decision was made to compliment the DL flyer’s informational focus with the button poster’s attention-grabbing imagery.

To contact the property owners with our proposal, we recommend that LSV reach out to Venus Bay leaders to assist with the discussion. Additionally, there is a Facebook group called Venus Bay/Tarwin Lower Holiday Rental Owners that LSV can reference when looking for rental owners to approach. In terms of measuring this method’s success and outreach, we recommend

that LSV count the number of properties our materials are in and how often these properties have been rented after the summer season.

Another essential aspect of our dissemination strategy was conducting direct observation in various public spaces. These spaces, including coffee shops, the general store, the community center, notice boards, the caravan park, VBSLSC's clubhouse, and public beach access points, will display at least one of the three traditional materials. By observing these locations, we can



effectively count the interactions and gauge the public's engagement with our materials. This method not only provides a quantitative measure of our campaign's reach but also offers insights into the effectiveness of the placement of these materials in capturing the attention of the public.

Other dissemination methods include the VBSLSC's Nippers program handouts, utilizing the local paper, and simply stapling flyers to telephone poles. The Nippers program was recommended to us by VBSLSC's president and other community leaders, as they conduct yearly fundraising by doing door knocks. This would be the most effective method to spread our material to each home, due to none of the properties in Venus Bay having mailboxes. In terms of the local paper, multiple news outlets cover the area. Metrics such as the total number of people the paper reaches and the number of copies purchased will measure the material's success.

Furthermore, our digital campaign, comprising a storyboard for an informational video, Instagram posts, and Facebook group posts, will be monitored and evaluated based on metrics such as website traffic, social media engagement, and public feedback.

Additionally, surveying will play a crucial role in our evaluation process. The next WPI group will conduct surveys, asking participants about their exposure to the campaign materials and what they have learned from them. These surveys will also include follow-up questions for individuals who utilize the call box to ask them about their prior knowledge of the PRE use procedure and learn whether they gathered and retained this from our campaign materials.

The Gantt Chart for our dissemination plan outlines the timeline and key milestones for both the creation and dissemination of our materials, as well as the monitoring and evaluation phases (Supplemental Materials Q, summarized in Figure 32). It was designed to align with the implementation of the PRE stations on the beaches, ensuring that our campaign is timely and relevant.

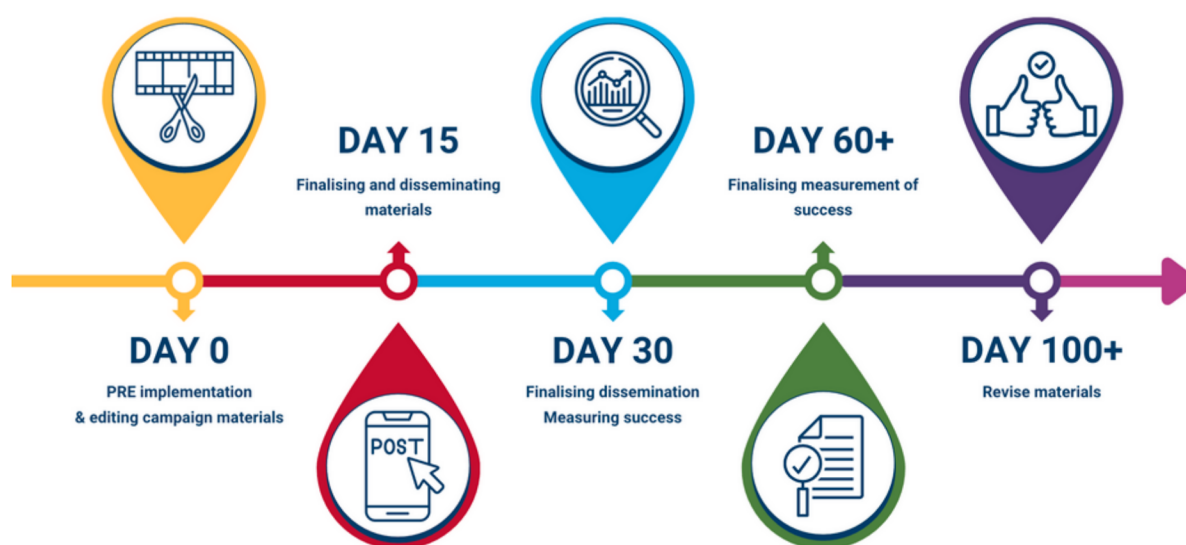


Figure 32: Summary of recommended dissemination plan

We anticipate the editing and release of the DL flyer, 3-Point poster, and Button poster to each take about a month, reflecting the need for updated station visuals. Once the editing is finished, these materials will be released using the various dissemination methods outlined in the Gantt Chart. Measuring the success and outreach of these posters is set to begin in March, aligning with the decrease in visitor numbers. This timing is essential, as many of our success measurement methods rely on direct observation and engagement with visitors. Concurrently, the development of the informational video storyboard is expected to take a month, with additional time allocated for filming and editing. The dissemination of this video across various online platforms should be completed within a few weeks, with its success and outreach monitored as needed. Engagement will be analyzed on social media, while traffic on websites and landing pages will be tracked.

In terms of our Facebook and Instagram campaigns, we anticipate the creation of content to take approximately two weeks, contingent upon the implementation of the stations for organic posts. We plan to revise and post content on various channels at the start of each month, dedicating the rest of the month to monitoring engagement and gathering feedback. This structured approach ensures that our campaign materials are not only effectively distributed but also that their impact is thoroughly measured and understood, allowing for ongoing refinement and greater effectiveness in future campaigns.



CHAPTER 4: RECOMMENDATIONS

Due to the timing of this project, the installation of the PRE station occurred after the end of term, and therefore we were unable to create and finish certain deliverables. To accommodate this constraint, we developed recommendations for the following additional campaign materials:

- PRE educational videos
- Demonstration sessions
- Social media posts (Instagram, Facebook)

Storyboard

One of the recommendations we developed was a storyboard for an educational video (Supplemental Materials L). This video was designed to address all stages of the behavior change model and appeal to all audiences. The main sections of the video are the “What is PRE?” segment, the “How do I use PRE?” segment, and the transitions that connect the two. It was also designed so that the transitions could be removed and the two main segments could be separated into two shorter videos depending on the campaign’s needs. We recommended that LSV put this video on the landing page for the PRE campaign on the LSV website so that anyone who is routed to the website through the links and QR codes on our other materials can see it. The “How do I use PRE?” segment could also be used for instructional purposes as well.

The storyboard for the video lays out the sections of the video, the flow of the video, and detailed notes of recommended visuals and audio for each frame. For each frame, all essential information that must be included is bolded so that LSV can make informed decisions about what to include in the video versus what to cut for the sake of reducing the video’s length. Mock-ups of recommended footage and actions are also included in the visual aspect of the storyboard. This storyboard was developed using a similar method as outlined in Objective 2, the only difference being that feedback was conducted in meetings with only the LSV media and communications team. The initial draft is in Supplemental Materials K and the final draft is in Supplemental Materials L.

This video was inspired by the Rescue Tube Foundation in Hawaii’s video demonstrating how to use a rescue tube. The main difference between their video and our proposed one is the introduction of three different personas: one middle-aged person, one child, and one elderly person. This was to emphasize the various skill levels of beachgoers and highlight that bystanders do not have to perform a rescue, but should still press the button. Another thing to note is that the ambassador presenting in this video would ideally be somebody with a public profile and experience with water-related activities. Our recommendation for an ambassador was Tammy van Wisse, a 5-time swimming-related world record holder and Venus Bay resident.

Demonstration Sessions

In addition to all of our promotional materials, we also recommended that LSV collaborate with VBSLSC to host several demonstration sessions around Venus Bay around the time of the PRE installation. We recommended that they host at least 3-6 within the three months of the PRE launch. The timing and locations will be determined by LSV depending on factors such as space availability, lifesaver volunteer availability and training, and weather.

To help lifesavers with the demonstration, we outlined a lesson plan for them to follow (Supplemental Materials N). It includes the main information that is to be covered during the demonstration and the order in which it should be covered. It also has additional information such as a guide to properly demonstrate the use of the PRE. We also assembled an FAQ sheet which is a compiled list of answers to questions we anticipate the audience may have (Supplemental Materials M). This is to best equip the volunteers performing the demonstrations with the information of the project and the equipment to best help them give informed answers to audience questions.



Social Media Guidelines

Social media is a medium that will be heavily utilized throughout the campaign. Following our project, LSV and another team of students will continue to develop content for the campaign. To aid these efforts, we created content guidelines for these materials (Supplemental Materials O). For example, these guidelines include information that should be in the description of a post as well as some example descriptions. They also contain information about recommended graphics, specifically recommendations for photos to be used in the post in line with LSV media and the communications team's advice that organic photos perform better than more designed photos. Examples of LSV and VBSLSC social media posts are in Figure 33.

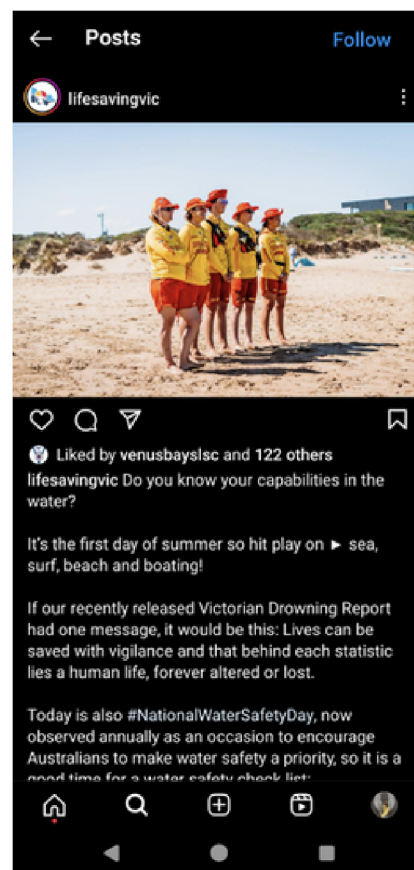


Figure 33: VBSLSC and LSV social media posts

CONCLUSION

This project at Venus Bay represents a comprehensive and strategic effort to tackle the significant challenge of water safety and drowning prevention. Through our collaboration with LSV and VBSLSC, we have developed and planned the implementation of a multifaceted safety campaign, aiming to raise awareness and understanding of the new PRE and its correct and safe usage.

Our campaign, informed by in-depth research and a deep understanding of our diverse audience, was tailored to address the unique needs and expectations of the Venus Bay community. We identified and pursued key objectives, which included understanding our audience, drafting and testing campaign materials, and creating a dissemination plan with well-defined metrics for success. The integration of traditional and digital methods in our dissemination strategy ensured that the campaign reached the majority of the community, engaging them in familiar formats and on platforms where they are most active.

The utilization of targeted personas such as beachgoing families, retired residents, young adventurers, and pipi hunters, allowed for personalized and impactful messaging. The use of various mediums, from posters and a DL flyer, to social media posts and an educational video, enabled us to communicate our messages effectively and engagingly. Additionally, the Gantt Chart we developed played a crucial role in aligning our dissemination plan with the implementation of the PRE stations, ensuring that our campaign was timely and relevant.

As we reflect on this project, we recognize the importance of ongoing efforts in water safety education and drowning prevention. Our recommendations for future initiatives, including the creation of additional educational videos, the organization of demonstration sessions, and the sustained use of social media for awareness-raising, are vital in continuing this message.

Ultimately, the success of this project will be measured not only by the reach and engagement of our campaign materials but more importantly, by the long-term impact on the Venus Bay community's awareness, attitudes, and behaviors regarding water safety. Our aim is for Venus Bay to evolve from a drowning 'blackspot' into a safe and enjoyable environment, where residents and visitors alike can appreciate the beauty of the water with an informed understanding of the risks and safety measures. This project stands as a testament to the potential of well-researched and community-focused safety campaigns in addressing critical public health issues and fostering a culture of safety and responsibility in aquatic environments.



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