

# Neither External nor Multilateral: States' Digital Diplomacy During Covid-19

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## Abstract

How does a public health crisis play into the digital rhetoric of states? As Covid-19 is presenting a situation in which countries need to manage the international environment in a relatively short period, their practices could signal how digitization is going to influence public diplomacy in the longer run. This paper explores state public diplomacy in the context of a public health crisis. It develops a theoretical framework of public diplomacy on social media through how and what states communicated during the first year of the Covid-19 pandemic. Through keyword and hashtag analyses, we identify two patterns. First, states usually regard social media as an instrument for domestic communication rather than public diplomacy. The international impact of messaging has not been prioritized or well-recognized. Social media platforms such as Twitter have global outreach and messaging can be seen by audiences all over the world. Messages intended for the domestic audience could have an international impact. Thus, any communication on digital platforms should consider their public diplomacy outcomes. Second, while social media platforms are claimed to be for networking at different levels, states tend to connect with other states rather than with international organizations during the pandemic. States do not like to mention international organizations like the WHO and the UN on Twitter. Instead, they were either busy dealing with internal problems or cooperating with another state to combat the virus.

**Keywords:** Covid-19, digital diplomacy, US, China, middle power

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## Introduction

Calling 2020 an unusual year would be an understatement with a variety of local, regional, and global crises ranging from wildfires in Australia, military conflict between the U.S. and Iran, and the explosion in Beirut among many other devastating news. While each of these events could have been considered major, they were dwarfed by coronavirus disease 2019 (Covid-19). To say the least, the international community was not well-prepared for a crisis at such a scale. As of December 17, 2021, there are more than 270 million cases reported and over 5 million people have lost their lives, according to WHO (WHO, 2021). More than half the world's population lived through temporary lockdowns and quarantines.

The pandemic, or rather the attempts to contain and combat the pandemic, has drastically altered various aspects of social life. Masks have become an everyday clothing item, while going into a grocery store is becoming optional, and concerts are a relic of the past. Some of these changes have been unprecedented for most individuals, such as using masks to express themselves, some are not necessarily new. For instance, around 3% of grocery shopping was already done online in the United States in 2019, with a projected growth of 7.1% in 2023 (Coppola, 2019). Yet, during the pandemic, 68% of consumers went online for their groceries (Melton, 2020). In other words, the pandemic has accelerated a change that was already in the works, and market research argues its impacts are going to outlast the pandemic (Polito, 2020).

In this paper, we try to understand how and what states communicated through Twitter during the pandemic through keyword and hashtag analyses. We look at a not-so-new change, the digitization of public diplomacy. There is already a substantial body of literature on digital diplomatic networks (Sevin & Manor, 2019), digital outreaches in public diplomacy campaigns (Bjola et al., 2019), and the digitization of public diplomacy messages (Manor, 2019; Pamment, 2014b, 2018). But we focus on states' digital diplomacy during the first year of the Covid-19 pandemic because it may present a crisis that urges countries to adopt new strategies and communicate a higher volume of messages within a relatively short time. Pandemic is both a period for scholars to examine these messaging strategies and an environment in which strategies might need to change.

The paper is structured in six sections. First, we set the stage by discussing public diplomacy in the digital world. In this section, we define public diplomacy and information projection. We also present studies on crisis communication as public diplomacy. Then we review the literature on digital diplomacy. Second, we briefly introduce Covid-19 as the context of our study. In the third section, we report our methodology. In the fourth section, we summarize the results of our analyses. Then we outline the theoretical patterns and implications of the findings. We conclude our paper by pointing out future directions for study.

## **Public Diplomacy in Digital World**

Public diplomacy, simply put, is an umbrella term that covers various communication projects, such as international broadcasting and exchange programs, to manage the international environment (Cull, 2009). Countries aim to create an environment that is more conducive to realizing their foreign policy objectives (Sevin, 2017). In the digital age, more communicative tools provide states with various means to communicate and govern, including social media. In fact, many studies of public diplomacy have been focused on digital diplomacy or public diplomacy 2.0 (Cull, 2013; Kampf et al., 2015). In this section, we set the stage for our analysis through a review of literature on informational public diplomacy and soft power, the impact of crisis communication, and digital media. As our study aims to contribute to theory building of public diplomacy, the literature discussed in this section mainly serves as a context and foundation for our study, rather than a basis for hypotheses.

### ***Information Projection as Public Diplomacy***

Public diplomacy is defined as a means for governments to communicate and shape opinions and behaviors of foreign publics for the purpose of advancing foreign policy and national interests (Gregory, 2014). Generally speaking, public diplomacy can be divided into two categories: informational public diplomacy and cultural/exchange diplomacy. The US public diplomacy body in the State Department is structured by this classification (Wu, forthcoming). Early years of public diplomacy or propaganda during war times mainly relied on international broadcasting to disseminate information. For instance, Rawnsley (2016) argued that international broadcasting and one-way information projection remains a key activity in public diplomacy. States have utilized international media to communicate with foreign publics since the early 20<sup>th</sup> century. Russia, for instance, demanded the return of Bessarabia from Romania through radio broadcasting in the 1920s. Although there is a relational turn in the public diplomacy literature, information projection still predominates in public diplomacy practice. States use international media, print or digital, to deliver information to international audiences. Such a relatively one-way approach serves states' need to explain and advocate policy, countering misinformation, or generally boost their soft power.

Public diplomacy can also be used as a method to boost a country's soft power (Nye, 2008). It can attract foreign publics by drawing their attention to potential resources of soft power - culture, political values, and foreign policies - through means such as international broadcasting, cultural activities, and exchanges (Nye, 2011). Coined initially by Nye (2004, p. x) to describe "the ability to get what you want through attraction rather than coercion or payments", soft power was first presented in contrast to hard power. The latter stood for coercion whereas the former represented a co-opting power that arises from "the attractiveness of a country's culture, political ideals, and policies" (Nye, 2004, p. x). Soft power's emphasis on attraction offers "a compelling justificatory logic" for states' many outward projects, including policy advocacy, exchange programs, and nation branding (Hayden, 2012, p. 2). In other words, if attraction can help countries achieve foreign policy goals, promoting these

attractive assets is a legitimate foreign policy tool. Soft power is a measure of resources and a reflection on behavioral outcomes (Hayden, 2012). In a sense, the idea of soft power establishes the grounds on which to justify policies leveraging resources such as attraction and persuasion.

### ***Crisis Communication***

The field of public diplomacy has been learning from the sister field of public relations (Fitzpatrick, 2007). In the area of crisis communication, both fields share basic concepts and ideas as public diplomacy is also a tool for governments to manage crises among foreign publics by offering channels and routines for international crisis communication (Olsson, 2013). Crisis communication studies tackle the challenges that organizations encounter (Coombs & Holladay, 2014). Traditionally, crisis communication focused on planning and control (Falkheimer & Heide, 2010). This approach has been challenged by the new information environment brought by the Internet as the reality shows that taking control of today's crises through planning is a mission impossible. Instead, scholars proposed an approach of mental preparation and learning to deal with crises (Eriksson, 2014).

One of the dominant theories of crisis communication is the situational crisis communication theory (Avery et al., 2010). The situational crisis communication theory suggests that when crises happen stakeholders make attributions about the crisis responsibility (Coombs, 2014). Crisis responsibility is a key concept of the theory. It means that stakeholders make sense of the crisis and make a judgment about whether the organization is responsible for the crisis. Organizations can be divided into three groups by the types of crises they encounter: victim (minimal responsibility), accidental (low responsibility), and preventable (high responsibility). There are also two intensifying factors that contribute to the crisis responsibility, which are the history of crises and prior reputations. Organizations can utilize three primary reputation-repair strategies to respond to crises: denial, diminish, and rebuild (Coombs, 2017).

In the last decade, studies have attended to digital crisis management or crisis communication on social media, as the digital platforms are the primary spaces where communication takes place (Eriksson, 2018). As a new area of research, social media crisis communication mainly contains exploratory studies as well as best practices, while they lack "a synthesized strategy toolkit" (Cheng, 2018). In general, scholars believe that crisis communication needs to align with the interactive, dialogic, and fast-paced digital environment (Schultz et al., 2011). Some scholars believe that social media has been widely used by organizations for crisis communication and media channels had a huge impact on the effectiveness of crisis communication strategies (Utz et al., 2013). In other words, crisis communication on social media is more likely to achieve its desired results. Others think that the complexity of social media brings more problems and challenges than offering solutions, especially in image management (Liu & Fraustino, 2014).

With the new information environment, the situational crisis management theory has been updated to deal with two new issues though Coombs and Holladay (2012) claimed that

crisis management strategy rarely goes out of date with the emergence of new media. One challenge is the paracrisis or reputational threat generated amplified by social media. Crisis prevention was out of public view during the pre-social media period. Now public scrutiny of paracrises due to the popularity and usage of social media has placed pressure on organizations' effective responses (Coombs, 2017). Another challenge for crisis communication on social media is the issue of channel proliferation. Organizations need to find a good fit between the channels they select and the stakeholders they are targeting (Coombs & Holladay, 2012).

More recently, scholars started to analyze public sector crises communication (Auer, 2016). On environmental protection, the European Union tried to brand itself as a “Green Superpower” and upholds the norm of sound environmental governance at the global level (Cross & Melissen, 2013). Crises like the BP oil spill also had implications for public diplomacy, as media shaped public awareness through public relations in this issue (Kleinnijenhuis et al., 2015). Some studies have paid attention to how states react to public health crises that will impact their national image and soft power. Wu and Yang (2017) studied China's management of the issue of Ebola. They argued that China adopted a networked strategy for the country's public diplomacy campaigns in West Africa. Chinese foreign assistance to combat Ebola is part of their strategy to build and sustain relationships with local communities. On Covid-19, scholars found that the digital environment has provided channels for experts to quickly convey information, yet induced “the spread of misinformation and exacerbate outrage” (Malecki et al., 2021, p. 543). Coombs (2020) suggested that the Extended Parallel Process Model from health communication, combining both rational and emotional considerations, offered a framework for public health communication.

In general, crisis and global issues are both challenges and opportunities for public diplomacy actors to communicate and build relationships with foreign publics. We focus on the most striking event in the past decade—the Covid-19 pandemic and try to understand how states position themselves and convey messages on Twitter. The following section completes the discussion on messaging and management by presenting platforms. Let it be broadcasting, listening, or engaging in dialogue; communication projects need platforms. As more and more individuals embraced digital devices and social media platforms, international actors also joined the same networks to engage with them. In the next section, we discuss how public diplomacy and new public diplomacy play out on digital media platforms.

### ***Digital Media in Public Diplomacy***

Digitization of public diplomacy was not unexpected. Communication technologies have always been incorporated into diplomatic practices just as they are in our daily lives (Pamment, 2014a). The latest chapter in this story is digital communication platforms to diplomatic practices (Manor & Crilley, 2019). Although we have seen various concepts to describe how diplomats use these new platforms, including cyber diplomacy (Potter, 2002) and virtual diplomacy (Brown & Studemeister, 2001), the shared point across the board is that

information and communication technologies, ranging from smartphones to social media, have impacted diplomatic practices (Manor, 2016, p. 3). For instance, a recent study has found that 142 countries had diplomatic representation on Twitter with 130 actively following other countries' diplomatic accounts, mimicking embassy-level networks (Sevin & Manor, 2019). Beyond solely joining these networks, their actions also suggest that countries adopt the logic of new media in their outreach, looking at engaging with other users (Manor & Crilley, 2019), and responding in real-time (Seib, 2012). Within this perspective, we expect digitization to change the channels relaying information, languages, and semiotics functions used in practice, and the overall environment of communication (Pamment, 2014b). Digital platforms could and should be seen as a platform on which public diplomacy messages are circulated (Bjola et al., 2019). Diplomatic actors are becoming more aware that their messages are viewed by foreign audiences. Such messages have the potential to mobilize shared or prominent soft power assets to influence behavior. We can, as an extension of the digitization argument, expect to see changes in the relationships and power dynamics among actors within new platforms.

Covid-19 further brought out these soft power efforts because states are utilizing social media to explain policies and regulations, publicize the statistics, and call for healthy actions. While some of these messages may not be designed for external audiences, the information on social media can be accessed publicly and internationally. In this way, intentionally or unintentionally, governments have been wielding soft power by projecting their assets via narratives (Nye, 2011). In the circumstance of Covid-19, the asset is their public health policy. In each instance, countries had the opportunity to frame Covid-19 and their responses as they wished, representing how countries themselves would like to share the story. From a public diplomacy perspective, two aspects of such narratives are noteworthy. First, practitioner countries present themselves, as public diplomacy "is a mode of official self-representation" (Graham, 2014, p. 536). The messages shared on digital platforms should be seen as communicative attempts to convey public perceptions. Second, the narratives might also include other actors - or the attempts of countries to portray other countries (Anholt, 2006). Thus, the digital narratives move beyond being solely self-representations but also touch upon the other actors involved. In the next section, we operationalize these arguments.

## **COVID-19 as a Context**

In early 2020, the outbreak of the Covid-19 pandemic swept across the entire planet. The first confirmed case was found in China and then transmitted to other parts of the world. It has impacted all aspects of international and domestic politics, economy, and society. From medical and health care to tourism to international trade, these areas have been severely affected by the pandemic. The virus challenged not only states' healthcare system but also their general governing ability. Because the virus is highly contagious, travel, especially international travel, becomes difficult. Many states shut down their borders to slow down transmission. Some states and cities were even in lockdown for months.

To combat the pandemic, states have shifted their priorities and started to concentrate on issues related to the Covid-19. This is also true for their public diplomacy. The pandemic changed public diplomacy in at least two ways. First, Covid-19 made international travel extremely difficult, so people-to-people exchange and cross-border in-person communication became impossible. Many interactions happen online and digital platforms turn out to be the only tool for public diplomacy. Second, the agenda and message of public diplomacy have been on the pandemic. In other words, states' policies have been on managing the virus, so public diplomacy as a means to explain and advocate policy also concentrates on this topic.

How do states react to the pandemic through digital platforms? This is the question we try to answer in this study. Given the external shock of Covid-19, states are likely to adopt strategies to meet the needs of this special time. This study looks into the content and networking strategies of selected states on Twitter. The next section presents the methodology we used in this study and explains our selection of cases.

## **Methodology**

In this study, we look at how selected countries communicate messages about Covid-19 and their involvement in providing a solution to this global crisis through the lenses of public diplomacy and soft power. We study states' public diplomacy during the first year of the pandemic for two reasons. Covid-19 is a public health crisis that shocked the entire world, including states' public communication. States may change their communication strategy in responding to the incident. Moreover, the Covid-19 pandemic's wide impact raised public attention over the world. People across different continents sought information updates via social media like Twitter. So similar to the mega event phenomenon, tweets by official accounts received more attention than usual.

We used grounded theory to guide our research, constructing theories and models through inductive reasoning. In other words, this study does not test theories via the hypothetico-deductive model. Instead, we discover the trends and patterns of public diplomacy during the pandemic and ultimately hope to generate theories based on findings. According to Glaser and Strauss (1967), grounded theory is the discovery of theory from data systematically obtained from social research. In this study, our data is comprised of tweets on the Covid-19 pandemic by selected official accounts.

We select five states' Twitter accounts: the US, China, Australia, Norway, and Canada. The countries were chosen to best exemplify the contentious as well as cooperative rhetoric. The US and China have been publicly involved in a feud. Australia, Norway, and Canada are wealthy non-EU affiliated countries, known as JACKSNNZ (Japan, Australia, Canada, Republic of Korea, Switzerland, Norway, and New Zealand). We decided on them as this particular combination ensured the highest number of accounts and tweets while giving the benefit of geographic diversity.

**Table 1.** Public Diplomatic Twitter Accounts

	USA	China	Canada	Norway	Australia
President / Prime Minister	President (realDonaldTrump)		Prime Minister (JustinTrudeau)	Prime Minister (erna_solberg)	Prime Minister (ScottMorrisonMP)
Public Health Agency	CDC Director (CDCDirector)		Minister of Health (PattyHajdu)		
	CDC (CDCGov)		Chief Public Health Officer (CPHO_Canada)	Minister of Health and Care Services (BentHHoyre)	Department of Health (healthgovau)
Official Account for Executive Branch	The White House (WhiteHouse)	Foreign Ministry Spokesperson (SpokespersonCHN)			Australian Government (ausgov)
Ministry of Foreign Affairs	US State Secretary (SecPompeo)	Ministry of Foreign Affairs (MFA_China)	Minister of Foreign Affairs (FP_Champagne)	Ministry of Foreign Affairs (NorwayMFA)	Department of Foreign Affairs & Trade (dfat)
Broadcasting Agency		Xinhua News (XHNews)			Australian Broadcasting Corporation (ABCAustralia)
	Voice of America News (VOANews)	CCTV (CCTV)			Australian Broadcasting Corporation News (abcnews)
		CGTN (CGTNOfficial)			

For each country, we decided to include as many accounts and tweets as relevant to our study. They fall into five categories: president or prime minister, public health agency, spokesperson for executive branch or official account for the executive branch, Ministry of Foreign Affairs, and international broadcasting agency (see Table 1). Other than governmental agencies and national media that are usually involved in public diplomacy activities, we also included public health agencies because they became informational outlets domestically and internationally. Given the scope of this study, we do not intend to reach generalizable results. Rather, they are outlining different ways a public health crisis might be observed in messaging strategies.

We collected timeline data on October 21st, 2020, and gathered the most recent 3,200 tweets except Donald Trump. For his account, we have used a publicly available archive of his tweets (B. Brown, 2020), and included all his tweets after his first tweet about Covid-19 on January 24th, 2020 to October 17th, 2020. We collected tweets coming from 25 accounts of five countries. As these accounts are not solely dedicated to Covid-19 and related news, we focused on a subset of data in our analysis. In total, we analyzed China (7671 tweets), the US (5458 tweets), Norway (9569 tweets), Canada (4737 tweets), and Australia (2943 tweets) sent in any language.



We used R’s tm library (Feinerer et al., 2008) to carry out keyword and hashtag analyses for theory building. For both analyses, we produce the results of frequency analysis for words, frequency analysis for word pairs, and frequency analysis for hashtags. We then carried out topic modeling using R’s topicmodels library (Grün & Hornik, 2011). Topic modeling was set to ten topics, and R put every tweet in one of the ten categories. It then collected the top 50 words for each. We also look at the hashtag network and examine whether the accounts of each country mention hashtags in a connected way. As the software captures words of the HTML language and garbled texts, such as “&,” we cleaned the lists. Topic modeling also produces duplicate results, so we cleaned and combined the ranking to include the top 5 topics and 30 keywords for each topic.

## Results

### *Frequencies of Keywords*

The results of keyword and hashtag frequencies can be found in Table 2 and Table 3. Each country mentioned itself in tweets but China mentions itself more often than others. For the top five keywords, China's name appeared three times. The US talked about its “Center of Disease Control (CDC)” more often than President Trump. The tweets by accounts of Australia, Canada, and Norway also brought up their country names many times as they rank high (9, 2, and 2) in keyword frequencies (see Table 2). Norway also wrote about their Foreign Minister Ine Marie Eriksen Søreide 63 times (rank 3). In terms of paired keywords, China referred to its president Xi Jinping and Wang Yi, Minister of Foreign Affairs many times (rank 6 and 8), whereas the US mentioned its President Trump 105 times (rank 17). Australia didn't talk about their Prime Minister but only about the government (rank 46). Norway mentioned their Foreign Minister 55 times (rank 1), while Canada didn't care about their Prime Minister.

**Table 2.** Keyword Frequencies by Country

	US		China		Australia		Canada		Norway	
1	covid	4091	covid	3013	covid	1927	covid	4735	covid	182
2	coronavirus	1063	china	2118	coronavirus	1460	canada	990	norway	99
3	learn	941	coronavirus	1319	health	468	people	803	eriksensoreide	63
4	spread	866	chinese	1291	visit	436	les	782	global	61
5	help	819	chinas	1249	covidsafe	416	pour	738	pandemic	46
6	can	791	cases	898	can	411	can	633	response	40
7	health	760	new	854	app	394	des	552	support	38
8	new	730	president	643	information	380	tested	516	countries	35
9	people	671	said	631	australia	378	health	512	today	35
10	virus	581	pandemic	611	coronavirusaustralia	332	help	472	crisis	32
11	protect	563	people	595	support	313	daily	471	need	29

	US		China		Australia		Canada		Norway	
12	cdc	549	province	544	new	300	canadians	460	health	28
13	pandemic	522	countries	543	help	297	nous	440	dagiulstein	27
14	public	445	world	527	via	290	publichealth	428	fight	26
15	face	373	combatcoronavirus	513	learn	286	across	423	people	24
16	cases	365	medical	463	will	278	keep	416	together	23
17	others	357	global	433	important	265	today	396	coronavirus	23
18	slow	355	cooperation	424	get	258	average	389	development	21
19	cdcgov	332	health	419	need	250	positive	379	now	21
20	hiv	325	fight	414	keep	245	spread	361	ernasolberg	21
21	see	321	international	398	find	244	testandtrace	354	important	20
22	may	311	foreign	375	home	238	coronavirus	341	must	20
23	risk	308	epidemic	360	spread	220	virus	338	humanitarian	20
24	social	299	region	332	people	219	cases	328	cooperation	20
25	testing	296	autonomous	325	stay	219	pandemic	328	thank	19
26	vaccine	288	first	322	cases	219	avec	324	can	19
27	take	288	city	312	restrictions	216	vous	315	international	19
28	report	271	virus	309	abcnews	213	need	295	new	18
29	hands	270	support	303	pandemic	212	support	278	solidarity	17
30	wear	261	minister	303	tested	195	sur	262	vulnerable	17
31	work	256	national	298	australians	194	together	259	strong	17
32	community	251	state	289	australian	190	key	257	efforts	16
33	today	249	million	289	available	178	testing	251	vaccine	16
34	states	248	novel	289	symptoms	176	disease	250	cepivaccines	16
35	prevent	247	one	287	current	172	continue	248	commonfuture	16
36	home	245	trump	281	government	166	update	248	economic	16
37	cdcmwr	244	says	279	mental	162	safe	247	good	15
38	get	242	help	275	situation	151	risk	246	world	14
39	response	239	control	271	now	149	physicaldistancing	245	also	14
40	flu	238	country	269	update	149	plus	242	covidnorway	14
41	care	231	wang	265	news	148	now	241	nok	14
42	president	228	reports	262	read	147	work	240	key	14
43	china	226	wuhan	261	advice	142	que	237	time	13
44	use	226	outbreak	258	distancing	138	info	235	vaccines	13
45	stay	226	work	256	download	132	new	234	foreign	13
46	continue	225	hichina	256	care	128	many	228	peace	13
47	outbreak	224	government	256	protect	127	care	223	work	12
48	americans	221	unityisstrength	248	hands	124	concerns	217	ensure	12
49	one	220	according	247	work	123	continues	210	first	12
50	distancing	220	development	243	good	123	dashboard	210	meeting	12

We also noticed that China and the US mentioned each other many times in their tweets during the timeframe. In single keyword frequencies, the US mentioned the keyword “China” 226 times (rank 43), and China referred to “Trump” 281 times (rank 36). China mentioned “United States” 125 times (rank 16), “US President” 125 times (rank 17), the “White House” 113 times (rank 21), and “President Donald Trump” 111 times (rank 22). The US brought up the “China virus” 60 times (rank 47). China also mentioned the Johns Hopkins University many times (rank 44 and 46).

Not all countries talked about cooperation (or similar words like community). The US mentioned “community” 251 times (rank 32). China wrote “cooperation” 424 times (rank 18). Norway mentioned both “humanitarian” and “cooperation” 20 times (rank 23 and 24), “international” 19 times (rank 27), “global response” 8 times (rank 8), “international cooperation” 6 times (rank 13), “humanitarian response” 5 times (rank 23), “work together” 5 times (rank 30), “developing countries” 4 times (rank 39), “global fight” 4 times (rank 45).

**Table 3.** Paired Keywords by Country

	US		China		Australia		Canada		Norway	
1	spread covid	469	covid cases	392	https t.co	4247	la covid	466	fm eriksenoreide	55
2	slow spread	333	covid pandemic	312	covid 19	1023	de la	414	covid pandemic	19
3	public health	248	novel coronavirus	282	visit https	399	people tested	284	fight covid	14
4	covid pandemic	222	autonomous region	240	more https	339	today,Ãs covid	280	covid norway	13
5	social distancing	208	president xi	237	if you	302	covid situational	206	covid response	12
6	cloth face	197	combatcoronavirus unityisstrength	227	of the	297	covid key	204	pm ernasolberg	10
7	can help	182	xi jinping	225	covid19 https	294	key concerns	204	global response	8
8	wash hands	181	fight covid	221	learn more	271	coronavirus disease	201	climate change	7
9	face covering	180	wang yi	213	at https	261	goc website	200	due covid	7
10	covid learn	168	chinese president	171	covidsafe app	244	covid info	199	global ceasefire	7
11	help protect	130	foreign minister	157	coronavirus covid19	236	website coronavirus	199	norway welcomes	7
12	prevent spread	122	new cases	132	the covidsafe	222	awareness dashboard	197	international cooperation	6
13	covid cases	120	death toll	127	the coronavirus	204	situational awareness	197	norway supports	6
14	help slow	119	hong kong	125	coronavirusaustralia covid19	201	updates goc	195	unsg antonioguterres	6
15	covidview report	110	united states	125	to the	196	info updates	194	common global	5
16	president realdonaldtrump	105	us president	125	in australia	194	labs across	190	covid crisis	5
17	new cdcmmwr	99	hubei province	123	via abcnews	193	people covid	184	economic consequences	5
18	task force	96	central chinas	119	the spread	188	across tested	177	fight coronavirus	5
19	help prevent	94	reports new	116	in the	181	covid w	176	global health	5
20	higher risk	94	white house	113	of coronavirus	180	date labs	176	health systems	5
21	face coverings	92	president donald	111	coronavirus covid	171	tested people	175	humanitarian crisis	5

	US	China	Australia	Canada	Norway	
22	covid outbreak	91 minister wang	104 to help	167 w average	174 humanitarian response	5
23	report shows	91 state councilor	104 need to	156 average people	172 looking forward	5
24	united states	86 southwest chinas	103 you can	151 average positive	172 nok mill	5
25	wear cloth	84 positive covid	102 for more	149 positive overall	172 response covid	5
26	novel coronavirus	83 northwest chinas	101 spread of	145 publichealth continues	170 school closures	5
27	protect others	82 donald trump	98 of covid	139 covid canada	161 support cepivaccines	5
28	cdc covidview	81 east chinas	97 get tested	133 continues testandtrace	156 vulnerable people	5
29	latest cdc	81 new covid	97 find out	130 public health	152 work together	5
30	covid vaccine	80 chinas xinjiang	94 you have	130 spread covid	151 antonioguterres call	4
31	pm et	78 tested positive	93 to get	129 nous avons	129 call global	4
32	hiv epidemic	73 medical supplies	92 for the	125 covid pandemic	124 cepivaccines outsmartepidemics	4
33	contact tracing	71 hichina seechina	90 mental health	124 canada covid	122 combat covid	4
34	coronavirus task	70 fighting covid	88 on the	118 epidemiological summary	117 countries covid	4
35	wear mask	70 amid covid	86 more information	114 summary covid	115 covid fm	4
36	covid can	69 prevention control	86 you are	114 canada report	114 covid need	4
37	take steps	69 coronavirus worldnews	83 important to	111 de covid	114 developing countries	4
38	washing hands	68 coronavirus outbreak	82 the current	110 detailed epidemiological	114 eriksensoreide dagiulstein	4
39	hands often	67 photos taken	81 the australian	109 past week	114 fm eriksensv/ Ttreide	4
40	positive covid	66 chinas hubei	79 you need	108 phac detailed	114 foreign affairs	4
41	state local	66 uygur autonomous	78 download the	107 tested daily	107 foreign nationals	4
42	wearing cloth	64 xinjiang uygur	78 your hands	106 across canada	105 global challenge	4
43	fight covid	61 covid epidemic	77 more at	104 week average	105 global fight	4
44	practice social	61 johns hopkins	77 the app	103 et de	104 hardest hit	4
45	wear face	61 chinese government	75 australian government	102 covid cases	97 importance global	4
46	china virus	60 hopkins university	75 here https	100 covid epidemiology	97 key role	4
47	others covid	58 chinese mainland	74 up to	100 tested covid	96 member states	4
48	stay home	58 confirmed covid	74 about the	99 daily w	90 nonessential travel	4
49	covid response	57 councilor foreign	71 current coronavirus	98 ve publichealth	90 norway part	4
50	rt whitehouse	57 jinping said	68 out more	98 w ve	90 pandemic fm	4

Countries also used words about methods to prevent and control the virus spread, such as “testing,” “test and trace,” “wear mask,” “wash hands,” “stay at home,” etc. All countries mentioned “vaccine,” but the US and Norway used the word more often than others. Australia and Canada also used external links many times to educate the public about the pandemic. For

instance, Australia wrote “http” more than 700 times and Canada mentioned the government’s website 200 times (rank 10).

### *Frequencies of Hashtags*

When it comes to hashtags, countries all tagged themselves or governmental agencies and institutions (see Table 4). China used many hashtags about itself and its regions, including #hichina (rank 4), #china (rank 9), #xijiping (rank 10), #seechina (rank 11), #chinastyle (rank 13), #chinafaces (rank 13), #standwithchina (rank 14), #hongkong (rank 17), #amazingxinjiang (rank 20), etc. The US tagged CDC (#cdc and #askcdc) 21 times (rank 36 and 42). Australia used many tags that combine the pandemic and the country, such as #coronavirusaustralia (332 times, rank 2), #coronavirusau (11 times, rank 15), and #coronavirusaus (11 times, rank 16). Canada tagged its government (#goc) 241 times (rank 6), itself (#canada) 52 times (rank 15), and the Public Health Agency of Canada (#phac) 33 times (rank 26). It also used the tag #canadacovid 20 times (rank 38). Norway tagged its Foreign Minister (#eriksensoreide) 63 times (rank 2), and itself (#norway) 18 times (rank 5).

**Table 4.** Hashtag Frequencies by Country

	US		China		Australia		Canada		Norway	
1	#covid	2992	#covid	1678	#covid	914	#covid	3654	#covid	185
2	#coronavirus	316	#coronavirus	695	#coronavirusaustralia	332	#publichealth	429	#eriksensoreide	63
3	#hiv	209	#combatcoronavirus	519	#coronavirus	211	#testandtrace	354	#coronavirus	19
4	#endhivepidemic	180	#hichina	261	#covidsafe	100	#coronavirus	304	#norway	18
5	#covidview	123	#unityisstrength	251	#breaking	52	#physicaldistancing	248	#commonfuture	16
6	#flu	84	#us	236	#theworld	25	#goc	241	#consistentpartner	12
7	#nih	79	#worldnews	212	#keepourmobsafe	24	#epidemiology	128	#humanitarian	10
8	#wearmask	78	#china	188	#analysis	19	#plankthecurve	115	#unga	8
9	#slowthespread	74	#xijiping	174	#stopthespread	17	#flattenthecurve	100	#buildbackbetter	7
10	#hcps	59	#seechina	101	#stayhomesavelives	16	#protectthevulnerable	88	#sdg	7
11	#dyk	57	#eradicatingpoverty	68	#disabilityhelp	14	#handwashing	85	#outsmartepidemics	6
12	#socialdistancing	51	#chinastyle	65	#ausbiz	13	#slowthespread	70	#unitedagainstcoronavirus	6
13	#covidstopswithme	44	#chinafaces	56	#inthistogether	12	#covidknowhow	65	#globalgoals	5
14	#ebola	35	#standwithchina	52	#live	12	#togetherapart	60	#humanrights	5
15	#niaid	33	#un	49	#coronavirusau	11	#canada	52	#multilateralism	5
16	#zika	30	#hongkong	48	#coronavirusaus	11	#covidcoping	49	#sdgs	5
17	#sarscov	22	#breaking	44	#indopacific	10	#bepartofthesolution	44	#eea	4
18	#stayathome	22	#pompeo	31	#indigenoushealth	9	#stayhomesavelives	42	#eriksensoreide	4
19	#worldmaskweek	21	#amazingxinjiang	28	#jobkeeper	7	#coughetiquette	39	#sahel	4
20	#americanshome	20	#asiaalbum	28	#stayhome	7	#mentalhealth	39	#securitycouncil	4
21	#vaccine	20	#ncov	28	#antibiotics	6	#teamcanada	39	#un	4

	US	China	Australia	Canada	Norway					
22	#healthylatinos	19	#wuhan	28	#budget	6	#strongertogether	38	#zika	4
23	#aids	16	#xinjiang	23	#pacific	6	#stayhomeifsick	37	#education	3
24	#opioid	16	#xinjiangrediscovered	23	#auseufta	5	#slowburn	36	#hlpf	3
25	#pandemic	16	#who	22	#flu	5	#wewillgetthroughthis	36	#leavonoonebehind	3
26	#fluvaccine	14	#highspeedrailtour	21	#partnershipsforrecovery	5	#phac	33	#ocean	3
27	#publichealth	14	#trump	21	#superannuation	5	#maskon	32	#pandemic	3
28	#vaccines	14	#asiapacific	20	#cancer	4	#stayhome	31	#strongertogether	3
29	#vitalsigns	14	#asean	19	#knowthefacts	4	#crushthecurve	30	#wbgmeetings	3
30	#cdctravelnotice	13	#russia	19	#ncov	4	#washyourhands	29	#actonncds	2
31	#china	13	#chinabuzz	18	#telehealth	4	#cavabienaller	28	#ahlc	2
32	#wad	13	#goyunnan	18	#agedcare	3	#doyourpart	26	#burkinafaso	2
33	#influenza	12	#midautumnfestival	18	#asean	3	#innovation	22	#civilsociety	2
34	#tb	12	#happychinesenewyear	17	#ausgov	3	#olderadults	22	#climate	2
35	#cdc	11	#icymi	17	#ausmin	3	#stayhomesaveslives	22	#climatechange	2
36	#donatecovidplasma	11	#chinesefestivals	16	#auspol	3	#healthcareheroes	21	#eu	2
37	#doyourpart	11	#beltandroad	15	#australia	3	#keepitup	21	#globalgoalunite	2
38	#healthequity	11	#cgtnopinion	15	#beirut	3	#canadacovid	20	#humanrightsdefenders	2
39	#physicaldistance	11	#tiktok	15	#china	3	#contactbubble	20	#investinhumanity	2
40	#prep	11	#update	15	#helpathome	3	#stayathome	20	#multilateralismmatters	2
41	#virus	11	#nationalday	14	#hubei	3	#goodhygiene	19	#mythbuster	2
42	#askcdc	10	#twosessions	14	#icymi	3	#cdnpoli	18	#nb	2
43	#handwashing	10	#angola	12	#internationaldayofsignlanguages	3	#fluwatchers	18	#ncds	2
44	#mosquitofacts	10	#forzacinaeitalia	12	#mentalhealth	3	#science	18	#norwayunsc	2
45	#niaidnow	10	#ncp	12	#novelcoronavirus	3	#stopthespread	18	#oceanpanel	2
46	#outbreak	10	#panview	12	#opinion	3	#helpothers	17	#oceans	2
47	#remdesivir	10	#cgtnfirstvoice	11	#pacificfamily	3	#longweekend	17	#partnersatcore	2
48	#wildfire	10	#chinaus	11	#pacificwomenlead	3	#venezuela	17	#peace	2
49	#cnntownhall	9	#gochina	11	#tcharold	3	#covidalert	16	#saveoureducation	2
50	#diseasedetectives	9	#latest	11	#wuhan	3	#layerupcovid	15	#sgbv	2

The US and China tagged each other many times. The US used the hashtags #china 13 times (rank 31), and China used #us 236 times (rank 6), #pompeo 31 times (rank 18), #trump 20 (rank 27), and #chinaus 11 times (rank 48). China also tagged Russia 19 times (rank 31). Australia used hashtags about China, #china, #hubei, and #wuhan. China tagged several international organizations and regional institutions: the United Nations, the World Health Organization (WHO), and the Association of Southeast Asian Nations (ASEAN). Australia tagged ASEAN and used the hashtag “#partnershipsforrecovery.” Norway used many hashtags

to call on cooperation, such as “#unitedagainstcoronavirus,” “#multilateralism,” “#un,” “#eu,” “#globalgoalunite,” and “#multilateralismatters.” In terms of international organizations and institutions, Norway stood out as it used many hashtags to connect with the topics. It tagged the UN (#un) and EU (#eu). China also used several hashtags to join the conversation, including “#un,” “#who,” and “#asean.”

Like the keyword frequencies, many hashtags were used to educate the public about Covid-19 and call on actions such as wearing masks, and washing hands. The US used “#wearmask” 78 times (rank 8), “#slowthespread” 74 times (rank 9), “#socialdistancing” 51 times (rank 12), “#covidstopswithme” 44 times (rank 13), “#stayathome” 22 times (rank 18), and “#donatecovidplasma” 11 times (rank 36). Similarly, Australia tagged “#stopthespread,” 17 times (rank 10) and “#stayhomesavelives” 16 times (rank 11). Canada used “#testandtrace” 354 times (rank3), “#physicaldistancing,” 248 times (rank 5), “#handwashing” 85 times (rank 11), “#stayhomesavelives” 42 times (rank 18), and “#stayhomeifsick” 37 times (rank 23).

**Topic Modeling**

Topic modeling finds out keywords related to hot topics. We collected the top ten topics and ranked the top 50 keywords for each topic. To clean data, we deleted topics of "amp," which is an HTML language text. For the US, we present 9 topics and their keywords (see Table 5 to Table 9). Topic modeling describes the rhetoric around each topic and presents a general picture of the discourse. Since data was on the Covid-19 pandemic, all topics were on the virus. For instance, the US’s top nine topics (see Table 5) included three themes: Covid, coronavirus, spread, and virus. However, some themes such as Covid had five discourses and coronavirus had two discourses. We found that the “Covid” and “virus” rhetoric of the US accounts was primarily on medical treatments, disease prevention, symptoms, death rates, and tracing. For instance, CDC tweeted the following message on July 21, 2020: “While we encourage you to practice #PhysicalDistancing to slow the spread of #COVID19, it is equally important to continue monitoring your health and know when to seek treatment immediately” (Redfield, 2020). The discourse on the coronavirus was more on politics, such as the US President Trump, the world situation, China, media, and the economy. For example, former US State Secretary Mike Pompeo tweeted, "We have been in frequent contact with our Allies, and will continue to engage with them as we fight the #Coronavirus and marshal the full power of the federal government and the private sector to protect the American people” (Pompeo, 2020).

**Table 5.** US Topic Modeling Results

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
1	covid	covid	coronavirus	spread	coronavirus	virus	covid	covid	covid
2	can	amp	pandemic	protect	hiv	new	people	new	outbreak
3	help	get	china	help	president	vaccine	learn	cases	healthcare
4	one	use	together	face	today	flu	risk	cdc	cdc

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
5	important	learn	great	others	endhiv epidemic	news	cdcmwr	report	safe
6	know	home	american	slow	epidemic	now	may	states	time
7	find	sick	fight	social	realdonaldtrump	ncov	disease	see	patients
8	pandemic	contact	world	hands	trump	study	travel	testing	workers
9	make	symptoms	global	take	whitehouse	first	higher	shows	information
10	ways	may	just	wear	americans	infection	illness	latest	keep
11	family	tips	continue	prevent	prevention	vaccines	among	deaths	guidance
12	watch	visit	thank	stay	live	niaid	getting	reported	need
13	care	using	good	distancing	treatment	test	cdc	data	staff
14	like	call	united	cloth	force	research	adults	covidview	resources
15	reduce	close	countries	covering	end	viruses	children	positive	care
16	everyone	questions	well	wash	task	scientists	severe	week	plan
17	plasma	check	america	steps	join	nih	medical	rates	emergency
18	best	food	back	mask	tests	clinical	also	number	school
19	loved	person	job	around	discuss	transmission	including	many	available
20	recovered	tracing	said	public	million	novel	conditions	last	possible
21	lives	spreading	strong	wearing	day	effective	hcps	age	control
22	stress	slowthespread	way	practice	key	ebola	older	likely	safely
23	way	even	media	can	house	researchers	call	since	year
24	many	used	team	continue	update	right	nursing	part	see
25	friends	exposed	challenges	distance	director	trial	groups	hospitalization	families
26	video	someone	partnership	feet	hhs.gov	causes	found	percentage	due
27	role	household	minister	least	initiative	testing	serious	areas	essential
28	taking	sure	fake	learn	white	two	residents	httpstcozpyylopb	medical
29	save	going	combat	masks	says	human	living	national	facilities
30	ones	respiratory	economy	like	briefing	system	coca	still	schools

China's Twitter accounts focused more on China and the US (see Table 6). Out of nine topics, four were about China, one on (the US) president, two on covid, one on coronavirus, and one on people. The tweets on China were about Chinese leaderships, foreign policies, regions such as Xinjiang and Tibet, foreign aid during Covid-19, international cooperation, and development. For example, on October 21, 2020, the Chinese Foreign Ministry Spokesperson tweeted, "China officially joined #COVAX and has pledged to make #vaccines a global public good, to ensure fair distribution of vaccines and their accessibility; affordability in developing countries" (Hua, 2020). On Covid and coronavirus, the tweets were about cases, death rates, vaccine, economic situations, Wuhan/Hubei, prevention, and hospitals. On October 4, 2020, CCTV posted: "Once under strict lockdown due to the coronavirus epidemic, Wuhan, capital of Hubei Province, has seen an influx of tourists as this year's #MidAutumnFestival and the #NationalDayHoliday started Thursday" (CCTV, 2020). The discourse on the president was in fact about the US president as the keywords include Trump, Biden, White (House), and presidential debate. Chinese accounts, especially the media, regularly tweeted news coverage on American politics.



**Table 6.** China Topic Modeling Results

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
1	chinese	covid	chinas	covid	chinese	people	china	president	coronavirus
2	china	cases	province	pandemic	covid	one	countries	said	combatcoronavirus
3	foreign	new	region	global	medical	day	international	covid	epidemic
4	said	coronavirus	autonomous	world	fight	national	virus	trump	novel
5	minister	million	city	year	support	many	world	first	health
6	president	reports	hichina	united	help	may	development	says	control
7	state	total	xinjiang	economic	government	take	can	worldnews	wuhan
8	cooperation	deaths	county	states	china	students	community	positive	outbreak
9	wang	number	local	russia	experts	now	also	house	unityisstrength
10	jinping	reported	show	amid	team	see	cooperation	white	central
11	two	infections	years	economy	masks	back	work	friday	province
12	xijiping	confirmed	south	due	supplies	life	made	wednesday	measures
13	held	daily	taken	country	fighting	months	must	tested	hospital
14	ministry	watch	east	vaccine	battle	still	country	donald	monday
15	relations	death	poverty	africa	today	thousands	need	announced	hubei
16	meeting	sunday	photos	university	african	police	future	week	public
17	councilor	toll	southwest	according	including	school	shared	military	efforts
18	phone	since	industry	time	together	say	solidarity	election	prevention
19	continue	across	northwest	latest	assistance	home	like	presidential	thursday
20	general	according	seechina	center	batch	american	response	trumps	workers
21	wednesday	past	village	recovery	video	even	open	debate	beijing
22	joint	hours	festival	report	donated	become	intl	three	tuesday
23	ready	record	north	food	arrived	holiday	hope	set	patients
24	thursday	saturday	recent	india	working	without	make	early	spread
25	russian	country	group	science	conference	keep	better	following	work
26	bilateral	tally	uygur	market	face	look	major	test	capital
27	call	oct	tibet	brazil	experience	get	times	treatment	feb
28	tuesday	health	residents	hopkins	ambassador	children	efforts	next	disease
29	leaders	mainland	eradicatingpoverty	johns	testing	yearold	peoples	official	members
30	august	high	traditional	business	embassy	used	war	biden	authorities

Australia’s topics were more diverse. They included Covid and coronavirus, covid safe, support, health, keep, and via (see Table 7). One of the most noticeable characteristics of Australia's topic discourses was its inclusion of web links. Their tweets included web links to Australian government agencies, such as the Australian Government and the Department of Health. These links were connected to the topics of “corona virus” and “covid safe.” They also used tweets to educate their people to download and use certain apps to obtain information about Covid-19. For instance, on May 24, 2020, Prime Minister Scott Morrison posted a tweet asking people to download the “COVIDSafe app” (Morrison, 2020b). For the topic “support,” the rhetoric was more on business, payment, services, income, and information.

Scott Morrison tweeted on March 31, 2020: “Over \$1.1 billion in Federal Government assistance for lower income Australians will hit bank accounts today. The first \$750 payment will be paid automatically from today and progressively to those over 6.8 million people eligible for it, including pensioners, over coming weeks” (Morrison, 2020a). Under the topic “via,” Australia focused on rules, information, restrictions, and advice.

**Table 7.** Australia Topic Modeling Results

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
1	covid	coronavirus	via	covid	coronavirus	support	health	covidsafe	keep
2	get	new	abcnews	coronavirusaustralia	covid	visit	covid	app	home
3	tested	cases	pandemic	information	australia	help	can	learn	spread
4	symptoms	victoria	australian	restrictions	current	available	important	download	stay
5	need	records	australians	visit	situation	coronavirus	mental	protect	distancing
6	testing	nsw	government	advice	update	will	people	can	hands
7	community	day	news	make	read	find	time	contact	good
8	find	deaths	national	latest	provides	need	take	family	physical
9	live	breaking	care	state	daily	payment	outbreak	now	others
10	people	case	million	travel	view	measures	wellbeing	today	safe
11	cold	two	vaccine	may	infographic	services	staying	know	stop
12	info	one	first	sure	quick	due	care	help	hygiene
13	virus	recorded	now	territory	medical	income	information	friends	learn
14	even	hours	aged	date	across	call	ways	phone	distance
15	test	queensland	plan	local	resources	information	look	httpstcovwvrcpb	wash
16	flulike	infections	minister	check	world	supplement	ever	use	remember
17	mask	days	covid	states	httpstcoectzkidyvh	changes	getting	fight	keeping
18	clinic	confirmed	crisis	coronavirus	chief	range	connected	helps	continue
19	mild	three	abc	online	officer	access	stay	someone	public
20	flu	trump	ensure	just	httpstcozivzvhp	eligible	active	part	important
21	face	authorities	workers	looking	httpstcoshqkfpefdh	including	feel	httpstcoepnduroyh	way
22	tests	year	research	next	media	businesses	service	downloading	httpstcornvzjnniuo
23	respiratory	locally	additional	territories	quarantine	business	key	officials	one
24	free	acquired	jobs	doctor	httpstcozcfxfirtcg	see	essential	close	hand
25	different	border	say	made	numbers	place	around	please	social
26	like	amid	says	try	nick	disability	informed	play	best
27	reduce	change	back	step	deputy	provide	keepourmobsafe	store	regularly
28	risk	melbourne	announced	rules	coatsworth	leave	communities	number	slow
29	transmission	may	package	risk	travellers	payments	using	quickly	still
30	able	china	senior	fast	visitors	paid	priority	message	lives

Canada’s topics were mostly on Covid as four of them were “Covid.” Others were “pandemic,” “can”, “keep”, and “people.” Since Canada is a bilingual country, one of the topics was “les,” a word in French. For Covid, on the one hand, Canada’s focus was on community, long term,

family, and together. For example, on September 28, 2020, Prime Minister Justin Trudeau tweeted to publicize his speech at the UN: “More than ever before, the international community must join forces and step up its efforts to find solutions and uphold a set of common ideals and principles. Watch PM Trudeau’s virtual address to commemorate the 75th anniversary of the United Nations General Assembly #UN75” (Trudeau, 2020). On the other hand, it used the country name “Canada,” “Canadian,” and “team Canada,” and focused on issues such as epidemiology, awareness, slowing the spread, and surveillance (Canadian Chief Public Health Officer, 2020). Canada also conveyed messages about what to do during the pandemic to the general public. They wrote detailed measures to prevent the spread of the virus as well as educate the Covid symptoms such as physical distancing, masks, handwashing, and infection. For instance, the Canadian Chief Public Health Officer tweeted on May 5, 2020, “To continue to slow the spread of #COVID19, it is vitally important that we all practice frequent #handwashing. This #STOPCleanYourHands Day, join #TeamCanada and commit to washing your hands to prevent the transmission of infection” For the topic “people,” Canada mainly talked about testing, rate, and population. Canada also concerned business, worker, family, government, and vaccine. Similar to Australia, Canada also liked to include web links in their tweets, trying to redirect the audience to their government’s informational outlets about Covid-19.

**Table 8.** Canada Topic Modeling Results

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
1 covid	can	keep	people	pandemic	covid	covid	covid	les
2 health	help	spread	covid	support	canadians	cases	canada	pour
3 care	covid	physicaldistancing	tested	need	now	key	coronavirus	des
4 amp	protect	public	canada	work	time	update	virus	nous
5 may	get	measures	across	safe	must	daily	disease	avec
6 including	important	others	publichealth	help	efforts	concerns	info	vous
7 risk	community	like	average	make	home	new	dashboard	sur
8 communities	app	risk	positive	today	continue	can	updates	plus
9 continue	know	stay	testandtrace	thank	plankthecurve	today	website	que
10 protectthevulnerable	use	take	daily	working	flattenthecurve	epidemiology	awareness	notre
11 settings	information	control	continues	response	every	case	situational	avons
12 deaths	available	reduce	week	country	together	read	many	une
13 illness	resources	symptoms	date	canadian	slowthespread	statement	keeping	nos
14 outbreaks	together	prevent	testing	families	right	epidemic	report	est
15 severe	find	still	labs	hard	contact	inperson	low	aux
16 number	family	even	overall	sure	togetherapart	media	detailed	dans
17 vulnerable	alert	mask	past	government	travel	full	summary	canadiens
18 social	ways	handwashing	rate	businesses	get	lieu	epidemiological	qui
19 living	one	maintain	days	workers	much	issued	remains	pays
20 virus	way	infection	million	emergency	remain	reported	spreading	votre
21 first	better	practices	last	keep	one	day	infected	contre

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
22 long	download	local	per	taking	impact	national	surveillance	aider
23 outcomes	check	face	population	research	stayhomesavelives	data	wide	sont
24 age	kids	httpstcowgrhase	httpstcojrzthruo	provide	come	see	net	par
25 longterm	safe	contacts	provinces	helping	made	weeks	sensitive	pas
26 among	ones	possible	capacity	learn	teamcanada	latest	httpstcopwqogtoknl	cette
27 due	another	covidknowhow	httpstcozampjnam	plan	individuals	increase	httpstcoshnsujlpa	faire
28 system	part	going	based	lives	safely	httpstcoowrbqubtwf	indicates	tous
29 homes	difficult	close	territories	vaccine	coming	counts	cast	ont
30 young	loved	situation	tests	announced	wewillgetthroughthis	recent	confirming	pendant

Norway's top topic was the country itself (see Table 9). The discourse around this topic focused on the leaderships of Erna Solberg, Prime Minister, and Dag Inge Ulstein, Minister of International Development. Their accounts also called on solidarity, “leave no one behind,” partnership, and multilateralism. For instance, the Norwegian Ministry of Foreign Affairs tweeted on June 2, 2020, “Norway warmly welcomes the @WorldBank strategy on Fragility, Conflict, and Violence. We encourage the bank to further deepen its work in #FCV settings and to leave no one behind. I fear that fragile states will be hit the hard by the economic consequences of #COVID19” (Norwegian Ministry of Foreign Affairs, 2020a). Norway also attended to Covid as three out of nine topics are “Covid,” and one is “pandemic.” There were three discourses around the topic of “Covid.” The first discourse centered around the Norwegian leaders and what they said during the pandemic. The second discourse was on global efforts and the common future. The third discourse was about the Norwegian people, recovery, poverty, human rights, and trade. On “pandemic,” the keywords showed that the Norwegian accounts were more on health, vaccine, virus, funding, research, and frontline efforts. The topic “support” was about internationalism, focusing on humanitarianism, development, world security, and partnership. Their Foreign Ministry tweeted: “Norway welcomes the @UN #SecurityCouncil resolution on #COVID19 adopted by consensus. The support for @AntonioGuterres ‘ appeal for a global ceasefire is more needed than ever. Now we need to follow up on its implementation - FM #EriksenSoreide” (Norwegian Ministry of Foreign Affairs, 2020c). The topic “today” was political, containing keywords of international, sustainable, ceasefire, peace, and cooperation. The Foreign Ministry also said, “To achieve our common goals, we must restore the multilateral system. No State can meet the challenges of climate change, growing inequality, and violent conflict - and now, the pandemic - alone” - FM #EriksenSoreide” (Norwegian Ministry of Foreign Affairs, 2020d). Norway also focused on the blue economy and the impacts of Covid-19. On June 4, 2020, the Foreign Ministry posted a tweet: “#COVID19 forces us to work in new ways to reach those that are hit the hardest by economic downfall in the wake of the #pandemic. Join Norway in sharing digital solutions globally for our #CommonFuture and the #GlobalGoals” (Norwegian Ministry of Foreign Affairs, 2020b).

**Table 9.** Norway Topic Modeling Results

	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9
1	norway	covid	support	pandemic	covid	today	economic	covid	need
2	efforts	global	crisis	health	eriksensoreideinternational	must	global		cooperation
3	ernasolberg	fight	development	vaccine	response	time	also	coronavirus	cepivaccines
4	dagiulstein	amp	humanitarian	nok	countries	call	countries	eriksensoreide	ensure
5	can	important	together	access	strong	back	importance	minister	key
6	new	thank	dagiulstein	coronavirus	people	pleased	travel	role	close
7	solidarity	now	vaccines	challenges	children	sustainable	vulnerable	response	help
8	eea	common	eriksensoreide	discussed	mill	due	covid	norway	ernasolberg
9	response	commonfuture	solidarity	protection	today	globalgoals	now	people	partners
10	today	new	countries	covidnorwaymake	intl	ceasefire	work		assistance
11	country	must	billion	funding	peace	can	difficult	covidnorway	health
12	first	education	part	welcomes	states	women	peace	impact	forward
13	nationals	conflict	situation	hardest	first	sahel	due	important	norwegian
14	girls	talk	unga	response	millions	looking	impacts	services	economies
15	ever	share	buildbackbetterresearch		climate	securitycouncil	consequencesyears		bilateral
16	improve	excellent	gavi	hit	norwegian	fundamental	concerned	information	get
17	critical	cepivaccines	world	economies	closures	yemen	foreign	international	increase
18	distribution	lives	security	school	poverty	talk	recovery	poorest	coronavirus
19	challenges	face	sdgs	oss	good	says	joint	unitedagainstscoronavirus	hit
20	read	affected	min	amp	open	multilateralism	pandemic	antoniogeterres	donors
21	zikavirus	states	partner	usd	humanrights	consistentpartnerothers	processes		suffering
22	leavenoonebehind	protect	corona	also	means	developing	facing	virus	eriksensoreide
23	partnership	develop	child	vulnerable	european	vonderleyen	good	world	discussions
24	multilateral	general	establishing	assist	join	therapeutics	national	million	immediate
25	educannotwait	million	vulnerable	good	glbictznimpact	challenge	systems	leadership	human
26	oceanpanel	within	available	learners	together	solutions	nonessential	action	taking
27	watch	year	thanks	frontline	preparedness	countries	til	take	spread
28	needed	foreign	cet	gjennom	council	since	encourage	discuss	summit
29	grateful	ready	vital	time	restrictions	teachers	planet	trade	world
30	lifesaving	working	med	save	recovery	devastating	cooperation	together	crucial

## Discussion and Implication

We used three analytical methods to process data, and tweets from five selected countries. While these three approaches focus on different aspects, they all seem to reveal overarching patterns for public diplomacy in these countries during the pandemic. In this section, we further analyze the above results of keyword and hashtag analyses and identify predominant patterns. Our purpose is to propose theories using the method of grounded theory. Then we discuss the implications of our findings, especially our contribution to theory building in public diplomacy.

## *Patterns and Theories*

When there is a public health crisis like the Covid-19, countries use digital platforms like Twitter mainly for information and education purposes for their internal population. One feature was that Australia and Canada tended to use web links and redirect the audience to their governments' websites for more information about Covid-19. The US accounts also mentioned their CDC many times, meaning that their tweets are inclined to educate the domestic public and they refer to CDC as the primary source of information about the pandemic. Only a small number of countries used Twitter as a public diplomacy tool during the pandemic. China is a special case because Twitter is blocked in China. It is a purely public diplomatic tool for the selected Chinese Twitter accounts.

Although international communication and public diplomacy was not their primary concern, countries such as China and Norway advocated their policy and politicians. China mentioned their President Xi Jinping and Minister of Foreign Affairs Wang Yi many times. Norway liked to quote its Prime Minister, Minister of International Development, and Foreign Minister. Australia used many hashtags that combined the country name and covid, creating and joining a coherent information stream about the country's situation.

China's Twitter diplomacy during the pandemic placed great emphasis on the US. It shows two things. First, China's Twitter diplomacy strategy focuses on Sino-US relations. Second, China's public diplomacy is more reactive than proactive. After the outbreak of the pandemic, China was targeted and attacked by the Trump administration. To respond and fight against the accusations, Chinese diplomats started to assertively post tweets, targeting American politicians such as Former President Donald Trump and Former State Secretary Mike Pompeo.

On Covid-19, countries rarely connect to international organizations on Twitter. China is the only country among the five that used the hashtag “#who” many times in their Twitter messages. It seems that international organizations like WHO and UN did not play a coordinative role in multilateral collaboration. However, it doesn't mean that countries are on their own. In fact, China and Norway were keen on expressing their aspirations for bilateral partnership and cooperation. Australia also emphasized partnership within the ASEAN framework.

The economy was a major concern for many countries during the pandemic. They communicated the economic impact brought by Covid-19 such as employment and business. The US used the economic agenda for the presidential election. Norway pushed the plan on blue economy and advocated ocean environmental protection.

## *Theoretical Implications*

The above findings of our study suggest two levels of implications for theory building. The first level is on the public diplomacy audience. Social media platforms like Twitter are

communication tools for many actors for different purposes and audiences. States can utilize Twitter to reach out to both the domestic and international public, and there is no clear line to separate these two groups of audiences. In other words, messages intended to speak to the internal audience will be seen by the external audience and have international repercussions, and words for foreign publics may be transmitted to domestic publics. Our study found that states tend to prioritize domestic purposes and neglect their public diplomatic roles when faced with a public health crisis like the Covid-19 pandemic. They mainly use Twitter for pep talks and education, targeting their own population. Second, states tend to build and rely on bilateral partnerships to deal with the pandemic rather than multilateral collaboration like the international organizations and regional integration. While some states such as China and Australia mentioned WHO, UN, and ASEAN, these organizations were rarely mentioned by the countries analyzed in this study. They all called on international cooperation, but it was only limited to bilateral ones rather than multinational networks.

We also found a few patterns that could not be theorized so far, but they are still worth our attention when thinking about specific countries' digital diplomacy. For instance, Norway's tweets were quite more political than we expected. Australia and Canada like to use Twitter as an advertising platform for their own governmental sites, on which the public can receive extensive information about the Covid-19. The Chinese accounts placed great emphasis on the US, while the US mentioned China for domestic purposes (Trump called Covid-19 a "China virus").

## **Conclusion**

How does a public health crisis play into the digital rhetoric of states? As Covid-19 is presenting a situation in which countries need to manage the international environment in a relatively short period of time, their practices could signal how digitization is going to influence public diplomacy in the longer run. This paper explores state public diplomacy in the context of a public health crisis. It tries to develop a theoretical framework of public diplomacy on social media through how and what states communicated during the first year of the Covid-19 pandemic. Through keyword and hashtag analyses, we found two theoretical patterns. First, states usually regard social media as an instrument for domestic communication rather than public diplomacy. The international impact of messaging has not been prioritized nor well-recognized. Social media like Twitter is a global platform and its messaging can be read and seen by audiences all over the world. Messages intended for the domestic audience can have an international impact. Thus, any communication on digital platforms should consider their effects on public diplomacy. Second, while social media are claimed to be a platform for multilateral networking, states tend to connect bilaterally rather than multilaterally or with international organizations during the pandemic. States do not like to mention international organizations like the WHO and the UN on Twitter. Instead, they were either busy dealing with internal problems or cooperating with another state to combat the virus.

In this study, we sampled five states and examined their tweets during the pandemic. This is exploratory research with a small sample size. Future studies could include more states and study their tweets after the outbreak of Covid-19. With more data, the keyword and hashtag analyses will produce more comprehensive findings. Moreover, content analysis in the future might be helpful to understand in more detail what these states have said.

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