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# **Park Agency Social Media Communication During the COVID-19 Crisis**

by

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Bachelor of Arts, Wilfrid Laurier University, 2019

THESIS

Submitted to the Department of Geography and Environmental Studies

in partial fulfillment of the requirements

for the Master of Environmental Studies degree

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## Abstract

The COVID-19 pandemic has affected all industries and organizations, including park agencies. There is a lack of research on how park agencies utilize Twitter during times of crisis, specifically during the COVID-19 pandemic. How park agencies communicate with the public and how they use their social media has not been extensively studied. In addition, the coronavirus pandemic is a novel management issue for these agencies, and there has been no empirical analysis in the ways in which information is being communicated to the public or how that information is being perceived.

This study aims to better understand park agency response to COVID-19 through a literature review, to explore how social media is used as communication tool related to COVID-19 by park agencies, to use NVivo and NCapture software to assess the content of park agency tweets, and to provide recommendations for park agencies in future times of crisis to enhance communication effectiveness using social media.

Qualitative analysis methods are used, guided by grounded theory and content analysis. NVivo and NCapture software was utilized to gather 8045 tweets from 21 Canadian park agencies, individual national parks, and individual provincial parks. In addition, the United States (U.S.) National Park Service (NPS) was also examined to compare social media response from both Canadian and American national park agencies. Those tweets were then coded into three major categories: pre COVID-19, COVID-19, and non COVID-19. Coding the tweets and organizing them thematically through inductive reasoning was done within the software. Chi-squared analyses were conducted to determine if there were any statistically significant differences between the various agencies and themes found within the data.

The key findings were that messaging frequency regarding COVID-19 was reduced after the summer months due to peak season ending, even though the pandemic was in full swing and the number of cases was rising. There was a statistically significant difference found between the themes tweeted about by Parks Canada and the U.S. NPS in terms of frequency. Geographically, there was a statistically significant difference between themes tweeted about by various Canadian national and provincial parks, referencing the lack of standardized messaging and cohesiveness when it comes to social media content across the country. In addition, there was a lack of promotion of virtual programming from Canadian individual national and provincial parks, contrary to the U.S. NPS.

From this study, it can be concluded that parks and protected area agencies should work closer with other departments, such as the health department, to potentially get the necessary messaging across. It is also recommended that capacity in parks needs to increase through virtual programming, as

there have been successful cases of this already in other industries such as zoos and mental health institutes. Public access to parks and protected areas provides mental and physical health benefits, and virtual engagements can provide an alternative to this throughout the COVID-19 pandemic and future crises. Finally, parks and protected area agencies can benefit from a more standardized social media strategy, especially during a crisis, to better inform and update the public.

**Keywords:** parks and protected areas, crisis communication, social media, risk management, park agency, COVID-19, coronavirus

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Over the years, I have learned that life is not linear and that there will be many unexpected triumphs and challenges along the way. I believe that everyone that comes into your life has a purpose in shaping who you are and what you are meant to do. I am forever grateful to all those that have positively impacted me in my academic career, and I am pleased that this Thesis has been a result of those interactions. Thank you.

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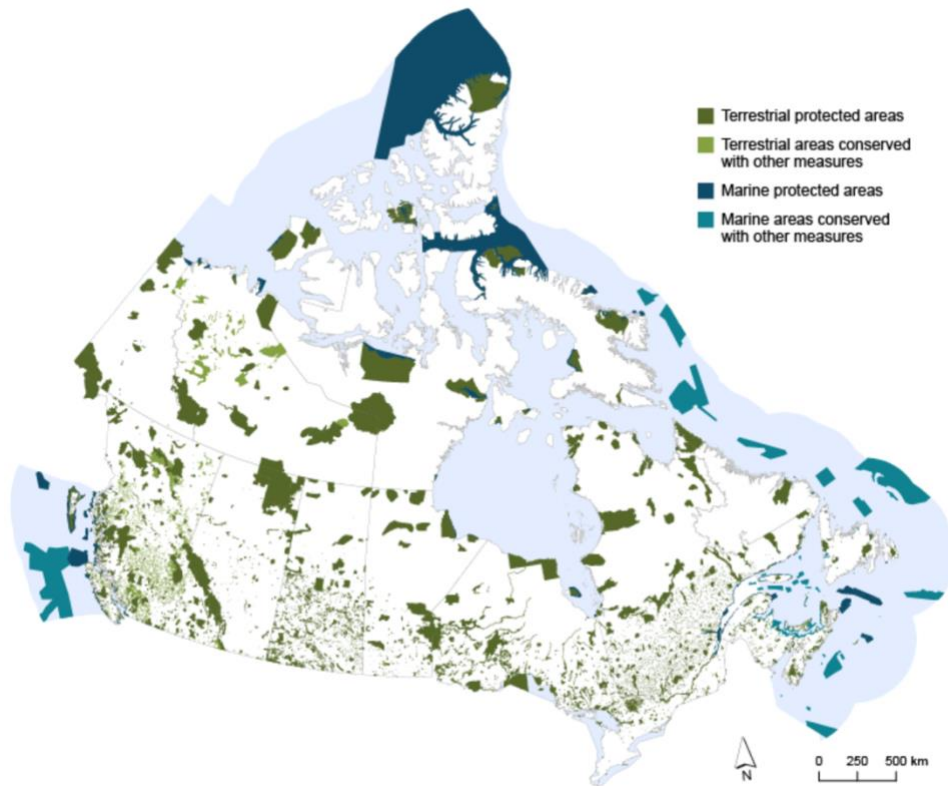
## CHAPTER 1: INTRODUCTION

On January 30, 2020, the World Health Organisation (WHO) declared a global health emergency based on the rapid spread of the novel coronavirus SARS-CoV-2, now commonly referred to as COVID-19 (Velavan & Meyer, 2020). Emerging in Wuhan, China, COVID-19 is a zoonotic disease with a low to moderate mortality rate spread from person to person through droplet or contact transmission (Wu, Chen & Chan, 2020).

The coronavirus pandemic resulted in an unprecedented management issue for Canada's many and diverse parks and protected areas agencies, including outright closures at the beginning of the pandemic, to significant restrictions and mitigation actions that remain in place to this day to protect the health and safety of the many millions of people who visit these areas annually (Hockings et al., 2020). On the one hand, it was assumed that the use of these spaces by large numbers of people may increase the risk of the virus spreading among the population (Freeman & Eykelbosh, 2020). On the other, these closures restrict access to important spaces that provide for healthy outdoor activities and associated stress relief and prevent people from receiving the many health and well-being benefits that these areas provide. There is also some evidence to indicate that such closures result in individuals attempting to access more congested and risky spaces (Freeman & Eykelbosh, 2020). Indeed, the coronavirus pandemic has resulted in a number of unprecedented challenges for both visitors to parks, and those responsible for their planning and management.

Canada has a wealth of parks and other forms of protected areas, including national parks, provincial parks, conservation reserves, and many other designations (Dearden, Rollins & Needham, 2015), as seen in Figure 1. As of 2019, Canada had 12.1% of its terrestrial area conserved and 13.8% of its marine territory conserved (ECCC, 2019).

Figure 1. Canada's conserved areas (ECCC, 2019).



These areas provide important spaces for recreation and leisure, with 15.9 million people visiting national parks and 10 million to Ontario provincial parks in 2018-2019 (Government of Canada, 2019). These areas are often specifically legislated to provide opportunities for recreation and enjoyment. For example, Ontario's *Provincial Parks and Conservation Reserves Act* (2006), states that one of the objectives of provincial parks is to: “*To provide opportunities for ecologically sustainable outdoor recreation opportunities and encourage associated economic benefits*” (Government of Ontario, 2006). Recently, there has been growing recognition of the health and well-being benefits that these areas provide to visitors (Lemieux et al, 2016). The experiences provided by these areas have been shown to have important physical, psychological, and social benefits. Physical benefits can include lowered systolic blood pressure for those that immerse themselves in nature (Bell, Wilson, & Lui, 2008), psychological benefits can include a reduction in stress levels (Buckley et al., 2019; Pretty et al., 2005), and social benefits include strengthening community relationships through nature creating more caring and positive people (Weinstein, Przybylski, & Ryan, 2009).

A recent poll by Ipsos finds that many Canadians that are weary of the pandemic are turning to outdoor recreation, especially in nature, during this difficult time (Dhaliwal, 2021). Results show that 94% of participants recognize that nature plays a vital role in reducing their stress or anxiety, and that there was a greater awareness of nature in their lives (Dhaliwal, 2021). Further, more than 85% of people surveyed reveal that having access to nature has helped to maintain their mental health throughout the pandemic (Nature Conservancy of Canada, 2021). This poll shows the important relationship between nature and health, and how nature has become a priority in this time (Dhaliwal, 2021). There was an increased use of trails and parks, which means an increase in visitation (Nature Conservancy of Canada, 2021). From a management perspective, there would have had to be adjustments made to account for this influx of people, especially when there were already changes put in place to accommodate for COVID-19 regulations. The results from this poll can help aid park management if a similar crisis occurs again in the future.

Crises, such as the COVID-19 pandemic, can occur at any time and organisations need to be prepared to know how to deal with it through various communication methods. Crisis communication can be broadly defined as *“the collection, processing, and dissemination of information required to address a crisis situation”* (Hinga, 2020). In addition, it refers to *“the communication between an organization and the stakeholders along with the public before, during and after the crisis”* (Hinga, 2020). The goal of crisis communications is to send the right message to the right people, and social media enables a rapid exchange of information (Graham, Avery & Park, 2015).

Crisis communication through social media is important because it will determine the organization’s stand during the crisis, as well as help build its reputation (Hinga, 2020). In addition, social media offers rapid, direct communication of updates, as well as support for those needing help or information (Cooper, 2020). If the communication is accurate and transparent, it can build trust between the public and the organization (Hinga, 2020). During this pandemic, the public is looking to organizations like park agencies for direction, and crisis communication through social media is important to these agencies during this time (Tran & Bar-Tur, 2020).

Social media represents many different forms of consumer-generated content including social networks, blogs, virtual communities, and media files shared on sites like Flickr and Youtube (Xiang & Gretzel, 2010). It is defined as, *“forms of electronic communication (such as websites for social*

*networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos)” (Merriam-Webster, 2020).*

Social media can have many advantages for park agencies. In general, social media promotes viral growth for any business through marketing (Waller, 2010). It also creates various opportunities for potential customers to learn more about the organization’s goods and services (Waller, 2010). Park agencies can use social media to provide information about park operations, activities, and events (National Recreation and Park Association, 2012). During a crisis, information such as changes in park operations, cancellations, closures, and other news can be communicated to the public through social media platforms such as Twitter.

### **1.1 Research Gap & Objectives**

This thesis offers a review of social media use of park agencies in response to COVID-19, specifically through the platform of Twitter. There is a lack of research on how park agencies utilize Twitter during times of crisis, specifically during COVID-19. In general, there has been little research undertaken on how park agencies communicate with the public and how they use their social media. In addition, the coronavirus pandemic is a novel management issue for these agencies, and there has been no empirical analysis in the ways in which information is being communicated to the public or how that information is being perceived.

In an attempt to address these gaps, the four objectives of this thesis are:

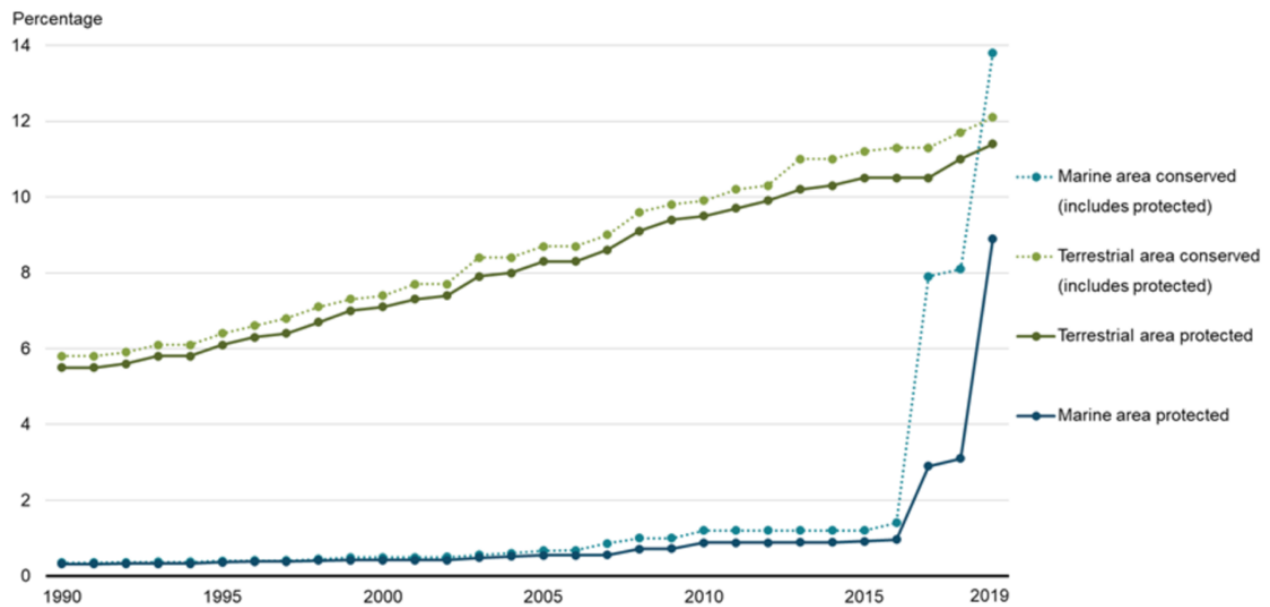
1. To better understand park agency response to COVID-19 through a literature review;
2. To explore how social media is used as communication tool related to COVID-19 by park agencies; and,
3. To make and test inferences on how NVivo and NCapture software can be used to assess the content of park agency tweets;
4. To provide recommendations for park agencies in future times of crisis to enhance communication effectiveness through the use of social media.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 Protected Areas in Canada

According to the International Union for Conservation of Nature (IUCN), a protected area can be defined as “a clearly defined geographical space, recognized, dedicated, and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (IUCN, 2008). Figure 2 depicts the trends in growth of Canada’s protected areas network (ECCC, 2019).

Figure 2. Proportion of area conserved, Canada, 1990 to 2019 (ECCC, 2019).



While terrestrial conserved area had increased by 5% in the last 5 years, marine conserved area increased by 1000%. This is due to the establishment of Canada’s 2020 Biodiversity Goals and Targets, resulting in this increase of protected area (ECCC, 2019). Target 1 states: “By 2020, at least 17 percent of terrestrial areas and inland water, and 10 percent of coastal and marine areas, are conserved through networks of protected areas and other effective area-based conservation measures” (biodivcanada, 2020). This target has been reached as 12.1% of Canada’s terrestrial area was conserved and 13.8% of its marine territory by 2019 (ECCC, 2019).

## 2.2 Protected Areas, Visitation & Visitor Experiences

In 1887, the first national park was declared in Canada and there are now 48 in the country (Dearden, Rollins & Needham, 2015). At first, these protected areas were mainly for “*recreation and tourism rather than natural lands to be preserved for ecological integrity*” (Dearden, Rollins & Needham, 2015, p. 4). Over time, especially during the 1960s, this changed as people realized that parks and protected areas should mainly focus on conservation (Dearden, Rollins & Needham, 2015). As a result, in 1988, an amendment was made to the National Parks Act that declared maintaining ecological integrity the first priority when considering visitor use or park zoning in the management plan of the park (*National Parks Act 1980*, 1988). Since then, 93% of agencies protecting terrestrial areas and 78% protecting marine areas have adopted ecological integrity as a conservation objective in the mandate of their legislation or policies (ECCC, 2016).

Alongside the environmental benefits that parks and protected areas provide, visitors to parks are a great tourism and recreation asset to Canada. In 2018 to 2019 alone, almost 26 million people visited Canadian national parks and national historic sites (Canada, 2019). In 2019, there were 10,765,340 visitors to Ontario Parks (Ontario Parks, 2019). There is a demand by local and international visitors for nature experiences, and nature-based tourism has developed in Canada in or adjacent to parks and protected areas (Dearden, Rollins & Needham, 2015). There are many activities available within protected areas, such as hiking, skiing, fishing, cycling, viewing wildlife, and others (Dearden, Rollins & Needham, 2015).

There are several key reasons as to why park visitation is important. It can be broken down into three categories: environmental, economic, and social/community. Environmentally, parks and protected areas can educate visitors on conservation issues and needs, along with creating awareness of the value of natural resources and need to protect them (Leung et al., 2018). Through experiences, interpretation, and education, visitors can develop a greater appreciation for the natural world (Leung et al., 2018). In terms of economics, revenue from visitation can be invested in continued conservation and protection of natural areas (Leung et al., 2018). Local residents can benefit from new jobs and income, along with diversifying the local economy (Leung et al., 2018). Finally, revenue can improve the park facilities, communication, and transportation to provide a better experience for visitors (Leung et al., 2018). When it comes to social and community benefits, visitation can encourage people to take pride in their local protected areas. Values, conservation issues, and management issues can be

interpreted for future visitors in order to provide an improved experience and to build capacity moving forward (Leung et al., 2018). In addition, it can improve physical well-being through recreational exercise, and mental well-being through a reduction of stress and fatigue (Lemieux et al., 2012; Leung et al., 2018).

### *2.2.1 Visitor Health and Well-being Benefits Associated with Visits to Parks and Protected Areas*

In order to understand why it is important to be immersed in nature, the benefits people receive from being in parks and protected areas need to be understood. In addition to community, parks and protected areas promote a healthy environment. The Canadian Index of Wellbeing, which attempts to determine how well Canadians are doing in terms of various wellbeing indicators, concludes that “*a sustainable environment is linked very closely to our physical and mental health*” (University of Waterloo, 2016, p. 58).

Park visitors are shown to develop positive environmental attitudes, including a concern for conservation and a strong connection with nature (Cheng et al., 2008). This, in turn, can provide the basis for the current or next generation to support conservation efforts including the establishment of more protected areas (Canadian Parks Council, 2014). Contributing to national pride is another visitor benefit that parks and protected areas provide. Given that Canada’s social dynamic is increasingly multicultural, nature can foster a unified national identity (Canadian Parks Council, 2014). Parks can be a place of national pride because they are the best places to experience the wonder of Canada and it is a legacy for future generations of Canadians to enjoy (Canadian Parks Council, 2014). Parks also build understanding of Canada’s history and culture to those visiting and they can be locations for citizenship ceremonies (Canadian Parks Council, 2014). This multicultural dynamic can also bring in different perspectives and perceptions on nature.

There are many health and well-being benefits that nature provides for visitors of parks and protected areas in Canada (Kaplan & Kaplan, 1989). Health is defined by the World Health Organisation (WHO) as “*a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity*” (1946). The next three subsections look at physical, psychological and social benefits of nature in more detail.

There are many physical health benefits for a person that spends time in nature. For the



purpose of this literature review, the effects nature can have on one's body and the activities it can provide to promote physical health will be discussed. Being in contact with nature has been proven to strengthen the immune system, lower blood pressure, and help mitigate disease (Gladwell et al., 2013; Park et al., 2009; Parsons, R., 1991). People who are immersed in nature *“recover from surgery faster, require fewer medications, and have shorter overall hospital stays”* (Canadian Parks Council, p.12; Maller et al., 2005; Ulrich, R., 1984).

Nature's “green gym” provides more benefits than an indoor facility, which has been shown in numerous studies. People that have access to a park have also seen increased physical activity (Bell et al., 2008; Kahn et al., 2002; Maller et al., 2005). Exercising outdoors has also been shown to reduce systolic blood pressure at a higher rate than treadmill training (Maller et al., 2005). In addition to these many physical benefits, there are also psychological health benefits that being in nature provides.

Being in contact with nature can provide restorative properties for one's mental health, leading to feelings of vitality, focus, alertness and a resurgence in energy (Canadian Parks Council, 2014; Reining et al., 2021). A short walk in the forest can improve sleep quality and decrease problems that one has during their sleep (Morita et al., 2007). Being in nature has also helped with reducing stress levels (Pretty et al., 2005). Finally, nature also fosters a boost in happiness and morale (Canadian Parks Council, 2014). A study that involved both built and natural features found that people are more caring and positive when exposed to the natural world (Weinstein et al., 2009). This leads to the social health benefits that visitors can experience when in nature

There are various ways in which one can experience a social health benefit during their time in nature. One is that their community can be strengthened by visiting a park or protected area. Green space is tied to community cohesion and concepts of home (Boyd, 2013). Nature can bring people together and fosters a greater sense of cohesion between people (Canadian Parks Council, 2014). There have been several studies done that demonstrate nature makes us happy by improving our mood and bringing up feelings of pleasure (Nisbet et al., 2011; Weinstein et al., 2009; Ipsos Reid, 2011). The Canadian Parks Council states that, *“the ‘feel-good’ factor facilitated by nature influences our relationships with others”* (2014, p. 20). Being in nature brings out more social feelings and nurtures our close relationships among others (Canadian Parks Council, 2014). Adult visitors that participate in outdoor group experiences have proven to show better abilities to connect with others and

that happens in their personal lives as well (Pohl et al., 2000; Harpe et al., 2007). The more connected one is to nature, the more motivated they are to visit parks and the greater the health and well-being benefits they receive (Lemieux et al., 2016). Parks and protected areas provide natural spaces for people to spend time outdoors and where they can improve their health. The emergence of COVID-19 has created issues for visitors and park management alike.

### **2.3 COVID-19 and the Global Shutdown**

In December 2019, there was an outbreak of the novel coronavirus in Wuhan, China. Quickly, it spread to other parts of the world. This led to the WHO officially naming the virus “coronavirus disease 2019” (COVID-19) and declaring a global pandemic on March 11, 2020 (Zu et al., 2020). COVID-19 is thought to be transmitted from person-to-person mainly through respiratory droplets that are produced when an infected person talks, coughs, or sneezes. The spread of the virus is more likely when people are in closer contact with each other (within 6 feet) (Centers for Disease Control and Prevention, 2020). The way the virus can be transmitted has posed problems for many businesses, workplaces, and recreational locations. Being outside may be considered an important way to manage transmission due to indoor restrictions placed on society since the beginning of the pandemic.

In this literature review, the focus will be on how COVID-19 has affected outdoor natural spaces, especially in parks and protected areas. In addition, crisis communication will be looked at in relation to messaging on Twitter. Since nearly the beginning of the pandemic, restrictions were put in place on workplaces, gatherings, travel movement, and both indoor and outdoor recreational spaces (Freeman & Eykelbosh, 2020). Due to these restrictions, there has been a surge in the use of crisis hotlines, with new centres being established across Canada to handle the increased volume of calls (Gilmour & Kovac, 2020). Many Canadian agencies have added recommendations in relation to dealing with stress caused by COVID-19. For example, there is now a webpage dedicated to advise those in quarantine and self-isolation on the Canadian Association for Mental Health website (Canadian Association for Mental Health, 2020).

### **2.4 COVID-19 and Public Demand for Outdoor Natural Spaces**

With these restrictions in place, demand for the outdoors, including natural spaces, in order to give people something to do and provide options for exercise increased (Eagles, 2020). Consequently, there has been an increase in park use (Pawson, 2020; Perley, 2020). In Vancouver, visitor numbers

were up 67% at 1.5 million visitors in April 2020 compared to the same month in the previous year (Pawson, 2020). The City of Vancouver also reported that 60% of its parks have had a higher-than-average use in the weeks after the physical distancing measure was implemented (Godfrey, 2020). A challenge was that parking lots were often at capacity and visitors did not have space to park their vehicles (Pawson, 2020). Camping reservations have also seen an increase in popularity, especially in New Brunswick. An increase in camping of 30% during the summer months of 2020 occurred as locals headed to parks within their own province instead of travelling outside of the Atlantic Region and this is evident in the increased park use (Perley, 2020).

Park use has also increased in the U.S. A recent study has shown that there is a higher frequency of participation in outdoor recreation (Rice et al., 2020). This can be attributed to the need for improved mental and physical well-being that parks and protected areas can provide to visitors (Rice et al., 2020). The participants in the study ranked park health benefits as the most important reason for being outdoors during the pandemic (Rice et al., 2020). In addition, the results show that park visitors were not willing to travel further or change their recreation activities, including after the COVID-19 pandemic would end (Rice et al., 2020). This indicates that the effects of COVID-19 will continue to impact visitor decisions regarding outdoor recreation and parks.

Despite the increased visitor use of various forms of parks, the messaging from municipalities and park agencies working at different levels of government has not been consistent. At first, the recommendation was to stay at home and exclude going outside. However, it was thought that this would ultimately exacerbate mental health issues due to constraints placed on spaces for recreation and leisure. Following this, people were encouraged to go outside and enjoy nature safely by social distancing (Global News, 2020; Holliday, 2020; Wang, 2020).

Some have argued that the limitations placed on outdoor spaces created inequities within populations and even encouraged risky behaviours (Burrowes, 2020; Gonzalez, 2020; Kornhaber, 2020; Lufkin, 2020). For example, the closure of parks can lead to health equity issues (Freeman & Eykelbosh, 2020). Those who have access to a private backyard, second home, or recreational property have a means by which to get exercise and enjoy green space, usually the case for the wealthier population. In contrast, those who do not have a backyard do not receive the same benefits and have to rely on parks and green spaces (Walker, 2020). When these public spaces shut down due to a crisis such as the COVID-19 pandemic, these populations that do not have their own private space are more

affected by these restrictions. The closure of public natural spaces increases the pandemic-driven stress that these lower-income families face, such as income loss, food insecurity, and health comorbidities (Walker, 2020). In addition to this, larger cities are hotspots for infection in comparison to smaller towns or villages (Sharifi & Khavarian-Garmsir, 2020). However, public green spaces in high-density cities are declining due to increasing privatization of public land and resources (Colding et al., 2020). These big cities are hotspots for infection, and, in most cases, least served by public green spaces that would provide a safe space for outdoor recreation for lower-income families. All of these insights raise issues of equity in access to parks and protected areas.

In this stress-induced time, removing certain outlets and areas for relief such as outdoor recreation spaces can create its own health challenges and increase negative behaviours (Freeman & Eykelbosh, 2020). For example, if there is no access to parks people may choose to increasingly use urban or suburban environments instead. However, sidewalks and pavements, common to these environments, are not designed to encourage people to stay two metres apart, especially when there is a high volume of people using these spaces (Barkhorn, 2020). The more people crowding into these spaces, the harder it will be for physical distancing to be maintained.

A key concern for users of outdoor natural spaces is whether the virus can be transmitted from person to person through coughing, talking, sneezing, or even breathing. These exhalations produce aerosols that range in size, can travel long distances, and can be inhaled into the lungs (Shiu, Leung & Cowling, 2019). There has been research that has focused on the spread of viruses in outdoor environments, including work on how crowding can contribute to the spread of influenza (Public Health England, 2014). Current research supports the fact that COVID-19 generates aerosols containing the virus, but that physical distancing protects park visitors from the main modes of transmission: respiratory droplet transmission and direct contact (Blocken et al., 2020). However, there is additional research needed to be done to fully understand whether COVID-19 can be transmitted via aerosols effectively, particularly in outdoor spaces where they can be rapidly dispersed (Freeman & Eykelbosh, 2020). At this moment, there is not enough evidence to assess the risk of the transmission of COVID-19 in outdoor environments (Freeman & Eykelbosh, 2020). Due to this, precautions must be taken in outdoor spaces based on what is known about COVID-19 in indoor and laboratory experiments and other viruses in outdoor environments (Freeman & Eykelbosh, 2020).

A solution has been proposed to allow people to spread out as much as possible in outdoor spaces in order to reduce the risk of disease transmission (Freeman & Eykelbosh, 2020). It is said that particles containing the virus can settle more quickly in disturbed (windy) air because they have a higher chance of being intercepted by a surface (Atkinson et al., 2009). However, if the air is highly turbulent, such as extreme wind, particles may also remain suspended longer (Freeman & Eykelbosh, 2020).

## **2.5 COVID-19 and Implications for Visitor Planning and Management in Parks and Protected Areas**

Given the factors that can lead to the spread of COVID-19, actions have been taken by various park agencies working at various levels of government to combat risk of transmission within their parks and protected areas. On March 25, 2020, Parks Canada, the federal agency responsible for national parks, suspended all motor vehicle access to national parks, marine conservation areas, and historic sites until June 1, 2020 (Freeman & Eykelbosh, 2020). Over two months later, on June 1, these sites opened for limited day-use and recreation, with other restrictions being lifted over time. The closures were done to reduce non-essential staffing at parks and to reduce the risk of search-and-rescue incidents and wildfires (Parks Canada, 2020). It also served to discourage non-essential travel or tourism during the pandemic by people who should be staying at home (Kotyck, 2020). This can also lead to decreasing incidental contact with services and people along the route of travel, which may bring the virus onto remote or smaller communities (Freeman & Eykelbosh, 2020).

Due to the closing of national and provincial parks across Canada, access to natural spaces in or near many urban and rural areas was significantly reduced (Freeman & Eykelbosh, 2020). Many municipalities tried to reduce the spread of COVID-19 by closing areas that have amenities that are touched often by people: playgrounds, picnic areas, shelters, courts, and outdoor exercise areas (Boynton, 2020; City of Guelph, 2020; City of Vancouver, 2020; Desjardins, 2020; Strathcona County, 2020). In Ontario, for example, areas not closed would be available for walk-through access only. In British Columbia, the city of Richmond implemented one-way traffic on walking trails (Chan, 2020). In addition, some cities have allowed for pedestrian thoroughfares to be established on streets with a lack of road traffic due to the pandemic, especially where there are no parks nearby (Hawkins, 2020; Walker, 2020). In London, Ontario, those who want to visit a park have been asked to go only to local parks in order to minimize travel, or to stay in their own backyard in order to prioritize the green spaces

for those who do not have access to their own private yard (Greater London Authority, 2020).

As noted above, outdoor recreational spaces contribute to our well-being, including our physical, social and mental health (Freeman & Eykelbosh, 2020). However, in order to stop the transfer of the virus from person to person, many restrictions have been put in place when it comes to outdoor recreation (Eagles, 2020). There have been several public health strategies implemented across the country to minimize the risk of disease transmission, such as self-isolation through quarantine, staying at least two metres apart from others, and frequently washing your hands (Freeman & Eykelbosh, 2020). In addition, many businesses, schools, and parks are closed (Eagles, 2020). The major implications for park management during a pandemic include visitation rates and park employees. Visitation rates have plummeted due to closures and health regulations (UNESCO, 2020). As for park employees, there has been an increase in layoffs or employees being sent home to self-isolate due to decreased revenue (IUCN, 2020).

## **2.6 Insights on Travel Behaviour & Parks**

There have been several insights about travel behaviour and parks since the beginning of the pandemic. First, when making outdoor recreation decisions, such as activity, group size, or where to go, people believe mental and physical health are the top factors when making these choices (Rice et al., 2020). In addition, the distance travelled to participate in outdoor recreation decreased significantly (Rice et al., 2020). Throughout the pandemic, the fear of COVID-19 exposure became more prominent over time, but more people decided to recreate outdoors (Rice et al., 2020; Venter et al., 2020). One last finding to note is that those residing in urban areas in comparison to urban clusters or rural areas have travelled less often to participate in outdoor recreation during the pandemic (Rice et al., 2020).

Since the early closures of many parks and protected areas, access to nature has now become part of the recovery strategy that is employed by governments and health organisations around the world (World Health Organisation, 2020; World Resources Institute, 2020). This has helped people increase people's time spent outdoors during the pandemic. However, governments are still not prioritizing environmental protections at a time when protection of the environment should be improved. For example, some governments are using the coronavirus pandemic as an excuse to cut back on environmental funding due to public health rules and economic challenges that companies are facing at the moment (Paterson, Devine, & Mordecai, 2020). Brazil and the U.S. have made it easier to

approve pipelines and lifted limits on pollution (Holden, 2020; McIntosh, 2020). In Canada, several provinces are relaxing environmental protections, specifically in Alberta where they are favouring development over environmental legislation (Bui, 2020). In addition, the Ontario government has suspended mandatory public consultation and participation before approving projects or laws that could impact the environment (Bui, 2020). During a time of crisis such as COVID-19, communication with the public is very important in order to provide proper risk management and to keep environmental interests in place.

## **2.7 Environmental Communication**

In recent decades, the study of the communication of environmental issues has garnered increased attention due to human interaction with the environment being more relevant (Comfort & Park, 2018; Hansen, 2011). Now, more than ever, questions relating to environmental communication and how it is understood by the public and policy makers are increasingly important (Comfort & Park, 2018). Environmental communication, as defined by Stephen Depoe in the first edition of the journal *Environmental Communication*, is “theories, practices, and processes of communication as they relate to the environment around the world” (Depoe, 2007). Three foci of environmental communication research exist: the production of media messages, the content of those messages, and the effect of such messages (Hansen, 1991).

Comfort and Park (2018) conducted a literature review of all environmental communication scholarship. Their findings indicate that literature on environmental communication is closely tied to mass media production and consumption (Comfort & Park, 2018). Their research found that there is significant growth in the field, especially in the 21st century (Comfort & Park, 2018; Pleasant et al., 2002). At the turn of the century, there was also a shift from risk-related research to more specific climate change studies (Comfort & Park, 2018; Schäfer & Schlichting, 2014).

A strength of the field is that environmental communication studies have both quantitative and qualitative approaches, using nearly all traditional methods of social scientific scholarship (Comfort & Park, 2018). In addition, there have been great advances in the last few decades. Environmental communication has become a distinctive subfield of media and communication research, while also examining media processes, theoretical frameworks and analytical approaches (Hansen, 2011). There is also a great deal of knowledge about news management, campaigning practices of environmental

claim-makers, publicity, environmental journalism, and sociopolitical implications of this communication (Hansen, 2011).

Although there are strengths within the field, there are also many weaknesses and limitations. To begin, the field is not yet well organized or integrated due to the large variety of traditions and disciplines under its umbrella (Anderson, 2015). Environmental communication is linked to the allied fields of science communication, risk communication, and health communication, and can sometimes be lost within these more established areas of study (Anderson, 2015). In addition, only one foci of mass communication is mainly focused on – the content of the messages. Nearly half of the studies use a content or rhetorical analysis method (Comfort & Park, 2018). Message effects and message production are unexplored in environmental communication literature compared to studies conducted on the messages themselves (Comfort & Park, 2018). Another shortcoming is the focus on news, specifically print media (both physical copy and online presence) (Comfort & Park, 2018). This focus on journalistic output ignores the diverse media outlets in existence today, including media producers such as citizens, policy-making bodies, and non-governmental organizations (Comfort & Park, 2020). It is also clear that the field focuses on U.S. and European issues, specifically from where the scholars are located, even though the countries most affected by environmental degradation and climate change are located in poorer nations (Baetting, Wild & Imboden, 2007). Finally, a small number of the studies examined by the authors included the term “environmental communication” (2018). The term seems to only be implicitly defined, however, if a normative ideal is attached to the field, it should be explicit in each study (Comfort & Park, 2018). An example of this would be environmental communication in relation to wellbeing or environmental communication in relation to climate change.

Parks and protected areas unique in terms of environmental communication. They are vital in a variety of ways: science communication, interpretation, and media communication. In terms of science communication in parks, scientists who conduct research in these natural spaces can help inform that park’s preservation (Watkins et al., 2018). This means that their contributions can engage park visitors in a personal context and encourage feelings of conservation (Rogoff et al., 2016). Their research can come in the form of knowledge through publications, media outlet broadcasts, and interpretation programs within the parks themselves (Watkins et al., 2018). Agencies such as the U.S. National Park Service (NPS) have established several science communications programs including, for example, Research Learning Centers (RLCs) and Cooperative Ecosystem Studies Units (CESUs) (Watkins et al., 2018). The RLCs have staff that are involved in proposal development, research, and the



communication of results (Watkins et al., 2018). CESUs communicate park research findings to different federal agencies and universities to provide information in order to obtain funding for park needs (Watkins et al., 2018).

Interpreters can also provide important environmental communication in parks and protected areas. The NPS defines the importance of interpretation as “*driven by a philosophy that charges interpreters to help audiences care about park resources so they might support the care for park resources*” (NPS, 2016). Interpretation occurs through digital media, individual conversations with visitors and citizens, signage and displays, and programs and events (Abrams et al., 2018). These communicators help visitors build intellectual and emotional connections to these natural spaces (Stern et al., 2010; Larsen, 2011). The visitor experience is enriched through in-person storytelling and media (Watkins et al., 2018). Its limitations include its educational connection not reaching all audiences or situations, and that there is a safety component, but it does not specifically focus on harmful behaviours (Abrams et al., 2018).

Finally, parks and protected areas benefit from media communication. Marketing and communications enable successful programs, events, or campaigns that park agencies administer (NRPA, 2019). The goal of these marketing activities is to increase awareness to a broader audience about what park agencies and these natural spaces have to offer (NRPA, 2019). In addition, these efforts are also in place to increase revenue and visitation numbers to these natural areas (NRPA, 2019). Agencies like the NPS use media communication to promote healthy recreation, engage people of all ages, and invite support for their parks and community programs (NPS, 2020). Their communication strategies are put in place to help preserve their parks and to connect people to these outdoor spaces (NPS, 2020). The NPS works together with park stewards and subject matter experts to come up with these strategies (NPS, 2020). In a survey conducted by the NRPA, several channels were chosen as being most effective in terms of marketing and communication strategies. Social media was cited by 85% of respondents as being effective in marketing park programs, events, and recreation amenities (NRPA, 2019). This was followed by printed program guides/catalogs at 45%, agency/government websites at 41%, and email messages and newsletters at 36% (NRPA, 2019). There is a lack of research on Canadian park agency communication strategies, including social media’s role in the marketing of parks and protected areas.

Currently, there is a need to examine how various actors in environmental communication, such

as scientists, advocacy groups, industry, government, and policy-makers, are framing the issues within the field (Anderson, 2015). It is necessary to identify how these issues connect with public interests and concerns (Anderson, 2015). In addition, there needs to be more active engagement with these actors in order to make new research and information about the field accessible to wider audiences (Anderson, 2015). This can be done through social media, especially during a crisis such as COVID-19.

## **2.8 COVID-19 and the Importance and Role of Social Media in Crisis Communications**

Crises, such as the COVID-19 pandemic, can occur at any time and organisations need to be prepared to know how to deal with it through various communication methods. The goal of crisis communications is to send the right message to the right people, and social media enables a rapid exchange of information (Graham, Avery & Park, 2015).

Social media represents many different forms of consumer-generated content including social networks, blogs, virtual communities, and media files shared on sites like Flickr and Youtube (Xiang & Gretzel, 2010). It is “*the term often used to refer to new forms of media that involve interactive participation*” (Manning, 2014). Social media is part of the interactive age, whereas the broadcast age is its predecessor (Manning, 2014). The broadcast age included centralized media with one entity, such as a radio or television station, which distributed messages to a multitude of people (Manning, 2014). However, with the rise of mobile and digital technologies, a new media age was born with interactivity and social media at the very core of it (Manning, 2014).

In 2013, a Pew Research Center report showed that 72% of American adults use social networking sites, a number that is growing every day (Graham, Avery & Park, 2015). Individuals can conveniently and quickly access social media that is deployed by organisations for the purpose of communicating information during a time of crisis (Park, Cha, Kim & Jeong, 2012; Schroeder, Pennington-Gray, Donohoe & Kioussis, 2013). Social media also has several unique features that organisations find appealing. It is interactive, it enables organisational response to stakeholder messages, and it reaches a vast audience (Roshan, Warren & Carr, 2016). Past research has shown that the engagement of an organisation’s social media followers increases during a crisis, and that social media sources are perceived to be more credible than traditional mass media (Graham, Avery & Park, 2015). With this increased attention, organisations can respond to the questions and concerns of stakeholders, potentially improving their understanding of what stakeholders want and need, especially

during a crisis (Hurk, 2013). However, social media can also increase organisations' vulnerability due to its ability to facilitate the spread of the crisis even further (Ngai, Tao & Moon, 2015). Before specifically looking at social media and parks, it can be helpful to examine the tourism industry as a whole.

## **2.9 Crisis Communications & the Tourism Industry**

Past research has suggested that the tourism industry, which includes hotels, venues, restaurants, park agencies, and more, is at risk during a time of crisis. Tourists can also be vulnerable during a crisis due to their unfamiliarity with their surroundings when away from home (Schroeder et al., 2013). Furthermore, foreign tourists are even more at risk because of their inability to translate and interpret warning messages due to language barriers. Also, they may not know about reliable sources and channels where they can find risk-related information or the risks associated with travelling to specific destinations (Schroeder et al., 2013).

To address these issues, the use of smartphones to access information, communicate, and stay connected while traveling is increasing with tourists from all around the world (Smith, 2012). Social media has been used for knowledge management, crisis informatics, and "retweeting" during crises, all leading to improved experiences for tourists (Schroeder et al., 2013). Information that is promoted by peer-to-peer communication through social media has helped produce information that can be challenging to obtain otherwise (Sutton, Palen & Shkloyski, 2008). This has led to social media being used as a tool to the public.

### *2.9.1 Social Media*

There are various benefits and challenges when it comes to using social media for communication. For example, when it comes to the food industry, public involvement is facilitated via social media and this can help companies decide what the trends are in society and how to determine what products to sell or buy (Rutsaert et al., 2013). Another industry that benefits from social media is the health sector. Health care can be communicated about by health professionals, the public, and patients and this can potentially improve health outcomes in the future (Moorhead et al., 2013). Finally, the public sector also benefits from social media because the government can communicate directly with the public about new or potential policies and have increased transparency (Picazo-Vela et al., 2012). However, a pitfall of social media for these three industries and sectors is that there can be a lot

of misleading or incorrect information spread by people that are not professionals (Moorhead et al., 2013; Picazo-Vela et al., 2012; Rutsaert et al., 2013).

When it comes to the tourism industry, social media platforms have gained popularity for online travelers before and during their travels. Tourists can search, share, organize, and annotate the stories of their travels through social media in a collaborative way (Leung et al., 2013). Social media is relevant to the travel industry because it is “information-intensive”, with consumers obtaining information online from these networks and websites to help them plan their trips and to make informed decisions about their travels (Hays, Page & Buhalis, 2013).

Aside from general communication, the tourism industry has also taken to social media during a time of crisis, with varying success rates. What people need to know about a tourism destination during and after a crisis can be monitored and analyzed through social media, giving organizations and tourism boards the opportunity to inform the public of any changes or vital updates in a timely manner (Park et al., 2019; Tan et al., 2017; Wang & Ye, 2018). Several examples of tourism crisis communication exist, such as improving a destination’s image after a natural disaster. In the case of the Gurkha earthquake that took place in Nepal in 2015, the Nepal Tourism Board used Facebook to restore its reputation as a tourism destination (Ketter, 2016). The Board used Facebook to address diverse audiences, to post various kinds of information, to bypass media by the news, to conduct interactions with past and potential visitors, and to provide an additional distribution channel (Ketter, 2016). This, in turn, improved their image and encouraged people to visit Nepal as tourists (Ketter, 2016). In addition to this study, another looked at the Ebola crisis and its impact on the tourism industry (Mizrachi & Fuchs, 2016). The Ebola crisis resulted in a negative impact on travel bookings to areas affected by the virus, and risk-handling strategies were assessed to see how the crisis was managed by the tourism industry (Mizrachi & Fuchs, 2016). 200 posts by users on Trip Advisor were analyzed, and results indicate that posts by tourism boards or private organizations in the area that promote positive thinking, encouragement, the development of knowledge, increased preparation, and a personal risk assessment can improve the risk perception of potential tourists (Mizrachi & Fuchs, 2016). Another example is in the analysis of Twitter use of destination management organizations (DMOs) during several terrorism attacks in European cities (Barbe et al., 2018). Twitter content was collected through NVivo software to determine when the DMOs communicated about the crisis, what messages were communicated, and if they were effective (Barbe et al., 2018). This study found that DMOs were not effective in their crisis communication strategy on Twitter and that communication

during a crisis of this sort is necessary to inform tourists of the safety status of the area (Barbe et al., 2018). Through these examples, social media plays a vital role in the tourism industry during a crisis. Social media can be used to mitigate crises and encourage people to return to a tourist destination, even after a natural disaster, terrorist attack, or virus has affected its image.

In the tourism industry, social media can also be seen as a way to gain business value. “Social media platforms such as Twitter and Facebook enable the creation of virtual customer environments (VCEs) where online communities of interest form around specific firms, brands, or products” (Culnan et al., 2010, p. 243). This allows for these organizations and companies to collaborate in new ways with their customers, suppliers, and business partners (Culnan et al., 2010). These VCEs can foster increased support of sales, branding, and product development (Culnan et al., 2010). Simply creating a social media account on Facebook or Twitter is not sufficient to create a loyal clientele that will keep coming back (Culnan et al., 2010). Companies are encouraged to embrace social media, encouraging to utilize its full potential (Kumar et al., 2016). Having a community that is consistent across all platforms, creating consistent messaging in line with the company’s brand and values, and putting out content in a timely manner can improve the company in a potential customer’s eyes (Culnan et al., 2010). *“Investing in developing a social media community with a dedicated fan base (e.g., a Facebook page) can significantly strengthen customer–firm relationships and can lead to a definitive impact on the firm’s revenues and profits”* (Kumar et al., 2016, p. 21). This can be applied to any industry, including tourism and parks.

When it comes to parks, social media is an asset and it can lead to increased visitation rates, conservation awareness, and higher event participation rates (Tenkanen et al., 2017). Therefore, social media platforms, including Twitter, can help people make travel-related choices.

#### 2.9.1.1 Twitter

Twitter is a social media platform that is centred on allowing users to express ideas or moments and share text, videos, or photos through tweets, which are 280-character messages (MacKay et al., 2017). With a click of the “follow” button, you can subscribe yourself to reading the news, updates on your friends and family’s lives, or even new scholarly research (Deller, 2011). Since its inception in 2006, it has been a fast-growing media platform, with over 310 million unique monthly visitors recorded in late 2015 (Mackay et al., 2017). Twitter is also known to create awareness through the exchange of media by consumers and organisations (Khan, Yoon & Park, 2014).

Various research has been conducted on Twitter and it can provide important contributions to our understanding of society and its public communication (Bruns & Stieglitz, 2014). Research on the various usages of Twitter reveal that the social media platform is mainly used for personal and professional purposes (Mahrt et al., 2014). Academically, scholarly blogging is at the forefront with scientific and self-promotional uses of the platform taking place (Mahrt et al., 2014). These uses include building and maintaining professional networks, advertising research or events, and internal communication between departments (Mahrt et al., 2014).

Research also examines how Twitter is used. Bruns and Moe discuss that there are a range of communicative purposes, including personal tweets, one-on-one conversations, and discussions around specific issues (2014). Hashtags are an important way of staying connected, which are “*simple keywords preceded by the hash symbol ‘#’*” (Bruns & Moe, 2014, p. 17). They are used to mark a tweet as being important to a specific topic and make it easier to be discovered by other Twitter users (Bruns & Moe, 2014). Another way of staying connected is through the @mention of another user, defined as “*the addressee’s username preceded by the ‘@’ symbol*” (Bruns & Moe, 2014, p. 19). These can be seen as ways to start a conversation with that user or to inform the user of a news item, event, or piece of information (Bruns & Moe, 2014).

Twitter also comes with its ethical challenges. One would be the analysis of Twitter data, especially when data obtained from the social media network is used for the purposes of dissemination (Webb & Jirotko, 2017). The question is whether it is ethical to “*collect, analyse, and reproduce tweets for the purpose of research*” or if consent procedures should be undertaken prior (Webb & Jirotko, 2017, p. 339). However, there is a lack of consensus on this topic and further debate should take place in order to determine a positive approach towards implementing good practice (Webb & Jirotko, 2017).

Promotional activities are emphasized more by companies and organisations on Twitter rather than engaging with consumers, and the platform aims to create an immediate awareness of issues (Chan & Guillet, 2011; Kietzmann et al., 2011). This allows tourists to use Twitter as a tool to gain information about events happening around the world and in their community, leading to them having more information ahead of their travels.

### *2.9.2 Park Agency Social Media Communication Strategies*

The emergence of social media in the past decade has created possibilities to assess how people use and respond to an endless array of things, including nature and recreation (Wood et al., 2013). Over 60% of global national parks have Twitter activity, and visitation rates to parks and other data can be analyzed (Hausmann et al., 2018; Tenkanen et al., 2017).

In the U.S. and Canada, some park organisations and agencies have begun to incorporate social media into their marketing, visitor experience provision, education, and communications (Halpenny & Blye, 2017). It is said that the engagement of people via social media with park agencies and organisations can increase park visitation rates as well as repeat visits (Halpenny & Blye, 2017). A 2014 study conducted in Finland and South Africa found that social media activity is highly associated with park popularity, and that social media tends to perform better in more visited parks (Tenkanen et al., 2017). This leads to the idea that social media is an asset for parks and protected areas, and that it should be incorporated into every agency or organisation's strategy.

#### *2.9.2.1 Parks Canada*

Parks Canada's Twitter account, @parkscanada, has over 214,000 followers as of July 2020. The Twitter account shares text-based information along with visual media. Promotion is done on various events and visitor information. In addition to that, the agency answers questions that other Twitter users may have regarding the national parks.

#### *2.9.2.2 U.S. National Park Service (NPS)*

The NPS has an Office of Communications that is responsible for planning, implementing, and directing communications that are internal and external (National Park Service, 2020). This is done through two integrated teams: media relations and digital strategy. The digital strategy team is responsible for establishing strategy, policy, and governance for NPS digital activities and products (National Park Service, 2020). NPS websites, social media, and mobile applications are managed by this team. It also manages the NPS homepage and creates content that is to be published across all NPS digital platforms (video, social media, web) to support the national communication goals (National Park Service, 2020). Crisis management is also part of the NPS' communication strategy, with social media playing an important role. Table 1 outlines the number of Twitter followers for major park agency accounts.

*Table 1. Select Examples of Park Agency Social Media Twitter Platform and Followers.*

<b>Agency</b>	<b>Twitter Followers</b>
Parks Canada	214,900
Alberta Parks	12,600
Ontario Parks	76,700
Sepaq	14,000
National Park Service	548,000

Even though Canada’s population is ten times smaller than the U.S.’, the NPS only has 2.5 times the amount of followers as Parks Canada on Twitter. This can suggest that parks and protected areas in Canada are very influential and that the Canadian population shows a great interest in outdoor recreation in these protected spaces. It is also worth mentioning that public health agencies, such as Health Canada and the Public Health Agency of Canada (PHAC), have a much larger presence and following on social media than the park agency accounts do. As of April 2021, Health Canada has PHAC’s Twitter account, @GovCanHealth, had 368,000 followers (Twitter, 2021). The park agencies draw a lot of their COVID-19 content from these accounts in order to inform their followers of the health and safety measures needed to be put in place due to the pandemic.



### CHAPTER 3: METHODOLOGY

Qualitative research involves various data collection and analysis methodologies. Qualitative analysis is defined as *“information or data collected and analyzed that is primarily nonquantitative in character, consisting of textual materials such as interview transcripts, fieldnotes, and documents, and/or visual material such as artefacts, photographs, video recordings, and Internet sites, that document human experiences about others and/or oneself in social action and reflexive states”* (Saldana, 2011). Subjective phenomena such as patterns, opinions, and ideas are often the focus of qualitative methodology (Ashley & Boyd, 2013). The goals of this research can vary but usually amount to representing and presenting findings from data analysis such as policy effectiveness or understanding social complexity (Saldana, 2011). This type of analysis also relies on the examination of the participants’ words and actions while drawing from various schools of thought within the social sciences (Ashley & Boyd, 2013).

The genre of qualitative research used in this study is grounded theory. It is a methodology in which qualitative data is meticulously analyzed in order to better understand human and social processes in order to assist in constructing a theory (Saldana, 2011). However, in this study, constructing a theory was not focused on. Instead, small data units are compared through coding cycles in order to determine themes and general patterns within the sample in order to the meaning behind social media messaging and the frequency of those messages (Saldana, 2011). Aside from grounded theory, content analysis was the primary method. Content analysis examines texts and visuals, media, and/or material culture systematically in order to analyze their meanings (Saldana, 2011). The focus of this study is on media materials. Media materials are often rich units that can be analyzed for their significance pertaining to the sender and receiver (Saldana, 2011). A downside to media materials specifically would be the ethics behind gathering this data, even if it is publicly accessible (Webb & Jirotko, 2017).

There are several advantages and disadvantages of the use of qualitative analysis techniques. To begin, an advantage is that qualitative research produces a detailed description of the data in question while also interpreting its meaning (Denzin, 1989; Rahman, 2016). In addition, qualitative analysis can explore several areas of human behaviour, such as reactions to a crisis, that cannot be quantified (Almeida et al., 2017). When conducting observation, the qualitative approach allows for data to be collected simultaneously with the event occurrence and is flexible to the knowledge discovery

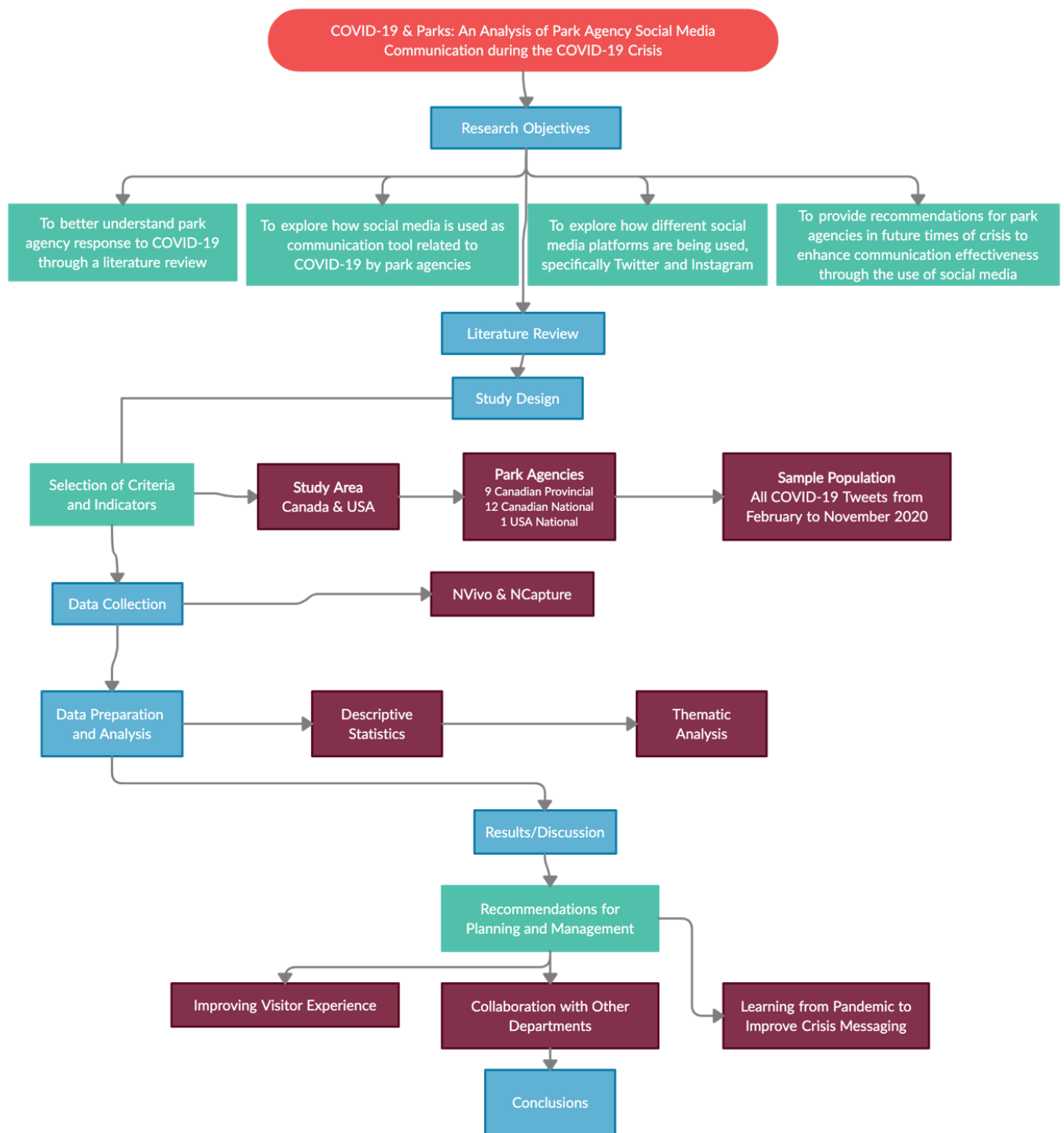
(Almeida et al., 2017). It's also possible to get very detailed data which can emphasize the role and relevance of the social context (Almeida et al., 2017).

Disadvantages of qualitative analysis include the fact that it can be very time consuming and dependent on the observer's impartiality (Almeida et al., 2017). If the dataset is large, it can be difficult to generalize based on a very large sample size, in addition to also documenting observations (Almeida et al., 2017).

### **3.1 Methodological Approach**

The methodological approach used in this study is inductive reasoning. Inductive reasoning *“involves the search for pattern from observation and the development of explanations – theories – for those patterns through series of hypotheses”* (Bernard, 2011, p. 7). The aim was to generate meanings from the data set collected in order to identify themes and relationships related to park agency response to the COVID-19 pandemic (Lewis, Saunders & Thornhill, 2012). The methodological framework used in this study is outlined in Figure 3.

Figure 3. Methodological framework.



### 3.2 Study Design

To achieve the objectives of my research, tweets from Canadian and U.S. park agencies were collected through purposive sampling (Battaglia, 2008). The park agency was selected based on the

purpose of the sample, which were organisations that tweeted about COVID-19 in the study period. A benefit of this sampling method is that it is easier to make generalizations about the sample compared to a random method (Dodge, 2008). A random method may not include organisations that tweeted about COVID-19 and so they would not be relevant to the study. A disadvantage would be that purposive sampling is sometimes open to error and selection bias due to a lack of random sampling (Dodge, 2008).

Tweets were analyzed using NVivo, specifically NCapture, software. NVivo is software that allows for the import of various types of data in order to perform in-depth analysis in one centralized place. The dataset can be organized based on themes through coding (QSR International, 2020). NCapture is a web browser extension of NVivo in which you can import datasets from social media accounts such as Twitter in chronological order (Hays & Daker-White, 2015). A recent study conducted in Brazil looked at sentiments about COVID-19 through user tweets (de Melo & Figueiredo, 2021). They looked at 1,597,934 tweets posted by 1,299,084 users in Brazil and used thematic analysis to organize the messaging. Through this social media analysis, there is a way to monitor the evolution of the pandemic and its subsequent effects (de Melo & Figueiredo, 2021). The study concluded that information obtained can be useful for decision-making by authorities (de Melo & Figueiredo, 2021). Researchers and authorities can identify potential controversial data, can address possible misinformation, and establish policies for communication and action with the local population (de Melo & Figueiredo, 2021).

With the tweets recorded, an inductive approach was used for coding. The inductive approach in qualitative analysis focuses on themes and interpretations that, in the case of this study, emerge from the data to comparing different cases to each other (Liu, 2016). In addition, the inductive approach is concerned with the generation of new knowledge coming from the data (Gabriel, 2013). This method has been used before in other social media studies, like one examining the use of hashtags employed by advocacy organisations on Twitter (Saxton, Niyiror, Guo & Waters, 2015). This study used an inductive coding scheme to organize data. Another social media study that used the inductive approach looked at place attachment through sentiment analysis in Massachusetts through Twitter (Hollander & Page, 2020). They collected, analysed, and then validated social media posts that referenced specific places in the city through inductive coding (Hollander & Page, 2020). The research suggests that it is possible to better understand attitudes about place attachment through analysis of Twitter data combined with a robust community engagement process (Hollander & Page, 2020).

Following this, a chi-squared analysis was conducted on the various themes found. The analysis was done to see if there was a statistical significance between the frequency of tweets for each theme within the different categories of organizations: Parks Canada versus the U.S. NPS, Canadian national park agencies, Canadian individual national parks, Canadian provincial park agencies, and Canadian individual provincial parks.

### **3.3 Study Site**

Tweets were coded from most provinces and territories in Canada to get a geographically representative sample. In addition, one important park agency in the U.S. has been included to allow for a comparison between the two countries (U.S. National Park Service). Specifically, Tweets from six park agency Twitter accounts (Parks Canada, Alberta Parks, Ontario Parks, Sepaq (Québec), Manitoba Parks, and Northwest Territories (NWT) Parks) were collected. Parks Canada is at the national level, while the remaining five are at the provincial level. Tweets from 15 individual park Twitter accounts were also collected, including 11 national parks and four provincial parks. The national parks studied were as follows: Banff National Park, Bruce Peninsula National Park, Elk Island National Park, Fundy National Park, Jasper National Park, Kootenay National Park, Point Pelee National Park, Riding Mountain National Park, Rouge National Urban Park, Waterton Lakes National Park, and Yoho National Park. The provincial parks studied were all within the province of Ontario: Algonquin Provincial Park, Arrowhead Provincial Park, Killarney Provincial Park and Pinery Provincial Park.

### **3.4 Sample Method**

The batches of tweets are from the beginning of February to the end of November. This was done to include tweets before the park agencies began releasing messaging regarding the pandemic. The time that the tweets were posted are known but the specific person that wrote the tweet will not. In addition, from where the tweet was posted is also not known.

### **3.5 Sample Size**

In order to get a representative sample, the sample size consists of all of the tweets each park agency during the sample period in order to get as much data as possible. Over a period of 302 days, 8045 tweets collected. The 8045 tweets were divided into two major categories based on their location: Canada and the U.S. Furthermore, they were divided into three smaller categories: Pre COVID-19,

COVID-19 and Non COVID-19. 24.2% (1948) of those tweets were COVID-19 related, 74.3% (5977) were non COVID-19 related, and the remaining pre COVID-19 tweets accounted for 1.5% (120) of the sample. For the Canadian organisations, they were then divided into national and provincial parks. This was not necessary for the U.S. National Park Service because they are a national organisation and individual U.S. national parks were not included in the study. In comparison to other studies that look at Twitter content analysis, the sample size is quite large. For example, a study that evaluated sampling methods for Twitter content relating to the 2014 South Carolina gubernatorial election collected 1896 tweets over a period of 107 days (Kim et al., 2018). Their findings show that this sample size is adequate in terms of Twitter content analysis (Kim et al., 2018). Another study examining public comments on Twitter about coronavirus assessed 600 tweets in the span of 30 days which amounts to 20 tweets a day (Damiano & Catellier, 2020). This number compares to the average 26 tweets collected per day in this study over the span of 302 days.

Once the tweets were sorted into national and provincial categories, they were then coded into themes based on the content of the tweet. Several tweets were coded into multiple themes. As a result of these thematic codes, varying results were found on how park agencies responded to the COVID-19 pandemic.

# CHAPTER 4: RESULTS

## 4.1 Examples of Tweets

In order to interpret the results, examples of tweets from the Pre COVID-19, COVID-19, and Non COVID-19 categories are shown below. While Figure 4 shows the different categories of tweets from Parks Canada, Figure 5 shows the different categories of tweets from Ontario Parks.

Figure 4. Examples of Parks Canada tweets.

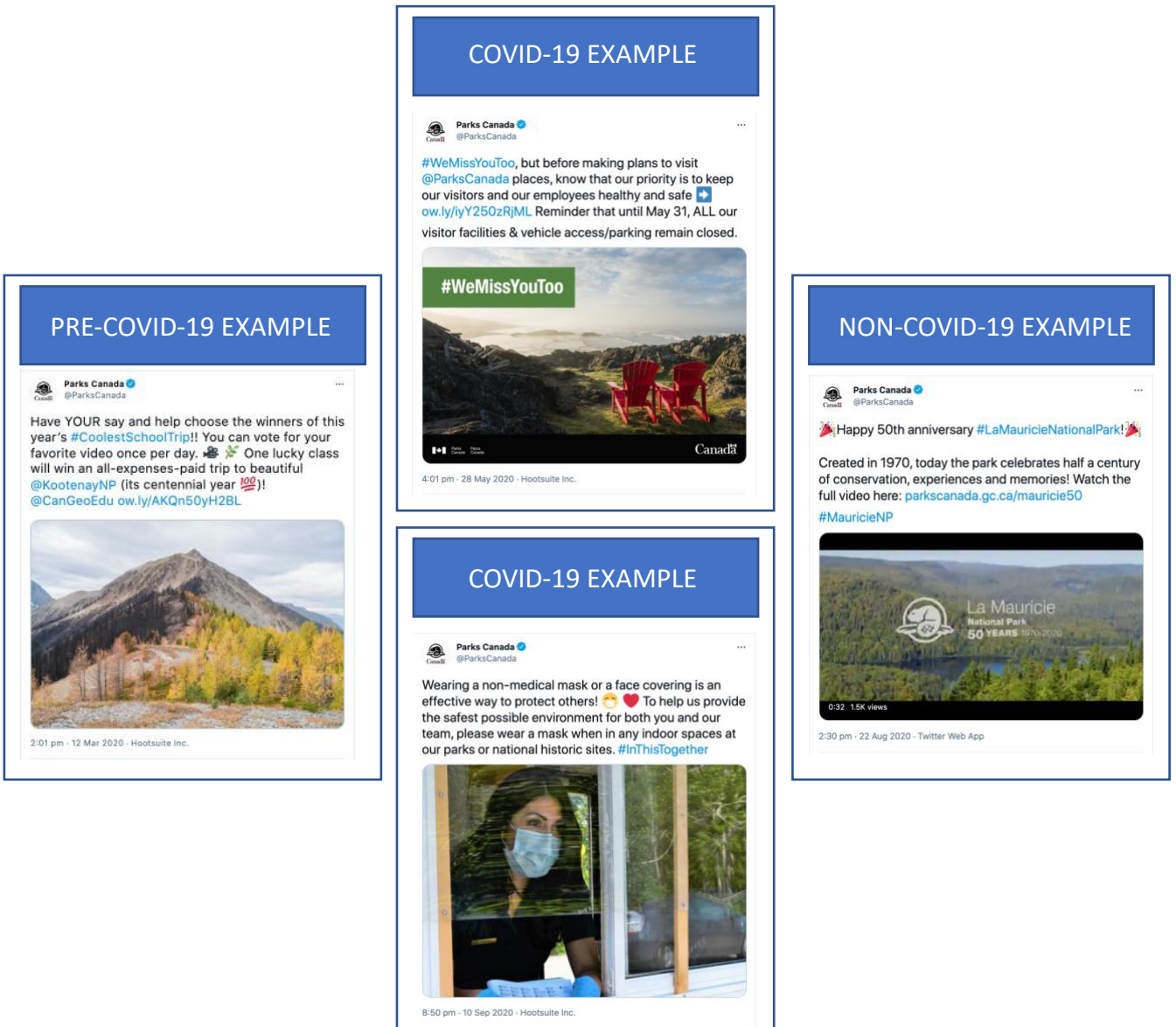



Figure 5. Examples of Ontario Parks tweets.

**PRE-COVID-19 EXAMPLE**

Ontario Parks  
@OntarioParks

For many Ontario birdwatchers, it's all about the spring.

Why not take your birding to the boreal forest this year? [bit.ly/2fhFb4N](https://bit.ly/2fhFb4N)




12:23 am · 13 Mar 2020 · Sprout Social

**COVID-19 EXAMPLE**

Ontario Parks  
@OntarioParks

It's been a challenging year, and we know how excited you are to escape into the natural beauty of our parks!

Our staff are working hard to get you into the park as quickly as possible. If you run into longer lines or closed facilities, please be patient. [bit.ly/2XuyRts](https://bit.ly/2XuyRts)



11:48 pm · 6 Aug 2020 · Sprout Social


**COVID-19 EXAMPLE**

Ontario Parks  
@OntarioParks

**Keep it local!**

We owe it to our frontline and essential workers, families, friends, and neighbours to avoid non-essential travel as much as possible. [bit.ly/28T7Ar7](https://bit.ly/28T7Ar7)

Our actions today will minimize the risk to others and help [#stopthespread](https://bit.ly/28T7Ar7) of COVID-19.




12:14 pm · 22 May 2020 · Sprout Social

**NON-COVID-19 EXAMPLE**

Ontario Parks  
@OntarioParks

Padding is a low impact activity which reduces the risk of wear and tear on joints: [bit.ly/1RNhkzr](https://bit.ly/1RNhkzr)

[#HPPH">#PaddleON">#NationalPaddlingWeek](https://bit.ly/1RNhkzr)



12:52 am · 19 Jun 2020 · Sprout Social



Figure 6 shows the different categories of tweets from Pinery Provincial Park.

Figure 6. Examples of Pinery Provincial Park tweets.


The figure displays five example tweets from Pinery Provincial Park, arranged in three columns. The first column contains one tweet, the second column contains two tweets, and the third column contains one tweet. Each tweet is presented within a white box with a blue header and a blue border. The tweets are categorized as follows:

- PRE-COVID-19 EXAMPLE:** A tweet from Ontario Parks (@OntarioParks) dated March 12, 2020, at 2:31 am. The text reads: "The Tundra Swans are back at @PineryProvPark! [bit.ly/2CTJCOI](https://bit.ly/2CTJCOI)". The image shows several white swans on a body of water.
- COVID-19 EXAMPLE:** A tweet from PineryPP (@PineryProvPark) dated June 12, 2020, at 1:21 pm. The text reads: "Reminder: our beaches and campgrounds remain closed. The park is open for day use activities such as walking, hiking, cycling, and paddling. Please check the Facilities/Activities icons on our webpage for more information on what is available: [ontarioparks.com/park/pinery](https://ontarioparks.com/park/pinery)". The image shows two people cycling on a dirt path through a forest.
- COVID-19 EXAMPLE:** A tweet from PineryPP (@PineryProvPark) dated March 15, 2020, at 4:06 pm. The text reads: "UPDATE: Ontario Parks has cancelled all planned events until further notice. Ontario Parks buildings, such as Visitor Centres, will be closed. Outdoor recreational opportunities including camping and day use will still be available at operating parks." Below the text is a link to the Ontario Newsroom: "Ontario Newsroom | Salle de presse de l'Ontario [news.ontario.ca](https://news.ontario.ca)". The image shows a small white flower.
- NON-COVID-19 EXAMPLE:** A tweet from PineryPP (@PineryProvPark) dated February 28, 2020, at 3:36 pm. The text reads: "If we work together, no matter what our role in parks, we can help prevent invasive species dispersal and uphold the ecological integrity of our parks and wild spaces." #invasivespeciesweek [bit.ly/2TnT6pV](https://bit.ly/2TnT6pV)". The image shows a person with a backpack sitting on a log in a forest.

Figure 7 shows the different categories of tweets from the U.S. NPS.

Figure 7. Examples of U.S. NPS Tweets.

PRE-COVID-19 EXAMPLE




Glacier National Park  
@GlacierNPS

It was a beautiful pink start to the day in Glacier this morning. #awesomesunrise #montanamoment

3:40 pm · 10 Mar 2020 · Twitter for iPhone

COVID-19 EXAMPLE



National Park Service  
@NatParkService

Do your part! We believe in you!

Each of us plays a vital role in protecting our national parks.


- ✓ Pack out everything you bring in
- ✓ Maintain 6 ft distance from others
- ✓ Park in designated areas
- ✓ Practice Leave No Trace

[nps.gov/articles/leave...](https://nps.gov/articles/leave-no-trace)

#NationalParkWeek

4:45 pm · 24 Apr 2020 · Twitter Web App

NON-COVID-19 EXAMPLE




National Park Service  
@NatParkService

Thursday...still not Friday.

#FindYourPark

1:57 pm · 5 Nov 2020 · Twitter Web App

COVID-19 EXAMPLE



National Park Service  
@NatParkService

Social distancing means avoiding large gatherings and maintaining distance (6 ft) from others. While we're at it, remember to keep it at least 300 ft for larger wildlife.

Check park websites for the most up to date information regarding access and services.

#SocialDistancing

6:38 pm · 25 Mar 2020 · Twitter Web App

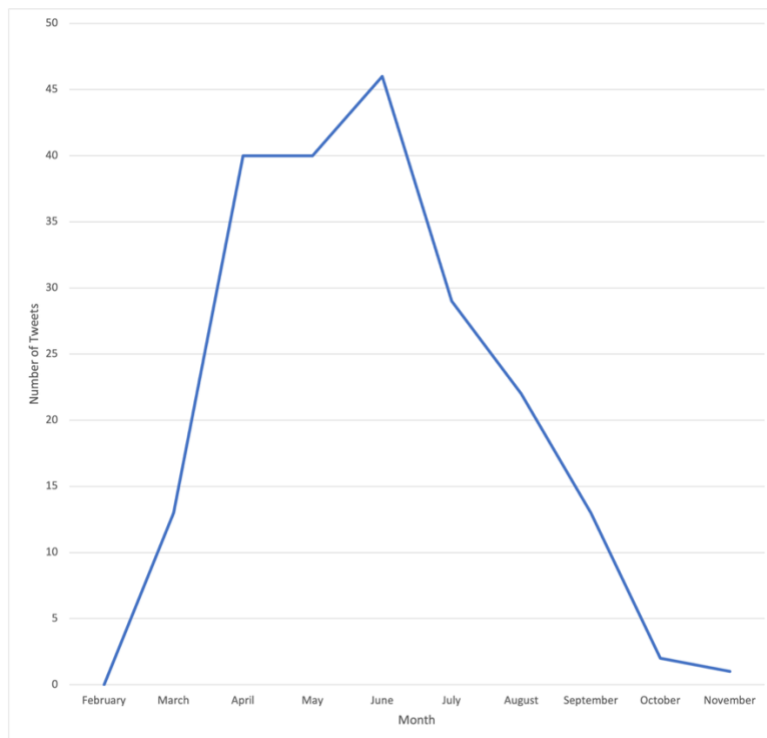
## 4.2 Number of COVID-19 Tweets

Line charts were created to analyze the trajectory of the number of tweets regarding COVID-19. Below are various graphs depicting the number of COVID-19 tweets by overarching park organisations, and important comparisons between park organisations (overarching and individual).

### 4.2.1 Parks Canada and Individual National Parks

The COVID-19 tweets by Parks Canada gradually increased from March to June (Figure 8). In March, there are 13 tweets regarding COVID-19, increasing to 46 in June, a 254% increase. Starting in July, they decrease significantly until the end of November from 29 COVID-19 tweets to 1 per month. The peak in June is 46 tweets leading to 1 tweet in November about COVID-19.

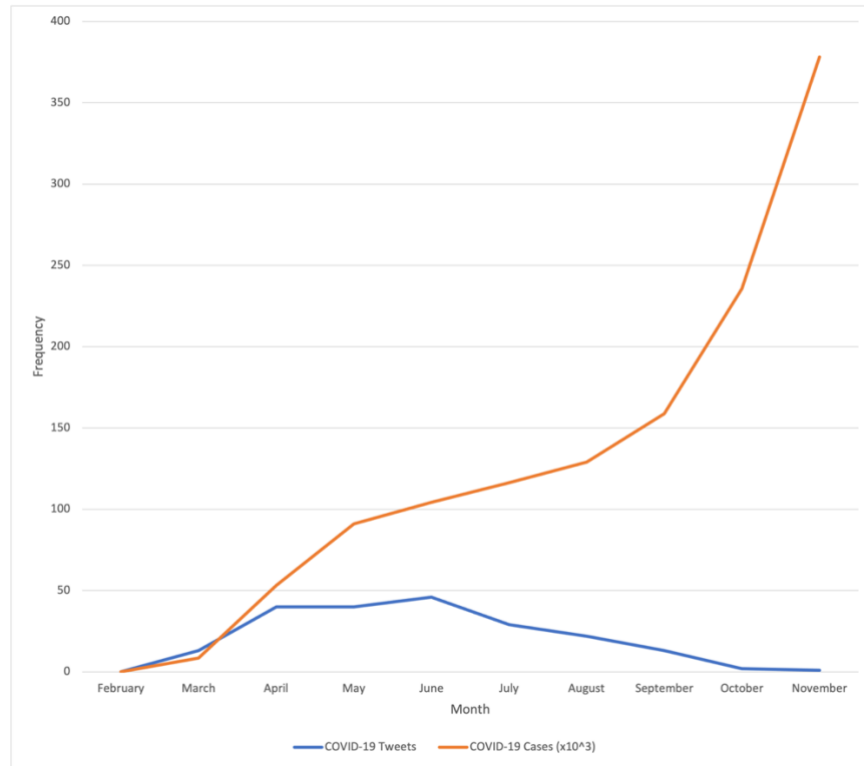
*Figure 8. Number of COVID-19 Tweets by Parks Canada.*



To compare the number of messages that Parks Canada has tweeted in relation to the progression of COVID-19, Figure 9 shows the number of tweets by Parks Canada and the cumulative number of COVID-19 cases in Canada by month. In this figure, it can be seen that COVID-19 cases in Canada start to rise in March and continue to do so throughout the year. However, the same cannot be said for the number of COVID-19 tweets by Parks Canada. The peak of the tweet count is in June with 46 COVID-19 related messages, and then it declines to 1 in November. There are 104,193 COVID-19 cases in June, rising 263% to 378,139 cases in November. There is an inverse relationship between the

number of COVID-19 tweets by Canada’s national park agency and the number of COVID-19 cases recorded in the country. This may be due to the park busy season of summer coming to an end. With less visitation, there is a potential for less social media content being put out.

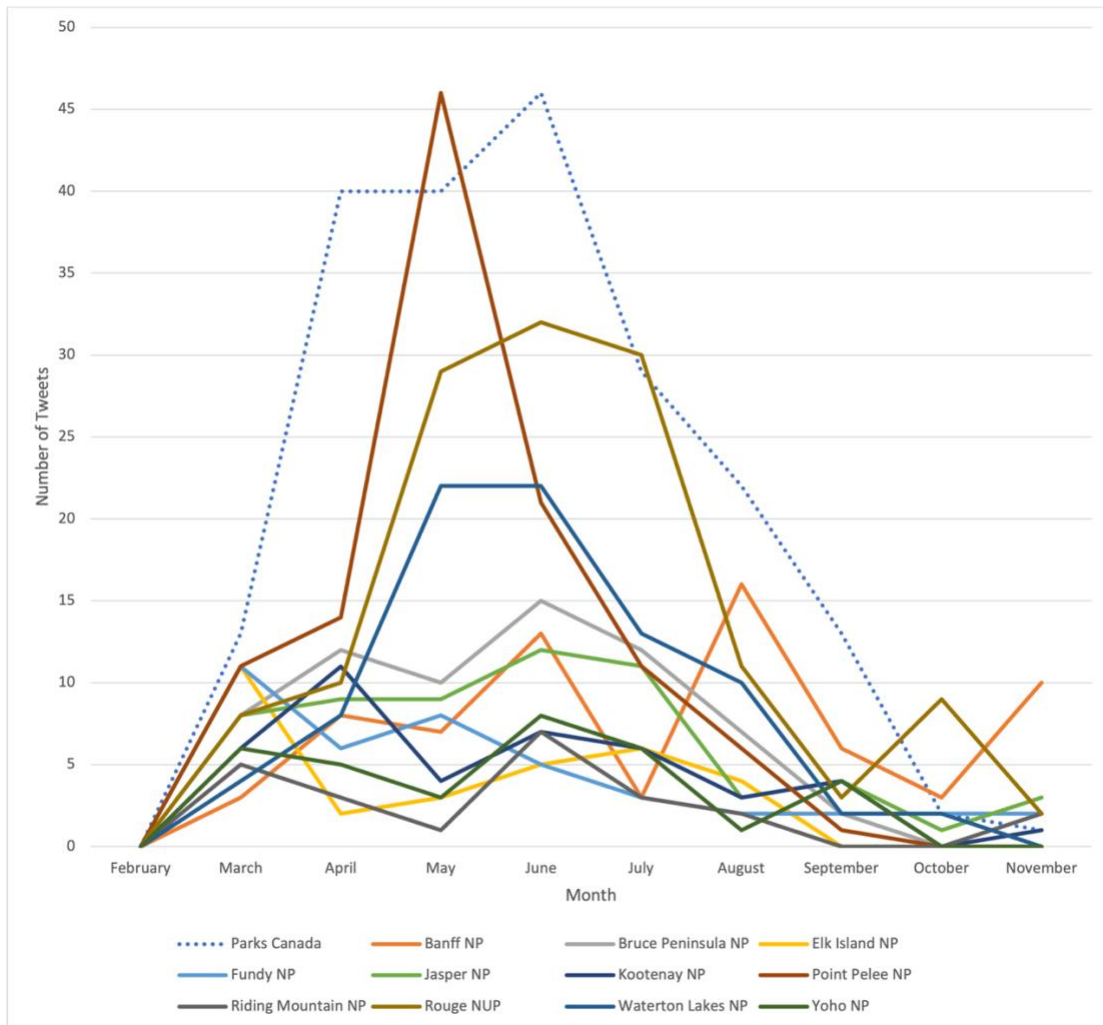
*Figure 9. Comparison of COVID-19 Tweets by Parks Canada and the cumulative number of COVID-19 cases in Canada by month (Statista, 2021).*



In Figure 10, Parks Canada can be seen to have the largest number of COVID-19 tweets out of all of the organisations over the study period with 206 tweets. In comparison, the organisation with the second highest number of tweets is Rouge National Urban Park with 134 tweets. Parks Canada, Point Pelee National Park, Rouge National Urban Park, and Waterton Lakes National Park have the most similar trajectory, with the most COVID-19 tweets from April to July. The other park organisations remain somewhat steady throughout the months, only slightly increasing from April to September. When it comes to increases in tweets concerning COVID-19, there were some exceptions. Banff National Park spiked in COVID-19 tweets during the month August, going from 3 tweets in July to 16 in August (433% increase). In addition, Rouge National Urban Park went from 3 tweets in September to 9 tweets in October, a 300% increase. Some organisations had different patterns. Elk Island National Park tweeted less about COVID-19 during the month of April, decreasing from 11 in March to two in

April. The same can be said about Riding Mountain National Park, which had a 40% decrease in those months.

Figure 10. Comparison of COVID-19 Tweets by Parks Canada and Individual National Parks.

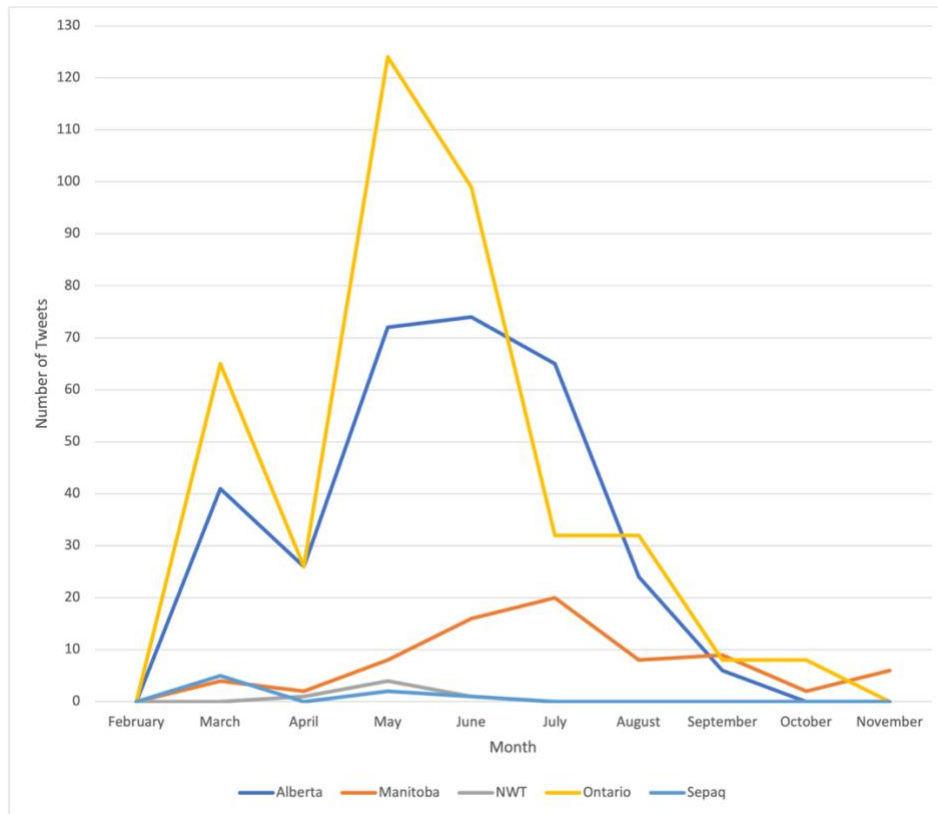


#### 4.2.2 Provincial Park Organisations

For the provincial park agencies, there was a general gradual increase in the number of COVID-19 tweets from March to July (Figure 11). In March alone, there were 115 tweets in total from all organisations. From August to November, there were a total of 103 tweets from all organisations. The provincial park organisations began to reduce the number of pandemic-related tweets until the end of November. It can be seen that Ontario Parks had the most COVID-19 tweets in the study period with 394, and Alberta Parks coming in closely behind with 308 tweets. There was an increase during March, a decrease in April, and then a spike from May to July for these two organisations. In March, Ontario Parks had 65 tweets and Alberta Parks had 41. Manitoba Parks, NWT Parks and Sepaq all had a small

number of COVID-19 tweets during the study period with 75, 6 and 8 respectively. However, it can be said that NWT and Sepaq had a very similar trajectory, with most of the tweets being posted from March to the end of May. NWT and Sepaq had 100% of their tweets go out in this period.

*Figure 11. Comparison of COVID-19 Tweets by Provincial Park Agencies.*



In Figure 12, all of the organisations had a spike in the number of COVID-19 tweets during March and a decrease in April. Algonquin Provincial Park and Killarney Provincial Park’s number of tweets decreased by 67% in those months, while Arrowhead Provincial Park by 94%, and Pinery Provincial Park’s by 94%. Following this decrease, varying patterns occurred. All except for Pinery Provincial Park increased during October. This may be due to the changing of the leaves, with Ontario Parks even having a “Fall Colours” report that indicates where the best places are to see this change within their natural spaces (Ontario Parks, 2020).

Figure 12. Comparison of COVID-19 Tweets by Individual Provincial Parks in Ontario.

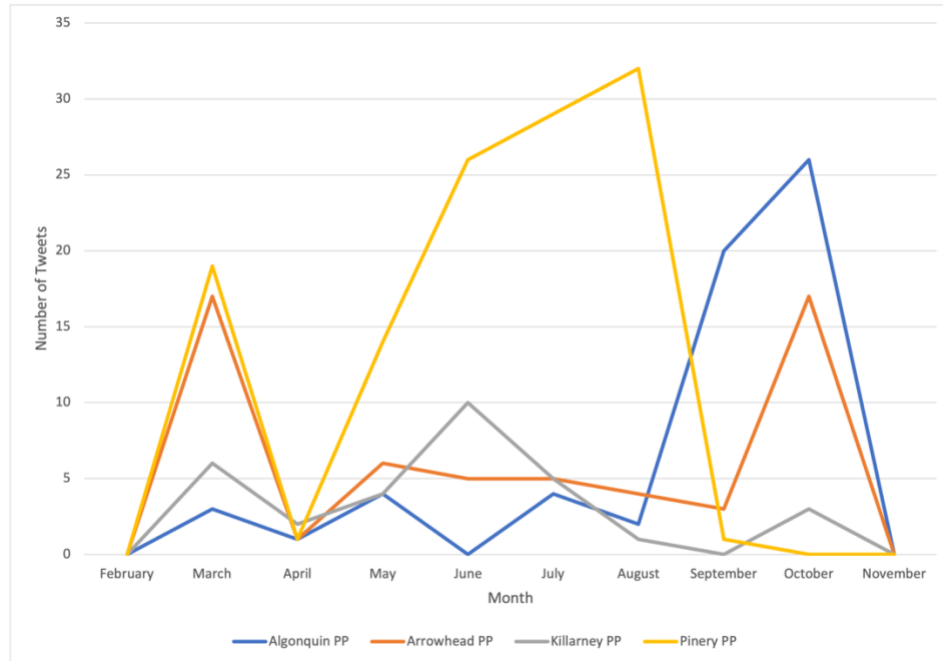
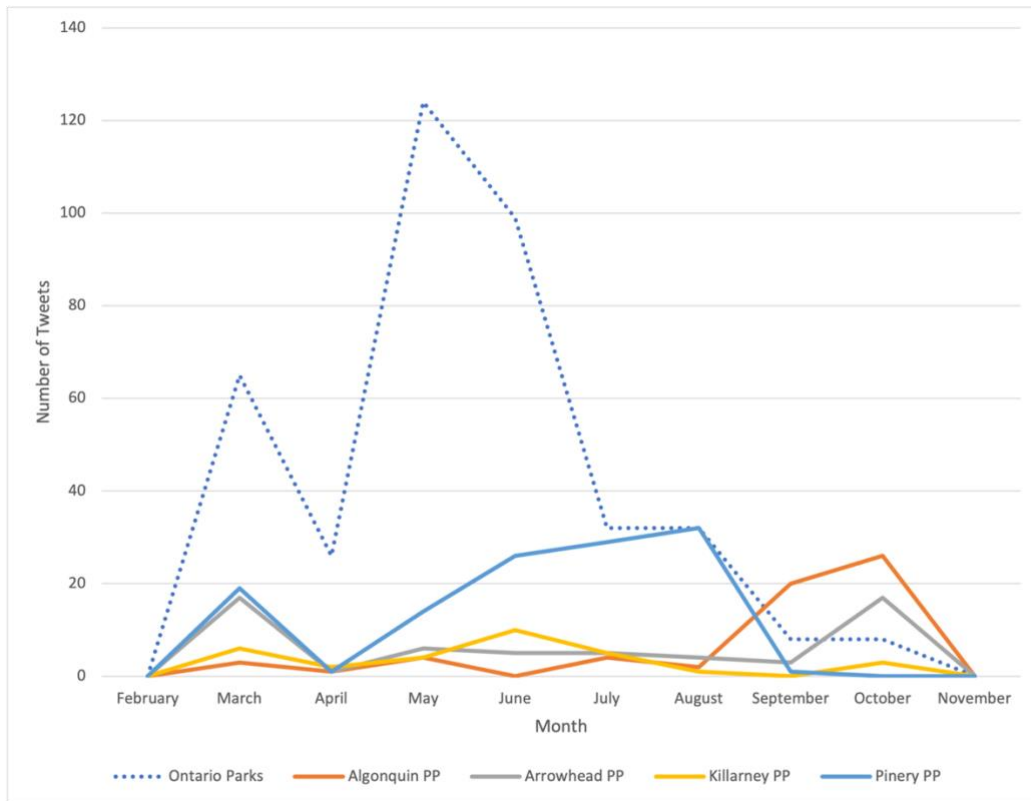


Figure 13 shows that Ontario Parks had more COVID-19 tweets from March to August in comparison to all of the individual park organisations within Ontario. During these months, Ontario Parks tweeted 378 times, with Pinery Provincial Park tweeting 121 times, Arrowhead 38 times, Killarney 28 times, and Algonquin 14 times. After, however, Algonquin and Arrowhead provincial parks exceeded the number of COVID-19 tweets that Ontario Parks had during the months of September through November. Algonquin tweeted 46 times and Arrowhead 20 times, compared to Ontario Parks' 18 tweets.

Figure 13. Comparison of COVID-19 Tweets by Ontario Parks and Individual Provincial Parks in Ontario.

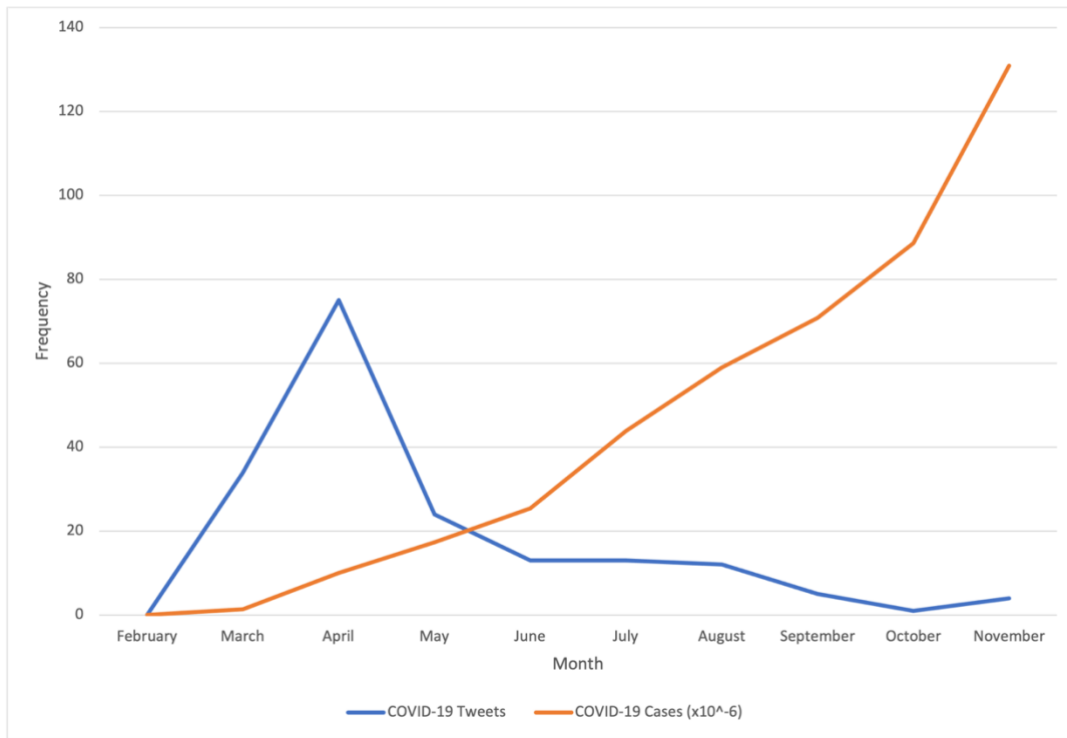


#### 4.2.3 National Park Service

In Figure 14, the number of COVID-19 tweets by the NPS increases by 121% from March to April, going from 34 to 75 tweets. There are a minimal number of pandemic-related tweets from May to the end of November, at a total of 72 tweets. The COVID-19 cases in the U.S. start to increase consistently from March to November. From March to June, there is a 3844800% increase in COVID-19 cases. This high percentage is in line with the high number of tweets from March to April. From July to November, the percentage increase lowers to 198.113%, which can account for the decrease in tweets, in addition to the peak summer season coming to an end in September.

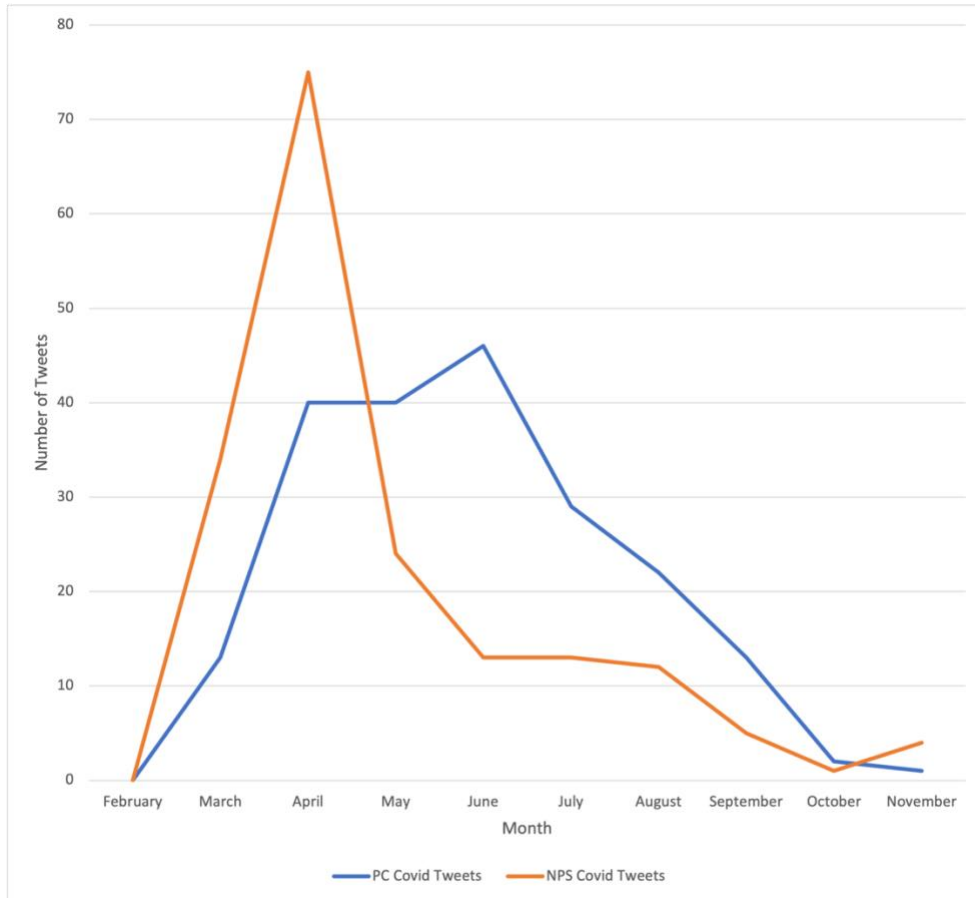


Figure 14. Comparison of COVID-19 Tweets by U.S. NPS and the cumulative number of COVID-19 cases in the U.S. by month (Statista, 2021).



When comparing Parks Canada and the U.S. National Park Service in Figure 15, it can be seen that Parks Canada has a more gradual increase in the number of COVID-19 tweets from March to June with a 253% increase over four months, gradually decreasing after that until November. However, the NPS COVID-19 tweet frequency increases during March and spikes in April at 121% over two months, with minimal numbers of COVID-19 tweets beginning in May.



Figure 15. Comparison of COVID-19 Tweets by Parks Canada and the U.S. NPS.


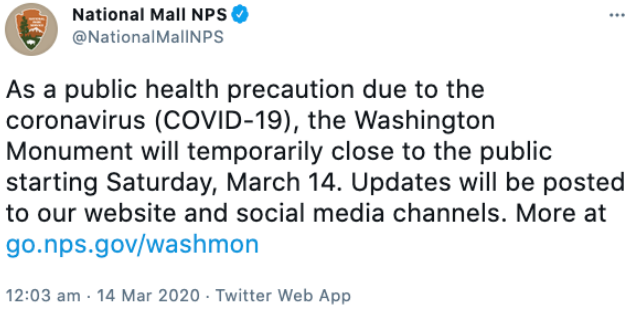
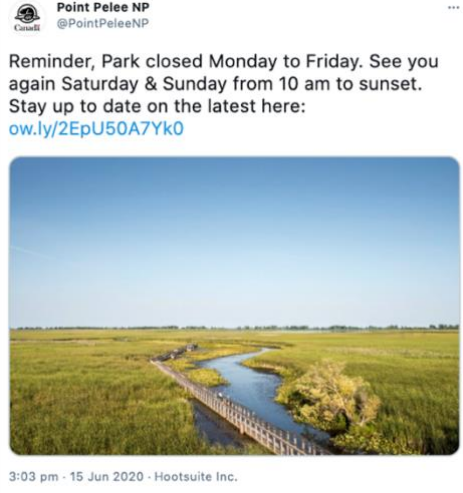


### 4.3 Themes Found Within the COVID-19 Tweets

Various themes were found within the COVID-19 related tweets. Table 2 provides a definition and example for each theme found within the tweets of the park organisations relating to COVID-19.

Table 2. Definitions and examples of themes found within the COVID-19 tweets.

Theme	Definition	Example
<i>At Home &amp; Local</i>	Tweets about people staying at home or visiting local areas.	 <p>9:45 pm · 10 Apr 2020 · Sprout Social</p>
<i>Camping</i>	Tweets about camping (i.e., reservations, cancellations, re-opening).	 <p>10:00 pm · 17 Jun 2020 · Hootsuite Inc.</p>

<p><b>Capacity &amp; Overcrowding</b></p>	<p>Tweets about park capacity or overcrowding in parks. Can include tweets urging people not to visit a park due to overcapacity or day use visitor limitations.</p>	 <p>12:55 pm · 11 Oct 2020 · Twitter for iPhone</p>
<p><b>Closures &amp; Cancellations</b></p>	<p>Tweets about the closures of parks. In addition, tweets about event cancellations due to COVID-19.</p>	 <p>12:03 am · 14 Mar 2020 · Twitter Web App</p> <p style="text-align: center;">Retweet by the NPS</p>
<p><b>Operational Changes</b></p>	<p>Tweets about operational changes within parks, including their facilities.</p>	 <p>3:03 pm · 15 Jun 2020 · Hootsuite Inc.</p>

<p><b>Parking &amp; Vehicles</b></p>	<p>Tweets about parking at the parks, restrictions on parking/vehicle access, or road access.</p>	
<p><b>Re-Opening</b></p>	<p>Tweets about the re-opening of parks, park facilities, or camping within parks.</p>	<p style="text-align: center;">Retweet by the NPS</p>
<p><b>Resources &amp; Information</b></p>	<p>Tweets about COVID-19 resources and information regarding parks.</p>	

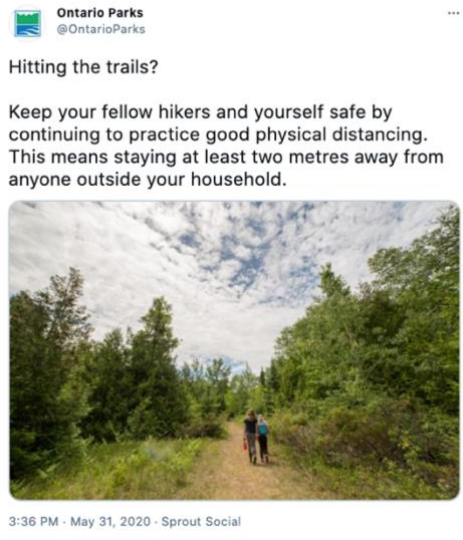



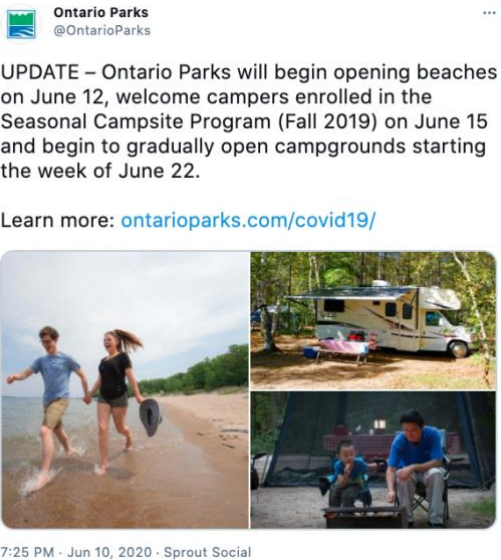
<p><b><i>Social Distancing &amp; Health Guidelines</i></b></p>	<p>Tweets encouraging social distancing and promoting provincial or national health guidelines.</p>	
<p><b><i>Trespassing &amp; Illegal Activity</i></b></p>	<p>Tweets about trespassing in parks when they are closed or other illegal activity.</p>	
<p><b><i>Virtual Information, Education &amp; Events</i></b></p>	<p>Tweets promoting virtual information, education, or events as a result of staying home.</p>	 <p style="text-align: center;">Retweet by the NPS</p>

Table 3 provides an example for each theme found within the tweets of a major provincial park organisation.

Table 3. Examples of themes found within the Ontario Parks COVID-19 tweets.

Theme	Example by Ontario Parks
<p><i>At Home &amp; Local</i></p>	 <p>Ontario Parks @OntarioParks</p> <p>Feeling tense?</p> <p>Take a break and draw your favourite camping scene, memory, or even a natural element from your home or backyard. <a href="https://bit.ly/3fKWMMM">bit.ly/3fKWMMM</a></p> <p>1:00 AM · May 24, 2020 · Sprout Social</p>
<p><i>Camping</i></p>	 <p>Ontario Parks @OntarioParks</p> <p>UPDATE – Ontario Parks will begin opening beaches on June 12, welcome campers enrolled in the Seasonal Campsite Program (Fall 2019) on June 15 and begin to gradually open campgrounds starting the week of June 22.</p> <p>Learn more: <a href="https://ontarioparks.com/covid19/">ontarioparks.com/covid19/</a></p> <p>7:25 PM · Jun 10, 2020 · Sprout Social</p>

**Capacity & Overcrowding**

**Forks of the Credit Provincial Park**  
@ForksCreditPP

October 3, 2020. The park has reached capacity and gates are now closed. No further entry will be permitted. Please visit us another day or explore another park.



3:29 PM · Oct 3, 2020 · Twitter Web App

Retweet by Ontario Parks

**Closures & Cancellations**

**Ontario Parks**  
@OntarioParks

In order to assist the province with its efforts to keep Ontarians safe during this time, all provincial parks and conservation reserves will remain closed to the public until May 31, 2020.

For full details, please read:  
[ontarioparks.com/covid19](https://ontarioparks.com/covid19)



3:18 PM · Apr 25, 2020 · Sprout Social

**Operational Changes**

**KillbearPP**  
@KillbearPP

A reminder for those who have yet to visit Ontario Parks this summer! Showers will remain closed for the 2020 season. Check out the blog article for further information: [bit.ly/312ldQ6](https://bit.ly/312ldQ6). We appreciate your help in protecting our environment for the future!



What to do when showers are closed - Parks Blog  
We're thrilled to welcome campers back to parks, and we look forward to another wonderful summer of ...  
[ontarioparks.com](https://ontarioparks.com)

2:25 PM · Jul 27, 2020 · Sprout Social

Retweet by Ontario Parks



***Parking & Vehicles***

 **Mono Cliffs Provincial Park**  
@MonoCliffsPP

Have you arrived to find the parking lot full?

Consider heading to another Provincial Park (such as [@darlingtonPP](#) or [@opbrontecreek](#)), or check out another park in the Town of Mono [bit.ly/3k4hbhT](https://bit.ly/3k4hbhT)



9:39 AM · Oct 17, 2020 · Sprout Social

Retweet by Ontario Parks

***Re-Opening***

 **Sandbanks Prov Park**  
@SandbanksPP

\*\*\* UPDATE \*\*\*

Sandbanks has re-opened for day-use visitors. We are still busy, but spots are now available at all three beaches.

8:49 PM · Jul 18, 2020 · Hootsuite Inc.

1 Retweet 2 Quote Tweets 14 Likes

Retweet by Ontario Parks

***Resources & Information***

 **Ontario Parks**  
@OntarioParks

UPDATE: As of June 1, limited backcountry camping will be available at Ontario Parks. Please check our website for details: [bit.ly/3aPpTuJ](https://bit.ly/3aPpTuJ)

The closure of campgrounds will be extended to June 14.



3:29 PM · May 30, 2020 · Sprout Social


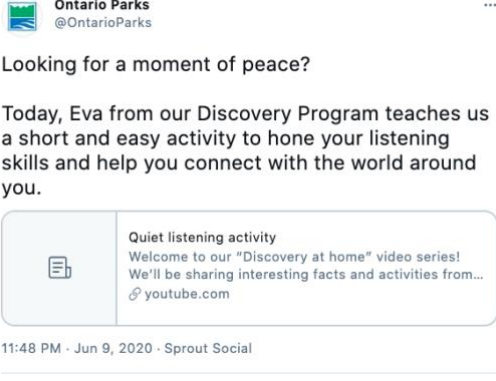

<p><b><i>Social Distancing &amp; Health Guidelines</i></b></p>	 <p>Ontario Parks @OntarioParks</p> <p>Hitting the trails?</p> <p>Keep your fellow hikers and yourself safe by continuing to practice good physical distancing. This means staying at least two metres away from anyone outside your household.</p> <p>3:36 PM · May 31, 2020 · Sprout Social</p>
<p><b><i>Virtual Information, Education &amp; Events</i></b></p>	 <p>Ontario Parks @OntarioParks</p> <p>Looking for a moment of peace?</p> <p>Today, Eva from our Discovery Program teaches us a short and easy activity to hone your listening skills and help you connect with the world around you.</p> <p>Quiet listening activity Welcome to our "Discovery at home" video series! We'll be sharing interesting facts and activities from... <a href="#">youtube.com</a></p> <p>11:48 PM · Jun 9, 2020 · Sprout Social</p>

Table 4 provides an example for each theme found within the tweets of a provincial park organisation that was very active on social media and had tweets that fit into most of the themes found.

Table 4. Examples of themes found within Pinery Provincial Park’s COVID-19 tweets.

Theme	Example by Pinery Provincial Park
<p><b><i>Camping</i></b></p>	 <p>PineryPP @PineryProvPark</p> <p>Replying to @Laura_DBON</p> <p>Hi Laura,</p> <p>Camping will be available on June 22nd: <a href="https://ontarioparks.com/park/pinery">ontarioparks.com/park/pinery</a></p> <p>We're looking forward to seeing you!</p> <p>5:30 PM · Jun 17, 2020 · Sprout Social</p>

***Capacity & Overcrowding***

 PineryPP  
@PineryProvPark


UPDATE AUGUST 22 ND, 2020, 2:48 PM

Day Use has reached full capacity and we are no longer selling day passes. Please monitor social media for updates.



7:47 PM · Aug 22, 2020 · Sprout Social


***Closures & Cancellations***

 PineryPP  
@PineryProvPark

Reminder: our beaches and campgrounds remain closed.

The park is open for day use activities such as walking, hiking, cycling, and paddling.

Please check the Facilities/Activities icons on our webpage for more information on what is available:  
[ontarioparks.com/park/pinery](http://ontarioparks.com/park/pinery)



1:21 PM · Jun 12, 2020 · Sprout Social

**Operational Changes**

**PineryPP**  
@PineryProvPark

We have updated our hours for the Park Store, Ice Cream and Woodlot! 📌 See the image below for details!

Will you be camping this September?



**PINERY CONCESSIONS**  
September 2020

<b>Park Store</b>	
Sunday - Thursday 9 AM - 5 PM	Friday - Saturday 9 AM - 7 PM
<b>Ice Cream</b>	
Sunday - Thursday 11 AM - 7 PM	Friday - Saturday 11 AM - 9 PM
<b>Wood lot</b>	
Sunday - Thursday CLOSED	Friday - Saturday 1 PM - 8 PM
<b>Rentals and Restaurant</b>	
Rentals and the restaurant are CLOSED for the season.	

4:53 PM · Sep 9, 2020 · Sprout Social

**Parking & Vehicles**

**PineryPP**  
@PineryProvPark

Replying to @MrsGooyers

Hi Jaime,

All trails are open.

Please note, though, that some roads are closed or gated. Our campgrounds are gated, our day use road is closed, and the Burley is gated at the Park Store.

1/2

3:46 PM · May 16, 2020 · Sprout Social

***Re-Opening***

 PineryPP  
@PineryProvPark

Beginning May 11, we're providing access to some provincial parks and conservation reserves for limited recreational day-use, such as walking, hiking and biking, with access to the remaining provincial parks -- including Pinery -- on May 15: [ontarioparks.com/covid19](https://ontarioparks.com/covid19)



10:24 PM · May 9, 2020 · Sprout Social

***Resources & Information***

 PineryPP  
@PineryProvPark

Just a reminder: our park will be available starting Friday May 15 for limited recreational day-use activities.

Please visit this link for services that will be available: [bit.ly/3aPpTuJ](https://bit.ly/3aPpTuJ)



4:46 PM · May 10, 2020 · Sprout Social

***Social Distancing & Health Guidelines***



Table 5 shows a comparison of frequency of tweets for each theme between Parks Canada and the U.S. NPS themes. There was a statistically significant difference between themes and the frequency of tweets from Parks Canada and the U.S. NPS ( $X^2=41.51$ ,  $p=0.00000007$ ,  $df=5$ ). In terms of specific themes, Parks Canada had the highest percentage of tweets in the At Home & Local theme (37.8%) while the NPS had the highest in Virtual Information, Education and Events (36.1%).

*Table 5. Frequency of Tweets by Parks Canada and the U.S. NPS Organized by Theme.*

<b>Theme</b>	<b>Parks Canada – Number of Tweets</b>	<b>Percentage (%)</b>	<b>U.S. NPS – Number of Tweets</b>	<b>Percentage (%)</b>
At Home & Local	115	<b>37.8%</b>	37	<b>16.3%</b>
Closures & Cancellations	26	<b>8.9%</b>	22	<b>9.7%</b>
Re-Opening	18	<b>6.2%</b>	27	<b>11.9%</b>

Resources & Info	21	<b>7.2%</b>	11	<b>4.8%</b>
Social Distancing & Health Guidelines	51	<b>17.5%</b>	48	<b>21.1%</b>
Virtual Information, Education, & Events	60	<b>20.6%</b>	82	<b>36.1%</b>

Table 6 shows a comparison of frequency of tweets for each theme between Canadian individual national parks.

*Table 6. Frequency of Tweets by Canadian Individual National Parks Organized by Theme.*

Theme	Banff NP	Bruce Peninsula NP	Elk Island NP	Fundy NP	Jasper NP	Kootenay NP	Point Pelee NP	Riding Mountain NP	Rouge NUP	Waterton Lakes NP	Yoho NP	Total	%
At Home & Local	9	16	6	8	17	15	56	2	44	17	13	<b>203</b>	<b>19</b>
Closures & Cancellations	21	21	13	19	16	14	25	8	16	25	11	<b>189</b>	<b>18</b>
Re-Opening	21	7	2	10	10	11	18	7	9	14	9	<b>118</b>	<b>11</b>
Social Distancing & Health Guidelines	11	5	5	3	23	4	2	3	23	20	6	<b>105</b>	<b>10</b>
Parking & Vehicles	12	17	11	12	10	3	6	1	7	25	3	<b>107</b>	<b>10</b>
Virtual Information, Education, & Events	7	3	1	2	7	2	19	1	50	6	4	<b>102</b>	<b>10</b>
Resources & Info	25	3	5	3	4	4	15	6	9	17	9	<b>100</b>	<b>9</b>
Camping	7	12	2	6	6	5	12	5	7	11	4	<b>77</b>	<b>7</b>
Capacity & Overcrowding	1	13	7	0	0	1	7	0	1	8	2	<b>40</b>	<b>4</b>
Operational Changes	0	0	1	1	0	0	8	2	0	5	3	<b>20</b>	<b>2</b>

Trespassing & Illegal Activity	0	2	0	0	0	0	0	0	0	0	1	0	3	0
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Table 7 shows a comparison of frequency of tweets for each theme between Canadian provincial park agencies.

*Table 7. Frequency of Tweets by Canadian Provincial Park Agencies organized by Theme.*

Theme	Alberta Parks	Manitoba Parks	NWT Parks	Ontario Parks	Sepaq	Total	%
Camping	125	2	3	66	0	196	21
Social Distancing & Health Guidelines	85	35	3	36	0	159	17
Closures & Cancellations	38	4	3	71	1	117	12
Re-Opening	28	1	1	84	3	117	12
Resources & Info	12	23	0	59	4	98	10
Capacity & Overcrowding	22	0	0	60	0	82	9
At Home & Local	16	11	0	31	0	58	6
Operational Changes	1	1	0	48	1	51	5
Parking & Vehicles	24	7	0	7	0	38	4
Virtual Information, Education, & Events	5	22	0	6	0	33	3



Table 8 shows a comparison of frequency of tweets for each theme between Canadian individual provincial parks.

*Table 8. Frequency of Tweets by Canadian Individual Provincial Parks Organized by Theme.*

<b>Theme</b>	<b>Algonquin PP</b>	<b>Arrowhead PP</b>	<b>Killarney PP</b>	<b>Pinery PP</b>	<b>Total</b>	<b>%</b>
Capacity & Overcrowding	45	23	2	54	<b>124</b>	<b>35</b>
Closures & Cancellations	7	9	11	38	<b>65</b>	<b>18</b>
Camping	2	6	15	40	<b>63</b>	<b>18</b>
Re-Opening	5	6	8	22	<b>41</b>	<b>11</b>
Social Distancing & Health Guidelines	5	4	1	17	<b>27</b>	<b>8</b>
Resources & Info	5	5	5	11	<b>26</b>	<b>7</b>
Parking & Vehicles	1	1	2	4	<b>8</b>	<b>2</b>
Operational Changes	0	1	0	4	<b>5</b>	<b>1</b>
At Home & Local	0	0	0	0	<b>0</b>	<b>0</b>
Virtual Information, Education, and Events	0	0	0	0	<b>0</b>	<b>0</b>

## CHAPTER 5: DISCUSSION & RECOMMENDATIONS

In this section, an examination of the results is provided concerning how park agencies responded on social media during the COVID-19 pandemic, including the successes and consequences of their communication. The chapter is organized into themes, guided by the research objectives. Further, the limitations of the study, opportunities for future research, and recommendations for park management and communication will be looked at in this chapter.

### 5.1 Social Media as a Park Agency Communication Tool

From February to November 2020, it can be seen that park agencies did take to social media, especially Twitter, to communicate information about operational changes, closures and cancellations, and anticipated re-opening of facilities. Tweets about staying home or local, camping reservations, capacity and overcrowding, and virtual information are just a few of the themes found within the messaging of the agencies. For Canadian agencies, there was an emphasis on staying home and health guidelines, such as maintaining social distancing, to further prevent the spread of the virus. A deeper examination of the themes found within the dataset is discussed.

#### 5.1.1 Themes

##### 5.1.1.1 At Home and Local

The theme of “At Home and Local” includes tweets about people staying at home or visiting local areas. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (37%), individual national parks (19%), provincial park agencies (6%), individual provincial parks (0%), and the U.S. NPS (16%). Based on these numbers, this theme was tweeted about more frequently on the Parks Canada Twitter account and the U.S. NPS account. Individual provincial parks did not tweet about this theme. Words such as “stay home” or “at home” were used. In addition, various hashtags were created to encourage people to stay home (#StayHome, #ParkedAtHome) or stay local (#BackyardXplorers). Figures 20, 21 and 22 show examples of these hashtags being used.

Figure 16. Example of a tweet using "#StayHome".



Figure 17. Example of a tweet using "#ParkedAtHome".



Figure 18. Example of a tweet using "#BackyardExplorers".

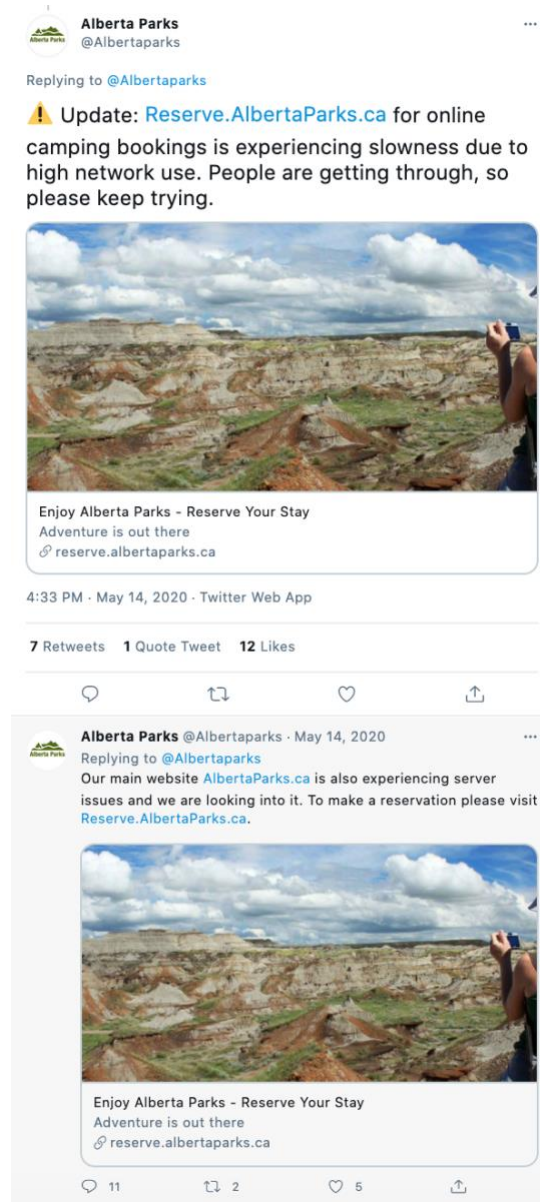


#### 5.1.1.2 Camping

The theme of “Camping” includes COVID-19 tweets about anything related to camping in Canadian national and provincial parks. This includes closures of campsites, making reservations, and re-opening of campsites. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (2%), individual national parks (7%), provincial park agencies (21%), individual provincial parks (18%), and the U.S. NPS (0%). Provincial park agencies tweeted about this theme the most out of all of the dataset categories. An event worth mentioning is that once the Alberta Parks provincial park agency camping reservation portal was open, and people could reserve their spot for the summer, the website crashed due to the high levels of activity. Figure 22

shows a series of tweets by the provincial park agency trying address this issue and that their website will be up and running again shortly after the crash.

Figure 19. Camping tweets by Alberta Parks.



These high levels of activity can be attributed to the fact that Alberta Parks cancelled all camping reservations from March to mid-May due to COVID-19. When camping was permitted once again, many Albertans wanted to go camping, which can potentially be attributed to the mandatory quarantine and isolation required during the first months of the pandemic. The U.S. NPS did not tweet about COVID-19 related camping during this time.

### 5.1.1.3 Capacity and Overcrowding

The theme of “Capacity and Overcrowding” includes tweets about park capacity or overcrowding in these natural areas. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (0%), individual national parks (4%), provincial park agencies (9%), individual provincial parks (35%), and the U.S. NPS (16%). The high number of tweets about this theme by individual provincial parks urge people not to visit a park due to overcapacity or give more information about day use visitor limitations. This occurs during the summer months when it is peak season. A reason for these tweets is that the parks implemented a day-use capacity so that social distancing guidelines and other health regulations could be followed (Ontario Parks, 2020). During these peak months, visitation increased to parks, especially since they re-opened to the public in June with COVID-19 measures in place. Therefore, overcrowding and day-use capacity occurred at various provincial parks across Ontario. Figure 24 shows an example of a capacity and overcrowding tweet.

*Figure 20. Example of a capacity and over-crowding tweet by Algonquin Provincial Park.*



#### 5.1.1.4 Closures and Cancellations

The theme of “Closures and Cancellations” includes tweets about the closures of parks. In addition, tweets about event cancellations due to COVID-19 were also included. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (8%), individual national parks (18%), provincial park agencies (12%), individual provincial parks (18%), and the U.S. NPS (10%). All of the dataset categories tweeted about closures and cancellations, especially near the beginning of the pandemic. Parks were closed and events were cancelled due to government health guidelines and regulations being put in place to flatten the curve of the pandemic. An example of this is shown in Figure 25.

Figure 21. Example of a "Closures and Cancellations" tweet by Parks Canada.



#### 5.1.1.5 Operational Changes

The theme of “Operational Changes” includes tweets about operational changes within parks, including their facilities. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (0%), individual national parks (2%), provincial park agencies (5%), individual provincial parks (1%), and the U.S. NPS (0%). This theme was not frequently tweeted about during the pandemic across all dataset categories. Parks Canada and the U.S. NPS did not tweet about this theme at all. Provincial park agencies tweeted about it the most, especially about park hours changing after park re-openings and facility re-openings. Figure 26 is an example of a tweet like this.

Figure 22. Example of an "Operational Changes" tweet by Alberta Parks.



#### 5.1.1.6 Parking and Vehicles

The theme of “Parking and Vehicles” includes tweets about parking at the parks, restrictions on parking/vehicle access, or road access. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (4%), individual national parks (10%), provincial park agencies (4%), individual provincial parks (2%), and the U.S. NPS (0%). This theme was especially important at the beginning of the pandemic and during the peak summer months. In the first months, vehicle access to Canadian parks was restricted to slow the spread of the virus. Figure 27 shows an example of this message being communicated to the public.



Figure 23. Example of "Parking and Vehicles" tweet by Fundy National Park.



During the peak summer months, Canadian park agencies and individual parks, both national and provincial, encouraged visitors to these natural areas to come early to avoid not finding a parking spot. Parking lots were getting to full capacity quickly, especially since there were limits on how many people could enter the park at a time. Again, this was put in place to limit the spread and keep in line with health guidelines. An example of a tweet like this is shown in Figure 28.

Figure 24. Example of a "Parking and Vehicles" tweet by Sandbanks Provincial Park, retweeted by Ontario Parks.



#### 5.1.1.7 Re-Opening

The theme of “Re-Opening” includes tweets about the re-opening of parks, park facilities, or camping within parks. The percentage of tweets concerning this theme among the different dataset

categories are as follows: Parks Canada (6%), individual national parks (11%), provincial park agencies (12%), individual provincial parks (11%), and the U.S. NPS (12%). All of the dataset categories tweeted about this theme in some capacity. This was because, between the months of May and June, health guidelines and preparation by the park agencies and individual parks allowed for the re-opening of facilities and natural areas. Even though they tweeted about the re-opening, they also included cautionary messages encouraging people to still follow social distancing and other health guidelines. Examples of these tweets are seen in Figures 29 and 30.

Figure 25. Example of a "Re-Opening" tweet by Yosemite National Park, retweeted by the U.S. NPS.

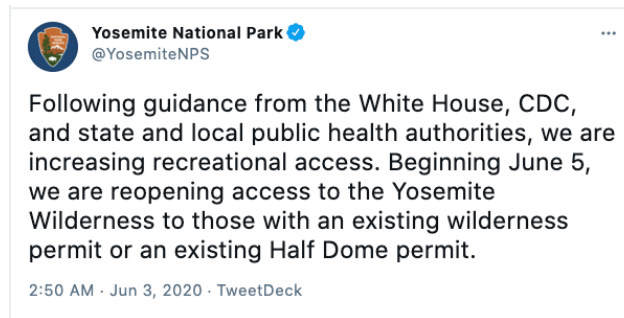
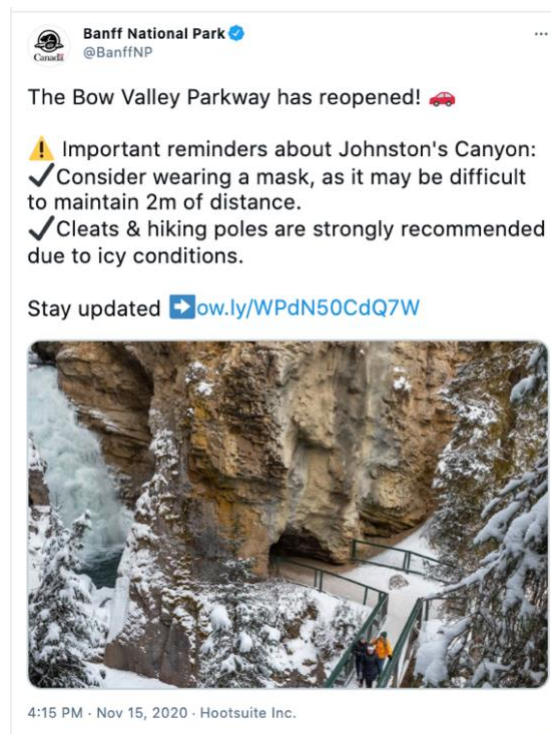


Figure 26. Example of a "Re-Opening" tweet by Banff National Park.



#### 5.1.1.8 Resources and Information

The theme of “Resources and Information” includes tweets about COVID-19 resources and information regarding parks. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (7%), individual national parks (10%), provincial park agencies (10%), individual provincial parks (7%), and the U.S. NPS (5%). The messaging consists of informing the public about new guidelines within the natural areas and how to adhere to health advisories. In addition, information about what facilities or parks were open or closed are also included in this theme. Figure 31 shows an example of a tweet with this kind of messaging.

*Figure 27. Example of a "Resources and Information" tweet by Riding Mountain National Park.*

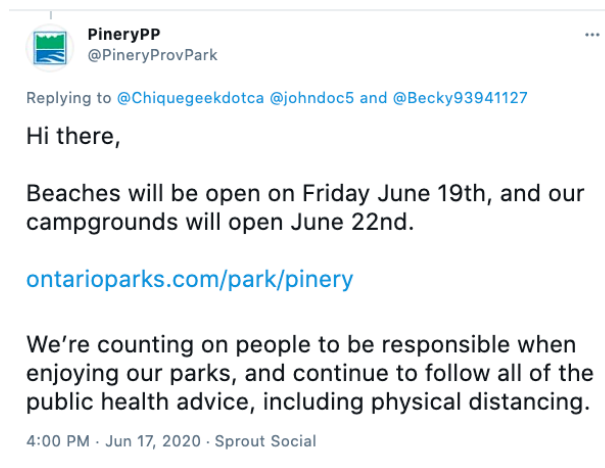


#### 5.1.1.9 Social Distancing and Health Guidelines

The theme of “Social Distancing and Health Guidelines” includes tweets encouraging social distancing at parks and promoting provincial or national health guidelines. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (17%), individual national parks (10%), provincial park agencies (17%), individual provincial parks (8%), and the U.S. NPS (21%). All of the dataset categories included messaging relating to social distancing and health advisories throughout the entire study period. Wording in these messages included “masks” and

“physical distancing”. They became more frequent as the re-opening of parks in May and June was announced. Figure 32 is an example of this.

*Figure 28. Example of a "Social Distancing and Health Guidelines" tweet by Pinery Provincial Park.*



The messaging within this theme also included information and resources from the government and health authorities. This can be seen in an example in Figure 33, where wearing a mask in indoor spaces is encouraged at Bruce Peninsula National Park.

Figure 29. Example of a "Social Distancing and Health Guidelines" tweet by Bruce Peninsula National Park.



#### 5.1.1.10 Trespassing and Illegal Activity

The theme of “Trespassing and Illegal Activity” includes tweets about trespassing in parks when they are closed or other illegal activity. Less than one percent of tweets by Parks Canada and individual national parks account for this theme. The other dataset categories did not tweet about trespassing and illegal activity. The messaging surrounding this is about people illegally trespassing on park land during the COVID-19 closure of these spaces. It also encourages people to stay home and not visit the parks during their closure. This indicates that people did not follow the health guidelines and closures within the parks and decided to visit illegally. It can reflect the need for people to be outdoors during this difficult time and how outdoor spaces are so important to people’s wellbeing. An example of a tweet within this theme can be seen in Figure 34.

Figure 30. Example of a "Trespassing and Illegal Activity" tweet by Bruce Peninsula National Park.



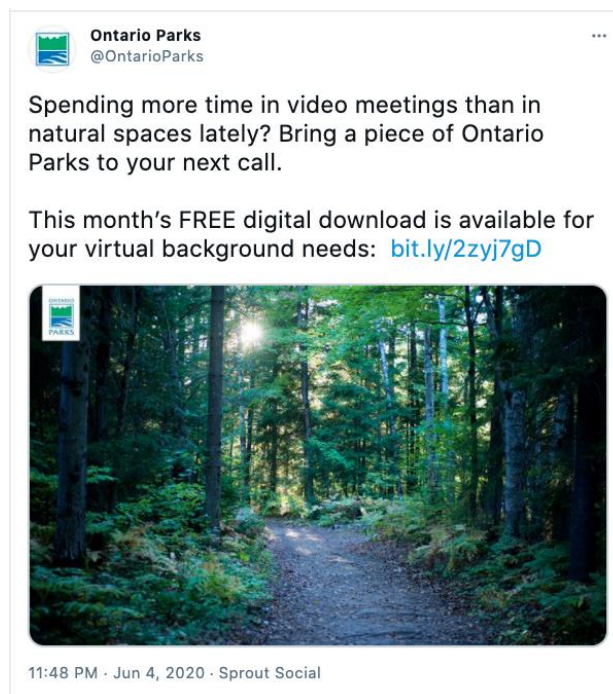
#### 5.1.1.11 Virtual Events, Education and Information

The theme of “Virtual Information, Education and Events” includes tweets promoting any kind of virtual programming as a result of staying home. The percentage of tweets concerning this theme among the different dataset categories are as follows: Parks Canada (19%), individual national parks (9%), provincial park agencies (4%), individual provincial parks (0%), and the U.S. NPS (36%). For the individual provincial parks and provincial park agencies included in the study, it can be interpreted that there was a minimal amount of messaging regarding virtual events, education and information. Figures 35 and 36 are examples of what tweets looked like when they did promote a virtual event.

Figure 31. Example of a tweet by Manitoba Parks promoting virtual programming.



Figure 32. Example of a tweet by Ontario Parks promoting virtual programming.



Some agencies did introduce social media activities and web-based programming due to reduced physical access, however, despite the new programs offered, there was a lack of messaging to promote them on park agency Twitter feeds (Waithaka et al., 2021). Based on the results, Canadian

provincial park agencies and individual provincial parks did not seize the opportunity to promote this alternative form of education or “virtual visit” to its parks and protected areas. This is potentially due to having a lack of students at the parks because of the closure of facilities. In contrast to this, Parks Canada tweeted more frequently about this theme, even though individual national parks lacked promoting virtual programming. The U.S. NPS focused more on providing alternatives to their visitors through virtual events, information, and education. 36% of their messaging was about virtual programs or opportunities. The U.S. NPS adapted to COVID-19 related-challenges in a manner that focused on education, interpretation and outreach, and on fostering or maintaining visitors’ relationship with their parks, even though people could not physically go there during the pandemic. Examples of these programs include the Classroom Virtual Learning Experience and Find Your “Virtual” Park. They promoted it heavily through the majority of their COVID-19 related tweets.

### *5.1.2 Strengths and Weaknesses within the Messaging*

The messaging put forth by the park agencies and individual parks during the ongoing COVID-19 pandemic had several strengths and weaknesses. In terms of strengths, the closure and re-opening of parks and their facilities was, overall, communicated in a consistent and timely manner. These events were tweeted about frequently before the actual closing and re-opening of parks. Another strength is that individual and general concerns about camping reservations, closures, re-opening of parks and facilities were communicated in a timely and frequent manner. While comments to tweets were not addressed in this study, park agencies and individual parks made a concerted effort to answer questions during this time. Information and resources were provided when necessary. For example, if a park was to re-open, the agency or individual park gave important information about the park itself but also health guidelines that needed to be followed. The clarity of the information was at a high standard, as the tweets were clear, concise and avoided jargon. Next, a number of park agencies, especially Parks Canada, tried to create a sense of community among their followers. For example, #ShareTheChair was an already existing hashtag that was about the red chairs you found throughout the national parks and that you could buy from Parks Canada. During the pandemic, Parks Canada branded them to be something you could take home and imagine yourself sitting in them within a national park. Figure 37 is an example of a tweet by Parks Canada involving #ShareTheChair.



Figure 33. Example of a "#ShareTheChair" tweet by Parks Canada.



Finally, when provided, virtual programming was encouraged to provide an alternative during the quarantine period at the start of the pandemic. Programming included virtual park tours, park staff giving nature lessons, ideas for backyard activities, resources for kids, virtual backgrounds available for online meetings, and more. Overall, messaging came across to the public clearly and was issued in a timely manner.

In turn, the park agencies and individual parks did exhibit some weaknesses when it came to their tweets and information provided. To start, there was overall a lack of virtual promotion in the provincial parks and agencies. In addition to this, virtual messaging rates, and tweets in general, declined after parks opened up again, even though people were still staying at home or in their local area due to the pandemic. Messaging frequency regarding COVID-19 was reduced after the summer months due to peak season ending, even though the pandemic was in full swing and the number of cases was rising. There was an inverse relationship with the number of COVID-19 tweets after April

and the number of COVID-19 cases in Canada. From the results, it can be seen that after April, there was a decrease in the COVID-19 related tweets by Parks Canada. However, the COVID-19 cases in the country continued to rise from March to the end of the study in November. This inverse relationship is potentially explained by the fact that parks did slowly re-open to the public in the late spring and summer months, easing restrictions due to warmer weather and operational measures put in place to prevent the spread of the virus. In addition, there is also the impact of COVID-19 fatigue, which suggests that people did not want to hear about the pandemic anymore (Zerbe, 2020). This could have led to park agencies tweeting less about it to not overwhelm the public during a time when COVID-19 was already so present in other parts of their lives.

During the fall season, when the colours were changing and people were still wanting to visit natural spaces, there was an inconsistency in the COVID-19 messaging across all dataset categories. However, park agencies should have continued to provide information and resources regarding the pandemic and how to stay safe in their parks during this time. The rationale behind the dramatically reduced number of COVID-19-related tweets is not known, but could be linked to a number of factors, including lower risks associated with outdoor activities, visitor familiarity with risk reduction measures, and the relatively low COVID-19 cases across Canada during the summer.

Another weakness would be that there was a lack of standardized messaging across the same political jurisdictions. For example, there was a statistically significant difference between individual provincial parks, all within Ontario, regarding the themes of their messaging. This indicates that although the parks were all located within the same province, they did not have the same content informing the public during the crisis. The same can be said for national park agencies, provincial park agencies, and individual national parks.

### **6.3 Disconnect Between Departments**

The results of this analysis indicate that park agencies and individual parks did not work enough in collaboration with their health department counterparts throughout the study period. They did not give enough information about health guidelines and did not retweet official government health officials when new rules and regulations came out. There was a clear disconnect between these departments within federal and provincial governments alike. Park agencies and individual

parks did not attempt to leverage resources for communication from their associated health departments or local health units. Specifically, there was a lack of cross-messaging between park agencies and health departments. This can be seen in the low percentage of messaging from both provincial and national organisations regarding resources, information, and health guidelines. When there were tweets about health guidelines, they were usually in line with park closures, park re-openings, and encouragement to follow health regulations due to the pandemic. In spite of this, specific authorities, such as Public Health Ontario, were often, if not always, left out of the tweet. Figure 38 provides an example of health advice being given in terms of COVID-19 and parks but makes no mention of the health department.

Figure 34. Example of a health guidelines tweet by Banff National Park.



A rare example of authorities being mentioned in messaging relating to health guidelines is seen in Figure 39. The Jasper Municipal Council’s new legislation is promoted, and masks are strongly encouraged when visiting indoor spaces in Jasper National Park.

Figure 35. Example of a tweet mentioning public authorities by Jasper National Park.



This lack of reference to health authorities within the messaging leads to the question of whether there is a disconnect between health and protected area departments in Canada. The health department could help the park agencies in terms of creating compelling and informative messaging for the public to understand more about decision-making and safe visitation. Wang et al. (2021) state that “*sufficiency, congruence and consistency in health risk communication have important implications for effective health safety instruction as well as critical content interpretability and recall*” (2021). Past research has shown that social media messaging, such as Twitter, is most effective when used by health organizations in crisis situations, like the Ebola outbreak, that are familiar with their audience (Guidry, 2017). In the case of parks and protected areas, the audience can be assumed to be made up of people who enjoy spending time outdoors. In addition to this, health organizations are more successful at getting their message across when incorporating visual imagery, acknowledging public fears and concerns, and offering solutions (Guidry, 2017).

In future crises, is there a larger role that health agencies, operating at multiple levels of government, can play in terms of helping parks with messaging and guidelines? In addition, how can

key issues be embedded across departments? Is there potential for a cross-messaging system in order for the same tweets to be put out by all park agencies with the messages coming from the health department? In addition, is there potential for parks and protected to work with other departments as well, such as the immigration department in order to offer more accessible ways to New Canadians of visiting parks or obtaining virtual programming during crises such as the COVID-19 pandemic? This further collaboration can lead to a renewed commitment for Canada's parks and protected areas, especially when being connected to the health department in these crisis situations.

#### **6.4 Recommendations for Park Management & Communication**

From this study, several recommendations can be made to park management and communication teams. First, and most significantly, messaging about virtual events, education and information should be made a priority, especially until the pandemic ends. The use of remote learning technology has boomed during the pandemic, and it is certain that virtual messaging will continue to be an important part of visitor experiences after the crisis is over. Park agencies should explore the opportunity of increasing the number of online educational park programs. Allocating more resources towards virtual series, information, events, and educational programs will help improve these services and attract more public interest and traffic, especially youth. There is potential for park agencies to reach a larger and broader audience through virtual programs, as they are more accessible because they cut down on geographical, economic, and seasonal barriers. Monitoring of these programs' effectiveness can also be done through marketing analyses and improvements can be made at an efficient rate. Data can be easily collected to determine user sentiment of these services and how they can better serve participants. A successful example of this is the Toronto Zoo's *Zoo to You* program (Toronto Zoo, 2021). Various virtual resources and educational programs were made available to keep building capacity during this pandemic. For example, the Zoo offered educator and parent resources, a high school course, and other virtual programs (Toronto Zoo, 2021). Park agencies did not realize this potential. Another example of successful virtual programming is at the McLean OCD Institute at Houston. A mental health care provider, the Institute transitioned from providing in-person care across three levels to conducting in-patient and out-patient programming completely online. This transition occurred over a five-day period (Sequeira et al., 2020).

While moving to virtual programming may have its benefits, park agencies currently have a really low capacity due to poor financial/human resources (Office of the Auditor General of Ontario, 2020). 95% of provincial parks in Ontario have plans that are at least 20 years old, and 12 provincial

parks have no management plan at all (Office of the Auditor General of Ontario, 2020). Increasing virtual programming and promotion would require further investment and updating these plans to account for different needs post COVID-19. Increased funding due to the significant wellbeing effect of access to parks and protected areas is also recommended, especially in areas that have higher population densities.

In addition, a more standardized communication plan is needed for park agencies and individual parks within the same political jurisdictions, especially during a time of crisis. Pearson and Culver (2016) identify a communication strategy as “*a written reference document against which to judge process*”. It has several key components: communication objectives that are clear and measurable, relevant audiences across available channels, a timetable and plan of activities, communication risks and mitigation, and resources (both people and financial) (Pearson & Culver, 2016). Ideally, a communication strategy for an agency or individual park should be reviewed annually and planned according to the events of that particular year. Past performance indicators, such as social media metrics from Twitter, should be analyzed to determine successes and failures of strategies used prior (Pearson & Culver, 2016). The messages put out should be clear, honest and consistent. In addition, they should be tailored to the specific audience that is being targeted. Finally, statistics and case studies will help in increasing credibility among the people that are seeing the messages through various channels of communication. These channels can include, but are not limited to, media, lobbying, marketing, and events.

Another recommendation would be to work more closely with the health department to put out standardized messaging across all park agencies regarding health guidelines and important information pertaining to park visitors. This can lead to less confusion about new regulations and operational changes during a crisis.

#### **6.4 Limitations**

Although this study does provide new research on park agency crisis communication during the COVID-19 period, it does have its limitations. One would be that the sample should continue to be studied until the parks are all open once again to full capacity like they were in February 2020 at the start of the study. This would enable the data collected to cover all of the periods of the pandemic, and not just from February to November. It can be argued that this would provide a more representative sample of the messaging provided.

In addition, a sentiment analysis was not carried out on the tweets, which would provide more insight on the public's perception of the messaging. For example, the number of "Likes" or "Retweets" for each tweet were not observed. This can determine if the approach taken through this crisis was successful with the public and park visitors. In addition, responses to the park agency and individual parks' tweets were not recorded or studied. These responses will also provide more insight on whether or not the communication during this crisis was effective. Feedback to the messaging and measures taken during the pandemic could be studied in order to improve communication methods in the future.

## **6.5 Opportunities for Future Research**

More research is needed on crisis communication in park agency organisations to further improve messaging. Crisis communication has been studied previously in relation to tourism and communication, but not specifically looking at park agency approaches, especially in Canada.

As previously mentioned, another opportunity for future research would be to conduct a sentiment analysis of the COVID-19 related tweets to see how park visitors reacted to the messaging provided by the agencies during the study period. This can help park management improve or maintain their communication practices during a crisis.

In addition to this, comparison analyses can be conducted to look at non COVID-19 related tweets before and during the pandemic to see if there was a change in the messaging, whether in frequency or content. A sentiment analysis can also be performed on these tweets to determine if there was a change in the public's feelings towards messaging not related to COVID-19.

There is also an opportunity to conduct the same study on all of the Canadian park agency organisations that have a social media presence. This can determine if there are regional differences in terms of content and frequency. This will give park management and the communication team a more comprehensive understanding of individual parks within each province and territory of Canada. It can also be done in the U.S., instead of just looking at the overarching National Park Service.



## CHAPTER 6: CONCLUSIONS

Parks and protected areas are a very important part of Canadian lives, and this was shown to be true during the COVID-19 pandemic. Through the literature review conducted in this study, COVID-19 and its impact on parks and protected areas was better understood. This includes the health benefits associated with being in nature and how COVID-19 resulted in an increased interest in being outdoors. In addition, information about environmental communication, more broadly and specifically in the context of parks and protected areas, was examined. Media content was found to be the most focused on in this literature. Social media as a communication tool was also examined in relation to COVID-19 and park agency response. Through the use of NVivo and NCapture software, tweets by park agencies in Canada and the U.S. were studied and coded to determine how park agencies communicated about the pandemic with the public through this social media platform. Crisis communication was vital during this period, as park agencies kept people up to date about operational changes, closures, re-openings, and other important information regarding the pandemic. These agencies also attempted to provide alternatives, such as virtual education or events, to help the public cope through this difficult time. Upon completion of the study, it can be said that NVivo and NCapture software can be used to assess the content of park agency tweets and should be considered for other studies of the same nature. Through this program, tweets from any organization can be gathered and coded in order to create a comprehensive analysis of the messages. It allowed for the data to be gathered and organized in a timely manner. The study also has various contributions to the field and for practitioners.

New findings about Canadian and American park agency crisis communication during the COVID-19 pandemic have been examined in this study. It is the first known study to assess park agency response to COVID-19, and also contribute to the limited literature on use of social media by park agencies. The study is similar to other scholarly literature on the topic of social media communication by park agencies in that NVivo was used to gather and code data. However, the difference was that other studies examined the sentiment analysis of the tweets as well. Another difference in this study is that environmental communication literature usually focuses on U.S. and European issues. This study broadened that scope to include data and results regarding Canadian park agencies. Social media is increasingly used by park agencies to communicate with the public, and this study examined this communication during a crisis. The results add to the knowledge of environmental crisis communication in the context of parks and protected areas. It has important implications for the communications departments in these agencies and reveals insights on how they dealt with the crisis through social media. It can be said that the promotion of virtual information, education and events

through Twitter should have been more of a priority during the pandemic. Parks and protected areas can continue to build capacity moving forward through more virtual programs and working more closely with other departments. It is recommended that future studies build on this to further inform these agencies of best communication practices during a crisis and how to continue building capacity moving forward in a post COVID-19 world.

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