

CLIMATE CHANGE vs COVID-19:
A COMPARATIVE ANALYSIS OF GLOBAL CRISES IN CANADIAN NEWSPAPER
COVERAGE

By

Coral Olivia Cairo Somerton

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Abstract

Considering the comparative threats and differing public and institutional responses to the climate crisis and the COVID-19 pandemic, many have been quick to draw parallels between the two global crises. In recognition of the media's influence over public behaviour, this study examines Canadian newspaper coverage of climate change and COVID-19, comparing the volume of coverage and the framing of both crises. The purpose of this research is to identify the differences and similarities in the coverage of climate change and COVID-19 and draw potential implications of the media's respective treatment of both crises in the Canadian context. The findings identify several key differences in the volume of coverage and framing of the crises. According to agenda-setting and framing theory, these findings offer insight into the media's role in Canada's dissimilar responses to climate change and COVID-19.

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Introduction

Following the World Health Organization's official declaration of the COVID-19 pandemic in March 2020, the world experienced unprecedented levels of social, economic, and political change. The novelty and uncertainty surrounding the disease catalyzed drastic shifts in government and individual behaviours and norms. Although it has not been without strife, the overall actions taken to address the pandemic indicate the ability of both decision-makers and individuals to act in concert when faced with a dire and imminent global crisis.

The responses to the pandemic are particularly intriguing when compared with the actions taken to address the climate crisis. Anthropogenic-induced climate change poses a serious existential threat and is often described as the most significant challenge future generations will face. Yet, despite decades of evidence and warnings from scientists, both institutional and public responses have not reflected the gravity of the situation (Young & Dugas, 2011).

In the case of global crises, the public relies heavily on communication channels such as mass media for information. The climate crisis and COVID-19 represent two circumstances in which the general public lacks the direct experience and background knowledge required to become aware and informed. Therefore, a substantial amount of the responsibility for communicating public health policy and political decision making has been handed to mass media outlets. This dependence results in the media being highly influential in terms of the public's understanding of important issues and, in turn, the way the public behaves. Importantly, however, mass media outlets are subject to their own internal processes, agendas, and external influences, ultimately affecting their representation of different stories.

By focusing on the media's role in influencing public behaviour, this study examines the ways Canadian newspapers have reported on climate change and COVID-19. The analysis compares

and contrasts trends in the volume of coverage and the dominant frames employed. Ultimately, this research seeks to uncover and discuss whether Canadian media has reported on the two respective crises differently, what the differences are, and what the potential implications of these differences might be. The study is guided by four research questions.

To address the comparative volume of coverage, I ask:

RQ1. What are the key trends in the volume of climate change coverage in Canadian newspapers?

RQ2. What are the key trends in the volume of COVID-19 coverage in Canadian newspapers?

To address the framing of both crises, I ask:

RQ 3. What are the dominant frames employed by Canadian newspapers in climate change stories?

RQ4. What are the dominant frames employed by Canadian newspapers in COVID-19 stories?

The presence of differences may enable further understanding regarding the factors contributing to the public's acceptance of the unprecedented measures taken to address COVID-19 and the comparatively less meaningful action taken towards tackling climate change.

In this paper, I begin by providing a brief background of climate change and COVID-19 in the Canadian context followed by the role of media in influencing public behaviour. Then, I offer an overview of the existing research concerning the media's relationship with climate change and COVID-19 and the literature connecting both crises. Next, I outline the methodology and sampling strategies employed, followed by a summary of the key findings. Lastly, I provide an analysis of the findings and discuss their implications. The findings suggest that Canadian newspapers have

in fact covered climate change and COVID-19 differently, justifying further inquiry into the media's contribution to the varied responses towards both crises.

Background

Canadian Context

As a northern nation with an economy heavily dependent on the extraction and exportation of natural resources, Canada has strong ecological, moral, and economic incentives to act aggressively towards climate change (Dion, 2011). It is among the countries that will experience the greatest effects of the crisis, many of which are rapidly approaching or have already begun.

. Therefore, environmental action is in Canada's best interest. Despite these threats, Canada continues to be ranked among the worst performers when it comes to climate change (Climate Change Performance Index (CCPI), 2021; Dion, 2011; Young & Dugas, 2011).

Canada was one of the first nations to commit to climate action in the 1990s (Young & Dugas, 2011); however, this commitment has been followed by a slew of failures to effectively address and act meaningfully towards environmental goals. While efforts are continuously made, the majority are symbolic. Since the ratification of the Kyoto protocol in 2002, Canada has failed to meet all emission reduction targets, in some cases, even increasing emissions. Furthermore, the renewable energy sector in Canada has only grown 4% in the last five years, demonstrating a lack of effort to divest from the fossil fuel industry (CCPI, 2021). In 2021 the country was ranked 58th by the Climate Change Performance Index, down three positions from 55 in 2020, and despite its relatively small population, it remains one of the biggest per-capita greenhouse gas emitters (albeit far behind those highest ranked) (CCPI, 2021; Stoddart et al., 2016).

The discrepancies between the goals outlined by the government and the success of implementing policies and achieving tangible results are due to several factors. Importantly, Canadian's have shown notable interest in climate change responses (Dion, 2011). There is a significant amount of awareness among the population; however, the actual actions required are

far more multifaceted. Climate change is a deeply complex issue whose causes, effects, and solutions are found at the crossroads of a multiplicity of systems and stakeholder interests. The distant and ambiguous nature of the threat makes it difficult to grasp and provides little room for political incentives (Renn, 2011; Young & Dugas; 2011).

Government figures point to several excuses, most of which have a certain level of validity. Canada is a large country with a small population, resulting in increased emissions due to the transportation requirements. Further, its economy is reliant on the exportation of natural resources (i.e., oil, coal, aluminum etc.,) and tied deeply with the US, making independent action more challenging (Dion, 2011). Most significantly, the challenge of collective action enables climate change free-riding among countries such as Canada. It is harder to establish policies in circumstances where the benefits of action do not exclusively serve those acting. Further, the benefits of aggressive action are marginal when only a few are taking the necessary steps. Drastic measures in the Canadian context would have minor impacts because Canada, despite its poor performance, only contributes approximately 2% of GHG emissions. Therefore, these necessary actions are currently of limited benefit due to the more significant impacts of more populous countries.

In November 2020, the federal government announced the Canadian Net-Zero Emission Accountability Act, promising net-zero emissions by 2050 (Environment and Climate Change Canada, 2021). This is one of the most recent efforts from Canada to act towards climate change; however, only time will tell if it will be successful or performative.

Conversely, Canada's actions towards COVID-19 have been rather urgent and even drastic. Within the first few weeks of the pandemic's declaration in March 2020, Canada closed its border, placed a travel ban on its population, provided immediate economic relief packages, invested \$2

billion into diagnostic testing and so on (Canadian Public Health Association (CPHA), 2021). Throughout the crisis, the federal, provincial, and municipal governments have acted aggressively to implement public health measures and guidelines, intervening to provide adequate PPE to health care workers, and acquired and distributed vaccines after their development (CPHA, 2021). In turn, the country has begun to return to a certain degree of normalcy. While measures and policies were not perfect and received a significant amount of criticism, the urgency and severity of the pandemic response is undeniable, and perplexing given similar circumstances.

The Role and Influence of Media

The public's perception of risk dictates how decision-makers and individuals react, behave, and respond when faced with a crisis or hazardous event (Kasperson et al., 1988). The Social Amplification of Risk Framework (SARF) presented by Kasperson et al. (1988) asserts that an individual's perception of risk is determined by a hazard's interaction with pre-existing "psychological, social, institutional and cultural processes" that either intensify or reduce its perceived severity and, therefore, any associated responses (Kasperson et al., 1988).

Notably, the public's interpretation of risk is contingent upon how that risk is communicated. Various social actors responsible for communicating risk contribute to this increased or decreased perception of a threat, including individuals, social groups, institutions, and most importantly, mass media outlets (Binder et al., 2015). These "amplification stations" help shape our perception of reality by communicating information that may not be empirically accessible to the general public (Kasperson et al., 1988).

The media plays a particularly large role in information dissemination since it is the most common way individuals are exposed to and come to understand information regarding hazards (Binder et al., 2015). The inherent purpose of mass media is to communicate information to the

public that is not empirically accessible (Kasperson et al., 1988). Furthermore, the abundance of news and information extends far beyond an individual's knowledge and understanding capability.

Heuristics refers to the psychological process whereby an individual outsources information rationality to make a decision (Kasperson et al., 1988; MacDonald, 2009). In other words, the media helps the public create mental shortcuts to determine what issues are important and how they ought to respond. This reliance creates a mediated reality resulting in a significant amount of the public's perception of the world reflecting media representations -- making the media exceptionally influential in behavioural responses (Binder et al., 2015).

In terms of disseminating information, *what* and *how* stories are communicated can either amplify or attune the risk. Media scholarship acknowledges the volume of coverage and the contents of coverage as affecting issue salience and public perception (Scheufele & Tewksbury, 2007; Binder et al., 2015; Tindall & Stoddart, 2018; Stoddart et al., 2016). The literature often refers to two distinct theories describing these effects: *agenda-setting* and *framing*.

Agenda-setting: Agenda-setting theory addresses the impact the story's volume of coverage has on the public's perception of its importance and issue salience. Agenda-setting theory claims the higher the volume of coverage, the greater the perceived importance of any given issue (Binder et al., 2015). Scheufele & Tewksbury. (2007) argue that increased coverage leads to heightened accessibility meaning the more the audience is exposed to information, the more significant it appears to be. Importantly, when a story loses momentum in the media, it can lose the public's attention regardless of whether or not it has been addressed or solved.

Framing: Distinct from the amount of coverage, the way a story is portrayed also impacts how it is understood. Media frames are considered the "interpretive schemas individuals use to perceive,

identify, and label events in the world” that have the power to influence public opinion (Tindall & Stoddart, 2015, p.16). While the volume of coverage may increase *accessibility*, *how* a story is framed affects the *applicability* (Scheufele & Tewksbury, 2007). Framing a story connects the issue to people’s values and concerns, and effective frames vary depending on the audience. Frames are often crafted to highlight or take advantage of “aspects of culture, cognitive processing, or dispositions of the audience” (Tindall & Stoddart, 2015, p.16). Scheufele & Tewksbury (2007) state that beyond its presence in the media, “how an issue is characterized in news reports can have an influence on how it is understood by audiences” (p. 3). The framing of news stories has a notable effect on public perception because it dictates how the audience understands the issue (Binder et al., 2015) and the “frames that paradigmatically dominate event coverage also dominate audience response” (Ogbodo et al., 2020, p. 265).

While the amount and content of coverage determine how the public receives a story, the processes that determine the volume and content are also not directly representative to the inherent risks. Mass media’s role in informing the public intersects with external processes that determine what, how much, and the way issues are covered (Binder et al., 2015). This can lead to over, under, or misrepresenting a story, ultimately affecting the public’s interpretation of reality. Three predominant processes influence media coverage: news values, the issue-attention-cycle, and agenda-building (Binder et al., 2015; Tindall & Stoddart, 2018).

News values: Due to the abundance of stories requiring coverage and the limited space in the media, an event’s likelihood of receiving media attention can largely be attributed to its newsworthiness or the presence of ‘news values’ (Binder et al., 2015). Unfortunately, the dissemination of information competes with the need to fulfill financial obligations and journalists, and media producers must also concern themselves with telling a good story. There are six widely

agreed-upon news values in mass media literature: (1) prominence/importance; (2) human interest/personalization; (3) conflict/controversy; (4) novelty/the unusual (5) timeliness/relevancy; and (6) proximity (Binder et al., 2015; Tindall & Stoddart, 2018). The presence of characteristics in a news story is acknowledged as influential in whether or not it's covered because issues are prioritized when they contain elements that sell.

Issue-attention cycle: Anthony Downs presented the issue-attention cycle in 1972 to describe “the public’s limited attention span for environmental problems and other social and public policy issues” (Tindall & Stoddart, 2018, p.7). Related to news values, the cycle points to the circumstances in which a threat persists beyond the public and media’s attention span (Tindall & Stoddart, 2018; Binder et al., 2015). The issue-attention cycle is divided into five stages: (1) the pre-problem stage, when the problem exists but is not yet in the public eye; (2) the ‘alarmed-discovery and euphoric enthusiasm’ stage, when the public has become aware of the issues and is motivated to act; (3) the ‘realization of the cost of significant progress’ stage, when the public understands that what is required to solve the problem is costly; (4) the ‘gradual decline of intense public interest,’ where the public becomes discouraged because of these costs or becomes bored of the issue; and finally (5) the ‘post-problem’ stage, where the public’s attention has moved on entirely (Binder et al., 2015; Downs, 1972; Tindall & Stoddart, 2018).

Agenda-building: Lastly, insofar as the media influences public opinion, various stakeholders attempt to gain access to the media to push forward competing institutional, social, and economic interests. (Binder et al., 2015). This is a complex process involving many actors, but generally, contacts within the media and personal credibility can allow individuals and institutions to access the media’s agenda and, therefore, the public’s (Binder et al., 2015). Furthermore, Tindall et al. (2018) point out that media outlets can have their own ideological stances affecting *what* stories

are covered and *how* they are covered. Notably, the news values of a crisis are often exploited by stakeholders' interests (Binder et al., 2015).

Literature Review

Mass Media and Climate Change

Climate change presents a unique case for considering the role of mass media in the dissemination of information. Canada has one of the largest media visibilities of climate change. Yet, Canada's performance on mitigation efforts and policy implementation is considered one of the worst among developed countries (Stoddart et al., 2016; Boykoff et al., 2011).

Climate Change Media Trends

The existing literature on the media's coverage of climate change highlights the unique trends and patterns resulting from the crisis's long-term, global, and complex nature. Regarding the agenda-setting processes, Stoddart et al. (2016) examine the longitudinal trends in the volume of coverage, noting a steady increase in Canadian climate change coverage between 1997 and 2010. This upward trend is categorized by periods of peaks and troughs that correspond with critical political, ecological, and scientific events (Stoddart et al., 2018). They point to events such as the adoption of the Kyoto Protocol in 1997 and the release of the IPCC 4th Assessment report in 2007, each correlating with spikes in climate change stories.

Beyond the volume of coverage, the researchers analyze climate change coverage for key frames during the peak year of 2007-2008. '*Policymaking*' is identified as the primary thematic frame used in climate change coverage, followed by '*economic and energy interest*' and '*science and technology*.' Additionally, stories regarding '*civil society*' received the least attention in Canadian news media (Stoddart et al., 2018).

Similarly, in analyzing Canadian climate change coverage over three distinct periods, Young & Dugas (2011) identify an increase in the volume of articles. They further argue that while the coverage is more voluminous, it is also less complex and contextual. The authors claim that since

1988, the climate change narrative has shifted away from “issues of causation, scientific claims, and potential impacts, while more attention is granted to how climate change superficially intersects with everyday politicking and business issues” (p. 2). This, they argue, has weakened the coverage by oversimplifying and decontextualizing the issue (Young & Dugas, 2011).

Rather than discussing ‘pure’ climate change issues (i.e., causes and effects), climate change reporting in Canada increasingly focuses on its intersection with political debate and policy or economic and business interests (Young & Dugas, 2011). It is also observed that scientific experts have less presence in climate change communications with fewer articles, including expert knowledge claims over the years. In contrast, political voices are increasingly common (Young & Dugas, 2011). Ultimately, it is argued that climate change coverage has become far more ‘unidimensional’ with the media highlighting niche slivers of the issue rather than the broader contextual aspects (Young & Dugas, 2011).

Climate change and media norms

The fluctuation in the volume and shifts in the framing of climate coverage is a product of how various media norms and processes intersect with the inherent and contextual factors of the crisis (Boykoff et al., 2011). Young & Dugas (2011) highlight that climate change lacks many necessary qualities to make it suitable for a 24-hour news cycle, affecting how much the crisis is covered and under what context it is discussed.

The volume of coverage: A few factors influence the volume of climate change coverage (Tindall & Stoddart, 2018). A significant amount of climate change media literature refers to the issue-attention-cycle (MacDonald, 2009). Anthony Downs asserts that most issues subject to the issue-attention cycle lose salience depending on who is primarily impacted and the inherent drama of

the situation (MacDonald, 2009). Climate change fits this criterion as the vast majority of those most responsible have not yet experienced the effects of climate change, and the causes are deeply rooted in inequality and power dynamics. Furthermore, the threat is so ambiguous and distant that it lacks many inherent newsworthy qualities. Importantly, however, climate change has shown incredible tenacity in the media over the years, and while the volume of coverage fluctuates, it never disappears entirely (Lyytimäki et al., 2020).

Many scholars argue that these spikes in coverage are driven by critical events, as identified by Young & Dugas (2011) and Stoddart et al. (2016). Anderson (2009) refers to the role of news values in affecting the volume of climate coverage. Because the media prefers newsworthy stories, the volume of climate change coverage tends to correlate with newsworthy events. Conversely, Lyytimäki et al. (2020) outline several factors causing dramatic drops in coverage from peak levels such as “the end of a specific news event or policy process (e.g., international climate policy meetings), lack of weather anomalies (e.g., normal winter weather and snow coverage), the silence of key influencers (policymakers, business elite), and news competition together with reporting fatigue following abundant climate coverage” (Lyytimäki et al., 2020, p. 1). In particular, the newsworthiness of new short-term crises can push long-term crises out of the media regardless of whether or not the threat is bigger than that of climate change, often falsely representing the severity of the issues (Lyytimäki et al., 2020).

Content of coverage: Beyond affecting the volume of coverage, Tindall & Stoddart (2018) acknowledge the media’s value of drama and newsworthiness as significantly influential in the narrative and content of climate change coverage, arguing that the need for newsworthy stories affects what and how climate stories are presented in the media. They claim the slow-moving abstract nature of the climate crisis makes it difficult to keep in the news, and therefore, the stories

shown to the public are often characterized by news values and the more dramatic aspects of coverage (Tindall & Stoddart, 2018).

Under the scope of newsworthiness, Boykoff et al. (2011) identify several critical journalistic norms characterizing climate change narratives. First, they identify the norm of personalization, which describes the media's proclivity to highlight the personal/individual climate change stories, including stories regarding lifestyle choices or conflicts between politicians. Next, they identify the media's tendency to emphasize the more sensational and dramatic aspects of the crisis, "displacing subtle, enduring and more chronic issues in the public arena" (Boykoff et al., 2011 p. 104). Lastly, they describe the value of novelty, and the media's preference for 'fresh' news versus more persistent, contextual stories. As a long-term issue, climate change is no longer novel on its own.

In valuing newsworthiness, the media may overrepresent stories that possess more news values but lack relevant information and context. Concerning personalization, climate change stories that focus on more individual aspects of the climate crises de-emphasize the broader social, economic, and political dynamics at the root of both the issue and solutions. Similarly, presenting more dramatized or novel stories exaggerates the sensational narratives of climate change and detracts from the reality of the situation. In valuing novelty and dramatization, the coverage tends to be 'episodic' due to the reliance on new events to grab the media's attention. This de-emphasizes the more crucial and contextual aspects of the crisis, ultimately affecting the public's understanding and perception (Boykoff et al., 2011).

Beyond news values, scholars point to the ideological stances and competing interests of stakeholders. Climate change is often viewed as a partisan issue, receiving more attention from left-wing politicians and voters, while skepticism tends to stem from those on the right

(MacDonald, 2009; Young & Dugas, 2011). Notably, news outlets also tend to exhibit political ideologies. In a study of Canadian climate change coverage, Stoddart & Tindall (2015) found that *The National Post*, which is typically considered right-leaning, published more skeptical stories regarding climate science reliability compared to its center-left counterpart, *The Globe and Mail*. Anderson (2009) similarly addresses the influence of political association, stating “ideological standpoints of newspapers, resulting from sharply contrasting value systems, can profoundly shape discourses of scientific knowledge” (p. 173) Further, she argues that mainstream media may be less inclined to report on climate change in a way that harms corporate interests or challenges more inequalities in resources and power (Anderson, 2009).

The literature also addresses the use of authority figures and experts in the coverage. Boykoff et al. (2011) describe ‘authority order’ as a journalistic norm related to the tendency of reporters to rely on “‘actors’ and figures such as political leaders, high-profile scientists, government officials, environmental non-governmental organization (ENGO) figureheads and titans of carbon-based industry” (p. 107). Anderson (2009) also considers the prominence of authority figures, arguing that this practice offers only a select few individuals access to the media allowing them to become ‘primary definers.’ The reliance on these authority figures can affect the coverage as it overrepresents their views, giving those with access to the media’s agenda more control over the public understanding (Anderson, 2009; Boykoff et al., 2011).

Lastly, in an attempt to avoid biases in coverage, media outlets aim to provide equal representation to different sides of the debate. The norm of balance is a media practice related to the value of objectivity (Anderson, 2009; Boykoff et al., 2011; Tindall & Stoddart, 2018). While neutrality is integral in quality reporting, there is a near-unanimous consensus regarding the existence of anthropogenic-induced climate change within the scientific community (Tindall &

Stoddart, 2018). Therefore, the norm of balance causes dissonance between the scientific account of climate change and the media's narrative by presenting climate change as an issue of contentious scientific debate. In this case, "minority viewpoints have gained inordinate attention in the media landscape, and therefore have had their voices amplified when providing outlier perspectives on climate change" (Boykoff et al., 2011, p.108). Notably, the norm of balance is more commonly associated with American news media (Tindall & Stoddart, 2018).

COVID-19

While COVID-19 is a relatively new subject of analysis, there is a growing body of literature on the pandemic's relationship with the media. Due to the novelty of the situation, the news media has covered the pandemic extensively and in ways that have had both positive and negative impacts on public health (Anwar et al., 2020).

COVID-19 media trends

Within a single month of the declaration of the pandemic, approximately 65% of Canadian news media coverage headlines referenced COVID-19 (Poirier et al., 2020), defining it as an 'infodemic' (Anwar et al., 2020). Beyond the observable abundance of stories, many narratives have circulated (Anwar et al., 2020). While the pandemic is still unfolding at the time of this research, exploratory mass media studies on the current and similar health crises offer an early glance at how the media has tackled COVID-19.

In a preliminary analysis of the COVID-19 pandemic, Poirier et al. (2020) identify common frames used to define the pandemic in Canadian news media. The frames specified included 'Chinese outbreak,' 'economic crises,' 'Western deterioration,' 'health crisis,' 'societal impact,' and 'helping Canadians.' While each frame's prominence differed among francophone and

anglophone media and across different media outlets, *'health crisis'* was the most common way COVID-19 was defined in the early stages of the pandemic. The study also noted the fluctuation in frames over time, indicating the likelihood that a frame's prominence will increase and decrease as the pandemic progresses, depending on current events (Poirier et al., 2020).

On a global scale, Ogbodo et al. (2020) examine how the media framed COVID-19 worldwide, paying particular attention to dominant frames and word choices. They contextualize their study by recognizing the media's important role in communicating public health measures and concerns. They assert that as an institution responsible for disseminating information, any "shortcomings in the reportage of the evolving COVID-19 pandemic could potentially trigger more global health concerns", highlighting the influence framing has on public perception and behaviour (p. 258). In their analysis, narratives pertaining to human interest and fear/scaremongering are determined to be the most prominent, followed by hope and economic consequences.

COVID-19 and media effects

While the volume of coverage alone has likely increased the salience and influenced public behaviour, a significant amount of the limited literature on COVID-19 has addressed the impacts of the narratives employed to frame the crisis.

Anwar et al. (2020) analyze the mass media coverage during the first few months of the pandemic, considering both the importance of public health communications and the shortcomings of the approaches taken to date. They note the media is vital in public health communication, playing a global and local role in updating the public regarding disease tracking, cases, new findings, health regulations and strategies. Without the media, insights regarding where to get tested, guidelines to follow, and other valuable information would have been far less accessible,

challenging efforts to end the pandemic (Anwar et al., 2020). However, the COVID-19 pandemic has highlighted various social, political, and economic issues that mass media norms and processes have exacerbated. The authors assert that trends in the volume and narrative of stories surrounding COVID-19 have seemingly had negative effects. They present a model under which mass media's performance should be evaluated during a crisis of this nature. These include stricter public health communication criteria, proper health education related to behaviours (i.e. mask-wearing and attending to mental health), reducing stigma, discrimination and abuse and managing 'infodemics' by addressing concerns and misinformation (Anwar et al., 2020).

Similarly, Ogobodo et al. (2020) assert that the dominance of fear/scaremongering narratives is associated with the media's compulsion to present dramatic stories and 'breaking news.' They theorize that the prominence of these frames concerning COVID-19 accentuated fear and concern among the public. Further, they suggest that an unnecessary level of fear could lead to more health concerns such as anxiety and panic attacks, extending the risk of the virus beyond its physical threat. Considering the extended health threats, they state the necessity for the media to "not blow a critical issue like COVID-19 out of proportion to avoid creating unnecessary panic in the people" (p. 258). They emphasize the need for mindfulness regarding how health crises are communicated to avoid escalating the adverse secondary outcomes (Ogobodo et al., 2020).

In identifying public health and economic consequences as two areas of public concern during the pandemic, Deslatte (2020) examines which behaviours are associated with exposure to each frame. Through this comparison, they find "public-health versus economic issue frames differentially influence the preferences of individuals to avoid unnecessary social interaction" (p. 9). They note that the '*public health consequence*' frame positively affects the choices of individuals to avoid unnecessary outings, while the '*economic consequence*' frame is associated

with an increase in outings. Considering the different responses related to different messages, they highlight the value of consistent messaging during a pandemic. Additionally, they find that messages delivered by government figures were more likely to strengthen the message relative to scientific experts. Ultimately, however, they assert that the message itself is more influential than the messengers (Deslatte, 2020).

Climate change and COVID-19

Considering the pandemic's short existence, a significant body of literature connects and compares climate change and COVID-19. Despite their similarities, specific characteristics and social dynamics have resulted in the perception of COVID-19 as a crisis deserving of unprecedented life-altering, school closing, and business threatening responses (Ruiu et al., 2020). At the same time, the threat of climate change continues to grow, relatively unaddressed. Some scholars point to the multiplicity of opinions from stakeholders and actors in different fields (e.g. scientific experts, politicians, economists, the media) regarding the causes and effects of climate change (Ruiu et al., 2020; Boykoff et al., 2011). This, coupled with climate change's distant and ambiguous nature, makes it more challenging to implement policies and encourage behavioural changes among the public (Tindall & Stoddart, 2018; Boykoff et al., 2011).

Botzen et al. (2020) acknowledge the similarities between the two crises and turn to several behavioural biases influencing the dissimilar responses from decision-makers and the public. These behavioural biases involve common trends in human behaviour low-probability-high consequence scenarios such as climate change and COVID-19. They include (1) simplification, which refers to an individual's tendency to respond to risks based on their probability and potential consequences rather than a "rational assessment of the full risk; (2) availability, highlighting the

positive correlation between personal experience of a threat and an individual's concern and response; (3) the 'finite pool of worry' hypothesis, which acknowledges the limited mental capacity available for multiple concerns; (4) myopia, emphasizing the public's inherent nearsightedness making responses to long-term crises complex; (5) the 'not in my term of office' hypothesis, which points to the lack of political incentive to act against long-term crises; and (6) herding, the effect of group behaviour in influencing individual action (Botzen et al., 2020).

Botzen et al. (2020) draw lessons from COVID-19 for climate policy by working with, rather than against, these behavioural biases with a significant amount involving communication strategies. They suggest emphasizing the threat of climate change, explicitly referencing framing practices and stressing more personalized narratives to highlight how individuals themselves will be affected. Further, the scholars suggest connecting climate change to disease and public health by promoting climate policies as pandemic prevention, making the perceived benefits more immediate rather than distant (Botzen et al., 2020).

Gemenne & Depoux (2020) also identify lessons from the pandemic responses that can be applied to climate change action. They argue that the public's concern and response rest in the immediacy of the threat and its proximity to individuals. They also suggest that more attention should be paid to the immediate consequences of climate change instead of the distant threat or current political and economic conflicts (Gemenne & Depoux, 2020). Secondly, they state that the public health impacts of climate change have not been given sufficient attention, despite the evidence that personal health narratives effectively generate positive responses. Lastly, they attribute the acceptance and success of COVID-19 measures to the temporary nature of the lockdowns and strict public health regulations. They argue that the public is more willing to act

for the greater good when they believe it will improve the situation and they will be able to return to normal, something that is absent in the climate change discourse (Gemenne & Depoux, 2020).

To address the role communication plays in their varied responses, Ruiu et al. (2020) examine the similarities and differences between the official messaging of climate change and COVID-19. Their analysis focuses on documents released by the International Panel on Climate Change (IPCC) and the World Health Organization (WHO), the global bodies responsible for managing the crises. The study highlights the importance of communication in influencing the public to accept drastic COVID-19 measures, while efforts to address the climate crisis continue to lack urgency (Ruiu et al., 2020).

From their analysis, they identify some critical differences in the messaging of both climate change and the pandemic and outline several requirements for successful communication strategies of both crises. Notably, they emphasize the need to simultaneously warn and reassure the public, highlighting the importance of both messages and language in influencing public opinion (Ruiu et al., 2020). Next, they highlight the need to accurately reflect the severity of the threat without causing unnecessary panic, as well as the need for more multilevel collaboration, designated communication channels and trusted figures. Additionally, they warn for the risk of over politicizing or commodifying the crises and, lastly, emphasize the necessity to encourage self-efficacy (Ruiu et al., 2020)

While there is an impressive amount of literature regarding climate change, COVID-19 and mass media, existing research has primarily focused on their individual relationship with the media or drawn connections between two crises. Evidently, there is a lack of literature comparing climate change and COVID-19 news media coverage under a standardized analysis, particularly in the Canadian context.

Having compared the research findings related to media coverage of each crisis, it's clear that it is reasonable to examine the media's role in the diverging public response to climate change and COVID-19. However, currently there is a gap in the literature since no studies compare the news media coverage of both crises. This study will address this gap by providing a content analysis of climate change and COVID-19 media coverage in Canadian newspapers. This will offer a reliable comparison of the crises coverage and the findings will help determine whether or not news media can reasonably be considered a contributing factor when it comes to the different public responses to climate change and COVID-19 in Canada. Additionally, an analysis of the findings can provide insight into the potential implications of the differences identified.

Methodology

This study conducts a mixed methods comparative analysis of climate change and COVID-19 newspaper coverage in Canada. The units of analysis include articles from Canada's three most prominent (anglophone) news publications: *The Globe and Mail*, *The National Post* and *The Toronto Star*. As climate change and COVID-19 are both global crises, *The Globe and Mail* and *The National Post* were selected as Canada's only two nationally circulated papers. While *The Toronto Star* is not considered a national publication, it has the largest daily circulation in Canada and a significant online presence (Stoddart et al., 2016; Tindall et al., 2018). Furthermore, COVID-19 has more proximate implications, and *The Toronto Star* offers a more appropriate balance between local and national coverage.

Level 1

Scope

The first level of analysis is quantitative, focusing on the volume of coverage. Because the crises have existed over different periods, their longitudinal trends were analyzed on different scales. As a long-term crisis, the longitudinal trends for climate change included the volume of coverage *per year* since 1997, the year the Kyoto Protocol was negotiated (Stoddart et al., 2016). Conversely, the virus causing COVID-19 was discovered in late 2019, becoming a global concern in January 2020. As a short-term crisis, the longitudinal trends for COVID-19 included the number of articles *per month* from January 2020 to April 2021.

Data Collection

I conducted a keyword search on Nexis Uni to determine the number of articles containing the relevant terms associated with both crises. The terms '*climate change*' and '*global warming*' were input for every year from 1997 to 2021 for the climate change corpus. For the COVID-19 corpus,

the terms ‘*COVID-19*’ and ‘*pandemic*’ were input for every month from January 2020 to April 2021.

Level 2

Scope

The second level of the study conducts a deductive framing analysis to consider the portrayal of climate change and COVID-19 in Canadian media. To remain within the scope of the study, only one publication was analyzed. Considering the municipal and provincial relevance of COVID-19, articles from *The Toronto Star* were selected as the unit of analysis to incorporate local and national stories.

Importantly, *The Toronto Star* is considered left-leaning, while *The National Post* offers a conservative lens and *The Globe and Mail* a more centrist perspective for Canadian readers. By only including *the Toronto Star*, there may be an exclusion of other ideological stances (Stoddart et al., 2016; Tindall et al., 2018). However, the vast readership and the local and national coverage render it the best option for an exploratory study of this scope.

Data collection

To gather the corpora, a keyword search was conducted using the advanced search option from NexisUni. The terms ‘*climate change*’ and ‘*climate crisis*’ were input as keywords for climate change coverage, and the terms ‘*COVID-19*,’ and ‘*pandemic*’ were used for COVID-19 coverage. Both crises were filtered for articles over 250 words, ensuring only articles of substance were included.

January 11th marks Canada’s first front-page news story regarding COVID-19 (Poirier et al., 2020). Therefore, the time frame selected for COVID-19 coverage was January 1st, 2020, to April 30th, 2021. This accounts for the 16-month period during which the pandemic has dominated news

media coverage. Considering the fluctuation in the volume over time (Stoddart et al., 2016) and the impact of other news stories on its coverage (Lyytimäki et al., 2020), the same timeframe was not appropriate for the climate change corpora because it represents a period during which climate change was not a dominant story. To compare their coverage, August 1st, 2018 to December 31st, 2019 was selected as the timeframe for climate change coverage because it reflects the most recent period during which climate change was heavily featured in Canadian media.

This 16 month period marks a peak in climate change coverage corresponding to the emergence and promotion of Greta Thunberg as a climate activist figure, the publication of the 2018 International Panel on Climate Change (IPCC) report (Lyytimäki et al., 2020) and the 2018 federal election in Canada. Greta Thunberg's increased celebrity sparked a period of civic action and increased discourse surrounding climate change with the Fridays for Future marches organized across the country and the world. These marches also correspond with the IPCC reports declaration of a +1.5° threshold by 2030, after which the effects of climate change become irreversible. This period was interrupted by the emergence of COVID-19, which quickly dominated the media and public attention, pushing climate change out of the spotlight, albeit not out of the media entirely (Lyytimäki et al., 2020).

The search was originally intended to include all the articles containing one of the aforementioned terms; however, the initial search of COVID-19 articles yielded 18 270 articles. Upon examination, it became apparent that due to the novelty of the pandemic, the terms appeared in articles that did not primarily concern COVID but mentioned the pandemic in passing making many unsuitable for a framing analysis. For this reason, the search was repeated, filtering for articles that contained the terms in the headline, ensuring the articles selected were focused on the

pandemic. A scan of the results was conducted to remove articles that were not fit for the coding criteria (i.e., letters to the editor, opinion pieces), yielding 3178 articles.

Initially, the same was done for climate change to maintain consistency; however, it became apparent that fewer articles concerning climate change included the terms in the headline. Further, in the case of climate change, articles containing the relevant terms tended primarily to concern the crisis itself. The final search filtered for articles that mentioned the terms anywhere in the article. A scan of the climate change articles was also conducted to eliminate irrelevant articles, yielding 1716 results.

The first 10% of articles were selected as the corpora for both crises. In Nexis Uni searches, articles are randomized by date and topic. Therefore, the order simply represents articles deemed relevant based on the search criteria. Ultimately, the climate change sample included 171 articles, while the COVID-19 sample consisted of 371 articles.

Two content-coding strategies were employed, examining *thematic frames* and *issue frames*. The *thematic frames* define the general topic under which crises are discussed (i.e., politics, economic, scientific etc.). The *issue frames* consider the nature of the narrative and context under which the issue was being discussed (i.e., consequence, action, conflict). The articles were manually coded for a maximum of two codes in each category. Articles containing more than two frames were coded based on the two perceived to be the most relevant. Both the framing categories were pre-defined.

In order to understand the dynamics further, a cross-code analysis was conducted to identify the distribution of *issue frames* among the topics outlined by the *thematic frames*. These results were calculated manually using the original coding results.

Codes

The codes were selected based on analyses from previous studies on the media coverage of climate change and public health crises (Stoddart et al., 2016; Poirier et al., 2020; Lyytimäki et al., 2020; Young & Dugas, 2011). The thematic frames were heavily inspired by Stoddart et al.'s (2016) 'COMPON' project analysis of Canadian climate change news coverage. The frames outlined in the study were broadened and modified to fit both climate change and COVID-19. After the initial attempt at coding, a gap in the thematic frames was identified and 'society and social concerns' frame was added. The issue frames were taken directly from Shih et al.'s (2008) comparative analysis of different epidemics and redefined to accommodate the climate crisis. Table 1 defines the thematic frames and Table 2 defines the issue frames.

Table 1. Thematic Frames

Frame	Definition	Climate Change Examples	COVID-19 Examples
<i>Policymaking & Political Activity</i>	Article focuses on government policy response and political debate surrounding the crisis.	Bills passing, carbon tax, partisan stances, elections, pipeline approval or cancellation	Public health measures and regulations, debates, border closures, stay-at-home orders
<i>Economic Cost & Impact</i>	Article focuses on the economic costs of and responses to the crises	Energy interests, cost of climate change, government, banks, and corporate responses.	Status of the economy, debt, small businesses, government relief packages.
<i>Culture</i>	Article focuses on individual lifestyle as it relates to the crisis	Movies, influencers and celebrities, veganism, consumer habits	Sports, movies, cooking, how individuals are passing time.
<i>Science & Technology</i>	Article focuses on scientific findings and communication, or on the development, and application of new technologies	Development of clean energy, alarming findings related to climate change, mitigation opportunities	New discoveries, variants, vaccine development, testing, contact tracings technology, medical concerns.
<i>Civil Society & Actions</i>	Article focuses on public opinion or activities by non-governmental organizations and individuals	Marches, indigenous peoples, activist figures, environmental NGOs	Willingness to get vaccinated, protests, efforts my charities to relieve severe impacts
<i>Society and social concerns</i>	Article focuses on the deeper social impacts felt by certain social	Mental health, next-generation, public health,	Mental health, domestic abuse, the strain on the

	groups or institutions that are caused or exaggerated by crisis	education, inequality, and environmental racism	health care system, education, inequality, and injustice
<i>Natural Impacts</i>	Article focuses on the direct impacts of the crisis or the primary concerns	Natural disasters, impact on animals or vegetation, weather patterns	Cases, deaths, individuals' stories, long-term effects, recovered

Table 2. Issue frames

Frame	General Definition	Climate Change Examples	COVID-19 Examples
<i>Consequence</i>	Stories related to the primary and secondary consequences and impacts of the crisis	Weather events, public health, economic impact, rising sea levels, migration, oil spills.	Cases, deaths, economic consequences, mental health impacts, school closures.
<i>Uncertainty</i>	Stories related to uncertainties in any aspect of the crisis and the portrayal of the crisis and its impact as something unknown	The proper course of action towards mitigation, the consequences of not meeting emission targets.	The severity of the disease, how long until a vaccine will be available, the success of lockdowns, when the pandemic will be over.
<i>Action</i>	Stories related to any actions taken to against the crisis to prevent or mitigate the consequences.	Protests, vegetarian and veganism, policies, and political action.	Lockdowns, social distancing, wearing masks, border closures, vaccine rollout.
<i>Reassurance</i>	Stories that emphasize the public should not worry about the effects or that there are positive outcomes during the crises.	Successful mitigation efforts, the severity of the impacts, the ability to reverse the damage through proper action.	Resolved cases, lower cases count, vaccine effectiveness, the positive environmental impact of lockdowns.
<i>Conflict</i>	Stories that discuss the differences in opinions and debates regarding the crisis	Political debate and criticism, corporate greed, protests, and marches.	Political debate and criticism, anti-vax/anti-mask protests,
<i>New Evidence</i>	Stories that outline new findings and results of research efforts or discoveries, both positive and negative	Necessary emission targets, warming thresholds, predictions of impacts.	Vaccine development, new strains, treatment options.

Results

Level 1 Findings and Analysis

Concerning the volume of climate change and COVID-19 coverage, Level 1 addresses the longitudinal trends characterizing both crises.

Climate Change

Figure 1 displays the volume of articles mentioning climate change per year from 1997 to 2021. The climate change findings support claims from the literature that the crisis' coverage increases steadily over time, with peaks in coverage corresponding to key events. The trends found between 1997 and 2010 are consistent with previous studies (Stoddart et al., 2016). From 2010 to 2015, climate change coverage was notably low compared to the peak in 2007-2008, representing a lull in climate change discourse. Following this trough, coverage began to pick up slightly, with a dramatic increase in 2018 and 2019.

The 2018-2019 spike corresponds to several key events in the climate crisis. First, August 2018 marks the beginning of Greta Thunberg's school walkout, which catalyzed widespread civil action. She inspired marches across the world with the Fridays for Future demonstrations and has since been established as a global climate activist. Additionally, the release of the bombshell IPCC report occurred in October 2018, presenting the findings of a 1.5-degree warming threshold above which the damage of climate change would be irreversible. Lastly, 2019 marks the most recent Canadian election, during which climate change was a major topic of concern.

A slight decrease in coverage is apparent in 2020, corresponding to the onset of the COVID-19 pandemic. However, while the data for 2021 only represents January to April, the search found 3066 articles containing climate change key terms. With this finding, it is plausible that 2021 may represent a peak year for climate change's presence in the media. Importantly, however, the search

only yields articles that contain the terms rather than articles that are primarily concerned with climate change. Therefore, it is not clear that climate change is a dominant issue regardless of the amount it is mentioned.

As previous literature has stated, climate change never disappears from the media entirely due to its long-term nature but may diffuse and be discussed in tandem with other current issues (Boykoff et al., 2011; Lyytimäki et al., 2020). Therefore, an additional search was conducted to include the term ‘*COVID-19*’ within the climate change results. The results found that 936 of the articles containing climate change terms also mentioned COVID-19, meaning 33% of the articles mentioning climate change also refer to the pandemic. This supports Lyytimäki et al.’s (2020) claim that climate change remains in the media by intersecting with other more mainstream or ‘hotter’ topics.

COVID-19

Figure 2 displays the monthly volume of articles mentioning COVID-19 from January 1st, 2020, to April 30th, 2021. The findings for COVID-19 consist of a much shorter period but do present several noteworthy increases and decreases in coverage that correspond to critical events during the pandemic.

First, there is a dramatic increase in coverage from February to March 2020. The virus was discovered towards the end of 2019, but it was not until March 11th, 2020, that the WHO officially declared the COVID-19 outbreak a global pandemic. This announcement catalyzed major economic and social changes over the following weeks, and the novelty and uncertainty surrounding the situation warrant significant media coverage.

The coverage continued to increase slightly through April but was faced with a notable decline from May to September. Throughout the summer of 2020, COVID-19 cases in Canada declined,

and lives returned to a relative level of ‘normalcy.’ Additionally, the death of George Floyd at the hand of the Minneapolis Police department reignited mass concern regarding police brutality and racial injustice. It catalyzed Black Lives Matter protests across the world, capturing some of the media’s attention. However, it is important to note that while the coverage did decline during the summer months, it remained comparatively high, with an all-time low of 5790 articles during September 2020.

COVID-19 mentions remained steady from September to November, but a dramatic increase in coverage in December 2020 is observed. On December 9th, 2020, Health Canada officially authorized the Pfizer-BioNTech vaccine, corresponding to a rise in COVID-19 mentions.

Further, cases began increasing in the fall of 2020, characterizing the beginning of the ‘second wave’. December marks the implementation of harsher regulations and the first time several provinces returned to lockdowns since the spring. Lastly, December 2020 was also the first holiday season affected by the pandemic. Coverage during the winter months remained steady, with only a slight decrease from December in the following four months as cases continued to increase and the vaccine rollout began.

Climate change and COVID-19 comparison

The most notable difference between the two crises is the sheer volume of articles that contain their respective key terms. The longitudinal trends for climate change are presented on a year-by-year basis since it is a long-term issue. COVID-19, on the other hand, has only existed for 18 months; therefore, the longitudinal trends are presented on a monthly basis. Despite this, COVID-19 is consistently mentioned in more articles in any given month than climate change, even in its peak year. In 2019, climate change terms were mentioned in 4829 articles, the historic record.

Conversely, COVID-19 terms were mentioned in 9885 articles in December 2020 alone, nearly double the 2019 results for climate change.

In total, COVID-19 was mentioned in 104 591 articles between January 2020 and April 2021. For reference, during its peak 16-month period of August 2018 to December 2019, climate change was mentioned in 6434 articles, demonstrating the sheer volume of articles in which COVID-19 was discussed.

Due to the long-term nature of climate change and the short-term nature of COVID-19, it is difficult to compare the longitudinal trends of the crises as they span over vastly different time periods. Considering the differences, COVID-19 coverage has fluctuated slightly but has remained the dominant news story over the course of the pandemic. On the other hand, climate change has steadily increased over time but has experienced significant fluctuations in the volume of coverage. Conversely, the media presence of both crises shows similar increases and decreases that correspond to respective key events highlighting the influence of news values in driving coverage (Boykoff et al., 2011; Shih et al., 2009; Stoddart et al., 2016; Young & Dugas, 2011).

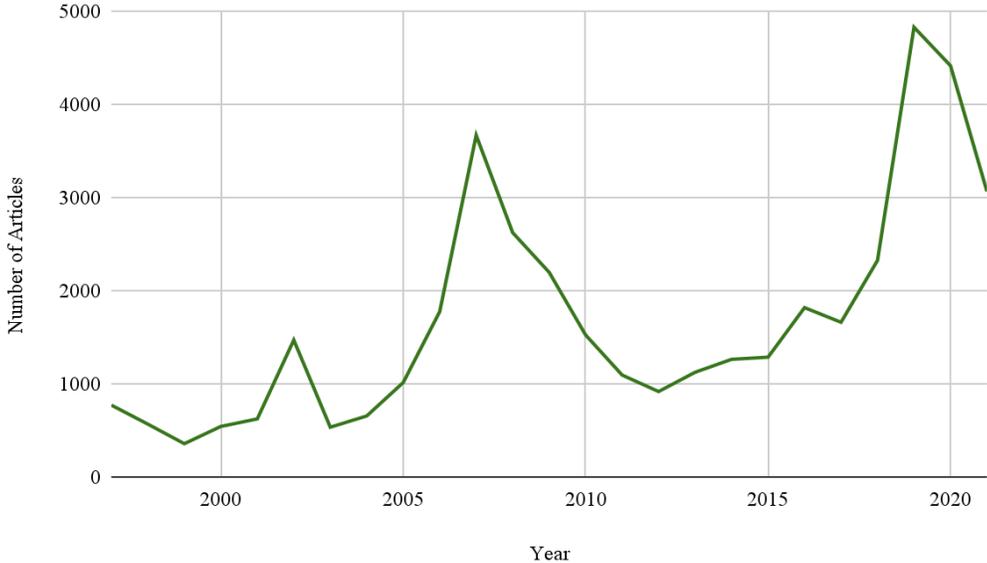


Figure 1. The volume of climate change articles in Canadian newspapers from 1997-2021

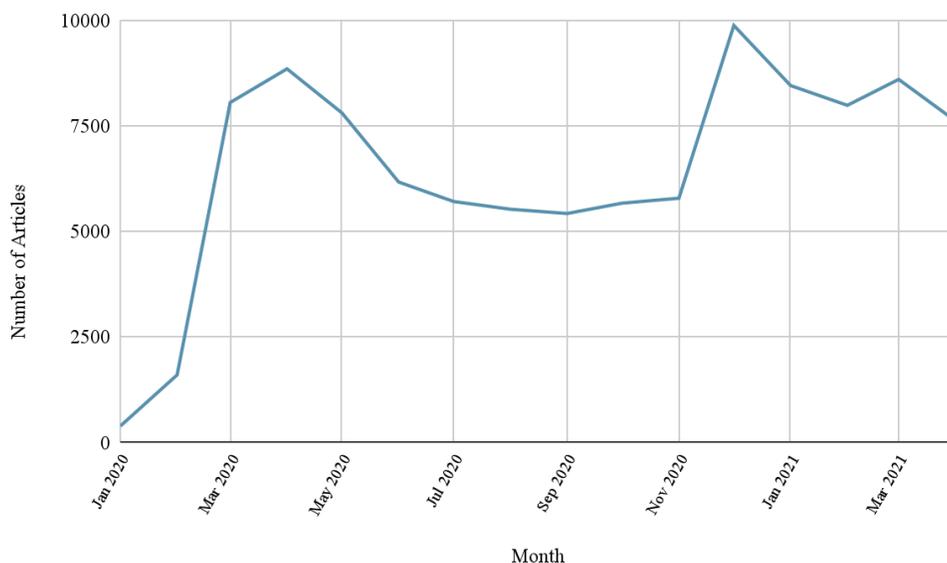


Figure 2. The volume of COVID-19 articles in Canadian newspapers from January 2020 to April 2021

Level 2 Findings and Analysis

The level 2 analysis of this study examines the dominant *thematic* and *issue frames* in both climate change coverage and COVID-19 coverage. Figure 3 represents the percentage of stories characterized by each *thematic frame*, and Figure 4 shows the percentage of stories characterized by each *issue frame* for both crises. It is important to note that the articles were coded for up to two codes each and therefore the percentages reflect the frequency of each frame rather than the portion of coverage they individually account for.

Climate change

Thematic frames: The results from the coding analysis of climate change articles determined ‘*policy making and political activity*’ to be the most dominant frame. Of the 171 articles coded, 50.26% included a political frame, discussing topics such as climate policies, political debates, and the role of climate change in the election. The second most common frame employed was ‘*civil society*,’ characterizing 28.65% of the articles, followed by ‘*economic response and impact*,’

which constitutes 21.05% of the articles. The least dominant frame was ‘*science and technology*,’ accounting for 8.7% of the climate change articles coded.

The results shown in the thematic framing of climate change results are relatively unsurprising considering the findings from existing literature. However, a few are noteworthy. The prominence of ‘*policy making and political activity*’ supports Boykoff et al.’s (2011) claim that climate change coverage is becoming increasingly politicized. Similarly, in their framing analysis, Stoddart et al. (2016) find that the ‘*policymaking*’ frame accounted for 40% of climate change coverage in Canada during the 2007-2008 period. Further, during the period analyzed for this study, the Fridays for Future marches, demanding more government action, and the 2019 Canadian Federal Election were taking place, presumably causing an increase in policies and political debates stories.

The prominence of the ‘*economic response and impact*’ frame is similarly expected based on the findings from previous studies (Stoddart et al., 2016; Lyytimäki et al., 2020). However, the dominance of the ‘*civil society*’ frame diverges from Stoddart et al.’s (2016) results, in which it was found to be the least prominent frame in 2007-2008. Since the literature states that climate change coverage is largely contingent on current events (Anderson, 2009; Boykoff et al., 2011; Stoddart et al., 2016; Tindall & Stoddart, 2018), this is likely due to the civil unrest in 2018-2019 and the media’s attention to the Fridays for Future marches and Greta Thunberg. By contrast, ‘*science and technology*’ was found to be the least dominant frame, whereas Stoddart et al. (2016) determined it was the third most prominent in 2007-2008. This finding is particularly surprising as the IPCC report was released in 2018. This could potentially support Young & Dugas’s (2011) assertion that climate change coverage is becoming increasingly less contextual and complex and more concerned with narrower aspects of the crisis, such as protests and political conflict.

Issue frames: The articles were also coded for *issue frames*. Regarding climate change, the ‘*action*’ frame was the most prominent frame employed, constituting 65.49% of the climate change articles coded. The next most prominent frames are ‘*conflict*’, found in 32.74% of the stories and ‘*consequence*’ found in 25.14%, while the least common issue frame employed in climate change coverage was ‘*uncertainty*’ constituting only 2.3% of the articles.

The prominence of the ‘*action*’ frame suggests significant attention is paid to what is being done to address climate change. Importantly, this does not necessarily mean these actions are meaningful or impactful. Further, it does not specify who or what is acting. Similarly, it is not apparent who the conflicts are in between or who is suffering the consequences.

Cross code analysis: A cross-code analysis shows which *issue frames* were most prominent in stories characterized by the various *thematic frames*. Figure 5 demonstrates the distribution of *issue frames* among the thematic categories in climate change coverage. The findings show that 65% of the articles concerning the political aspects included the ‘*action*’ frame, while 48% included the ‘*conflict*’ frame. This finding suggests that political articles tended to focus on government action and political conflict. The ‘*action*’ frame was also highly present in stories concerning civil society (85%) and the economic aspects of climate change (66%). Further, the stories concerning the economic aspects also included the ‘*conflict*’ (38%) and ‘*consequence*’ (30%) frame a notable amount. Stories including the ‘*consequence*’ frame tended to categorize articles discussing the societal (42%) and scientific aspects of the crisis (47%) and, most significantly, direct impacts (79%).

COVID-19

Thematic frames: The coding analysis presents interesting findings regarding the dominant themes in COVID-19 media coverage. The most dominant thematic frame was the ‘*society and societal*

concerns' frame, representing 37% of the articles coded. The second most prominent thematic frames were '*policymaking and political activity*' and '*culture,*' which each account for 22% of COVID-19 articles. The '*civil society*' frame was the least common frame with 11%.

The prominence of the '*society and social concerns*' frame highlights the impacts COVID-19 has had beyond the disease itself, such as mental health, the suffering healthcare system, and the impact on childhood education. This finding is supported by Poirier et al.'s (2020) exploratory study of the framing of climate change in Canada. While their results show social impact as the fourth most prominent frame, their analysis only includes articles from January 11th to April 11th, 2020, the first four months of the pandemic. Their study also investigates the prominence of frames over time compared to the total. It shows that by April 11th, 2020, the '*social impact*' has become the most prominent frame and was likely to continue to increase while stories concerning the outbreak in China would decrease and those discussing economic impact would fluctuate.

The prominence of the '*policymaking and political activity*' and '*culture,*' frames correspond to the handling of the pandemic from both the provincial and federal governments and the dramatic changes to individuals' lifestyles. Considering the political stories, there has been consistent communication from the government regarding the current situation and the necessary regulations or policies. Further, there is a significant amount of criticism regarding how the pandemic has been handled. Concerning lockdowns and public health measures, the public has seen a dramatic shift in their everyday lives and individuals were forced to adapt to a new normal. Notably, the seemingly low representation of the '*direct impacts*' frame such as stories including cases and deaths may be since these numbers tend to be reported on a municipal and provincial level daily or through social media.

Issue frames: The ‘*consequence*’ frame was determined to be the most commonly employed frame, accounting for 47% of the articles concerning the pandemic. The next most prominent frame was ‘*action*,’ accounting for 35% of the articles, followed by the ‘*conflict*’ frame accounting for 19% of the articles. The least common issue frame was ‘*uncertainty*,’ constituting 6% of the articles.

The prominence of the action and consequence frames is supported by Shih et al.’s (2008) findings regarding the dominant issue frames characterizing health epidemics. Similarly, Ogbodo et al. (2020) suggest ‘*human interest*’ and ‘*fear-mongering*’ frames dominated COVID-19 coverage globally from December 29th, 2019, to April 29th, 2020. While their study did not include the broader frames of action and consequence, they define the ‘*human interest*’ frame as stories that “draw on the impact of the pandemic on human beings across the world abound” (p. 260) while ‘*fear/scaremongering*’ intuitively addresses consequences. Interestingly, in their study, the ‘*conflict*’ frame has the lowest prominence. Considering the novelty of the pandemic, it is plausible that a general sense of unity characterized the first few months and that once the reality of the crisis began to set in, more conflict arose. (It is also worth noting, this study did not include a Canadian newspaper in the analyses.)

Cross code analysis: Considering the distribution of the *issue frames* among the dominant topics characterizing COVID-19, the inter-code analysis presents interesting findings. Figure 6 demonstrates the distribution of issue frames among COVID-19 articles characterized by the thematic frames. Most notably, 70% of articles discussing societal concerns featured the ‘*consequence*’ frame, suggesting that stories concerning the social impacts of COVID-19 dominated its coverage. The ‘*action*’ frame was also relatively significant in articles characterized by societal concerns, with 29% of stories. Similarly, articles containing the economic contexts heavily featured the ‘*consequence*’ frame (59%) and the ‘*action*’ frame (32%). Stories regarding

the cultural aspects of the crisis were also dominated by the *'action'* (52%) and *'consequence'* (34%) frames however, their prominence was reversed. Conversely, the most dominant issue frame in articles discussing the political aspects of the pandemic was the *'conflict'* (56%), followed by the *'action'* frame (41%). Unsurprisingly, stories pertaining to the direct impact of the pandemic were also most often associated with the *'consequence'* frame, with a significant amount of the coverage also including the *'new findings'* frame. However, the *'new findings'* frame was most prominent in articles concerning science and technology (48%). Further, articles discussing science and technology also tended to feature the *'action'* frame (48%). Though stories discussing civil society were rarer, those that did most frequently included the *'conflict'* frame (43%) and *'consequence'* frame (38%).

Climate change and COVID-19 comparison

Thematic frames: Figure 3 represents the comparative prominence of *thematic frames* in climate change and COVID-19 media coverage. There are significant differences regarding the framing of both crises. First, I will consider the dominant frames. While climate change is most commonly discussed in stories concerning politics (50%), COVID-19 is most frequently discussed with respect to the societal aspects of the pandemic (36%). Politics is still one of the most prominent contexts for COVID-19 coverage (22%); however, not nearly to the same extent as climate change. Notably, the societal context is not a dominant theme in climate change coverage (16%). There is also significant variation in the prominence of stories concerning civil society and the culture. While climate change coverage heavily included stories regarding civil behaviour and action (29%), COVID-19 coverage focused more on the cultural aspects and stories pertaining to lifestyle (22%). Both crises show comparable results with respect to the prominence of economic stories

(climate change: 21% & COVID: 19%). Similarly, the science and technology and direct impact frames are not heavily used in the framing of either crisis.

Notably, there is more distribution of COVID-19 articles among the frames with the dominant ‘*societal*’ frame characterizing just over a third of the articles. Conversely, climate change coverage disproportionately focuses on the ‘*policymaking and political activity*’, accounting for just over half of the articles and is highly concentrated in the top three dominant frames.

Issue frames: Figure 4 represents the comparative prominence of *issue frames* in climate change and COVID-19 media coverage. Interestingly, ‘*action*’, ‘*consequence*’ and ‘*conflict*’ were the top frames for both crises; however, the prominence of each varies. The most notable difference in the employment of the *issue frames* is the dominance of the ‘*consequence*’ frame in COVID-19, which constitutes 48% of the articles, while the consequence of climate change only account for 22% of its coverage, the third most dominant frame. The ‘*action*’ frame is the most dominant frame in climate change coverage, constituting 66% of the articles, and is the second most dominant for COVID-19, constituting 36% of the articles. The ‘*conflict*’ frame is present in 33% of the articles regarding climate change, making it the second most prominent frame. While it is the third more prominent frame in COVID-19 coverage, characterizing 19% of the articles. ‘*Action*’ is the second most common issue from with 36% of COVID-19 articles including this frame.

Regarding the least dominant issue frames, COVID-19 coverage tended to include slightly more stories regarding ‘*new findings*’ (11.32%) and ‘*reassurance*’ (12%). However, neither crises’ coverage featured many stories including the ‘*uncertainty*’ frame. Further, COVID-19 again showed notably more distribution among the frames whereas climate change coverage remains relatively concentrated in the top three frames.

Cross-code analysis: The prominence of issue frames in the different thematic categories diverges in the case of the political, civil society, and economic stories. In the case of climate change, all three are dominated by the ‘action’ frame, followed by the ‘conflict’ frame. Regarding COVID-19 coverage the political and civil society stories are dominated by the ‘conflict’ frame, and the economic stories are dominated by the ‘consequence’ frame. In the case of cultural, societal, direct impacts and science and technology stories, the results show little difference among the distribution of the issue frames between the two crises.

In sum, climate change coverage is predominantly characterized by stories regarding political action, civic action, and economic action. Conversely, COVID-19 coverage is dominated by societal consequences, political conflict, and cultural action.

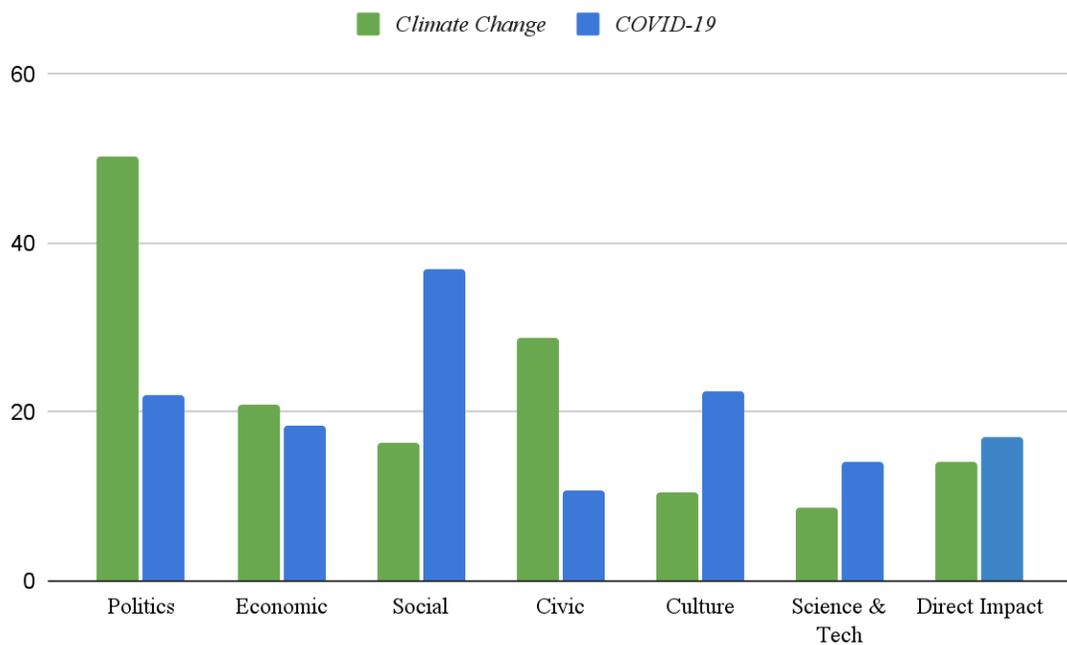


Figure 3. Percent of thematic frames used in Canadian climate change and COVID-19 newspaper coverage.

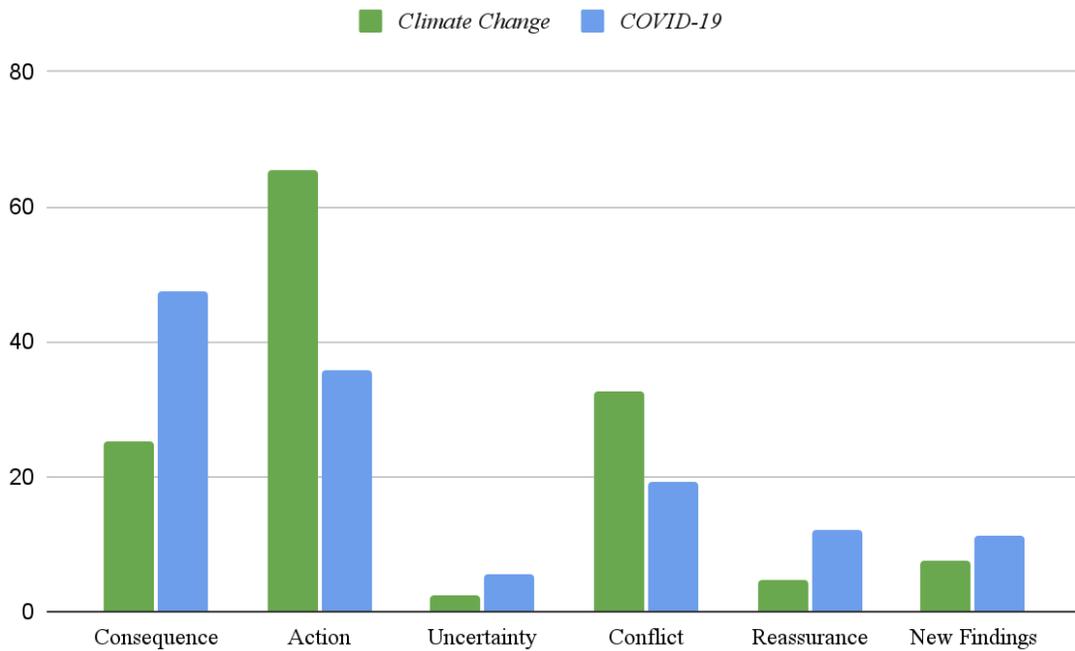


Figure 4. Percent of issue frames used in Canadian climate change and COVID-19 newspaper coverage.

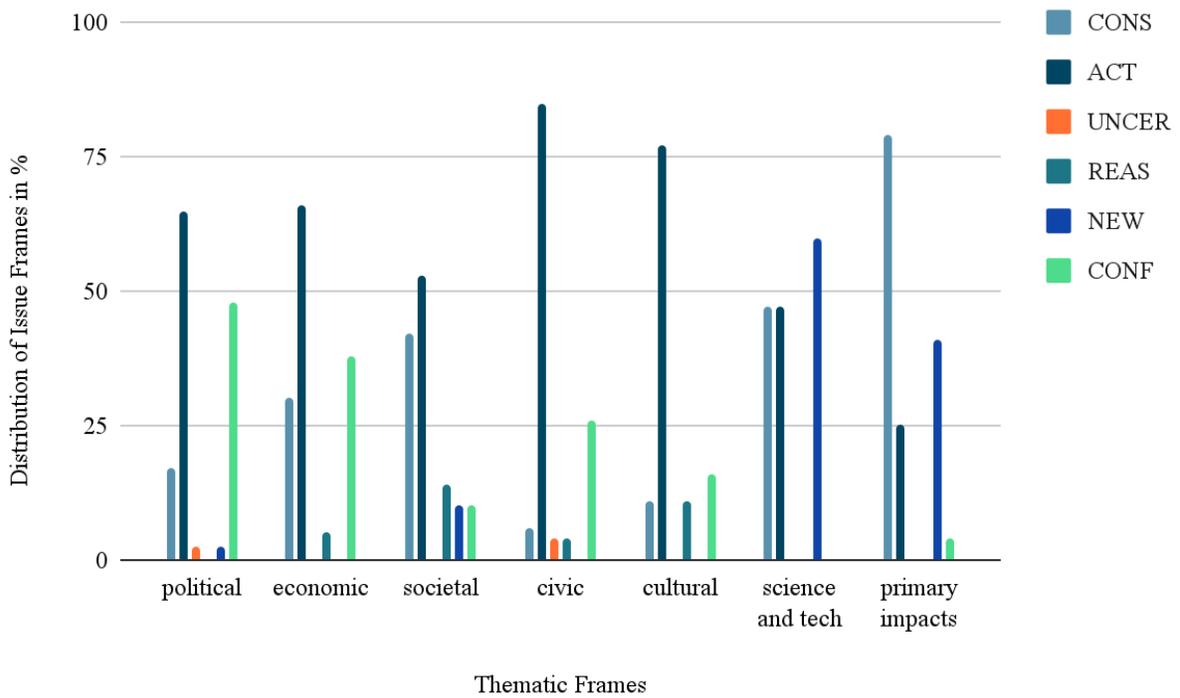


Figure 5. Distribution of issue frames among climate change articles characterized by thematic frames.

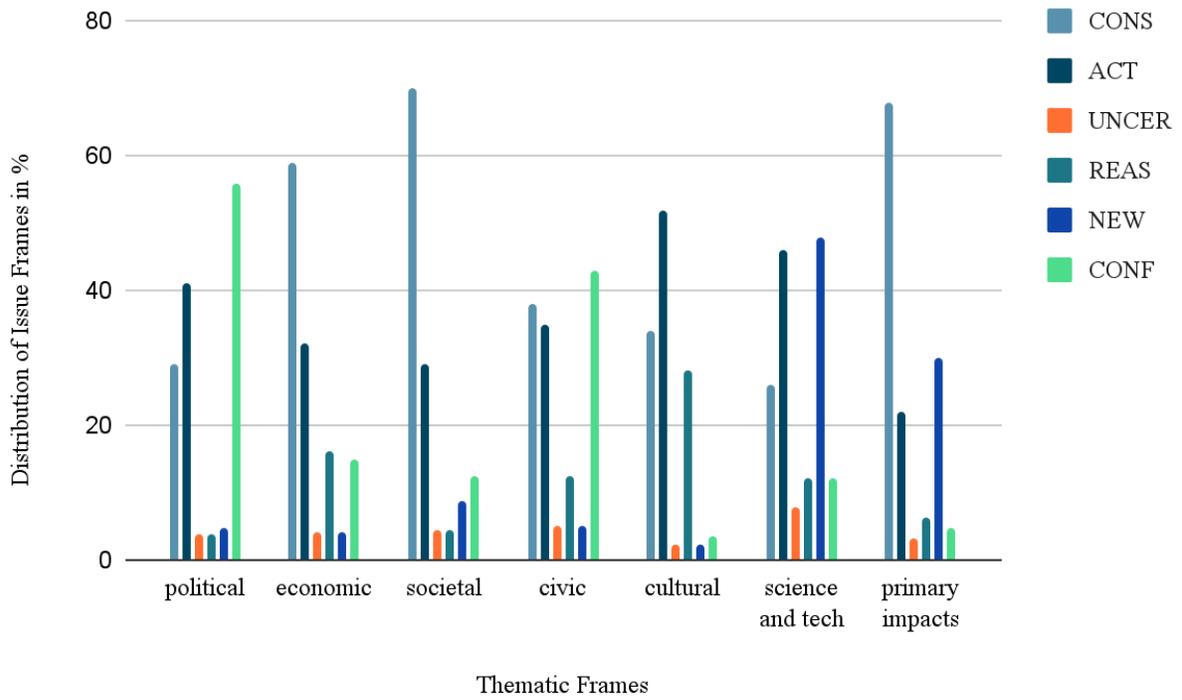


Figure 6. Distribution of issue frames among COVID-19 articles characterized but thematic frames.

Discussion

As highlighted at the beginning of this paper, the media plays an integral role in determining public awareness and understanding of risks, which ultimately influences public behaviour. Considering the dissimilar responses to the threats posed by climate change and COVID-19, this study examined Canadian newspaper coverage of both crises to compare and contrast their visibility and portrayal. The findings identify several differences between the media's treatment of both crises both in the volume of coverage and the framing, validating the plausibility that the media has influenced the respective public responses to climate change and COVID-19.

Volume of Coverage

Regarding the volume of coverage, the results show a stark difference in the number of articles that mention climate change compared to COVID-19 in the three publications analyzed. COVID-19 has received significantly more media attention than climate change, despite its relatively short duration. This finding holds true in both the longitudinal trends and a comparison of respective peak periods. In any month following the pandemic's official declaration, COVID-19 was mentioned in more articles than climate change, even in its peak year. For example, in September 2020, COVID-19 terms appeared in 5428 articles, which constitutes the lowest point in coverage throughout the pandemic, while climate change appeared in 4829 articles in the entirety of 2019, representing a peak coverage year.

Explanations for the disproportionate amount of media attention COVID-19 has received are likely due to its newsworthy characteristics. The novelty and uncertainty surrounding the pandemic give the media an important role in informing the public, who heavily rely on these outlets for awareness of public health measures, new discoveries, regulations, etc. (Anwar et al., 2020; Mheidly et al., 2020). Further, the pandemic poses an immediate and proximate threat to

individuals' health. The directness and urgency of risks associated with COVID-19 creates more demand for coverage, while climate change lacks many of these characteristics (Anderson, 2009; Tindall & Stoddart, 2018; Young & Dugas, 2011). Despite the threat it poses, it is seen as distant and ambiguous and involves a multiplicity of stakeholders with competing opinions and interests affecting when and why it receives coverage. Ultimately, it lacks allure.

Examining these findings under the framework outlined in Agenda-Setting theory, the abundant volume of COVID-19 coverage has caused a heightened awareness and concern surrounding the pandemic. By overrepresenting the pandemic in the media and underrepresenting climate change, uninformed individuals may misinterpret the relative threats. As the public continues to rely on the media for information regarding the crises, the amount of coverage COVID-19 receives signals that the pandemic is a serious concern. Conversely, despite the persistent threat of climate change, lower amounts of coverage push the crisis out of the public's attention, which in turn, reduces concerns and actions (Lyytimäki et al., 2020; Stoddart et al., 2016; Tindall & Stoddart, 2018)

A second finding concerning the volume of coverage pertains to the longitudinal trends of the crises. In support of prior studies on climate change coverage in the media, the findings demonstrate an overall increase in the media visibility of climate change in Canadian newspapers. The longitudinal trends of COVID-19 are more challenging to interpret due to the short nature of the crises; however, since the declaration of the pandemic, articles mentioning COVID-19 have been and continue to be extremely voluminous. Notably, the coverage of both crises seems to be highly event-driven, with peaks in coverage corresponding to critical events. This finding supports both the previous literature on climate change coverage (Boykoff et al., 2011; MacDonald et al., 2009; Stoddart et al., 2016; Young & Dugas, 2011) and studies regarding other public health

epidemics (Shih et al., 2009); however, there are notable differences in these fluctuations with potential implications.

First, the events that appear to drive up COVID-19 coverage circumstances that present essential contextual information to the public, such as the declaration of the pandemic, the onset of the second wave/increases in cases, and the approval and distribution of the vaccine and so on. Similarly, lower periods of coverage correspond to a diminished threat, as seen during the lull in coverage during the summer of 2020, where cases were decreasing and much of the economy reopened. It is also important to reemphasize that COVID-19 maintained a disproportionately large media presence even during periods of lower coverage. Conversely, climate change fluctuations correspond to “newsworthy” events attached to political action and conflict or key figures (Boykoff et al., 2011; Stoddart et al., 2016; Tindall & Stoddart, 2018; Young & Dugas, 2011). While these events are important, they concentrate climate concerns around more narrow and specific aspects of the crisis and may deemphasize the broader contexts (Young & Dugas, 2011). More importantly, the threat of climate change has only increased while little action has been taken. Therefore, periods of lower amounts of coverage do not represent a diminished threat but rather a loss of momentum in the discourse potentially related to media cycle norms, the absence of extreme weather events, news competition and issue fatigue, as identified by Lyytimäki et al. (2020).

The last finding concerning the volume of coverage concerns the tenacity of climate change coverage during the pandemic. While the momentum gained during the 2019 peak was interrupted with the onset of COVID-19 outbreaks, preliminary findings for 2021 suggest that climate change media visibility has not yet suffered in terms of the volume of articles mentioning the crisis. Prior studies have identified newer short-term crises as causes for decreases in coverage; however, the

parallels drawn between the two crises may have benefitted climate change concerns by allowing it to draft off the pandemic's momentum. While it is too early to say, the growing literature connecting climate change and COVID-19 has identified many lessons that can be drawn from the pandemic and applied to climate change policy and response. This suggests that as COVID-19 begins to wind down, the energy gained may shift rather than disappear. This is further supported by the finding that over a third of climate change articles mentioned COVID-19 as well, similarly, observed by Lyytimäki et al. (2020).

Framing

Beyond the varied trends in the volume of climate change and COVID-19 coverage, there are significant differences in the framing of both crises. The results from the coding analysis show that climate change was primarily discussed in the political context, followed by civil society and economic themes. Conversely, COVID-19 coverage was dominated by societal contexts followed by the cultural and political aspects of the pandemic. Further, climate change was more often discussed in terms of action and conflict, while COVID-19 coverage referred most frequently to the consequences and actions. Importantly, neither crises' coverage featured a significant amount of science and technology articles despite the relevance of the scientific contexts in both circumstances. Ultimately, the climate change coverage was dominated by stories concerning political, civil, and economic activity, while COVID-19 was dominated by societal consequences, cultural action, and political conflict.

These findings build on existing evidence that climate change has diffused into more mainstream topics and shifted away from the more relevant contextual concerns (Stoddart et al., 2016; Young & Dugas, 2011). In considering the episodic nature of both crises' media coverage, these findings are unsurprising. While critical events seemingly influence climate change and COVID-19

coverage, climate change remains a relatively distant threat whose consequences are largely projected and require preventative action. Therefore, critical events tend to involve political action and conflict, such as passing a bill or an election. Further, the prominence of the civic frame contradicts Stoddart et al.'s (2016) 2007-2008 findings which identify it as the least dominant frame. This also supports arguments for climate change's episodic nature, which renders its narrative dependent on current events rather than the deeper contextual issues. Importantly, this centres the media's attention, and therefore, the public's understanding, around these contexts rather than those that represent the reality of the crisis.

Conversely, the consequences of the pandemic are more immediate, and stories regarding the impacts of the pandemic are news stories rather than scientific projections. Even in cases of the projected effects of COVID-19, the consequences are far nearer than those of climate change, making them more newsworthy and effective. Further, they are more focused on personal and direct impacts such as mental and physical health, school closures, healthcare system, cases or deaths or economic struggle. In contrast, climate change consequences are discussed primarily in terms of the environment such as rising temperatures and sea levels, creating a disconnect from personal issues.

Another important finding concerning the framing is the distribution of stories among the frames. Climate change was highly concentrated in the top three dominant frames in both thematic and issue frames, particularly the political frame, while COVID-19 was more evenly distributed. This supports Young & Dugas's (2011) that climate change coverage has also diminished in complexity, focusing on niche aspects of the crisis, and de-emphasizing the broader themes and holistic picture of the causes, effects, solutions, and stakeholders.

The differences in the framing of climate change and COVID-19 can also be considered influential in the varied responses to both crises, as outlined in framing theory. The emphasis of the societal impacts of COVID-19 makes the concerns surrounding the pandemic much more applicable to individual's personal lives. Conversely, the focus on political and civic action in climate change coverage decontextualizes the crisis and over-emphasizes distant, specific, and 'newsworthy' aspects that are harder to grasp or apply to personal experience. There is a significant lack of attention paid to more personal and contextual factors of climate change, while COVID-19 is portrayed in ways that increase concern and, therefore, responses. If the public had more exposure to the deeper consequences of climate change inaction such as public health or financial consequences, as opposed to debates among politicians, protests or, pipeline cancellations, it is possible that more aggressive actions would be taken (Maibach, 2010).

Overall, the results suggest that providing more coverage for climate change and concentrating on more contextual aspects of the crisis may be beneficial in increasing responses. Currently, climate change coverage is too inconsistent and focuses too much on the political actions rather than the more immediate, proximate, and personal consequences that would better incentivize action. As seen in the case of COVID-19, the abundance of coverage and the framing of the crisis in personal impact terms correlates with increased action from both the public and decision makers. Despite some of the inherent differences, if climate change was more often portrayed as an immediate threat to public health, economic success, or other personal concerns, we may see more success in the efforts to mitigate and adapt to the crisis.

Implications

It is important to note that while COVID-19 was approached with far more complacency and willingness to forego certain rights and freedoms, it should not be used as the blueprint for climate

change communication strategies. While there are many lessons to be learned from the way COVID-19 was reported and acted upon for climate change, not all those lessons are positive. The volume of COVID-19 coverage seemingly helped increase its salience; however, it also overrepresented its relevancy and severity, contributing to increased fear and panic rather than rational and understanding (Ogobodo et al., 2020). Similarly, the framing of the crisis may have helped portray a story in a way that increases concern and acceptance. However, as noted by Anwar et al. (2020), the media's portrayal of the pandemic also has many negative psychological, social and economic consequences. Proper communication strategies are imperative for appropriate and effective responses that minimize the risk of both the crisis itself and secondary harm (i.e., mental health, economic damage, political distrust) as suggested by Ruiu et al. (2020) who emphasize the the necessity to both inform and reassure the public in the context of both crises.

In sum, while the media may have played a role in affecting the public's responses, only certain aspects of COVID-19 coverage should be carried over into climate change coverage to encourage more public action. This is not to imply that COVID-19 was not a serious threat to public health and society, but rather that the representation of the pandemic in the media had notable flaws that should be considered and avoided when comparisons are drawn to address the climate crisis.

Limitations

While this study presents interesting findings concerning the treatment of climate change and COVID-19 in Canadian newspapers, several limitations may affect the results. Concerning the sources, the first limitation is that Canada is a bilingual country; however, this study excludes French publications, eliminating a significant amount of the population who only read French newspapers. Similarly, the framing analysis only included one publication, *The Toronto Star*, identified as a left-leaning newspaper. This possibly impacted the results by providing articles

from only one ideological standpoint and excluding others. However, due to the impressive volume of COVID-19 coverage, 10% of the articles from multiple sources would have been outside the scope of this paper. Lastly, in including only print news coverage, this study did not cover the role of social media and broadcast reporting. Traditional print media is declining (Tindall & Stoddart, 2016), so it is also valuable for future studies to consider how these crises have been discussed online and on TV and radio. The volume of articles of COVID-19 does support the choice of newspapers for analysis; however, due to the popularity and concern regarding the climate crisis among the younger generation, an analysis of social media may have yielded different results and implications.

Considering the methodological approach to the framing analysis, this study lacked an identification of positive and negative stories and the depth and tone of the articles. While the issue frames present findings regarding the prominence of consequences and actions, it is not evident that the consequences were negative or positive or if the actions taken were meaningfully described or identified (i.e., naming and describing a policy). Similarly, coding the articles for up to two thematic frames and two-issue frames did not allow for specification of which issue frame corresponded to which thematic frame. For example, in the case of an article discussing new scientific findings influencing the implementation of a bill or policy, the results would not be specific that the scientific aspect corresponded to the new findings frame while the political context corresponded to the action frame.

Additionally, even though science & technology and direct impacts were not dominant themes, it does not necessarily prove that they are not discussed frequently within other stories. This study only coded for the dominant frames characterizing the coverage, not their presence within the articles. Future studies should perform a discourse analysis to gather an in-depth analysis of the

framing of both crises. Future studies would also benefit from comparing the framing of both crises over time to identify if COVID-19 followed similar trends to climate change. This study only coded the articles found during the more recent peak in coverage; however, the results may vary due to the different levels of maturity and public understanding of the crises. Lastly, due to the scope of the study, only 10% of the articles were coded, which presents a valuable picture of the coverage but may not be significant enough to confidently back these findings.

Conclusion

Through a comparative analysis, this study examined Canadian newspaper coverage of climate change and COVID-19. In recognition of the various ways the media affects the public's perception of risk, the purpose of this research was to identify differences in the media's coverage of both crises and discuss their potential implications. The findings suggest there are several key differences in the coverage of climate change and COVID-19.

The unprecedented media attention the pandemic received contributed to the issue's salience, meanwhile, climate change's cyclical coverage results in unsustained concern and in inconsistent responses. Further, Canadian news media framed the two crises differently, with climate change being portrayed in far less contextual ways that ultimately neglect the aspects of the crisis that would accurately represent the concern.

Ultimately, this study suggests the media can justifiably be considered as a factor in the disproportionate response to both crises. Importantly, COVID-19 does not represent a larger threat than climate change but rather a crisis more fit for the mass media attention. While there are many dynamics at play, the public's dependence on the media to generate an understanding of the crises means that differences in the coverage will most likely result different interpretations and, therefore responses. With this in mind, my hope is that further attention can be paid to how the mass media outlets can more effectively communicate environmental risks in a way that accurately represents the threat and generates appropriate responses.

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