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## Promising Practices for Boating Safety Initiatives that Target Indigenous Peoples in New Zealand, Australia, the United States of America, and Canada

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# Promising Practices for Boating Safety Initiatives that Target Indigenous Peoples in New Zealand, Australia, the United States of America, and Canada

## Cover Page Footnote

We would like to thank the reviewers for their very helpful feedback on an earlier version of this paper.

### Abstract

Boating-related incidents are responsible for a significant number of the drowning fatalities that occur within Indigenous communities in New Zealand, Australia, the USA, and Canada. The aim of this paper was to identify promising practices for boating safety initiatives that target Indigenous peoples within these countries and evaluate past and ongoing boating safety initiatives delivered to/with Indigenous peoples within these countries to suggest the ways in which they – or programs that follow them - may be more effective. Based upon evidence from previous research, boating safety initiatives that target Indigenous peoples in New Zealand, Australia, the USA, and Canada should employ cultural adaptation strategies, strategies to increase boating safety knowledge and awareness, strategies to increase the accessibility of boating safety equipment, and capacity building strategies. Improvements can be made to past, ongoing, and future boating safety initiatives delivered to/with Indigenous peoples in the four countries studied. These strategies all show promise in improving boating safety initiatives and decreasing boating-related drowning.

*Keywords:* boating safety, Indigenous peoples, Canada, United States, Australia, New Zealand

Although New Zealand, Australia, the United States of America (USA), and Canada all place high on the Human Development Index rankings, they are all home to Indigenous populations who suffer from poor health and social conditions (Cooke et al., 2007). Within these former British colonies, Māori and Pasifika peoples in New Zealand, Aboriginal and Torres Strait Islanders in Australia, American Indians and Native Alaskans in the USA, and Aboriginal (First Nations, Métis, and Inuit) peoples in Canada have all endured the forced loss of culture, paternalistic protectionism, and violence (Cooke et al, 2007; Stephens, Porter, Nettleton, & Willis, 2006; United Nations Inter-Agency Support Group, 2014). Due to colonialism, Indigenous peoples in these countries continue to have hampered access to the social determinants of health, resulting in poverty, low education attainment, a lack of access to health services, and food insecurity (Cooke et al., 2007; United Nations Inter-Agency Support Group [UNIASG], 2014; Reading & Wien, 2009). As a result, they face persistent health inequities (Cooke et al., 2007). One of the many health inequities that continues to have significant impacts on Indigenous populations within New Zealand, Australia, the US, and Canada is the prevalence of drowning fatalities which refer to deaths from submersion/immersion in liquid (World Health Organization [WHO], 2017).

Epidemiological data can be used to illustrate the severity of drowning in Indigenous populations within these four countries. For example, Australian Aboriginals and Torres Strait Islanders in Australia, who represent just under 3%

of the Australian population (Australian Bureau of Statistics, 2016), represented 4.4% of the drowning fatalities in Australia (Royal Life Saving Society Australia, 2012). Similarly, drowning data from New Zealand have indicated that Māori and Pasifika peoples are overrepresented in the nation's drowning fatality data (Feyer & Langley, 2000; Water Safety New Zealand, 2014). For instance, in New Zealand in 2014, Māori peoples, who represent 14% of the country's population, accounted for 21% of the nation's drowning fatalities (Water Safety New Zealand, 2014). From 2010-2011, epidemiological data from Canada in 2011 reported that Aboriginal peoples, who represent 4% of the Canadian population, have represented at least 15% of immersion fatalities (death by drowning and/or immersion hypothermia) within Canada since 1996 (Canadian Red Cross, 2013). Moreover, in the USA, between 1999 and 2010 the overall drowning rate for Native Americans and Native Alaskans aged 29 years or less was the highest of any population. To illustrate, the drowning rate for this population was 2.57 per 100,000 population in comparison to rate of 1.32 per 100,000 population for white Americans (Gilchrist & Parker, 2014). Evidently, drowning is an important public health issue for Indigenous populations in these countries.

Although drowning fatalities can occur during a variety of activities, boating-related incidents are responsible for a significant number of the drowning fatalities that occur within Indigenous communities in these four countries (Canadian Red Cross Society, 2013; Gilchrist & Parker, 2014; Water Safety New Zealand & Sweeney, 2014). Boating-related fatalities accounted for 37% of the 1140 Aboriginal peoples who drowned in Canada between 1991-2010 (Canadian Red Cross Society, 2013). In New Zealand between 2009 to 2013, boating-related fatalities accounted for approximately 20% of drowning deaths by members of the Pasifika population (Water Safety New Zealand & Sweeney, 2014). In the USA from 1999-2010, boating-related fatalities accounted for 23% of drowning deaths by Indigenous peoples aged 29 or younger (Gilchrist & Parker, 2014). Similarly, boating-related fatalities accounted for 12% of drowning fatalities experienced by Indigenous populations (i.e., Australian Aboriginal peoples and Torres Strait Islanders) within Australia between 2003 and 2015 (Peden & Queiroga, 2014; Centre for Maritime Safety Australia, 2017).

In an effort to reduce the number of boating-related incidents, and thus the overall number of drowning fatalities in Indigenous communities, government groups, non-governmental organizations, and other enterprises within New Zealand, Australia, the USA, and Canada have implemented numerous boating safety initiatives (Alaska Department of Natural Resources: Office of Boating Safety, 2015; Commonwealth of Australia, 2014; Glassford, 2011; Maritime Safety Queensland, 2016; Northwest Territories Recreation and Parks Association, 2013; Water Safety New Zealand, n.d.)

Boating safety initiatives have been found to be an efficacious method of reducing drowning in Indigenous (Barber, 2010; Moran, 2011; Zaloshnja et al., 2003) and non-Indigenous communities (Cassell & Newstead, 2015; Miller & Pikora; Treser et al., 1997; Virk & Pikora, 2011), but the factors that make them effective for Indigenous communities have not yet been identified. Below, we draw on existing literature to identify promising practices for boating safety initiatives that target Indigenous peoples living within New Zealand, Australia, the USA, and Canada. A promising practice is an intervention, initiative, or strategy that has been evaluated and has elicited strong quantitative and/or qualitative data showing positive outcomes, although it does not yet have enough research or replication to be deemed a best practice (National Indian Health Board, 2015). Then, after identifying promising practices for boating safety initiatives targeting Indigenous peoples living in the four countries studied, we evaluated six past and ongoing boating safety initiatives delivered to/with Indigenous peoples within the aforementioned countries to suggest the ways in which they – or programs that follow them - may be more effective.

### **Promising Practices**

In this section, we outline promising practices in boating safety initiatives targeting Indigenous peoples in New Zealand, Australia, the USA, and Canada. These promising practices were identified by thoroughly investigating previous literature found through literature searches on the University of Ottawa's library databases, including JSTOR, Springer Journals, Taylor and Francis Journals, Elsevier, and Pubmed, as well as Google's search engine. We searched terms such as "successful drowning prevention strategies," "successful boating safety strategies," or "an Indigenous population's name *and* the name of the country in which they reside *and* successful injury prevention *or* health promotion initiative strategies" (e.g. Native Alaskans *and* United States *and* successful injury prevention *or* health promotion initiative strategies). Furthermore, we used more specific search terms such as "an Indigenous population's name *and* the name of the country in which they reside *and* successful drowning prevention strategies" (e.g., Australian Aboriginal *and* Australia *and* successful drowning prevention strategies). Overall, our extensive search enabled us to identify literature from researchers, health communication experts, and national and international organizations. Our thematic analysis (Braun & Clarke, 2006) of the gathered literature led us to identify the following promising practices:

- cultural adaptation strategies;
- strategies to increase boating safety knowledge and awareness;
- strategies to decrease barriers to safety equipment; and
- strategies to enhance community capacity.

### **Cultural Adaptation Strategies**

Previous research from Golob et al., (2012) and Giles and colleagues (Giles et al., 2010; Giles et al., 2014) has illuminated the importance of culturally adapting water safety initiatives that target Indigenous peoples. In short, cultural adaptation refers to adapting an initiative so that its components are culturally sensitive and relevant to its target population (Kumpfer et al., 2002). Many health-related interventions delivered to ethnic minorities have overlooked the importance cultural adaptation; as a result, they have experienced a limited amount of effectiveness (Marin et al., 1995; Kumpfer et al., 2002). Notably, cultural factors can influence a cultural group's health-related behaviours and the overall effectiveness of a health intervention (Kreuter et al., 2003). More specifically, researchers have identified that sociocultural factors, which are broader social and cultural values, beliefs, and behaviours of a cultural group (Kreuter et al., 2003), play a role in determining the effectiveness of water safety initiatives delivered to Indigenous peoples (Giles et al., 2014; Golob et al., 2012). Culturally adapted initiatives should reflect an understanding of the given sociocultural factors of the intended target population (Kreuter et al., 2003). Specifically, the target population's values, beliefs, and behaviours should be recognized, reinforced, and built upon to improve the meaningfulness of the information and messages within a given initiative (Kreuter et al., 2003). As reported by Giles et al. (2007; 2010; 2014), past water safety initiatives delivered to Aboriginal peoples in Canada's north have experienced a limited amount of effectiveness due to their lack of cultural adaptation. Specifically, these initiatives have overlooked the historico-socio-political processes that influence Aboriginal peoples' health, and they have failed to account for Aboriginal community members' beliefs, attitudes, and cultural practices such as using boating as a central means of transportation while hunting, fishing, and gathering food (Giles et al., 2014).

Evidence exists that illustrates the efficaciousness of culturally-adapted water safety initiatives for/with Indigenous peoples (Barber, 2010; Zaloshnja et al., 2003; Moran, 2011). Zaloshnja and colleagues (2003) assessed the impact of a water safety initiative that delivered a culturally relevant message and provided flotation devices for a reduced cost. They reported that this initiative lowered the drowning rate within the Native Alaskan community by 53%. Barber (2010) reported an increase in the uptake of float coats within a Native Alaskan community after manufacturers developed white float coats that met Native Alaskan whalers' cultural needs and beliefs. In New Zealand, Moran (2011) reported that a culturally-adapted water safety initiative that included bi-lingual interpreters, cultural role models, and language resources led to a significant increase in life jacket use among Asian and Pasifika rock fishers. In light of these findings and the ineffectiveness of

culturally insensitive water safety initiatives, we contend that it essential for boating safety initiatives targeting Indigenous peoples to be adequately culturally adapted.

There are two forms of cultural adaptation: one form concerns modifying program content, and the other concerns modifying program delivery (Castro, Barrera, & Martinez, 2004). If either form of cultural adaptation is overlooked, the effectiveness of an initiative may be limited (Castro et al., 2004); hence, it is vital that initiative developers assess and modify both program content and program delivery during cultural adaptation. Kreuter et al. (2003) identified five communication strategies that can be applied to enhance the cultural relevance of the design and delivery of initiatives: peripheral, evidential, linguistic, constituent involving, and socio-cultural strategies. All five of these strategies have exhibited effectiveness within previous water safety initiatives that have targeted either Indigenous peoples or ethnic minorities (Golob et al., 2012).

In light of Giles and colleagues' (2007, 2010, 2014) findings, it is evident that constituent-involving strategies should be prioritized while culturally adapting water safety initiatives for Indigenous peoples. Constituent-involving strategies are those that include directly involving members of a target group in the design and delivery of an initiative (Kreuter et al., 2003). By using a constituent involving approach, initiative developers will gain valuable insight by involving Indigenous peoples within the design of an initiative (Kreuter et al., 2003). Thus, a constituent involving approach can help to ensure that initiatives content is culturally relevant and appropriate for its target population (Kreuter et al., 2003). In addition, a constituent involving approach used to deliver an initiative may increase the amount of trust the target population has in the initiative (Giles et al., 2010). Thus, first and foremost, it is essential for boating safety initiatives targeting Indigenous peoples to prioritize the use of constituent involving strategies. However, they should also apply the four other cultural adaptation strategies outlined by Kreuter et al. (2003).

Peripheral strategies seek to match communication materials (images, videos, colours, and fonts) with characteristics of the target Indigenous population (Kreuter et al., 2003). This strategy should be applied to package program content in ways that are appealing to the target indigenous population (Golob et al., 2012). Evidential strategies present evidence (Kreuter et al., 2003); these strategies can be applied to increase Indigenous peoples' awareness of the repercussions of not being safe while boating (Golob et al., 2012). For example, boating safety initiatives should provide Indigenous populations with data that illuminate the relationship between not wearing a PFD and drowning. Next, linguistic strategies, which encompass linguistically matching an initiative's content to its target population (Kreuter et al., 2003), should be used to ensure that all communicative materials

within a boating safety initiative are accessible for the targeted population. Lastly, initiative developers should use socio-cultural strategies. These strategies are used to ensure that an initiative is relevant to the core values, beliefs, and behaviours of the target population (Kreuter et al., 2003), and they can help to ensure that the initiative is sensitive to the target Indigenous communities' culturally specific conceptualizations of drowning and boating safety (Golob et al., 2012).

### **Strategies to Increase Boating Safety Knowledge and Awareness**

One of the longstanding impacts of colonialism is the low level of formal education attainment among the Indigenous peoples. As stated by the UNIASG (2014), "Indigenous learners tend to have less access to education, have to contend with poorer quality education, and do not enjoy the same benefits from education as non-Indigenous learners" (p. 1). Data exist that illuminate the disparity between Indigenous and non-Indigenous peoples' educational attainment in New Zealand, Australia, the USA, and Canada (Cooke et al., 2007). As reported by Cooke et al. (2007) many Indigenous peoples within these countries have low levels of educational attainment. For example, in New Zealand in 2012, 60.9% of Māori peoples had a secondary school qualification [National Certificate of Educational Achievement (NCEA) Level 2], while 82.1% of non-Māori peoples had a secondary school qualification (Marriot & Slim, 2014). In Canada in 2011 nearly one third (28.9%) of Aboriginal peoples aged 25 to 64 had no high school certificate, degree, or diploma (Statistics Canada, 2011). Meanwhile, for non-Aboriginal peoples within the same age group, only 12.1% lacked a certificate, degree, or diploma (Statistics Canada, 2011). Furthermore, in Australia in 2011, Aboriginal and Torres Strait Islander peoples were far less likely to attain a secondary school qualification compared to non-Indigenous Australians (35.9% compared to 67.3%) (Australian Bureau of Statistics, 2014). Finally, in the US in 2006, 75% of American Indians and Alaskan Natives received a high school diploma. In comparison more than 86% of non-Indigenous Americans received a high school diploma in the US in 2006 (Devoe et al., 2008).

Researchers have identified that there is a correlation between low education and injury and mortality risk (Hussey, 1997). The International Life Saving Federation (ILS) (2015) has emphasized the importance of including educational and awareness strategies within drowning prevention initiatives. Research on past boating safety initiatives delivered to/with non-Indigenous peoples has illustrated the effective role educational and awareness strategies can play in improving boaters' safety knowledge and awareness and changing boaters' boating safety-related behaviours (Davoudi-Kiakaleyeh et al., 2012; Treser, Trusty, & Yang, 1997). Moreover, organizations such as the Canadian Red Cross Society (2013), the Australian Water Safety Council (2008), and Water Safety New Zealand (2014) have all emphasized that water safety initiatives that target Indigenous

peoples should include educational components. For example, the Canadian Red Cross Society (2013) suggested that boating safety initiatives for Aboriginal peoples in Canada should do the following: illuminate the benefits of not consuming alcohol and drugs during water related activities, offer culture and environment-specific training, reiterate the importance of using flotation devices, and provide information about dangerous areas on waterways that pose risks to boaters. Initiative developers must be cognizant that the educational content needs to align with the normative practices and beliefs within the target Indigenous population (Golob et al., 2012). Thus, members of the target population should play important roles in the planning, development, and implementation of education efforts (Golob et al., 2012).

### **Strategies for Decreasing Barriers to Boating Safety Equipment**

In comparison to their non-Indigenous counterparts, many Indigenous peoples within New Zealand, Australia, the USA, and Canada have a low socioeconomic status and live in impoverished communities (Altman, 2007; Chapple, 2000; National Collaborating Centre on Aboriginal Health, 2009; Salmond & Crampton, 2012; Sarche & Spicer, 2008; Shepherd & Zubrick, 2012); this is yet another condition that stems from longstanding impact of colonialism (UNIASG, 2014). It is important to note that lower socioeconomic status and material deprivation are interrelated (Picket et al., 2005). Further, researchers have identified an association between economic disparity, material deprivation and the prevalence of injuries and death from injuries (Cohen et al., 2003; Cubbin et al., 2000; Laflamme, Burrows, & Hasselberg, 2009). Due to the low socioeconomic status of many Indigenous peoples living in New Zealand, Australia, the USA, and Canada (Cooke et al., 2003), it is reasonable to suggest that many Indigenous peoples within these countries suffer from material deprivation; hence, one can deduce that they may face barriers to purchasing boating safety equipment. Two studies support this assertion: a New Zealand study reported that there was a lack of boating safety equipment within Māori communities (Haimona, 2007), while a Canadian study found that residents in Aboriginal communities in Canada's north identified cost as a barrier to purchasing lifejackets (Giles et al., 2007; Giles et al., 2013).

The Canadian Red Cross Society (2013) has reported that the provision of safety equipment for free or at a reduced cost could help Aboriginal peoples access boating safety equipment. Water safety initiatives that have combined educational and awareness tactics with the provision of lifejackets for free or at a reduced cost have demonstrated positive outcomes in Indigenous communities (Alaska Department of Health and Social Services, 2015; Zaloshnja et al., 2003). As stated by Giles and colleagues (2014), "the provision of flotation devices for free of charge or at reduced rates may enhance drowning prevention efforts by eliminating or reducing barriers that stem from low income" (p. 207). For example, an

observational study of Alaska's "Kids Don't Float," an initiative that provides lifejackets free of charge on "loaner boards" beside bodies of where children swim, found that children were more likely to wear lifejackets when they were made available for free (Alaska Department of Health and Social Services, 2015). Furthermore, as reported by Alaska's Department of Health and Social Services (2015), the Kids Don't Float initiative has saved 31 lives since its initiation in 1996. Based on the available evidence, boating safety initiatives that target Indigenous peoples should implement strategies that increase Indigenous peoples' opportunities to obtain boating safety equipment. Merely providing education programs that educate Indigenous peoples about the importance of using boating safety equipment will not be an effective approach if the target population does not have access to boating safety equipment.

### **Strategies to Increase Community Capacity**

Many health-related initiatives solely focus on immediate, short-term impacts and overlook the importance of generating sustainable outcomes; as a result, these types of initiatives generate short-term outcomes that are not sustainable over time (Muller et al., 2005; Nilsen et al., 2005). We contend that the prevalence of boating-related fatalities within Indigenous communities is not an issue that can be resolved in a matter of weeks or months; hence, boating safety initiatives that target Indigenous peoples need to offer more than short-term, stop-gap solutions. In order to generate long-term positive outcomes, injury prevention initiatives should increase their target communities' capacity (Muller et al., 2005). Capacity building is essentially the process by which an initiative enhances a community's abilities to use local resources to solve local issues (Labonte & Laverack, 2001). It is important to note that past capacity building health initiatives delivered to/with Indigenous peoples have been found to produce sustainable outcomes, and thus have resulted in healthier communities (Fletcher et al., 2003).

Researchers have identified effective guidelines for health-related initiatives that aim to increase capacity and generate sustainable outcomes within Indigenous communities (Chino & DeBruyn, 2006; Fletcher et al., 2008). Boating safety initiatives should make use of these guidelines to generate sustainable outcomes in Indigenous communities. The guidelines include the following:

- allow community members to be actively involved in the initiative;
- give community leaders within the target Indigenous population leadership roles within the initiative;
- provide community members with the knowledge and skills needed to help to sustain the effects of the initiative over time; and
- respect local autonomy while promoting commitment and a sense of responsibility for the given initiative within the Indigenous community

(Chino & DeBruyn, 2006; Fletcher et al., 2008).

As a final point, it is important to note that capacity building is not a process that occurs overnight. Researchers have emphasized that building capacity within a community is a long-term process that requires significant time and commitment (Amodeo et al., 1995; Chavis, 1995).

### **An Evaluation of Boating Safety Initiatives Targeting Indigenous Peoples in New Zealand, Australia, the USA, and Canada**

In the following section, we describe past and ongoing boating safety initiatives delivered to/with Indigenous populations within New Zealand, Australia, the USA, and Canada. We then used publicly-available information to identify whether these initiatives used the promising practices we identified above:

- cultural adaptation strategies,
- strategies to increase boating safety knowledge and awareness,
- strategies to increase the accessibility of boating safety equipment, and
- capacity building strategies.

We searched the University of Ottawa's library databases, namely JSTOR, Springer Journals, Taylor and Francis Journals, Proquest, and Pubmed, as well as Google's web search engine by using search terms such as "an Indigenous population's name *and* the name of the country they reside in *and* boating safety initiative" (e.g. Māori peoples *and* New Zealand *and* boating safety initiative), "an Indigenous population's name *and* the name of the country the county they reside in *and* drowning prevention initiative" (e.g. Aboriginal peoples *and* Canada *and* drowning prevention initiative), or "an Indigenous population's name *and* the name of the country they reside in *and* efforts to improve boating safety" (e.g. Native Alaskans *and* United States of America *and* efforts to improve boating safety). We excluded several past and ongoing boating safety initiatives delivered to/with Indigenous populations within New Zealand, Australia, the USA, and Canada due to being unable to identify information in sufficient detail. Thus, the number of boating safety initiatives delivered to/with Indigenous populations within New Zealand, Australia, the USA, and Canada that are included within our analysis are was limited to six.

### **The Torres Strait Maritime Safety Project (TSMSP)**

In 2006, the Australian Maritime Safety Authority (AMSA) and the Torres Strait Regional Authority (TSRA) collaborated to create and deliver the Torres Strait Maritime Safety Project (Maritime Safety Queensland, 2016). This ongoing project aims to reduce the number of seafarers lost in the Torres Strait, increase the chance of survival for lost seafarers, promote community and industry commitment to

safety, and achieve outcomes through community partnerships, industry, and government.

The integrated boating safety campaign targets common barriers and safety issues experienced by seafarers in the Torres Strait. The campaign features the following: television, radio, and press advertising, a pocket handbook containing boating safety tips and information in local languages, a map and safety sticker to determine fuel requirements for travel between islands, the provision of safety “grab bags” (details of contents were not provided), and the supply of safety equipment through island stores. The initiative also includes an emergency position indicating radio beacon (EPIRB) exchange program, which offers new EPIRBs to local seafarers for a reduced cost. Lastly, the campaign provides local Torres Strait Islanders with an opportunity to attend *BoatSafe*, which is a recreational marine driver license course. *BoatSafe* was delivered into the high school curriculum to increase adolescents’ boating safety knowledge and disseminate boating safety information throughout the target communities. In order to maximize the effectiveness of the campaign, a census was conducted to gather information on all boats in Torres Strait. The census provided data that were analyzed for the number of vessels in use and not in use, the overall condition and seaworthiness of boats, what safety equipment the boats carried, and the make, motor size, and type of each boat.

### ***Evaluation***

The AMSA uses cultural adaptation strategies, strategies to increase boating safety knowledge and awareness, and strategies to increase the accessibility of boating safety equipment. The TSMSP does not appear to have included any capacity-building strategies.

To ensure that the TSMSP is culturally adapted for Torres Strait Islanders, the AMSA uses a constituent-involving strategy (Kreuter et al., 2003) by including the TRSA (a commonwealth organization composed of Torres Strait Islander and Australian Aboriginal peoples) in project design and delivery. Further, the AMSA used a census in order to gather information about its target populations’ current situation in regards to boating safety. To increase boating safety knowledge and awareness, the TSMSP provided Torres Strait Islanders with the opportunity to take *BoatSafe*, a boating education course. Moreover, components of *Boatsafe* were integrated into the community’s school curriculum. With regard to strategies to increase the accessibility of boating safety equipment, AMSA provides safety bags, which include boating safety equipment such as a personal flotation device (PFD), ropes, and a bailing bucket, ensures there is an increase in the supply of safety equipment in local island stores, and offers an EPIRB exchange program. In short, the EPIRB exchange program offers Torres Strait Islander seafarers a new EPIRB

for a reduced cost. One shortcoming of the TSMSP is its failure to include capacity-building strategies; as a result, this initiative may not generate sustainable outcomes over time (Muller et al., 2005).

### **The Northern Territory Indigenous Maritime Safety Initiative (NTIMSI)**

In 2015, the Australian and Northern Territory governments collaborated to implement the Northern Territory Indigenous Maritime Safety Initiative (NTIMSI) (Commonwealth of Australia, 2015). This ongoing initiative aims to educate and support small boat operators in some of the Territory's most remote communities. Prior to implementing the initiative, the Northern Territory and Australian governments consulted Indigenous boat owners and operators to ensure that the key messages were relatable and understandable for the Indigenous community. The initiative uses a range of strategies to spread boating safety information, including magazine and radio advertising, community posters, safety checklists, and stickers. Furthermore, it provides Indigenous boat operators in remote communities with "grab bags" of safety equipment (e.g., emergency beacons and flares) free of charge.

### ***Evaluation***

The Australian and Northern Territory governments use cultural adaptation strategies and strategies to increase awareness about boating safety and the accessibility of boating safety equipment. By including Indigenous boat owners in the initiative's design process, the Australian and Northern Territory governments applied a constituent-involving approach (Kreuter et al., 2003). In terms of using strategies to increase boating safety knowledge and awareness, the NTIMSI uses an array of strategies to deliver boating safety education information to the Aboriginal communities. Specifically, the initiative disseminates boating safety information through magazines, local radio, community posters, and a safety checklist. It is important to note that the NTIMSI also includes strategies to increase Aboriginal peoples' access to boating safety equipment through the provision of free "grab bags." One shortcoming of the NTIMSI is that it did not appear to use any capacity-building strategies; as a result, the outcomes of this initiative may not be sustainable over the long term (Muller et al., 2005).

### **Kia Maanu, Kia Ora! (Stay Afloat, Stay Alive!)**

In 2003 the New Zealand Post, a state-owned enterprise responsible for providing postal service in New Zealand, partnered with Water Safety New Zealand (WSNZ) to deliver a water safety campaign to New Zealand's Indigenous Māori population (Water Safety New Zealand, n.d.). The ongoing Kia Maanu, Kia Ora! campaign focused on empowering leaders in the Māori community with the skills and knowledge needed to educate other members of the Māori community on how to stay safe while enjoying their traditional and cultural links to the water. The

campaign was directed towards the Māori population and included events, awareness campaigns, and provided educational resources and teaching programs to Māori communities. Overall, the campaign hoped to reach, educate, and empower as many Māori as possible (Water Safety New Zealand, n.d.).

### ***Evaluation***

The New Zealand Post and WSNZ ensured the Kia Maanu, Kia Ora! campaign was culturally relevant for the Māori population. Moreover, the partnering organizations used capacity-building strategies. By empowering leaders within the Māori community with the skills to educate other community members about water safety, the Kia Maanu, Kia Ora! made use of a capacity-building strategy. Thus, it is more likely that outcomes of this initiative will be sustained over time (Muller, et al., 2005). By including local leaders in the delivery of the educational component, the partnering organizations made use of a constituent-involving delivery strategy. The inclusion of local leaders in program delivery could contribute to a broader dissemination of knowledge and increase the cultural relevance and trustworthiness of the initiative (Giles et al., 2010). It is important to note that this was not the only method used by The New Zealand Post and WSNZ to ensure the initiative was culturally relevant; the partnering organizations ensured that the awareness campaigns/events and the educational resources and teaching programs were culturally sensitive for Māori peoples as well. One weakness of the Kia Maanu, Kia Ora! campaign is that it failed to include strategies to increase the accessibility of water safety equipment within Māori communities.

### **Folau Malu (Journey Safely)**

In 2011, Maritime New Zealand, Coastguard Boating Education, and the Auckland Council collaborated with Pasifika (especially Tongan) peoples to design and deliver the Folau Malu (Journey Safely) program (Glassford, 2011). Members of the Tongan community with a proven ability to lead and interact with their community were chosen by leaders of the program to participate in an adapted version of the Coastguard Boating Education Day Skipper course. This course provided the participants with essential boating safety knowledge, such as rules and regulations, navigation information, how to deal with emergencies, and how to properly use ropes. It was then up to the chosen members of the Tongan communities to disseminate the boating safety information back to their respective communities (Glassford, 2011).

### ***Evaluation***

Maritime New Zealand, Coastguard Boating Education, and the Auckland Council used cultural adaptation strategies while designing and delivering Folau Malu. Specifically, the three partnering organizations used a constituent-involving strategy (Kreuter et al., 2003) by collaborating with Tongan peoples to design and

delivery Folau Malu. Another strength of Folau Malu was that it included strategies to increase boating safety knowledge and awareness by providing Tongan community members with the opportunity to participate in an adapted version of the Coastguard Boating Education Day Skipper course. A final strength of Folau Malu was that it made use of capacity building strategies by empowering proven leaders within the Tongan community with the knowledge and skill to disseminate boating safety information back to their respective communities. Overall, the only evident shortcoming of Folau Malu was that it did not implement a strategy to increase Tongan peoples' access to boating safety equipment.

### **Kids Don't Float**

Several Alaskan state and federal agencies, organizations, and local grass-roots sponsors have collaborated to create a statewide injury prevention program. Kids Don't Float is a drowning prevention initiative that began in 1997 in the state of Alaska. The ongoing initiative features a lifejacket loaner board component and an educational component (Alaska Department of Natural Resources, 2015). This program does not specifically target Native Alaskans, but many participate in this program (Alaska Department of Health and Social Services: Office of Boating Safety, 2015). The lifejacket loaner component of this campaign features over 600 personal flotation devices (PFD) loaner boards in 249 communities within Alaska. The loaner boards are situated at harbours and boat ramps, and they offer Alaskans the opportunity to borrow a lifejacket for their children for the day. The lifejackets are supplied through government and corporate funding and community donations. The educational component of the campaign features several short lessons that emphasize boating and water safety and how to properly use lifejackets. It is important to note that the curriculum places a significant amount of emphasis on cold water survival and the danger that cold water poses to boaters (Alaska Department of Health and Social Services: Office of Boating Safety, 2015).

### ***Evaluation***

Kids Don't Float primarily focuses on increasing Alaskans' access to boating safety equipment. The initiative's lifejacket loaner initiative is a primary example of a strategy that can be used to create a sustainable increase in the accessibility of boating safety equipment. Although Kids Don't Float features an educational component, there is no evidence that the educational content is culturally adapted for Native Alaskans. Thus, due to the lack of cultural adaptation, Native Alaskans may perceive the initiative's educational component as lacking in culturally relevance; as a result, the educational component may have more limited effectiveness with Native Alaskans.

### **Water Smart**

Since 2011 the Government of the Northwest Territories (NWT), Canada, has delivered the Lifesaving Society's Water Smart program to thirty-three communities across the territory (Lifesaving Society, n.d.). Staff at the Government of the NWT hopes that the program will reduce the number of preventable drowning fatalities associated with boat use and water activities within remote NWT communities (NWT Recreation and Parks Association, 2013). The Water Smart program is a one-day initiative that provides training and education to community leaders so they can deliver boating safety information within their communities, and it delivers educational awareness programs that emphasized making safe choices when it comes to wearing a lifejacket, boating sober, and planning for a safe trip (NWT Recreation and Parks Association, 2013). Along with the educational and awareness components, Water Smart provides expert advice and support for communities wanting to develop safe shorelines and aquatic programs (Lifesaving Society, n.d.; NWT Recreation and Parks Association, 2013).

### ***Evaluation***

Although Water Smart includes strategies to increase boating safety knowledge and awareness, the initiative does not appear to use cultural adaptation strategies or strategies to increase the accessibility of safety equipment. Thus, the Water Smart program, like Kids Don't Float, may have a limited effectiveness with Aboriginal peoples due to its lack of cultural adaptation (Giles et al., 2007; 2014). Furthermore, the initiative's effectiveness may also be hindered due to its lack of capacity-building strategies. At first glance one may contend that the initiative makes use of a capacity-building strategy by training and educating leaders from remote NWT communities on how to deliver boating safety information within their respective communities. One must consider the fact that Water Smart program is one day in length and capacity-building is not a rapid process (Amodeo et al., 1995; Chavis, 1995); hence, we argue that due to Water Smart's short duration, it is unlikely the initiative's capacity-building strategy will truly build capacity within the Indigenous communities. In summary, although this integrated initiative seems promising on paper, it may not meet its desired outcomes.

### **Discussion**

The prevalence of boating-related fatalities is a cause for concern among communities of Indigenous peoples in New Zealand, Australia, the USA, and Canada (Canadian Red Cross Society, 2013; Gilchrist & Parker, 2014; Water Safety New Zealand & Sweeney, 2014). There is limited research pertaining to the issue. Some evidence does illustrate the efficacious role boating safety initiatives can have in reducing the number of boating related fatalities in Indigenous communities (Alaska Department of Health and Social Services: Office of Boating Safety, 2015; Barber, 2010; Moran, 2011; Zaloshnja et al., 2003); however, sparse evidence-

based literature exists to support promising practices for boating safety initiatives that target Indigenous communities in the aforementioned countries.

Our findings illustrate that past and ongoing boating safety initiatives delivered to/with Māori and Pasifika peoples in New Zealand, Aboriginal peoples and Torres Strait Islanders in Australia, Native Alaskans in the USA, and Aboriginal peoples in Canada have used or continue to use a variety of different strategies. We were able to identify strengths within each initiative; however, we were unable to identify an initiative that included all four of the identified promising practices. It is important to note that all six of the boating safety initiatives we described and evaluated included a strategy to increase boating safety knowledge and awareness.

It is beyond the scope of this paper to conclude the degree to which these boating safety initiatives have been effective at reducing the prevalence of drowning in their respective target Indigenous communities. Nor can we confirm that one boating safety initiative we described and evaluated above will be more effective than another. That said, we contend that all six of these boating safety initiatives have limited effectiveness because they have overlooked one or more of the promising practices we outlined above.

### **Conclusion**

Overall, improvements can be made to past, ongoing, and future boating safety initiatives delivered to/with Māori and Pasifika peoples in New Zealand, Aboriginal peoples and Torres Strait Islanders in Australia, Native Alaskans in the USA, and Aboriginal peoples in Canada. In order to reduce the prevalence of boating-related incidents and thus the overall number of drowning fatalities in Indigenous communities in the four countries studied moving forward, it is vital that government groups, non-governmental organizations, and enterprises that create boating safety initiatives for Indigenous populations follow evidence-based strategies while designing, developing, and implementing their respective boating safety initiatives. Based upon evidence from previous research, we contend that successful boating safety initiatives that target Indigenous peoples in the four studied countries will be ones that:

- are respectful and sensitive towards Indigenous peoples' culture;
- account for the challenging social conditions faced by Indigenous peoples, namely low levels of education and income; and
- offer more than short-term, "band-aid" solutions by increasing Indigenous communities' capacities.

Further research should be conducted to evaluate the efficaciousness of different strategies used in boating safety initiatives that target Indigenous peoples.

By continuing to assess and improve current boating safety initiatives with Indigenous populations and by creating more effective boating safety initiatives with Indigenous populations in the future, we can reduce the number of boating-related incidents, and thus the overall number of drowning fatalities within Indigenous communities.

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