

JUMPING IN: EXAMINING PUBLIC PERCEPTION OF URBAN SWIMMING IN THE  
HALIFAX HARBOUR

by

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## **ABSTRACT**

### **Jumping In:**

Examining Public Perceptions of Urban Swimming in the Halifax Harbour

By: Anika Riopel

The purpose of this study is to determine what is the public's current perception of the suitability of the Halifax waterfront for swimming, and what is the public's feedback on the proposed infrastructure related to an urban swimming infrastructure proposal. Using Community Based Social Marketing as a framework, the study conducted surveys on the Halifax waterfront to determine the public's perceived barriers and benefits toward urban swimming and to recommend strategies for a potential pilot. Survey results indicate that there is strong support for an urban swimming project. The survey also highlighted the public's perceived benefits (community building, accessibility and tourism) and barriers (water quality, boat traffic and emergency services). Based on these benefits and barriers the following are recommended for a potential pilot: consistent water quality testing of both organic and inorganic compounds; publicly available data on water quality testing; infrastructure design that is safe (barriers from boats) and accessible to all ages and abilities (ramps, shallow areas and safe exits and entrance points); additional facilities (change rooms, showers, lockers and washrooms); fun features (jump platform, waterslides, hot tub, sauna, beach elements, lounge chairs and shade umbrellas); and lifeguard services.

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## CHAPTER ONE – INTRODUCTION

### 1.0 Introduction

The Halifax Harbour is a natural inlet located in Halifax Regional Municipality (HRM), Nova Scotia, Canada. The HRM is a growing urban area with a population slightly over 403,000 (Stats Canada, 2016). The Halifax Harbour serves as an important source of commerce to the area, as a major shipping port, naval base and research centre (Halifax Harbour Cleanup Project, 1993). It is also an important part of the city's image and recreational space, a 1993 Federal-Provincial Environmental Review noted that "Nova Scotians and tourists value the Harbour's recreational opportunities and the aesthetic dimension it adds to this urban centre" (Halifax Harbour Cleanup Project, 1993. p.3).

Historically, the Halifax Harbour was a popular swimming site for the local public. Photographic archives, from the 1900s up till the 1970s, show that swimming in the Harbour was a prominent activity at central beaches such as Black Rock, Dingle and Horseshoe Island (HRM, n.d.). This would cease as the Halifax Harbour became increasingly contaminated. Since human settlement in the area, the Halifax Harbour has received numerous contaminants from human activity such as untreated sewage, urban and commercial run-off (Buckley & Fader, 1995, Buckley & Winters, 1992, Robinson et al., 2009, AMEC, 2010.) Initially, the Harbour's strong daily tides displaced much of the waste, however, as the local human population increased, the Harbour's ability to flush away human waste output began to wane (Halifax Harbour Cleanup Project, 1993). The Harbour became increasingly contaminated, most noticeably by untreated sewage waste (AMEC, 2010). Public calls for a clean-up solution, led by citizens, environmental groups and businesses, grew between the 1960s to 1990s (Halifax Harbour Cleanup Project, 1993). During this period, it appears that the public view of the water quality became

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increasingly negative. In 1986, Federal Environment Minister, Tom McMillian, referred to the Harbour as an “open sewer” in an interview after visiting Halifax (Lamson, 1994, p.222). A 2001 environmental screening report stated that untreated sewage effects were significant; citing poor water quality along shorelines, contaminated sediment, high bacterial contaminants, and poor aesthetics on the waterfronts due to “particulates, floatables, and odour” (HHSPEs, 2001). At this point, the estimate was that more than 150 million litres of raw sewage was entering the Harbour daily, only 20% of municipal sewage was being treated through the Mill Cove and Eastern Passage sewage treatment plants (STP) (HHSPEs, 2001).

In 2004, after decades of delays, the Halifax Regional Municipality gradually began implementing a 333-million-dollar wastewater overhaul called the Halifax Water Solutions Project (HWSP) (AMEC, 2011). The HWSP saw the construction of three new STPs in Halifax, Dartmouth, and Herring Cove respectively. These new STPs would join Mill Cove and Eastern Passage STPs already in operation (AMEC, 2011). The HWSP was completed in 2008 diverting 91% of all outflow through primary sewage treatment plants (M. White, personal communication, February 1, 2018). The Halifax Harbour Water Quality Monitoring Program's Final Summary Report (2011) details the bacterial levels from 2004 to 2010. After all three new treatment facilities were in operation, the bacterial levels rapidly dropped under the national recreational swimming guideline limits. In 2008, the city re-opened Black Rock and Dingle Beaches for swimming (AMEC, 2011).

This change in bacteria offers the opportunity to safely use the Harbour for human recreation again. There are many benefits to using urban blue spaces (urban water spaces which include: lakes, rivers, ponds, canals, and ocean) for human recreation (Völker & Kistemann, 2011.). First, exposure to nature, including blue spaces, is good for human health and wellbeing

(Völker & Kistemann, 2011; WHO, 2016; APHA, 2013). Studies link access to nature with improved physical and mental health (WHO, 2016; APHA, 2013). Additionally, people in cities have less nature exposure, maximising opportunities to do so is increasingly being recognized as a “cost-effect health benefit” (Shanahan et al., 2015). Finally, research indicates that people who are more exposed to nature are more likely to choose pro-environmental behaviours (Chawla, 2006; Kollmuss & Agyeman, 2002). The restoration of urban blue spaces, such as harbours, creates opportunities for cities to maximize on the benefits that increased access to nature gives, through activities such as swimming, kayaking, SCUBA diving, paddle boarding and fishing.

### 1.1 Statement of Problem

While the Halifax Harbour’s water quality levels have met safe recreational use guidelines since 2009, there has not been a surge in actual recreational use (Weston, 2010; Windsor, 2016). This can be seen as a missed opportunity from a nature-exposure perspective, as well as from a tourism viewpoint, and through the lens of environmental education. One way to increase the use of the Harbour is to provide opportunities for recreational use. The *Jump In Project* is an advocacy project that proposes the building of public urban swimming infrastructure in the Halifax Harbour (Planifax, 2017). In order to develop opportunities and infrastructure that will be appropriate, useable and embraced by the public, it is necessary to better understand the perceived benefits and barriers of the public on this particular project. As such, this thesis asks: what is the public’s current perception of the suitability of the Halifax waterfront for swimming, and what is the public’s feedback on the proposed infrastructure related to the *Jump In Project*?

## 1.2 Framing the Problem

This thesis is situated within the larger *Jump In Project*: a Community-Based Social Marketing (CBSM) campaign that is attempting to build swimming infrastructure and encourage public swimming (thus also changing public perceptions about swimming) in the Halifax Harbour. Based on similar projects in Denmark, France and Sweden, the *Jump In Project* hypothesises that building accessible and friendly urban swimming infrastructure will encourage public use of the Halifax Harbour. To better frame this thesis, it is important to examine the CBSM framework.

CBSM is a combination of community-based approach and social marketing strategies. Community-based approaches demonstrate that community participation contributes to successful initiatives such as health promotion programs (Flocks et al., 2001). This type of approach aids in determining social and cultural barriers that are specific to individual communities. Rather than applying broad solutions, community-based approaches allow for the development of strategies that are effective (Flocks et al., 2001). Social marketing uses commercial marketing approaches to analyse, plan, execute, and evaluate programs “designed to influence voluntary behaviour of target audiences” (Flocks et al., 2001, p. 462). CBSM combines these two approaches to create community specified marketing campaigns. CBSM selects a target behaviour (in this case, increased swimming in the Halifax Harbour), identifies barriers and benefits (the focus of this thesis), develops strategies (from the results of this thesis), pilots a program at a small scale and evaluates before broadening to a larger implementation (McKenzie-Mohr, 2011).

The first step of any CBSM project is to better understand the public’s perceived benefits and barriers to a proposed target activity (in this case the target end activity is swimming in the

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developed Halifax Harbour infrastructure). To determine public perceptions related to this project, this thesis utilizes a survey with quantitative and qualitative questions. The survey also uses a site-specific display of large architectural renderings of the proposed *Jump In Project*, which allows the public to visualize and engage with the concept of urban swimming in the Halifax Harbour. The public's feedback on the renderings as well as the public's perceptions of the suitability of the Halifax waterfront for swimming were collected.

### 1.3 Purpose of Study

Understanding the current public's perceived benefits and barriers in regard to swimming in the Halifax Harbour is important to develop a successful strategy for local urban swimming. Although the HWSP has created significant improvements in water quality making the water safe to swim in, there is very little infrastructure to promote recreational use of the Halifax Harbour. Access to the water is limited, and swimming is poorly endorsed as can be seen by the two closest downtown beaches (Black Rock Beach and the Dingle) which are also not centrally located and lack promotive features, such as signs indicating that the water is safe for swimming. In 2017, the HRM decided to remove lifeguard service on both beaches due to lack of public use (MacDonald, 2017). There was no report or study conducted on why these beaches were underutilized. There is a need for a better strategy to encourage recreational use of the Halifax Harbour. Under the CBSM framework, this means gaining a better understanding of public perception of barriers and benefits to do so. This study aims to determine those barriers and benefits.

## CHAPTER 2 – LITTERATURE REVIEW

### 2.0 Introduction

This chapter consists of three main sections. The first will examine case studies of other urban blue space rejuvenation projects, identifying key aspects of the history and perceptions of blue spaces and the development of urban swimming infrastructure. Many of the selected case studies are recent projects, and therefore much of the information presented is drawn from media sources and grey literature. In order to give context to current perceptions of water quality in Halifax, the second section of this chapter will examine the history of the Halifax Harbour and documentation that exists on water quality perceptions in the past. Finally, the third section of the chapter will discuss the Community-Based Social Marketing (CBSM) literature as a tool of social change.

### 2.1 Case Studies

There are a number of case studies that informed this thesis project. Each of the case studies below offers background information on why and how public swimming infrastructure was developed and highlights the key aspects of the case studies regarding their implementation that are relevant to this thesis. These case studies have been selected because they share comparable water temperatures to Halifax.

#### *Case Study #1 - Havnebadet Islands Brygge - Copenhagen, Denmark – 2002*

Copenhagen's harbour bathing space is a comprehensive and well documented urban swimming project. The city of Copenhagen is built around the Copenhagen Harbour. In the 1930s, the city built a municipal wastewater system that pumped treated wastewater into the ocean kilometers from the city harbour, to help reduce contamination within the Copenhagen

Harbour. However, this system was subject to regular overflows of raw sewage (Jensen et al., 2015). The Harbour was also an industrialized space and was used as a disposal for industrial wastewater. By the 1950s, swimming in the Harbour was banned due to the heavily polluted waters (Jensen et al., 2015). In the late 1980s, public pressure for change came from two separate calls for action. The first was citizen complaints around the deteriorating sewer infrastructure which was creating unpleasant odors and attracting rats. The second was biological concerns of the poor sewage system risk to the city's water supply (Jensen et al. 2015). Through the 1980s and 1990s political pressure, access to new technical developments and shifting urban planning concepts created an opportunity for change. A vision of the harbour becoming a recreational space for humans became a focus (Jensen et al., 2015). This focus on recreation meant that "hygienic water qualities standards" became part of the criteria for the new wastewater developments (Jensen et al., 2015, p.564). In 1996, safe water quality standards for human recreation were officially added to the proposal endorsed by the municipality (Jensen et al., 2015). In 2000, two new wastewater treatment facilities were constructed with the objective of meeting these water quality standards. Two years later, Copenhagen's first harbour bathing facility open (Jensen et al., 2015).

Copenhagen's Harbour Bath is called Islands Brygge Harbour Bath (Figure 1). The bath was designed for socializing and play as well as ensuring continuity with the waterfront, safety, accessibility and harbourscape (BIG JDS, 2009). The wooden structure divides the water into five different pools; the pools vary in depth, two pools are purposively built for children with shallow false bottoms (BIG JDS, 2009). The bath is designed to ensure a diversity of activities with space for lap swimming, jump platforms, a splash pad and sun bathing. Logistically the bath can accommodate 600 people at a time, has lifeguard supervision and is open from June 1<sup>st</sup> to

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September 30<sup>th</sup> yearly with water samples being conducted daily (VisitCopenhagen, n.d; BIG JDS, 2009). City data shows that during summer months the baths frequently have more than 1000 visitors a day (Schrøder, personal communication, 2016).



*Figure 1 Island Brygge Harbour (Copenhagen, Denmark). The image shows the five bathing areas, jump tower, lifeguard station, changing area and sunbathing area. Designed by PLOT = BIG + JDS.*

The development of the harbour bathing facilities came from a junction of pressure (Jensen et al., 2015). First, the mayor of neighboring Stockholm questioned Copenhagen's claim to of being the environmental capital of Europe - citing Stockholm's swimmable waters compared to Copenhagen's swimming-prohibited Harbour. This created political pressure. Second, a local diving association applied to do diving demonstrations during the city's Harbour Festival. The diving shows were permitted by the city and attracted huge public interest. Following the dive show a public petition was collected to build permanent diving and swimming facility in the harbour for public use (Jensen et al., 2015, p.566). With both public support and political pressure, within six months the city approved a budget to build a Harbour Bathing facility with a monitoring system for overflows, which opened later that year. The mayor opened the official Copenhagen harbour bathing infrastructure by jumping in (Jensen et al., 2015).



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The Copenhagen Harbour Bath is successful because it is a well-used piece of urban swimming infrastructure in formally polluted waters. Key aspects of the development of Copenhagen's swimming infrastructure was the initial visualization, the public support, and the support of city staff. The planning process was indirect with multiple stakeholders pushing for the final development. The infrastructure works within the surrounding aesthetic while allowing the city to interact with its water directly. Copenhagen Harbour Bath is an example of a well-designed and thought-out piece of public infrastructure.

*Case Study #2 - La Baignade dans la Bassin de la Villette - Paris, France 2017*

The human-made Bassin (canal) de la Villette was built for drinking water in 1802 (McKnight, 2005). Over time, due to industry and sewage, Parisian Canals, including the Bassin de la Villette, became increasingly polluted (O'Sullivan, 2017). In 1923 urban swimming in Paris was banned for reasons of public health (Ollivier, 2015). Up until the late 1980's Parisian waterways continued to be heavily polluted. Policy to identify and improve sewer leaks and dischargers were implemented in 2006 (Ollivier, 2015). Furthermore, the city began to drain and clean portions of the canal (Ollivier, 2015). The result has been the improvement of the Bassin's water quality over the past decade and, in 2015, the water in the Bassin de la Villette was deemed safe enough to be used for the swimming portion of a triathlon (Olliveir, 2015). The following summer, during the Paris' Plages (Beach) Festival, the basin was opened up for a popular, one-day public swimming event. In 2017 the city officially opened a swimming area called "La Baignade" to the public (Ahulwalia, 2017).

La Baignade consists of 3 pools of varying depths with built infrastructure on the surface and a passive underwater barrier to prevent fish and floating garbage from entering the swimmers' space (Sire, 2017). The area has change rooms, bathrooms, showers, and ramps for

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accessibility (Malsch, 2017). Water tests are conducted every half hour upstream of the swim pools (Sire, 2017).



*Figure 2 La Baignade dans la Bassin de la Villette (Paris, France). The image shows three pools of varying depth, with nearby change rooms, showers, and bathrooms. Designed by Patrick Charoin + Marina Donda, architects.*

There were a number of factors that helped the realization of the project. First, there is the vision of several Paris mayors. In 1988, former Paris Mayor, Jacques Chirac promised that the Seine would be swimmable by 1993 (Samuel, 2015). While Chirac's promise was not realized, Paris's current mayor, Anne Hidalgo, has taken up this vision as part of her efforts to make the city greener and attractive – an image that is being used to market the 2024 Summer Olympic Games (Sire, 2017). The mayor has cited other European cities like Basel, Switzerland, which has long had urban swimming in the Rhine, as influencing her vision for Paris' swimming infrastructure. (Ollivier, 2015). Second, city council voted in favor of the mayor's project provided that water tests were safe (Ahluwalia, 2017). Third, the local sanitation department was pivotal in cleaning up the canal by enforcing legislation against pleasure and commercial boat dumping (Ollivier, 2015). Finally, public support from the local triathlon club and the enthusiastic support of the general public helped the political agenda of the mayor (Ollivier, 2015). While La Baignade is in its first year, it has proven to be initially successful as a well-used piece of infrastructure with overall positive media coverage.

*Case Study #3 - Western Harbour – Malmö, Sweden – 2003*

Malmö offers an interesting example of an urban swimming space that does not have a historical polluted context. Malmö is an industrial city in Sweden that is close to Copenhagen. It should be noted that, like Denmark, Sweden has a strong outdoor bathing culture. Public bathing houses (saunas) are often accompanied by outdoor cold-water swimming holes. These bath houses are most commonly found in rural areas, but are still a prevalent part of the culture as a whole (Tykesson, 2017).

Malmö's water spaces are primarily industrial and historically did not have space for safe swimming access. This changed in the late 1990s when Malmö underwent an aggressive development period with the aim of reinvigorating a slumping economy (Tykeson, 2017). This development saw the building up of formally industrial areas into people-focus centers including a new, heavily residential waterfront called the Western Harbour which was completed in 2002 (Malmö Stad, n.b). The developers of the Western Harbour and city officials considered incorporating swimming infrastructure into the area, but due to strong currents they deemed the water unsafe for swimming (Tykesson, 2017). Once the development was completed it became evident that the public disagreed – swimming became a common activity – despite a complete lack of infrastructure (Tykesson, 2017). Citizens jumped off of wharfs or climbed over boulders down to the water. Rather than ban swimming, the city changed the infrastructure to allow the public to have easier access to the water (Tykesson, 2017).

As seen in figure 3, the city added simple water level docks with ladders to make entering and exiting the water easy. These docks connect to the already existing break-walls that prevent erosion. This infrastructure is simple but meets the public demands.



*Figure 3 Malmö, Sweden. The image shows the public boardwalk, with break-walls and the added swimming docks with ladders.*

In the case of Malmö, it was the public who allowed the realization of the project by swimming without infrastructure. This unsanctioned swimming in the newly develop waterfront area spurred the developers and the city to create infrastructure to make swimming in the Harbour safe. Malmö architect Tyke Tykesson stated that if people are going to jump into the water “you have to give them a way to get out” (2017). Tykesson, also noted that the city of Malmö looked to nearby Copenhagen for inspiration; Copenhagen opened its public harbour bath in 2001, by 2002 Malmö citizens were swimming off their own waterfront. Whether or not the public itself was inspired by Copenhagen’s progressive urban swimming development, Malmö city officials and developer certainly were and responded by supporting public behaviour as opposed to banning or blockading it. Malmö offers an interesting example of public behaviour when negative perception of water quality does not appear to exist. Malmö’s urban swimming project was driven by public behaviour and followed up with design and political support.

Case Study Summary

Urban swimming sites in formally contaminated waters are a relatively new phenomenon. As seen in the above case studies, cities have unique histories with their urban blue spaces and their social perceptions of swimming. Each case study has key aspects which allowed for the development of urban swimming. Often these projects were a culmination between political visions, public interest, and timing. However, it is important to note that none of these projects followed the same development path precisely. Copenhagen's project came out of a synthesis of public and political vision, Paris's project was designed with a political agenda, and Malmö's project accommodated the public's behavior. In all three projects, city officials were influenced by other cities swimmable waters. Inspired by others, the projects grew out of the local context to meet its publics particular needs and perceptions.

The infrastructure used to encourage swimming in the three case studies presented vary greatly: Copenhagen's site is complex with multiple levels built into the swimming infrastructure; Paris's site offers a simple rectangular layout with 3 pools; and Malmö's site is the most underdeveloped infrastructure with only small dock space and ladders. In each case, the infrastructure is designed to blend into the surrounding space and meet the social and cultural desires. In all cases the infrastructure appears to be well met by the public, with predominately positive media coverage. Thus, a similar analysis of Halifax's public needs and perceptions of the potential of urban swimming in the Halifax Harbour is required.

## 2.2 The Halifax Context

As established in Chapter 1, the Halifax Harbour has undergone a dramatic change in water quality with the completion of the HHS project. Aside from periods of heavy rain and a power failure that closed the plants in 2009, since the completion of the Halifax Harbour Solution's three new wastewater treatment plants, water quality tests have consistently meet safe recreational swimming guidelines. This section explores documented perceptions of the Harbour's water quality. While perceptions were not well documented it is possible to measure, at least in part, public engagement and awareness.

Before the Halifax Harbour Solutions project, there were high levels of engagement and public discourse around the Harbour's water quality and clean-up proposals, evidenced by public symposia and surveys discussing who and how the Harbour Clean up should be done (Halifax Harbour Symposium, 1996; HSPSRFR, 2001). These public consultations were well attended with broad support and approval for the development of new wastewater treatment plants. The Halifax Harbour Task Force, used public input in 1989 to set out eight key objectives for the cleanup that included: (1) "highest priority on improving and sustaining the Harbour as a healthy marine ecosystem"; (2) "enable all existing commercial, recreational, aesthetic and wildlife uses of the Harbour to continue and, where possible, expand" (HHTFFR, 1990, p.45). While the objectives do not directly reference swimming, the Task Force also determined priority areas for environmental protection. The Halifax Harbour was broken into sections and classified as future bathing or non-bathing areas (Figure 4). The Bedford Basin and Outer Harbour as being areas which aim to have swimmable levels, while the inner harbour focus was to be aesthetically clean.

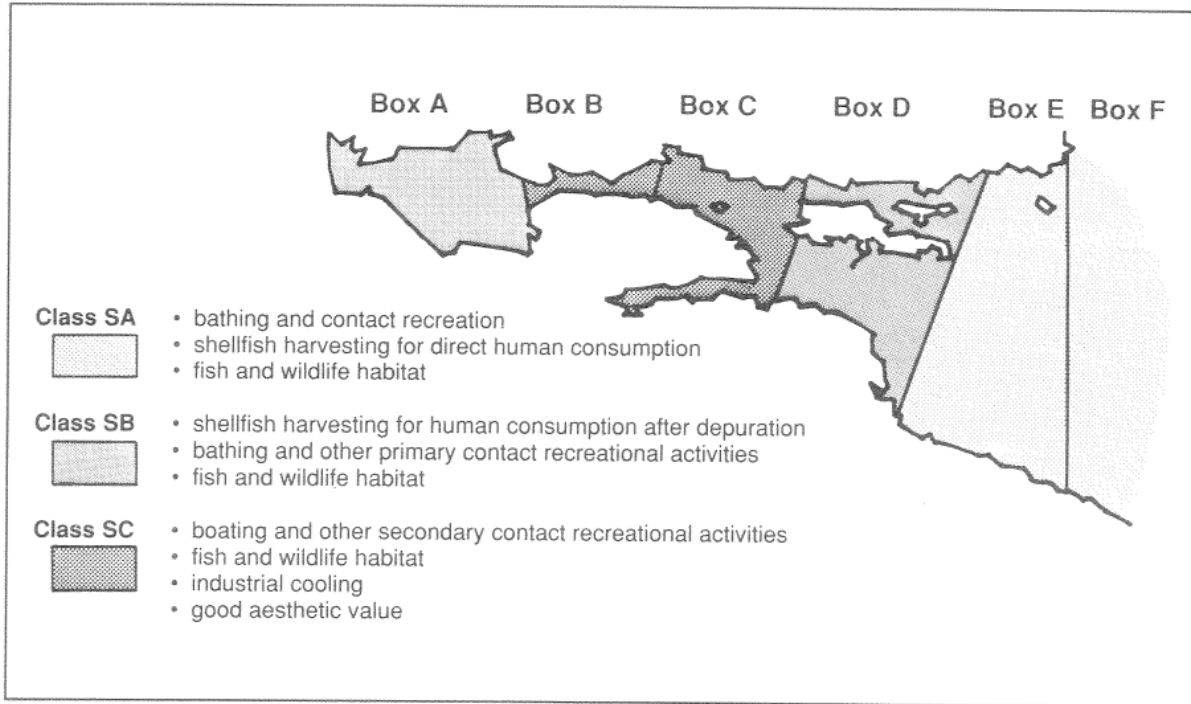


Figure 4 Priority areas for environmental protection determined by the Halifax Harbour Task Force in 1990.

In 2004, after numerous delays, the HHS project officially began. Official contracts for the design, construction and commissioning for the three-new wastewater treatment were signed by the mayor (HRM, 2017). In 2008, the Halifax plant was opened followed by the Dartmouth and a year later the Herring Cove plant. The plants are deemed to meet the “objectives for the harbour as set out by residents” (HRM, 2017). Beyond this, the water quality results in the Class SC sections also met safe bathing criteria (AMEC, 2011).

While the factual evidence of the water quality in the Harbour has shifted, it may be that the general public’s perceptions of the cleanliness of the Harbour has not. Public response to the opening of two central urban beaches (Black Rock and the Dingle Beaches) was mixed. News articles from 2010 on the reopening of Black Rock Beach and the Dingle, indicated that the beaches were underused and that the public response to the water quality ranged from acceptance to disgust (Taplin, 2010; Weston, 2010). At the same time, local Non-Government Organizations, such as the Sierra Club in Halifax and the Ecology Action Centre, also flagged

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other containments like pharmaceuticals, PCBs and household wastes as issues of concern that were not taken care of by the treatment plants (Weston 2010). In an effort to promote the safety of the Harbour, the former Mayor, Peter Kelly swam in both 2008 and 2010 to demonstrate the cleanliness of the water (CBC, 2010).

Although the Halifax Harbour Solutions project allowed for the cleanup of the harbour, an event occurred after the completion that may have influenced the public's perceptions of the cleanliness and swim-ability of the harbour. In January 2009, a massive power outage caused major damage at the Halifax Plant. This damage caused raw sewage to once again flow into the harbour until the damage was fully resolved in fall of 2009 (HRM, 2017).

While there is little scholarly research on public perceptions of the Halifax Harbour, an Honour's thesis from a student at St. Mary's university surveyed 106 people in the Halifax area on their perception of the Halifax water quality and its suitability for swimming (Weston, 2010). The results showed that 60% of the respondents felt that swimming in the Halifax Harbour, even when all sewage treatment plants are operational, poses a risk to human health. Weston's (2010) study also questioned where residents wanted water data to come from in order to determine the "swimability" of the water, and if a certified beach program (i.e. a program that would ensure beaches meet specific water quality levels) would encourage people to swim. She found that 56% of the respondents felt that a certified beach program would be beneficial for inspiring swimming in the harbour. Aside from a certified beach program, just under half of the participants stated that they would trust water quality data from a government body (the Halifax Regional Municipality, and either the provincial or federal), while roughly 30% of the participants stated that they would trust water quality data from "non-governmental organizations, independent consultants, and relevant scientists" (Weston, 2010, p.38).



In an overall assessment of her participants' perceptions of water quality in the Halifax Harbour, Weston (2010) concluded that perceptions were moderately low. However, Weston's study did not account for participants' backgrounds, such as length of time living in Halifax, and how this may influence their perceptions of the Harbour's water quality.

Since 2010, the media interest in the cleanliness of the Halifax Harbour has quieted down. Occasionally there are call outs for swimming such as The Coast's 2016 article "Swimming in the Halifax Harbour." This article highlighted the continuation of public scepticisms toward the water quality of the Harbour. The article concludes: "Unfortunately, old habits die hard. Even though it may be cleaner now than it was before, there's just something about swimming in the Halifax Harbour that's still a bit off-putting" (Windsor, 2016). This skepticism notwithstanding, 2016 and 2017 have had sanctioned swimming events such as triathlons and fundraiser swims being done in the Harbour. These events are sanctioned and coincided with water testing (Brigadoon, 2017; White, 2017).

### 2.3 Approaches and Methods to Project Realization

As Halifax explores the potential of an urban swimming project like the *Jump In Project* – there is a unique opportunity to collect data during the process of an urban swimming project development. The data collected is both relevant to informing the *Jump In Project* but also providing an opportunity to analyze public opinion during the development of an urban swimming infrastructure process. This mid-process data is missing from the relatively thin literature on urban swimming in rejuvenated urban blue spaces. Therefore, it is important to overview the theoretical approach that the *Jump In Project* is using to better understand the

impact that it may play in data collection. The *Jump In Project* uses Community-Based Social Marketing (CBSM) as a guiding theoretical framework.

As previously outlined in Chapter 1, CBSM is a combination of community-based approaches to societal change and social marketing strategies. CBSM selects a target behavior, identifies barriers and benefits, develops strategies, pilots a program at a small scale and evaluation before broadening to a larger implementation (McKenzie-Mohr, 2011). The *Jump In Project* has selected swimming in the Halifax Harbour as its target behaviour. In order to identify further barriers and benefits, this study was designed to receive public feedback. The study took the form of a visualization pilot called: “The Jump In Visualization Pilot”, which placed two architectural renderings on a proposed swimming site at the Halifax Harbour. Members of the public were surveyed on their response to the visuals and their perceptions of the water. The renderings were designed using elements from the case studies to help the participants conceptualize different infrastructure options, one very built up like Copenhagen and the other very simplistic like Malmö. This study’s data aims to help determine local barriers towards an urban swimming project which have informed the development of strategies that can be used in a potential future small-scale pilot project.

## 2.4 Summary

Urban swimming projects are not well studied or documented. Often these innovations are captured through procedural government grey literature or media reports. The three case studies, show that projects in similar conditions, have had different paths to completion. There are commonalities: each project was influenced, in part, by swimming activities in nearby cities; and each project was mindfully designed to blend in and meet its surrounding aesthetic. However, due to a lack of data, there is a lack of understanding as to what the barriers to urban swimming

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may have been. Examining the Halifax context, gives relevant information on the history and the reasons behind potential public perceptions. Weston's research shows that, in 2010, the public opinion of water quality was moderately low and that the public wants information about water quality from government or non-government agencies. This background does not demonstrate a strong public desire for swimming access in the Halifax Harbour. Finally, this Chapter examines the CBSM approach to creating change. In order to effectively change behaviour, it is important to understand public's perspectives on the barrier and benefits towards a behaviour.

## CHAPTER THREE - METHODS

### 3.0 Introduction

This thesis draws on methods developed in the field of Community Based Social Marketing (CBSM). CBSM is a specific process that focuses on finding ways to create a desired behavior or thought change with a targeted audience. In this case the desired behaviour change is to encourage Halifax residents to swim in the Harbour. The CBSM process follows a specific methodological process which includes developing an understanding of the perceived barriers and benefits to the adoption of the desired behavior (McKenzie-Mohr, 2011). In the CBSM framework, projects are often piloted to not only better understand public perception, but also engage the community in the development process of a project which is linked to better public buy-in (McKenzie-Mohr, 2011).

This thesis focuses solely on the part of the CBSM process of understanding the perceived barriers and benefits to the adoption of the desired behavior (in this case the desired behaviour is swimming using new urban infrastructure in the Halifax Harbour). In order to do so, an intercept survey is used to answer the research question: “What is the public’s current perception of the suitability of the Halifax waterfront for swimming, and what is the public’s feedback to the proposed swimming infrastructure associated with the *Jump In Project*?”. The survey has a combination of qualitative and quantitative questions, and allows for a broad collection of public opinion (Palys & Atchison, 2014). The results from the survey allow the research team to better understand the public’s current perception of the suitability of the waterfront for swimming and their feedback on the proposed *Jump In Project* infrastructure.

### 3.1 Population, Sampling & Site Location

A survey booth was set up close to the proposed *Jump In Project* site at South Battery Pier (Bishop's Landing) on the Halifax Waterfront at between September 6 to September 10, 2017. This location is just off the main waterfront boardwalk, which receives heavy pedestrian flow (Figure 1). The location is in proximity to two small pleasure craft docking wharfs and several high-end waterfront restaurants (The Bicycle Thief, Ristorante A Mano and Hamachi Steakhouse Bar & Grill). South Battery Pier is also the location of *The Way Things Are*, a large public art installation. The area is used by locals and tourists, and has a diverse demographic of families, retirees, students and professionals. This location was chosen, not only to draw on this diverse population, but also to engage with the population who already frequent the waterfront area.

The population sampled for this study was any person over the age of 18 years. Individuals were sampled using a non-probabilistic and haphazard sampling technique in which any person who came close to the survey booth were invited to participate.

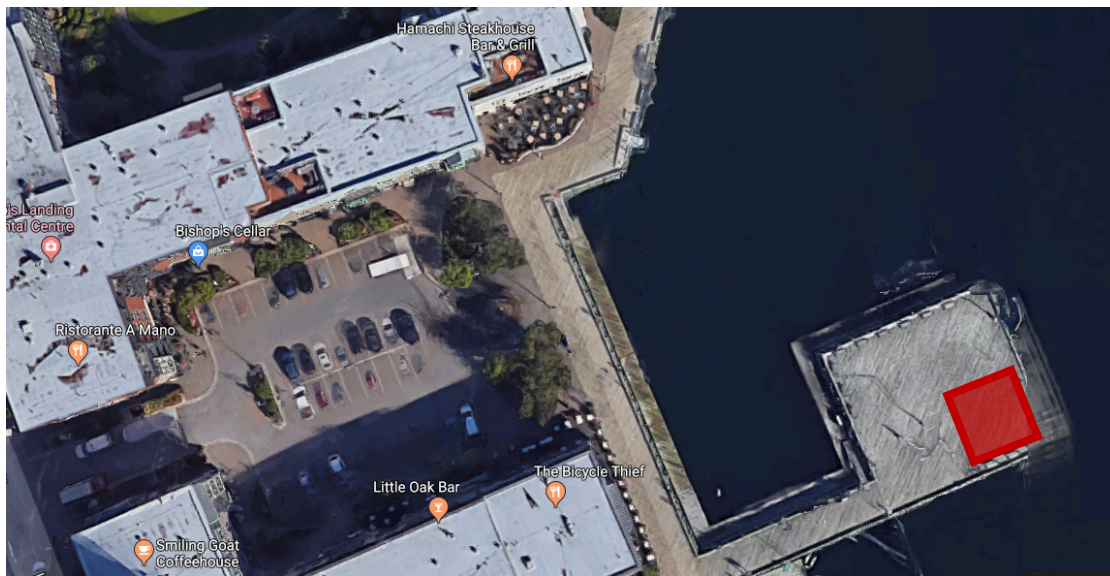


Figure 5 Survey site location indicated in the red area. Original image from Google maps.

### 3.2 Survey Date & Hours

In-person surveys were collected between September 6 to September 10, 2017, during the hours indicated in Table 1. These dates and hours were selected to capture the diverse population that use the Halifax Waterfront during the week and weekend throughout daylight hours. Due to rain and high wind, the survey hours on Thursday, September 7, 2017 were cancelled. The location is in an area of high exposure to weather, particularly wind, and it was deemed unsafe and unrealistic to conduct paper surveys in these conditions.

Date	Hours	Number of Hours
Wednesday, September 6 <sup>th</sup> , 2017	12 pm – 6pm	6
<del>Thursday, September 7<sup>th</sup>, 2017</del> <b>CANCELLED due to rain and wind</b>	<del>12pm – 8pm</del>	8
Friday, September 8 <sup>th</sup> , 2017	8am – 8pm	12
Saturday, September 9 <sup>th</sup> , 2017	8am – 8pm	12
Sunday, September 10 <sup>th</sup> , 2017	8am – 7pm	11
<b>TOTAL SURVEY HOURS</b>		<b>41</b>

*Table 1 Survey Collection Time and Dates.*

### 3.3 Survey

The survey (Appendix A) includes a mix of open-ended and closed/structured questions. The survey begins with initial simple, closed, demographic questions (questions # 1- 6) followed by more in-depth ranking and opened questions (Palys & Atchison, 2014). The demographic questions are not only important for analysis, but their simplicity aid in making respondents comfortable before transitioning into more in-depth questions (Palys & Atchison, 2014). Participant comfort is increased by using categorical questions, as many people prefer to place themselves in a category rather than give an exact answer, for example picking an age category rather than giving a specific age.

The following nine questions (# 7-16), delved into specifics around the research question. The development of the survey paid attention to the wording, the order of questions, and engaging respondents to elaborate using open-ended questions. Wording was important as well with the aim of asking clear, questions with minimized bias. Question #9 asks “What would make you confident that the Harbour is safe for swimming?”. This question was written in the positive, and the word choice of *confident* was chosen so that participants would give responses that focused on constructive rather than deconstructive feedback. Question order was important so that certain questions did not influence each other. For example, question # 7 asked respondents about the *safety* of the Harbour for swimming while question # 9 asked respondents about the *cleanliness* of the Harbour, it was important that these questions were ordered in this manner so that the idea of cleanliness did not influence the respondent’s perspective of safety.

Questions #7-16 were a mixture of rating scales and open-ended questions. Rating scales are useful to collect quantitative opinion responses. Open ended questions are useful in collecting the respondents’ own opinions, which is valuable in exploratory research and when there is uncertain of what the range of responses may cover (Palys & Atchison, 2014). Open ended questions can be useful to interpret other responses. A combination of ranking and opened question in the survey (ie. questions # 7 and 8, and 9 and 10), allows for the collection of quantitative opinion data and more qualitative data to interpret and elaborate on their responses. While open-ended questions are useful, over use may turn off respondents as the survey may starts to feel tedious (Palys & Atchison, 2014). Question # 15 is a Likert-type question which purposed an assertion and had participants agree or disagree with it.

Questions # 13, 14 and 15 asked participants to react to two visualizations that were rendered for the participants to see and give feedback on within the survey. The two

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visualizations for potential swimming infrastructure included: Design 1 - a simple minimal infrastructure layout (Figure 5); and Design 2 - a developed extensive infrastructure layout (Figure 6).



Figure 6 Visualization #1 shows potential swimming site using minimal infrastructure (colored orange) of a jump platform, a dock, buoys, and floating swim platform. This image was created by Outside Planning and Design.

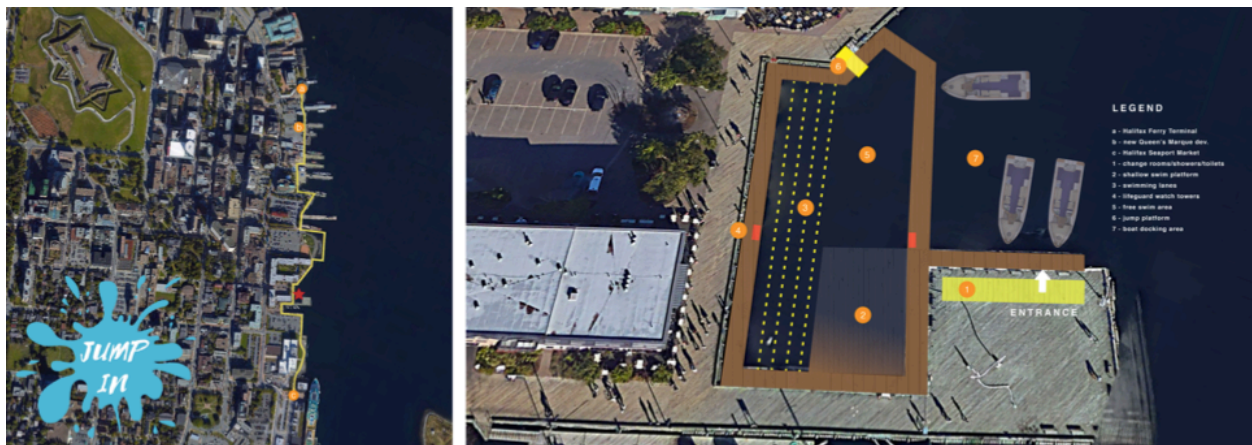


Figure 7 Visualization #2 shows potential swimming site using extensive infrastructure of an dock enclosed swim area, a declining ramp, swim lanes, a jump platform, lifeguard towers and shower and change room area. This image was created by Karen Mills.



### 3.4 Procedure

In accordance with ethical approval from Dalhousie University (Appendix B - Ethics Approval Letter), the surveys were conducted by the lead researcher (Anika Riopel) or by one of the trained research assistants (Appendix C –Research Assistant Training Form). The surveys were collected in person, through an interview style approach following the Survey Script (Appendix A). The researcher or research assistants verbally asked the survey questions of the participants and transcribed the answers onto pre-printed survey forms.

Intercept surveys are conducted at the survey booth location. Individuals who approach the table and passers-by were invited to participate in a survey about swimming in the harbour. The lead researcher or trained research assistants conducted the survey following the Survey Script (Appendix A), including an overview of the purpose of the study, the amount of time needed to complete the survey (10-15 minutes), the right to withdraw at any time and the anonymity of the survey responses. Participants are then asked for consent that their answers can be used for research at the beginning (question # 1). The final question of the survey (question # 16), confirms that the participant gives continuing consent that their responses be used for the research. The participants are thanked for their time. No compensation was given.

### 3.5 Considerations for Survey Site and Procedures

The tent, which was 10' by 10' was erected on the survey days is intended to make a large and official looking space. The lead researcher and researcher assistants all wear bright green t-shirts provided by the College of Sustainability that read “Leading Change”. The T-shirts are a uniform which create a sense of brand, cohesion and legitimacy (Kylander & Spring, 2012). The “have your say” signs and the visualization images of potential attributes for the proposed

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Jump-In site were used to draw the public in through provocative engagement. Visualizations are a tool used to transform ideas emotion or feelings, and therefore are useful in engagement (Kosslyn et al. 2006).

### 3.6 Considerations for Minimizing Bias

Interviews-style surveys carry the risk that participants feel obligated to respond in what they perceive is the “right” way to meet the interviewer’s expectations. In this case the lead researcher’s position as an advocate for the project introduced the risk of significant bias to the research. In order to minimize this bias in the interviews, the researcher and assistant researchers kept to the written script, were careful not to provide any opinions and allowed participants to lead the conversation. As well, as seen in the Research Assistant Training Form, biases or cues communicated through body and facial language were minimized with the aim of being an ideal researcher who is “tolerant, friendly, interested supportive, detached, professional and neutral” (Palys & Atchison, 2014, p.173). If directly questioned, the researcher reiterates that the intent of the study is to collect current public opinion and as such there is no right or wrong answers.

The actual survey event “The Jump In Visualization Pilot” received unexpected, and extensive media coverage, prior to the surveying dates. Media coverage included a YouTube video with significant exposure on Facebook, and multiple news articles both locally, the Chronical Herald, and nationally, The Canadian Press and CBC News (MacDonald, 2017; Davie, 2017; . While the added media coverage may have made people more aware of the project, the survey was designed to be neutral and it is not anticipated that knowledge of the project would have influenced any participant’s responses to the survey.

### 3.7 Analysis

The analysis of the surveys focuses on the public's general attitude toward the swimming in the Halifax Harbour, the public's support for permanent swimming infrastructure, the public's feedback on the specific Jump-In pilot site, and the public's recommendations for future developments of swimming infrastructure in HRM. The analysis outlines the public's perceived barriers and benefits towards urban swimming.

The survey data collected is both qualitative and quantitative. All data is transferred into an excel spreadsheet. The quantitative data is analyzed using descriptive statistics measuring central tendency and dispersion. Central tendency was calculated in the form of mean, median and mode depending on the callus. Interquartile range and standard deviation were calculated to measure levels of data dispersion. This analysis allows for the determination average public perception and the level of disparity within that average.

The qualitative data from the opened questions is analyzed using *a posteriori* coding techniques. Codes and categories are developed and refined through a review of the responses to the questions. Each new concept is assigned a code through the first step in analysis. Codes are assigned according to common themes, for example "wildlife" (parent code) and then subdivided into child codes (i.e. "sharks", "fish", "seaweed"). Codes are not only used to identify words but also to determine distinct ideas and concepts. The second stage of analysis involves comparison and refinement into groupings of common code categories. The results are presented in aggregate form. The qualitative data allows for more specific analysis of barriers and benefits, and allows for the ability to illustrate the quantitative data. Discussion includes making comparisons and links to similar projects as introduced in Chapter 2.

## CHAPTER 4 – RESULTS & DISCUSSION

### 4.0 Introduction

This chapter will present and discuss the results of the analyses from the public perception survey carried out in September 2017. The principle objective of this survey was to collect data regarding current public perception of the suitability of the Halifax waterfront for swimming, and gain feedback on the proposed swimming infrastructure related to the *Jump In Project* (described in Chapter 1). Using CBSM framework, these results will be discussed with the aim of determining the public perceived barriers and benefits of an urban swimming project, weaving in insights gained from the case studies presented in Chapter 2.

### 4.1 General Demographics

A total of 339 surveys were completed in full and collected. As Figure 1 demonstrates, 56% of the survey participants were female and 44% were male (it is important to note that one participant declined to identify their sex). Statistics Canada's data from 2016 indicates that Halifax's current population is roughly 52% female and 48% male, therefore this sample provides a similar representation of the Nova Scotia population in terms of sex (StatsCan, 2016). While there was a wide range in ages of those who participated, the highest percentage of respondents (37%) were between 21-29 years old (Figure 2).

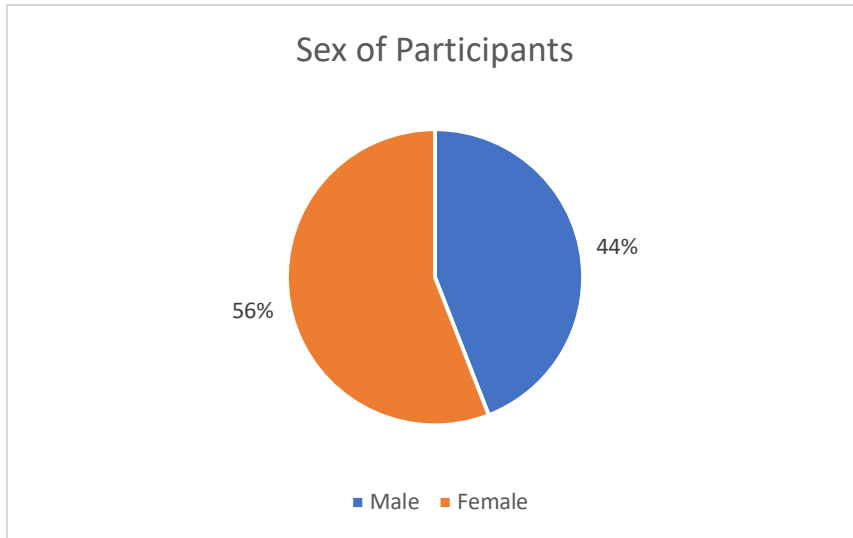


Figure 8 Sex of Participants of the Survey

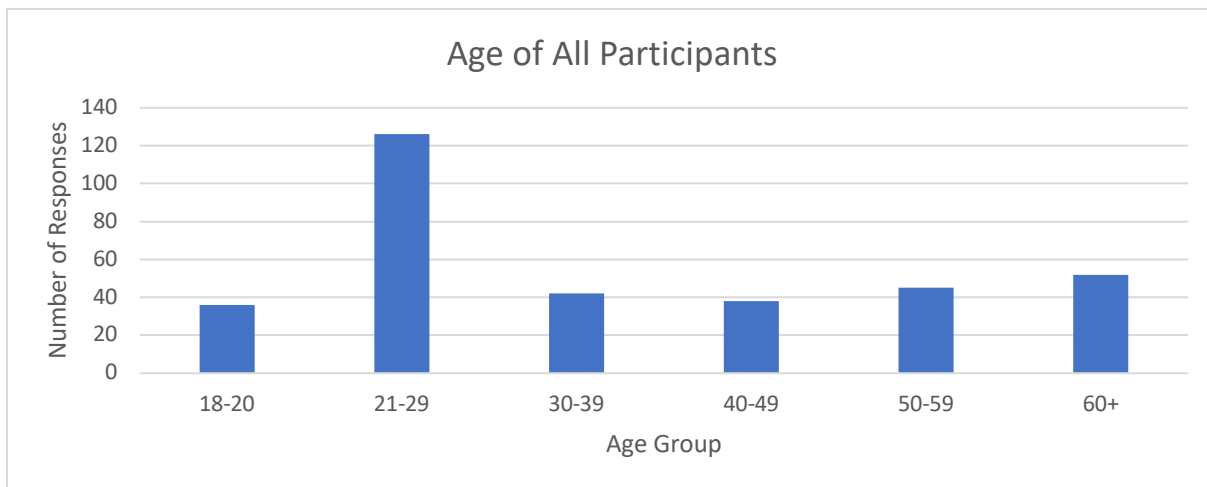


Figure 9 Age of Participants of the Survey. Please note that the first category 18-20 is smaller range than the other categories.

In terms of residency, 260 of the individuals who participated resided in the HRM and 79 were from outside the HRM (Figure 3). Of those individuals who identified as residents of the HRM, the distribution of the longevity of their residency was varied (Figure 4), with the largest group having lived in Halifax for more than 11 years. Of the participants who were not from the Halifax Region, the majority were from Canada but outside of Nova Scotia (Figure 5).

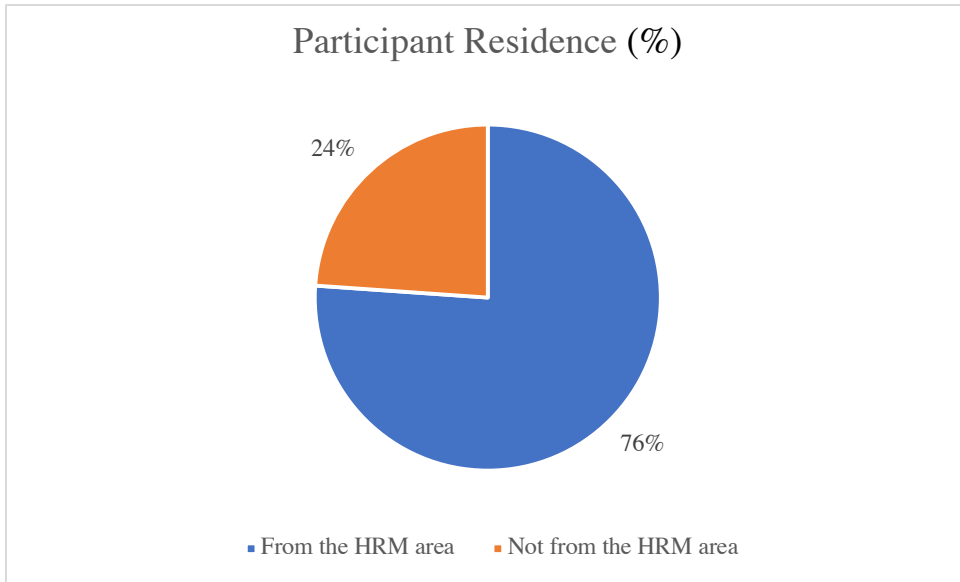


Figure 10 Residence of Participants

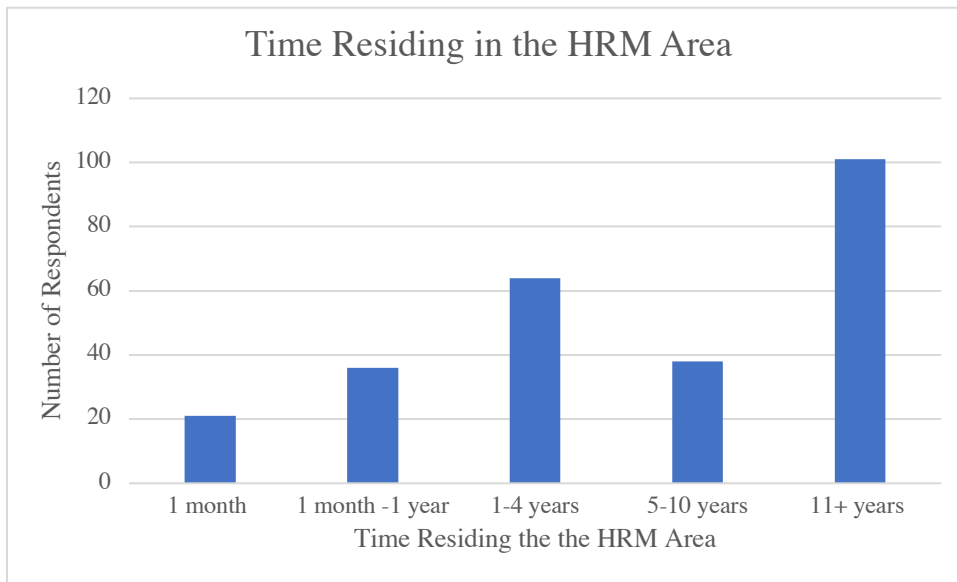


Figure 11 Time Residing in Halifax

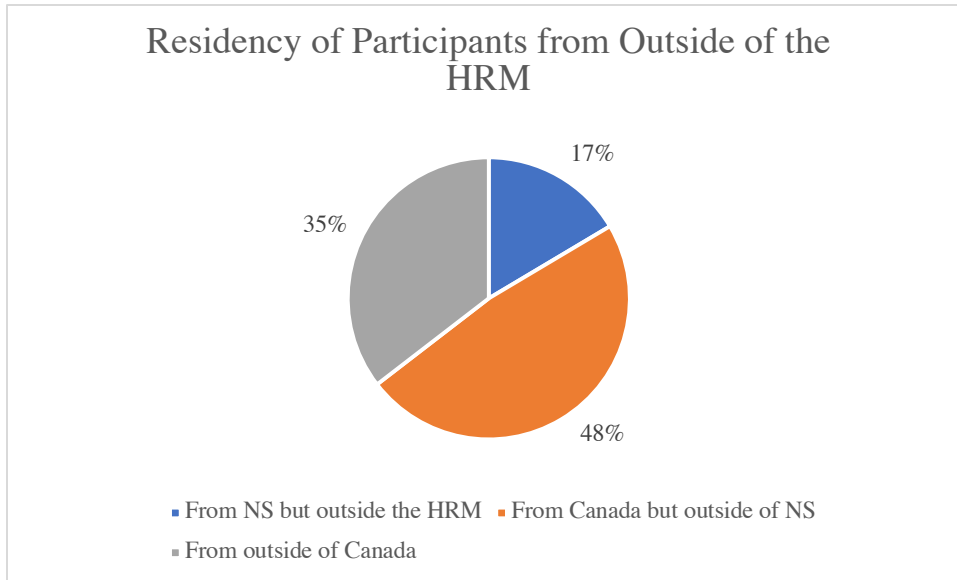


Figure 12 Residency of Non-Local Participants

In response to rating their swimming ability, the majority of participants identified as strong swimmers (34% as strong swimmers and 45% as moderate swimmers. Only 3% indicated that they did not know how to swim which aligns with national data that suggests roughly 4% of Canadian’s do not know how to swim (Byers, 2011). Therefore, any assumption that people who can swim are more likely to be interested in responding to the project, is not shown in this sample.

#### 4.2 Reactions to the Project

The most noteworthy finding of the survey is the strong public support for building urban swimming infrastructure. Survey participants were asked to rate on a scale of 1 to 5 (1 being total disagreement, and 5 being strong agreement) their agreement for building of permanent infrastructure (like this Jump In site) on the Halifax Waterfront. The results show that the majority (91%) of participants support some sort of swimming infrastructure on the Halifax Waterfront (Figure 6). It is interesting to note that there was a high mean score (4.5 out of a possible 5), with a low interquartile range of 1 and a standard deviation of 0.815. This

demonstrates that there is strong agreement, with little disparity, amongst the participants in terms of their support for building infrastructure for swimming.

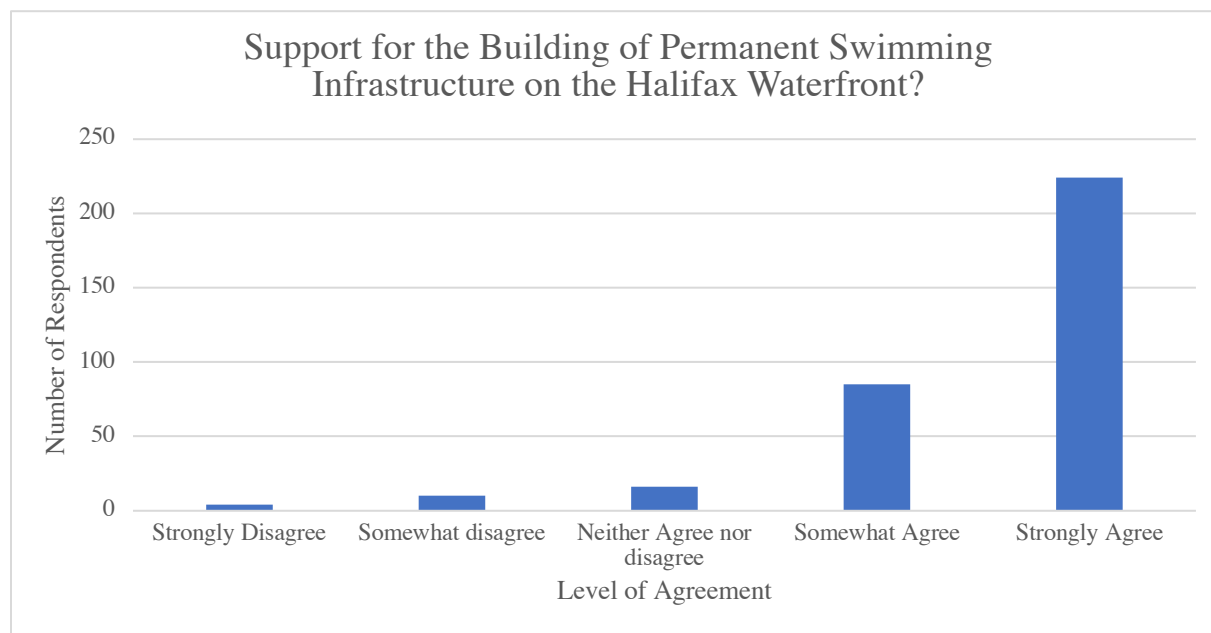


Figure 13 Support of building swimming infrastructure

Participants were also encouraged to verbalize in their own words why they supported or did not support the swimming infrastructure. In total, 316 comments were received that were grouped together into categories using *a posteriori* coding techniques. As Table 1 demonstrated, many participants (45%) felt that the swimming infrastructure would be good for the community and a positive addition to the downtown waterfront. As one participant said: “The waterfront is for the people - use it! It is Halifax’s greatest feature – this [project] enhances its value to the public” (Participant 59).

The participants’ comments also focused on the accessibility of the ocean for all ages and abilities and how the central location could mean access to water for people without a car (9%) and tourism (8%). As Participant 102 said: “I think that it is something children will enjoy; in particular it would be great for families. Myself, personally, [I] live nearby and would love this as opposed to driving 30 min to a beach. Also great for tourism.”



There were also comments that focused on fun (6%) and health (6%). Participant 100 responded that the concept “looks joyful” and Participant 21 responded that the concept would be “fun to do or watch”. With regard to comments on health, Participant 88 stated “access to swimming in the ocean is extremely beneficial for mental and physical health” and Participant 108 stated: “more recreation for all freely available”.

These top responses demonstrate the public’s perceptions of the benefits of a potential urban swimming project. The responses align with the design priorities seen in Copenhagen, which as outlined in Chapter 2, was designed for socializing and play as well as ensuring continuity with the waterfront, safety, accessibility and harbourscape (BIG JDS, 2009). The responses focusing on health reflect the benefits, as outlined in Chapter 1, of the positive human health and wellbeing of exposure to nature (Völker & Kistemann, 2011; WHO, 2016; APHA, 2013; Chawla, 2006; Kollmuss & Agyeman, 2002). These responses are important to note because it demonstrates that the local public perceives benefits that align with other projects and academic literature, these benefits are important to include in considerations for recommendations under the CBSM framework.

It is important to note that there were a number of negative comments, and while they only accounted for 5% of the total comments given, it is important to note them for future planning of swimming infrastructure and transparency (the full list of negative comments can be found in Appendix D). These comments include concern about location and noise: “The harbour walk would be jeopardized - by that I mean that the noise level would ruin it for others. Especially the restaurants close by.” (Participant 213). Other concern was focused on feasibility: “I think it will be hard to gain and maintain support and funding” (Participant 296). There was also concern about overall risk: “Risk management - not a good idea” (Participant 126).

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Memories of negative experience were also present in the negative feedback: “Even though I know it is clean I am repulsed after seeing poop as a kid floating in the same area, I would not use it. Sorry. It's a cool idea though” (Participant 225). These negative responses can be addressed in the development of a design that place the infrastructure further from the restaurants, that addresses risk management concerns. Likewise concerns for funding can be addressed by partnering with the official organizations to oversee. It is also fine to acknowledge that not everyone will be interested in swimming for whatever reason, which is a given for any type of public infrastructure development.

	<b>Explanation of Level of Approval</b>	<b>#</b>	<b>%</b>
1	Good for the Community	141	45%
2	Ocean for all (Accessible and Central)	28	9%
3	Tourism	25	8%
4	Fun	19	6%
5	Healthy	19	6%
6	Negative	16	5%
7	None Available	14	4%
8	Safety & Lifeguards	12	4%
9	Pilot	6	2%
10	Other Concerns	36	11%
	<b>Total</b>	<b>316</b>	<b>100%</b>

*Table 2 Explanation for Level of Approval. Appendix E lists Other Concerns.*

Overall the support for urban swimming is strong and the majority of the opened end responses demonstrate a public perception of benefits focused on community, accessibility, health and fun. The negative comments focused on location, noise, feasibility, risk and negative perception of the water quality based on experience. It is important to use the public’s perceived benefits to design a pilot that will be successful.

### 4.3 Water Perception

When participants were asked to respond to how safe they thought the Halifax Harbour was for swimming (on a scale where 1 is totally unsafe, and 6 is totally safe), the response was generally positive (Figure 7), and demonstrated an overall view that the Harbour is safe to swim in. However, there was a large spread of responses, and while the mean rating was 4.33, the standard deviation of 1.283 which demonstrates a greater disparity between the responses. Overall the responses to this question show a moderately high perception of water quality for swimming.

Compared to Weston's 2010 study, there seems to be a significant shift in public opinion. As discussed in Chapter 2, Weston's results showed a moderately low perception of water quality for urban swimming. These changes may be due to the passage of time, approximately eight years have passed since Weston's study. Furthermore, Weston's study was conducted shortly after the 2009 wastewater treatment plant power failure and subsequent Harbour contamination. Media from 2009 demonstrates poor public confidence for the water quality (Weston, 2009). Compared to the case studies presented in Chapter 2, this breakdown is unique to Halifax's Harbour's history and likely contributed to a level of initial distrust that was not felt in other cities.

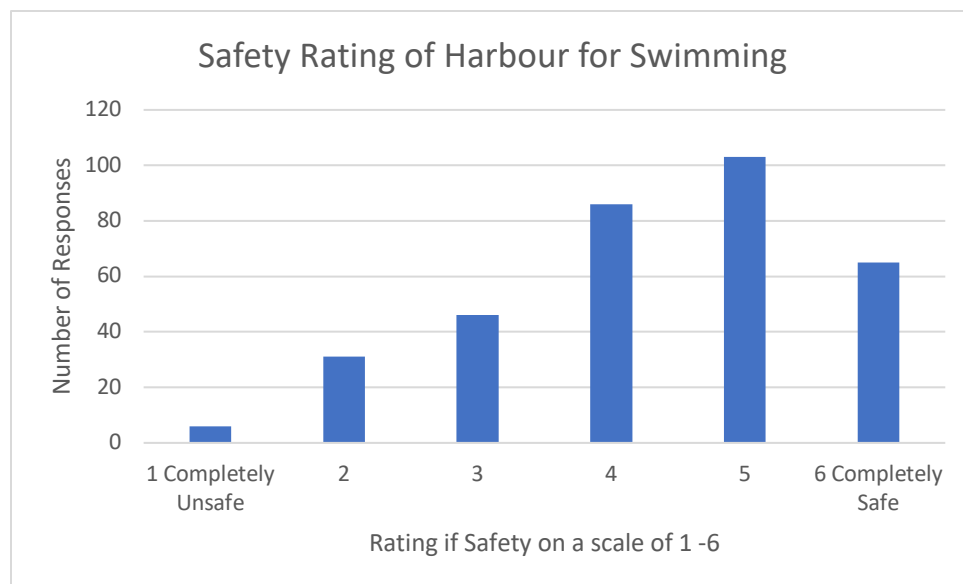


Figure 14 Water Quality Safety Rating

Participants were also invited to list any concerns they had in terms of the swimming safety in the Halifax Harbour. In total, 580 individual comments were collected and then grouped into categories using *a posteriori* coding techniques (Table 3). One of the main concerns listed by the participants was the quality of the harbour water for swimming (26%). Quality concerns included comments about “floaties” (raw sewage), runoff, pollution, toxicity, cleanliness and illness due to water quality. For example, Participant 70 said “Cleanliness even with the treatment plant”. Some participants voiced their concerns about illness, for example Participant 175 stated “you could get sick or mutate”. Other participants stated specific causes of contamination such as “sewage overflow after heavy rain and everything [sediment] on the bottom” (Participant 86) and “...ship in the harbour can and occasionally do spill oil and chemicals into water” (Participant 188). In many of comments participants noted that water quality testing should be conducted: “...monitoring of water contamination by people and boats” (Participant 107).

The next most common concern was boat traffic (22%). Major concerns included: right of waterways, being hit by a boat or jet ski. Participant 187 noted their concern that: “Boat

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people [would] not b[e] safe with the boats they handle. Such as not knowing there is a swimming zone”. Other participants voiced a simpler concern that there were “too many boats” (Participant 52). Some participants offered solutions such as a swim area “sectioned off from boats” (Participant 196) or a “safety zone between swimmers and boats” (Participant 37).

Looking at the successful urban swimming case studies from Chapter 2, it is possible to see how the design of the structures and water quality data responses to potential public concerns. Both cities urban swimming structures included enclosed parameters that separate boats from swimmers and conduct regular water quality tests that are shared with the public. As discussed in Chapter 2, Paris’s water quality tests are conducted every half hour while Copenhagen’s are conducted daily. Both cities have created water quality testing programs for their swim sites that seem to respond to public demands, the difference between the programming could be cultural, historical or simply that Paris’ project is much newer than Copenhagen’s. In Malmo, there is no enclosed parameter or water testing, which indicates that it is not barriers stopping the general public from swimming. It is important to design urban swim projects that respond to a public’s specific concerns in order for them to be successful.

While the categories of *Water Quality* and *Boat Traffic* were the two largest concerns (48%), there were other issues brought up by the participants that should be noted. For example, 12% of the participants had concerns we categorized as “natural concerns”. This included worries about cold water temperatures, current/tides/waves and weather. These comments are predominantly one word answers such as: “cold” (Participant 328), “current/tide (Participant 11), “weather” (Participant 22). Some participants elaborated on their responses such as: “microbes due to weather (heat and mechanical failure) cutting or puncture” (Participant 314).

*Natural Concerns* like weather and water temperature are not really something that can be addressed in a design concept, other than enclosing the space. It should be noted that the case studies had comparable water temperatures and that many locals swim in the ocean at other regional swim sites. Tides and currents are easier to address through the placement of the infrastructure and information posting at the sites, similar to public beaches.

Some participants were concerned with *Safety Features* (7%) and discussed issues around lifeguards, safety, and lifejackets. Many participants simply responded “lifeguards” however some elaborated. For example, Participant 181 stated: “lifeguards [are] essential for those who over estimate their ability” and Participant 158 felt it would be important to “hav[e] enough lifeguards because the water is deep”. Another participant felt that there was “not enough support for emergency situations” (Participant 56) and one participant outline that the site should include “lifesaver x 3, safety rings x 2, [and] buoys [for a] mark area” (Participant 55). Safety measures are clearly important to the public.

The case studies offer examples of differing levels of safety features. Both Copenhagen and Paris have on-site lifeguards and lifeguard towers as part of their design. Malmö’s site does not have lifeguard supervision, further it does not have a barrier and it easily the least “safe” design of the case studies. The primary difference between these case studies is that Malmö’s site is a response to urban swimming that was already taking place whereas Copenhagen and Paris’s sites were designed to encourage urban swimming. Based on these case studies, the inclusion of safety features should be in response to whether or not the public needs to be encouraged to take part in the behaviour. There is little urban swimming in the Halifax Harbour therefore the inclusion of safety features urbans swimming infrastructure would help encourage swimming.

Some participants were worried about wildlife (6%) while swimming, including concerns about sharks, jelly fish, and seaweed. These responses were again predominately one word answers like “sharks” (Participant 2), “seaweed” (Participant 107), “jellyfish” (Participant 285), and “wildlife” (Participant 323). Other participants elaborated slightly stating things like: “scared of fish” (participant 203), “[getting] tangled in seaweed” (Participant 152) and “[cleaning] ladders of sea life” (Participant 29). Participant 230 noted that they were concerned of “swimmers damaging the ecosystem”.

Both Copenhagen and Paris’s swim structures had completely enclosed spaces (via solid structure or net) which would reduce any concerns about wildlife. It should be noted that perceptions of aquatic wildlife are largely false, such as the likelihood of being attacked by a shark is minimal (Burgess, 1990). Using a swim cite as a space to educate the public about marine life and about the protection of ecosystems would align with research that indicates that exposure to nature leads to more pro-environmental behaviours outlined in Chapter 1.

While there were only a few participants that discussed their concerns with boat fuel, it is interesting to note that 4% felt that oil and fuel from vessels could impact the swimmers in the swimming area. Many of these comments were simply “boat pollution” (Participant 21), other participants were more specific: Participant 24 responded “shipping spills [like] oil” and Participant 297 responded “emissions from motor boats”. While information about the case studies did not specify if they were testing for oil or fuels in the water it is possible to conduct these tests (using Semipermeable Membrane Devices and Polar Organic Chemical Integrative Samplers (Alvarez, 2010)) alongside bacterial tests.

Only a few participants discussed accessibility issues (3%), but these concerns are pertinent to note when designing a public space. Access concerns included those around

infrastructure, barriers, exit & entry, ladders and change rooms. Multiple participants’ responses overlapped with boat traffic concerns such as “a closed off space for swimming [from] boat traffic” (Participant 182). Other responds focused on “ladders” (Participant 145), or “easy entry/exit to water” (Participant 62). Other responses focused surface infrastructure like “change rooms” (Participant 125). Copenhagen, Paris and Malmo’s designs included features that made swimming accessible. Malmö simply added ladders and surface platforms to make entry and exits easier, whereas Copenhagen and Paris’s infrastructure included barriers, ladders, ramps and varying levels of depth.

<b>Concern for Safety</b>		<b>#</b>	<b>%</b>
1	Water Quality	152	26%
2	Boat Traffic	126	22%
3	Natural Concerns	68	12%
4	No Concerns	40	7%
5	Safety Features (i.e. lifeguards)	39	7%
6	Wildlife	33	6%
7	Boat Fuel	23	4%
8	Access	21	4%
9	People (being irresponsible)	15	3%
10	Other Concerns	63	11%
<b>Total</b>		<b>580</b>	<b>100%</b>

Table 3 Public Concern for Safety. Appendix E lists Other Concerns.

Community Based Social Marketing aims to have a certain population adopt a specific behavior. In order to do this, it is important to know the barriers and benefits perceived with the proposed activity. As such, the survey asked participants to indicate what would make them confident that the harbour is safe for swimming. In total, 475 comments were collected that were grouped together into categories using an *a posteriori* coding technique (Table 4).

The most common theme that emerged in our analysis was that information on water quality being available to the public onsite (31%) would make people feel confident. Also included in this theme were responses around requesting more specific information such as:



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bacterial levels, tides, currents, waves, recent rain fall stats, information on other cities with urban swimming, and comparison to other local used swim sites (i.e. Long and Chocolate Lake). As Participant 113 said: “[water] quality reports that are accessible”. This theme aligns with what the public identified as a concern in the previous question and with approaches used in both Copenhagen and Paris where water quality testing is conducted and made public and accessible.

Five comments specified that participants would feel confident if water quality information came from either third parties, citizen checks or peer reviewed studies. Participant 333 recommended “peer reviewed studies and ongoing monitoring programs”, while Participant 314 recommended that “citizen inspectors wor[k] with city officials to do regular reporting and inspections”. This aligns with Weston’s study that 30% of the public wanted water quality information from “non-governmental organizations, independent consultants, and relevant scientists” (Weston, 2010, p.38).

The second most common comments were about infrastructure (15%) such as physical barriers from boats and access issues like safe entry and exit points. Less common comments included nets to keep out wildlife, purification barriers and lights at night. For instance, Participant 29 responded “nice ladders, easy entry and exit [and] marked swimming areas”. As previously noted, infrastructure is used in the case studies to make a site appealing to its public.

The third most common comments, were focused on official swim site designation and accountability (13%) which included comments about designated area being indicated by signs & infrastructure, city and government support, and accountability to the public in regard to safety. Participant 109 responded that they wanted “declaration that its safe by the city”. This aligns with Weston’s findings that 56% of the respondents felt that a certified beach program would be beneficial for inspiring swimming in the harbour. As well, all three case studies were

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supported by local government, mainly in the construction of infrastructure. Further officially was demonstrated through the hiring of lifeguards and the support of local politicians. In Paris, mayors played a key role in championing the project and in Copenhagen, the mayor opened the structure officially by swimming himself. This physical support of government officials was seen in the survey responses: Participant 84 stated “[seeing] local politicians & their families swim here - actions speak louder than words”. While having politicians swimming does send a public message, the construction of infrastructure, publicity and water quality testing all communicate official government support.

Further comments focused on issues of safety (11%) which included the presence of lifeguards, flotation devices (personal floatation devices & lifesaver rings), general safety precautions and night surveillance. Most of these comments were simply “lifeguards” (like Participant 295). As previously mentioned above varying levels safety are used in the case studies. The public response in Halifax indicates that there is a strong desire for lifeguards.

Further categories Seeing Other People Swim (5%) included those who wanted to see people swimming before swimming themselves. Participant 178 responded: “If I saw people in it, I would go in too”. Based on these responses, some members of the public would feel confident in swimming if others are already taking part in the activity. If accounting for this it is important to note that a successful pilot needs to initially encourage a large enough group to participate, and that others will likely follow. The Copenhagen and Paris case studies both had large openings with public figures and had large turn outs of people; this initial success is key to convincing those who want to see others participating to jump in themselves.

*Education & Media* (3%) included comments supporting better public education, advertising and reporting about swimming in the Harbour, one comment stated: “the perception

of sewage in the harbour needs to be addressed”. While comments regarding education and publicity were small in number, it is worth noting that an educational campaign is a key part of communicating information to the public. It is not enough to create a product or space; communication or advertising is crucial to getting something new known.

<b>Confident for Swimming Safety</b>		<b>#</b>	<b>%</b>
1	Water Quality Information	147	31%
2	Infrastructure (barriers, entry & exits)	70	15%
3	Official Swim Site Designation & Accountability	64	13%
4	Safety Considerations (lifeguards & safety equipment)	50	11%
5	Seeing Other People Swim	22	5%
6	Already Confident	18	4%
7	Boat Regulations & Precautions	18	4%
8	Education & Media	14	3%
9	Better Filtration Process	13	3%
10	Other Concerns	58	12%
<b>Total</b>		<b>475</b>	<b>100%</b>

*Table 4 Confident for Swimming Safety.*

The rating of the Harbour’s water quality for cleanliness also shows a general positive overall view of the water quality of the Harbour for swimming but with a much wider spread of responses (Figure 8). The mean rating 4.2 which means most perceived the water quality to be relatively safe or more, but the interquartile range of 2 and a standard deviation of 1.235 demonstrates that there is disparity between the responses. Much like the response to the safety of the Harbour, this response demonstrates that public perception of the Harbour’s water quality is also moderate high. Again, citing Weston’s research, it’s possible to determine that there has been a large shift in public opinion of the water quality since 2009. This shift supports the feasibility of creating a successful pilot.

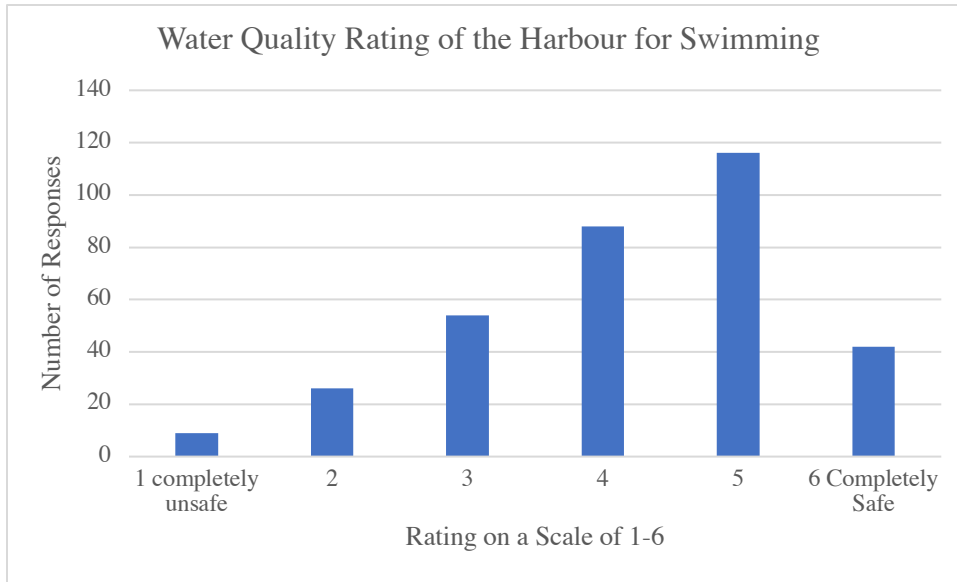


Figure 15 Water Quality Rating for swimming

Related to the question on water quality, participants were asked to comment on any concerns they had for the cleanliness of Halifax Harbour. In total, 418 comments were collected and were grouped together into categories using an *a posteriori* coding technique (Table 5). There is considerable overlap in responses since the category pollution could include sewage, garbage, oil etc. Many comments were more general such as “sewage”, “pollution” or “garbage”, while other comments focused on specific concerns such as oil, fuel, chemicals, cigarettes and condoms. Some participants elaborated like Participant 64 who stated: “getting sick from the water quality” and others on a lack of knowledge about sources of potential contamination like Participant 84 who asked: “Commercial sea traffic - do they dump ballast? How is industrial run off monitored”? Again, these concerns align with Weston’s study, which concluded that perception of the water quality is relatively low, however her study did not ask respondents specifically what their concerns for water quality were. This table allows for an in-depth examination of what specifically the public is concerned about and what information or tests need to be conducted to address these concerns. For instance, bacterial tests should be conducted

but so should tests for chemical, oil and fuel pollutants. Information about recreational and commercial boating regulations, as well as commercial run-off policies should also be communicated with the public.

<b>Concerns for Water Quality</b>		<b>#</b>	<b>%</b>
1	Sewage and bacteria	69	17%
2	No concerns	61	15%
3	Containments (oil, fuel & chemicals)	39	9%
4	Garbage & Litter	36	9%
5	Boat pollution	33	8%
6	Boat dumping	31	7%
7	Pollution	20	5%
8	Data testing (frequency & results)	19	5%
9	Run-off	17	4%
10	Other Concerns	93	22%
<b>Total</b>		<b>418</b>	<b>100%</b>

Table 5 Concerns for Water Quality. Other Concerns are listed in Appendix E.

#### 4.4 Feedback On the Proposed Infrastructure Related to the Swimming Infrastructure

##### Proposed in the *Jump In Project*

After responding to general questions about the Harbour as a potential swim cite, participants were invited to examine the two swimming infrastructure renderings (Figure 5 shows Design #1 & Figure 6 shows Design #2 in Chapter 3). The participants were asked first what they liked in the images. The responses were wide ranging. In total, 472 comments were collected and were grouped together into categories using an *a posteriori* coding technique (Table 6). Many remarks focused on the security and accessibility of Design # 2, for instance Participant 92 stated the design with the barrier was: “safe and protected”; Participant 63 stated that it is “accessible to all physical abilities”; Participant 192 stated that it was: “more versatile and would attract all ages with inclusion of lanes and swim area”; and finally Participant 294 stated: “I like the access to swimming in the waterfront I live close by so this would give another

option to exercise and have fun (lanes, diving boards), [it’s a better] use of space [and has] changing rooms [and] more public bathrooms. While design 2’s features were popular some people liked the simplicity of Design 1, for instance Participant 326 stated: “less structured”. These feedback responses to participants’ previous answers and yet again reflects solutions to areas of concern like barriers, safety and accessibility. It also reflects again elements of design that Copenhagen’s urban swimming project used: such as socializing and play, safety, accessibility and harbour-scape. Designing something that fits in with the aesthetic and feeling of the waterfront, that is fun, accessible and safe is desirable to the public.

Feedback on Jump In Designs		#	%
1	In water dock barrier from boats, waves etc.	84	18%
2	In water ramp/shallow bottom	39	8%
3	Change rooms, showers & washrooms	39	8%
4	Jump platform	37	8%
5	Swim lanes	33	7%
6	Security/sheltered	33	7%
7	Accessible to all ages & abilities	24	5%
8	Development of # 2	18	4%
9	Love design #2	17	4%
10	Lifeguards	17	4%
11	Buoys	14	3%
12	Simplicity of design # 1	13	3%
13	Other comments	104	22%
Total		472	100%

Table 6 Public Feedback on the Jump In Designs. Other Comments are listed in Appendix E.

Participants were then asked what improvements they would like to see in the designs. In total, 294 comments were collected and were grouped together into categories using an *a posteriori* coding technique (Table 7). *Additional Features* (22%) includes waterslides (8), change rooms/bathrooms/showers (9), lounge chairs (9), more ladders (6), lockers (6), beach/sand (5), shade area/umbrellas (4), a hot tub (3), a sauna (3), multi-level jump platform

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(3), wetsuit rentals (3), saltwater pool (3), food (2), and colorful design (2). Again, these responses are an important part of determining elements needed for a successful pilot. The additional features all include fun components or components that will make the site more attractive to a large group of people. Likewise, once again there is a clear demand for further information about water quality.

<b>Improvements to Jump In Designs</b>		<b>#</b>	<b>%</b>
1	Additional features	66	22%
2	Nothing	52	18%
3	More Info & Visuals	30	10%
4	Barriers & Docks	28	10%
5	More Lifeguards/ Lifeguard Towers	21	7%
6	Accessible / False Bottom	15	5%
7	Bigger	11	4%
8	Different Location	10	3%
9	Free Entry	7	2%
10	Other Comments	54	18%
Total		294	100%

*Table 7 Improvements to Jump In Designs. Other Comments are listed in Appendix E.*

During the survey, participants were shown a table in which they could indicate if they would use certain swimming infrastructure if available in the Halifax Harbour. The responses are displayed in Table 8. Based on items participants stated they would use, ladders (82%) were the most popular item, followed closely by docks (78%) and lifeguards (74%). Swim lanes (32%) were the least popular item followed closely by water toys (41%). Again, these results clearly indicate that entry and exit points, dock barriers, and lifeguards are necessary in a urban swimming design in the Harbour. All three case studies had safe and useable entry and exits points, and Copenhagen and Paris both had dock barriers and lifeguards incorporated.

Items	Would Definitely Use	Might Use	Would Not Use	Don't Know
<b>Swim Lanes</b>	32%	36%	32%	4%
<b>Diving platforms</b>	50%	31%	20%	3%
<b>Wading pools</b>	52%	26%	22%	2%
<b>Docks</b>	78%	15%	7%	2%
<b>Ladders</b>	82%	13%	5%	2%
<b>Swimming Buoys</b>	62%	26%	12%	3%
<b>Water Toys</b>	41%	27%	32%	4%
<b>Lifeguards</b>	74%	17%	9%	3%

Table 8 Swim Infrastructure Features

#### 4.5 Demographic Differences and Similarities

In order to examine the data closer, this section explores how the different demographics surveyed in this study may influence responses. It is important to note that only descriptive statistics were performed on this data, so any demographic differences and/or similarities are not to be considered statistical correlations, and cannot be considered statistically significant. Rather, they are presented to show potential areas to explore with the data in future analyses and for general interest.

First, is there a difference between a participant's residency and their support towards building an urban swimming project in the Harbour, Figure 9 shows the level of agreement for building permanent swimming infrastructure for participants from Halifax, outside Halifax, outside Nova Scotia and outside the Canada. As each group has a different number of respondents, level of agreement was converted into percentage to be able to clearly compare results. While all groups were in agreement, participants from Halifax (70% agree strongly) were in the highest level of agreement, followed by those from outside of Canada (64% agree strongly). Participants from outside Nova Scotia (45% agree strongly) were the least in agreement. While there is some disparity in the responses, generally all four groups were supportive of the project. This shows that support of the project is not specific to locals or tourists but rather is a concept that will be attractive to all. The fact that locals had the highest



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level of agreement demonstrates that this project is viewed favorably by those who live in the area and are therefore the most likely users. The support of tourists also indicates that this project is viewed as a positive for people coming to visit Halifax and therefore could be used as an additional tourist attraction for Canada's Ocean Playground.

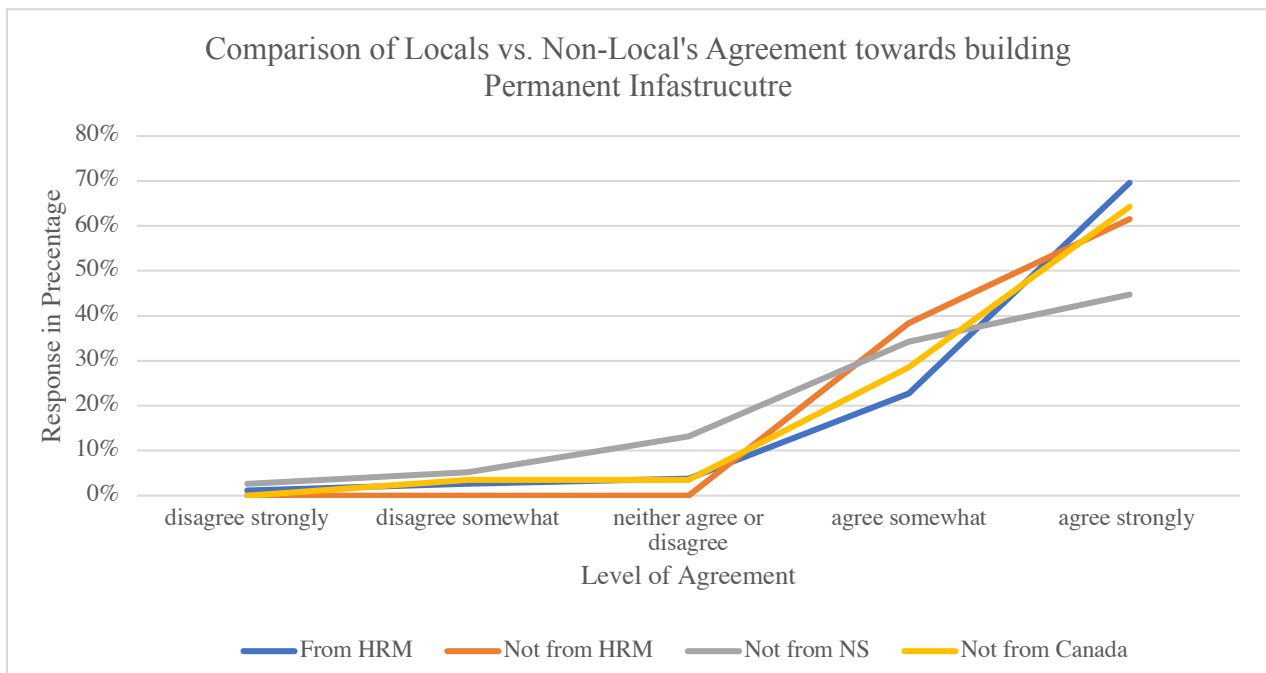


Figure 16 Comparison of Local vs. Non-Local's Agreement

The open-ended responses of why participants supported or did not support the swimming infrastructure helps illustrate these perspectives. As outlined, above, the feedback from residents from Halifax are wide ranging, but overall most strongly supportive responses view the project as a positive initiative for the city and something that residents were looking forward to the possibility to swimming in the Habrou. Participant 125 stated: "This would be an awesome addition to the waterfront, great for locals". Multiple respondents who were in agreement with building urban swimming infrastructure and from outside of Canada, commented that they felt that swimming would be good for tourism, two participants stated that: "We've been craving to swim as tourist" (Participant 64 & 65). Participants from Canada, but outside of

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Nova Scotia, were mostly positive although several were skeptical that noise from a swimming site would detract from the boardwalk. Participant 329 responded that while the concept would allow for “more interaction with water” that they were concerned that “noise manners [and] etiquette would change” the waterfront experience and that “perhaps a different location [would be better]. These comments did not dismiss the project but rather were focused on keeping the waterfront atmosphere pleasant for all. Therefore, designing the structure and placing it in a location that minimizes interference with other waterfront features should be considered.

Figure 10, shows the level of agreement for building permanent swimming infrastructure from participants from the HRM broken into how long they have lived in the area. Individuals who have lived here for 5-10 years (79% agree strongly) and 1-4 years (78% agree strongly) were in the strongest agreement. Individuals who have lived here for 1 month – a year (56% agree strongly) were the least strong in agreement. This is important to the discussion because it shows board general agreement regardless of time spent living in the area. It is also interesting that participants who have experience and memories of the Harbor’s dirty past (any participants who have lived in the area for more than 10 years) are still strongly supportive of the concept. This information could be used to create ambassadors for the program such as long-time residences and newly arrived.

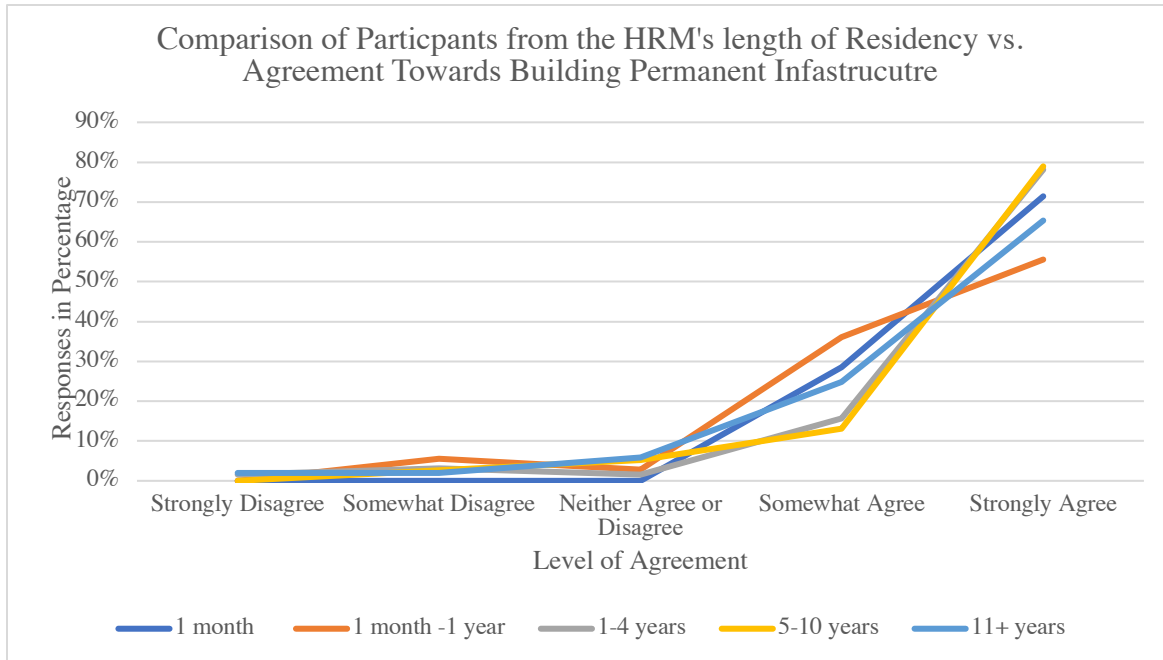


Figure 17 Comparison of Participants from the HRM's length of Residency vs. Agreement

Figure 11, shows the level of agreement for building permanent swimming infrastructure for participant's age. Participants in the age range of 30-39 (79% agree strongly) were in the strongest agreement for supporting the project. Again, this figure shows board general support of the project across age demographics. This is important because it indicates that a project should be designed to accommodate all ages. Likewise, it indicates that marketing should target all ages groups, and that there is potential for to use ambassadors from across these age demographics.

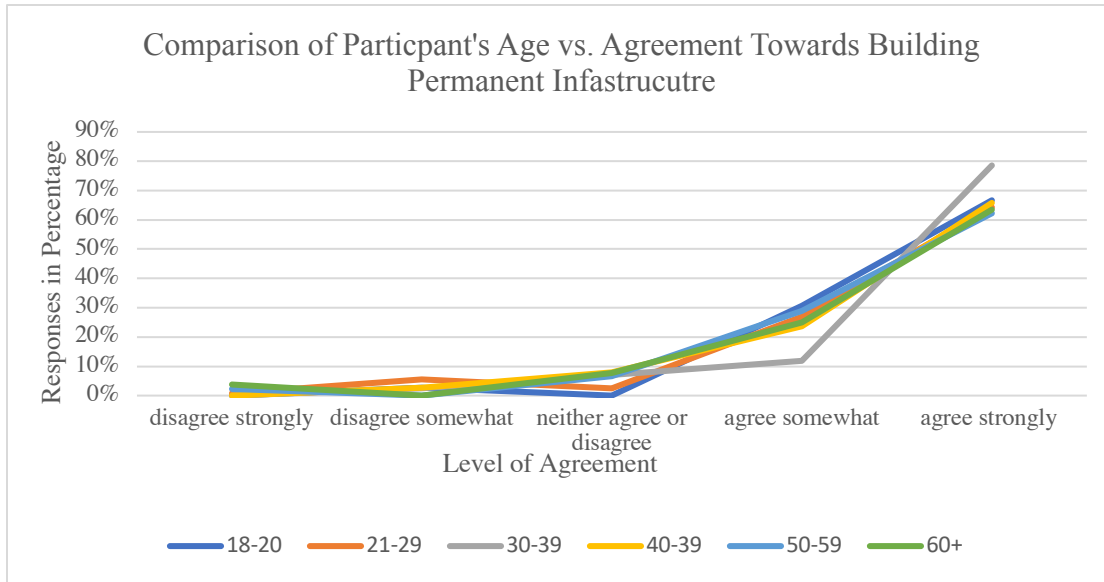


Figure 18 Comparison of Age and Agreement

Figure 12, shows the level of agreement for building permanent swimming infrastructure for male and female participants. There was one participant who chose to not identify their sex, but as there was only one person in that sample they have been removed as an unsubstantial sample. As seen in the sample males (64% agree strongly) and females (67% agree strongly) have similar levels of agreement for building permanent infrastructure. Again, this information shows that there is no strong difference between sex's and support of the project, indicating that marketing should target both demographics.

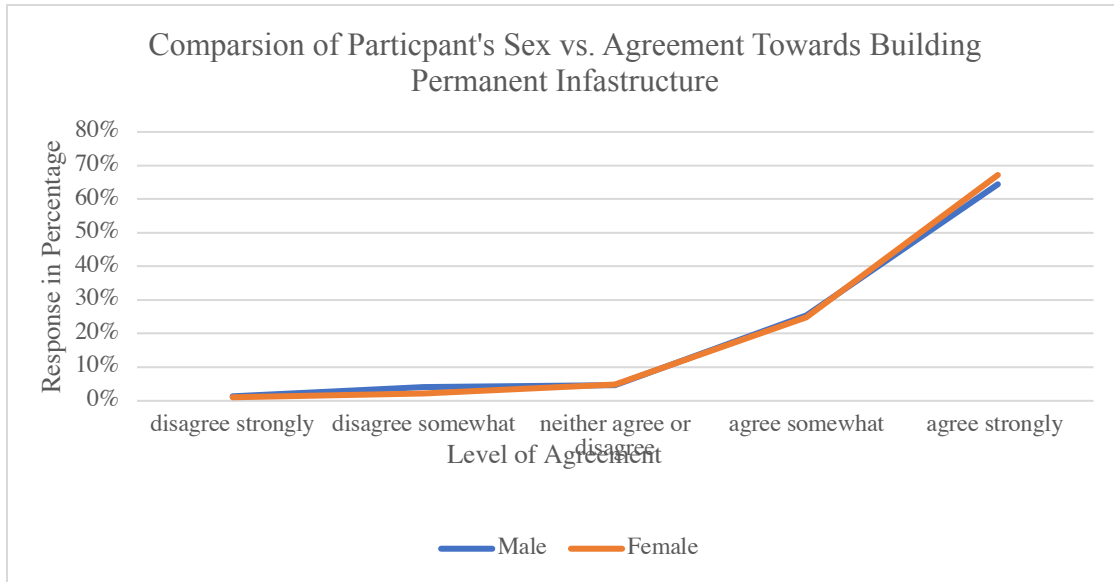


Figure 19 Comparison of Sex and Agreement

#### 4.6 Conclusion

The survey results yield much information of public opinion towards urban swimming in the Halifax Harbour. Combining the qualitative and quantitative results it is possible to map out public opinion, specifically perceived barriers and benefits in order to design successful pilot.

## CHAPTER 5 – CONCLUSION & RECCOMENDATIONS

### 5.0 Introduction

Following a CBSM framework, this thesis asks: what is the public's current perception of the suitability of the Halifax waterfront for swimming, and what is the public's feedback on the proposed infrastructure related to the *Jump In Project*? The responses to these questions aid in determining the social and cultural benefits and barriers perceived by the public on this particular project. Rather than relying on assumptions or haphazardly applying project approaches from other cities, this community-based approach allows for the development of strategies that are effective and can be utilised to create a pilot project in this particular location (Flocks et al., 2001).

The most significant finding of this thesis is that there already is broad support (91%) for an urban swimming project in the Halifax Harbour with permanent infrastructure. This unexpectedly strong finding indicates that a potential urban swimming project is highly likely to be successful. Likewise, the public perception of the Harbour as a safe location for swimming and the perception that the water quality was acceptable for swimming were both moderately good, which is a dramatic shift from Weston's 2010 findings. Prior to this study, there was no data on the public perspective and opinion for the potential of an urban swimming project. This study's results not only demonstrate support for a potential project but also offer valuable insight into the public perceived barriers (water quality, boat traffic, natural concerns and emergency supports) and benefits (good for the community, accessible and central, positive for tourism, fun and healthy).

This study allows for the development of a project that has the potential to create a new urban blue space in Halifax. As identified in Chapter 1, urban blue space provides opportunity

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for exposure to nature leading to positive human health and wellbeing and more pro-environmental behaviours (Völker & Kistemann, 2011; WHO, 2016; APHA, 2013; Chawla, 2006; Kollmuss & Agyeman, 2002). Using the results of this study it is possible to address the local public's concerns and create an urban swimming space that fits Halifax's needs.

### 5.1 Recommendations for Future Scholarly Research

This study opened up a lot further questions that offer the opportunity for further scholars. First, while this study approached data analysis using descriptive statistics, it is valuable to consider other potentially useful analyses that could be applied in future studies including inferential statistics and regression analysis to determine whether there is statistical significance when breaking the question into various demographic categories. While the descriptive statistic method used allows for a broad analysis of the questions, a regression analysis could better examine potential relationships among the various variables. Second, it would be interesting to gather and examine the online and media response to the Jump In Project which was not achieved in this study. While this study focused on the responses of the participants, there was much conversation online about the project. It would be interesting to analyse this data and compare how the public responded in person with the survey and online.

This study also opened up other areas of interest for potential further studies including research on the impact of visuals on public response. This study used architectural renderings to communicate potential ideas for an urban swimming project. Future research could focus on if positive images of the project impacted public perceptions? Would the participants have responded differently if there had not been visuals? Another study might be to examine perceived barriers against real barriers, that is barriers that people think would stop them from doing an activity rather than barriers that actually stop a person. Are the responses given by the

public actual barriers? What other factors influence human behavior? Public advocacy and change making projects that aim to shift public perceptions have many factors that contribute to their success. This study was only able to capture a small aspect of a much larger question.

## 5.2 Recommendations for an HRM Swimming Infrastructure Project

As discussed in Chapter 1, under the CBSM approach, once the barriers and benefits have been identified, effective strategies can be developed for a potential pilot project. Based on the survey results the following strategies are important for a successful pilot:

### 1) Water Quality Tests

Conduct regular water quality testing which encompasses testing for bacteria (like endo e coli) as well as for other particles like fuel, and chemicals which can be collected through Semipermeable Membrane Devices (SPMDs) and Polar Organic Chemical Integrative Sampler (POCIS) (Alvarez, 2010). Other information could include tides, currents, waves, recent rain fall stats, information on other cities with urban swimming, and comparison to other local used swim sites, likes Long and Chocolate Lake.

### 2) Sharing Water Quality Information with the Public

Water quality data should be shared in a transparent and easy to understand manner. The public should be aware of how the water quality testing is being conducted and who is conducting the tests. This data should be posted at the swim site. A marketing campaign would also be beneficial to share findings of water quality as there seems to be much uncertainty, skepticism and/or misinformation surrounding the water quality.

### 3) Design of Structure – Safety



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Safety and security of the design were identified as important elements. This should include a solid barrier for protection from boats and waves. A barrier would also allow for the ability of additional features like a wildlife net or filter mesh being incorporated if necessary.

#### 4) Design of Structure – Accessibility

The design of the structure should be mindful of being accessible for all ages and abilities. These should include features such as a ramp into the water, shallow areas for children and weak swimmers, and safe exits and entrances.

#### 5) Design of Structure – Facilities

The addition of facilities such as change rooms, showers, lockers and washroom were popular. Warm showers would be ideal but not necessary. Likewise, lockers would allow users to secure their personal possessions while swimming.

#### 6) Design of Structure – Fun

The jump platform was a popular feature, likewise fun was a well-used word to describe the designs. As such it is useful to be mindful of incorporating fun elements into the design. Beyond the jump platform, this could include some of the additional features collected like a waterslide, hot tub, sauna, beach elements, and lounge chairs and shade umbrellas.

#### 7) Lifeguards

Safety is not only important in design but also in management. Onsite lifeguards during swimming will not only add to a sense of an official space but also security for the public. Likewise, general night time surveillance is recommended.

Following the CBSM approach this study recommends that a pilot program using these recommendations be implemented at a small scale and evaluated before broadening to a larger implementation (McKenzie-Mohr, 2011).

### 5.3 Conclusion

This study demonstrates that constructing an urban swimming structure in the Halifax Harbour is broadly supported by the public. The CBSM framework allows for the determination of barriers and benefits outlined in this chapter for design elements that will create a project that will be embraced and used by the local population. In using this data to help with the design, there is a higher likelihood of success. For example, this study has clearly indicated that a major barrier is the water quality and that the public wants access to water quality information. Therefore, information should not only be posted but there should also potentially be a marketing campaign about the water quality. Failing to do so may deter the public from embracing the project. Likewise, this study has identified that a major benefit is accessibility, meaning that the design should make the project accessible to users across ages and swimming abilities, such as including ramps and shallow areas. Failing to do so will deter some users from using the space. Following the CBSM framework, this study identified barriers and benefits and developed strategies. The next steps forward are piloting a program at a small scale and evaluating it before broadening to a larger implementation.

## Works Cited

- Ahluwalia, R. (2017, June 02). Paris canal is officially clean enough to swim in this summer. Retrieved October 25, 2017, from <http://www.independent.co.uk/travel/news-and-advice/paris-canal-plages-swimming-pool-summer-bassin-de-la-villette-st-martin-a7769051.html>
- Alvarez, D. A. (2010). Guidelines for the use of the semipermeable membrane device (SPMD) and the polar organic chemical integrative sampler (POCIS) in environmental monitoring studies (No. 1-D4). US Geological Survey.
- AMEC Earth & Environment. (2011) Halifax Harbour Water Quality Monitoring Program Final Summary Report. Retrieved from <https://www.halifax.ca/harboursol/documents/HHWQMPFinalSummaryReport.pdf>
- American Public Health Association (APHA). (2013, November 5). Improving Health and Wellness through Access to Nature. Retrieved September 24, 2017, from <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policydatabase/2014/07/08/09/18/improving-health-and-wellness-through-access-to-nature>
- BIG JDS. (2009, January 05). Copenhagen Harbour Bath. Retrieved April 14, 2018, from <https://www.archdaily.com/11216/copenhagen-harbour-bath-plot>
- Buckley, D.E., Fader, G.B.J. 1995. Environmental Geology of Halifax Harbour, Nova Scotia. *Geoscience Canada* 22: 152-171.
- Buckley, D.E., Winters, G.V. 1992. Geochemical characteristics of contaminated surficial sediments in Halifax Harbour: impact of waste discharge. *Canadian Journal of Earth Sciences* 29: 2617-2639.
- Burgess, G. H. (1990). Shark attack and the International shark attack file. *Discovering sharks. Highlands: American Littoral Society*, 101-105.
- Brigadoon. (2017). BrigaSwim. Retrieved April 14, 2018, from <http://brigadoonvillage.org/brigaswim/>
- Byers, B. (2011, June 21). Drowning Risks High for Children Under Five and New Canadians. Retrieved from [https://lifesaving.org/pdf\\_files/92MediaRelease\\_June\\_21,\\_2011.pdf](https://lifesaving.org/pdf_files/92MediaRelease_June_21,_2011.pdf)
- CBC News. (2010, September 01). Halifax mayor back for harbour swim. Retrieved April 14, 2018, from <http://www.cbc.ca/news/canada/nova-scotia/halifax-mayor-back-for-harbour-swim-1.964697>
- Chawla, L. (2006). Learning to love the natural world enough to protect it.

- Davie, E. (2017, August 27). Dalhousie student wants swimming spot in Halifax Harbour | CBC News. Retrieved April 14, 2018, from <http://www.cbc.ca/news/canada/nova-scotia/halifax-habour-swimming-spot-project-dalhousie-student-1.4264333>
- Flocks, J., Clarke, L., Albrecht, S., Bryant, C., Monaghan, P., & Baker, H. (2001). Implementing a Community-Based Social Marketing Project to Improve Agricultural Worker Health. *Environmental Health Perspectives*, 109, 461-468.
- Jensen, J., Lauridsen, E., Fratini, C., & Hoffmann, B. (2015). Harbour Bathing and the Urban Transition of Water in Copenhagen: Junctions, Mediators, and Urban Navigations. *Environment and Planning A*, 47(3), 554-570
- Halifax Harbour Cleanup Project (HHCP). (1993). Halifax Harbour Cleanup Project - Report of the Federal-Provincial Environmental Assessment Review Panel for the Halifax Dartmouth Metropolitan Wastewater Management System. Retrieved September 20<sup>th</sup>, 2017 from
- (HHSES) HRM. (2001). Halifax Harbour Solution Environmental Screening. Retrieved September 20<sup>th</sup>, 2017 from [http://legacycontent.halifax.ca/harboursol/documents/ea\\_screening\\_report\\_001.pdf](http://legacycontent.halifax.ca/harboursol/documents/ea_screening_report_001.pdf)
- (HSPSRFR) HRM. (2001). Harbour Solutions Project Survey of Residents Final Report. Retrieved September 20<sup>th</sup>, 2017 from [http://legacycontent.halifax.ca/harboursol/documents/public\\_survey\\_2001.pdf](http://legacycontent.halifax.ca/harboursol/documents/public_survey_2001.pdf)
- Halifax Regional Municipality HRM (1996). Halifax Harbour Solutions Symposium. Retrieved October 20, 2017, from [http://legacycontent.halifax.ca/harboursol/documents/sympproc\\_001.pdf](http://legacycontent.halifax.ca/harboursol/documents/sympproc_001.pdf)
- Halifax Regional Municipality (HRM). (2017, June 26). Harbour Swimming. Retrieved April 14, 2018, from <https://www.halifax.ca/abouthalifax/municipalarchives/exhibits/swimming-halifax-harbour>
- Kosslyn, S., Thompson, William L., & Ganis, Giorgio. (2006). *The case for mental imagery* (Oxford psychology series no. 39). New York ; Oxford: Oxford University Press.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental education research*, 8(3), 239-260.
- Kylander, N., & Spring, C. S. (2012, Spring). The Role of Brand in the Nonprofit Sector (SSIR). Retrieved November 25, 2017, from [https://ssir.org/articles/entry/the\\_role\\_of\\_brand\\_in\\_the\\_nonprofit\\_sector](https://ssir.org/articles/entry/the_role_of_brand_in_the_nonprofit_sector)

- Lamson, C., Dalhousie University. School for Resource Environmental Studies, & Canadian Electronic Library. (1994). *The sea has many voices : Oceans policy for a complex world* (DesLibris. Books collection). Montreal, Que.: McGill-Queen's University Press.
- MacDonald, M. (2017, September 4). 10 years after harbour cleanup, can Haligonians be coaxed into the water? *The Chronicle Herald* , p. 1. Retrieved November 29, 2017, from <http://thechronicleherald.ca/metro/1500123-10-years-after-harbour-cleanup-can-haligonians-be-coaxed-into-the-water>
- Malmö Stad. (n.d.). Western Harbour. Retrieved October 25, 2017, from <http://malmo.se/Nice-to-know-about-Malmo/Technical-visits/Theme-Sustainable-City/Sustainable-Urban-Development/Western-Harbour.html>
- Malsch, E. (2017, June 14). Et la baignade en plein coeur de Paris devint une réalité. Retrieved January 18, 2018, from <https://www.urbanews.fr/2017/06/01/52146-et-la-baignade-en-plein-coeur-de-paris-devint-une-realite/>
- McKenzie-Mohr, D. (2011). *Fostering sustainable behaviour: an introduction to community-based social marketing*. Philadelphia, PA: New Society.
- McKnight, H. (2005). *Cruising French Waterways*. 4th ed. 20(4), N/a.
- Ollivier, C. (2017, June 20) "Nager dans la Seine, ce n'est pas impossible". Retrieved October 29, 2017. <http://www.lejdd.fr/JDD-Paris/Nager-dans-la-Seine-ce-n-est-pas-impossible-749583>.
- O'Sullivan, F. (2016, May 10). Paris Wants the River Seine to Be Open for Swimming by 2024. Retrieved October 23, 2017, from <https://www.citylab.com/solutions/2016/05/paris-wants-to-make-the-seine-swimmable-by-2024/482031/>
- O'Sullivan, F. (2017, July 20). You Can Swim in the Canals of Paris Again. Retrieved October 01, 2017, from <https://www.citylab.com/environment/2017/07/lets-all-swim-in-the-once-filthy-canals-of-paris/534141/>
- Palys, T. S., & Atchison, C. (2014). *Research decisions: quantitative, qualitative, and mixed method approaches*. Toronto, Ont.: Nelson Education.
- PLANifax. "Jump In." *YouTube*, uploaded by PLANifax, 27 August 2017, <https://www.youtube.com/watch?v=EBVyYqZWX9Q>.
- Robinson, B.J., Hui, J.P.M., Soo, E.C., Hellou, J. 2009. Estrogenic Compounds in Seawater and Sediment from Halifax Harbour, Nova Scotia, Canada. *Environmental Toxicology and Chemistry* 28: 18-25.
- Samuel, H. (2015, July 09). Parisians will be swimming in the Seine by 2024, promises French capital's mayor. Retrieved January 18, 2018, from <http://www.telegraph.co.uk/news>

- /worldnews/europe/france/11730075/Parisians-will-be-swimming-in-the-Seine-by-2024-promises-French-capitals-mayor.html
- Shanahan, D. F., Lin, B. B., Bush, R., Gaston, K. J., Dean, J. H., Barber, E., & Fuller, R. A. (2015). Toward Improved Public Health Outcomes From Urban Nature. *American Journal of Public Health, 105*(3), 470–477. <http://doi.org/10.2105/AJPH.2014.302324>
- Sire, A. (2017, August 05). Swimmers flock to a Paris canal as the city cleans up its waterways. Retrieved October 25, 2017, from <https://www.pri.org/stories/2017-08-07/swimmers-flock-paris-canal-city-cleans-its-waterways>
- Statistics Canada. (2018, March 20). Census Profile, 2016 Census Halifax, Regional municipality [Census subdivision], Nova Scotia and Canada [Country]. Retrieved April 14, 2018, from <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CSD&Geo2=PR&Code2=01&Data=Count&SearchType=Begins&SearchPR=01&TABID=1&B1=All&Code1=1209034&SearchText=halifax>
- Taplin, J. (2010, July 05). Quiet weekend for reopened beaches. Retrieved October 29, 2017, from <https://web.archive.org/web/20100707100944/http://www.metronews.ca/halifax/local/article/570715--quiet-weekend-for-reopened-beaches>
- Tykesson, Tyke. “Public Waterfronts” Art of City Building. Paul O’Regan Hall, Halifax. 23 October. 2017. Lecture.
- Visit Copenhagen. (n.d.). Islands Brygge Harbour Bath. Retrieved April 14, 2018, from <https://www.visitcopenhagen.com/copenhagen/islands-brygge-harbour-bath-gdk482346>
- Völker, Sebastian, and Thomas Kistemann. "The impact of blue space on human health and well-being—Salutogenetic health effects of inland surface waters: A review." *International journal of hygiene and environmental health* 214.6 (2011): 449-460.
- Weston, S., & Saint Mary's University. Department of Geography. (2010). *Public perception of Water Quality in Halifax Harbour*. Halifax, N.S.: Saint Mary's University.
- White, S. (2017). Halifax Harbour Swim. Retrieved April 14, 2018, from <https://www.unitedwayhalifax.ca/campaign/harbour-swim.html>
- Windsor, H. (2016, June 02). Swimming in Halifax Harbour. Retrieved September 27, 2017, from <https://www.thecoast.ca/halifax/swimming-in-halifax-harbour/Content?oid=5427559>
- World Health Organization (WHO). (2006). Urban Green Spaces and Health. Retrieved September 28, 2017, from [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0005/321971/Urban-green-spaces-and-health-review-evidence.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0005/321971/Urban-green-spaces-and-health-review-evidence.pdf?ua=1)

## Appendix A

### Jump In Survey Script

Date:

Hi! I'm conducting research to determine the public's current perception of the suitability of the Halifax waterfront for swimming, and to gain feedback on the proposed Jump In Project. I'm wondering if I could ask you some questions (it will take 5-10 minutes).

I am conducting this research project as part of my undergraduate Honors Thesis in Environment, Sustainability and Society at Dalhousie University, and the results will be given to the Waterfront Development Corporation and Halifax Regional Municipality for future planning purposes.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized. Any answers you give will be totally anonymous and all original data will be destroyed two years after the study is complete.

If you have any questions about the research study, please contact Anika Riopel at [anika.riopel@dal.ca](mailto:anika.riopel@dal.ca) or her Supervisor Dr. Tarah Wright ([Tarah.wright@dal.ca](mailto:Tarah.wright@dal.ca)). This research has been reviewed according to Dalhousie University Research Ethic Board.

1. Do you agree to take part in the study now?

Agree

Disagree

2. What age range best describes you

18 - 20

21-29

30-39

40-49

50-59

60+

3. What is your sex

Female

Male

Intersex

Prefer to not respond

4. Are you a resident of Halifax?

Yes (go to 3a)

No (go to 3 b)

5.a. How long have you lived in Halifax?

Less than a month

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Between one month and a year

Between 1-4 years

Between 5-10 years

11 years or more

5.b. Which reflects your residency best

I live in Nova Scotia, but not HRM

I live in Canada, but from another province or territory

I live in a country other than Canada

6. Which of the options below best describes your swimming ability (choose 1):

I am a strong swimmer

I am a moderately good swimmer

I am a weak swimmer

I do not know how to swim

Prefer not to answer

7. On a scale of 1 - 6 how safe do you think the Harbour is (for swimming)?

Completely unsafe    1    2    3    4    5    6    Completely safe

8. What, if any, are your concerns for swimming safety in Halifax Harbour?

9. What would make you confident that the harbour is safe for swimming?

10. On a scale of 1-6 how clean do you think the water quality of the Harbour is for swimming?

Completely dirty    1    2    3    4    5    6    Completely clean

11. What, if any, are your concerns for the cleanliness of Halifax Harbour?

12. Which of the following would you use if available if you were swimming in the Halifax Harbour (check all that apply):



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Items	Would Definitely Use (x)	Might Use (x)	Would Not Use (x)	Don't Know (x)
Swim Lanes				
Diving platforms				
Wading pools				
Docks				
Ladders				
Swimming Buoys				
Water Toys				
Lifeguards				
Other				

Now I'm going to ask you questions about the specific visuals of the Jump In proposal .

13. What do you like about the Jump In pictures that you see today (i.e. signs, staff, etc.)?

14. What would you improve?

15. To what degree do you agree with the following statement: I support the building of permanent infrastructure (i.e. like this Jump In site) on the Halifax Waterfront?

- disagree strongly
- disagree somewhat
- neither agree nor disagree
- agree somewhat
- agree strongly

Please feel free to explain your answer:

16. Do you consent that your responses to these questions will be used for research?

Agree  
Disagree

## Appendix B

### Ethics Approval Letter



**Social Sciences & Humanities Research Ethics Board  
Letter of Approval**

September 01, 2017

Anika Riopel

Dear Anika,

**REB #:** 2017-4290  
**Project Title:** Jump In Pilot Project  
**Effective Date:** September 01, 2017  
**Expiry Date:** September 01, 2018

The Social Sciences & Humanities Research Ethics Board has reviewed your application for research involving humans and found the proposed research to be in accordance with the Tri-Council Policy Statement on *Ethical Conduct for Research Involving Humans*. This approval will be in effect for 12 months as indicated above. This approval is subject to the conditions listed below which constitute your on-going responsibilities with respect to the ethical conduct of this research.

Sincerely,

A handwritten signature in blue ink, appearing to read "Karen Beazley". The signature is written in a cursive style and is positioned above the printed name.

Dr. Karen Beazley, Chair

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## Appendix C

### In-Person Interviewer Training Overview

Thank you for volunteering your time to be a Research Assistant (herein referred to as RA) with the Jump In Visualization Pilot. As an RA, you will be conducting verbal survey with the public at Bishop's Landing between Sept 6<sup>th</sup>- 10<sup>th</sup> 2017.

The survey aims to answer the research question: What is the public's current perception of the suitability of the Halifax waterfront for swimming, and to what is the public's feedback on the proposed Jump In project?

As an RA it is your job to interview and record the respondents' answers without influencing them. Many people pick up visual cues such as body language, vocal intonation and other influencing "signals" that you may give off based on your opinion. As an RA you need to be neutral in your questioning and receiving. **You may not engage in conversations about your opinion.**

As a researcher with Jump In, I will:

- Read the full disclaimer of consent to respondents
- Not record any identify information or share respondents' answers with others
- Not give your opinion about the project, swimming or the water quality
- You may answer specific questions about what's in the Jump In images

In signing you are agreeing that you:

- 1) Understand your role as a RA with Jump In
- 2) Have been trained to conduct in-person interviews

Name

Date

Signature

## Appendix D

Table of Participants' Explanation for Disagreement

Level of Agreement	Explanation for Disagreeing
Strongly disagree	The Harbour walk would be jeopardized - by that I mean that the noise level would ruin it for others. Especially the restaurants close by.
Strongly disagree	There are other places to swim Habrouir. Too much money - Too dangerous
Somewhat disagree	Even though I know it is clean, I am repulsed after seeing poop as a kid floating in the same area, I would not use it. Sorry. It's a cool idea though.
Somewhat disagree	I believe the areas could be put to better use than swimming. I also have changing dressing concerns.
Somewhat disagree	I like the idea but you need extensive + ongoing testing of the water before I'd use it
Somewhat disagree	I think it will be hard to gain and maintain support and funding
Somewhat disagree	I think other options might encourage swimming more elsewhere and other projects would be better to draw in visitors /users.
Somewhat disagree	Not fixed/permanent, put it in another place
Somewhat disagree	Perhaps more interaction with water, more opportunities to be closer; noise manners; etiquette would change; perhaps a different location
Somewhat disagree	Risk management - Not a good idea.
Neither agree nor disagree	I like the idea and research not sure about location
Neither agree nor disagree	I live in Hubbards next to the beach so I tend to swim at that location
Neither agree nor disagree	Just wait and see how it goes.
Neither agree nor disagree	n/a
Neither agree nor disagree	n/a
Neither agree nor disagree	Not a resident - No weight in.
Neither agree nor disagree	Will it add or take away from Harbour front experience?
Neither agree nor disagree	Neither agree nor disagree

Table 9 Explanations for Disagreement

**Appendix E**

Elaborations of Other Concerns

Table 2 Explanation of Level of Approval

<b>Other Concerns</b>	<b>36</b>	<b>11%</b>
Improve perception of water quality	6	2%
Free	5	2%
Live elsewhere	4	1%
Not permanent	3	1%
Education	3	1%
Clean up	3	1%
Additional features	2	1%
Blend with nature	1	0%
Too Expensive	1	0%
Warmer water	1	0%
Oysters	1	0%
Too Small	1	0%
Prefer 2	1	0%
Prefer 1	1	0%
Infrastructure will equal buy in	1	0%
Swim lanes	1	0%
Don't lose boat space	1	0%

Table 3 Concern for Safety

<b>Other</b>	<b>63</b>	<b>11%</b>
Garbage (litter, debris, from boardwalk)	14	2%
Depth	13	2%
Bottom/hazards/sharp objects	8	1%
Sediment	8	1%
Location	4	1%
Unsure	4	1%
Construction	3	1%
Entanglement	2	0%
Ecosystem	2	0%
Interference with the economic activity	2	0%
People told me it wasn't safe	1	0%
Can't swim	1	0%
Crowds	1	0%

Table 9 Concerns for Water Quality

<b>Others</b>	<b>93</b>	<b>22%</b>
Lack of information / misinformation	11	3%
Lack of priority for clean up	11	3%
History	10	2%
Sediment	9	2%
Cruise ships	8	2%
Unsure	7	2%
Barnacles/jelly fish/seaweed	7	2%
People	5	1%
Illness from water	5	1%
Lifeguards	2	0%
Improvements for wildlife	1	0%
Invasive species	1	0%
Ecosystems	1	0%
Fees	1	0%
No dumping	1	0%

Table 10 Public Feedback on the Jump In Designs

<b>Other Comments</b>	<b>104</b>	<b>22%</b>
Access	11	2%
Negative	8	2%
General positive	11	2%
Buoys	7	1%
Open to the ocean	7	1%
Pilot it	7	1%
Different location	10	2%
Swim area	5	1%
Like raft	7	1%
Negative	8	2%
Make it permanent	3	1%
Ladders	4	1%
Safe	2	0%
Perspective	2	0%
Natural	2	0%
View	2	0%
Bigger	2	0%
Tourists	1	0%

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Temp	1	0%
Deck	1	0%
Boats	1	0%
Ecosystem	1	0%
Cheap	1	0%
Signs	0	0%

Table 11 Improvements to Jump In Designs

<b>Other</b>	<b>54</b>	<b>18%</b>
Cleanup	6	2%
More recreation	6	2%
Good	5	2%
Exit	5	2%
Advertising	5	2%
Temperature of water	4	1%
Platform	3	1%
Night regulation	3	1%
No boats	3	1%
Clean up	2	1%
Natural aesthetic	2	1%
Conservation incorporation	2	1%
Separate from boardwalk	1	0%
Wet kids	1	0%
Barnacles	1	0%
Better tent	1	0%
More infrastructure	1	0%
Net	1	0%
Filter water	1	0%
More government	1	0%