Use of Social Media in Crisis Communication in the Federal Government during COVID-19 Pandemic: Analysis of Responses Strategies

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Abstract

Social media has become a prime tool in communicating during crises. Ongoing COVID-19 pandemic illustrates this trend strongly with the Canadian government conveying messaging through many platforms. In this thesis, we aimed to explore how Public Health Agency of Canada (PHAC) and Health Canada (HC) communicate with Canadians through social media, namely Twitter. Based on insights from social media practices drawn from work by Wendling et al. (2013); Lin et al. (2016) and from social mediated crisis communication theory of Austin et al. (2012), we sought to find what type of social media strategies adopted to execute crisis communication during COVID-19 pandemic. We also aimed at understanding to what extent these reflect the theoretical framework of the present study. To undertake this research, we opted for a mix of quantitative and qualitative analysis enabled by thematic analysis to identify categories of meaning and their trend. We found that social media strategies adopted by PHAC and HC have many aspects in common with the theoretical framework, yet they offer many nuances in practices driven mainly by the length of the crisis and the uncertainty it has caused. This thesis brings theory into practice by researching an ongoing crisis, gauging social media use practices against messaging strategies. It also calls on the need for updating theories and good practices in light of the outcomes of the COVID-19 crisis.

Key words: crisis, crisis communication, social media, Government of Canada, government communication, risk society, uncertainty, misinformation, Twitter, preparedness, rules of engagement, emergency, public health, online interaction

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Table of contents

INTRODUCTION

Social media adoption and engagement have become part of people's daily lives with the number of social media active users and the amount of time spent on these platforms continue to rise substantially. As of February 2021, Tankovska (2021a) underlines that active global social media population worldwide stands at 4.2 billion users. Alone, Facebook leads social media platforms with 2.6 billion active users. According to the same source, in Canada, the number of social media channels users has grown constantly and stands at 25.35 million by then. This represents a high penetration rate of 67 percent, making it one of the worlds' most connected population. This growth rate is also expected to rise to reach more than 80 percent by 2025 (Tankovska, 2021b). In terms of distribution share, Facebook has 25.19 million users; Instagram has 12.6 million users; Twitter has 7.6 million users (Tankovska, 2021b).

Whether globally or locally, social media has truly emerged as the preferred channels for mediated communications, whether for networking amongst individuals, between organizations, or from individuals to organizations and vice versa. The figures above show a continuing trend with increasing social media penetration as the Internet to be even smarter and faster with upcoming 5G technology (Walker, 2020; Gledhill, 2019; Hall, 2020). Therefore, it is practical that private or public organizations should be active in social media in order to communicate their messages, to listen to their audiences and engage with them. Indeed, social media offers great opportunities for organizations whether in peace times or during crisis situations (Wang & Dong, 2017).

Through social media, individuals and organizations can disseminate content more freely and easily in less controlled manner. They can do so without much reliance on traditional mass

media channels, namely newspapers, television channels, or radio stations. For organizations, this saves time and ensures their messaging remains intact, and is not framed according to the editorial and ideological line of the media institution that reports the news. For individuals, social media represents a voice to express their opinions, giving them an easy access to public discourse, which empowers them and gives rise to a new category of agentry in society that we call today social media influencers.

In a review of literature on social media-related crisis communication from 2009 to 2017, Wang and Dong (2017) concluded that the rapid development of social media offers also challenges for organizations, especially in crisis. The free and unlimited access to social media makes it difficult to control the spread of information coming from the public, who benefit from the inherent features of social media to be able to disseminate freely and fast information of their own. Therefore, social media may cause threat to the integrity of information and threaten emergency efforts to handle an ongoing crisis. This can be seen when false or ill-founded information circulate online, as it is likely to trigger the spread of fake rumors. Misinformation can unfortunately set an organization in a crisis, cause the ongoing crisis to worsen, or disrupt the efforts to address that crisis (Coombs & Holladay, 2015). That is why Wang and Dong (2017) stress organizations should integrate social media strategically for managing crises and communicating with their stakeholders during and after crises.

On a related note, Jin et al. (2014) argue that the public have expectations on how organizations should behave via social media during and after a crisis and that counts on their perception (positive or negative) of that organization. Cheng (2018) stresses the importance of integrating adaptable social media strategies in the traditional framework of crisis communication response in corporate and government organizations. Kim (2013) maintains, for

example, that social media are essential and offer new communication tools for practitioners beside existing conventional mass media and other digital media.

Research by Ford (2011) on the use of social media in crisis communication in corporate organizations, including from UK, US, and Canada, focuses on the image and reputation repair. Ford (2011) finds out that social media platform characteristics create new context, challenges, and opportunities for crisis communication. She also finds that crisis communicators are variously aware of the social media constraints and challenges, but also of the opportunities, they provide and the new practices these channels require.

Our analysis of social media use in crisis communication acknowledges the shift happening in crisis management in general and crisis communication in particular. Specifically, we try to fill the gap in terms of what we know as new practices emerging from the change in media ecology, namely heavy reliance on social media, and active publics' participation as opposed to linear rules of engagement underlying fixed control commands (Mitroff, 1987). We argue that the centralized rules of engagement model of Mitroff needs to be revisited, although it still takes into consideration such elements of context as stakeholders, the organization position in addition to other ecological factors surrounding the crisis. Because social media have created a new media context where paradigms of urgency, access, and networking are key elements, this imposes new reality, opportunities, but also challenges for private and public organizations. Thus, in digital world, Culp ([Introduction], 2019) stresses, for example, the importance of considering factors of speed, around the clock monitoring, active readiness, and special need for interaction online with the public when communicating during the crisis (Cheng, 2018).

From this perspective and in the backdrop of social media use in organizations, we examined in the present research the use of social media in crisis communication in the Canadian

federal government. We attempted to explore *what* and *how* the social media strategies and good practices were incorporated in crisis communication efforts to handle the COVID-19 pandemic by Public Health Agency of Canada (PHAC) and Health Canada (HC) while it was still evolving at the moment of finishing writing this thesis.

The Government of Canada has the mandate to protect Canadians and the environment where they live, and for this purpose, it endorses the use of social media as a prime tool to communicate with Canadians at times of crisis (Treasury Board of Canada Secretariat, 2017). While it lays out roles within departments and some basic standards, the Directives on the Management of Communications, in effect since 2016, did not specify clearly how social media is to help inform Canadians and engage with them during crises (2017).

We can say that the said Directives on the Management of Communications serve as framework of practice for the incorporation of communications in general, including social media in various settings. However, this policy does not incorporate the many good practices that have emerged in the actual operational use of social media in real crisis situations. In addition, research in social media in crisis communication is rapidly expanding, which provide new ways, scenarios, and recommendations on how to handle crisis communication using social media in various types of crises, whether in private or in public settings. Thus, since the Government's Communication Policy only provides a general framework, it is useful to have a theoretically informed baseline of best practices that assist governments in using their social media function most effectively during a crisis.

Additionally, this research intended to go deeper and look at the strategies adopted in a real situation of crisis, as it was unfolding in real-time from the aftermath of the emergence of the Covid-19 virus to mid-June 2020. In addition, we aimed to gauge the identified strategies

against a benchmark of good practices with the goal of exploring to what extent they reflect these. If not, what is new or special about them, or if they are somewhat similar, then what are the possible nuances that we could highlight. In doing so, we are interested in examining how to make a government's use of social media, as communication tool, a more effective means of communicating with its citizens during a crisis.

Overview of thesis

In Chapter one, we outline the concept of risk society and present it as the context for the increase in the need for crisis communication. In Chapter 1, we examine the contemporary environment of a risk society, which has increased the prevalence of crises and therefore the increasing pressure on public sector organizations to adjust their communication practices. This leads to a discussion on the rise in importance of crisis management and crisis communication with a focus on the role of social media. The chapter concludes with an overview of trends in how governments at all levels use social media in Canada.

In chapter two, we explore the theoretical framework that guides this study, introducing both the social mediated crisis communication theory of Austin, Fisher and Jin (2012) and an inventory of social media good practices drawn from Wendling et al. (2013); Lin et al. (2016).

In chapter three, we explain the methodology we have adopted for this research. Thus, in the present study we perform three levels of analysis, consisting of theme identification, quantitative, and qualitative analyses to account for collected data from Twitter. We also give information about tools of research, source of data, collection of data and sampling, analytical framework as well as research limitations.

The final chapter, the analysis, we present the findings extracted from our analysis. Based on the analysis of data against our Benchmark of good practices (Wendling et al., 2013); (Lin et

al., 2016) as well as the description of findings, this chapter concludes with a discussion of practices adopted by PHAC and HC when using Twitter to communicate about COVID-19. This thesis concludes with reflections about how the lessons learned about the 'best practice' use of social media by PHAC and HC during the COVID-19 crisis could be relevant to crisis communication in other types of crisis. These lessons highlight some of the unique challenges and opportunities facing public sector organizations when they use social media in crisis communication.

CHAPTER 1: Literature Review

1.1 Contextual framework: Risk society

In the world of today, a pandemic contagion speed and scope can be attributed to human behaviour and actions like lack of compliance with public health advice. Personal attitudes apart, factors related to modernity, such as increasing urbanization, people's high mobility nationally and internationally, integrated international trade, mass tourism, among others, have a greater potential of exacerbating the severity of a pandemic. Causes leading to such emergencies and others are well captured by the notion of manufactured risk (Beck, Giddens, & Lash 1994), which yields to a whole theory of risk and risk society.

"Modern society has become a risk society in the sense that it is increasingly occupied with debating, preventing and managing risks that it itself has produced" (Beck, 2006, p. 332). From this perspective, incidents happening like the Amazon rainforest fires of 2019 are examples of risk in action. One that can occur naturally, but it can also be due for example, to human intervention like clearing of forests for mining industry or other legal or illegal economic activities. Other examples could include the rise in floods frequency and their destructive power, which can be linked to climate change as a result of human action.

Beck et al. (1994) puts forward the notion of reflexivity to explain the evolution of industrial society into a risk society. Reflexivity involves individuals, who are growing aware of the contradictions and limitations of the industrial society, their institutions and instruments. One of the most important set of instruments contested is the scientific expertise and their assessments.

Reflexive modernity has, thus, implications to many areas of daily life, as individuals tend to question science, politics and economic production models (Cantelli, Kodate, & Krieger, 2010). According to the literature on risk society, these institutions are supposed to ensure safety and well-being, yet they may turn to be the source of uncertainty, continuous anxiety and instigator of risks.

Driven by a sense of distrust in the institutions and elites, individuals tend to voice out their concerns about various issues and uncertainties they experience. This time, they can do so through multiple channels they possess. Increasingly, social actors are on the edge "demand[ing] greater transparency, participation and accountability from risk managers" (Cantelli, et al., 2010, par. 4).

Not surprisingly, Hood and Rothstein (2001) suggest that the concerns and demands from individuals would eventually cause the elites and institutions to face uncertainties and risk themselves. As a result, their institutional image and reputation is continuously at risk.

Because it affects all facets of life, the notion of risk society is of relevance to the present research. Through this lens, crises of various types can be seen as manufactured. That is, they are understood to happen, or their severity increases because of some form of human intervention, whether intentionally or as a by-product.

1.2 Crisis and crisis management

1.2.3 Crisis

Heath and O'Hair (2010) write that crisis is *risk* manifested. That is, any emergency or non-routine situation, be it natural, industrial, organizational or others, that unfolds and causes harm to stakeholders. Illegal security or personal data leaks, oil spills, illegal lobbying or unconstitutional political maneuvering, unethical corporate practices, or a virus outbreak can all lead to a crisis. In a risk society, a crisis is always something imminent. Its occurrence is no longer a matter of "if" but "when" (Coombs, Frandsen, Holladay, & Johansen, 2010).

In cases of public health, "emergencies are defined as much by their health consequences as by their causes and precipitating events" (Nelson, Lurie, Wasserman, & Wasserman, 2007, p. 9). It is a situation that its health outcomes surpass the community capacity and ability to contain it. In other words, its "whole scale, timing, or unpredictability threatens to overwhelm routine capabilities." (2007, p. 9). For example, pandemics are such overwhelming public health crises that see "large scale outbreaks of infectious diseases that can greatly increase morbidity and mortality over a wide geographic area and cause significant economic, social, and political disruption" (Cheval, Adamescu, Georgiadis, Herrnegger, Piticar & Wolfe, p. 2).

Invoking the risk notion, Madhav et al, (2017) quotes research by Jones et al. (2008) and Morse (1995), explains some reasons of why the probability of pandemics occurring has increased over the past century. The risk researchers have observed that this trend is in line with the increase in global travel and integration, urbanization, changes in land use, in addition to intensive exploitation of the natural environment. The authors also argue that such a trend is most likely to continue and intensify. Indeed, the new millennium has seen many waves of epidemics and pandemics. Examples include SARS from 2002 to 2003, H1N1, from 2009 to

2010, MERS in 2012, EBOLA from 2014 to 2016, ZIKA from 2015 to 2016, and COVID-19 from 2019 to present. Undoubtedly, the imminent public health risk requires preparedness and a full range of readiness measures to address it.

1.2.4 Crisis management

Coombs (2007b) defines crisis management as "a set of factors designed to combat crises and to lessen the actual damages inflicted" (p. 5). It encompasses all measures of intervention aimed at averting the undesirable effects of a crisis. He considers management of a crisis as a process with many parts, including preventive measures, crisis management plans, and post-crisis evaluations. This process translates into pre-crisis, during-crisis, and post-crisis.

Applied to public health emergency preparedness and management, this translates a set of prevention, mitigation, and recovery activities. Nelson et al. (2007) adds that this should involve operational capabilities, that is, the ability to implement quickly the preparedness plan when the crisis strikes. Thus, the capacity of a public health crisis response would require in addition to infrastructure, systems, skilled workforce, plans, scenarios, regular testing of existing plans to formulate corrective actions if needed (Nelson et al., 2007). In other words, crisis management is a comprehensive process that is put in place even before the crisis occurs. Those management practices should be engaged before, during and after a crisis (Coombs, 2007b), with communication as an integral part of those efforts. According to Coombs (2007b), these three categories reflect the phases of crisis management, and are relevant for planning and executing crisis communication activities.

Largely, this categorization reflects first generations of linear crisis management approaches like those of Mitroff et al. (1988); Pauchant and Mittroff (1992). According to this model, crisis management is a process that can be controlled and is dissected as a process

comprising environmental context with some components like institutional practices and industry regulations. Pearson and Clair (1998) explain that this environmental context determines the executive perceptions about risk, which lead to the adoption of organizational crisis management preparations plan. When a crisis hits resources are mobilized and the plans and preparedness protocols are put into action to contain the emergency. The hope is to achieve successful outcomes. With this model comes a controlled centralized messaging, because the media ecology based mainly on mass communication channels then allows for more time to communicate in a pace, which was mostly in favor of the crisis manager.

With a legitimate concern by crisis managers to control the emergency at hand, this model presupposes "to achieve certainty, stability, and control that fundamentally distinguishes main-stream crisis management from complexity-based thinking" (Gilpin & Murphy, p. 172-177). However, with the less uncertainty in the environment and context where crises happen in modern world with risk is a norm, Gilpin and Murphy (2008) recommends a paradigm shift for crisis management to accommodate for uncertainty, adaptiveness, and improvisation replace certainty, goal orientation, and control. Indeed this view reflects the fragmentation of the context and the environment of crisis, which requires new understanding and a more flexible approach fitting the new reality where stakeholders have a bigger role to play, as they have a voice thanks to social media. Media landscape, as we will explain later has caused an upheaval in the traditional media landscape, brining more opportunities, but also more challenges for organizations

1.3 Crisis communication

Coombs (2010) defines crisis communication as "the collection, processing, and dissemination of information required for addressing a crisis situation" (p. 20). He classifies

crisis communication intervention as occurring in three phases: pre-crisis, during-crisis and post-crisis. Pre-crisis involves preparedness actions that include gathering information about crisis risks, creating potential scenarios, making decisions about ways of managing potential crises, in addition to training people, who respond to the crisis.

During-crisis phase involves collecting and processing of information for crisis team decision making together with the creation and transmission of communication products to the intended audience. Post-crisis phase aims at assessing the communication efforts by the organization during the crisis and communicating necessary corrective measures to affected individuals. This include information about how to deal with and recover from the situation after the crisis as well as any follow-up messages as required.

Advances in information technology has revolutionized the way organizations and individuals communicate in general and in crisis situations in particular. The rise of digital communication creates more options for messaging and interaction. It enlarges the scope of reach and gives agile solutions for dissemination of information. Bucher (2002) admits that digital communication has increased opportunities to secure information in a manner that has not been available before. For example, it has empowered the official sources of information in a crisis communication. Similarly, it has offered individuals easily accessed media platforms to voice their concerns and produce their own content. Indeed, media has tremendously transformed over time, a change that has a great impact on the way crisis communication is executed.

1.4 Media landscape and impact on crisis communication

First, the media landscape has witnessed profound changes over last 100 years. This has created a greater need for public and private sector organizations to seek public relations advice on how to respond to the increasing propensity for this changing media landscape to create more

crises for these organizations. In general, the practice of public relations has evolved with and responded to changes in the media landscape. Ivy Lee, known as the 'father' of modern public relations (Hiebert, 1966), in the face of much more media intrusion in the practices of corporate America in the early 20th century, recommends what would be become known as the "public information model" of organizations (UKEssays, 2018). Lee suggests "an open honest, and transparent relationship between organizations and the media [and public]", cited in (Ford, 2011, p. 24) at a time where publicity /agent trend was the predominant practice.

Second, the emergence of mass media, with newspaper circulation reached a peak in 1910. Radio and TV broadcasting expansion continued by 1920 and 1950, respectively. As of that time, more channels were available for PR professionals to manage the crisis and expand their message reach. However, the increasing importance of mass media means also a bigger role they could play in controlling the outgoing messages. Yet, organizations experienced less control over the final framing and time of the message release. Then, media institutions have a greater power to plan their programming and message formulation in general.

Third, the emergence of 24/7 news cycle, as of 1980. This came with cable TV channels, namely the CNN. Channels adopting the 24/7 news cycle revolutionized the way news were reported. They ended the limitation that news could only be broadcast at designated times during the day. They offered the format of unfolding stories as they happened with series of updates (Ford, 2011). With this rapid paced media environment, organizations found themselves denied of the time luxury they used to have to address a crisis. They had yet to adapt and keep pace with the new fast tempo (Young, Flowers, & Ren, 2011).

The fourth trend, the advent of the Internet, has had a deep impact on how organizations should respond to crises. The Internet brought in a new dynamic deterring the control of the

narrative of the crisis (De Bussy, Watson, Leyland, & Ewing, 2000). Audience can participate in the creation of meaning as a crisis unfolds. By interacting freely and posting messages, individuals can magnify crisis visibility and scale (Ford, 2011). However, the Internet and its social arm, the social media platforms, can also enable organizations control back messages, include richer content and offer the possibility to engage with the audience in real-time and in two-way communication mode during a crisis. Additionally, the Internet provides the communication efforts with the tools for engagement evaluation through analytics, and other tools of assessment. For example, social media monitoring is a useful for assessing public sentiment, which is important in issues management and planning communication. As applicable to this research, a further note about social media follows.

1.4.1 Social Media and crisis communication

According to Wright and Hinson (2009) quoted in Austin et al (2012, p. 189), "social media are digital tools and applications that facilitate interactive communication and content exchange among and between audiences and organizations." These internet-based applications consist of blogs, micro-blogs, forums, photo and video sharing, wikis, social bookmarking, and social networking (Salminen, 2017). As various as they are, social media tools all enable some form of content contribution, participation, openness, conversation, two-way interaction, communities, networking, and connectedness (Coombs, 2014).

Thanks to the real-time environment where they operate, social media enhance the speed and the scope of information distribution. Thus, for a mass reach, organizations can use social media to bypass filtering usually exerted by traditional media. Conveniently, they can communicate their messages to their audiences directly and with more control. They can listen to their feedback in two-way communication mode, as well. Yet, organizations face constraints, as

the target publics, themselves, are active since they own a voice via the same platforms. Because social media are widely accessible, the public can network and communicate spontaneously. In doing so, they can react either positively or negatively to the organizations' online content. Given this dynamic communication environment created by social media, organizations more than often need continuous monitoring of media environment and be more open to engage in a dialogic conversation with the public.

In situations of emergency or distress, social media can play an important role in communicating with the public. They allow organizations to be prompt in their responses (Salminen, 2017), while enabling the public to seek and access information and help from emergency respondents. At the same time, the public can use social media to network among themselves for support (Austin & Jin, 2016). The authors explain that social media can allow information and opinion sharing and emotional expression about crises more effectively compared to traditional public relations communication tactics, such as press releases or public statements communicated through conventional media.

However, according to Austin and Jin (2016) the rise of social media in crisis communication poses risks, at least in two ways. Because of their inherent technical features of accessibility, immediacy and connectedness, anyone can create content and share it, while avoiding validity processes usually associated with content creation in traditional media through editing approval mechanisms. Thus,

> social media can be the source or origin of an organizational crisis, such as mishandled or poorly-designed social media campaign or message that damage the organization's reputation. Second, social media platforms have become major vehicles for damaging rumor transmission, negative opinion sharing, and aggregation of negative emotions regarding an organization.

(Austin & Jin 2016, p.165)

With this in mid, all types of organizations should benefit from the use of social media in communicating with their public, whether in normal times or during emergencies. In the following section, we will look briefly, at how the government of Canada integrates social media in their communication policies.

1.5 Government Crisis Communication

1.5.1 Government communication

Howlett (2009, 2011) considers communications activities in public organizations as tools that help achieve policy goals. Glenn (2014) summarises Howlett's view by arguing that "government communication is best understood as an information- or knowledge-based resource that is provided or withheld from societal actors in order to influence and direct policy actions". From a different perspective, Liu and Horsley (2010) conceptualizes government communication in terms of a dynamic environment of communication decision. The researchers propose a model they name the Government Communication Decision Wheel. This model identifies government communication in US government environment at four levels:

- In the multilevel microenvironment, two or more levels of government collaborate on an issue; an example is the Federal Emergency Management Agency and a state emergency management agency communicating about disaster preparedness.
- In the intergovernmental microenvironment, two or more units at the same governmental level coordinate on an issue; an example is a governor and state tourism office communicating about a special event.
- In the intragovernmental microenvironment, only a single agency from any level of government acts; an example is a county animal shelter conducting an annual fundraiser.
- In the external microenvironment, any level of government coordinates with private and/or nonprofit organizations, both domestically and/or internationally; an example is a city government working with a nonprofit coalition to raise awareness about domestic violence.

(2010, p.193)

In a study of communication in governments in Canada (Glenn, 2014), public sector communication reflects such levels in terms of federal, provincial and municipal and the interaction that occurs amongst them and also with various stakeholders. However, in Canada, federal communication demonstrates systematic efforts to standardize processes and policies thanks to the role of Treasury Board of Canada (TBS) and Privy Council Office (PCO) compared to US.

Liu and Horsley (2007) attempts also to find special characteristics that distinguish public organization communication. The researchers identify nine attributes and we will mention for the purpose of this research only four: legal frameworks, media scrutiny, politics, and poor public perception. In the US, the government cannot communicate fully and freely due to external legal guidelines such as the federal Freedom of Information Act (FOIA), federal Gillette Amendment, and state and local access-to-information laws. Other legal constraints are some Federal laws that prevent "how creatively and effectively government communicators can disseminate information to the public and media and also can encourage government communicators to be careful about how they document their strategic planning" (Liu & Horsley, 2007, p.191), citing (Graber, 2003). Media scrutiny denotes the intense exposure of public sector organization to media watch. Traditionally, media plays the role of reporting decisions and actions to the public, but the same media tend to cover government organization negatively compared to private sector (Liu & Horsley, 2010), pushing public employees to "follow the status quo, thereby making incremental changes to policy and improvising less in how they communicate these changes" (2010, p.192). Politics refers to how public relations practice is profoundly affected by the political context. As in the case with media scrutiny, political environment can restrict the way public communicators develop messages and reach out to stakeholders. Most importantly, "politics also play a critical

role in deciding what government information is shared and how… and elevates the need for public support for programs and initiatives" (2010, p.192). The fourth attribute is the poor public perception, which can jeopardize the success of government communication (2010). According to (Liu & Horsley, 2010), the public like media tend to be critical, rather cynical regarding government communication. Such a public reaction constitutes a continuing challenge for government communication and this may intensify, especially in situation of crisis. In the latter, the government becomes even more exposed to critique, misinformation, and discredit.

1.5.2. Crisis Communication in government settings

Gardell (2014) provides a model that outlines major dimensions of crisis communication in public organizations. The author identifies two dimensions in crisis communication, which comprise either operational or strategic information. The first level of this designates information aimed at providing the affected public with information about a crisis to help them cope with the situation. Thus, operational information "focuses on comprehensive information, availability and emotional reactions rather than organizational survival and reputational aspects" (2014, p.116). The strategic information denote mostly pre-planned information sent with the aim of achieving long-term organizational objectives, namely organizational survival by cultivating positive perceptions among the stakeholders (2014).

The second dimension suggested by Gardell (2014) relates to two objectives of crisis communication: "maintaining reputation and instilling resilience" (2014, p.117). For reputation-oriented aim, this is organization-oriented. Information sent for this purpose would serve explaining and promoting "an organization's own framing and preferences, and in doing so strengthen its credibility and legitimacy" (2014, p.117). The success of reputation repair is a matter of the public's perception as opposed to what is widely available in crisis communication

literature. In this regard, Gardell (2014), quoting Coombs and Holladay (2002), highlights the primordial role of creating a balance between instructive communication and action. As for the second aim, resilience, focus is on providing information that is critical for affected public to survive and overcome the crisis trauma. In crisis communication literature the concept of resilience 'captures' the capacity of affected communities to 'bounce back' following a crisis (2014). Generally, this describes the ability to adapt, learn, and change to unpredictable situations, and in this process creating some stability in the future (Gunderson, 2000); (Hanson & Roberts, 2005).

Based on these two dimensions, Gardell (2014) lists four categories to understand the major trends in crisis communication in government settings and gives examples of crisis from Queensland floods of 2010 and 2011 as examples. Thus, the author summarizes the common approaches to crisis communication in government context as follows: operational resilience-oriented communication, operational reputation-oriented communication, strategic reputation-oriented communication, and strategic resilience-oriented communication.

1.5.3 Social media in crisis communication in Government of Canada

Governments around the globe have embraced new media technology in disseminating information or services. For example, social media provides public authorities the opportunity to communicate directly and openly with their constituents (Owen, 2018). In Canada, the use of social media platforms in government is part of the open government initiative as a way of opening their data, improving provision of government information and services as well as engaging with the public (Gintova, 2019). The Government of Canada recognises this need through Canada's Action Plans on Open Government championed by the Treasury Board Secretariat and individual departments. According to the Plan, one of the challenges to address

since 2012 is to create safer communities, including measures to address public safety, the security sector, disaster and crisis response, and environmental threats (Open Government, Government of Canada, 2018).

To achieve these objectives, communication technologies are essential and specifically the use of social media, which is in line with the overall context of the Policy on Communications and Federal Identity (Treasury Board of Canada Secretariat, 2017b) as well as the Directive on the Management of Communications (Treasury Board of Canada Secretariat, 2017a), including social media and web requirements. According to these policies, the federal government recognizes the value of using new media technology in communicating with Canadians, while it expects citizens to be able to interact likewise with federal public authorities.

These policies also set practices and acknowledge that communications through social media have great potential to keep the public informed and engaged in real-time, increase general awareness of risks, and contribute in the overall efforts of managing crises. It is note worthy that the federal government departments and agencies use a variety of social media platforms such as Twitter, Facebook, YouTube, Instagram, LinkedIn, and blogs to connect with Canadians.

Crisis communication is an area where social media use is increasingly important at all levels of Canadian government. For example, Twitter has become one of the key channels in healthcare crisis communication strategies, allowing the government to connect to population that turned away from mass media as their main source of information due to change in media preferences (Koerber, 2020); (Teichmann et al, 2020). Using Twitter and other similar platforms when responding to an emergency, the government not only informs the public, but also attracts

such ordinary media users to participate by amplifying its crisis communications, hence contributing to the general awareness efforts (Koerber, 2020).

However, the task of a crisis communicator is not a straightforward. Koerber (2020) notes that in our hyper-mediated digital environment, crisis communicators face tremendous challenges to warn people about the risks involved in a crisis as well as to provide instructions on how to limit its damage on the individuals and in the community. The author warns especially about the various issues that might arise from using social media such as the loss of reputation in case of a poor campaign or spread of misinformation.

In order to manage crisis communication and create impact through social media in government settings, Wendling et al. (2013) and Lin et al. (2016) suggest a set of good practices that are either based on lessons learnt from past crises or case studies. Insights from these good practices as well as the social-mediated crisis communication model (SMCC) will help set our theoretical framework and benchmark for exploring how Canadian federal government, represented by Public Health Agency of Canada and Health Canada have used social media in communicating during COVID-19 crisis.

CHAPTER 2: Theoretical Framework

According to Coombs (2014), Crisis communication theory is an applied field that intends to help crisis managers by providing them with informed guidance on how to reduce the harm that crisis can inflict on stakeholders and the organization. It is argued that the majority of crises fall into two categories: reputational or operational. A typical operational crisis would involve situations that create threat to public safety and/or stakeholder welfare in general. On the other hand, reputational crisis, affecting mostly the organization, are less likely to cause similar level of public safety or welfare concerns for the general public.

Many theories of crisis communication emerged and intended to describe, explain, and prescribe. In general, theories can describe communication, explain the effectiveness or ineffectiveness of communication, and prescribe how we should communicate. For example, the communication theories of Corporate Apologia (Ware & Linkugel, 1973) and Image Repair Theory (Benoit, 1997) describe common responses to crises of organizational nature and can explain the effectiveness or ineffectiveness of response strategies adopted from an organization standpoint. Similarly, the Situational Crisis Communication Theory of Coombs (2007) describes, explains, and prescribes communication strategies to protect the reputations of organizations managing crises. Another theory that is consistent with Situational Crisis Communication Theory is the Discourse of Renewal in terms of philosophy of attributions. However, it is different in its emphasis. This highlights the diminished role of threat to the reputation of the organization through systemic change of narrative about the organization's image. "In many examples of renewal, issues of blame, culpability, image, or reputation never arise as dominant narratives following these types of crisis responses" (Ulmer, 2011, p. 20). The effectiveness of this theory lies in its strategies, which can mobilize the support of stakeholders and enable them with a vision to follow in order to overcome the crisis. Other theories, like Renn (1992,) focus on risk perception, assessment, management and communication. According to Renn, the major goal of risk communication is to help stakeholders and the public understand reasons behind risk-based decisions, and eventually be able to arrive at a balanced judgment that reflects the factual evidence about the matter at hand in relation to their own interests and values. The latter reflects communication response efforts in educating and informing the public about the crisis as well as guiding them through the challenging times caused by a situation of a crisis.

As we cannot account for all theories of communication, the few ones we have mentioned briefly can be representative of the evolution of research in crisis communication in modern time. However, it should be noted that most of these theories are PR efforts driven and organization-oriented. The strategies they describe and prescribe tend to some extent minimize the role and the potential participation of stakeholders. By further reviewing these theories, they also fail to highlight active interaction of stakeholders and or provide a conceptual description of the role of digital channels, namely social media, in crisis communication. To fill this gap, the Social-Mediated Crisis Communication, a relatively recent theory, has emerged to emphasize social media channels' role, messaging form, and third party's contribution in crisis communication at large.

2.1 Social-Mediated Crisis Communication

Research trends in crisis communication (Jin & Liu, 2010); (Schultz, Utz, & Go¨ritz, 2011) demonstrate that information form and channels may turn to be as important, if not more important, than the actual crisis response message itself (Austin, Liu, & Jin, 2012). Social-mediated crisis communication (SMCC), a descriptive approach, came to explain the underlying interaction between an organization and stakeholders, who not only consume but also produce information before, during, and after the crisis (Austin, Liu, & Jin, 2012). SMCC divides the stakeholders in an organization crisis as follows:

1. Influential social media creators, who create crisis information for others to consume.
2. Social media followers who consume the influential social media creators' crisis information
3. Social media inactives, who may consume influential social media creators' crisis information indirectly through word-of-mouth communication with social media

followers and/or traditional media who follow influential social media creators and/or social media followers.

(p.192)

This interaction between the organization and stakeholders is illustrated further in Figure 1.

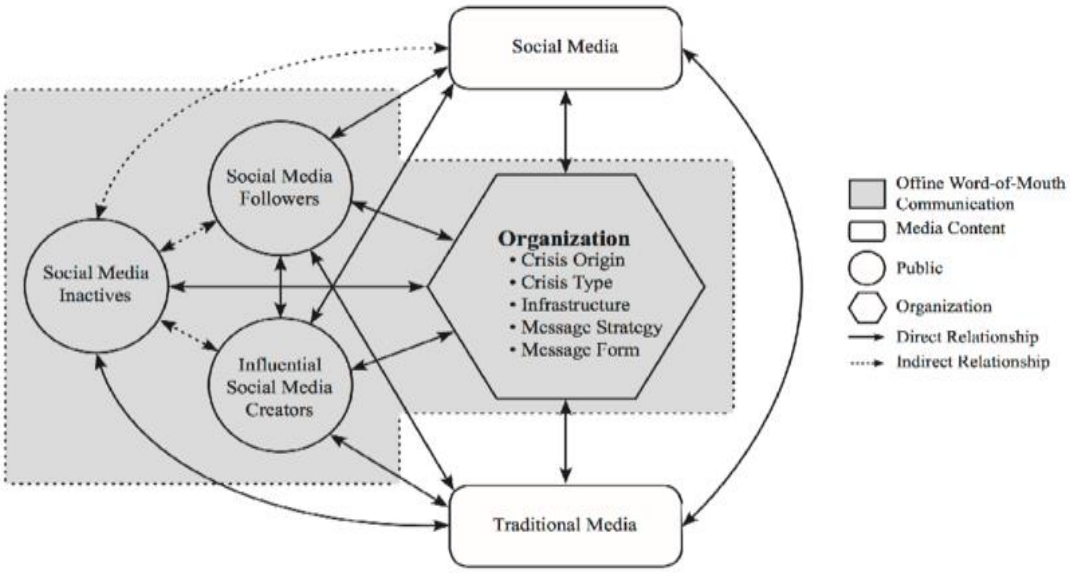

Figure 1. Social-mediated crisis communication model (p. 192)

According to this theory, Austin et al. (2012) describe that the information flow through social media can go directly or indirectly. For example, crisis information travels directly from influential social media creators to social media followers, but potentially indirectly from influential social media followers to social media inactives (passive audience). This also means crisis information can travel directly between traditional media and social media. One of the points Austin et al. (2012) would like to emphasize here is that the third-party influence is substantial to crisis communication in the digital age, as they can increase communication momentum. Thus, they recommended the strategic value of calling out to social media

influencers and opinion leaders active in social media to spread the message and have them as allies for amplifying the message.

In a review of SMCC, Salminen (2017) states that the model provides organizations with five key considerations for crises. Some of these factors originate from conventional crisis communication theories. First, the crisis origin, which focuses on whether the source of the crisis is internal or external. Second, the crisis type, which is part of Coombs' (2017) description of SCCT, involving levels of attribution of victim, accidental, and intentional clusters (Liu et al., 2012).

Third, the infrastructure, which relates to decisions to take about, whether the crisis should be managed locally or centrally. Austin et al. (2012) explains that at the local level, local departments involved respond to the crisis, while in the centralized approach, the organization headquarters takes the lead in handling the crisis. Fourth, the crisis message strategy integrates strategies from Coombs' SCCT and Benoit (1995a)'s image restoration theory.

Crisis message strategy or the organization's crisis communications are intended to help publics respond to and make meaning of the crisis. Content may include informing and adapting information for affected publics (Coombs, 2014), which instructs them of the crisis and any actions they should take to mitigate its effects. Crisis messages may also provide them with emotional support. Crisis response strategies for image restoration management can range on a continuum from defensive to accommodative strategies. Defensive strategies tend to separate the blame for the crisis from the organization and often include a combination of attacking the accuser, denial, scapegoating, ignoring, excusing, justifying, and separation. On the other hand, accommodative strategies underline image repair, which is needed as image damage increases. Accommodation includes bolstering, ingratiation, victimization, a strategy that serves to

reinforce the belief that the organization is a victim of the crisis too and deserves sympathy (Coombs, 2007), endorsement, compensation, transcendence, and full apology. Further details of response strategies can be found in Coombs (2014) and (Jin & Liu, 2010).

Finally, the message form focuses on the importance of medium in the social media era, being more interactive, real-time and wider in scope (Schultz et al., 2011). SMCC asks for using various social media platforms strategically to ensure a horizonatal reach to accommodate for audiences' preferences in our fragmented media landscape of today. Crisis communicators can be creative in adapting the message to the medium as well as taking advantage of the technical features of each platform to inform and interact.

SMCC model provides a different perspective to existing generic crisis communication strategies as established in classic crisis communication theories. For example, it explains the environment of crisis communication in digital age, focusing on the message networking that crisis communications would trigger, with the existence of various content generators and their followers who can engage and spread the word of mouth in almost non-controlled manner. SMCC describes the media ecology around crisis communication as also horizontal, involving beside the organization an active participation of the publics at many levels.

What is more, SMCC model would benefit us understand the new media ecology brought about by social media by staying vigilant to content created by audiences and circulated online. For this reason, we should develop strategies and techniques fit for social media to monitor it for misinformation and fake rumors. On the other hand, we should take advantage of online content that amplifies positively the crisis communication efforts by calling out to third party social media influencers for collaboration.

Overall, SMCC pictures the context of social media content creation, sharing and networking. Therefore, such understanding puts in context relevant communication strategies or practices to address a situation of emergency. On the background of these theoretical notes, we will explain in the following our checklist of good practices in government settings that served us in the analysis of our research data in terms of social media strategies.

2.2 Social media in crisis communication: Checklist of good practices

The benchmark we adopted for this research includes good practices from the Organization for Economic Cooperation and Development (OECD) Working Papers on Public Governance titled "The Use of Social Media in Risk and Crisis Communication", authored by Wendling et al. (2013). Choosing guidelines from OECD can be relevant to Canadian government context since this international organization groups countries of advanced economies, in addition to some leading emerging nations. Moreover, OECD describes itself as committed to democracy and the market economy, by providing a platform where they:

- Share and compare policy experiences.
- Identify good practices.
- Coordinate members' international and domestic policies.
- Seek answers to common problems.

(MBN, 2019, par. 4)

From this perspective, social media practices suggested by Wendling et al. (2013) can be practical and feasible, as they are a result of lessons learnt from cases of crises that happened in countries that share many governance and infrastructure characteristics.

Another set of strategies are from Lin et al. (2016). Collected from relevant literature, these practices focus on social media use in crisis communication in public sector in general.

Thus, they are also useful to our research. Indeed, both documents are complementary, as they outline the use of social media and communication strategies. They also provide solutions in situations of crisis where the government is supposed to be the emergency respondent.

2.2.1 List of good practices – general recommendations

Wendling et al (2013) argue that compiling good practices for the use of social media in crisis communication was determined by many factors. This includes the belief that carefully tested risk and crisis communication has the great potential to improve emergency preparedness and response, reduce costs of disaster, improve transparency of decisions, increase the potential of acceptance of outcomes, and keep with sociological changes among the target audience.

From this lens, Wendling et al. (2013) collect guidelines from two sources. They draw on independent research and the presentations of experts at the workshop organized jointly by the OECD and the International Risk Governance Council (IRGC), in Geneva (Switzerland), on 29 June 2012 on the theme of "Risk and crisis communication: the challenges of social media" as well as on review of literature on the subject matter.

2.2.1.1 Surveillance, monitoring, situation awareness and early warning system

Wendling et al. (2013) suggest two ways to monitor social media content during a crisis: Technical and volunteer options.

The technical option

The technical option relies on the technology of crowd sourcing and data mining. It consists of software used to synthesise the type of content shared and make sense of it. Organizations can use many available tools to geotag their social media accounts and from which to draw useful information at times of crisis. An example of this tool is the information mapping for creating situational awareness from Twitter known as "Tweak the Tweet" (Starbird, n.d., par.

1). Organizations can ask users on the ground to format their tweets with specific hashtags that allow computers to recognize and process that information received. Computer processing involves identifying location information, creating incident report from received tweets, and sorting these tweets into different categories in the form of dynamic infographics and interactive maps accessible online and via social media. Eventually, the affected publics can view where the aggregate information has been reported online and via social media to guide them to locate shelters, safe exit corridors pathways, and so on.

Other popular technological tools that can be paired with social media include Hootsuite, Google Alerts, Reddit search, among many solutions, which offer the possibility to monitor content online and by that to know about what people are discussing and their sentiment (Newberry, 2020).

The volunteer option

The second option is to call on volunteers for input. Wendling et al. (2013) illustrat this case through the examples of training 67 volunteers to support media monitoring for the United Nations humanitarian response to the Libyan civil war in 2011 and US meteorological services, which incorporate people's pictures or videos of tornadoes using GPS locator and text messaging to provide a real time situational awareness.

Wendling et al. (2013) recommend a combination of both options, as this can lead to dynamic and innovative practices in terms of crisis situational awareness, helping emergency respondents to better understand the crisis as it happens. This also will help crisis managers to have a fuller picture of the situation and achieve better public participation, engagement, and further risk awareness.

2.2.1.2 Raising public awareness about risks and crises

Government organizations should preschedule communication campaigns through social

media about various potential risks and emergencies throughout the year. By doing this, they can promote their communication channels accounts as the authoritative source of information prior to any eventful emergency. Thus, people get used to these official sources on social media platforms and allows organizations to increase their followers, especially among the younger audience who rely less on traditional media than the digital ones.

Therefore, it is important to keep social media accounts rolling because this contributes to viral dissemination through communities, helping the public to recognize over time the source of information as official and reliable.

During crisis, Wendling et al. (2013) suggest creative use of social media to create communication momentum like sending tips of the week or similar format and conducting viral campaigns on the organizations' official accounts. Public organizations should provide real time objective facts to avoid keeping the public in the dark or relying on other non-reliable sources. Furthermore, they have to act quickly to control the spread of rumors and misinformation to avoid members of the public retweet and quote.

2.2.1.3 Managing reputational effects and spread of misinformation

Counterbalancing fake rumours

According to Wendling et al. (2013), "using social media for risk and crisis communication can help to counter inaccurate press coverage or to counterbalance rumours" (p. 22). It is argued that if an organization is not active in the social media, "someone else can be who can speak for it, and damage its reputation" (p. 22). Organizations should be active in addressing any an uncontrolled broadcast of information about the organization by a third party via social media, which can hurt the organization's reputation and brand equity. Another strategy that organizations should adopt to control spread of rumors is to act proactively to correct information by communicating candidly to the public.

Communicating about the organisation's own actions

Emergency organizations should stay active in social media and reach out constantly to audience. This is because the general public is not always aware of the efforts of these organizations. Thus, organizations should communicate with the public regularly and interact effectively in real time to highlight those efforts, stay open to complaints and address them appropriately and immediately as well as sense/assess any threat to their reputation through feedback.

Wendling et al. (2013) believe that communicating "what an organization is doing can help change the perception of the public about the actions taken to respond to an emergency" (p. 23).

2.2.1.4 Building trust

Wendling et al. (2013) state that studies show that the more citizens can interact with their government online, the more they develop trust in public authorities. Therefore, social media are useful tools to build trust and improve transparency.

To ensure this happening, Wendling et al. (2013) suggest that organizations should stay trusted online, for example, by providing regular and reliable public safety and emergency updates. So, building a "community of followers to whom to communicate hard facts and timely information on disasters could help public authorities benefiting from and adapting to the breaking news effect, capitalising trust over time" (p. 25). In addition, public organizations should respond within tighter time frames as soon as an event happens, because that increases the level of transparency. For public, this is perceived that the government cares about them and puts their interest first.

2.2.2 List of good practices – government communication

In the same vein, Lin et al. (2016) advocate the adoption of good practices as to the use of social media in crisis communication in government. The authors quoted (Lachlan, Spence, & Eith, 2014) noting that recommendations for the use of social media for crisis communication remain largely unstructured and unsettled, hence bringing the need for attested set of best practices that takes into consideration situational factors.

2.2.2.1 Use media affordances to provide credible sources of information

Lin et al. (2016) quote research by Glik (2007); Renn and Levine (1991); Sundar, (2008) indicating that the source credibility of information is a "critical persuasive attribute that would reinforce the legitimacy of information providers and enhance public approvals, [acceptance], and trustworthiness" (p. 602). At the same time, information lacking credibility is counterproductive, hampering communication efforts to contain the crisis and increasing its potential harm and severity. Organizations should make the best of social media to provide credible, reliable and trustworthy information and stand out of erroneous and false information that may come from other sources that can circulate at the time of crisis and cause public's confusion.

One way to ensure credibility of social media sources at extreme times of crisis and in the crowded social media landscape is to provide enough visual cues to help "individuals to engage in heuristic processing with the least amount of cognitive effort as possible" (Lin et al., 2016, p. 603) when looking for information online. This requires establishing, for example, an official branding identity for social media accounts and profiles to easily recognize the official sources of information about the crisis and "in order to convey credible perceptions when communicating with the public or partners" (2016, p. 603).

2.2.2.2 Fully integrate social media into decision making policy development

Because the public has increasingly turned to social media to get breaking news and quick information, Seeger (2014) advises that social media is mostly effective when it is part and parcel of "an ongoing and integrated process" (p. 237). As such, it is recommended to incorporate social media into risk and crisis decision making and policy development.

Lin et al. (2016) stress the importance of developing social media policies for emergency management in public health and national security agencies, including federal, state (in Canadian context would be provincial and territorial) and local levels (regional and municipal) with the aim of enhancing their crisis response capabilities. Formulating policies should be dynamic and flexible to reflect the crisis development and the public expectations. Another way to understand this is that communications policies should be open to consider using many channels through which various audiences prefer to receive information and adopt different messages forms that resonate better with the public.

2.2.2.3 Actively engage in dialogue online

Lin et al. (2016) state that online engagement has a key normative component: "Compared with legacy media, social media have revolutionized communication norms and protocols, and subsequently changed information processing within many social contexts" (2016, p. 602). Social media technologies allow, in principle, public emergency respondents to communicate directly and dialogically with the public during a crisis by informing them about the situation, and telling them what they should do to avoid risk and increase resilience, while expecting reaction and feedback.

On the other hand, the public is empowered enough to express what they have in mind as the crisis unfolds, hence owning a voice to ask questions, comment, and report to government the situation on the ground. Thus, instead of passively disseminating risk and crisis information,

public organizations should actively engage in ongoing two-way online conversations with the public.

Additionally, risk and crisis managers, as well as public health practitioners involved in emergency response, should listen to stakeholders and respond to their concerns in timely manner. Lin et al. (2016) highlight the advantage of immediate engagement in two-way communication interactions to public authorities, because it increases transparency and trust, and informs respondents of the general sentiment and the situational awareness. Therefore, public authorities can establish themselves further as trustworthy sources of information for the public to follow and engage, which will encourage positive interaction, dialogue, and a better visibility of crisis communication online.

All in all, social media provide practical opportunities for crisis respondents to communicate in a discursive manner to share with the affected publics, depending on type of crisis, information toolkits on how to prevent further damage, where to find shelters, safer location to go to, safer routes and exits, etc. (Lin et al, 2016).

2.2.2.4 Be cautious about message update speed

A study by Lachlan et al. (2014) cited in (Lin et al., 2016) shows that slow tweet feed can cause less audience engagement and generate less interest. However, "social media users tend to consider quick updated social media posts as more relevant, as breaking news, or as high involvement issues" (p. 603). However, Lachlan et al. (2014) warn that if social media is updated fast but poorly implemented, this may lead audience to judge the messages in a negative manner. It is possible that the public will perceive those feeds as "incomplete, inaccurate, and misleading" (p. 603).

Lin et al. (2016) suggest that quick and regular update of social media feeds should relate to information from official or authoritative sources, because of credibility attached to government agencies and organizations. The authors highlighted empirical evidence from research that suggests receiving quick and frequent quality information from official or authoritative outlets would allow the public perceive that government agencies and organizations have the best interest of the audience in mind.

The second considerations to bear in mind is determining the schedules and frequencies of social media feeds. Crisis communication can be sent out via one tweet or a series of tweets repeatedly through the duration of a crisis. The information should be sent out frequently enough to be noticed and be available to people seeking updates. It is also important to have a system in place to build and train a team of members who can access the organizational official social media accounts to provide constant updates.

2.2.2.5 Own the hashtag

Based on research by Lachlan et al. (2014), Lin et al. (2016) state that it may be beneficial for government departments and first line respondents to use a specific hashtag created for the incident at hand. The hashtag will serve as a marker for transmission of official information, warnings, and updates. Lin et al. (2016) say that by owning the hashtag, crisis managers might be able to guide the affected public to useful instructions issued from official source.

According to Lin et al. (2016), owning a hashtag adds to credibility of information sources, because, relying on organically generated hashtags surrounding the event may provide misinformation and cause confusion for the audience. In turn, this may contribute to the transmission of spam, rumors, and adverse communication effects. Owning the hashtag makes it easier to track it and promote it in other media outlets, letting the audience know it is " better

able to find breaking news and information from authoritative sources as the crisis unfolds" (p. 603). The authors also recommended organizations promoting their hashtag of their own to assume the responsibility to maintain its accuracy and utility.

2.2.2.6 Cooperate with the public and similar organizations

Lin et al. (2016) affirm that the proliferation of social media increases the sharing and promotion of information. This helps "create a cooperative environment where information is shared, commented on and supported" (p. 604). Seeger (2006) quoted in (Lin et al., 2016) notes that in order to "maintain effective networks, crisis planners and communicators should continuously seek to validate sources, choose subject-area experts, and develop relationships with stakeholders at all levels" (2006, p. 240).

In cooperating, crisis managers should not only build partnerships with traditional organizations but should also monitor the information trends in social media to recognize the influencers and invite them to their side in the communication process (Austin & Jin, 2016). Lin et al. (2016) recommend also that government organizations should consider other agencies and member of the public as information dissemination partners and not competitors.

Now that we have explained the inventory of our benchmark of good practices, which are mostly relevant to public sector, it should be noted that combining Wendling et al. (2013) and Lin et al. (2016) help cover the key component of use of social media in crisis communication. Lin et al. (2016), for example, focus more on Twitter in government communication and internal processes with regard to use of social media, while Wendling et al. (2016) bring important strategies of crisis communication as accommodated to social media. Examples include situational awareness, monitoring and public sentiment, information, and managing reputation.

Both sets of good practices are pertinent to government organizations, and are results from outcomes and lessons learnt from real crisis that occurred in countries similar to Canada in terms of governance and other indicators. However, we cannot claim that this baseline of good practices is complete. Yet, such good practices are selective and seem to provide strategies that are more relevant to investigate the social media use during crisis. Indeed, this fits our purpose of our study since we examine the COVID-19 pandemic as it was unfolding.

Further to the overview above of our social media good practices in crisis communication based on Wendling et al. (2013) and Lin et al. (2016), a quick checklist of these practices is also available in Annex A to help guide us in our analysis of data.

CHAPTER 3: Research Methodology

The present thesis explores the use of social media in crisis communication in federal government in Canada represented in Health Canada and the Public Health Agency of Canada. The ongoing COVID-19 public health crisis serves as a case study to look particularly at social media strategies adopted to send information and communicate with Canadians about this emergency.

Choosing COVID-19 crisis was accidental and motivated by the sudden virus outbreak. In fact, the initial plan included the study of crisis communication preparedness at a number of federal departments either by looking at their internal communications plans or by interviewing their communications executives. We decided to change the plan because of three reasons.

First, we could not get in touch with our prospective interviewees, especially from Public Security Canada, PHAC, and HC. We reached out to them as early as 2020 through LinkedIn for possible interviews, few days before the news of a new flu started to spread in China. We did not

receive any answer later. We argued this was because they should have been mobilized to prepare for a potential wide spread of the virus in Canada.

Second, by the passage of time, more and more public service employees started to work from home and direct contact with prospective interviewees had become even more difficult. Moreover, as of mid-March onward, PHAC and HC started calling for physical distancing, followed by lockdowns, which made it inconvenient, if not impossible to arrange for face-to-face meetings.

Third, this inconvenience turned to be an opportunity to study a current crisis while it was still evolving when we were writing this thesis. Therefore, we shift our focus to COVID-19, especially when it had emerged to be a global pandemic and it started to become a major public health issue in Canada. We decided it would be no less of a good opportunity to look closely at how federal public health authorities would manage crisis communication through social media by looking at relevant tweets sent out to Canadians.

Thus, for the purpose of the present thesis the two sets of benchmarks of Wendling et al. (2013) and Lin et al. (2016) we described above serve as guidelines to gauge how close federal government organizations are or far in terms of their use of good social media practices for crisis communication. Together with this list of good practices, SMCC model outlined in (Jin and Austin 2012, 2016) shall highlight the context of social media use in crisis communication.

This model is not a prescriptive one, rather a descriptive theory. Therefore, it is good to have as a background knowledge for it sets the context of some aspects related to social media, namely the role of influencers and the emerging interactions between various types of audiences during crisis communications. On the other hand, the benchmark of good practices serve

primarily as the interpretive framework to analyse and discuss data. That is said, this research is set to explore the following questions:

- RQ1. How are the good practices of social media in crisis communication reflected in how the government organizations deployed social media in its crisis communication in Canada to respond to the first stage of COVID-19?

- RQ2. How Health Canada and the Public Health Agency of Canada have adopted social media and particularly Twitter in handling COVID-19 pandemic communication?

To answer these research questions, we identified two crisis phases to study that we name Phase 1 and Phase 2. We demarcated Phase 1 as the period from December 31, 2019 to March 13, 2020. In other words, it started with the announcement by the World Health Organization (WHO) that it had been informed of several unusual cases of pneumonia in Wuhan, China until when the Prime Minister Justin Trudeau advised all Canadians to avoid all non-essential travel outside Canada indefinitely.

Phase 2 began from March 13, 2020, just a week before the WHO declared the coronavirus was a public health emergency of international concern. Phase 2 stretched from March 13, 2020 until mid-June 2020. During this period, a series of measures were taken to contain the spread of the virus, most importantly lockdowns across Canada. We decided to delimit the end of Phase 2 on this date because it coincided with provincial and territorial governments' decision to open gradually the economy across provinces and territories. Then, we saw that activities got back to some form of normalcy, while precautionary advice and health protocols were always kept in place.

We chose Twitter as a source of data mainly because it is easier to extract its content and has this value of being a newsfeed. In addition, PHAC and HC tend to publish similar content across its social media platforms, with some tweaks to suit the type of audience of each platforms and their specific features, mainly the length of text allowed. From this perspective, we focused on Twitter to avoid potential redundancy and ensure we control the variable related to source of data.

For time limitations to carry out this research, we cannot cover fully all periods of the crisis, as it should be in similar case studies. We just chose a time slot that sensibly we can afford to study and retrieve the required data. Thus, given the time constraint to undertake this thesis, we cannot wait longer until the pandemic is over to cover all phases methodically and retroactively as in the most classic manner. Moreover, so far there is no end in sight to encourage us to wait in order to account for, let us say, the post-crisis phase and analyse communications related to recovery. Moreover, since this pandemic is an ongoing one until the moment of writing this thesis, the time delimitation criterion of the crisis is only based on timeline that reflect major government decisions we mentioned above. Thus, data collection followed that order. Indeed, studying an evolving crisis turns out to be an opportunity to look at strategies used during the crisis, and, therefore, learn reasons of adopting various strategies, as the crisis unfolds.

3.1 Levels of analysis

This thesis adopted three levels: Theme identification, quantitative and qualitative analyses. Yet, the approach we adopted is inductive, which would allow us to draw general conclusions based on observing data for regularities and patterns.

Thematic analysis serves to identify patterns of meaning and trends in data. This helps exploring the content of tweets sent out by PHAC and HC to Canadians to manage the crisis and

understanding underlying communicative strategies and purpose. The quantitative analysis aims first at counting tweets related to COVID-19 from all other general tweets that are sent during each phase of the crisis under study. Then, it defines the frequency distribution of themes and sub-themes in data. The aim here is to identify dominant units of meaning, that is, themes and sub-themes, throughout the crisis timeline as well as the communication engagement extent of PHAC and HC. For example, this highlights time boundaries when the two departments become more active or less active in tweeting as per specific dates and events along the crisis timeline.

On the other hand, the qualitative analysis, the core of this study, aims at analysing data represented in themes and sub-themes as well as representative tweets and other references from COVID-19 hub website[1], as required. The qualitative analysis explores the research questions by looking at the social media strategies used in communicating about the crisis and how they reflect the good practices, we highlighted in the theoretical framework. Moreover, this level of analysis provides also the opportunity to discuss and explain various social media strategies PHAC and HC adopted in informing Canadians during the crisis beyond the good practices benchmark explained earlier. In other words, it sheds light on social media strategies or practices that PHAC and HC have adopted in different ways during its communications drive along the crisis timeline.

3.2 Technical tools of research

3.2.1 Source of data

PHAC and HC were chosen as the source of data because, as per their mandate, jointly took the official lead in responding to the crisis at the federal level and communicating accordingly with Canadians. The two departments used a variety of channels to disseminate

[1] Coronavirus disease (COVID-19) outbreak updates, symptoms, prevention, travel, preparation - Canada.ca

information and interact with the public, including Twitter. The following is a brief description of the role of each department.

3.2.1.a Public Health Agency of Canada

PHAC is part of the federal health portfolio that includes also Health Canada, Canadian Food inspection Agency, Canadian Institutes of Health Research, and Patented Medicine Prices Review Board. Its activities focus on preventing disease and injuries, responding to public health threats, promoting good physical and mental health, and providing information to support informed decision-making (Public Health Agency of Canada, 2021a). Its mandate defines its role as the following:

- Promote health;
- Prevent and control chronic diseases and injuries;
- Prevent and control infectious diseases;
- Prepare for and respond to public health emergencies;
- Serve as a central point for sharing Canada's expertise with the rest of the world;
- Apply international research and development to Canada's public health programs; and
- Strengthen intergovernmental collaboration on public health and facilitate national approaches to public health policy and planning.

(2021a, par. 4)

3.2.1.b Health Canada

Also part of the health portfolio, Health Canada is responsible for helping Canadians maintain and improve their health. It ensures that high-quality health services are accessible, and works to reduce health risks (Health Canada, 2011). As per its mandate. Health Canada undertake the following role:

- Prevent and reduce risks to individual health and the overall environment;
- Promote healthier lifestyles;

- Ensure high quality health services that are efficient and accessible;
- Integrate renewal of the health care system with longer term plans in the areas of prevention, health promotion and protection;
- Reduce health inequalities in Canadian society; and
- Provide health information to help Canadians make informed decisions.

(2011, par. 4)

3.2.2 Collection of data and sampling

The data consists of tweets from PHAC and HC's Twitter account GovCanHealth. These tweets were sent with the aim of informing Canadians about COVID-19 and communicating public health measures. Data for Phase 1 covers the period from December 31, 2019 to March 13, 2020, while that for Phase 2 covers the period from March 13 to mid-June 2020. Because it is not practical to track historical tweets right from the Twitter user interface, we have to scrape these publicly available tweets using GetOldTweets3 (A Python 3 library and a corresponding command line utility for accessing old tweets). This tool hits Twitter search APIs to pull the data tweets in reverse chronological order, with the oldest tweets come top of the list. Extracted tweets were then exported into Excel sheets. Scraping data from Twitter was conducted in compliance with Twitter Developer Agreement and Policy[2]. A detailed description of the process of collecting data is available in Annex B.

For each phase of the crisis, we extracted two datasets; one contains tweets sent, while the other contains both tweets and their replies. For analysis, we considered solely the tweets that are COVID-19 related. To do so, we filtered tweets using the #COVID19 hashtag as identifier of relevant tweets. Thus, we reduced first dataset from 976 to 144, the latter being the tweets sent to

[2] https://developer.twitter.com/en/developer-terms/agreement-and-policy

inform Canadians about the pandemic, while the remaining are tweets about other routine aspects related to the PHAC and HC mandate. In the second dataset, we reduced tweets from 830 to 709. The latter are COVID-19 related. The non-COVID-19 tweets were only 121 in second dataset.

3.2.3 Tools of analysis

Related to levels of analysis section above, for quantitative analysis the present research used simple tallying of tweets based on metrics like counting their number of occurrences over a period or between two points in crisis timeline. Patterns of meanings categorized were also counted to define their frequency distribution, as this is important to identify prevalent categories in data. The aim at this stage is to understand the intensity of PHAC and HC's engagement as the crisis unfolds. By engagement, we mean how many tweets they send overall in between the crisis timeline. It also lays the ground for the qualitative analysis when, for example, there is a noticeable cluster of specific practices or strategies. On the other hand, the qualitative analysis serves to gauge the theoretical framework against our data. For this purpose, we used thematic analysis as analytical framework.

3.2.4 Thematic analysis

This model of analysis investigates the qualitative aspects of content (Marks & Yardley, 2004) and is used for examining data extracted from PHAC and HC's Twitter account GovCanHealth. According to Boyatzis (1998) and Patton (2002), this analytical framework is a common method used to categorize, label, describe, and analyze data for their manifest and latent meanings (Marks & Yardley, 2004). Central to this model is identifying key categories of meaning and sub-categories in the text. These patterns of meaning are then codified and aggregated into major themes that sum up the overall content. Guest et al. (2012) stated that

codes applied to dataset could serve as indicators for a further analysis, which may include comparing code frequencies, identifying code co-occurrence, and establishing relationships between codes within data.

In our analysis, we focus more on coding data and identifying themes and sub-themes, their occurrences and frequency distribution throughout datasets. We also focus on the code co-occurrence in order to make sense of data along the crisis timeline. To do this, we undertake an inline coding of tweets. So each tweet is considered as a distinct text. From there emerge sub-themes and then eventually major themes.

By zooming in tweets, we are able to extract both the implicit and explicit meaning embedded in the information. We did so by reading through words used and weighing in their rhetorical effects if need be. We also go sometimes beyond the tweet itself, click on links, and look at hashtags included to get more context. In doing so, we aim not only at deciphering the outer layer of information but rather exploring how and why a specific information is communicated and in what context. Eventually with this approach, we aim at getting valuable insights in regards to how PHAC and HC use social media to communicate during COVID-19 and to what extent their practices are in a par with our research benchmark.

3.2.5 Limitations

Ideally, a finished crisis would offer a clearer path to study various stages and highlight the lessons learned of how crisis communication managed throughout. However, in this research we were denied of this *luxury* since the crisis was still ongoing at the time of preparing this thesis. Therefore, we were unable to study it in a retrospective manner, for example, by looking back at every stage of the crisis and highlighting especially the lessons learned of how communications have been rolled out and managed. As a result, we had to collect only data in

time slots that we determined based on the criteria above outlined under the heading of collection of data and sampling. Nevertheless, a long crisis as the current one would provide us with the possibility of studying new kind of disruptive events shaping human behaviour globally, similar to the consequences of climate change, which had plunged us in a risk mode. This factor is relevant to this research and might have implications in terms of how crisis and crisis communication to be managed in the long run. Thus, this was a work in progress as the crisis evolved, and in doing so, no final theoretical model per se might concretely emerge by the end of the study. However, we can see practices and strategies that are specific to how the Government of Canada attempts, so far, to communicate during this unique, unprecedented, and ongoing pandemic.

It would be beneficial though for this research if we have undertaken some triangulation approach as well. However, communications executives or task force in charge of delivering current crisis communications from PHAC and HC could not be reached for interviews, despite attempts to do so. This could help enrich further our analysis of tweets, for example, by providing us with some perspectives, and explaining rationales for some communications decisions, they took.

Except from giving some examples from individual postings or videos from other channels owned by PHAC and HC, it should be emphasized that we could not cover those social media channels in this study. We could only extract massively data from Twitter. This is because not all media platforms allow their data be scrapped automatically by users. Challenges to do that vary from technical to legal. For example, Facebook, the most popular social media in term of use in Canada, disallows automated scrapping of data (Octoparse, 2019) without a prior express written permission if to use a crawler. As an alternative, we chose Twitter as a representative

variable for social media platforms used by the PHAC and HC to communicate about the crisis. In addition, it was easier to scarp data historically and in mass. Indeed, it turned out to be a good decision anyways, as both departments relied highly on Twitter to reach out to Canadians during these times. In addition, Twitter is a good reflection of how government disseminates information to the public, and it is conveniently designed as a newsfeed channel.

CHAPTER 4: Analysis

4.1 Theme identification and quantitative analysis

4.1.1 Overview

This section reports the identification of themes, resulting in codified units of meaning in the form of sub-themes and major thematic categories as tweets were analyzed for content. The analysis consisted of defining themes throughout the tweets collected in the Phase 1 and Phase 2 of Covid-19 pandemic. In the present research, as explained earlier, we delimit the Phase 1 as the period ranging from December 31, 2019 to March 13, 2020. This started just after the announcement by the WHO that it had been informed of several unusual cases of pneumonia in Wuhan, China. Phase 1 extended to when Prime Minister Justin Trudeau advised all Canadians to avoid all non-essential travel outside Canada indefinitely. Phase 2 of the crisis corresponds to general measures taken nationally and provincially to contain the spread of the virus, following Prime Minister Justin Trudeau's advice on March 13, 2020 to avoid all non-essential travel outside Canada. For methodological reasons, it is decided that Phase 2 ended around mid-June 2020 when measures taken to open gradually the economy, with malls, hotels, public parks, and other venues were opened for business while health restrictions were still in place.

A quantitative analysis results were also reported in this section. It consisted of frequency distribution of sub-themes and themes to highlight the degree of communication engagement by PHAC and HC and the prevalent type of themes along the crisis timeline. It is worth mentioning that this level of analysis aimed to help identifying patterns of meaning throughout the data. Eventually this would serve us to explore in qualitative manner how PHAC and HC used Twitter to communicate during the Covid-19 pandemic by shedding light on the strategies adopted and discussing the good practices it followed.

4.1.2 Themes' identification and their frequency distribution

The first layer of analysis aims at mapping out if there are any trends in terms of number of tweets in association with the crisis timeline as it evolves.

4.1.2.a Crisis – Phase 1

In phase 1, Health Canada PHAC published 976 tweets in total, of which 830 are non-COVID-19 related and 144 are COVID-19-related. Tweets frequency varied from timeline to another, as crisis evolved, reaching its peak when it was announced that the first case in Canada was confirmed in a patient returning from Wuhan, China and when the Minister of Health recommended stockpiling some food and medication, arguing events could change quickly. However, the first tweets about coronavirus dated to January 24, 2020 and pertained to screening measures at airports, as more and more countries started screening air travelers coming from China. Before then, coronavirus, a name given to such unusual cases of pneumonia had not been associated with any tweets.

The following table and chart show number of tweets dated along the crisis timeline.

Table 1. Phase 1: Number of tweets and crisis timeline

Date	Crisis timeline (events)	Number of Covid-19 related tweets
2019-12-31	Event 1: The World Health Organization is informed of several unusual cases of pneumonia in Wuhan	0
2020-01-15	Event 2: The Public Health Agency of Canada activates Emergency Operations Centre	0
2020-01-17	Event 3: As more and more countries screen air travelers coming from China, Canada took similar screening measures	0
2020-01-22 to 2020-01-24	Event 4: Warning signs are added at major Canadian airports, raising awareness of the new virus	22
2020-01-25 to 2020-01-28	Event 5: First case in Canada is confirmed in a patient returning from Wuhan, China	52
2020-01-29 to 2020-02-08	Event 6:Announces repatriation of Canadians in China; returnees will be quarantined for two weeks 2020-01-30 World Health Organization declares the outbreak a "public health event of international concern"	3
2020-02-09 to 2020-02-17	Event 7: Airport screening requirements are expanded	13
2020-03-06	Event 8: Minister of Health recommends stockpiling some food and medication “because things can change quickly”	28
2020-03-11 to 2020-03-12	Event 9: The WHO declares the global outbreak a pandemic	14
2020-03-13 to 2020-03-13	Event 10: Canadians are advised to avoid all non-essential travel outside Canada indefinitely	12

A quick reading through these numbers demonstrated that PHAC and HC seemed variously engaged with Canadians depending on the crisis timeline as it evolved. Tweets reached a peak as of January 29 when the first case of a patient returning from Wuhan, China, was made public. Else, there is no significant consistency in data, although PHAC and HC continued to tweet regularly about Covid-19. 1. The following chart sums up tweets sent from November 17, 2019, to March 13, 2020.

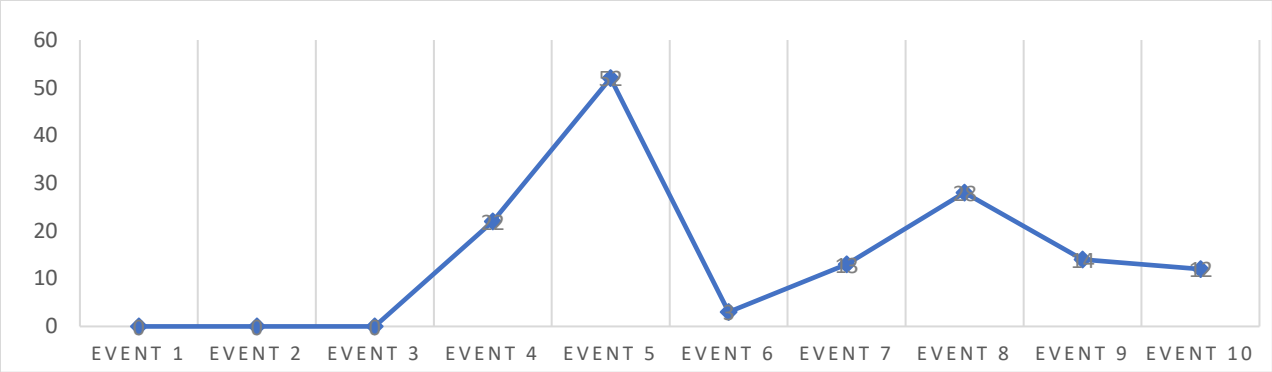

Chart 1. Tweets and crisis timeline of Phase 1

A second layer of analysis was conducted with the aim of identifying themes, sub-themes and their frequency distribution and making them ready for a further qualitative analysis. The most prevalent units of meaning were development and information; travel as vector; precautionary advice; post advice; informing of symptoms or exposure; coronavirus transmission; estimate of risk. These units fall under efforts to raise awareness of Canadians about the pandemic. Together they account for 65 per cent out of all coded occurrences of units of meaning (245) in total.

Thus, the most dominant theme was Theme 2: "GC has implemented a broad program of information dissemination," including 65% of all code occurrences. It comprises five subthemes:

1.Informing of the disease and updates

- Developments and information
- The nature of coronavirus
- Symptoms
- Coronavirus transmission
- Estimate of risk
- Reporting first case

2. Travel information

- Travel as a vector
- Travel, general
- Wuhan, China
- Quarantine

3.Prevent exposure or spread of disease

- Precautionary advice

- Quarantine
- Post advice

4.False and misleading claims

- Trustworthy sources
- Fraud

5.Preparedness

- Stockpiling

They reveal the communications sent to Canadians to raise their awareness concerning the pandemic and the risks related to it. It also urged Canadians to take the precautions necessary to stop exposure and spread of the virus. Information dissemination constitutes the core of this communications campaign centered on getting the public educated about the disease and augmenting preparedness at many levels, including travel and risks, avoidance of misinformation, adaptation to a potentially lengthy health crisis.

With 26 per cent of code occurrences, Theme 1: "Wide-ranging measures taken by the GC to slow the spread of coronavirus" came second in order. Prevalent codes under this theme comprise government intervention, Canadian readiness, and screening measures. This thematic category comprises two subthemes:

1.Immediate response

- Government intervention
- Restricted travel
- Screening measures

2.Healthcare measures

- Canadian readiness
- Canadian hospitals and measures
- Protecting Canadians
- General health and safety
- Healthcare workers

They communicate the very extensive and widely varied actions that the governments of Canada are undertaking to help slow the spread of coronavirus. This include measures taken at

hospitals; tracking and informing the public of cases; recruiting new healthcare workers; discussing how the government is seeking to protect Canadians from the virus; travel restrictions; screening at airports. The latter comprises direct government intervention, policy and measures regarding incoming travelers and what they should do and what they should expect in arrival.

The third theme in importance was Theme 3: "GC is working closely with residents of Canada in order to protect their health". Dominant codes under this theme include informing of symptoms or exposure as well as contacting individuals. This thematic category consists of two subthemes:

1.Symptoms and exposure awareness

- Informing of symptoms or exposure

2. Monitoring the situation

- Contacting individuals
- Orders
- Patient care

They cover information disseminated to protect Canadian population by explaining efforts to keep contact with individuals who have contracted the virus, orders by the government to contain and monitor the spread of the disease, measures regarding patient care, among others.

Finally, Theme 4: "GC has formed intranational and international partnerships to help combat coronavirus" featured only two units of meaning of equal occurrences: Global partnerships and Intra-country partnerships (two times each) grouped under one subtheme:

1.Collaboration and cooperation

- Global partnerships
- Intra-country partnerships

The theme informs about the coordination between federal level of government and provincial governments as well as research centers on how to mobilize resources to protect the health and safety of Canadians. It also reveals that Canada is collaborating with its international partners in research geared to many aspects of the pandemic, like testing, vaccine, and equipment acquisition.

The following chart is a breakdown of theme occurrence frequency in the first dataset of Phase 1. More information about frequency distribution are available in Annex C.

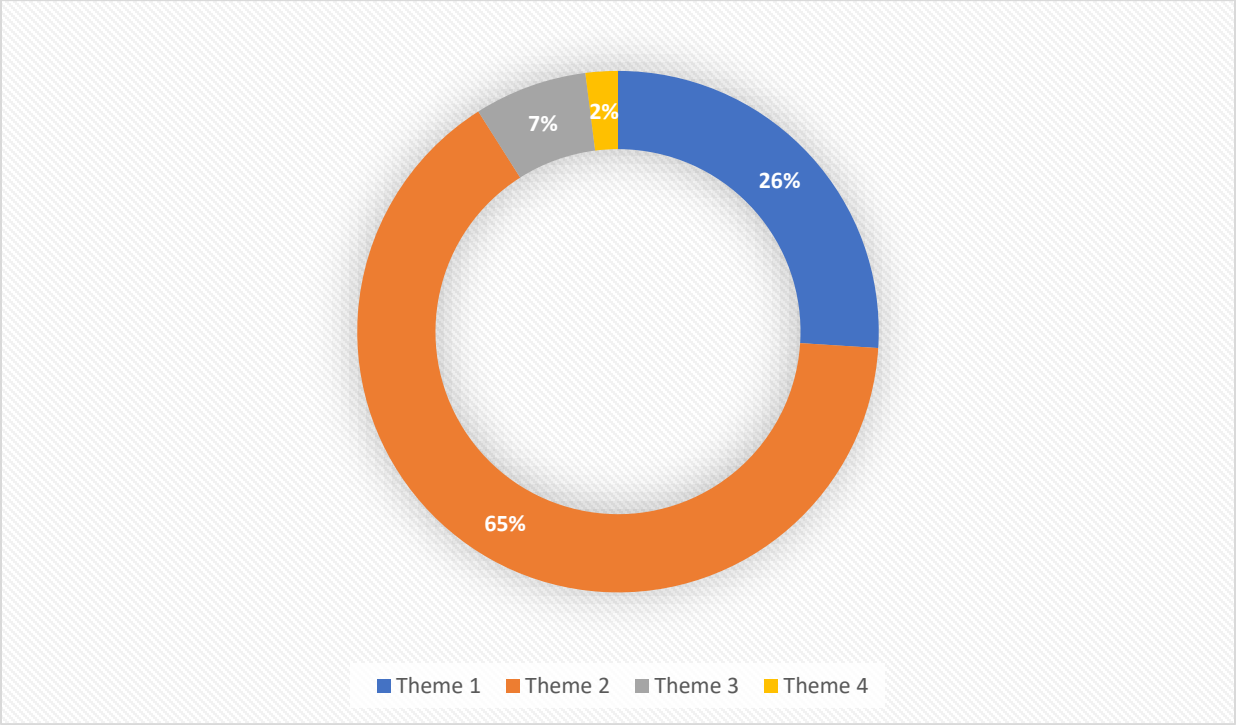

Chart 2. Theme occurrence distribution of Phase 1

Legend

Theme 1: Wide-ranging measures taken by the GC to slow the spread of coronavirus
Theme 2: GC has implemented a broad program of information dissemination
Theme 3: GC is working closely with residents of Canada in order to protect their health
Theme 4: GC has formed intranational and international partnerships to help combat coronavirus

4.1.2.b Crisis – Phase 2

In phase 2, PHAC and HC published 830 tweets in total, of which 709 are COVID-19 related and 121 are non COVID-19-related. As in phase 1, tweets frequency varied from one

segment to the other along the timeline, as the crisis continued to change, reaching its height in the period between April 28 to June 4, consecutively coinciding with the announcements that

- Canada hit 50,000 cases of Covid-19
- Canada registered 79 per cent of deaths to that date and were all connected with long-term care
- First time advice was given to Canadians where COVID-19 is still spreading should wear non-medical masks when they can't stay distant

In phase 2, although tweets fall mostly under similar themes as in Phase 1, they cover larger varieties of sub-theme categories and showed continuous engagement along the timeline. The Table 2 and Chart 2 below show the number of tweets dated along the crisis timeline.

Table 2. Phase 2: Number of tweets and crisis timeline

Date	Crisis timeline (Events)	Number of Covid-19 related tweets
2020-03-13 to 2020-03-15	Event 1: Canadians are advised to avoid all non-essential travel outside Canada indefinitely	5
2020-03-16 to 2020-03-17	Event 2: Government advises Canadians returning from abroad to self-isolate for 14 days Government announces border closure set for after midnight on March 18; only Canadians, their families, residents, and Americans allowed	18
2020-03-18 to 2020-03-19	Event 3: Canadians are advised to practice physical distancing Health Canada speeds up access to COVID-19 test kits	18
2020-03-20 to 2020-03-22	Event 4: COVID-19 cases pass 1,000 Canada-U.S. border closes to all non-essential travel	13
2020-03-23 to 2020-03-24	Event 5: Federal government earmarked $30-million advertising campaign focused on physical distancing and personal hygiene	28
2020-03-25 to 2020-03-29	Event 6: Quarantine act is invoked; mandates all travelers must self-isolate	38
2020-03-30 to 2020-03-31	Event 7: All passengers flying in Canada are subject to a health check	8
2020-04-01 to 2020-04-01	Event 8: Ottawa warns of possible drug shortages Trudeau says length of the lockdowns will depend on the behavior of Canadians	8
2020-04-02 to 2020-04-02	Event 9: COVID-19 death toll passes 100	3
2020-04-03 to 2020-04-08	Event 10: Ontario projects COVID-19 death toll could reach 15,000	42

2020-04-09 to 2020-04-09	Event 11: Ottawa projects 4,400 to 44,000 Canadians could die of COVID-19	9
2020-04-10 to 2020-04-14	Event 12: RCMP warns people it could make home visits to enforce the Quarantine Act	28
2020-04-15 to 2020-04-22	Event 13: Trudeau warned against premature reopening of the economy Canada passes 1,000 deaths	61
2020-04-23 to 2020-04-27	Event 14: Canadian death toll passes 2,000 as country announces it'll pour $1.1 billion into vaccine testing	31
2020-04-28 to 2020-05-11	Event 15: Canada hits 50,000 cases It was revealed that "79 per cent of all deaths in the country" were to that date connected with "long-term care and seniors' homes."	118
2020-05-12 to 2020-06-03	Event 16: Death toll passes 5,000 Top doctor says Canadians in communities where COVID-19 is still spreading should wear non-medical masks when they can't stay physically distant from other	194
2020-06-04 to 2020-06-06	Event 17: Prime Minister Justin Trudeau says new federal modelling shows that COVID-19 is in decline across Canada	18
2020-06-07 to 2020-06-11	Event 18: Canada allows families of citizens to cross border with 14-day quarantine after arrival	54
2020-06-12 to 2020-06-14	Event 19: It is now mandatory to test the temperature of all air travelers, starting with those entering the country from abroad. Passengers with a fever will not be allowed to board. Face masks have already been made mandatory	19
2020-06-15 to 2020-06-15	Event 20: Canada approaches 100,000 cases (99,073+ confirmed cases of COVID-19 with 8,174+ deaths) and the first wave of COVID-19 nears its end Tam said Canadians did do well to flatten the curve and not overwhelm the health care system but failed to protect seniors living in long-term care homes.	5

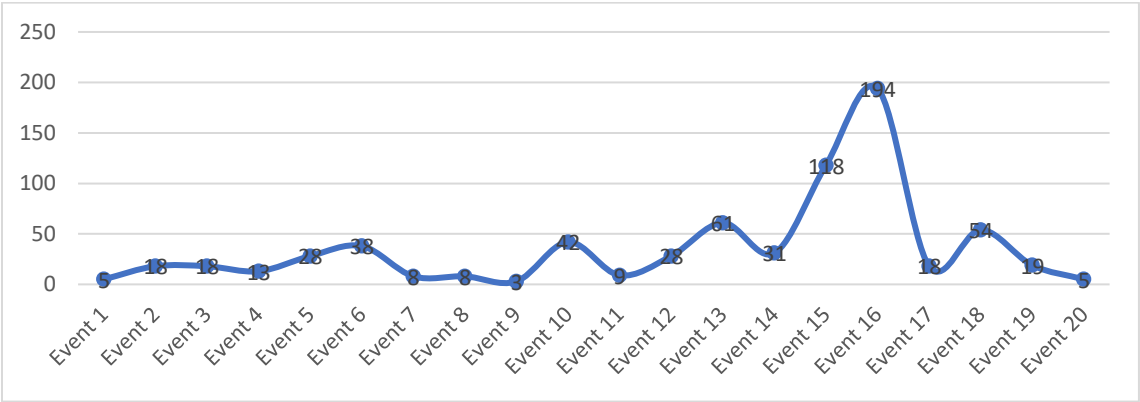

Chart 3. Tweets trends and crisis timeline of Phase 2

The second layer of analysis that was conducted aimed at identifying themes, sub-themes and their frequency distribution. In the analysis, the most dominant sub-themes that emerged were related to information that calls Canadians to prevent exposure or spread of disease; preparedness; false and misleading claims; informing of the disease and updates; travel information. These sub-themes fall under efforts to raise awareness of Canadians about the pandemic. Together they represent 69 percent out of all coded occurrences of units of meaning, totaling 1429.

As in Phase 1, the most prevalent theme was Theme 2: "GC has implemented a broad program of information dissemination," including 69 percent of all units of meaning occurrences. However, in Phase 2 data, this theme comprises more sub-categories, which in turn are broken down into smaller units of meaning. This theme is broken down further to six sub-themes and their related categories:

1. Prevent exposure or spread of disease
- 1.1 Covid-19 and youth role
- 1.2 About quarantine
- 1.3 Covid-19 advice for parents
- 1.4 Socializing at home
- 1.5 Precautionary tools and actions
- 1.6. Informing of mask
- 1.7 Call for observing distancing
- 1.8 Call for action on pandemic
- 1.9 Routine safety

2. False and misleading claims
- 2.1 Misinformation
- 2.2 Action against rumors

3. Preparedness
- 3.1 Informing of stockpiling
- 3.2 Cleaning products advice
- 3.3 Support to business
- 3.4 Increasing health products and testing availability

4. Informing of the disease and updates
- 4.1 Covid-19 cure information
- 4.2 Covid-19 general updates

5. Symptoms and exposure awareness
- 5.1 Type of symptoms
- 5.2 Transmission

6. Travel information
- 6.1 General travel information
- 6.2 Travel preparedness

The sub-themes above tend to inform Canadians about various aspects of Covid-19 and ways to avoid and prevent its spread. They show the progress of the pandemic across Canada by providing updated dashboard, informing of drugs, vaccines, symptoms, transmission, and clinical trials. They also cover information with respect to travel information, including rapid screening at airports using ArriveCan and conditions, which the incoming travelers should comply with like safe transportation and quarantine. Preparedness and precautionary advice are also crucial information communicated to Canadians. They urge them to be cautious by observing physical distancing, staying home, and avoiding visiting each other, among other measures. All of this was in the aim of flattening the curve, staying safe and saving lives, as stated by Health Canada and PHAC.

Theme 1 "Wide-ranging measures taken by the GC to slow the spread of coronavirus" occupies 10 percent of identified thematic categories. Prevalent units of meaning under this theme comprise government intervention, Canadian readiness, and screening measures. This type of information explains to Canadians the prompt efforts undertaken by the government to increase its capacity to contain the spread of the disease and minimize its impact in the short term and long term. This theme is broken down further into two sub-themes and their categories:

1. **Immediate response**
   1.1 Travel related response
   1.2 Community-oriented response
2. Healthcare measures
   2.1 Prevention measures
   2.2 Utilities and readiness
   2.3 Protection

Theme 3 "GC is working closely with residents of Canada in order to protect their health" comprises 19 percent of thematic categories in dataset of Phase 2. Its frequency is as three times as higher than in the first dataset for Phase 1, which can be seen as reflective of the evolution of the crisis itself and the need for assuring Canadians about actions taken. Therefore,

this theme categorizes information that highlights such important aspects of crisis communication and responds to potential concerns of population. This include situational awareness, risk assessment related to Covid-19, and prospective consequences of lock-down on health. This theme is broken down further to four sub-themes and their related categories:

1. Monitoring the situation
1.1 Situational awareness
1.2 Privacy disclaimer
2. Estimate of risk
2.1 Covid-19 and general wellness
2.2 Food and substance use advice
2.3 Non-human transmission
3. Physical and Mental health
3.1 Mental health adverse manifestations
3.2 Act on mental health
3.3 Act on physical health
4. Essential workers
4.1 Guidance for front liners
4.2 Recognizing front liners' role

Theme 4 "GC has formed intranational and international partnerships to help combat coronavirus". As in first dataset for Phase 1, this theme talks about the type of collaboration existing to tackle the pandemic. The coordination is two-fold, involving the federal government and its provincial counterparts the provincial governments as well as research centers, and international partners. This theme, the least in frequency with one percent of all identified thematic categories, featured only two units of meaning of equal occurrences: Global partnerships and Intra-country partnerships (two times each) grouped under one subtheme:

1.Collaboration and cooperation

- Global partnerships
- Intra-country partnerships

The second dataset for Phase 2 yielded a new theme: "GC amplifies social media to keep momentum and increase reach and engagement"

With a two percent frequency, theme 5 relays social media postings related to Covid19 by other government social media postings. This include those published by the Chief Public Health Officer of Canada, ongoing public campaigns like #PlanktheCurve, which was launched by Prime Minister Justin Trudeau to stop the spread of the disease by urging Canadians to take the necessary precautions. Social media amplification also comprises a series of YouTube interviews given by Deputy Chief Health Officer of Canada and retweeting postings of celebrities and other public figures. The box below summarizes this theme breakdown. This theme is broken down one sub-theme and its related categories.

1. Social media amplification
1.1 Government social media accounts
1.2 Celebrities and influencers
1.3 YouTube interviews

More information about frequency distribution in Phase 2 are available in Annex D. The following chart is a breakdown of theme occurrence frequency in the second dataset for Phase 2.

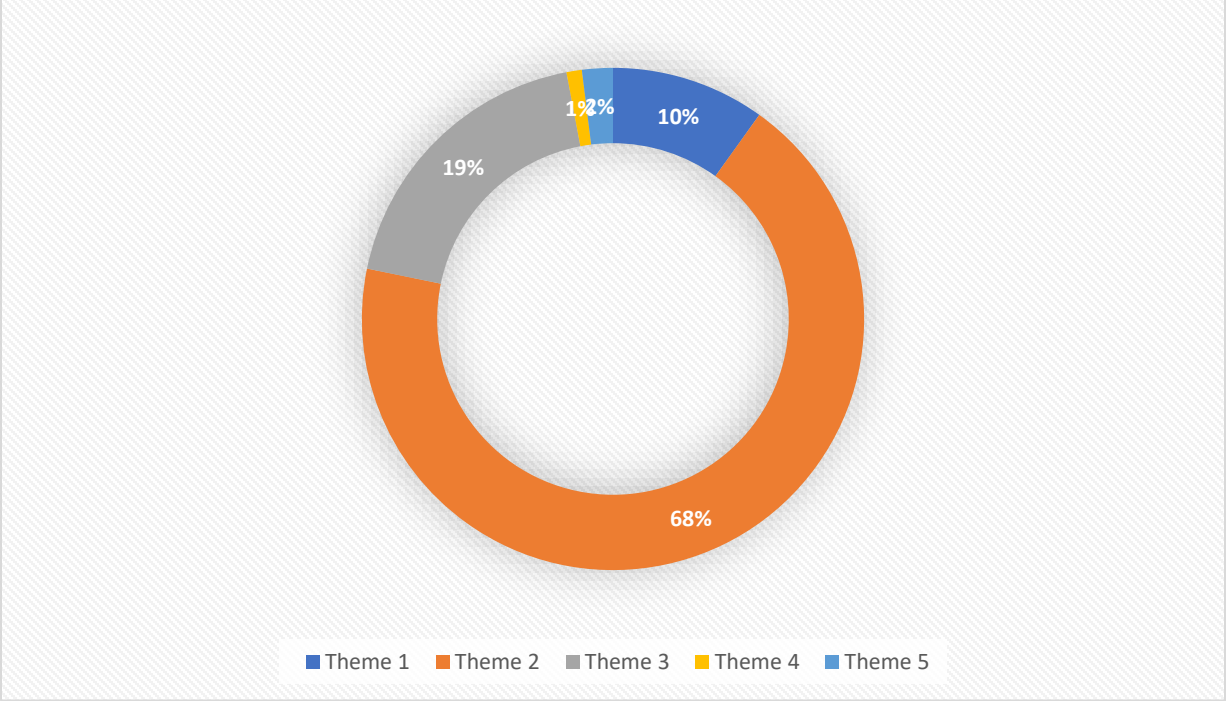

Chart 4. Theme occurrence distribution of Phase 2

Legend

Theme 1: Wide-ranging measures taken by the GC to slow the spread of coronavirus
Theme 2: GC has implemented a broad program of information dissemination
Theme 3: GC is working closely with residents of Canada in order to protect their health
Theme 4: GC has formed intranational and international partnerships to help combat coronavirus
Theme 5: GC amplifies social media to keep momentum and increase reach and engagement

4.1.3 Analytical remarks

It should be noted that a quantification of prevalent subthemes in tweets across crisis various timeline in Phase and Phase 2 yielded almost similar results. The most dominant theme in individual timeline remains the first theme that we identified as "GC has implemented a broad program of information dissemination" with a distribution of above 70 percent in both datasets. This corroborates also with the frequency of this theme in the overall data and reflects the role of the government as the source and distributor of information aimed at educating and empowering the public in the crisis. It should also be noted that the volume of tweets and the intensity of engagement increased as the crisis entered Phase 2. For research methodological grounds, it is noteworthy to reiterate that it has been decided to be March 13, 2020, when Canadians were advised to avoid all non-essential travel outside Canada indefinitely.

The identification of themes, sub-themes, their categories as well as their frequency distribution sets the ground for undertaking the second level of analysis: The qualitative analysis. This focuses on PHAC and HC's use of social media, namely Twitter, in communicating about the pandemic, in an attempt to identify the good practices and the general strategies that drives the crisis communication campaign during the COVID-19 pandemic.

4.2 Qualitative analysis

In the following section, we review, analyze, and discuss our data against the benchmark of good practices Wendling et al. (2013) and Lin et al. (2016) we outlined in the theoretical framework. Our observations and critical insights are supported by illustrative tweets as relevant.

Good practice 1: Surveillance, monitoring, situation awareness and early warning system

Social media offer the opportunity for an immediate and dialogic interaction as well as access to a large amount of information circulated online through following hashtag discussions, handles of other organizations and/or following specific individuals, groups or organizations' social media platforms. Therefore, it is important for organizations to be able to monitor the situation and have an idea of the crisis evolution and people's reaction to it. Social media can be added to other traditional sources of information and data collection, like field search and health record registration. The aim is to establish a continuing surveillance, monitoring, situational and early warning system to help health authorities and decision makers in measures to take for managing the crisis.

Access to social media have now become widespread and users are able to create content and communicate directly with organizations by reacting to their official Facebook postings, sharing, tweeting or retweeting crisis communications information. This provides content for the government to monitor for signals to understand better the reality on the ground during a crisis (Wendling et al., 2013). In a progressing crisis like COVID-19, which affects larger population and extends across a wider geographical area, monitoring the situation through social media can support decision-making and this can be done in many ways.

Many tweets sent out by PHAC and HC during Phase 1 and Phase 2 of the crisis contain patterns of meaning that illustrate some efforts to monitor and increase the situation awareness. In this tweet,

2020-04-04 17:40:04 Stay informed about how the #COVID19 outbreak is evolving in Canada. Visit our interactive COVID-19 Situational Dashboard for Canada to learn more: http://ow.ly/vKLf50z5nf5

PHAC and HC offer real-time information about COVID-19 cases across Canada. On daily basis, the situational dashboard covers new cases, total cases, cases recovered, and total recovered up to date. Data also covers deaths on daily basis and total deaths. Other information includes number of tests done and total cases count breakdown by health regions, as well as by age and gender distribution. The situational dashboard included in the Government of Canada website is made available for all Canadians to track the evolution of the pandemic in Canada and should serve all stakeholders and policy makers involved in their crisis management efforts, either at federal level, provincial or territorial levels. The situational awareness dashboard emerges as an important sub-theme with a high frequency occurrence of 71 out of a total of 1429.

To be able to gather updated information, it is clear from data that PHAC and HC use many data collection sources, including relying on the contribution of Canadians. For example, Canadians are invited to report flu cases using social media, as identified in sub-themes of situation tracking and flu watchers. These two sub-themes relate to the reach-out campaign by HC and PHAC, which encourage people to share information with the aim of helping monitor the situation, discover early signs of disease spread and detect where it clusters geographically in addition to other relevant information. Those sub-themes did not appear just in one point of time, but they keep recurring longitudinally throughout data[3]. The following tweets highlight this call-out campaign:

[3] The sub-themes of situation tracking and flu watchers recur frequently in tweets across data and the crisis timeline

2020-04-06 18:01:26 DYK over 3,000 Canadians are helping #PHAC track #COVID19 and other flu-like illness activity? Canada, we need your help to reach our target of 5,000 #FluWatchers. Sign up http://ow.ly/9zXU30qv3vu

2020-04-03 14:30:15 #FluWatchers normally track the flu. Let's try to track #COVID19. Join FluWatchers to help us #flattenthecurve: http://ow.ly/nchz50z4pkN

2020-05-26 13:01:36 Calling all volunteers from across Canada! We need you to help track where cases of #COVID19 are. This crowd source network provides an early warning of possible clusters of respiratory illness. Sign up: http://ow.ly/GzRq50zNOH5

The last three examples above show that the Government of Canada relies on the contribution of flu watchers, an existing network of Canadian volunteers who normally track all strains of flu. However, with the current global pandemic, they are mostly tracking COVID-19. According to Canada (2020), the "FluWatchers" program is considered an important part of Canada's national flu surveillance program called FluWatch. Anyone interested can sign up in a dedicated website. Once a person signs up, they will receive an email every week to aske them if they had any symptoms of flu in the previous week. Based on the assessment outcomes, there may be a few more questions of follow-up (Public Health Agency of Canada, 2020).

Ideally, a crisis can be tracked and monitored through a combination of technical and crowdsourcing (Wendling et al., 2013). Depending on the type of crisis, technical means may include data aggregation through, SMS/text, tweets, internet platforms, among others. In our case, Twitter is used as a precursor to call for more engagement by flu watchers and invite new participants in the attempt to collect more data in this critical time. Related tweets call for action and provide direct link where someone can sign up in the program. As mentioned, the Flu Watchers is an important aspect of Canada's overall national flu surveillance program. It provides a pool for data mining that can be synthesised by computer software to create situational awareness dashboard. This combination of technical and volunteering surveillance

and monitoring of the crisis enabled by Twitter should be seen as a point in a spectrum of 360-degree of data collection and processing, involving digital and traditional means.

The thematic analysis of tweets shows a pattern of meaning that the PHAC and HC use Twitter to engage Canadians to participate in the Flu Watchers program. This program adopts a surveillance, monitoring, situation and early learning system combining crowd sourcing of data on volunteering basis and digital processing of data collected to feed in real-time the situational awareness dashboard available online.

Good practice 2: Use of media affordances to provide credible sources of information

According to Hovland, Janis, & Kelley (1953) and Reynolds & Seeger (2005), source credibility is constantly seen as an essential key factor for information acceptance and interpretation. From this perspective, information that appear to lack credibility "would likely impede crisis communication efforts, which in turn increases the potential harm and severity of the incident at hand (Glik, 2007; Renn & Levine, 1991; Sundar, 2008). To put this in context, research done on the Canadian Red River Valley floods of 2009 concluded that the local people tended to retweet postings from authoritative news sources as well as information from government (Edwards, Spence, Gentile, Edwards & Edwards, 2003), mentioned in Lin et al. (2016). On the opposite side, a case study on the Hurricane Sandy found that the crisis communication online "challenged the public to locate tangible instructing information concerning health and properties in such a large-scale crisis," (Spence, Lachlan, Lin, & Del Greco, 2015, p. 603). The study suggested that crisis managers failed to provide cues for credible sources of information conveyed online, causing the public to find it difficult to recognize the trustworthy and reliable sources of information.

To put this notion further in the perspective of this research, PHAC and HC proactively merged their existing Twitter accounts into one account since November 2017 with the handle of @GovCanHealth. Although this move dated back to 2017 and not connected to the present crisis, it appears now that it is even more relevant for the pandemic communications. In fact, using one platform account can help avoid multiple voices when communicating, as these two government departments' roles may interweave and overlap in the management of such a dynamic, lengthy, and multi-faceted crisis.

It is important to mention that each department has a different health communications role as per the communications guidelines in place. For example, HC should be responsible for federal communications related to the approval of the pandemic vaccine and other regulated products used in handling the pandemic (Health Canada, 2011). Some of its other communications responsibilities include providing occupational health and safety information for federal employees, among others. On the other hand, the PHAC leads national communications on public health issues that span more than one jurisdiction (Public Health Agency of Canada, 2020). The ongoing pandemic is an illustrative example of its active intervention. Another direct communication role it undertakes is to communicate travel health advice and information to Canadians.

Thus, communicating through one Twitter account shall give PHAC and HC one voice, one brand, and one identity. With the help of other identifiers like the icon that bears #COVIDAlert Application, the Government of Canada watermark as well as the campaign name: "Canada.ca/coronavirus" on accompanying visuals, PHAC and HC strongly cement their brand on Twitter and online. Indeed, those branding items help give the organization its characteristics

and persona (see figure 2 and figure 3). Branding here is like the public face and personality, which contributes to the organization being easily identifiable by the public.

Figure 2: Tweet dated November 217 announced the merging of HC and PHAC in one Twitter account

Figure 3: HC and PHAC Twitter box description that features main elements of branding that includes the owners of the account on top left, handle, the hashtag of the ongoing campaign, and link to the official coronavirus website

The branding elements should not be seen as aesthetic accessories, however. Rather, they are cues that help users easily find the relevant information either online or through social media by means of specific hyperlinked tabs or visuals, established hashtags, videos, and links. This is exactly what PHAC and HC insist in by, for example, redirecting users to other sources of information, other social media platforms they own, and mainly to a hub website dedicated to

COVID-19. This website is jointly created by PHAC and HC and hosts updated and relevant information to serve as a back-end to social media and the official Canadian COVID-19 communications. Examples of tweets that refer the public to this website (Coronavirus disease (COVID-19)) include the following postings, which cover three different sub-themes of travel information, informing on symptoms, and travel-related response.

2020-03-16 15:02:10 If you develop fever, cough or difficulty breathing after having travelled, call a health care professional. More about symptoms of #COVID19 and prevention: http://ow.ly/EwIt50yD50K #coronavirus

2020-03-16 21:15:08 Social distancing measures can help limit the spread of COVID-19 and other illnesses. Minimize close contact – keep 2 arm lengths apart from others Avoid crowds and large gatherings For more information on how you can be prepared: http://ow.ly/YFLx50yNg7o

2020-05-06 18:01:08 Travelling to Canada? You are required to complete a #COVID19 form at the border. Speed up the process by downloading the ArriveCAN app and filling out the form in the app upon arrival. http://ow.ly/JYLk50zxfdt

In the next section, we discuss the importance of media affordances of visual cues, including a variety of information formats like pictures and videos, and their role in perception associated with social media content.

Because social media communications are basically not face-to-face, and lack verbal cues and other basic elements of in-person human interaction, individuals tend to rely on cues and heuristics provided along with text to help them process information (Walther & Jang, 2012), as stated in Lin et al. (2016). So, through the combination of branding, communicating in one voice, integrating richer media, redirecting users to the main website and to their other social media platforms- including sometimes to the heads of the two departments, PHAC and HC provide enough shortcuts, cues and heuristics to guide the public to postings that are retweeted and amplified.

With this media rich in helpful leads and clues, individuals are likely to process information in effortless manner and with less cognitive strain (Chen & Chaiken, 1999; Metzger, Flangin, & Medders, 2010; Walther, 1992), quoted in Lin et al. (2016). The ultimate value of

having these characteristics in the organization's Twitter account is to establish their credibility perception in the eyes of the public, who can stay assured that they are able access in this time of crisis authoritative, official, and trustworthy sources of information to deal with the tough circumstances ahead and mitigate risks.

Good practice 3: Raising public awareness about risks and crises

Leveraging social media is essential outreach tool to disseminate information promptly about the crisis, interact with the public, and support response to the crisis. Social media has also increased in importance because it allows crisis respondents to expand, among other things, their reach to wider audience, especially younger segments who rely less on traditional media than digital ones (Lin et al., 2016). Thus, it is important to promote the organization's official accounts all the time and as part of a preparedness drive. This is in order for members of the public to know where to get the most trustworthy information about the crisis when it hits and get used to the official sources on social media portals.

In the aftermath of the 2009 H1N1 Pandemic, federal, provincial, and territorial governments reviewed their contingency response, including pandemic communication protocols (Eggleton & Kelvin, 2010). This included an introduction of a rapid communication approach based on the creation and promotion of a pan-Canadian website that helps guide Canadians to relevant federal, provincial, and territorial websites in addition to the use of social media strategies. As we have seen above, having a known and branded Twitter account is an example of an approach that is likely to help guide the public to trustworthy sources of information and increase their awareness about risks and crises.

PHAC and HC have since 2017 merged their Twitter accounts and conveyed their public health information to the public on social media through this platform and others, including Facebook, Instagram stories healthycdns, and Snapshat, the last two were being used to target

younger audiences. By incorporating various platforms to inform and educate Canadians about risks, PHAC and HC intend to ensure that consistent information is widely spread (Lin et al., 2016), hence this is likely to help provide greater opportunities to monitor public's reaction and collect a large pool of feedback about which communications and tools of communication work best.

Figure 4: Snapchat lenses showing masks to promote wearing masks targeting the youth

Additionally, the fact that PHAC and HC turn to various social media portals beside Twitter reflects the overall government communication policy to deliver information that are flexible targeting a variety of different audiences (Treasury Board of Canada Secretariat, 2017). Opting for more channels also show them adjusting to the exigencies of a rapidly evolving crisis. This entails, of course, customizing their messages horizontally to fit different social media portals features and audiences' expectations with the progress of the crisis We may consider this as a good example of integrating social media into decision making policy development as the crisis evolves, a point that we elaborate further in the analysis.

That is said, we could assume that PHAC and HC Twitter account in combination with its other social media platforms as well as its COVID-19 hub website are well-established digital sources of information that are known to public. Yet, Twitter stands out as a powerful newsfeed during the ongoing crisis, through which the two departments consistently communicate announcements and convey new information with the aim of educating Canadians about the

disease, the risks associated with it, and how to prevent exposure and its spread. Not surprisingly, the most common theme that emerged in data is the one titled GC implemented a broad program of information dissemination. It represents up to 68 percent of all units of meaning frequency found. Prevalent sub-themes under this theme include, for example, prevent exposure or spread of disease, symptoms and exposure awareness, informing of the disease and updates, physical distancing, and precautionary advice, as illustrated consecutively in the following tweets:

2020-04-10 20:00:43 If you normally head to a cottage this time of year, please change your plans. You could get sick while there, or catch or spread the illness while stopping for supplies. http://ow.ly/EwvQ50zamdO #COVID19 #stayhome

2020-04-14 18:02:45 If you think you might have symptoms of COVID-19, watch this video. Then, use the self-assessment tool to see if you need medical assistance: http://ow.ly/7z1n50zaC8z #StayHome #SaveLives #FlattenTheCurve

2020-04-26 13:00:29 All #COVID19 information at your fingertips! Use the Government of Canada COVID-19 app to get the latest on #COVID19 in Canada. Also access information, resources and support services. http://ow.ly/UlAX50zowKq

2020-05-02 14:10:29 Even if you don't have symptoms, you can still be carrying #COVID19 and spreading it to others in your community. #Stayhome as much as possible, wash your hands and stay 2 metres apart from others. Learn more: http://ow.ly/MeZ450zrUCP

Those messages and similar ones in these categories comprise advice and information aimed at empowering Canadians and reinforcing public health measures like observing hygiene, physical distancing, self-isolation when having symptoms, among others. The tweets relate to back-end communication on the main Covid-19 website where further information is presented in clear and plain language as per the Canada.ca content style (Treasury Board of Canada Secretariat, 2017).

The concentration of awareness information clustered under this theme came in burst tweets throughout data. This takes the form of group of tweets of similar information and themes that keeps recurring across data and in various points in the crisis timeline. In many ways, they were also tweaked to reflect new situations as required. It is interesting here to see how risk and

emergency concern keep emerging as crisis evolves, reflecting what is known about virus and aligning with various crisis interventions. Some patterns of meaning identified include sending out targeted information as timed tweets, forming micro *viral* campaigns focusing on a batch of risk and awareness key messages within the overall crisis communication drive.

Early in the crisis in February and March, PHAC and HC focused, for example, on sending general information related to travel and known symptoms at that time and advising people to self-isolate if they show symptoms.

> 2020-01-24 17:11:47+00:00 Additional entry screening has been implemented at international airports, including #YVR (Van), #YYZ (TOR) and #YUL (MTL): information screens providing information to travellers and a health screening question on electronic kiosks.
>
> 2020-01-25 01:00:55+00:00 Additional entry screening has been implemented at #YVR (Van), #YYZ (TOR) and #YUL (MTL) international airports. Travellers are asked to inform a Border Services Officer if they have flu-like symptoms.
>
> 2020-03-05 14:14:29+00:00 If you develop a fever, cough or difficulty breathing within 14 days: •isolate yourself from others as quickly as possible •immediately call a health care professional or public health authority: http://ow.ly/c6tE30qnhYc

It appears that PHAC and HC tweeted general information about the pandemic, dripping only fewer information available about symptoms and estimate of risk associated with then named coronavirus. This echoes a cautious approach to communications likely as uncertainty about the nature of the virus still exists, prompting PHAC and HC to explain just what is known and inform about the immediate actions taken. Thus, risk was more associated with travel, the latter being considered as a vector. This has been widely reported in the media internationally with Wuhan, China, as the source of the virus.

When the outbreak hit in March and the World Health Organization declared the disease a global pandemic, the tone of information changed, and the update frequency moved faster (see Chart 1 and 2). Thus, communications were tweaked each time to reflect the changes in the situation. It also reflects anything from new knowledge about the disease to new actionable

advice to Canadians. Let us see the following tweets that highlight the sub-theme of physical distancing.

2020-03-14 15:55:08 #SocialDistancing minimizes close contact with others in the community. Try: avoiding crowds greeting with an elbow bump avoiding public transit during peak hours. How will you approach #COVID19? Learn more: http://ow.ly/D9te50yLNKH

2020-04-16 12:01:07 What does #physicaldistancing mean? It means making changes in your everyday routines to minimize close contact with others. Learn more: http://ow.ly/tU4v50zfbSb #COVID19

2020-05-03 18:01:04 We all have a responsibility to practice #physicaldistancing, even if we don't have #COVID19 symptoms. Learn more about how you can help #flattenthecurve: http://ow.ly/ZEt750ztv2H #Stayhomestaysafe

2020-05-07 20:15:23 should not make any stops on the way home and must practise social distancing at all times. This is also the case if you need to take a taxi or public transit to your home to quarantine.

2020-05-14 20:00:21 We can slow the spread of #COVID19 by being #togetherapart. Learn more about what #physicaldistancing means and how you can do your part: http://ow.ly/nzbn50zEmr4

2020-05-19 21:00:07 What does #physicaldistancing mean? It means making changes in your everyday routines to minimize close contact with others. Learn more: http://ow.ly/eZqz50zKIjl #COVID19

Here we can notice that social distancing has been communicated differently each time as the crisis evolves. In the first tweet dated mid March, Canadians were advised to observe *social* distancing by minimizing close contact with others in their surroundings. Nevertheless, later this was replaced by *physical* distancing as a more appropriate wording as the crisis length expands and measures in place to contain it were likely to continue. This sent a signal that distancing should not mean avoiding social connection. Physical distancing implies making changes in one's daily routine to stay safe and save others, yet one should stay connected with loved ones, family, and colleagues remotely. Later Canadians were advised to observe physical distancing, but they were permitted to have their own bubbles where they could interact socially in person.

Another example to illustrate adjustments in messaging related to actions that change from optional to being mandatory when arriving from travel. In the following tweets under the sub-theme of masks, PHAC and HC first recommended use of masks, but later required Canadians to wear them, namely for travellers.

2020-01-28 23:55:19+00:00 It is not recommended that healthy travellers wear masks. For travellers who become ill during or soon after their travel, masks may be appropriate to prevent spread of the illness to others.

2020-01-28 23:55:45+00:00 In particular, symptomatic patients may be asked to wear a mask to protect visitors and other patients in triage and health care settings, while they are waiting for or receiving treatment. More info: http://Canada.ca/coronavirus

2020-01-28 23:55:45+00:00 In particular, symptomatic patients may be asked to wear a mask to protect visitors and other patients in triage and health care settings, while they are waiting for or receiving treatment. More info: http://Canada.ca/coronavirus

2020-04-15 12:04:19 Mandatory measures require all travellers (with or without symptoms) returning to wear a non-medical mask or face covering during onward travel and avoid contact with vulnerable people. http://ow.ly/NuFw50zemiL

2020-05-11 21:31:30 They [returning travellers] must wear an appropriate non-medical mask or face covering while in public settings, and go directly to their hotel without any unnecessary stops along the way.

2020-05-25 18:00:29 When you're shopping, taking transit or around other people and #physicaldistancing is hard, a non-medical mask can help protect those around you. Get the facts here: http://ow.ly/j6Dr50zPpUm #COVID19

2020-06-03 16:03:33 You should also: •consider the use of a mask or face covering when you cannot maintain physical distancing of 2 metres from others; •self-monitor for symptoms of COVID-19;

2020-06-12 20:22:27 With summer on the horizon, many Canadians are getting out to enjoy the warm weather. Make sure you keep practicing #physicaldistancing, and wear a mask in situations where physical distancing might be difficult. http://ow.ly/wJ5e50A4j9j

Other examples pertain to tweets in mid-may requiring returning travellers to wear a mask whenever they are in public settings while heading to their mandatory quarantine. These came right after Theresa Tam asked on May 13, 2020; Canadians in communities where COVID-19 was still spreading should wear non-medical masks when they could stay physically distant from others.

However, tweets that are not related to travel are crafted in a way to sound possibly less obligatory than intended. This echoes a kind of positive reinforcement approach by motivating the public to perform the desired action and associate it with a reward. In this case, the vital benefit of saving one's life and the lives of others that matters.

Crafting this message in a non-obligatory tone can also be understood as giving the public authorities in various provinces and territories the choice to implement wearing mask

measures in public as per their pandemic conditions. In real terms, we have seen that orders to wear masks in public and indoors in public settings were enacted variously at the level of provincial governments. That could explain the cautious approach by PHAC and HC not to make wearing mask mandatory, except for situations that fall under the powers invested to the federal government, which is travel and management of transit, for example.

In a similar vein, tweets with the same messages of awareness were seen crafted to reflect season changes, thematic events, social and religious occasions. Let us a look at these representative tweets:

2020-04-12 19:30:16 Don't put lives at risk this weekend. #PhysicalDistancing means finding new ways to connect with loved ones, especially over the holidays. #StayHomeSaveLives http://ow.ly/na1K50zaBoF #COVID19 #FlattenTheCurve

2020-04-13 12:00:53 Today, Sikh Canadians celebrate #Vaisakhi. This year, only gather with those who live in your household, to help limit the spread of #COVID19. #Stayhomestaysafe by connecting with other loved ones by phone or online. http://ow.ly/ROj150z9UNz

2020-06-12 19:01:31With summer on the horizon, many Canadians are getting out to enjoy the warm weather. Make sure you keep practicing #physicaldistancing, and wear a mask in situations where physical distancing might be difficult. http://ow.ly/wJ5e50A4j9j

2020-04-06 22:01:09 Buying groceries for your upcoming #Passover or #Easter meals? Help limit the spread of #COVID19 through #physicaldistancing, including hosting virtual dinner parties instead of inviting others to your home. http://ow.ly/jNgX50z4Txy #flattenthecurve

2020-04-22 17:01:33 This #Ramadan, help limit the spread of #COVID19. Participate in virtual prayer services, keep iftar dinners limited to those you live with, and stay connected with friends and family by phone or online. http://ow.ly/AoRo50zgrEM #physicaldistancing

Aligning timely events of interest to public with awareness messaging looks like a tactical approach to address message fatigue. It has potential to give some real-life sense, relevance, and a raison d'être to communications, one which may resonate further with a variety of audiences. Another tactic used probably to alleviate the message fatigue is to change frequently the look and feel of visuals that go with individual tweets.

On another note, we can argue that the micro-campaigns pattern related to risk and awareness mentioned earlier and emerge throughout data should constitute the backbone of the

risk and awareness communication that PHAC and HC undertook to inform Canadians and guide them through the crisis in Phase 1 and Phase 2. We can assume, therefore, they are the key messages of the overall campaign, which as we stated above are tweaked and revisited each time to reflect the progress of the pandemic and special situations as the crisis evolves.

General information about COVID-19

This include educational information about COVID-19 transmission and cure, clinical trials, drugs and vaccines, type of symptoms (travel as vector vs community) and treatment, sources of transmission, and self-assessment tools.

False and misleading claims

This contains calls for Canadians to remain vigilant about what is circulated as information and act on them. We will discuss further this aspect of information in a separate section in the analysis.

Precautionary tools and actions

This include precautionary advice, public healthcare measures, self-monitoring, COVID-19 virtual assistant, contacting local public health authority, and physical distancing.

Protection

This contains information related to measures to help protect Canadians and vulnerable groups, who are at higher risk.

Information for families and healthcare professionals

This comprises communications aimed at educating parents who have a child with COVID-19 at home and professionals in settings like houses and healthcare facilities. Representative subthemes include COVID-19 and parenting, caring for a child with COVID19 at home, and healthcare measures and prevention measures, which refers to the following set of information:

- Infection prevention in care settings

- Prevention guidance in acute healthcare facilities
- Guidance for Canadians with disabilities
- Prevention guidance in long-term care facilities
- Prevention guidance for home care organizations

All about quarantine

This comprises communications about quarantine requirements and conditions, whether associated with returning from travels or when showing symptoms. The latter is denoted as self-isolation.

COVID-19 risks and awareness resources and materials

This comes under the thematic major category of the disease and updates. Basically, the tweets where this subtheme occurs provide referrals to the following website: Coronavirus disease (COVID-19): Awareness resources[4]. This website offers this information in HTML format and as downloadable PDFs in both official languages and in many other languages spoken in Canada.

Wearing masks

This type of information falls under the major thematic category of prevent exposure or spread of disease and contains subthemes and units of meaning of informing of mask, namely:

- N95 facemask advice
- Masks, appropriate use
- Wearing masks

Adjust to COVID-19 situation

Not distinct from other awareness key messages, this batch of information focus on enabling Canadians to adapt to a lengthy crisis ahead. In other words, it is a call for a necessary change in behaviour through a list of actions, which are essential and beneficial to contain the further

[4] https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/awareness-resources.html#covid-awareness-table

spread of the pandemic. In this research data, this emerges under the major thematic category of prevent exposure or spread of disease, which includes the following units of meaning:

- Stay inside your bubble
- Avoiding visiting each other
- Avoid cottage stay

under call for action on pandemic:

- Flatten the curve
- Save lives
- Stay safe
- Stay home

and under routine safety

- Handwashing
- Handwashing song
- Cleaning and disinfecting public spaces
- Safe workplace
- Grocery advice
- Shopping advice

Digital applications

Throughout data, tweets promote constantly digital initiatives aiming at stemming the pandemic, appearing as sub-themes of virtual self-assessment tool, ArriveCan, and COVID-19 Alert App. Available for IOS, Android and online, the self assessment tool is an application for COVID-19 self-check that helps determine the self-examiner if they need further assessment. A person can complete the assessment by answering prompted questions and results appear upon submission of all answers. ArriveCan, available on all app stores and online, is introduced to provide mandatory travel information on and after entry into Canada. It aims to speed up the screening process at points of entry and thus minimize the use of paperwork that is likely to cause spread of disease. COVID-19 Alert App is promoted as Canada's free COVID-19 exposure notification

app, which can alert of possible exposures before one can have symptoms (Health Canada, 2021). Once successfully downloaded on a mobile device, the application should work in the following way:

> - The app uses Bluetooth to exchange these random codes between your phone and nearby phones.
> - Each day, the app checks a list of random codes from users who have informed the app they've tested positive for COVID-19.
> - The app will notify you if a phone was near you in the last 14 days from a user who informed the app they've tested positive.
> - The app runs in the background and won't interrupt your activities.
> - Open the app once a day and keep background updates switched on and check them regularly.
>
> (2021, par. 3)

Good practice 4: Fully integrate social media into decision making policy development

Lin et al. (2016) suggest that social media provide a comprehensive outlet to complement the 360-degree approach to crisis communications, especially in the context of government communication. As such, in the current pandemic situation PHAC and HC relied on tools available so they can reach all Canadians inside and outside Canada in the attempt to fulfill their responsibility for ensuring delivery of information that is flexible, fact-based, and timely in such an evolving crisis. To do that, they should also cater for various communications preferences, whether traditional or digital. Indeed, research shows that society in Canada is divided in terms of their preferences when it comes to the way they like to receive communications about health. Some prefer that through dedicated information phone service, radio, television, newspaper, through schools and community centres, and by word-of-mouth (Public Health Agency of

Canada, 2010; Public Health Agency of Canada, 2016). Others, however, opts for digital media, namely Internet and social media. The latter is increasing, as more and more Canadians use online social media platforms to access news and network (Tankovska, 2021).

In such a varied media landscape, Seeger (2006) in Lin et al. (2016) state that "crisis communication and risk communication is the most effective when it is part of an ongoing and integrated process" (2016, p. 602). Thus, the ongoing COVID-19 communication campaign can be seen as evolving example of incorporating traditional and social media platforms as needed, while messages are being customized to fit multiple audiences, as the crisis unfolds. The example we mentioned earlier about using Snapshat lenses to promote wearing masks, streaming shorter TikTok videos or using Instagram stories marks a strategic decision *on the go* to target the youth as deemed necessary. It is a novel and a practical approach to keep pace with changes in social media use and show policy flexibility during this unprecedented lengthy crisis to adopt different rules of engagement. In such unique circumstances, the concern is double, however. PHAC and HC appears keen to ensure their messaging reflect the evolving situation over time and assure efficacy by keeping Canadians audiences duly informed through multiple channels.

In terms of Twitter messaging, before the crisis outbreak started in March tweets conveyed general information about travel, screening at airports, some known facts about the coronavirus, like symptoms and mode of transmission, in addition to some precautionary advice of general nature. Yet, as things moved fast, there appears a need, for example, to increase the volume of information shared and integrate social media handles of other organizations and active hashtags. The aim was likely to encourage discussion further and increase engagement to reframe raw public health information and prevent messaging fatigue. This is captured in this

research data under theme 5 named “GC amplifies social media to keep momentum and increase reach and engagement”.

Amplifying other associated social media accounts reflects a policy that aims at enhancing the crisis response capacities by opening up to networked population of various segments and interests, engaging them in discussion, and increasing awareness about public health as well as subjects that matter during the crisis. This includes, for example, financial advice, and so on. Tweets gathered in Phase 2 show three main patterns of retweeting/amplifying social media accounts of other government organizations and top health officials, celebrities and influencers, and links to YouTube interviews given out by Dr. Howrad Njoo, Deputy Chief Public Health Officer. To illustrate this point, let us explore the following tweets:

Pattern 1: government

2020-03-21 19:01:47 From our friends at @AHS_media : How #socialdistancing works!

2020-04-07 16:11:30 Hello. Please visit @ESDC_GC’s Canada Emergency Response Benefit page for more info: http://Canada.ca/coronavirus-cerb and tag their page if you have any further questions.

2020-04-27 18:10:26 #Advisory: Health Canada is improving access to cleaning products used in workplaces to help fight #COVID19. Read more: http://ow.ly/Yiss50zpREK @CCOHS

Pattern 2: Celebrities and influencers

2020-03-26 18:10:55 Thank you for helping us #FlattentheCurve & virtual interview with Yo @ShawnMendes.

2020-04-29 13:02:46 Listen to the experts @Cmdr_Hadfield, @wick_22 and @CPHO_Canada and stay home! Learn more on how you can slow the spread of #COVID19: http://ow.ly/6kco50znvYo #StayHomeSaveLives

2020-04-05 14:48:50 Thank you for helping us #FlattentheCurve Donald via @Lynnburry

Pattern 3: Deputy Chief Public Health Officer YouTube interviews

2020-05-03 20:00:52 These Canadian YouTubers are doing their part to spread the word about #PhysicalDistancing and #COVID19. Check out the playlist of Deputy @CPHO_Canada Dr. Njoo’s, interviews: http://ow.ly/DIKH50zurMq

Referencing social media channels of a variety of stakeholders from government, influential social media figures, and top public health officials have a high potential of creating engagement effects amongst many audiences. The first tweet example links to Alberta Health

Services, the aim most likely being to highlight efforts done by the health authorities in Alberta, but also to show the intra-country collaboration between PHAC and HC and other levels of governments. This tweet introduces a short video that explained how social distancing work, which drew a viewership of nearly 160,000 since it was posted on March 21, 2020. Other pertinent information of interest to Canadians during the pandemic was also promoted like financial issues and safety in the workplace for essential workers. This is done by linking to subject matter-expert organizations of, respectively the Employment and Social Development Canada and Canadian Centre for Occupational Health and Safety. By directing traffic to these two partner organizations and similar ones, PHAC and HC highlight, in addition to public health measures, other perspectives to this crisis of such largeness and scope. This crisis is, indeed, a multifaceted one. In addition to its epidemiological facet, it has ripple effects touching many aspects of life, including general safety, travel, economy, education, general well-being of population, mental health and many more.

For a similar purpose, referencing celebrities and influencers on social media, such as in the second group of tweets above is another engagement strategy to create an impact, benefitting from their fan base and appeal to a wider spectrum of public. For example, PHAC and HC called on Shawn Peter Raul Mendes, a Canadian singer and songwriter with tens of millions social media followers spreading on several platforms, Lynn Burry, a former NTV anchor, Olympian Hayley Wickenheiser, astronaut Chris Hadfield and a bench of others by amplifying the social media campaign #PlanktheCurve. The latter is an initiative launched by Prime Minister Justin Trudeau with the aim of engaging renowned celebrities, including Canadian actor Ryan Reynolds, Shawn Peter Raul Mendes, and singer Michael Bublé (Nathoo, 2020).

Figure 5 #PlankTheCurve is a social media awareness campaign initiated by Justin Trudeau that tags celebrities to spread the word

Last, PHAC and HC promoted through Twitter a list of four interviews featuring the Deputy Chief Public Health Officer and were animated by known Youtubers. This came as the COVID-19 situation changed rapidly and was part of PHAC and HC communication strategy to maximize reach and educate Canadians about the disease on multiple channels. This is highlighted in the introduction of these videos on PHAC and HC YouTube channel:

> It's important that the Public Health Agency of Canada and the entire Government of Canada share factual and authoritative information with all Canadians in a timely manner. To do so, we need to reach Canadians of all ages and on various platforms.
>
> (Healthy Canadians, 2020, par. 2)

Interviewers include Christine and Ben, Jay, Peter Mckinnon and Beck & Kelsey. Consecutively, the videos tackled the following issues:

- Video 1: How is the Canadian Government responding to COVID-19?

- Video 2: COVID-19 and what's next! Peter McKinnon interviews Canadian Deputy Chief Public Health Officer.
- Video 3: Are DIY face masks actually safe & other COVID-19 q's answered!
- Video 4: On démystifie les complots et le déconfinement avec le Chef Adjoint de la Santé Publique du Canada (Translation : Conspiracies and lockdown demystified with the Deputy Chief Public Health Officer).

Good practice 5: Managing spread of misinformation

The spread of misinformation during crisis time provides challenges to crisis respondents but also opportunities to react promptly to convey fact-based information and manage risk and crisis communication (Malecki et al., 2020). Given the inherent characteristics of social media, false information and rumor propagate rapidly across large portions of the public. Yet, Malecki et al. (2020) and Wendling et al. (2013) suggest that social media, if used strategically, can also help mitigate and control inaccurate information circulated.

First signs of this aspect in the ongoing crisis communication campaign led by PHAC and HC emerged early on in the crisis timeline. It was captured under the sub-theme of false and misleading claims, which is an umbrella of two distinct recurrent units of meaning in data. One that warns of the existence and potential spread of false information as illustrated in the following tweets dated back to first tweets about coronavirus in mid-February 2020. That is even before the outbreak of the disease in Canada.

> 2020-02-17 17:02:42+00:00 There is a lot of #misinformation about #2019nCoV #coronavirus circulating on social media. One of the best defences against misinformation is knowing where to find trustworthy sources. Start here: http://Canada.ca/coronavirus 1-833-784-4397 @CPHO_Canada

Ringing the bell alarm against inaccurate information is captured in data under categories of meaning, such as misinformation, fraud, rumors, and misinformation and social media.

Raising this concern early and communicate it through social media can help counterbalance fake rumors (Wendling et al., 2013). On the other hand, PHAC and HC seek the public engagement and plead with Canadians to act against rumors and false information, including those circulated online on another set of tweets throughout communications. Let us see these examples also from Phase 1:

> 2020-02-13 17:02:21+00:00 The overall risk presented by #coronavirus #2019nCoV within Canada remains low. Help prevent discrimination, #stigma and #misinformation by sharing information from trustworthy sources. Start here:http://ow.ly/DuE350yfIep
>
> 2020-02-21 17:03:11+00:00 Help prevent #misinformation about #coronavirus #2019nCoV #COVID19. Before retweeting, ask yourself: Is this … a reliable, trustworthy source? a verified government or media account? reasonable, not sensationalized? http://ow.ly/V10o50yfItU
>
> 2020-02-17 17:02:42+00:00 There is a lot of #misinformation about #2019nCoV #coronavirus circulating on social media. One of the best defences against misinformation is knowing where to find trustworthy sources. Start here: http://Canada.ca/coronavirus 1-833-784-4397 @CPHO_Canada
>
> 2020-02-26 17:03:15+00:00 If it seems sensational, it probably is. Help prevent online #misinformation by referencing trustworthy sources. Start here: http://ow.ly/jKjD50yfIv1 @CPHO_Canada #COVID19 #2019nCoV #coronavirus

One way to combat false rumors is to get to the right information through reliable source and take appropriate action. In data, this is categorized under such units of meanings as action against rumours, preventing misinformation, and trustworthy sources. The second, third and fourth tweets above, for example, called on Canadians to refer to trustworthy sources of information by suggesting the official government COVID-19 website hub, a media account, like a social media channel, and avoiding sensationalized content.

Yet, as a good communication practice, it is not enough alone to warn against false information, rumors, and conflicting information and messages even from experts during crisis. To counter misinformation, the organization should rather step in timely and provide clear, simple, consistent, and appropriate messages in order to address inaccurate information before it spreads wider (Malecki et al., 2020). This is best seen in multiple tweets that encourage

Canadians to seek reliable information on official and trustworthy sources of information that are prepared promptly for this purpose. This tie largely with what we mentioned earlier while mapping out data that PHAC and HC created a clear focal point for accessing information about the pandemic by designing and promoting COVID-19 website hub and COVID-19 App through their social media channels, including Twitter, to provide updated and fact-based information.

Before moving to another strategy for tackling misinformation, we find that PHAC and HC, in many instances send out tweets proactively in response to circulated rumors. In the following examples, they come out promptly to contradict misinformation with accurate information. For instance, the first tweet confirms there is no cure yet for the disease and advises Canadians to continue observing physical distancing for now and keep informed through reliable sources.

> 2020-03-25 18:30:10 #FactCheck: There is currently no cure for #COVID19. Help fight #misinformation and keep safe. Do not share false or unproven information Do seek out credible sources Start here: http://ow.ly/jKjD50yfIv1 @CPHO_Canada
>
> 2020-04-14 19:00:26 There is currently no cure for #COVID19. #Physicaldistancing is the best way to limit the spread of COVID-19. Help prevent online #misinformation by consulting trustworthy sources. http://ow.ly/jKjD50yfIv1 1-833-784-4397 @CPHO_Canada
>
> 2020-05-18 18:01:48 During a crisis, it can be hard to tell what information is trustworthy. Stay informed and help fight #misinformation. Download the Canada #COVID19 app today. http://ow.ly/hvDO50zz0pT
>
> 2020-03-28 00:00:09 #ADVISORY: Health Canada is warning Canadians about the risks of buying health products, incl. drugs, natural health products, homeopathic products, & medical devices that make false or misleading claims to prevent, treat or cure #COVID-19. More info: http://ow.ly/kN4450yYbqS

In addition to such practices as providing timely and reliable information, flagging possible false information, calling on the public to stay well informed and act against further spread of misinformation, among others, it is crucial to monitor social media for fraud and erroneous information (Lin et al., 2016). By doing so, the crisis managers can react in time and also to know about the public's perception of the crisis and the risk, which will serve also as a

washback for strategizing about which information should be provided and at what time as the crisis evolves.

Technically, this can be done through continuously tracking social media platforms for mentions and conversation trends related to COVID-19, as well as active hashtags. There are many tools to do this in a systematic way. For example, Hootsuite[5] search streams dashboard can track what users are saying based on keywords, hashtags, locations and even specific users. PHAC and HC uses Hootsuite as their overall social media platforms management tool as illustrated in the following figure (see the mention of Hootsuite Inc. at the bottom of the image):

Figure 6: Mention of Hootsuite Inc. as publisher platform of PHAC and HC tweets

In our research data, we find evidence that PHAC and HC is monitoring social media and other media for false information, as illustrated in the following communications:

[5] https://www.hootsuite.com/about. The tool is an integrated management platform for publishing social media postings across platforms, amplifying messages, monitoring content and providing analytics, among others

#FraudAlert: There are reports of phishing campaigns related to #COVID19. Help prevent #misinformation by referencing trustworthy sources. Start here: http://Canada.ca/coronavirus 1-833-784-4397 @CPHO_Canada

We have received reports that these fraudulent calls continue to be an issue. Please see below. #COVID19

#COVID19 has brought out the best in Canadians … It's also brought out bots, trolls and other bad actors. Help fight #misinformation by using reliable sources. Start here: http://ow.ly/4Xai30qkDe9 1-833-784-4397 @CPHO_Canada

In the first tweet, we can see that the information is framed as a blast breaking news, warning Canadians that there are phishing campaigns, and they should prevent fraud and erroneous information about COVID-19. In the second and third tweets, PHAC and HC acknowledge receiving reports of frauds and fraudulent calls and they are aware that there are those who intentionally disseminate misinformation. From these communications, we can understand that both departments have a system in place to track misinformation during this extreme event.
As part of their efforts to combat false information, PHAC and HC stated in the following tweet that they actively monitor social media, categorize that ill-founded information, and then provide answers.

2020-03-04 15:46:15+00:00 GovCanHealth: 1/7 There is a lot of #misinformation about #COVID19 #coronavirus circulating on social media. To help you stay informed, we'll be providing answers to some of the common questions we're seeing on social media.

They did so in a form of rubric questions, which remind us of the famous Frequently Asked Questions pages online. The following is one example of many of a string of answers with the precursor question:

2020-03-13 18:32:05+00:00 1/5 Today's #COVID19Question: What is the difference between #selfmonitoring and #selfisolation?

2020-03-13 18:32:05+00:00 2/5 If you have not been diagnosed with #COVID19 or not identified as a close contact of someone with COVID-19, you may be asked to self-monitor.

2020-03-13 18:32:06+00:00 3/5 Self-monitoring means, checking yourself for symptoms of respiratory illness such as fever, cough, difficulty breathing.

2020-03-13 18:32:06+00:00 4/5 If #COVID19 symptoms develop, you should self-isolate, meaning: stay home limit contact with others contact local public health, and follow their instructions Contact info here: http://ow.ly/FTpi30qpAfa More info on #selfisolation here: http://ow.ly/2UsJ30qpAh5

Good practice 6: Building trust

Research shows that public trust in institutions that are perceived to be providing reliable information is important in crisis and risk communication (Malecki et al., 2020). The authors further argued that this is because trust in institutions and media all shape perception, response and acceptance of crisis messaging. Reynolds and Seeger (2005) suggest that to avoid uncertainty the public tends to be open to receive early communications about the crisis and feels has the right to receive information that allow them to make informed choices regarding risk. Therefore, it is most likely that the emergency respondents - in this case government departments – will receive respect as long as it comes forward and explain the crisis situation as soon as possible. On the other hand, the public has more difficulty accepting a government that is silent and appears to wait for more certainty before communicating about a public health threat (Lachlan et al., 2014).

In the analysis of this research tweets, we can trace first communications dated as back as January 2020, following warnings from the World Health Organization about several unusual cases of pneumonia in Wuhan, China. As a result, the Government of Canada took new health measures to increase screening at major airports and raise awareness of the new virus. Type of information conveyed is a mix of information about the novel coronavirus, estimate of risk, transmission, and the measures taken at airport. For illustration, let us explore the following early tweets.

2020-01-24 17:12:02+00:00 Travellers are being asked to inform a Border Services Officer if they are experiencing flu-like symptoms. The risk to Canadians remains low. More information on coronavirus infections can be found here: https://www.canada.ca/en/public-health/services/diseases/coronavirus.html

2020-01-24 16:48:25+00:00 Travellers are being asked to inform a Border Services Officer if they are experiencing flu-like symptoms. The risk to Canadians remains low. More info on coronavirus infections: http://ow.ly/pW4r30qc356

Here PHAC and HC quickly informed Canadians of the screening measures taken at airports, which we can understand as the first public health actions undertaken to address the potential outbreak. Additionally, they also started promoting a COVID-19 website hub, which they urgently launched since then and started to direct people to it for all new information related to the novel coronavirus. In this case, PHAC and HC tend to fulfill their communication obligations towards the public by offering credible information and sources by which individuals can do their own research as needed.

Relatedly, Malecki et al. (2020) maintain that in an evolving pandemic like COVID-19 providing careful regular updates of what is known and is not known as the situation evolves is another factor to let the public trust the crisis respondents (Malecki et al., 2020). On the other hand, pretending to know everything is likely to discredit them over time, especially in an ongoing crisis of COVID-19. In these two tweets sent early during Phase 1, for example, convey information that sounds candid about limited knowledge of virus transmission and its survival outside the human body.

2020-01-27 01:44:36+00:00 Passengers who may be at risk are being contacted in order to provide them with information based on their specific potential exposure. At this time, there is no clear evidence that this virus is spread easily from person to person.
2020-01-28 01:00:49+00:00 Generally viruses can live on a surface for up to 24 hours, but it varies. Studies on other coronaviruses indicate they do not survive on dry surfaces. #2019nCoV #coronavirus

Other tweets openly suggested to Canadians the *unembellished* truth that at the time of their publication there was no cure or vaccine. The only shield of protection should be prevention. As the crisis progresses in time, more tweets present information about advances made in screening, testing, and trials of potential drugs or vaccines. In addition, PHAC and HC continuously gave the rationale to encourage Canadians adhere to advice, as in the third tweet below.

> 2020-03-14 20:00:14 Currently, there is no vaccine for #COVID19 or any natural health products that are authorized to protect against it. Any claims otherwise are false. Learn how to reduce your risk and prevent the spread of infection: http://ow.ly/aM3k50yLQtY
>
> 2020-04-14 19:00:26 There is currently no cure for #COVID19. #Physicaldistancing is the best way to limit the spread of COVID-19. Help prevent online #misinformation by consulting trustworthy sources. http://ow.ly/jKjD50yfIv1 1-833-784-4397 @CPHO_Canada

Additionally, PHAC and HC frequently gave the rationale for decisions made to contain the crisis and to encourage Canadians adhere to advice, as in the tweet below. This strategy helps build trust to accept taking the actions promoted because it presented the measures in a way to benefit the Canadians and it is for their good.

> 2020-03-17 14:38:50 The reason for #stockingup is not necessarily because you will need to self-isolate. Having these supplies on hand will ensure you do not need to leave your home at the peak of the outbreak or if you become ill. More on being prepared: http://ow.ly/WoqA30qpXKm #COVID19

Beside openness, transparency, and timeliness in crisis communication, Wendling et al. (2013) recommend that the organization should communicate regularly through social media about its actions in containing the crisis to maximise its trust online. From this lens, it is found that PHAC and HC continuously engaged in informing Canadians of measures taken to stem the spread of the virus throughout the ongoing crisis timeline.

In the analysis of the tweets, this aspect is reflected in the theme 1 named: “wide-ranging measures taken by the Government of Canada to slow the spread of coronavirus”, which covers many sub-themes and sub-groups of travel related responses, community-oriented response, public health measures, prevention measures, utilities and readiness, and protection. Utilities and readiness include Canadian readiness, which comprises health systems in place, hospitals and measures, testing, quick access to COVID-19 diagnostic test kits, and quick access to disinfectants, and PPE. Protection includes general measures to protect Canadians and vulnerable groups. The following tweets inform about examples of actions by the government to address the pandemic.

2020-01-27 01:45:40+00:00 We have multiple systems in place to prepare for, detect and respond to the spread of infectious diseases into and within Canada including entry screening at #YVR (Van), #YYZ (TOR) and #YUL (MTL) international airports. Learn more: http://Canada.ca/coronavirus

2020-04-08 12:45:07 Family and friends outside of Canada often cross the border for the holidays. Due to #COVID19, a reminder that non-Canadians will be turned away at the border and returning Canadians must quarantine for 14 days away from others. http://ow.ly/C4UZ50z8G5q #nowisnotthetime

2020-03-24 16:01:17 As of now, all travelers should self-isolate for 14 days after their return to Canada. For more information please visit: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/latest-travel-health-advice.html

2020-04-18 19:00:12 #Advisory: Health Canada is improving access to household cleaning products, hand soaps and body soaps to help fight #COVID19. Read more: http://ow.ly/dFvb50zhYxG

2020-03-19 13:30:08 #Advisory: Health Canada improving access to disinfectants, hand sanitizers, personal protective equipment and swabs to help stop the spread of #COVID19 http://ow.ly/J0i950yPSJR

2020-04-14 23:00:14 The risk of severe illness and outcomes from #COVID19 is higher for older adults, and people living in long term care facilities. We have developed evidence-informed infection prevention & control guidance: http://ow.ly/ZHnx50zefSn

These tweets and similar ones are important communications because they acknowledge the practical actions by PHAC and HC to contain COVID-19 and its effects on population. This type of information is also essential to share because the general public tend not to be fully aware of the efforts made by emergency organizations. Therefore, using social media to inform the public about what an organization is actually doing can help change the perception about the measures

taken to respond to an emergency. Thus, such information is likely to increase the level of trustworthiness, hence reducing speculations and potential spread of misinformation.

As part of increasing awareness of Canadians about the disease and compliance to public health measures, PHAC and HC called on endorsements from celebrities and public figures to convey messages to Canadians. Adopting this strategy can help boost the trust in the leadership of the government in the way it handles the crisis because of the esteem, admiration, regard, and respect the general public has usually for these people. For this purpose, as we have already reviewed, PHAC and HC engaged through their social media channels sports champions, an astronaut, singers, actors, social media influencers, in addition to the head of PHAC through her personal YouTube account.

Good practice 7: Actively engage in dialogue online

Wendling et al., (2013) state that social media are not only digital tools to disseminate messages to the public in times of crisis. Due to their inherent nature facilitating instant and prompt two-way communication, social media "allow for a dialogue with the public and for the public to interact about an event without the intermediation of public authorities" (2013, p. 31). It is also suggested that immediate interaction provide a visible feedback to know if the message has reached the recipient, if they could understand it, and in what ways they would react to it.

In many instances in this research data, we observed some patterns that show dialogic communication between PHAC and HC and the public. There are, for example, instances of conversational communications, mostly to encourage audiences' engagement, although without soliciting direct or interpersonal responses. In the following tweets, we will explore and discuss examples of how PHAC and HC interact in some sort of dialogue with the public.

One way to engage Canadians is to encourage them to report by tweeting back regarding their participation in a call to action. The following tweets illustrate examples of PHAC and HC

as they reach out to the public to know about how they keep contact with each other while observing physical distancing amid lockdown, as well as their contribution to acknowledging the frontline workers. These include first responders, health workers, and other essential workers. In data, recognition of this category of workers is reflected respectively under two sub-themes: Stay connected; Front liners, and thank you. Now let us look at these tweets:

2020-06-08 14:05:16 Today is #BestFriendsDay! Tell us how you stay connected while #physicaldistancing, and tag your best friend to let them know you want to have a virtual hang out.

2020-04-23 23:00:25 From banging pots and pans at 7:00 p.m., to balcony concerts, and social media posts, Canadians from coast to coast to coast are showing their appreciation for our #frontliners. Reply to tell us how you are saying thank you. http://ow.ly/uoFc50zmEZ8 #COVID19 #ThankYouThursday

In both tweets, PHAC and HC asked Canadians to engage by recounting what they do to stay connected and how they express their gratitude. In these two examples and similar ones, it does not appear, however, to be a genuine attempt to create a one-to-one communication, but a proactive call out to creating a social space for prompting a general discussion among Canadians, which help create a zone for mutual support. This can also help measure the sentiment of the public, and if they receive, understand and react conveniently to messages coming from the government. It could also be a way for changing the tone from the glut of raw risk-related information focusing on public health measures, precautionary advice and so on to a more social aspect of the communications. Choosing this tactic could help break the message fatigue that can mount by the passage of time throughout this lengthy uncertain crisis.

Below are two more examples of PHAC and HC inviting Canadians to report during the crisis, which highlight the sub-themes of youth engagement and fun activities at home. Again, through these tweets, we should not expect a reply from the sender to the interaction of the audience. Therefore, we can say it is a tactic to keep people engaged with government

communications and foster conversation among the public by means of the hashtags promoted in those tweets. As in the previous examples, this can help the government check the pulse of Canadians' mood and redirect the wheel of communications in such ongoing and tiresome pandemic.

2020-04-24 13:02:33 #YoungCanadians: You have an important role to play in helping Canada #flattenthecurve on #COVID19. Join the #PhysicalDistancingClub and tell us how you're contributing. More info on prevention & risk: http://ow.ly/Jp6k50zamzr

2020-05-16 13:00:36 This year's @WHO theme for the #WalkTheTalk Initiative is #HealthyAtHome. Canada is proud to take part in this virtual event. Tell us how you and your family are staying healthy at home.

Data also show that PHAC and HC attempted to educate Canadians about various aspects of COVID-19 crisis, using a conversational style by asking a series of specific questions. This a kind of questions (let us call them rhetorical) do not require the recipient to actually answer them. Let us discuss some examples that revolve around the sub-theme of stockpiling, rationale:

2020-03-17 14:38:49: 1/5 Today's #COVID19Question: Should I be stocking up on essentials during the #COVID19 outbreak? Short answer: #Stockingup on essentials Long answer

2020-03-17 14:38:49: 2/5 At this time, it makes sense to stock your cupboards with non-perishable food items, so that you do not need to go shopping if you become sick. #COVID19

2020-03-17 14:38:49: 3/5 Good items to consider for your shopping list: dried pasta and sauce canned soups canned vegetables and beans pet food toilet paper (not 600 packages) facial tissue feminine hygiene products diapers #COVID19

2020-03-17 14:38:50: 4/5 It is easier on the supply chain if people gradually build up their household stores instead of making large-scale purchases all at once. To do this, you can add a few extra items to your grocery cart every time you shop. #COVID19

2020-03-17 14:38:50: 5/5 The reason for #stockingup is not necessarily because you will need to self-isolate. Having these supplies on hand will ensure you do not need to leave your home at the peak of the outbreak or if you become ill. More on being prepared: http://ow.ly/WoqA30qpXKm #COVID19

The pattern we see is that the rhetorical question is used as a lead, sort of a tip of the day. It is followed by more tweets that drips one chunk of information at a time. The following is another example showing the same pattern and relates this time to the sub-theme quarantine.

2020-03-13 18:32:05+00:00: 1/5 Today's #COVID19Question: What is the difference between #selfmonitoring and #selfisolation?

2020-03-13 18:32:05+00:00: 2/5 If you have not been diagnosed with #COVID19 or not identified as a close contact of someone with COVID-19, you may be asked to self-monitor.

2020-03-13 18:32:06+00:00: 3/5 Self-monitoring means, checking yourself for symptoms of respiratory illness such as fever, cough, difficulty breathing.

2020-03-13 18:32:06+00:00: 4/5 If #COVID19 symptoms develop, you should self-isolate, meaning: stay home limit contact with others contact local public health, and follow their instructions Contact info here: http://ow.ly/FTpi30qpAfa More info on #selfisolation here: http://ow.ly/2UsJ30qpAh5

In these cases and similar ones, we can see that PHAC and HC seem to benefit from social media monitoring to understand and map out the general concern of the public. It is likely they drew on the pattern of questions and themes that emerged from the discussions online to design proactively this form of information delivery, which resembles the frequently asked questions, popular online.

In addition to the conversational type of communication mentioned above, it emerges from data that PHAC and HC interact in some instances in two-way communication (bi-direction way). There are at least 40 instances where they answered directly to people asking various questions, yet without mentioning their names in the answer. In such examples, answers sound more like proactive scenarios. They seem to have been pre-approved throughout the chain of bureaucracy. Most likely again, this comes as a result of media monitoring of common discussion trends online from which emerge frequent questions and concerns from the public Look at these examples:

2020-02-11 20:49:18+00:00 Hello, For detailed answers to #coronavirus #2019nCoV related questions, please visit our FAQ page: http://ow.ly/CGXs30qgWPG

2020-02-11 20:54:02+00:00 Hello, For the latest travel advice related to #coronavirus #2019nCoV, please visit: http://ow.ly/mA2O30qgWTQ For regular updates, please visit: http://Canada.ca/coronavirus

2020-04-01 19:57:20 Hello. Our resources are available in multiple languages, and we continue to add more here: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/awareness-resources.html

2020-03-18 15:24:40 Hello. Thank you for your question. You will find information on self isolating and what to do if others

live in the house at the following page: https://www.canada.ca/en/public-health/services/publications/diseases-conditions/covid-19-how-to-isolate-at-home.html

Other answers sound more personal as the name of the interactant is mentioned, which is an evidence that PHAC and HC responded, this time, directly and genuinely to specific questions. These examples also demonstrate that people can use social media as a practical tool/service to request assistance directly from PHAC and HC. The benefit of tagging the name of the question asker is strategic. By doing so, PHAC and HC not only answer that specific person, rather the same answer will reach to all people that follow that person in social media. Indeed, this is one of the advantages brought by social media, which is networking, or as described in SMCC theory as electronic word of mouth (Austin & Jin, 2014).

2020-02-10 20:58:21+00:00 Hi Terry, Canada has multiple systems in place to prepare for, detect and respond to, and prevent the spread of novel #coronavirus.

2020-03-17 19:00:00 @rominaepi Hi, For emergency consular assistance, contact sos@international.gc.ca or call collect +1 613 996 8885.

2020-02-14 20:33:50+00:00 Hi Hesham, For detailed answers to #coronavirus #2019nCoV related questions, please visit our FAQ page. Question 11: http://ow.ly/CGXs30qgWPG #COVID19

2020-03-31 19:50:16 Hi Coryl, thank you for your message. The link on our main page is now working. You can access the exposure locations page here: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/latest-travel-health-advice/exposure-flights-cruise-ships-mass-gatherings.html?topic=tilelink

Another digital tool that worth mentioning in the crisis communication led by PHAC and HC is the use of virtual assistant, which is promoted through Twitter and captured in data analysis as COVID-19 virtual assistant. The virtual assistant is an online data wizard hosted on the COVID-19 hub website designed to guide Canadians to updated information about COVID-19, economic and financial support, health and safety, income support, travel, and applications like ArriveCAN. It is not an online chat per se, but rather as an interactive shortcut to sections of relevant information on that website.

2020-03-20 00:00:13 Do you have questions about #COVID19? Ask our virtual assistant, it can help you find what you need. http://ow.ly/UkJD50yQvTU

The other aspect to look at the dialogue engagement is how the public react to communications and show examples where the latter have potential to achieve an impact and examples where they may possibly fail.

Public reactions and potential behavioural indicators

To do so, we considered the public reactions to tweets. For this sake, we looked at some semantic markers (verbs, adjectives, interjections) and the meaning implications of the reply tweets in general. The aim is to understand the prospective intent of interactants. Sample of reply tweets were taken from phase 1, phase 2 and phase 3. Phase 3 includes fewer tweets taken after mid-June 2020.

Overall, there emerged 10 subsets of reaction types. Before attempting to make connection between the desired outcome from sender and the feedback from recipient through examples from our data, let us define the found categories in the table below:

Reaction subsets	**Definition**
Acceptance	Seems accepting the information or call to action
Considerate and understanding	Seems acknowledging the trustworthiness of the information and supporting it
Acceptance and willing to cooperate	Sounds actively recognizing the benefit of the information and taking the initiative to ask for more of the same
Acceptance: Amplifying the message	Similar to acceptance and willing to cooperate, this subset group public reactions that support, adopt the government information, and urge the public to comply

Acceptance and acknowledging crisis communications is effective	Sounds supporting the government communication efforts
Mixed Frustration and acceptance	When some interactants demonstrate their dissatisfaction, while others show sign of acceptability in the same thread of discussion replying to a tweet by PHAC and HC
Lack of trust	Expresses uncertainty and concerns regarding information and actions by the government
Disapproval	Demonstrates disagreement with communications
Frustration	Sounds fed up and/or not satisfied with information or measures taken
Outrage	Expresses stronger emotional response putting in doubt information, acceptability, and potentially adherence to mitigation measures

For synthesis reasons, we combined all items that show signs of acceptance under one category of acceptance. We did the same for those that show lack of acceptance and we put them under the category of disapproval. During discussion and analysis, we will refer to subsets in the table for illustration, as needed. Yet, given the limitations of this research, not all of the subsets will be discussed.

So, as is known that in crisis situations, people tend to engage in desired behavior if they think the disease can cause severe consequences, if they think the behavior is effective, if it has fewer cost to them (Impact Canada, 2021), and if they perceive the ability to perform the desired behavior if they want to (Bandura, 1977). From this perspective, we argue that efficacy to adhere to the communications by PHAC and HC can be judged in light of a continuum. This should stretch gradually from acceptance to disapproval, corresponding to our table classification, while the outrage subset possibly represents the extreme outspoken refusal to compliance.

Acceptance

There are many instances where we can see that the public react positively with the tweets by showing support. In many examples, we will display both the tweets from PHAC and HC and respective replies from the public and sometimes just isolated comments:

> 2020-03-17 01:36:14 GovCanHealth: What you need to know about #SelfMonitoring, #SelfIsolation and #Isolation can be found in this infographic. More here: http://ow.ly/JS2h30qqmwL #COVID19
>
> 2020-03-17 02:43:34 Mcdebi: This is great, but I'm getting the message that, even though I don't fit any of the categories in the infographic, I'm staying home and avoiding all direct human contact. I'm confused.
>
> 2020-03-17 12:59:17 Tasxfraser: @RPDabrowski this is a good info graphic too!

In the tweets above, PHAC and HC inform the public about self-isolation and self-monitoring for symptoms. The tweet is accompanied with an infographic for visually representing some data in addition to a reference to the COVID-19 website hub. Mcdebi and Tasxfraser engage positively with the message and support these precautionary measures. They also appear willing to comply. However, Mcdebi points to the issue with the infographic, being a bit confusing, and asks for some clarification. This is a good sign that both individuals look forward to follow the instructions if required and they may ask for information if need be.

> 2020-03-15 01:51:23+00:00 MartyBevan1: Humankind is learning a great deal about Humility. We will forever be changed. My hope is that a study commences immediately to learn every possible lesson throughout this pandemic to further minimise future human suffering of any kind. Reporting best practices in real time.

In this example, MartyBevan1 expresses a rational thought about the pandemic and invites others to think as well to learn lessons through this crisis with the aim of handling hazards and remove sufferings. The tone of this comment demonstrates a strong commitment to adhere and promote pertinent measures to address the crisis. Even more, MartyBevan1 reflects on the idea of formulating good practices to apply eventually in real time.

2020-03-21 14:19:18 FoxieNow: Govt messaging in Canada so far on social media in Canada been excellent—fast, comprehensive, hitting every form of media. Can't open Twitter or Instagram without seeing something like this first:

In this tweet, FoxieNow openly accepts and acknowledges their satisfaction with the crisis communication led by the government through social media. FoxieNow also commends the great messaging and the visibility of information about the crisis across platforms. This is an illustrative case of a first adopter, who is looking for information and willing likely to act in order to mitigate the risks.

2020-03-21 13:00:49 GovCanHealth: How can you practice #socialdistancing? greet with a wave instead of a handshake, kiss or hug stay home as much as possible shop or take public transportation during off-peak hours http://ow.ly/cS3U50yQeuD #COVID19

2020-03-21 13:15:52 jamine0206: Stay home! Stay home! And isolate the person who appearance some symptom initial in the same place , no let them isolate in their family. in order to avoid translating in community. Protect them as well as protect others , pls professional specialist detective the process.

Jamine0206 tweeted back to amplify the government message calling for practicing social distancing, avoiding gathering, and staying home. Jamine0206 acknowledges the mutual benefits of self-isolation measures and suggests not letting people with symptoms to isolate with their family. Moreover, Jamine0206 asks for more policing and control to make sure isolation is respected. Like FoxieNow, Jamine0206 appears to be an adopter of the self-isolation measure and eventually will likely be willing to take similar risk mitigation measures as required.

That is said, we can see that acceptance of PHAC and HC messaging came in different ways. The examples we demonstrated above are just a few illustrations of the classification table where we have a full typology of reaction attitudes on a sample of tweets and discussion threads. With the same aim in mind - looking at behavioural impact of messaging -, now we will look at examples of the other side of reactions as we call it disapproval.

Disapproval

Again as in acceptance, sentiment of disapproval came in many ways. However, unlike the feelings of satisfaction expressed by those in favor of government measures and communications, interactants opposing the way the government handles the crisis tend to be outspoken and let their anger heard loudly. Malecki et al. (2020) attribute this reaction to the ambiguity surrounding the risk of an unknown and emerging hazard of a novel virus outbreak. This leads to a kind of an outrage, a sentiment that reflects public's perception about risks and influences their readiness to adhere to COVID-19 risk mitigation measures, for example (Malecki et al., 2020). In the tweets below, we will demonstrate types of disapproval reactions to information and measures promoted.

2020-04-09 18:00:44 GovCanHealth: This #Easter weekend, practice #physicaldistancing. Don't gather with friends and family, and consider watching mass online instead. Help limit the spread of #COVID19 within your community. #Stayhomestaysafe! http://ow.ly/X67N50z9p2g

2020-04-09 19:17:48 Theteapixie: Having Sunday Dinner with our elder via FaceTime. She gets a place at the table, will eat her dinner at the same time. We will be our regular, idiotic selves, reminding her how wonderful it is to live separately from us.

2020-04-11 14:24:53 CFM_GM: You know what else would help limit the spread? A 15 minute blood test like the kind being made in Markham and used by the CDC and ECDC. This will be an absolute game changer - particularly for essential services that must continue to safely operate. #approvethetest

In this discussion thread above, interactants replied cynically to PHAC and HC calling for physical distancing and holding Easter dinner remotely. Theteapixie finds it inconceivable rather unnatural, hence putting in doubt the appropriateness of holding a traditional dinner in a virtual mode. Simply, it is like to say: This is nonsense. CFM_GM answers with a rhetorical question probably to undermine the government promoting the feasibility of physical distance and avoiding social gathering. Instead, CFM_GM asked, in a determined tone, to go for more practical and undertake tangible measures of testing. Both tweet replies express frustration at

missing Easter dinner with family and a lacklustre support for the physical distancing measure. There exist similar replies elsewhere in our data regarding wearing masks, for example.

In the following reply tweet to PHACC and HC, Unallena1989 seems to be frustrated and categorically is suspicious about the effectiveness of the screening measures in detecting potential cases at borders, arguing travellers will not comply.

> 2020-01-24 16:52:32+00:00 GovCanHealth: 2/2 Travellers are being asked to inform a Border Services Officer if they are experiencing flu-like symptoms. The risk to Canadians remains low. More info on coronavirus infections: http://ow.ly/HJy130qc3a2
>
> 2020-01-24 19:36:45+00:00 lunallena1989: I will say this hasn't cleared my concerns. I know from Chinese social media that there were people claiming they were healthy (but they had symptoms before) pass the border successfully.

Likewise, in the following examples, comments doubt the information given by PHAC and HC on how the disease spread

> 2020-01-27 01:29:48+00:00 GovCanHealth: The risk to Canadians remains low. Canada has no direct flights from #Wuhan, and the volume of travellers arriving indirectly from Wuhan is low. There is no clear evidence the virus spreads easily. 2/2
>
> 2020-01-27 01:32:55+00:00 kwick_818: No clear evidence it spreads easily?! Isn't that a direct contradiction to China's doctors?!
>
> 2020-01-27 01:39:23+00:00 Gymgalca: If it doesn't spread easily why are 56 million people quarantined in China, why are people begging for masks , gloves, goggles....?

One more example, among many, about lack of trust include this discussion thread, where members of the public suspect the trustworthiness of information provided by the government as they associate that with WHO's failure in the beginning of the pandemic.

> 2020-03-23 20:01:23 GovCanHealth:If it seems sensational, it probably is. Help prevent online #misinformation by consulting trustworthy sources. Start here: http://ow.ly/4Xai30qkDe9 1-833-784-4397 @CPHO_Canada
>
> 2020-03-23 21:28:57 ScottMahoney94: Ironic
>
> 2020-03-24 02:48:33 Goborowsky: Don't get your data from WHO. They lied to the world in the beginning of this virus. Why did they lie?

2020-03-24 03:52:54 kenhayashi14: Remember they told us: Masks would be useless. Masks would increase you risks. Flu would kill more. Canada would be definitely at a better position than 17 years ago. Risk would be low in Canada. ALL ARE LIES! #COVID─19 #COVIDIOTS

On the end continuum of disapproval, we find the category of tweets where people express their outrage at both communications and government actions like in the following tweets.

2020-04-07 00:00:18 GovCanHealth: Feelings of fear, stress and worry are normal in a crisis. Stay informed but take breaks from social media and news stories. More info and resources: http://ow.ly/8m5250z6Uni #MentalHealth #COVID19

2020-04-07 00:02:57 yongxiangchen: go again.

2020-04-07 05:53:35 DSorokan: My stress comes from an incompetent government making mistake after mistake causing great pain for Canadians

Here, the ineractants strongly accuse the government of being incompetent in containing the crisis and causing harm to Canadians. With such an attitude, we may argue that it is less likely holders of this opinion will be willing to follow information and risk mitigation instructions, which the government wish to be the norm precautionary health behavior during the pandemic.

In the same tone of disapproval, in this reply tweet:

2020-01-27 01:40:18+00:00 GovCanHealth: Please follow usual health precautions like washing your hands, avoiding contact with persons who are sick & practising proper cough and sneeze etiquette. If you plan to travel get advice to help you travel safely while abroad at http://ow.ly/mbbC30qcuJy

2020-01-27 09:45:10+00:00 LisaPenney: Why not advise people to try to cancel travel plans?

LisaPenney hits back at government by implicitly rejecting the precautionary health norms that should be respected to mitigate current risks. LisaPenney angrily calls back the government to convince people not to travel. Similar comments are expressed in this discussion thread, where interactants are not happy with the public health measures like physical distancing to minimize the risks and instead are asking the government to order border closures.

2020-03-16 21:15:08 GovCanHealth: Social distancing measures can help limit the spread of COVID-19 and other illnesses. Minimize close contact – keep 2 arm lengths apart from others Avoid crowds and large gatherings For more information on how you can be prepared: http://ow.ly/YFLx50yNg7o

2020-03-16 21:53:13 Russtyballz1: Social distancing is not enough. You need to shut down non-essential business. You are failing us.

2020-03-16 22:08:21 Kaitwatters: Avoid crowds and large gatherings but let's keep malls open lol. This is ridiculous. #COVID19

2020-03-16 22:23:58 EeekingthruLife: Need shutdowns for Non-Essential Production in the Manufacturing Sector before we're all infected!!! #covidontario #COVIDCanada @CPHO_Canada @HondaCanadaMfg @CTVToronto @CDNMinHealth @ONThealth @TOPublicHealth @fordnation @GovCanHealth @CP24

Even more, one interactant openly questions evoking emotions by involving kids as mechanism:

2020-09-13 16:00:42 GovCanHealth: Seniors are more at risk of severe outcomes to #COVID19, so show your grandparents some love from afar. ❤ Help protect your grandparents, and others by: #WashYourHands #PhysicalDistancing #StayHomeIfSick http://ow.ly/8ZJv50BomWL #GrandparentsDay

2020-09-14 18:37:51 nunyobidnaz: So why are we masking children? Why are children being used as an emotional mechanism? I can't believe what I am seeing. Disgraceful.

It is interesting to see here how this reaction seems to nullify the behavioural impact sought by PHAC and HC through this tweet and a representative photo from Phase 3 of the crisis. This communication is drafted in a way to evoke an emotional response with the aim of convincing people not to mingle with seniors during weekends and social occasions. However, as it appears from this reply tweet, this strategy backfires and triggers a strong negative reaction that amounts to accusing the government of manipulation.

This continuum of reaction pattern observed in a sample of reply tweets can thus give us an idea of the public sentiments in this unprecedented pandemic. We found the public attitude had ranged from an intent to accept mitigation measures and advice to a rejection of these. Either ways, this situation will affect message reception and engagement and by large the success of the crisis communication campaign led by PHAC and HC with the support from provincial,

territorial governments, a variety of organizations, and individuals. In actual terms, however, compliance or none to some health measures may sometimes go beyond the realm of communications. For example, regardless of people's intent attitudes, it is mandatory for returning travellers and people with symptoms to quarantine and members of the public to wear mask while indoor public spaces, and so on. In these examples and others, some rules are enforced by law, an interesting aspect that compensate what communications and awareness alone cannot achieve by default.

Good practice 8: Be cautious about message update speed

Lachlan et al. (2014) in Lin et al. (2016) examine the role of message updates and its effects on cognitive processing and information seeking. It is found that slow message dissemination may lead to less audience elaboration on the matter at hand leading to less engagement (2016). Westerman, Spence, & Heide (2014) in Lin et al. (2016) associate fast updates with the public perception that "a quick updated social media feed as more relevant, as breaking news, or as high involvement issues" (2016, p. 603). Yet, it is also warned that if fast-updated messages are poorly performed, this may affect the public's perception negatively judging the quality of information, hence possibly affecting their trust in the emergency respondents.

From this perspective, Twitter is a useful channel to provide very timely information on events and to update audiences in a lengthy crisis like COVID-19. In the following, we will explore how PHAC and HC execute updates of information. Thus, we noticed that information regarding the crisis were sent as early as January 2020 with the news telling of a new virus had emerged in Wuhan, China. The first set of tweets informed Canadians of screening measures.

There are eight tweets of the same content sent the same day from 16:47:46+00:00 to 17:17:02+00:00. Examples include:

> 2020-01-24 16:47:46+00:00 Additional entry screening has been implemented at #YVR (Van), #YYZ (TOR) and #YUL (MTL) international airports. These include information screens providing information to travellers and a health screening question on electronic kiosks.
>
> 2020-01-24 17:17:02+00:00 Additional entry screening has been implemented at #YVR (Van), #YYZ (TOR) and #YUL (MTL) international airports. These include information screens providing information to travellers and a health screening question on electronic kiosks.

On the same day, this series of swift tweets was followed by more tweets that asked travellers to inform border officers if they feel any flu-like symptoms. This time the new tweets have new information. They come with a link to a specially designed website of all-about coronavirus disease.

> 2020-01-24 16:48:25+00:00 Travellers are being asked to inform a Border Services Officer if they are experiencing flu-like symptoms. The risk to Canadians remains low. More info on coronavirus infections: http://ow.ly/pW4r30qc356
>
> 2020-01-24 16:53:46+00:00 Travellers are being asked to inform a Border Services Officer if they are experiencing flu-like symptoms. The risk to Canadians remains low. More info on coronavirus infections: http://ow.ly/LgDD30qc38n

As new facts dripped in new information was added to the website. PHAC and HC appeared to be keen to highlight that in their tweets by adding more information or resending the same tweets.

> 2020-01-24 17:12:02+00:00 Travellers are being asked to inform a Border Services Officer if they are experiencing flu-like symptoms. More information on coronavirus infections can be found here: http://ow.ly/Gdfk30qc3xI
>
> 2020-01-24 17:17:43+00:00 Travellers are being asked to inform a Border Services Officer if they are experiencing flu-like symptoms. The risk to Canadians remains low. More information on coronavirus infections can be found here: https://www.canada.ca/en/public-health/services/diseases/coronavirus.html

The second tweet in the box above brings in a new information saying that the risk to Canadians remains low and refers to the website for more information about infections. This shows

immediacy in updating tweets, which allows responding quickly to potential expectations from the public, provides new information as they become available, and monitors responses to answer repeated questions if possible (Rush, 2015).

Tweet updates are also necessary to make sure the public is reached and informed enough (Lin et al., 2016). To do so, it is important to send "a tweet or a series of tweets over and over again through a duration of time throughout the crisis" (2016, p. 603). This strategy should be pertinent for this ongoing global pandemic. In the data of this research, this is reflected in the distribution of various sub-themes and their frequency along the crisis timeline. PHAC and HC tried to emphasise its key messages and their updates by frequently posting and revisiting them. To illustrate, let us look at the following tweets that represent the subtheme of quarantine adequate place:

2020-04-15 13:15:11 Reminder that travellers returning to with symptoms, and without private transportation or suitable place to isolate, are required to stay in a place designated by the Chief Public Health Officer. More information here: http://ow.ly/rc1O50zemoK

2020-04-15 14:30:15 Travellers entering : Even if you do not have any symptoms, you must have an adequate place to isolate or quarantine for 14 days. If not, you will be required to stay in a place designated by the Chief Public Health Officer. More details here: http://ow.ly/MiLP50zemq3

2020-04-15 16:37:59 Travellers entering Canada who do not have any symptoms must also have an adequate place to quarantine for 14 days. If not, they will be required to stay in a place designated by the Chief Public Health Officer. More details here: http://ow.ly/MiLP50zemq3

2020-04-15 16:39:32 Travellers entering Canada who do not have any symptoms must also have an adequate place to quarantine for 14 days. If not, they will be required to stay in a place designated by the Chief Public Health Officer. More details here: http://ow.ly/MiLP50zemq3

2020-06-11 18:59:07 The Canadian Border Services Agency will make the final determination on the appropriateness of the quarantine location upon arrival in Canada. For more info: https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/latest-travel-health-advice.html

As we can see, the message about quarantine adequate place emerged in many points of time in data. For example, in the above dated and timed tweets, it is a recurrent sub-theme whether in April or June. Many more occurred with extra information in other points of time.

More examples of recurrent tweets of the same message comprise the sub-theme of routine safety. Tweets associated with this unit of meaning occurs throughout the crisis timeline. In many times, they are updated with new information as the crisis unfolds and as the situation requires. Let us explore the following tweets as a case in point.

2020-01-26 03:38:13+00:00 Cdns can take precautions to prevent respiratory illnesses like #2019nCoV, including: frequent #handwashing w/ soap & water for at least 20 seconds, #elbowsneeze & avoid touching eyes, nose, mouth Avoid contact with sick people

2020-01-27 01:40:18+00:00 Please follow usual health precautions like washing your hands, avoiding contact with persons who are sick & practising proper cough and sneeze etiquette. If you plan to travel get advice to help you travel safely while abroad at http://ow.ly/mbbC30qcuJy

2020-01-28 01:01:19+00:00 Please follow usual health precautions such as washing your hands often, avoiding contact with persons who are sick, and practising proper cough and sneeze etiquette. #2019nCoV #coronavirus

2020-01-28 23:55:19+00:00 It is not recommended that healthy travellers wear masks. For travellers who become ill during or soon after their travel, masks may be appropriate to prevent spread of the illness to others.

2020-03-04 15:46:17+00:00 You can prevent the spread of #COVID19 infections by washing your hands frequently, covering your coughs and sneezes, and staying home if you're sick.

2020-03-14 15:55:08+00:00 #SocialDistancing minimizes close contact with others in the community. Try: avoiding crowds greeting with an elbow bump avoiding public transit during peak hours. How will you approach #COVID19? Learn more: http://ow.ly/D9te50yLNKH

2020-03-16 21:15:08 Social distancing measures can help limit the spread of COVID-19 and other illnesses. Minimize close contact – keep 2 arm lengths apart from others Avoid crowds and large gatherings For more information on how you can be prepared: http://ow.ly/YFLx50yNg7o

2020-04-21 20:00:33 How can you help #SlowTheSpread of #COVID19? #StayAtHome #StayInsideYourBubble #WashYourHands #PhysicalDistancing Learn more about how you can help #FlattenTheCurve: http://ow.ly/EcDt50zfi21

Similar pattern of recurrent tweets of similar messages is highly frequent in this crisis communication. According to Lin et al. (2016) this is a social media strategy that can ensure the desired information is sent out frequently enough to be noticed and be available to people. Ensuring the public is updated is useful to educate them about the ongoing risks so they can know how to mitigate these risks (Reynolds & Seeger, 2005). Moreover, updating the same information regularly online throughout the crisis timeline should be beneficial as it answers the

demand by the public for information, which can also enhance the level of transparency and their perception of trust towards the crisis respondents (Wendling et al., 2013).

On another note, thanks to its function as a newsfeed channel, Federal health officials also used Twitter regularly during the ongoing crisis as a platform to broadcast livestream update about COVID-19. The announcement for a live broadcast usually come with a thumbnail and a tweet like in these two examples keep occurring.

2020-05-06 15:08:07 LIVE: Federal ministers and health officials provide COVID-19 update
2020-05-07 16:02:51 LIVE: Federal ministers and health officials provide COVID-19 update

Any reasonably quick and regular social media updates require, however, a fast-track clearance approval process for social media in times of crisis. This point is hard to analyse or determine at the surface level of tweets. However, if we look at the condensed volume of tweets produced in such a short span of time as well as the tight interval between their transmissions, we can assume that behind this is a dynamic process for speeding up the production of messages and their approvals.

Another strategic consideration and a challenge to highlight regarding tweets update is to synchronize all backgrounders in the COVID-19 website hub to reflect new information in the new tweets. Because it is hard to study this aspect in a granular manner, an alternative way is to check the main page for date it is last modified. This can be an approximate indicator of recency, confirming information are kept updated. For the sake of this research, we checked the website, and it had been regularly modified.

Good practice 9: Own the hashtag

If branding elements of a social media account such as the Twitter handle and other metadata information help define the identity of the owner of the channel and establish

trustworthiness, relevant hashtags are known to increase the validity of information in times of crisis (Wendling et al., 2013). A hashtag is used to highlight keywords or topics within a tweet and can be placed anywhere within a post. It is an easy way for users to categorize, find, and join conversations on a particular topic.

Thus, Lin et al, (2016) advise government departments responsible for responding to an emergency to design, own/register, and promote a set of customized hashtags for transmission of official information, warnings, and updates. The authors warn against relying solely on organically generated hashtags. The latter are ones that may emerge from general social media discussion trends surrounding the event. Organic hashtags sometimes can pose risks because they "may lead audiences to misinformation, affective outpouring, spam, and other less-than-ideal information" (Lin et al. 2016, p. 603). Research quoted in Lin et al. (2016) also show that owning specific hashtags help directing the public to useful actionable information to mitigate risk.

With this in mind, it is relevant to look at the kind of hashtags used in in this research data and their origins. As for tracing back the creator of the hashtags used in the present crisis communication, it has been practically impossible to find which individual or organization who did so. It seems there is no technical tool or an Internet application to determine who design such and such hashtag. Therefore, we cannot claim for sure PHAC and HC create or register some or all of the hashtags they have used in their tweets throughout the crisis communication they have led.

However, we can argue that, as trusted government departments, PHAC and HC may only adopt hashtags that are valid and attested via social media. By attested hashtags we mean those when we click on them, they should likely lead us to meaningful discussions or to other

portals of useful information. The only thing that we can say for sure is that PHAC and HC have used a variety of hashtags to direct the public to extra information and lead them to discussion online around topics in the tweet sent. This real-time intertextuality facilitated by hashtags linkages and shortened form of links are one of the tools to help the sender to say more with less characters, given the limited characters allowance in Twitter (240 with space in total).

To find more insights, we looked at COVID-19 website hub and we found that PHAC and HC encourage Canadians to choose from a list of prominent hashtags for engagement via Twitter and to use in their social media channels when talking about those topics. We conclude that by framing these specific hashtags, we can argue that this is a tactic to reflect and proactively direct the public to some key communication objectives of the present crisis communication campaign. The following are the list of framed hashtags that are promoted as of February 13, 2021:

- #COVIDVaccine
- #VaccinesWork
- #gooutsafe
- #handwashing
- #physicaldistancing
- #flattenthecurve
- #physicaldistancingnow
- #physicaldistancingclub
- #COVID19
- #Coronavirus
- #COVID2019
- #stayhome
- #stayhomestaysafe
- #COVIDwise
- #COVIDalert

(Public Health Agency of Canada, 2021b, pp. 7)

Regardless of who first created a hashtag, what is important is how it evolved. If a hashtag is mostly associated with trustworthy discussion and with social media accounts of trustworthy sources, it is likely to be seen a relevant one. This can help it to be shared and triggers trendy discussions online. Such a process resembles of coining a new word, which acquires its legitimacy of use through usage and wide acknowledgement. In crisis communication, we would

argue that only those that lead to valuable information and help the public mitigate the risk could survive during the cycles of the crisis.

Good practice 10: Cooperate with the public and similar organizations

The open access to social media brings many contributors, be they individuals or organizations, to the online discussion about crisis (Wendling et al., 2013); (Lin et al., 2016). In other words, "social media provides both an opportunity and mechanism for members of the public to participate in the crisis communication" (2016, p. 604). While there are organizations, which actively participate directly in the crisis communication, like governments at the level of the provinces and territories, there are "members of the public who are sharing information, don't have an expressed mission, [however]" (2016, p. 604). Lin et al. (2016) add that these members of the public are using social media out of a practical need, a goal to learn, or a desire to help. Therefore, in such an ongoing COVID-19 crisis, it is important to engage with individuals and other departments collaboratively through social media.

In the ongoing COVID-19 crisis communication, PHAC and HC is the lead, but they also collaborate with other emergency and government departments to ensure that information are consistent and widely spread. The fact that federal ministers and health officials provide regular COVID-19 update online demonstrates that there is a mechanism of coordinated efforts to communicate with one voice (see below tweet, which is sent each time a live update is streamed).

2020-05-06 15:08:07 LIVE: Federal ministers and health officials provide COVID-19 update

This practice is in line with the Directive on the Management of Communications (Treasury Board Secretariat, 2017a) that stipulates collaboration in the collection of information

provincially, territorially, and federally, the development, and use of all communications levers, including social media to reach all Canadians. Information about this cooperation is captured in the analysis of tweets under the Theme 4 “GC has formed intranational and international partnerships to help combat coronavirus”, and specifically under the sub-theme of intra-country partnership. The following tweets illustrate this point.

2020-01-26 03:24:17+00:00 @PublicHealthON has confirmed that the patient is isolated, and that all necessary precautions are being taken to prevent the spread of #2019nCoV. #coronavirus
2020-03-17 19:08:19 @CanBorder will implement & enforce the application of the recent travel ban restrictions based on the appropriate authorities & legal framework identified by partner departments. For the most up-to-date info on #COVID19: http://canada.ca/coronavirus or 1-833-784-4397
2020-06-01 21:10:07 In consultation with the provinces and territories, the #GoC has developed guidance to help #stopthespread of #COVID19 while public health measures are lifted across Canada: http://ow.ly/Rihr50zVQFJ

While many officials, such as the Prime Minister, Provincial and Territorial Premiers, and public health officials who speak to the public by giving announcements regarding health measures, PHAC and HC remain the interface that relay and manage the actual crisis communication. Thanks to social media, they interact with the public and quote stakeholders, who take some public health measures according to their prerogative, by tagging their Twitter handle, for example.

In the first tweet above, PHAC and HC informed of collaboration with an internal stakeholder (Public Health Ontario) about implementing the necessary measures to isolate a patient and prevent spread of the disease. The communication about this action reveals that it is verified and is only announced with the knowledge and approval of these stakeholders: The Public Health Ontario, PHAC and HC. In the second tweet, Canadian Borders are quoted as implementing travel restrictions in accordance with the legal framework identified by partner departments. In the last tweet, it is clear enough the coordination existing between federal

government and the governments at the provincial and territorial levels in preparing plans to contain the spread of the virus in the reopening phase. Therefore, this information and more examples of these sounds to have been validated. Moreover, this reflects the existence of a coordinated system of information development, which involve all stakeholders concerned. The same remarks also apply to these two examples, which involve centres of expertise in their subject matter:

2020-05-07 21:30:18 In collaboration with the #COVID19 Disability Advisory Group, the Public Health Agency of Canada has developed guidance for Canadians with disabilities and for people who care for them during COVID-19. http://ow.ly/o0V650zA6I4

2020-05-28 19:56:39 #PHAC scientists at the National Microbiology Laboratory in #Winnipeg have been working hard to understand the virus that causes #COVID19. Read new research they've published with Cadham Provincial Laboratory: http://ow.ly/FUhp30qKu7m

Another aspect of cooperation online can be seen in terms of PHAC and HC's engagement with others' social media channels. In our thematic analysis, tweets relevant to this discussion fall under the theme of "Government of Canada amplifies social media to keep momentum and increase reach and engagement". Thus, it emerges from data that the two departments engaged with social media channels of organizations- government and private- and individuals. For illustration, we will look at the following examples taken from Public Ottawa Health Twitter channel and from a retweet of Dr. Janice Fitzgerald, Newfoundland and Labrador's Chief Medical Officer of Health by Heather Bambrick, an artist from Newfoundland. In both tweets, PHAC and HC react positively to these channels for promoting the download of COVID-19 Alert App.

Figure 7. A reply tweet in which PHAC and HC thank Public Ottawa Health for promoting Covid-19 Alert App

Figure 8. PHAC and HC react to a retweet by artist Heather Bambrick

In the same vein of thoughts, in the following tweets, PHAC and HC join an external campaign led by celebrities and influencers aimed at flattening the curve.

2020-03-22 00:43:41 Thank you for helping us #FlattentheCurve @MapleLeafs
2020-03-26 18:10:55 Thank you for helping us #FlattentheCurve & virtual interview with Yo @ShawnMendes.
2020-04-05 14:48:50 Thank you for helping us #FlattentheCurve Donald via @Lynnburry

In these examples, the pattern of interaction by PHAC and HC is quote tweets and comes as a thank you to someone or to an organization. In doing so, they acknowledge their action as it supports their mission and promote it wider online. Yet, the interaction remains limited to a word of recognition, which sounds a scripted line that is repeated over and over. In this sense, it does not seem to encourage further exchanges to create a viral discussion online.

In addition to the analysis of our data against the baseline of good practices, we chose for this study, next we will discuss our findings further by providing a taxonomy of practices as they emerge from the analysis of our data reflecting the way PHAC and HC used Twitter to communicate during COVID-19 pandemic.

4.3 Discussion

In the following, we will explain in succinct manner strategies that we observed through the analysis of data. This represents salient examples of social media practices PHAC and HC adopted in their communication campaign to handle COVID-19 pandemic during the period of time that we studied, from December 31, 2019 to mid-June 2020. We labelled the emergent strategies as outcomes. They demonstrate where PHAC and HC converge with some aspects of our theoretical framework, or where their practices show some nuances and differences to these.

Outcome 1: Combining the technological and volunteers option in situational awareness

Crowd sourcing and data mining have been useful in aggregating current flu activity nation-wide in near real-time to provide situational awareness board online. The board tracks the evolution of the pandemic by indicating statistics of confirmed cases based on testing and number of deaths, in addition to other various data. Yet, the actual situational awareness about the spread of the disease may be larger than crunching numbers based on cases revealed through

testing or deaths confirmed by the coroner as a results of the COVID-19. To cover more data that may fall in the cracks due to the difficulty to screen and test every individual that may show the virus symptoms, we saw the importance of how Canadians were encouraged through social media to report if they feel have any flu symptoms. The Flu Watch Program was vigorously promoted during the COVID-19 crisis communication campaign. This 'communication' program is a combination of volunteer and technological practice that helps map the crisis, not only in terms of numbers, but also geographically. People, registered in the program, provide their location, and make it easier to analyze data afterwards to recognize not only numbers but also flu location distribution and clusters.

In the lengthy COVID-19 crisis, using social media to encourage volunteers to report symptoms digitally turns to be convenient, because collecting data directly from people can complement lab-testing efforts to give a better picture of the pandemic situation. Thus, a more comprehensive situational awareness would require both voluntary and technological option to gather dynamic data right from flu watchers who reported it online so for the government get a better sense of the pandemic in the community. What is more, it seems conveniently low cost to engage volunteers to report flu symptoms systematically online in a country as large as Canada, where testing took some time before it rolled out widely and quickly, especially during the first months of the pandemic.

Moreover, the social media management tools like Hootsuite, which is used in the present crisis communications, is practical in monitoring social media content in a systematic and speedy manner by screening content automatically. If used consistently, this technological tool or any similar one with data mining and analytics capacity would provide rich data to conduct content analysis of networks discussions and thus further mapping the crisis. For example, this would

help understand and assess public attitudes, messaging fatigue, preparedness, rumors mongering, among others. Indeed, all of these are some of the tenets of a continuing communication crisis of this scope, aiming among others to increasing perseverance of Canadians, groups and individuals.

Outcome 2: Accentuating social media account-specific features

Much research underlines the source credibility being a critical persuasive attribute that would reinforce the legitimacy of information providers and make the new norms promoted for mitigating risks salient (Lin et al., 2016). We have seen that PHAC and HC were aware of branding their unified Twitter account to reflect a unique identity by highlighting the following descriptive features:

- Name of the owner of the platform
- PHAC and HC's Twitter handle (@GovCanHealth) that is easy to recognize since it has been used for a while for communications whether in crisis or in non-crisis situations
- The CVOID-19 hashtag (#COVID-19)
- Link to the CVOID-19 official website hub (Canada.ca/coronavirus)
- Hotline phone number of the ongoing campaign

These markers should help the public recognize easily and effortlessly the source of data in the digital world in extreme circumstances as in the crisis.

It seems that these account specific attributes align substantially with what is called social media metadata in (Teichmann et al., 2020). These attributes help guide users to the linguistic content (messaging in text) and contribute to maximizing engagement with government communications on social media (Lin et., 2016). In this sense, those branding elements cannot be

aesthetic accessories, but rather are heuristic cues that tell users that they are in the right place for trustworthy information from reliable sources.

Possibly what is special in the current COVID-19 is a high dependence on visuals to accompany textual content. PHAC and HC created a series of graphic banners for social media that are relevant to micro-campaigns that we have discussed under raising awareness about risks and crises. For example, tweets related to restricted travel, a visual banner would be displayed highlighting that message. The banners also come in a format that reflect PHAC and HC brand and the COVID-19 communication campaign. Thus, we can argue that these embedded pictures shall contribute to accentuate the recognition of the social media account, increase the validity of tweets, easily identify the crisis messaging, and react to it. We can also say that by the habit of seeing those pictures around, they become themselves heuristic cues in the digital world on our devices. They can help users spot quickly and intuitively on their device screen that under a specific photo should come a thematic tweet related to COVID-19, hence shaping in advance the public's perception associated with the social media content that follows. Communicatively, a mix of textual content and images that feature people of diverse backgrounds and highlight inclusion can cater for various learning styles of the public and their preferred ways of receiving information, as well.

Outcome 3: Leaving no stone unearthed when raising public awareness of risks and crisis

COVID-19 pandemic is an unprecedented lengthy crisis and as we go along with it, we learn more and this gives us insights on how to devise new ways to handle it. We have realized how respondents changed the gear each time they learn new facts about the pandemic as it evolved. Indicators from our analysis point to the fact that the communications campaign led by PHAC and HC had taken a developmental approach to accommodate for an evolving situation.

Therefore, the heart of this campaign is raising public awareness about crisis and mitigating risks. In terms of channels use, PHAC and HC adopted a 360-degree scope, disseminating messages in all forms through traditional and digital platforms. The latter include the mainstay newsfeed, Twitter, but also incorporate whenever it is convenient other channels, such as Facebook, and YouTube for streaming live announcement videos and when reaching out to the public in a 'relaxing chatty manner' in interviews with influential Canadian YouTubers. PHAC and HC has been open to explore other channels to achieve maximum reach and impact, especially amongst younger generations. They did so through Snapchat, TikTok, and Instagram Stories for promoting some communications like wearing masks and other public health measures. This means COVID-19 crisis could have set a precedent in government settings, initiating a speedy transformation in the way federal public service departments adopt and adapt novel digital channels for communicating with the public.

In another way, the lengthy nature of the ongoing crisis could play in favour of the emergency respondents. Communicators have more time to monitor and assess communications disseminated and see how the public react to them as the time passes. Thus, it is interesting to see at the beginning of the crisis how cautious PHAC and HC were about providing information, executing almost exactly a crisis communication textbook commandment. PHAC and HC kept vigilant to communicate clearly, candidly, and even proclaimed uncertainty when there was no confirmed information that were not backed by science about the virus. As the crisis unfolded with now available data about the nature of the virus, its transmission, and ways to prevent its spread, thematic micro-campaigns were developed and communicated recurrently throughout the crisis timeline. This also reflects similar developmental approach trend of adopting and relying on new social media channels already mentioned in the earlier paragraph. Packaging relevant

information as the crisis progress is way easier and low cost to do in social media, each time by tweaking messages and resending them. That what we saw when PHAC and HC seize some opportunities like social and religious events or change of seasons to recycle and highlight salient norms and public health measures with the aim of toning down the messaging fatigue and relaying new information. Change of pictures accompanying messages is another tactic that would help refresh and reframe the textual content to keep the public engaged.

Interestingly, the length of this ongoing pandemic allowed the emergence of some forms of evolving approach to communication that adapts to the change of the situation on the ground. As said earlier, for raising awareness and educating Canadians about ways to mitigate risks PHAC and HC remain open-minded to choose whatever it takes in terms of social media channels to achieve impact. At the same time, they developed a stock of micro-campaigns with 'magazines' of messages (if we want to opt for the warfare metaphors and terminology), touching upon various aspects of COVID-19 awareness. They continued to send these each time this was needed and also tweaked those messages and resent them when special circumstances required so. Indeed, it was a process of reuse and recycling that is taking place throughout the phases of the crisis.

On another note, it is worthwhile emphasizing that the unprecedented and disrupting COVID-19 crisis has encouraged PHAC and HC to adopt new tactics such as using novel social platforms such as TikTok and Snapchat in government communications. The same can be said when giving the floor to the endorsements of social media influencers and celebrities by amplifying their accounts or mobilising them to convey government messaging. The key words that describe the apparent shift in crisis communications here are more openness and flexibility

in government policies, the aim being to enhance the government crisis response capabilities by leaving no stone unearthed.

Outcome 4: Working together to combat misinformation

Content from the public published onto social media is fluid and escape the usual process of validation in conventional media (Wendling et al., 2013), which increases the risk for circulating rumors and misinformation. We have seen how in the present COVID-19 communication campaign PHAC and HC strived to react promptly by conveying fact-based information to contradict false information. The aim is to limit rumors propagation and raise concern about false information throughout the crisis timeline. They also direct the public to the trustworthy sources of information in an attempt to eradicate fraudulent claims that circulate in the community about the virus.

Furthermore, PHAC and HC also monitored social media for spread of misinformation, a practice that is widely established in crisis communication. With technological advances, there are many tools to scan content rapidly and more efficiently. The proactive approach taken by PHAC is well commanded in theory (Wendling et al., 2013) and (Lin et al., 2016). If the crisis respondents do not step in promptly to cut short speculations, others might fill in the void and spread their ill-founded concerns. Thus, respondents should remain vigilant to spot fake content online early before its propagation, and counterbalance fake information.

COVID-19 pandemic is not only an epidemiological crisis. It will go in modern history as a multi-faceted crisis that affect many aspects of daily life. That is why misinformation will spread not only in relation to the virus itself, but also to measures related to addressing the situation in many related dimensions, be they education, economy, public order, politics, etc. Therefore, people may undermine actions by the government and overlook advice. This could

jeopardize efforts by the government and its allies, causing further disruption. That is why, PHAC and HC have been keen throughout their communications to plead candidly with Canadians to mobilize social networks, engage together, and act against rumors and false information. They also mobilize public figures to convey the same message through the voice of celebrities, social media influencers, and Chief Public Health Officer of Canada, Theresa Tam. Such a dynamic engagement is summoned to happen via social media platforms, which are a great tool for discussion, debate and opinion shaping. The call for the public to engage is a good example of online community dialogue and good citizenship to address collaboratively a cause of concern to all Canadians. Overall, we can also see it in terms of a strategy to work together to set a general good mood for message acceptance, which is required in efforts aimed at mitigating the risk and flatten the curve.

Outcome 5: Striking balance between uncertainty and confidence is key to building trust

Social media has great potential in increasing public trust in public authorities thanks to their quick turnaround of messages and regular updates. It is also known that the public is perceptive to a government that is up-front and ready to share the information available in time. However, the public tend to reject the attitude of a government that remains silent and appears to wait for more certainty before communicating about a public health threat. The public would appreciate the public authorities being open, transparent, and timely in their communications feeds. Additionally, they would favor seeing immediately what are the actions and measures undertaken to address the ongoing emergency.

It emerges from the analysis of our data that PHAC and HC were keen to promote their messages with credibility in mind. They appear to be aware of communicating early, and raise awareness of what was known so far about the new virus since January 2020. They jointly

established a new COVID-19 website hub to provide most up to date information about the virus and the status of the pandemic in Canada. This is combined with tweeting regularly and with a good frequency throughout the pandemic timeline. In addition, PHAC and HC sought endorsements from social media influencers and other household public figures to amplify the government messages, which can give a boost to the trustworthiness not only for messages but also for those taking the lead in responding to the emergency.

Such an approach reveals two strategies: Informing the public about the disease itself honestly in timely manner while advising people about public health measures and actions, giving the rationales for these to encourage them to adhere to advice, with the aim of acting to mitigate the risk and handle the crisis. If we sum up what is in this approach, we can say it is a combination of education and empowerment. In principle, the public would appreciate this type of information, because it will enable them to revitalize their resilience to live with a lengthy crisis and help them keep mitigating risks. It reflects the paradigm of giving people what they need in terms of information at the time they need it so to be able to take appropriate action to protect themselves.

Overall, PHAC and HC do not seem to overstate their confidence though in what they communicate. They remain tentative in their claims, especially when informing about the outcome of the pandemic and the future prospects. While they express confidently, they keep a tentative tone by referring to data from research and observation. Acknowledging uncertainty is a good strategy to gain and maintain public trust, especially in Phase 1 and Phase 2, when lots of information about the virus and cure still lacked. PHAC and HC seem to invite the public to a journey on the same boat for learning and discovery throughout the crisis timeline. Again, this reflects a developmental approach to addressing the crisis communication where PHAC and HC

try to establish a balance in their communications between expressing uncertainty / certainty, confidence and tone. This is possibly a combined approach of risk communication and crisis communication because of nature of this global pandemic strategy. It can be helpful to avoid ambiguity with the aim of reducing speculations and potential spread of misinformation. Therefore, failing to heed these factors might potentially increase ambiguity and confusion, which can lead the public losing trust in public authorities and eventually in the communications to manage the crisis.

Outcome 6: Creating conversational mood throughout the crisis timeline to minimize the newsfeed tone

Lin et al., (2016) suggest that social media create a platform for interaction. This dialogue is likely to provide opportunities for the public to voice their opinions. Similarly, it will help the sender gauge the reach of their communications and know how these resonate with their target audiences. In COVID-19 communication campaign, most tweets are one-direction communication with PHAC and HC sending information without a clear intention for triggering a direct interaction. Nonetheless, we have seen that PHAC and HC engage in many instances in dialogue, reflecting a two-way communication form versus unidirectional communication only. This especially happened when the public ask direct questions, and PHAC and HC selectively pick those, which will answer eventually. Thus, in those instances where PHAC and HC interact with the public in two-way communication mode PHAC and HC tend to respond to those questions from the public, while tagging the Twitter name of the interactants.

It is curious to know that PHAC and HC do not answer all questions. However, they only select a few. While it is hard to pin down the reasons and criteria behind this choice given the direction of this research and tools available, there are some views like those of (Waters & Williams, 2011) quoted in (Lin et., 2016), which try to give some explanation. Therefore, it is

argued that government organizations tend to be less likely to engage in two-way interactions with the public, only when it is necessary to defend their public image, for example, if the public criticize negatively the way they handle the crisis. From this perspective, we may cautiously assume that answers provided by PHAC and HC came possibly as a reaction to frequent queries that questioned or undermined actions by the government, aimed to correct people's wrong perceptions, or addressed circulated misinformation. Another way to understand this is to argue that PHAC and HC answered one on one questions basis when a specific question is a representative of a pattern of discussion of the public online. Overall, PHAC and HC do not comment on people's threads of discussion. Yet, they proactively and indirectly intervene in cases of spread of rumors and false information.

Other interesting but creative conversational devices used were calls to action statements to encourage Canadian to tweet back, rhetorical questions to trigger conversation amongst Canadians, in addition to a series of questions of the day. This proactive practice relates to the point of addressing patterns of questions and public discussions observed online by providing structured and round-up form of information, hence answering various concerns one at a time. We have qualified this tactic as the equivalent to the popular online 'frequently asked questions', which serves as a lead tweet followed by more tweets that offer each time more pieces of information. Here, PHAC and HC group similar questions received or observations gathered most likely through social media monitoring, and provide generic answers. Another relevant tactic observed is tagging questions askers when providing direct answers. This would help spread the information further to more people that follow them thanks to the networking feature of social media technology. That is said, both the two-way mode of communication we observed

as well as other conversational tactics used by PHAC and HC could help create a conversational mood to tweets and avoid them to sound like mere newsfeed.

It is also noteworthy to look at the public's reaction for behavioral markers to see which communication that triggers either acceptance or refusal. We mentioned that between these two poles exists a continuum of reactions shade that intensifies in both directions. The present crisis communications is indeed a hot subject. Therefore, it is no wonder that it has produced active reactions from the public from all walks of life. The section about the public's engagement in this research may serve primarily as additional information to give readers a preview of what is happening on the recipient's end of the communication cycle. However, it can also inspire extra studies focused on deeper analysis of public reaction and engagement, which is not the main objective of this research, however.

Outcome 7: Undertaking fast-track production processes to ensure speedy and regular Twitter updates

Regular, high volume, and quick updates of information in crisis communication are important factors to keep the public well informed so they handle the crisis and mitigate risks (Lachlan, Spence, Edwards, Reno, & Edwards 2014; Spence, Lachlan, Omilion-Hodges, & Goddard, 2014) quoted in (Lin et al., 2016). In this ongoing crisis communication campaign, we have seen many patterns of tweet updates that fit common practices, including high frequency of information sent in shorter periods of time and tweets update executed frequently with the same content repeated for emphasis and visibility. We have said the merit of these tactics ranges from ensuring messages are seen and accessible by the public to enhancing the level of transparency and increasing audiences' perception of trust towards the crisis respondents. Lin et al. (2016) attribute this to the attitude of the public who tend to associate fast and abundant information sharing with the idea that the government cares and has the best interest of the audience in mind.

In our analysis, there emerges two interesting points that worth mentioning though. First, PHAC and HC chose Twitter and other social media accounts, namely Facebook and YouTube, in order to broadcast livestream updates about CVOID-19 by federal health officials on a regular basis. Choosing to broaden broadcasting channels is strategic and indeed reflects the present media landscape. This is because increasingly more people prefer getting information via social media and less through conventional mass media outlets. Second, it is not possible for all the above updates and information sharing tactics to be successful without regular and massive update of website backgrounders. This includes various webpages on the COVID-19 website hub that host the reference, official, and most authoritative information about the pandemic in Canada. We have seen that PHAC and HC were diligent in updating information on the website as things progressed.

Still, in order to meet the public's expectations in terms of information and instructions, there must be a *fireball* process in place to ensure quick production and update of messaging via social media. Indeed, by observing the frequency and pace of tweeting we can conclude there exists an exceptionally fast track and a dynamic process to be able to deliver fast tweets and obtain their approvals in time.

Outcome 8: Promoting quality hashtags that lead to useful and actionable information

Hashtags are an integral part of social media postings, which are added to emphasize certain information and help users to find and engage in particular conversations. In times of crisis, hashtags are also relevant for users and emergency respondents alike. Wendling et al. (2013) state that hashtags are beneficial in increasing the validity of information provided on social media.

Because the COVID-19 pandemic is a nation and worldwide crisis, it can be problematic in terms of how to direct the public to useful and targeted hashtags. Moreover, CVOID-19 is not only an epidemiological crisis, but it is also a lengthy emergency of enormous psychological implications, one that tends to split opinions, leads to social polarization, and causes fatigue and low morale. In the end, this may affect the willingness of the public to comply with government advice. With that in mind, it is risky for the government to suggest or use randomly hashtags that are organically generated or circulating in social media without verifying their validity to the crisis and efforts to contain it. For example, Lin et al. (2016) warn against such hashtags because they may lead the public to false information, spam, and useless discussion threads.

It is suggested to create and register a hashtag for an organization so to make sure it leads to useful information and discussion online that suit its communicative objectives. Yet, this is hard to achieve in the swift of the moment and in such a large and expansive crisis as COVID-19. This can be relevant though if the crisis is a local one and affects a smaller area, or if it is an issue that mostly affects the public image of the organization. In our case, it is a national and international public health disaster. Rather it is trans-border, both epidemiologically as well as communicatively. People around the world post communications on social media platforms and so there are plenty of hashtags used and reused.

In their communications efforts, PHAC and HC did not seem to create new hashtags to engage the public in discussions. Nevertheless, they promoted a set of various hashtags throughout Twitter for this purpose. We assumed that PHAC and HC are trusted government departments with expertise and the public would perceive or hope they are able to undertake their responsibility to handle the emergency successfully. From this perspective, we also presume that PHAC and HC have adopted and promoted hashtags that should be valid and

attested via social media. We could argue that attested hashtags are the ones, which have been duly verified, and proved to lead to meaningful discussions, useful and actionable information online. Moreover, it is important to mention this explicitly to the public, which the two departments exactly did. In the COVID-19 website hub, PHAC and HC published a list of recommended hashtags for the public to follow and use. This is an evergreen list, which they add on it as the crisis progress with new facts or developments emerge.

Outcome 9: Collaborating in all directions to create momentum and increase reach and engagement

Communication through social media capitalizes on the networks existing and the huge technological capacity to share information in the public sphere. Such open access platforms bring contributors from all walks of life, whether individuals or organizations. As such, social media are a collaborative space where everyone is welcome to participate, and be heard, especially in crisis circumstances. Moreover, they constitute a mechanism for emergency respondents to convey crisis communications and assess audiences' reactions. At the other end of the receiving line, the public and other stakeholders, including public and private organizations, social media are an opportunity for contributing, and expressing opinions.

Managing the COVID-19 pandemic has brought combined efforts from federal, provincial, and territorial governments, yet PHAC and HC remain the official source of information. They are the lead in ensuring the information about the disease are consistent, reliable, and widely distributed nationwide. They oversee a mechanism of coordinated efforts to communicate on behalf of the federal government through regular updates online. In doing so, they collaborate with all levels of government in the collection and dissemination of information. Through Twitter and other social media platforms, top health officials - acting as the interface of the federal government- give regular live stream announcements about the status of the pandemic

around Canada and tell about new measures. Moreover, PHAC and HC integrate provincial and territorial government who take public health measures as per their prerogative where they have authority to act. They do so by occasionally quoting and sharing their postings from their social media accounts as well as tagging their social media handles in tweets sent by them.

It is also interesting how PHAC and HC engaged at certain points with others by joining extra campaigns led by celebrities and influencers aimed at flattening the curve, or amplifying their social media accounts to increase momentum and increase reach and engagement. Thus, they give the floor to third parties, such as athletes, singers, and other public figures to amplify the government message to Canadians. In the same way, attending interviews by Dr. Howrad Njoo, Deputy Chief Public Health Officer with famous YouTubers from Canada revealed a non-conventional shift to collaborate with influencers online for creating a space for discussion and reaching segments of society that prefer receiving information via social media. Thus, by being open to join efforts with others and vary stakeholders with whom to coordinate online is likely to create more opportunities for spreading the message further. This reflects an emphasis, not only on the message, but also on the environment of communication as a whole. Thus, by involving third parties as an audience and creators of content, their contributions can resonate with their followers and fans and help with crisis communications efforts.

4.4 Reflections

Beyond the discussion above, which attempted to highlight, among others, conformity to good practices, differences, and nuances to these, it is also important to reiterate that the nature of this sustained crisis is truly of a kind. First and foremost, it is unprecedented in modern time given its length and the high uncertainty it has aroused. As it evolved, issues changed, which would affect the focus of communications accordingly. For example, at the moment of writing

this thesis, social media content shifted to emphasize the increasing disinformation about vaccines, and encouraged people to overcome vaccine hesitancy. We will also expect similar trends to continue as long as the crisis endures, which will cause more challenges to PHAC and HC in the way they should communicate.

In our analysis, we saw that PHAC and HC created micro-social campaigns, which are a form of digital marketing and advertising combining expressive graphics and texts, to accommodate for various scenarios, issues, and situations that emerged along the crisis timeline. That represents some of the nuances observed in data, showing the proactive and developmental approach possibly to address the implications related to such a lengthy crisis. This developmental approach to crisis communication markedly underlies evolving strategies as PHAC and HC adapt and learn from the crisis in real time. It also reflects the framing and reframing of messaging to accommodate for the communication needs as issues change, sometimes rapidly, with the evolution of the crisis. This form of strategizing (Aten & Thomas, 2016), as we argued in our analysis, should have involved a simplified and a dynamic form of approval and production process of messages. We also suppose that strategizing would require a more horizontal input and collaboration from internal stakeholders than a top-down crisis communication management at PHAC and HC.

On the other hand, observing COVID-19 pandemic leads us to think of it in plural form. Primarily, it is a multifaceted incident with a snowball effect. We can label it as crisis-within crisis. Besides being epidemiological crisis affecting public health, it has affected also many other aspects of life, such as transportation, travel, economy, education and learning, the way we work, the way we socialize, the way we shop, the way we receive routine medical care, to name but a few. It has been for a while now that we live in a fluctuating mode, in between times of

toughened restrictions and times when these are loosened. This situation only feeds further our uncertainty and anxiety. Meanwhile, many of us probably have been saturated due to the information influx through all media but more from social media because of its penetrating characteristics through notifications and access on the go through mobile devices.

Therefore, due to its length, magnitude, fluidity, and its implications, Covid-19 crisis tends to challenge for now the stereotypical temporal delimitation of crises based on the classic trio of before the crisis, during the crisis, and post-crisis. In it, patterns of events vary a lot across Canada, hence making it a futile pursuit to set distinct time boundaries since the virus outbreak. We argue, therefore, that we might see more volatile and lengthy crises in the future as we live in the risk society with many triggers, seen or hidden, that surround us. Thus, the linear definition of crisis above might become obsolete in some instances. We might still witness more uncertain and chaotic situations, anyways.

The outlook of this crisis foretells the type of emergencies in the future. We might eventually expect longer and multiple disruptive events, only to plunge us more and more in a risk mode. That's why it has been suggested that linear models of crisis management needs to show more flexibility to accommodate for the changing nature of crises of our modern time and also accommodate for a crisis communication that relies more on social media and online interaction. It has also been argued that due to the overwhelmingly chaotic, lengthy, disturbing, and psychologically exhaustive ongoing crisis, crisis communication would continue to adjust and become more operational than reputational, especially in the risk society we live in. Operational crisis communication, as described above, tends be flexible to use innovative tools to provide information quickly with the aim of serving, educating and empowering the affected communities. This will help increase affected communities' resilience to overcome the effects of

the crisis (Gardell, 2014). With digital technology expanding, the media landscape would continue to do so, offering new opportunities for risk management and crisis communication. However, this would also pose challenges for communication managers in public sector, because free and wide access to communication channels by stakeholders would bring further communication competition. In such a compact media landscape, governments are more exposed than in the past and may need to open up and interact more. Although timid, we have seen some aspects of interaction by PHAC and HC. Moreover, both departments have adopted a new practice of calling out to external non-traditional allies. This time, their allies belong to household names and higher achievers from sport and science as well as young influencers whose main currency is only their fan base of young people. Allies are mobilized to amplify the crisis messaging and maximize reach. According to social mediated crisis communication theory (SMCC), this is an example of spread of electronic word of mouth and a reaction of the audience to the initial message from the organization. We expect once the situation comes to a form of normalcy, social media strategies/practices that have emerged in the current efforts to communicate about the crisis communication to inform future preparedness, but also from a research point of view add new perspectives to existing (SMCC). For example, this theory should upgrade to include prescriptive dimensions to help organization, especially, in the government sector to handle effectively the way they should interact with the public without causing them damage given many legal and political constraints they may face (Liu & Horsley, 2010). This may include providing anything from suitable rules of engagement to strategic recommendations on how to harness the electronic word of mouth through social media influencers and allies to control and attenuate the effects of information fatigue, uncertainty,

hesitancy to compliance, misinformation, public rage, public order, irresponsible use of social media, fear, distrust, among others.

As we argued, crises tend to be more fluid and ambiguous, then new social media adapted for government settings can be needed and should be responsive (reactive and proactive), agile, and flexible. Social media practices should practically be in line with existing governance considerations and directives, and outline risks and advantages associated, for example, with accelerating the process of production and approvals of crisis communications using social media. The latter was mentioned in SMCCT as a common practice in organizations under infrastructure, mentioning if crisis communication would be handled centrally in headquarters or locally in regional branches of the organization. However, this theory did not provide a clear process or further details about ways to operationalize it in due form; nor does it specify, let us say, the roles of top management, middle management, or operational level of management in this endeavor.

A further note, because of risk society we live in, change is a fate. Risk is continuing and governments should always be prepared to manage it and communicate about it. As social media has emerged as channels of choice in communicating during the current pandemic, existing theories may not be enough alone to account for how the government of Canada inform about the ongoing crisis. That is why we adopt and compare previous social media practices and document the other emerging practices in this study. A checklist of emergent practices as they apply to the current crisis communication campaign is included in Annex E.

CONCLUSION

The communication campaign to address COVID-19 led by PHAC and HC provides a good example of a context of socially mediated crisis communications. Twitter provided an unfiltered platform for quicker turnout of messaging to help in the crisis communication efforts. PHAC and HC have direct access to various audiences to convey their messaging, and stand as the lead emergency respondents. In this role, they are the voice of the federal government as far as the pandemic communications, and the official source of information for various stakeholders and audiences across Canada. Social media use has allowed their content to be shared and amplified amongst individuals and various stakeholders from government and public sector.

In the analysis, we observed that PHAC and HC has adopted a developmental and proactive social media campaign in addition to adhering to good practices for a better use of this tool. Thus, in terms of messaging content overall, it emerges that it focuses on informing Canadians of the virus, increasing their awareness of the evolving pandemic situation, and educating them about measures to take to protect themselves and minimize the risks, all that while staying healthy physically and mentally. In addition, it also focuses on other aspects of life under the crisis like economy, systems in place to assure Canadians are well taken care of, prospective recovery, and warns of potential surges in cases and possible worsening conditions, among others.

On another note, to satisfy possible anticipations / expectations of the public as the crisis is continuing, messaging appears to prepare Canadians to handle the pandemic across seasons of the year by urging them to adapt their behaviors and activities as the situation changes. Similarly, PHAC and HC promptly direct Canadians to get in touch with their local health authorities when

there is public health measures changes at the level of the provinces and territories or in matters that do not fall under their federal authority and responsibilities.

Now that we have briefly revisited the approach to communications and type of messaging in COVID-19 campaign, we will continue giving some final remarks about our research objective of exploring how and in what forms PHAC and HC have used social media during COVID-19 pandemic communications.

While PHAC and HC social media communication reflects largely the strategies laid out in the good practices that constitute our theoretical framework, they, however, adopt a developmental approach to crisis communication. It seems they evolve with the evolution of the crisis itself. They frame and reframe messages, as they adapt and learn in real time. PHAC and HC choose so far the unusual use of channels like TikTok at times when reach for youth is required. Moreover, they reach out to the help of influencers with large fan base to amplify crisis messaging. With the progress of the crisis and the communication thereof, there seems to be more elaboration in the way messaging are crafted. More visuals are added and the technique of framing and reframing is experimented, hence producing messages likely with the aim of attenuating information fatigue.

Moreover, the analysis reveals that social media context brings into focus the central importance of media monitoring in managing the crisis and its communications. We have argued based on our data analysis that PHAC and HC have been engaged in continuous media monitoring using mega-data analysis tools, which help measure public's mood and sentiments, keep up with their expectations and needs for information, and most importantly control spread of rumors and misinformation. Collecting data from social media has also been done in structured way through an established volunteer program in which registered individuals provide

information about flu symptoms. This program is likely to help further track symptoms and form a situational awareness of the pandemic together with testing and actual cases admitted in hospitals.

Spread of misinformation continues to be an issue in all crisis types, whether manufactured or naturally occurred. Therefore, we have seen the proactive approach that characterizes this campaign by providing in a prompt fashion fact-based information to counter the propagation of false information. PHAC and HC call out to everyone to work together to fight misinformation and spread the word at all levels, including online.

Relatedly, PHAC and HC have been keen throughout their communications to build trust and present themselves as worthy of being the official sources of information about CVOID-19 in Canada. The strategies pattern observed reveal that the two departments tend to communicate about the virus honestly by providing science-based information, and avoiding overstating confidence. They remain tentative though and cautious in claims when need be. Without being cautious in validating the veracity of information, PHAC and HC may find themselves exposed to critique and scrutiny of the public and media (Liu & Horsley, 2010). Therefore, it is the government's duty to be a responsible and transparent informant and communicator. In a bid to encourage the public adherence to advice, they also give reasons for taking some public health measures, and explain how this could help. This may allow presenting these measures in a friendlier manner and be construed as they are designed for the public's best interest.

Efforts to strengthen trust has also been seen in terms of branding of Twitter account and use of visuals to support textual content, which is an important social media practice to help users recognize the source of information and ease browsing and interaction with messaging if we consider the crowded social media landscape. Indeed, this aligns with Austin et al. (2012)

who found out in a study that in a socially mediated context, users would prefer less to receive information about a crisis elsewhere if the original information came directly from the organization in charge.

Another element that also helps information recognition is using the right hashtags that lead to useful information and discussion online. PHAC and HC set a strategy to recommend a build-up list of quality hashtags for users to choose from in order to engage in discussions and find relevant information. Yet, there is no sign they have created, or patented their own for the sake of this communication campaign.

The proactive character behind this campaign is further seen in what we argued that for PHAC and HC to be able to ensure quick, continuous, and frequent updates of quality tweets, there should have been a fast-track production and approval process. Having this process should be helpful to back the communication efforts and keep up with the expectations of the public and their needs for timely information, especially in such a lengthy crisis.

The core of any crisis communication is to protect people's health and wellbeing, awareness and education. In this, PHAC and HC appeared flexible to adopt many channels as relevant to their objectives to reach out to and engage with audiences. In taking this approach, they were open and flexible to try new practices with the aim of conveying their messages conveniently, for example, to reach younger generations. In addition, they tweak the tweets to suit changes of situations over time and probably in an attempt to help audience overcome messaging exhaustion. It is also interesting that the awareness communications were marked by thematic micro-campaigns that were communicated then and again throughout the crisis timeline and as the situation evolved.

Unlike conventional media, social media offers a better direct unfiltered communications. It helps create a space for collaboration between various stakeholders, individuals and organizations, which can help promote further initial messaging. This is the third party role in social media emphasized in the SMCCT (Austin et al., 2014). Our analysis revealed forms of online collaboration by engaging public figures from sport, science, performing arts, and astronomy, as well as opening up to social media influencers to speak with. They all unite and network to endorse the government messaging and spread the word electronically.

Finally, social media is one of the most accessible platforms that give voice to everyone and make it easier to initiate discussion during a crisis. Engaging in dialogue online is important to show to the public that the government cares and is a sign that it shows interest in their situation. In the present crisis, PHAC and HC were keen to create conversational style to tune down the newsfeed tone of Twitter. They did so through many strategies, including directly answering questions from the public and indirectly by posting what we termed as rhetorical questions, followed by series of answers. This we said is an equivalent to the frequently asked questions that is popular in web communication. Other tactics comprise calling out to action to tweet back and tagging and quoting the original question askers, which helps spread further the information to the latter's networked followers.

It is worth mentioning that observing good practices is what makes the use of social media increasingly a strategic choice in communication, whether in peace time or during extreme times like in crisis (Wendling et al., 2013). During this campaign, PHAC and HC found itself in an increasing obligation, to not only send out messages, but also enter into dialogue with the public, who has become active in social media, seeking information and expressing a multitude of opinions ranging from acceptance to refusal of measures. In many cases, they put in doubt the

feasibility of such measures and lean towards conspiracy theory. As the public is accustomed to network amongst themselves through various social media platforms, they often receive instant replies, comments, likes and all other sorts of engagements. Probably, the audience would expect similar reactions from their government by answering their questions in more real-time and getting further in discussion online.

Such pressing demands for immediate interaction and access to information by the public via social media is probably a strategic challenge for the government in the volatile crisis times. That raises the question of how to strike the balance between immediacy in the two-way communication through social media in a government context while assuring processes are in place to ensure messaging that are forceful, salient, candid, effective, and conversational (Veil et al., 2011). This is a recurrent issue in government communication highlighted in research (Gintova, 2019; Lu, Zhang & Fan, 2016). In crisis communication, this question may garner even more importance as crises might tend to be more and more uncontrollable and lengthy, causing higher level of uncertainty. That is why two-way communication in social media in government settings is a research area of strategic importance because it can help provide strategic advice to inform designing relevant policies. Indeed, an efficient, fast, and responsive engagement with the public can play a major role in correcting false information and perception, listening and responding to signs of information saturation, and strengthening trust of emergency respondents amongst audiences.

Another question that should prompt future research in the field of social media in crisis communication as we are in the middle of this crisis is the constant penetration of 5G Internet technology. This technology promises faster connection, helping new networking features that may override the existing social media practices and the preparedness plans whether in public or

private sector. So, how this could affect crisis communication? We might expect revolutionizing features in social media that can create faster space for information circulation, intense networking, closed-knit online communities, speedy transmission of misinformation, digital inequalities, including issues related to accessibility, and so on. On the other hand, this may also be counterproductive to a two-way communication because public sector organizations could eventually have bigger capacity to filter public reactions to government postings on social media, hence causing a reverse framing of public comments. With this prospect in mind, it is important that research in crisis communication should stay in avant-guard position to cover such new trends in technology, their effects on interaction between government and stakeholders during crisis, and provide solutions for the public sectors to increase preparedness.

Ideas for future research cannot probably be complete without thinking of social media as a space for collaboration. We all have seen that the present crisis stirred heated discussions online, and attracted many to circulate rumors and conspiracies. Therefore, it is important to address these issues, which can impede efforts to address the incident. We can do this by establishing and maintaining networks of allies that can help magnify messaging during crisis times and speak out doubters. However, to set attested standards to ensure a visible impact of social media influencers in crisis communication, we may need research in this area to help defining criteria for selecting the right candidates and defining their roles, for example. That is why we suggest social mediated crisis communication theory to have prescriptive dimensions to allow for the emergence of good practices to help government organizations manage interaction online more effectively and safely.

More areas of inquiry to focus on is assessment and evaluation of the social media campaign effectiveness. There has likely not been a crisis in the recent past that has witnessed

such a high dependence on social media in order for public organizations to communicate most effectively with their citizens, there has been no crisis in the past that saw the massive use of social media in crisis communication like COVID-19. With that comes huge information influx with possible communication fatigue, which affects reach, engagement, and eventually compliance with public health advice. From this perspective, the current pandemic is a great opportunity to undertake research focused on information recall at various stages through the crisis timeline, for example, when there was a rise in messaging clusters, and as per ethnicities, among other variables. Another related area is to measure efficiency of messaging in achieving the communication objectives. One way to do this is performing continuous behavioral insights research given the broad variables it accounts for to evaluate communications and change. Behavioral insights research can help provide washback information to decision makers in time of delivering communications as well as in the recovery phase.

In conclusion, we hope that the findings of this study and the discussion that follows can help inform crisis communication professionals about attested practices to adopt and adapt to various crises. While the study focused on public sector, crisis communicators can draw lots of ideas, information and tips that can be valuable to private sector, as well. While this study attempted to explore and answer how PHAC and HC used social media to communicate about CVOID-19, our analysis and discussion led us also to reflect on the potential effects this unprecedented crisis may have on our perceptions about good practices and crisis communication theory in general. In both cases, we argued that because of the length of the crisis and the immense uncertainty it has stirred, new standards or complementary ones as well as revision of the theory may need to emerge to fill any gaps that we may see afterwards once we

have fuller picture of the scale of the crisis. However, this can only be possible through a retrospective analysis of the crisis once the situation returns to a form of normalcy.

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Annexes

Annex A

Good practices checklist

Good practice	Action

Surveillance, monitoring, situation awareness and early warning system	• The technical option
	  ○ Use and customize technology for collecting and analyzing data from social media
	• The Volunteer option
	  ○ Call out to public to engage in data collection about the crisis and monitor the situation on the ground

Raising public awareness about risks and crises	• Stay active on social media year around to ensure the organization' social media accounts are known and increase followers' base • Conduct viral campaigns on the organization' social media during crisis • Provide objective factual information in real-time to assure the public they are not left uniformed • Act quickly to control potential spread of rumors and false information

Managing reputational effects and spread of misinformation	• Counterbalacing fake rumors
	  ○ Respond swiftly to address any uncontrolled broadcast of information about the organization by a third party via social media
	  ○ Act proactively to correct information by communicating candidly to the public
	• Communicating about the organisation's own actions
	  ○ Communicate with the public regularly to highlight efforts aimed at containing the crisis
	  ○ Stay open to complaints and address them appropriately and immediately
	  ○ Assess public's feedback for signs of threat to the organization's reputation

Building trust	• Provide regular and reliable public safety and emergency updates • Communicate frequently hard facts and timely information on disasters

	• Communicate quickly within tight time frames as soon as an event happens
Use media affordances to provide credible sources of information	• Provide enough visual cues to help individuals reach and browse information with minimum efforts • Establish an official branding identity for social media accounts for easy recognition and recall • Communicate frequently hard facts and timely information on disasters • Communicate quickly within tight time frames as soon as an event happens
Fully integrate social media into decision making policy development	• Integrate social media into risk and crisis decision making and policy development • Develop social policies for emergency management in public health and national security agencies at all levels of government to enhance crisis response capabilities • Design social media policies that are flexible to incorporate use of novel social media channels to accommodate different audiences' preferences
Actively engage in dialogue online	• Engage in two-way online conversations with the public • Communicate in discursive manner when providing information and emergency advice • Listen to stakeholders and respond to their concerns in timely manner • Build reputation as trustworthy sources of information for the public to follow and engage with
Be cautious about message update speed	• Tweet quickly quality information • Tweet as frequently as possible throughout the crisis timeline to ensure the information is visible enough • Have a system in place to train a team of members who can access the organizational official social media accounts to provide constant updates
Own the hashtag	• Use a specific hashtag created for the incident to guide the affected people to useful instructions issued from official sources • Promote created hashtags to assume the responsibility to maintain its accuracy and utility

Cooperate with the public and similar organizations	• Maintain effective networks, choose subject area experts, and develop relationships with stakeholders at all levels • Monitor discussion trends online for influencers and call out to them to endorse and amplify crisis communications • Consider other government agencies and the public active on social media as information dissemination partners and not competitors

Annex B

Data collection work and process

Programming Language: Python in Jupyter Notebooks
Python Libraries Used: GetOldTweets3, Tweepy, pandas,

Building the script required utilizing two different libraries in Python and using the Tweepy API for pulling more specific tweet information. Everything was created inside a Jupyter Notebook named "PHAC Deliverables.ipynb" these files can be opened either through Jupyter Notebook on local computers or through cloud notebooks like Google's CoLab or AWS SageMaker.

Notes about completeness of dataset

Note the possibility that GovCanHealth tweets can have no replies. There are also some tweets that do reply to a tweet by GovCanHealth, but are not found in this dataset. This may be due to private accounts, or some other reason. We used the reply count from GovCanHealth tweets to calculate the percentage of reply tweets we scraped out of the total amount of replies. Our datasets consistently contain 75-84% of all replies to GovCanHealth tweets.

General line of thinking and process to how we created the notebook

We faced the challenge of creating a file that contains the GovCanHealth user's tweets and replies to each tweet. A problem that proved harder than originally thought since two popular Python Tweet Scraping Libraries Tweepy and GetOldTweets3 do not offer a quick and simple reply method. We first built the script by scraping all GovCanHealth's tweets in a pre-determined date range as per COVID-19 crisis Phase 1 and Phase 2. Based on some government decisions, we determined Phase 1 ranging from December 31, 2019 to March 13, 2020, while

Phase 2 from March 13 to mid-June. This would also give us the tweet id for each of the users' tweets. Next, we scraped all tweets that mentioned GovCanHealth. Most of these were assumed to be tweets that reply to a specific tweet by GovCanHealth. However, some tweets sometimes mention GovCanHealth without specifically replying to one of their tweets. This meant we had to filter out the reply data set finding which tweets are directly replying to GovCanHealth's tweets and not just mentioning their username. Once this was filtered, we used the Tweepy API to pull tweet metadata such as the tweet id of the specific GovCanHealth tweet each reply tweet was replying to. This made it easier for us later to combine the two datasets since we have a tweet id connecting reply tweets to each of GovCanHealth's tweet. We found that when we scraped tweets they always came in reverse chronological order; however, we needed data in chronological order with the oldest on top and followed by most recent. We flipped the datasets making them in chronological order. After this was done, we could then combine the user dataset and reply tweet dataset. The last big step in all of this was creating a for loop that would go through each tweet from GovCanHealth, find tweets in the reply dataset that reference that specific tweet, and append them to that tweet.

We had two datasets to deliver:

1. Dataset containing GovCanHealth tweets.
2. Dataset containing GovCanHealth tweets and their replies.

The combined dataset containing GovCanHealth tweets and their replies is formatted as such:

- GovCanHealth Tweet 1
- Reply Tweet 1 to GovCanHealth Tweet 1
- Reply Tweet 2 to GovCanHealth Tweet 1…
- GovCanHealth Tweet 2
- Reply Tweet 1 to GovCanHealth Tweet 2…
- GovCanHealth Tweet 3
- GovCanHealth Tweet 4

Code process description

The following is a process description of what code accomplishes marked by comments in the notebook with # (Number). The steps below are assuming you are looking at them alongside the Jupyter Notebook.

1. Authorize Tweepy library by using credentials given from Twitter Developer.

2. Setting variables to scrape, ex: username, oldest date, recent date.

3. Scraping GovCanHealth tweets in the above given date range, and creating a data frame called user_tweets_df.

4. convert_id_str function created to save exact id numbers, applied function to user_tweets_df.

5. Checkpoint to save GovCanHealth tweets save called GovCanHealth-Tweets-d2.

6. Scraping Tweets that mention GovCanHealth, and creating a data frame called tweet_replies_df.

7. Filter data frame to show only tweets that are replying to GovCanHealth and not just mentions.

8. pull_tweet_reply_data function uses Tweepy API to figure out which GovCanHealth tweet each reply tweet is directly talking to.

9. Applies function pull_tweet_reply_data to data frame to go through each tweet in replies data frame (Time heavy, is scraping specific data for each reply tweet may take 1 to 3 .hours to run depending on latency/hardware)

10. convert_id_str function created to save tweet ids and not lose them when creating checkpoint csv file, convert_replies_str function created to save id of tweet that is being replied to and not lose them when creating checkpoint csv file. Both functions are then applied to replies_direct_df.

11. Checkpoint to save reply data called Reply-tweets-d2.

12. Creating two new data frames called flipped_user_df and flipped_replies_df to create chronological order for data, ex: oldest -> newest. They're originally newest -> oldest.

13. Created list called combined_list, that has a for loop that goes through each tweet from GovCanHealth appends to combined_list, then finds replies that reply to that tweet and appends them to the combined_list. Finally creates data frame called combined_df.

14. Create copy of combined_df to prepare data to be cleaned and given.

15. Checkpoint that holds combined_df labeled with date.

16. Saving an excel file for deliverable 1, a file that only contains GovCanHealth tweet information.

17. Saving an excel file for deliverable 2, a file that contains GovCanHealth tweets and their subsequent replies if available.

Annex C

Codes and themes frequency distribution – Phase 1

Codes	Number of occurrences	Themes	Individual code frequency percentage within theme (%)
Developments and information	44	2	28
State intervention	23	1	34
Travel as a vector	20	2	13
Travel, general	16	2	10
Canadian readiness	16	1	24
Post advice	15	2	10
Screening measures	14	1	21
Coronavirus transmission	11	2	7
Trustworthy sources	10	2	6
Precautionary advice	10	2	6
Estimate of risk	10	2	6
Informing of symptoms or exposure	9	3	53
Wuhan, China	8	2	5
Contacting individuals	6	3	35
Global partnership	2	4	50
Restricted travel	4	1	6
The nature of coronavirus	3	2	2
Quarantine	3	2	2
Stockpiling	3	2	2
Symptoms	3	2	2
First case	3	1	4
Canadian hospitals and measures	2	1	3
Protecting Canadians	2	1	3
General health and safety	2	1	3
Intra-country partnership	2	4	50
Health care workers	1	1	1
Fraud	1	2	1
Patient care	1	3	6
Orders	1	3	6

Total 29

Theme 1: Wide-ranging measures taken by the GC to slow the spread of coronavirus

Code	Number of occurrences
State intervention	23
Canadian readiness	16

Screening measures		14	
Restricted travel		4	
First case		3	
Protecting Canadians		2	
Canadian hospitals and measures		2	
General health and safety		2	
Healthcare workers		1	
Total	67	Percentage out of total code occurrences	27%

Theme 2: GC has implemented a broad program of information dissemination

Code	Number of occurrences		
Developments and information		44	
Travel as a vector		20	
Travel, general		16	
Post advice		15	
Coronavirus transmission		11	
Estimate of risk		10	
Precautionary advice		10	
Trustworthy sources		10	
Wuhan, China		8	
Quarantine		3	
Stockpiling		3	
Symptoms		3	
The nature of coronavirus		3	
Fraud		1	
Total	157	Percentage out of total code occurrences	64%

Theme 3: GC is working closely with residents of Canada in order to protect their health

Code	Number of occurrences		
Informing of symptoms or exposure		9	
Contacting individuals		6	
Orders		1	
Patient care		1	
Total	17	Percentage out of total code occurrences	7

Theme 4: GC has formed intranational and international partnerships to help combat coronavirus

Code	Number of occurrences
Global partnerships	2
Intra-country partnerships	2
Total 4	Percentage out of total code occurrences 2

Annex D

Codes and themes frequency distribution – Phase 2

Theme 1: Wide-ranging measures taken by the GC to slow the spread of coronavirus

Sub-themes and codes	**Number of sub-themes /codes occurrences**	**Individual sub-themes frequency percentage within theme (%)**
1. **Immediate response**		
1.1 Travel related response		**94**
• Travel ban restrictions	2	
• Repatriation of non-Canadian visitors at the border	3	
• Mandatory mask for returning travellers	4	
• Screening measures	35	
• Avoiding non-essential travel	2	
• Mandatory quarantine for returning travellers	34	
1.2 Community-oriented response		**6**
• Safety measures for schools and daycares	1	
• Compliance to quarantine	1	
• Ethics framework and Covid-19	1	
• Expedited access to cleaning products	2	
Total	**85**	
2. Healthcare measures		
2.1 Prevention measures		**17**
• Infection prevention in care settings	1	
• Prevention guidance in acute healthcare facilities	4	
• Guidance for Canadians with disabilities	1	
• Prevention guidance in long-term care facilities	2	

• Prevention guidance for home care organizations	1	
2.2 Utilities and readiness		**41**
• Canadian readiness	6	
• Canadian hospitals and measures	2	
• COVID-19 Nurse – Inventory	1	
• Testing	9	
• Routine vaccination and Covid-19	1	
• Expedit access to COVID-19 diagnostic test kits	2	
• Quick access to disinfectants and PPE	1	
2.3 Protection		**41**
• Protecting Canadians	8	
• Protecting vulnerable groups	14	
Total	**53**	
Grand total of codes occurrences	**138**	
Percentage out of total code occurrences	**10%**	

Theme 2: GC has implemented a broad program of information dissemination

Sub-themes and codes	**Number of sub-themes occurrences**	**Individual sub-themes frequency percentage within theme (%)**
1. Prevent exposure or spread of disease		
1.1 Covid-19 and youth role		**2**
• Engaging kids	8	
• Youth engagement	3	
1.2 About quarantine		**8**
• Quarantine adequate place	18	
• Quarantine requirements	24	
• Quarantine readiness	6	
• Quarantine versus self-isolation	1	

1.3 Covid-19 advice for parents		**1**
• Covid-19 and parenting	3	
• Caring for a child with Covid-19 at home	3	
1.4 Socializing at home		**6**
• Playdates	2	
• Virtual get-together	13	
• Fun activities at home	20	
• Virtual prayer	1	
• Virtual Iftar	2	
1.5 Precautionary tools and actions		**16**
• Covid-19 Application	16	
• Self-monitoring	11	
• Self-isolation	48	
• Virtual self-assessment	12	
• Covid-19 Virtual assistant	3	
• Contacting local public health authority	8	
1.6. Informing of mask		**3**
• N95 facemask advice	1	
• Masks, appropriate use	4	
• Wearing masks	15	
1.7 Call for observing distancing		**18**
• Social distancing	4	
• Physical distancing	97	
• Stay inside your bubble	1	
• Avoiding visiting each other	4	
• Avoid cottage stay	4	
1.8 Call for action on pandemic		**26**
• Flatten the curve	75	

• Save lives	7	
• Stay safe	20	
• Stay home	57	
1.9 Routine safety		**18**
• Precautionary advice	64	
• Handwashing	23	
• Handwashing song	3	
• Cleaning and disinfecting public spaces	3	
• Safe workplace	10	
• Grocery advice	7	
• Shopping advice	1	
Total	**602**	
2. False and misleading claims		
2.1 Misinformation		**32**
• Fraud	5	
• Rumours	1	
• Misinformation, social media	1	
2.2 Action against rumours		**68**
• Preventing misinformation	8	
• Trustworthy sources	7	
Total	**22**	
3. Preparedness		
3.1 Informing of stockpiling		**16**
• Stockpiling, rationale	5	
• Avoid stockpiling medication	3	
• Minimize drug shortages	3	
3.2 Cleaning products advice		**40**
• Sanitizers production	3	

• Hand sanitizers	3	
• Hand sanitizers, health risks	5	
• Chemical products advice	13	
• Household chemicals advice	1	
• Attested disinfectants	2	
3.3 Support to business		**7**
• Businesses' support in response to COVID-19	4	
• Cannabis industry and Covid-19	1	
3.4 Increasing health products and testing availability		**35**
• Health product manufacturing	2	
• Expedit the validation of spartanbio's screening kit	1	
• Informing of PPE buying and selling	1	
• Supply	3	
• Donating PPE	4	
• Funding opportunities	1	
• Serological testing survey	1	
• Rapid screening test authorized	1	
• Research response to COVID-19	10	
3.5 Modelling		**1**
• Predictive modelling	1	
Total	**68**	
4. Informing of the disease and updates		
4.1 Covid-19 cure information		**18**
• Clinical trials	1	
• Informing of drugs and vaccines	4	
• Informing of cure	1	
• Informing on symptoms and treatment	14	
• Covid-19, transmission	3	

4.2 Covid-19 general updates		**82**
• Developments and information	104	
• Covid-19 awareness resources in many languages	2	
• Informing on CERB	1	
Total	**130**	
5. Symptoms and exposure awareness		
5.1 Type of symptoms		**80**
• Symptom-free	1	
• Asymptomatic individuals	3	
5.2 Transmission		**20**
• Community as vector	1	
Total	**5**	
6. Travel information		
6.1 General travel information		**54**
• Travel as vector	5	
• Travel advice	49	
• Travel, general	34	
6.2 Travel preparedness		**46**
• Emergency consular assistance	3	
• Quarantine	22	
• ArriveCan	24	
• Returning travellers, transportation	20	
• Study permit and Covid-19	2	
• Returning travellers	3	
Total	**162**	
Grand total of code occurrences	**989**	
Percentage out of total code occurrences	**69%**	

Theme 3: GC is working closely with residents of Canada in order to protect their health

Sub-themes and codes	Number of sub-themes occurrences	Individual sub-themes frequency percentage within theme (%)
1. Monitoring the situation		
1.1 Situational awareness		**93**
• Situation tracking	20	
• Tagging	1	
• Flu watchers	11	
• Situational awareness dashboard	39	
1.2 Privacy disclaimer		**7**
• Contact tracing and privacy	5	
Total	**76**	
2. Estimate of risk		
2.1 Covid-19 and general wellness		**58**
• Covid-19 and pregnancy	9	
• Covid-19 and breastfeeding	2	
• Chronic pain and Covid-19	1	
• Blood, organ and tissue donation and Covid-19	1	
• Drugs advice	1	
2.2 Food and substance use advice		**17**
• Food safety and Covid-19	3	
• Substance use and Covid-19	1	
2.3 Non-human transmission		**25**
• Biosecurity measures	1	
• Livestock and Covid-19	1	
• Covid-19 and mosquitoes	3	
• Animal health and Covid-19	1	

Total	**24**	
3. Physical and Mental health		
3.1 Mental health adverse manifestations		**49**
• Stress	23	
• Fear	4	
• Worry	19	
• Substance use	19	
• Domestic violence	1	
• Alcohol intake	5	
3.2 Act on mental health		**45**
• Mental health care	31	
• Stay informed moderately	2	
• Ask for help	29	
• Stay connected	3	
3.3 Act on physical health		**6**
• Stay healthy at home	4	
• Outside activities advice	5	
Total	**145**	
4. Essential workers		
4.1 Guidance for front liners		**23**
• Advice for essential retailers	1	
• Frontliners	3	
• Essential workers and Covid-19	2	
4.2 Recognizing frontliners' role	**17**	**74**
• Frontliners, thank you	16	
• Supporting frontliners	1	
Total	**23**	
Grand total of code occurrences	**268**	

Percentage out of total code occurrences	**19%**	

Theme 4: GC has formed intranational and international partnerships to help combat coronavirus

Sub-themes and codes	**Number of sub-themes occurrences**	**Individual sub-themes frequency percentage within theme (%)**
1. Collaboration and cooperation		
• Global partnership	5	**56**
• Intra-country partnerships	4	**44**
Total	**9**	
Grand total of code occurrences	**9**	
Percentage out of total code occurrences	**1%**	

Theme 5: GC amplifies social media to keep momentum and increase reach and engagement

Sub-themes and codes	**Number of sub-themes occurrences**	**Individual sub-themes frequency percentage within theme (%)**
1. Social media amplification		
1.1 Government		**52**
• Social-distancing@AHS social media amplifying	1	
• Amplifying healthycdns social media	1	
• Amplifying @ESDC_GC social media	1	
• Amplifying @CCOHS social media	4	
• @CPHO_Canada social media amplifying	6	
1.2 Celebrities and influencers		**24**
• Amplifying @ShawnMendes social media	1	
• Amplifying @wick_22 social media	1	
• Amplifying @Cmdr_Hadfield social media	1	
• Amplifying @Lynnburry social media	1	
• @MapleLeafs social media amplifying	1	

• Amplifying #PlanktheCurve	1	
1.3 YouTube interviews		**24**
• CPHO in virtual interview with YouTubers	5	
• CPHO virtual interview with YouTubers playlist	1	
Total	**25**	
Grand total of code occurrences	**25**	
Percentage out of total code occurrences	**2%**	

Number of codes/units of meaning: 156

Number of sub-themes: 40

Number of major categories 14

Number of themes: 5

Total of code occurrences 1429

ANNEX E

Taxonomy of good practices outcomes

Outcomes	Checklist
Combining the technological and volunteers option in situational awareness	• Reach out to public in continuing structured program for data collection. • Integrate mega-data analysis tools for gauging public's mood, needs and spread of misinformation.
Accentuating social media account-specific features	• Include organizational and the communications campaign branding in social media accounts for highlighting content and validating source. • Use a mix of text and image to best present content and its theme while respecting diversity and inclusion in choice of visuals.
Leaving no stone unearthed when raising public awareness of risks and crisis	• Try as many channels as possible and as required. • Adopt and adapt to change and constant needs. • Reuse and recycle thematic messages throughout the crisis timeline as relevant. • Adopt open and flexible communications policies.
Working together to combat misinformation	• Collaborate with citizens and allies to spread the word.
Striking balance between uncertainty and confidence is key to building trust	• Revitalize the public resilience by informing them about the disease honestly and in timely manner while advising them about what actions to take to protect themselves and mitigate the risks. • Provide reasons why a public health measure is taken to encourage trust and adherence to advice. • Avoid overstating confidence in communication and remain tentative in claims.

	• Avoid ambiguity by communicating candidly.
Creating conversational mood throughout the crisis timeline to minimize the newsfeed tone	• Calls to action to encourage the public to tweet back. • Use rhetorical questions to trigger conversation amongst the public. • Use proactively questions of the day to introduce new information in conversational style. • Answer directly when needed by tagging interactants' names and quote their original tweet to ensure further spread of information.
Undertaking fast-track production processes to ensure speedy and regular Twitter updates	• Ensure quick and continuous tweet updates. • Ensure quick updates are backed with valid information. • Ensure synchronic update of content in the crisis website hyperlinked in tweets. • Adopt an urgent production and approval process of communications.
Promoting quality hashtags that lead to useful and actionable information	• Avoid organically generated hashtags. • Verify and validate existing hashtags before using them. • Encourage the public to use a list of designated and attested hashtags.
Collaborating in all directions to create momentum and increase reach and engagement	• Involve third parties of influence in the crisis communications. • Endorse online campaigns and initiatives that align with the purpose of the crisis communication at hand.