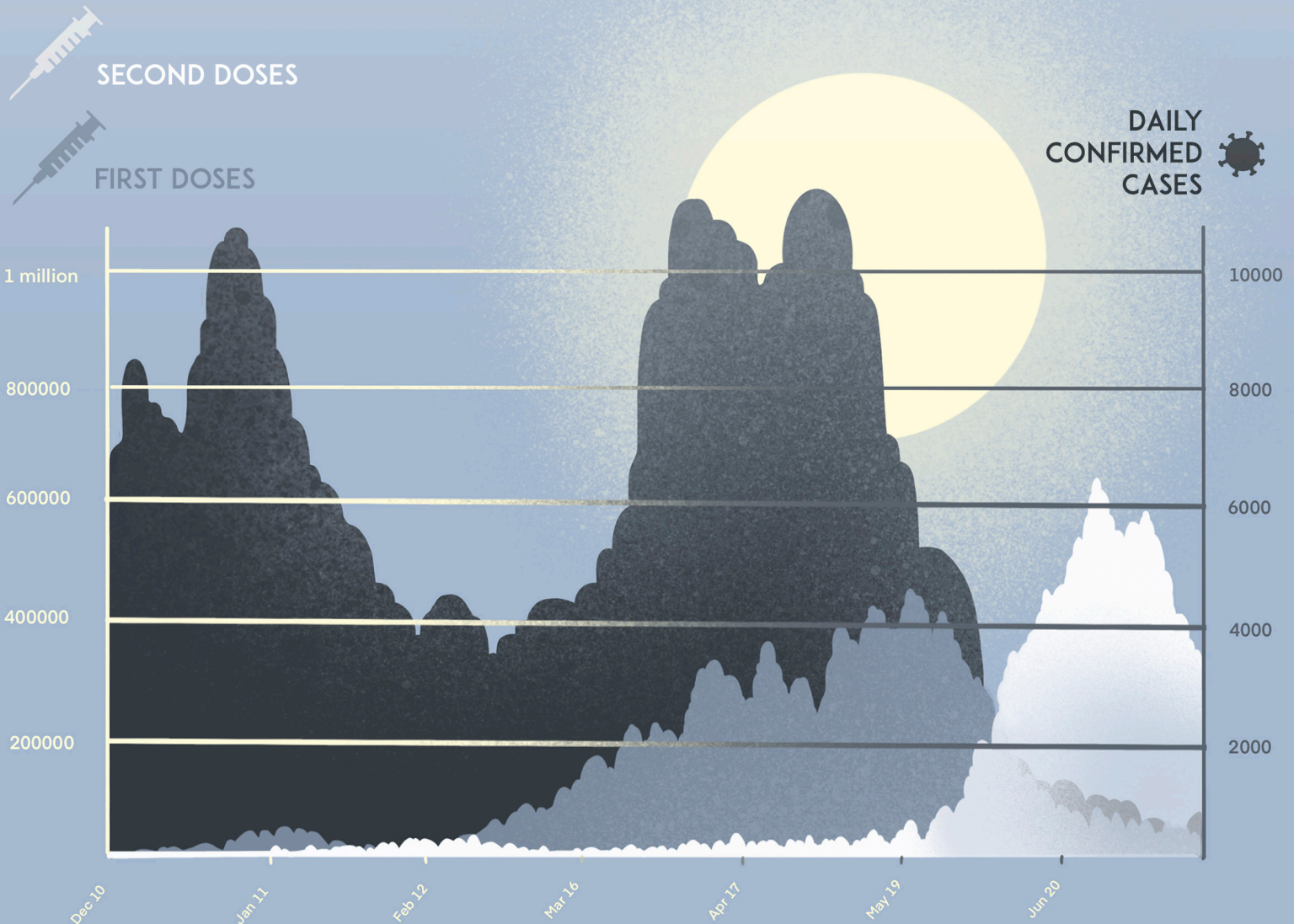# HazNet

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Silver Linings

SECOND DOSES

FIRST DOSES

DAILY CONFIRMED CASES

1 million

800000

600000

400000

200000

10000

8000

6000

4000

2000

Dec 10   Jan 11   Feb 12   Mar 16   Apr 17   May 19   Jun 20

CONTENTS

CRHNet

FEATURE

INTERVIEW

PRACTICE

LESSONS LEARNED

RESEARCH

POLICY

President's
Message

For many, 2021 has continued to be a whirlwind of activity due to the COVID-19 response. There is still the need to follow public health guidance to stop the spread of COVID-19, especially with the emergence of new variants; however, with vaccination rates increasing, it is starting to feel like we can see the light at the end of the tunnel. COVID-19 will continue to impact disaster risk reduction for a long time. The ultimate test will be how many lessons from this historic event become lessons learned rather than just 'lessons observed'. It is important that all of us continue to act as champions for disaster risk reduction so the lessons from COVID-19 are not lost.

With my term as President coming to an end in the fall, I want to express what an honour it has been to work with the CRHNet Board and the Haznet Team. Both the Board and Haznet are run by volunteers who selflessly gave their time while helping with or being impacted by many of the ongoing emergency responses. Even with limited capacity and the stresses presented by such emergencies as COVID-19 and the ongoing forest fire situation, they have still succeeded in making sure that CRHNet and Haznet can continue to grow. While COVID-19 has posed challenges for CRHNet like many other non-profits, we have continued to move forward with projects and activities intended to build a stronger organization and network. We have worked hard to modernize our internal processes and have made great strides in large projects such as the website refresh and the strategic plan. In addition, new membership and partner benefits will be rolled out soon to give our members even more value. The Board remains committed to building new partnerships, serving as a network for people with interests in disaster risk reduction, and seeking exciting new opportunities to bring more value to our members.

I would like to thank our Board and the Haznet Team for all of their hard work over the past several years. It has been a pleasure to work with you and I look forward to seeing where you take CRHNet in the future.

Patricia Martel, Ph.D, CEM

President, CRHNet

Executive Director's
Note

T he new normal, post-COVID, recovery...all these terms point to what comes next. As a profession, we have the privilege - and responsibility - to share our experiences, insights, and challenges with each other to improve disaster risk reduction in Canada.. What long-term impacts from the past eighteen months will shape the direction of our field? What will the next eighteen months look like as we emerge from the COVID-19 pandemic or tackle a fourth or fifth pandemic wave?

Knowledge-sharing is the key to improvement. Rarely before have so many across the country and around the world shared similar challenges, successes, and the collective need to adapt and pivot to emerging issues and risks. We want to provide a platform and networking space to discuss and share your insights for the future through HazNet and the CRHNet platform.

On a personal note, I love the "Silver Linings" theme of this issue of HazNet. It is important to take time to recognize the benefits of these challenging times. For me, having always worked largely from home, I felt a much greater societal recognition of how challenging such an environment can be. It is not easy to manage, especially as it further blurs the lines between work-life and home-life. Similarly, after years of being on the road for 200+ days a year for work, I was finally home long enough to be able to welcome a puppy into my family! With the pandemic having lasting impacts on business travel and enabling greater virtual collaboration, I do not see myself returning to that unsustain-able level of travel again.

I hope others share their silver linings and remind one another that although you sometimes have to look for them, silver linings are always there. Stay tuned for some exciting updates on how CRHNet hopes to facilitate knowledge sharing and collaborations among our disaster risk reduction network. Thank you to everyone that has worked so hard during this unprecedented pandemic.

Ramona McVicker

Executive Director, CRHNet

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Editors´
Note

How many things are you 100% certain of in life? The recent United Nations Intergovernmental Panel on Climate Change report reaffirmed the certainty that the future ahead of us will bring many disasters. 'Irreversible for centuries to millennia': an increasingly hot, unstable world will see extreme precipitation in some parts and droughts in others, as well as reductions in Arctic sea ice, snow cover, and permafrost. Canada is heating up twice as fast as the rest of the world and three times as fast in the Canadian Arctic. As Margareta Wahlström, the former head of the United Nations Office for Disaster Risk Reduction who led the development of the Sendai Framework shared in 2017 in a HazNet interview: "2 degrees is an average, in some parts of the world the increase will be 9 degrees; it will be inhabitable."

These formerly distant scientific projections are manifesting through lived experiences for some communities. This summer in British Columbia, a prolonged record-breaking heat wave killed over 800 people. It 'cooked' a billion sea creatures. This was followed by a fast-moving destructive wildfire season that displaced thousands of people, devastated Monte Lake and burnt the Village of Lytton to the ground, killing an elderly couple that attempted to take cover from the fire in a freshly dug out septic hole. In the words of one of our contributors for this issue, Sheri Lysons, Fire Chief, Adams Lake Indian Band, whose team comprises of Indigenous and non-Indigenous firefighters deployed to some of the most challenging wildfires in British Columbia: "It feels like we are just waiting for a storm to hit and don't know when it is going land, but know it is going to bring destruction with it."

These climatic events came just as the pandemic measures were easing, meaning there was little reprieve from one disaster to the next - many were locked indoors for the pandemic and then the smoke. In our little community in the BC Interior, we saw some of the worst air quality in Canada. A thick smoke blanket covered our region for weeks, penetrating every aspect of our lives, a paralyzing apathy-inducing toxic poison. As a small lower-income community, we do not have a clean air shelter for the community and many residents, especially the elderly, cannot afford routinely recommended measures such as air filters or air conditioners, let alone better insulated houses and better windows. Prolonged periods of isolation and loneliness put youth at higher risk of experiencing poor mental health. As the world as we know it comes to an end, a deeper longer-term risk of "youth disillusionment" is considered a top blind spot and a top neglected risk globally that will become a critical threat to the world over the next two years.

As we took a collective sigh of relief with the vaccination rollout and the outdoor season approaching, we choked on the reality that is climate change. It is in this context that our editorial team decided to focus on silver linings for this issue. Through a collective effort of our Canada-wide HazNet team and contributors globally, here is what we found:

The power of community-led action

Learn about We're Ready! workshops that help communities to design and implement their own disaster preparedness program through interactive and engaging community-building activities.
Learn about the power of community-led earthquake and tsunami preparedness study based on traditional, Indigenous and local knowledge as well as western science.

An opportunity to connect pandemic recovery with other systemic issues such as climate change and poverty

Read about opportunities for building climate resilient communities through pandemic recovery and a call for the development and implementation of a Pan-Canadian National Adaptation Strategy. Read about the power of grassroots response in the City of Kigali, Rwanda's capital, in which 70% of 1.6 million people live in informal settlements. Can the pandemic momentum of connected, activated and empowered communities carry on to fight systemic poverty, inequities and injustices in cities globally?

An opportunity to serve better by acknowledging differences

The pandemic highlighted the importance of applying an intersectional lens to our field of practice by acknowledging that disaster outcomes vary based on race, gender, class, education, among other identity factors. Learn about cultural safety in Emergency Social Services and how to create safe spaces, free from discrimination, where Indigenous people, families and communities can continue practicing their culture even when displaced. Learn about gender-based analysis and intersectional approaches to policy through an interplay between climate change, COVID-19, and housing.

A spotlight on public health

COVID-19 crisis highlighted the importance of pre-pandemic investments in public health and health equity, as it was highlighted worldwide how the roots of vulnerability endure during disasters. To understand the significance of public health transformation opportunities, read an interview with Dr. Michael Schwandt, a Medical Health Officer with Vancouver Coastal Health. Learn about some of the early challenges and successes of the vaccine roll-out across Canada and the United States based on interviews with public health experts in North America.

Changing how we learn

The pandemic brought an exceptional growth in online learning and digitally enabled collaboration. Learn about the Pandemonium series that explored lessons for the future of the city by bringing 38 speakers and 1400 participants over several months: while the pandemic amplified pre-existing urban challenges, it also revealed existing solutions and new lessons for the future of our communities and cities. Learn about the Salvation Army's pivot of emergency management training beyond geographical boundaries.

Towards evidence-based changes in policy and practice

Another silver lining is the significant acceleration of research globally and in Canada that went into understanding the social dimensions of the pandemic. Read about key findings from a pan-European survey on societal resilience titled "COVID-19: Emergency, Recovery and Improvement" that showed a tendency towards optimism among the respondents with regards to emergency support logistics and technologies. Learn about key findings from a Pan-Canadian study that focused on the COVID-19 experience of emergency management practitioners in health care organizations: effective emergency management is more likely when emergency management practitioners are a dedicated resource and have a place at the leadership table.

This issue shows that an ability to find a silver lining in any dark cloud - an opportunity for improvements in crises and disasters - is a distinct feature of emergency management. Despite the hardships of COVID-19, it is clear that many important transformations are taking place. Voices, movements, and causes that previously struggled to be heard are now gaining traction, thanks to the pandemic.
Now is the time to capitalize on the silver linings and to prepare for
the next disaster. Are we prepared to lead?

Lilia Yumagulova
Editor, HazNet www.haznet.ca

Perspective:

COVID-19 vaccine distribution challenges in Canada and the United States

By Michelle Pratt

The COVID-19 pandemic has proven to be one of the biggest public health emergencies to face modern society. While other pandemics have impacted large populations, the process to develop a vaccine typically takes eight to fifteen years; with COVID-19, there was an unprecedented accelerated development of multiple vaccines (Felter, 2021). In this way, the COVID-19 pandemic was also one of the biggest public health achievements in modern society, with numerous COVID-19 vaccines approved within one year of the virus first being detected.

This article examines some of the early challenges and successes of the vaccine roll-out across Canada and the United States. The author interviewed a panel of experts* in March, 2021 to get their opinions on the vaccine roll-out plans and approaches, which have been integrated into the discussion throughout the article.

The panel of experts included in the following:

- **Dr. Dylan Taylor, Facility Medical Director, University of Alberta Hospital Preparedness and Response, Public Health Agency of Canada**

- **Ryan Imgrund, biostatistician**

- **Michael Colanti, Zuckerman Fellow – Harvard Centre for Public Leadership**

- **Richard Serino, Distinguished Senior Fellow, Harvard T.H. Chan School of Public Health**

Please note the opinions of the interviewees are their own and do not represent the opinions of the organizations to which they are affiliated

Vaccine procurement in Canada

Canada had early challenges with vaccine procurement. In contrast to Operation Warp Speed in the United States which initially provided over $10 billion USD to companies to get vaccines to trial (Rabson, 2021), Canada was forced to rely on foreign vaccine manufacturers due to a lack of domestic vaccine manufacturing capability (Lexchin, 2021).

Unfortunately, this led to numerous delays and supply shortages. Despite ordering from multiple suppliers, shipments of vaccines were not always on schedule. In late January, Pfizer announced delivery delays and reduced the number of vaccines it sent to Canada in February and March, right as governments were planning large-scale vaccine rollouts.

While Canada had allocated $600 million for COVID-19 vaccine development in April 2020 (Rabson, 2021), years of underinvestment in domestic vaccine development and manufacturing limited Canada's ability to scale up quickly to meet the challenge of COVID-19. Universities and companies working on vaccine development reported issues such as lack of funding to manufacture vaccines for clinical trials, lack of government support to run trials, and lack of manufacturing capacity (Chung, 2020). All interviewees agreed that the issues with vaccine development in Canada began long before COVID-19 and undermined its ability to manufacture vaccines domestically.
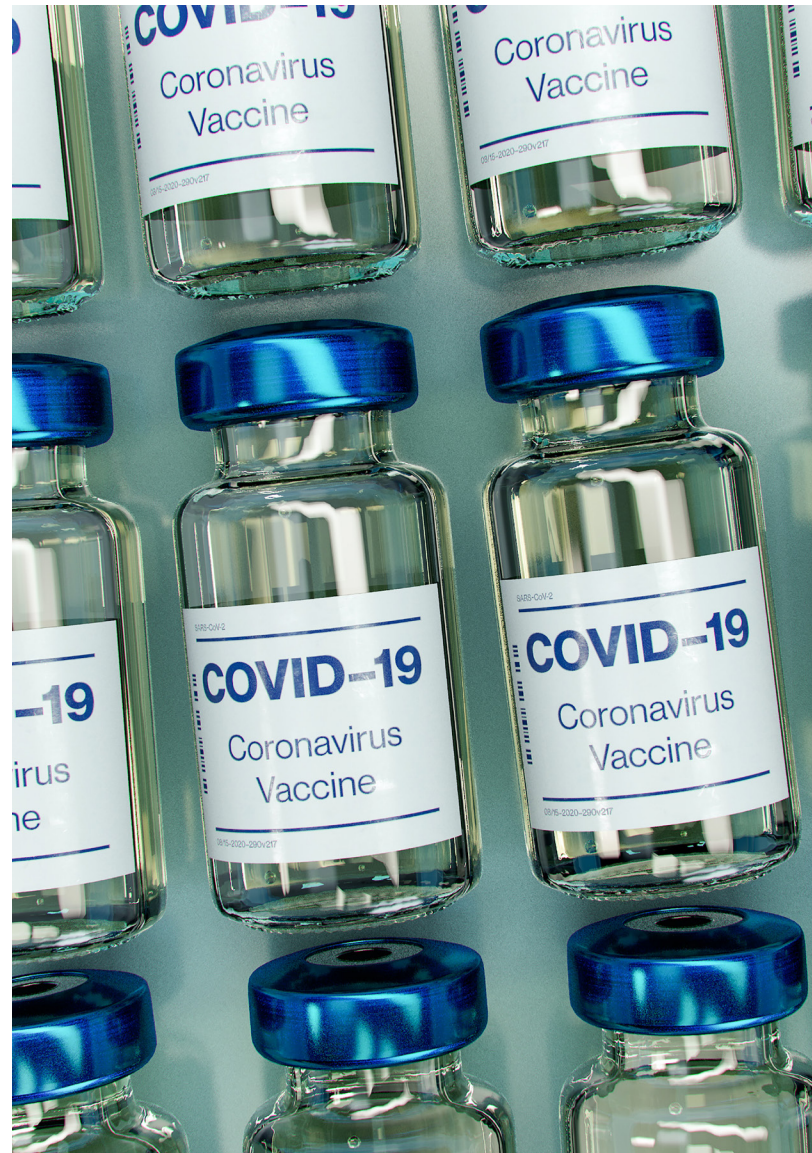
Image Credit: Daniel Schludi on Unsplash

Vaccine allocation and distribution

All countries faced the same problem with early distribution: who should be vaccinated first when demand for vaccines far outstrips supply? In Canada, the National Advisory Committee on Immunization (NACI) established guidelines for distribution, which were then adjusted by provinces and territories "depending on local trends and transmission rate" (Public Health Agency of Canada, 2021a). Biomodels suggested different approaches to prioritization based on the underlying priorities. For example, if the priority was to reduce lives lost, vaccine distribution should go in descending order from the oldest to youngest popula-

tions as well as those with pre-existing medical conditions. If the aim was to reduce community transmission, targeting people aged 20 to 49 first would have the greatest impact as these populations were more likely to spread the virus, be frontline workers, and have school-aged children (Bubar et al., 2021). Using the available data, NACI ultimately recommended vaccine distribution based on the risk of exposure to COVID-19, risk of severe illness from COVID-19, and the safety of the authorized vaccines in the target populations (Public Health Agency of Canada, 2021).

Vaccine roll-out varied across the country as each province made decisions about who could administer the vaccin react to conditions on the ground: Ontario revised its plan to focus on virus hot-spots during its second phase to slow the rate of transmission (Martin, 2021).

One of the most significant recommendations from NACI was to delay second vaccine doses beyond manufacturing guidelines to provide some protection to more people while supply remained limited, which enabled provinces to provide at least some protection to a greater proportion of the population more quickly. e (e.g. professional qualifications required), where they would be distributed (pharmacies, public health units, etc.), and the order of priority. There was no standard-ized method of booking vaccine appointments, which often left citizens confused. However, in many cases the decentralized approach allowed provinces to be more nimble and

Image Credit: Martin Sanchez on Unsplash

Image Credit: Jakayla Toney on Unsplash

Vaccine distribution in the United States

In the United States, states were responsible for vaccine distribution. Roll-outs varied across the country, with examples of major successes - such as West Virginia's contracts with community pharmacies - and failures, such as Philadelphia's Philly Fighting COVID scandal that alleged corruption and incompe-tence in the startup organization tapped to handle the city's vaccine distribution program.

After President Biden took office, mass vaccination sites organized by FEMA were used to distribute vaccines faster with fewer resources required. However, where mega-sites such as stadiums received more doses than they could distribute, it came at the expense of local communities. In one instance in Wittman, Massachusetts, the more than 500 elderly residents were offered bus rides to the nearest mass vaccina-tion centre when it was announced the town would no longer receive supplies. Only 25 residents took the offer (Chery, 2021), because people prefer to stay in their own communities.

Based on national data, the Biden administration shifted tactics in May, 2021 to focus on an increased use of pharmacies and community vaccination sites, while announcing a federal website to assist individuals with finding community vaccine sites (LaFrenier & Weiland, 2021).

Lessons for the future

Distribution of the COVID-19 vaccine in Canada and the United States faced many challenges. Governments adapted and updated recommendations, sometimes causing confusion for the population, while trying to remain responsive to new information and emergent conditions. It will take years of scientific studies to determine if some prioritization strategies were more effective than others; however, as of July 2021, 79.6% of Canada's population and 66.5% of the US population over age 12 have at least one vaccine dose (Government of Canada, 2021; Center for Disease Control and Prevention, 2021).

While the long-term health and social consequences of COVID-19 will play out in the years to come, the COVID-19 pandemic has shown the importance of pre-pandemic investments in public health and health equity.

Michelle Pratt is an emergency management and business continuity advisor and is completing an internship with Richard Serino, a distinguished Senior Fellow at the Harvard T. H. Chan School of Public Health. She is currently the secretary for the IAEM Canada Alberta Region.

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A new dawn for public health?
One specialist's thoughts and hopes

By Marian Orhierhor, Tasha-Aliya Kara, and Nicole Spence

Public health reimagined

As COVID-19 centered in many lives for the past 16 months, 'public health' became a household term. Through the media and elevated profiles of many health organizations, mainstream society is now more attuned to the only element of the health care system dedicated to preventing injury, illness and premature death, as well as to the underlying factors that lead to inequitable outcomes (Brisolara and Smith, 2020; Brownson et al., 2020). Whether this increased awareness will lead to increased societal value - and therefore increased support for the under-resourced field - is an uncertainty for many health professionals.

Historically, public health emergencies of international concern, such as HIV/AIDS, SARS, H1N1, Ebola and Zika, have been catalysts for change. After the Canadian SARS crisis in 2003, there was a resolve to strengthen public health, which led to the creation of the Public Health Agency of Canada (PHABC, 2019). Lessons learned from H1N1, Ebola, and Zika also spurred discourse on the need to invest in vaccine and biotech companies to stimulate the development of investigational vaccine technology that can be adapted to new and emerging pathogens (Lurie et al., 2020). The 2014-2016 Ebola epidemic in West Africa further highlighted the importance of research and fast funding in outbreak response. This led to the development of the WHO Research and Development Blueprint and the WHO Contingency Fund for Emergencies to allow for the rapid activation of research and development activities during epidemics.

While these events spurred positive change, particularly in increasing emergency response capacity, public health in Canada has not witnessed the same post-pandemic boom; rather, the enthusiasm seems to fade. Currently, the percentage of the national health care budget allocated to **public health** is at 5.7%, while hospitals, physicians, and prescriptions account for 54.3% (CPHA, 2014; PHABC, 2019; CIHI, 2021). In fact, the small portion of funding has suffered consistent cutbacks, despite clear evidence that increased investments in health promotion and disease prevention reduces health care spending overall by reducing the burden of disease (PHAC, 2010; PHABC, 2019). With public health solely responsible for keeping people healthy and preventing disease, injury and death, this depleting expenditure on public health has been explicitly linked to the lack of preparedness in responding to the first major pandemic of the 21st century.

Public Health expenditures include disease prevention and health promotion activities, community mental health and addictions services, and occupational health services to promote and enhance health and safety in the workplace. A broad definition of public health is consistent with the definition of preventive care used by the OECD for international comparative reporting of health expenditure (CIHI, 2021).

Like other disasters, immediate recovery efforts have focused on the areas that were highlighted as the biggest gaps: reforming long-term care, pivoting to greater virtual-based care, and revisiting methods and deliveries of care. However, this was the first pandemic to highlight the sociocultural dimensions of public health events on a global scale; it exacerbated existing inequities and further emphasized the importance of applying an **intersectional** lens to the population, as many marginalized groups shouldered the brunt of the pandemic (Paremoer, 2021). For example, individuals belonging to these groups worked in essential occupations and health care to prevent further economic, social, and health care system failure (UN Women, 2020; Paroemoer, 2021). Ultimately, the pandemic took a devastating toll on all aspects of society. Many hope that the silver lining of this impact is a level of awareness that has the potential to disrupt the status quo of an under-valued and under-resourced field.

Intersectionality is an analytical lens that examines how different identity markers (such as gender, class, race, education, ethnicity, age, geographic location, religion, migration status, ability, disability, sexuality, etc.) interact to create different experiences of privilege, vulnerability and/or marginalization (Crenshaw, 1990; Larson et al., 2016).

A new dawn

Despite devastating effects on a global level, the pandemic has rewarded the field of public health with a wide range of commendable developments, creative innovations, and has highlighted areas of strength. To understand the significance of this transformation and opportunity in the context of British Columbia, we interviewed Dr. Michael Schwandt, a specialist in Public Health and Preventive Medicine, who serves as a Medical Health Officer with Vancouver Coastal Health and Clinical Assistant Professor in the UBC School of Population and Public Health. Dr. Schwandt has been actively engaged at the front lines of British Columbia's response to the COVID-19 pandemic, working to prevent transmission in high-risk contexts such as long-term care home and impacted workplace settings. Beyond his direct management of the COVID-19 pandemic, he is a specialist physician in Public Health and Preventive Medicine, with a focus on environmental public health and health equity. Through public health practice and research, Dr. Schwandt aims to explore and act on the health impacts of environments such as housing and urban form, in the context of climate change and persistent but modifiable disparities.

Q: *How has the definition and perception of public health changed? Can you tell us how your role evolved as the pandemic evolved?*

Dr. Schwandt: Most textbook definitions will highlight that public health is interdisciplinary and sectoral, but that can be lost in practice with specialty programs, such as food safety, disease prevention, and immunization, which are very focused by nature in order to effectively offer services.

The COVID-19 pandemic has required an **all-of-society response to an all-of-society problem**, driving home the idea that public health is an intersectoral field. To effectively manage the pandemic, we have supported areas like housing, transportation, education, income supports - but it has also highlighted opportunities to help manage the pandemic. There has been a general **evolution in public understanding**, which has been reflected in our health partners - for example, housing services now recognize they are a major part of a pandemic response and are part of an all-of-society approach.

Helping unsheltered people self-isolate

Image by Flickr user Province of British Columbia (CC BY-NC-ND 2.0)

Q: *COVID-19 became the first pandemic in history to benefit from the Information Age, supporting connection and collaboration around the world. Yet, the technology used by health experts to mobilize interventions, programs, responses, and recovery, also provided means for an* **infodemic**. *How has public health dealt with this in the past and what are the plans to tackle this in the future?*

Infodemics are an overabundant and rapid spread of information regarding a specific topic, often triggered by a major incident, making it difficult to find credible and accurate information (WHO, 2020a; PAHO, 2020). During the COVID-19 pandemic, misinformation showed up in various narratives: how the virus originated, treatment options, mechanism of transmission, and government intentions. Data from a BC Centre for Disease Control (BCCDC) survey of 400,000 BC residents during the first wave demonstrates that increases in engaging online was not always healthy, nor did it help provide clarity (BCCDC, 2020).

Dr. Schwandt: As a trainee at the time, I witnessed how the 2003 SARS event was the first epidemic to take place under a 24 hour news cycle; the health authorities that thrived were those that kept up with the cycle, producing daily reports and clear information, ensuring public confidence and dispelling misinformation in advance. Now, the COVID-19 pandemic has witnessed a new level of social media engagement. We see not only rapid communication with new findings and new discourse, often with global experts and politicians, but a live public debate on practice, policy, and guidance.

To deal with misinformation, health organizations have had to adjust not only how they broadcast but also how they understand what the conversation is, as the public can now drive the news cycle. For example, there was a lot of pessimism and alarmism about the immunization campaign, which has proven to be safe and effective. Early on, it became clear that we needed to notice and quickly address trends in discussions, adjusting the message for each audience.

Q: *Knowing there is often fast economic growth and people tend to demand more of politicians in a post-pandemic world, how can we capitalize on this opportunity? Do you think the focus of public health will change? Is this shift due to scientific learnings or new public priorities?*

Job-protected leave for COVID-19 vaccines

COVID-19 IN BC

Image by Flickr user Province of British Columbia (CC BY-NC-ND 2.0)

Dr. Schwandt: I really hope it will. Many public health practitioners adopt approaches in 'One Health', 'EcoHealth', and 'Health-in-all-policies' that acknowledge **solutions to complex problems** won't come from the health system, but rather from **organizations that have their hands on the ecological and social determinants of health**. For example, municipal governments and provincial ministries are turning to public health to solve their issues, but we need to ask, "How can they help with ongoing health issues?" Public health needs to further influence policy outside of health, and we could be in a better place to do this following COVID-19 - that would be a silver lining.

One area that has received a lot of attention throughout the pandemic is the nature of livelihoods. For example, policies have developed around mandatory paid sick leave, as unpaid sick leave is a known barrier for staying home when sick. Other risks that have been made clear include managing healthy practices around crowding, shift work, and the ability to take time off. If these types of healthy public policies could stick, they would have positive impacts.

Q: *We've learned that it takes an interdisciplinary approach to solve global crises like COVID-19. Knowing this, who are the critical partners for public health going forward?*

Dr. Schwandt: As a field, public health increasingly understands that complex issues are not solvable by the government alone - 'health-in-all-policies' means including all partners. Large institutions, such as a health authority, **benefit and need guidance from those who are closest to the front lines**. Therefore, the biggest opportunity lies within the non-government sector, with those who provide direct services to diverse populations. This is where we learn about cultural safety and anti-racism - in immunization programs, overdose emergencies, or the effects of climate change. And it can't just be a matter of collaboration, the work has to be driven by community-based organizations.

Q: *Throughout history, as the human population spread across the globe, infectious diseases have typically followed. Pandemics are not new to our species, they are just new to this generation. What research is needed now for creative and innovative solutions to this problem?*

Dr. Schwandt: Community-based and driven research is what is needed; hopefully with the support of formal researchers and public health institutions. **There is greater impact when research questions are driven by lived experience** rather than from the office of a health organization. Health problems we identify may

not be the greatest concern at the community level, which is why we need to turn to the advice and input from communities. There is a disconnect when health organizations define their own metrics; there needs to be space for research structures that are more directly informed by the community. That goes for funding research as well: understanding what constitutes rigorous research, what research helps inform policy decisions, and gaps in research. This drives innovation and creativity, and allows us to ask the right questions but also make sure there are actionable outcomes.

An obscurity when things go as planned; a silver-lined cloud after a storm

As Dr. Schwandt illustrates throughout his answers, one of the perennial problems in communicating public health's value is that when it works most effectively, the outcomes are not necessarily clear; they are marked by the absence of disease, injury, and premature death. This phenomenon is all too familiar for emergency managers - when the practice functions as intended, there is minimal impact. For example, when zoning properly mitigates structural damage during an earthquake, business goes on as usual. Unfortunately this means that when things go as planned, these fields are shrouded in obscurity and demonstrating the preventive value is significantly challenged (Richardson, 2012). But thanks to the pandemic, people are taking note - highlighting that there is no better time to capitalize on the silver linings to support preventive measures in public health:

- **Work against traditional silos and integrate health in all policies**. It is commonly understood amongst public health professionals that action taken outside the health sector can have health effects much greater than actions taken within it. Now, people are generally more aware that everything impacts health, **resulting in a greater all-of-society response**. For example, community supports for homelessness increased during the pandemic.

Dr. Michael Schwandt at a Vancouver Coastal Health office in Vancouver, BC

- **Continue to advance public health technology**. Public health took on a responsive and preventive role, enabling innovative solutions in areas that had previously struggled to progress. Digital technologies have been utilized in every area of the COVID-19 response, from epidemiological surveillance, rapid case identification, and contact tracing, and the delivery of clinical care through telehealth services (Budd et al., 2020). Telehealth and virtual health services have eliminated some barriers in access to care, especially for rural and remote communities.

- **Listen to the community.** There is a **greater impact when research, practice, and structures are driven by the community.** Diverse communities outside of the health authorities facilitated knowledge translation and supported health literacy initiatives. For example, an online resource called the C19 Response Coalition used their platform to make resources accessible for the multilingual population. Their goal is to empower Chinese-, Vietnamese-, and Filipino-Canadian citizens to take the proper precautions and make informed decisions for themselves and the broader community during the COVID-19 health emergency.

- **Continue to dedicate funding and resources to public health**. There has been **an increase in the funding allocated for public health**, research, surveillance and data management, and for strengthening public health institutions. The Canadian Government has also provided $803 million over two years to support the Public Health Agency of Canada and Health Canada in the ongoing pandemic response and almost $1 billion to support mental health care (Government of Canada, 2020; Government of Canada 2021).

- **Use social media to effectively engage with the public in real-time**. More than ever, health organizations, health authorities, government agencies, and health professionals have utilized social media platforms to share hard facts about COVID-19, preventive and control measures, and also engage members of the public. Using these platforms helps health officials reach large audiences and provides a direct mechanism to combat misinformation.

Looking over the horizon

Despite the hardships of COVID-19, it is clear that public health is undertaking an important transformation. There is consensus among the global public health community that the lessons learned and meaningful progress made during the COVID-19 pandemic cannot and will not go to waste. The foundations have long been built for meaningful action to improve not only domestic preparedness, but more notably, global health security.

The silver linings of COVID-19 need to be utilized to combat the most pressing public health concerns of our time. Global collaboration and technological innovation to support public health research have proved to be powerful tools for the field. Looking beyond COVID-19, how could these creative solutions be applied to more complex and chronic diseases such as diabetes, the opioid crisis, and obesity?

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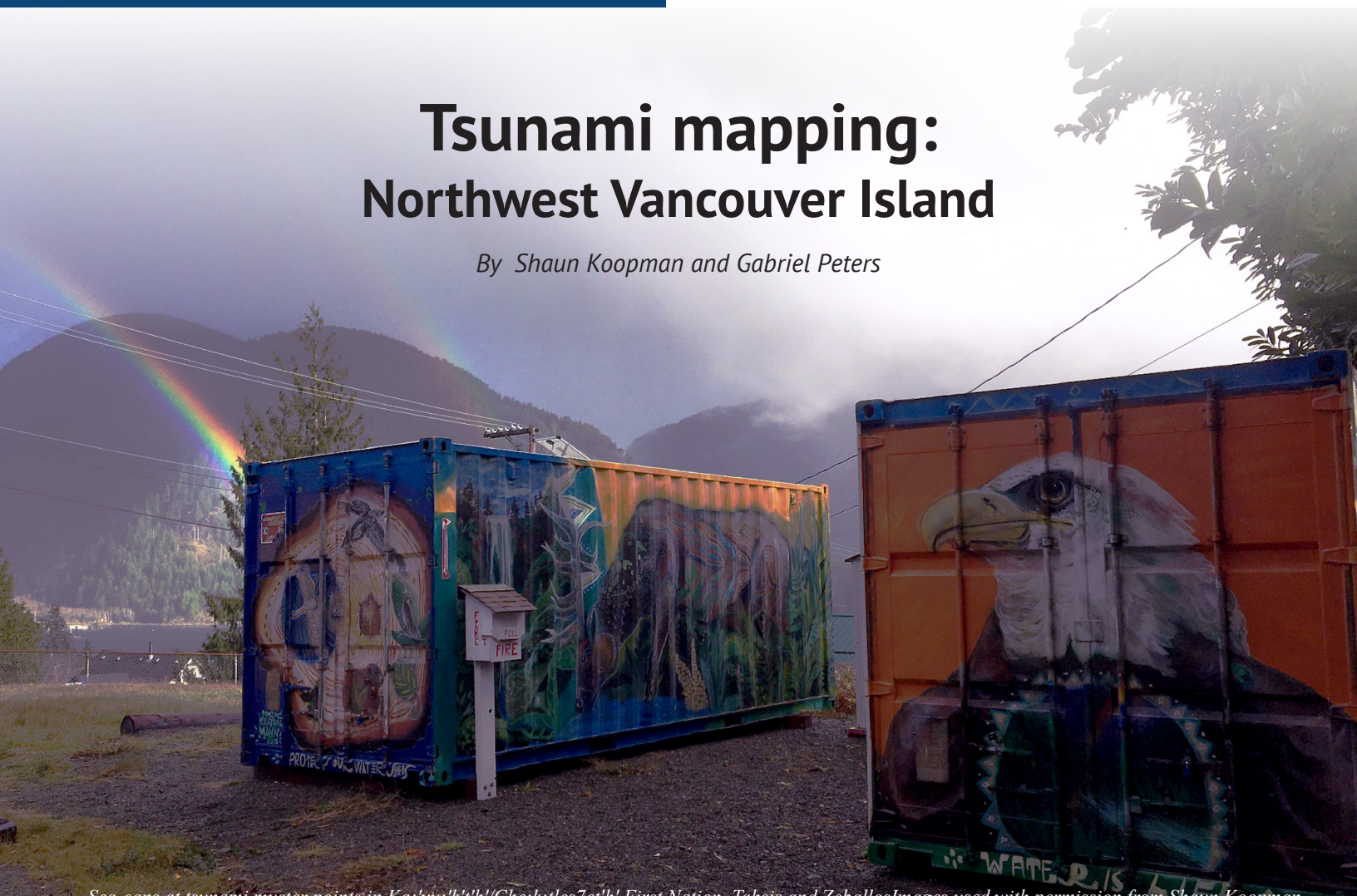**nait.ca/cadem**

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Tsunami mapping:
Northwest Vancouver Island

By Shaun Koopman and Gabriel Peters

Sea-cans at tsunami muster points in Ka:'yu:'k't'h'/Che:k:tles7et'h' First Nation, Tahsis and Zeballos Images used with permission from Shaun Koopman

Geological studies, historical records from Japan, and oral history from Indigenous communities along the west coast of North America show that the last large local tsunami was generated by a strong Cascadia earthquake which occurred on January 26, 1700. The scientific study of tsunamis on the west coast of Vancouver Island began in earnest in the 1980s; however, the history of tsunamis and the impacts of those tsunamis is much longer, represented in several ways. The Nuu-chah-nulth story describes mountain dwarves and the foot-in-drum legend: the dwarves invited a person to dance around their drum; the person accidentally kicked the drum and got earthquake-foot, said the Nuu-chah-nulth people, and after that, every step he took caused an earthquake. The land shook and the ocean flooded in - people didn't even have time to wake up and get into their canoes. Everything then drifted away; everything was lost and gone. Along with other references, these accounts highlight the knowledge and teachings that exist with regards to earthquakes and tsunamis on the west coast of Vancouver Island.

Mapping local knowledge to understand tsunami risks

The Strathcona Regional District in partnership with the Ka:ʼyu:ʼk't'h'/Che:k:tles7et'h' First Nations and Nuchatlaht First Nation are currently undertaking a tsunami modelling of the northwest coast of Vancouver Island, from Muchalaht Inlet to Cape Scott Provincial Park (Figure 1). Our goal is to better understand tsunami risks on the northwest coast of Vancouver Island through tsunami models and the completion of a risk assessment with the integration of community experience and indigenous knowledge. This project aligns with the Sendai Framework for Disaster Risk Reduction by using traditional, Indigenous and local knowledge as well as western science in the risk assessment. Knowledge was gathered from **communities in the Mount Waddington and Strathcona Regional Districts**, as well as many historic community locations, sacred sites, fishing and hunting areas, shellfish harvesting sites, and old village sites

- **Coal Harbour**
- **Ehattesaht/Chinehkint First Nation**
- **Esperanza**
- **Holberg**
- **Ka:ʼyu:ʼk't'h'/Che:k:tles7et'h' First Nation**
- **Kyuquot**
- **Mowachaht/Muchalaht First Nation**
- **Nuchatlaht First Nation**
- **Quatsino**
- **Quatsino First Nation**
- **Village of Gold River**
- **Village of Port Alice**
- **Village of Tahsis**
- **Village of Zeballos**
- **Winter Harbour**

The multiple benefits of engagement

Part of this project included surveying residents in the study area's communities in order to build community resilience by:

- The sharing of experiences and knowledge we hope to help reduce tsunami risk in communities.
- Assessing community evacuation and shelter-in-place preparedness levels.
- Helping the community understand where they can access emergency programs.

The survey consisted of 12 yes/no questions and three open-ended questions to encourage storytelling from participants, acknowledging that public preparedness is so much more than a kit with 72 hours of water, a flashlight, canned food, and duct tape. Public preparedness surveys that ask "on a scale of 1 to 5, how prepared do you think you are" are not a good measure of community preparedness; rather, they are a measure of how prepared people think they are. For example, if a resident knows of 30 actions they can take to prepare for a tsunami, but they have only completed 15 of them, they may rate themselves as "not prepared." Another resident, who only knows about four actions, but has taken three of them, may rate themselves as "very" prepared. By using primarily yes/no questions and questions that promoted storytelling, this project not only provided data to guide future emergency planning, but it also educated the residents about specific actions that they can take to be better prepared for a tsunami.

Surveys were promoted through a media release, neighbourhood mail outs, email, and community-specific social media sites. Responses could be mailed in or submitted electronically; 275 responses were received by Strathcona Regional District's Protective Services Coordinator. Participants that provided contact information were contacted and personally thanked for their participation. This was also an opportunity to inform each respondent of suggestions to improve personal preparedness, such as telling them about their community's phone mass notification system for tsunami alerts or sending them more information about how to obtain their amateur radio certification.

## Findings and recommendations: A quantitative discussion

Emergency supplies

- The rate of respondents having two weeks worth of emergency supplies was relatively high amongst all communities, with the lowest being 50% and the highest being 78%. Figure 1 provides a breakdown of responses by community.

This indicates an awareness that their communities are highly vulnerable from being cut off from the outside world for a long period of time following a disaster. However, the portability of these supplies (such as in a backpack or suitcase with wheels) differed and was generally split 60/40 amongst all communities except for Quatsino, which had the highest score of 83% of responses indicating their supplies were mobile. This is of particular concern in communities such as Tahsis, Zeballos and Ka:'yu;'k't'h'/Che:k'tles7et'et'h' First Nations where a large portion of the population resides within the tsunami inundation zone. It is important that all residents are encouraged to have their emergency supplies in an easily accessible place and able to be mobilized quickly to support an evacuation.

Total respondents per community

Legend: Gold River, Port Alice, Tahsis, Quatsino, Zeballos, Winter Harbour, KCFN, Coal Harbour
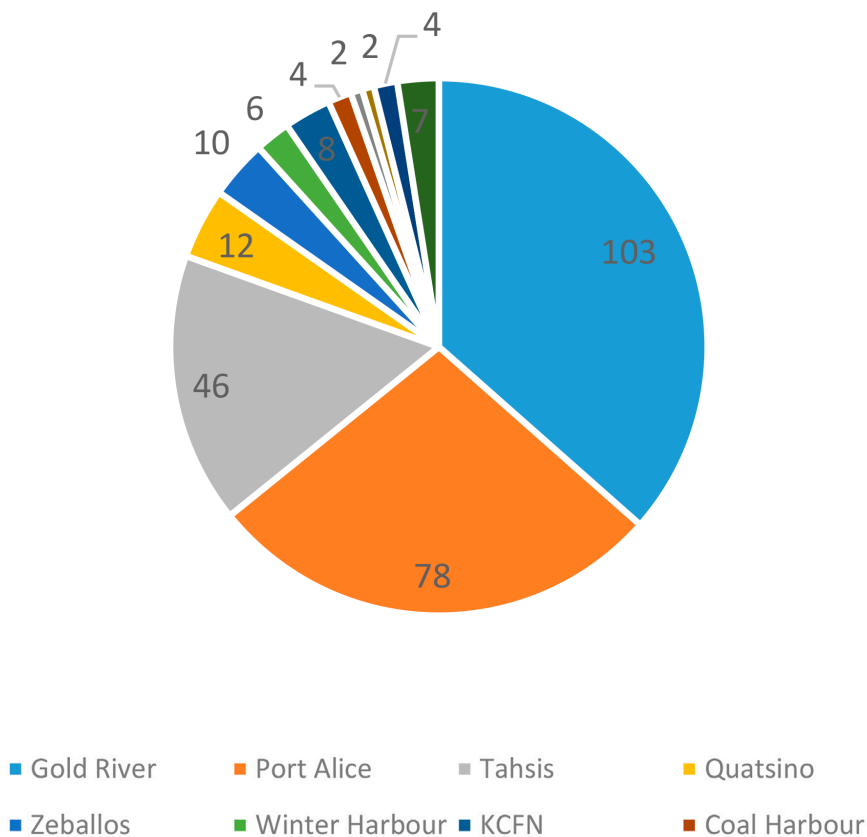
Figure 1: Total respondents per community

Meeting points

- Ka:ˈyuːˈkˈtˈh'/Che:k:tles7etˈh' First Nation, Tahsis and Zeballos have sea-cans stocked with post-earthquake group lodging supplies to support essential survival needs. Overall, 58% of participants indicated that they knew where the community's tsunami meeting point(s) were. In the three communities that have sea-cans at their tsunami muster sites, this response was as high as 86%. This speaks to the importance of having a distinguishing identifier or sign at community tsunami assembly areas. While residents may possess a high level of awareness that the sea-cans are tsunami assembly areas, the survey raised the discussion that tourists and visitors likely do not possess the same degree of awareness, so more obvious signage should be placed in these areas.

Notifications and alerts

- On behalf of Emergency Management British Columbia, the Canadian Coast Guard issues tsunami messages directly to vessel traffic and remote coastal communities on Marine Channel 16. All the communities in the study area are coastal communities, so it was surprising to see that such a high level of respondents were unaware of the role of the Canadian Coast Guard during a tsunami. This represents an opportunity for the Canadian Coast Guard and Local Authorities to work together to ensure more residents are aware of this notification method.

Back-up communications

- Even though many of the communities involved in the survey are rural and remote, only 10% of respondents indicated they were certified ham radio operators or own satellite communication devices such as a

Spot-X or In Reach. After a disaster, a key mode of communication – one not reliant on infrastructure vulnerable to tsunami waves and ground shaking – is amateur "ham" radio. Untethered from wires and cables, operators can share information by voice and data (email). In the author's experience, the Strathcona Regional District has had low participation and high dropout rates when we run ham radio certification courses in these types of communities. The course information is very much theory-based, and many participants have cited the technical course content as overwhelming to learn and difficult to comprehend. Amateur Radio Certification is governed by the Government of Canada through Innovation, Science and Economic Development Canada and changes to the course content to eliminate these barriers would have to come at that level. The authors propose that communities across the nation advocate for the Government of Canada to consider restructuring this certification's curriculum.

- Only 30% of study participants expressed interest in learning more about obtaining their amateur radio certification. The lack of support and interest in developing redundant communication options could be indicative of a common mindset across rural communities, which is "we can't rely on the government during regular times; why would we rely on them after a disaster?" Residents of these rural communities are often connected, cohesive, and resourceful, through developing their own informal support networks. Regarding communicating with the outside world after a tsunami, the time and effort required to obtain an amateur radio certification combined with the cost of either radio or satellite communication devices may not be perceived as worthwhile investments when residents are used to solving their problems at a community level anyways.

Findings and recommendations: A qualitative discussion

Every community involved in the study expressed an interest in greater risk communication, evacuation drills and public education. When the mapping is finalized and the inundation areas are known, communities could start participating in 'High Ground Hikes,' which are a community-led tsunami evacuation event. These hikes help raise awareness about tsunami risks in coastal communities and offer residents an opportunity to practice using their designated tsunami evacuation routes.

"We experienced a tsunami warning a while back that was a false alarm, but better safe than sorry. Response on the whole by staff was good but felt a sense of panic which might be resolved with more practice. Perhaps an annual full alert drill would be helpful."

- Participant

The qualitative survey section also allowed respondents to provide their insights on past tsunami events they've experienced firsthand. All respondents that mentioned past experiences were contacted to ask if they would be willing to share more details about their experience over a phone call. Through this method, stories were related through direct past tsunami experiences or passed down from elder family members. Since the last major tsunami to hit Vancouver Island was in 1964, time is of the essence to track down and document these firsthand tsunami experiences.

"My husband lived in Port Alice in 1964 when the tsunami hit the inlet. An abundance of water building up at the head of the inlet caused logbooms to break loose. Damage to the pulp mill near water level closer to the head of the inlet."

- Participant

Looking out over the water in Zeballos
Image by Flickr user Province of British Columbia (CC BY-NC-ND 2.0)

Conclusion

This project provided an opportunity to educate residents about earthquake and tsunami preparedness and collect input from community members. The authors recently discovered that two participants who provided their input passed away shortly after discussing their past tsunami experiences. Without this study, their stories may have been lost. It is also deeply saddening to think of all the untold stories that have been lost since the last tsunami in BC was 57 years ago. Had funding been available sooner, this may not have been the case.

It is incredible that we are only just now discovering the effects of a tsunami wave on half of the west coast of Vancouver Island. If 'understanding risk' is the crucial foundation that drives emergency planning – what does that say for where our discipline is maturity-wise? With the compounding threats from climate change, political instability, nuclear war, and rising inequality, it bears the question of whether our discipline is maturing fast enough to adequately reduce disaster risk.

Shaun Koopman. For the past six years Shaun has been blessed to work as the Protective Services Coordinator following the completion of his Masters in Disaster Management. He was drawn into this world through his family ties in Haiti following their devastating earthquake in 2010. When he's not with his wife and two dogs at dog agility, you can find him surfing, yogaing, hiking or headbanging to California groove metal.

Gabriel Peters graduated from the University of Winnipeg with a Bachelor of Arts in Geography. He is passionate about disaster management and focused his degree around resilience and natural hazards. His vigor for life is fueled by the natural world, his relationships with friends and family, and his desire to engage people in their deepest interests.

Grassroots solidarity action in Kigali

By Margot Lootens

View of Kigali, Rwanda by Flickr user oledoe under an Attribution-ShareAlike 2.0 Generic license.

When confinement measures and mobility restrictions were put in place at the beginning of the pandemic, the place we call home, our neighbours and local communities, suddenly reclaimed a central place in our daily lives. In the first months of the COVID-19 pandemic, individuals and communities showed great solidarity with their neighbours, especially those identified as being vulnerable - those directly or indirectly put at risk by the disease. In the City of Kigali, Rwanda's capital which is home to 1.6 million people (NISR, 2018), grassroots communities were essential in providing timely assistance to those members of society hardest hit by the pandemic and the associated lockdown.

Epidemic vulnerability in Kigali

At the Resilience Agenda Workshop held in April 2015 as part of Kigali's participation in the [100 Resilient Cities programme](#), the outbreak of epidemic diseases had been identified by local stakeholders as one of the acute shocks the city could face (100RC, n.d., p. 28). Based on past experiences with the spread of infectious diseases, such as the cholera outbreak of 2006 in Kigali's suburbs (ReliefWeb, 2006), the risk of an outbreak and the vulnerability of citizens can be linked to the spatial and socio-economic characteristics of informal settlements.

In Kigali, more than 70% of citizens live in informal settlements (NISR, 2018), most of which are located on the steep hillsides or flood-prone wetlands around the historic and economic city centre (see Image 1). Despite recent improvements made in providing universal access to potable water, many of these neighbourhoods still lack reliable basic infrastructure and services related to sanitation, hygiene, energy, and transportation, which are all crucial in building resilience. Only 9.3% of households have access to improved toilet facilities, while more than half of them remain outside the solid waste management system (Manirakiza et al., 2019). In short, the overall access to proper drainage and wastewater management is low (Manirakiza et al., 2019). Furthermore, unemployment and poverty are additional stressors, prevalent in slums and informal settlements further away from the city centre and its economic activities (ibid.). Layering these spatial and socio-economic stressors, certain neighbourhoods are more at-risk of human health-related hazards. That being said, it is important to note that within these at-risk neighbourhoods, households experience different levels of vulnerability and exposure to potential acute shocks.

Leveraging resilience through social cohesion

Not long after the first cases of the COVID-19 virus had been registered in Kigali and a national lockdown was put into place, grassroots initiatives were set up at the neighbourhood scale to support individuals and households most affected by the lockdown. Local communities self-organized to identify households at-risk of pandemic impacts, such as casual labourers and street vendors who depend on their day-to-day earnings to provide food. Using social media platforms such as WhatsApp, those communities collected resources and distributed food to the households at risk (Karuhanga, 2020). With the support of local volunteers, these initiatives reached more than 40,000 households in need, thus reducing the direct socio-economic impact of the pandemic at the grassroots level (J. Habinshuti, 2021, pers. comm., 21 April). Speaking to the success of Kigali's pandemic response, Kigali's City Resilience Officer Japheth Habinshuti (2021, pers. comm., 21 April) emphasized the key role volunteers played in enforcing the necessary preventive measures all around the city and thus curbing the spread of the virus.

These spontaneous grassroots initiatives and the solidarity showcased amongst citizens in the early stages of pandemic response exemplify the importance of strong, connected communities and social networks as first line of support and assistance in times of crisis. Moreover, as Japheth Habinshuti pointed out (Resilient Cities Network, 2020), the pandemic response was an operation and collaboration between different sectors and different spheres of society, where everyone did their part. This recognition of the value of social cohesion in building city-wide holistic resilience which leaves no one behind had already been identified as part of the city's "pathway to resilience" (J. Habinshuti, 2021, pers. comm., 21 April). The self-organization and mobilization of local communities which emerged early in the COVID-19 pandemic response now provides a fertile ground to put ambition into action. Supporting and scaling up existing initiatives could leverage social cohesion to build community resilience alongside the governments' commitment to reduce vulnerability and exposure to disasters through infrastructure investment and resilient economic development.

Capitalizing on the pandemic for transformative change

The kinds of grassroots solidarity actions which emerged in Kigali have also sprung up in many other places around the world, taking different shapes and working at different scales. Notwithstanding the damage caused by the spread of the virus, the ongoing COVID-19 pandemic has brought to the fore the role of connected and empowered communities in coping with the challenges of unpredictable shocks in the interest of all. If people decide to show solidarity and act collectively in the interest of the most vulnerable in a time of great uncertainty for everyone, we can only imagine what connected, activated and empowered communities can mean in the fight against poverty, inequities and injustices in cities globally. How we capitalize on emerging solidarity movements now will determine if, in five years' time, stories like these will be precursors to transformative change or, alternatively, have become mere anecdotes to a time of disruption and uncertainty.

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Building social connections with the We're Ready! Community disaster preparedness workshop

By Ashley M. Roszko, Eva (Evalyna) A. Bogdan, Mary A. Beckie and Adam Conway

While disasters in Canada are on the rise, not all communities are well prepared for such emergencies. The We're Ready! community disaster preparedness workshop was developed to address the low uptake of emergency preparedness of residents (Ibrahim, 2016) and the gap in municipal resource shortages (Cohen et al., 2017). The We're Ready! approach incorporates interactive activities to strengthen social connections and enhance community resilience. The workshop applies principles of adult education, including learning best with hands-on activities and applying educational activities to practical situations (Knowles, 1973).

While "community" is a complicated term, communities can often be defined as a group of people bound by a location, common identity or objective; they can be geographical (e.g. neighbourhood) and/or social (e.g. ethnic). We're Ready! was piloted in 2016 and 2019 in three different types of communities in Alberta: geographical, ethnic and workplace communities in the Town of High River and the City of Edmonton. The workshops provided participants with an opportunity to identify community members' skills and resources, design customized community disaster plans with others, and develop hands-on experience coping with a disaster simulation (Bogdan et al., 2021).

Identifying skills, needs, and resources is crucial for emergency preparation, but most important are relationships and strong social ties (Aldrich, 2015; Donahue and Tuohy, 2006). Examining exemplary disaster management models, such as in Cuba, reveals that "strengthening community capacity, strong coordination of local actors and investing in social capital are determining factors for success" (Grogg, 2015). Cuba's disaster management is exceptional due to their regular government and resident-organized preparations; community drills are held all over the country to rehearse prevention and evacuation plans for various disasters, test communication systems, increase citizen knowledge of what to do during an emergency and provide opportunities for local actors to build relationships with others in their communities. Highly interactive activities and relationship building opportunities, such as those in the We're Ready! workshop, help communities to develop individual and community preparedness capacity. In this article, we provide an overview of the We're Ready! activities and our key learnings from the pilot workshops in the hopes of inspiring other community groups to build their own community emergency plans and increase their resilience.

Workshop activities:
Build your own disaster preparedness program

The purpose of the We're Ready! Workshop is to facilitate communities in designing and implementing their own disaster preparedness program through interactive and engaging community-building activities. Communities do so by creating their own evacuation maps, communication plans, and a community capacity inventory. The workshop culminates in a disaster simulation to provide hands-on experience. The workshop takes approximately six hours to complete, including interactive, informational lectures accompanied by group activities and individually completed surveys at the beginning and end of the workshop. After introductions, the activities are as follows:

1. Pre-Workshop Survey
2. Community Bingo
3. Sharing Previous Disaster Experiences and Lessons
4. Mapping
5. Community Plan
6. Mock Disaster Game
7. Debrief Exercise
8. Building Momentum
9. Post-Workshop Evaluation

Community members complete a pre-workshop survey (Activity 1), which allows organizers to evaluate the effectiveness of the workshop when compared with the post-workshop evaluation (Activity 9). Many of these questions are based on Statistics Canada's (2014) emergency preparedness and resilience survey.

Community Bingo (Activity 2) is an interactive icebreaker where participants circulate around the room with a bingo sheet to find individuals who possess certain skills or resources, or who might need additional assistance during an emergency.
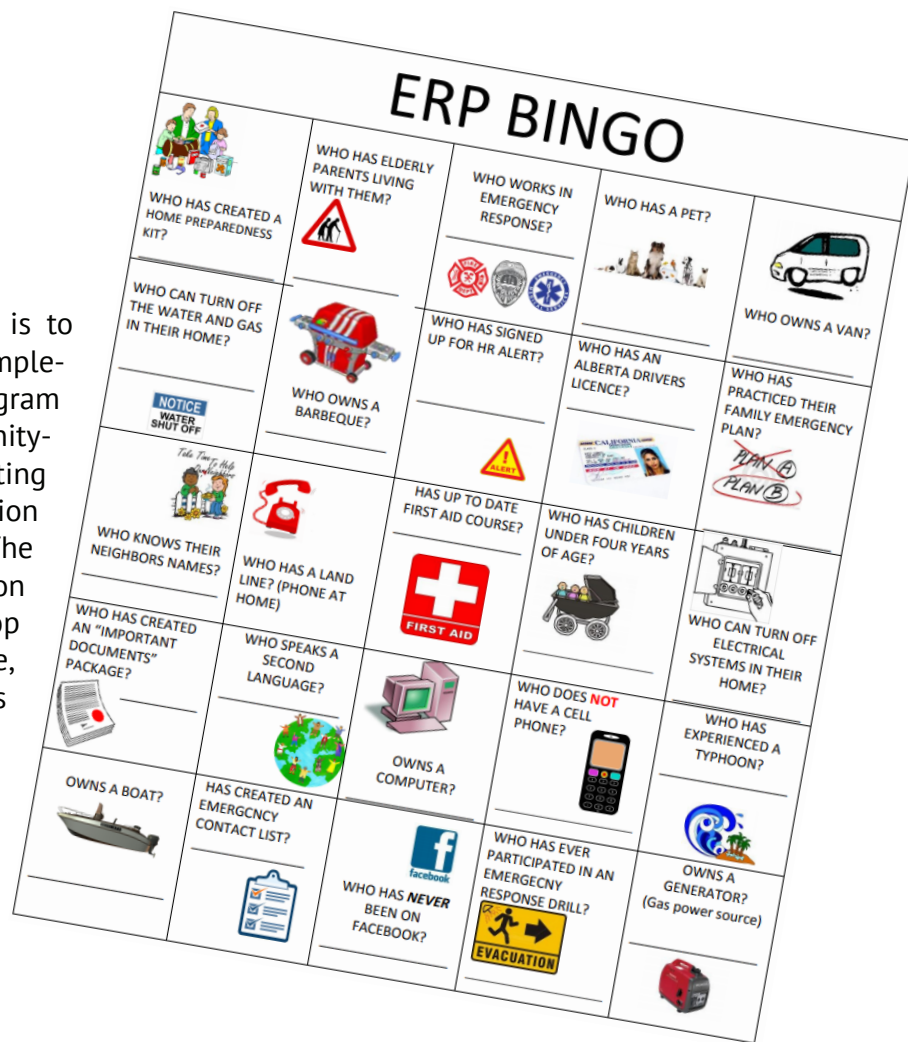

Figure 1. Activity 2: Community bingo sheet

During the experience sharing exercise (Activity 3), participants break into groups and learn who may have experienced an emergency or disaster before, what worked well, and consider lessons learned to improve in the future. Participants then work in small breakout groups for the next two activities: mapping and developing a plan. In the mapping exercise (Activity 4), each group builds an interactive map of their geographical community (such as a neighbourhood or workplace) using craft supplies that are provided. Mapping helps participants to visualize key access routes, indicate meeting points, and identify safe places to go during an emergency. The small groups then develop a community plan (Activity 5) to determine how all community members can be kept safe during an emergency and identify redundant communication strategies in case of communication disruptions. Facilitators provide participants with examples and templates of emergency plans to help build their own.

Figure 2. Filipino community members participating in Activity 6: A disaster simulation

All participants then come together for Activity 6, a mock disaster simulation (e.g., a flood or ice storm). Individuals receive different "roles" in this scenario (e.g., an individual that does not speak English or was hurt as a result of a hazard). During the simulation, participants develop hands-on experience building connections with each other and learning to identify hazards and resources in their community in the face of an emergency.

Following the mock scenario, participants debrief what happened and have an opportunity to revise their community plans (Activity 7). Finally, participants brainstorm ways to continue working together to increase preparedness and identify community leaders to build momentum (Activity 8). All of the activities in the We're Ready! workshop were designed based on needs, skills, and resources important for emergency preparedness as identified in the literature (see Bogdan et al., 2021).

Lessons learned: Tapping into social resources

Assessments of the three We're Ready! workshops suggest that combining instructional presentations with hands-on learning was effective. The workshops helped participants build plans and maps as well as increase social capital. However, this work also showed differences in community groups. The Filipino community in High River were already well-connected, while participants from the geographical community in High River did not have many previous social ties to one another. This workshop helped to increase social capital; however, the geographical community did not appear to be as interactive and comfortable with each other while participating in activities. Similarly, participants of the workplace community in Edmonton worked in different areas or different buildings and seemed less socially connected. They seemed to have more difficulty identifying and utilizing the skills and resources of other participants. In contrast, a higher proportion of Filipino community members with previous strong social connections identified the workshop as highly effective and interacted more during the activities. Participants of the Filipino community group also championed several spin-off projects, including translating a presentation by local first responders to Tagalog. We concluded that combining social capital with educational training allowed for stronger emergency planning during the workshop as well as more opportunities to continue building momentum for emergency preparedness in their communities.

These workshops identified the importance of tapping into existing social networks to increase the uptake of emergency preparedness activities and strengthen response to and recovery from emergencies. This has implications for pandemic preparedness as fostering positive community relationships is also critical in a public health emergency. Even under public health restrictions, efforts are needed to develop and maintain community connections using social media and other virtual engagement methods. To facilitate communities accessing We're Ready! during the pandemic, we are adapting the workshop activities and tools to an online environment; for example,

virtual breakout rooms will be utilized to simulate the different geographical areas of a real-world simulation exercise. An online train-the-trainer session for We're Ready! was developed and delivered May 27, 2021 through the Tamarack Institute..

For those seeking additional information about the workshop activities and a detailed assessment of the pilot workshops based on the pre- and post-workshop surveys, please read the full article on the effectiveness of community disaster preparedness workshops across different community groups in Alberta, Canada (Bogdan et al., 2021). An open access website (www.wereready.org) is available for anyone to conduct a We're Ready! Workshop with their community to increase their preparedness and resilience to emergencies.

Ashley Roszko has a MA in Community Engagement from the University of Alberta; her thesis research focused on urban climate resilience in vulnerable neighbourhoods. Ashley is passionate about environmental issues, inclusive public engagement and collaborating on emergency preparedness projects.

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What is cultural safety in the context of ESS?

Cultural safety in emergency support services

By Kayla Pepper

Emergency Support Services (ESS) is a program guided by Emergency Management BC (EMBC) and delivered by First Nations or local governments to support evacuees during emergency events. As part of a Royal Roads University action research project, and with support from EMBC, I hosted virtual sharing circles with 23 Indigenous community or support organization practitioners. We came together to explore the question: What is cultural safety in the context of ESS?
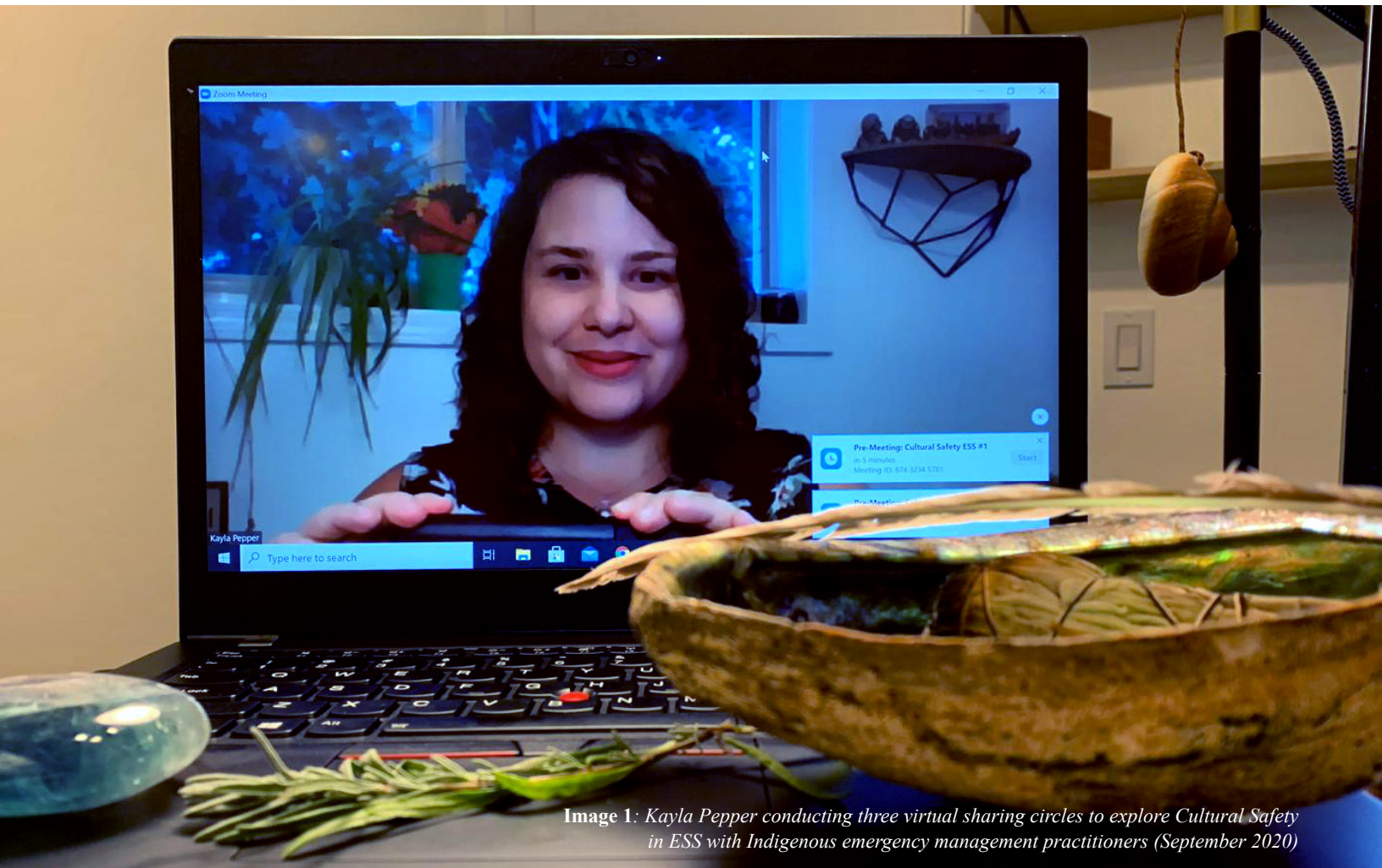

Image 1: *Kayla Pepper conducting three virtual sharing circles to explore Cultural Safety in ESS with Indigenous emergency management practitioners (September 2020)*

Cultural safety in ESS was defined as creating safe spaces, free from discrimination, where Indigenous people, families and communities can continue practicing their culture even when displaced. ESS practitioners accompany evacuees with humility, open listening, kindness, compassion, respect, and consideration for their own and others' mental, emotional, physical, spiritual, and cultural well-being.

Support in emergencies extends beyond basic physical needs, as described by one community member, "I think equally as much as people need food, clothing and shelter I think they also need spaces of emotional support and cultural well-being" (Participant 21). Captured below are the various ways cultural safety can be practiced in the context of ESS, as described by the participants.

Cultural and spiritual supports"

Many participants shared the importance of grounding the work in prayer and ceremony, including bringing in organizations like Tsow-Tun Le Lum and the First Nations Health Authority to provide support. Participant 15 also shared the importance of "acknowledging some of the traditional medicines and the traditional healers in the territory to ensure that they are a part of the ESS system."

Language

"There's so much involved in our people being culturally safe. Knowing the language is probably the most important to me" (Participant 8). If there is a language barrier, there needs to be "an easily accessed process to maneuver through that barrier in a manner that makes your client feel special, welcome, respected and understood" (Participant 9). In addition to translation services, ESS teams could create signage in local Indigenous languages and learn words to build cultural bridges.
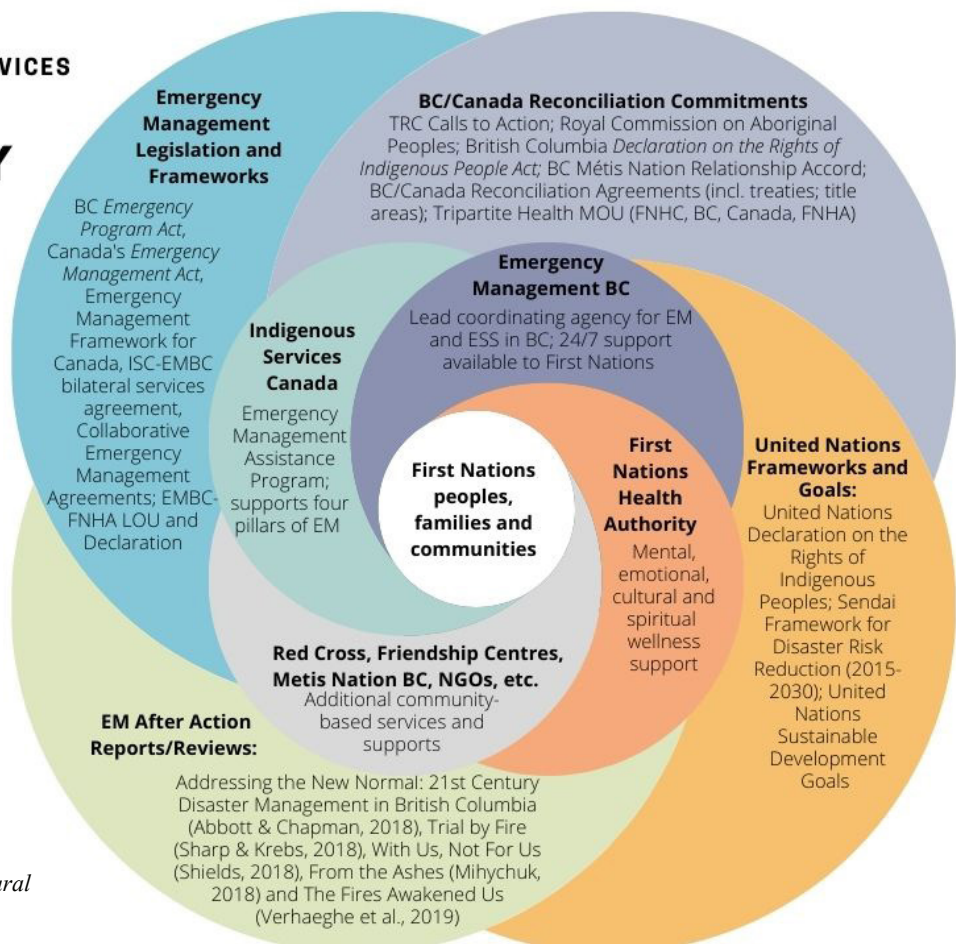

Image 2: *A visual representation of cultural safety in ESS (Pepper, 2021)*

Image 3: *Indigenous Emergency Management Partnership Tables, October 2019, Witset First Nation.*

Reception centres: Familiar spaces

Transforming reception centres into welcoming environments supports cultural continuity. Participant 7 suggested this could be achieved by "pulling in the resources that are already in communities," including Big Houses, Aboriginal Friendship Centres, and facilities in neighbouring First Nations communities.

Community navigators: Familiar faces

The "Community Navigator" is someone trusted who accompanies evacuees and serves as a liaison between the evacuated community and the host community or ESS team. There were examples of this position helping with delivering evacuation order notices, welcoming and registering evacuees at reception centres, and giving "voice to the community around what it was that they needed in order for the work to be effective" (Participant 18). They might also provide real-time feedback to ESS teams about how ESS could be adapted to meet community needs.

Healthy, traditional foods

Food and medicine is central to culture. Therefore, in ESS it is important to offer traditional foods and honour connection to the land. Participant 11 provided an example from the Tk'emlúps Powwow Grounds in 2017 when their Nation provided Indigenous and non-Indigenous evacuees with salmon, They described how happy the Elders were because salmon "wholeheartedly makes you a healthier person at a time when you're so stressed that regular food is just not nutritious enough to help your mind, body and soul when you're displaced."

One participant outlined how traditional practices can make a positive impact: "They [Tk'emlúps te Secwépemc] Powwow Grounds offered...more traditional foods and traditional ceremony, and it was more like a community" (Participant 9). Food and medicinal hampers could also be delivered to evacuees who might be facing a strain on personal resources during an evacuation.

Accommodations

In general, group lodging environments were viewed as "not appropriate" for Indigenous evacuees because they triggered memories of residential school environments, which also had dormitory-like accommodations (Participants 2 and 16). Commercial lodging (hotels) might contribute to feelings of isolation and increased family stress when too many family members are housed in one room (Participant 12). One example from 2017 was when Elders were stranded in the Fraser Valley.

> *"...even after the longhouses had served the meals, they opened up one of the large rooms downstairs in the hotels so that people could just go and visit there. And there was a call out to all of the First Nations communities and all of the Fraser Valley for their weavers, beaders, drummers, storytellers...we had gone to the hotel to sit in the big room just to visit."* -Participant 15

An alternative solution to standard ESS group lodging was shared by an Indigenous emergency management practitioner who was evacuated from their home several times:

> *"We have a food service truck, so we'll bring it out to the community and cook our traditional foods for the Elders and have them all in one spot with their families...So there's no hotels, there's no fast food, it's camping. Traditionally doing the culture camps that we normally do. Having the group gatherings, having the drumming, having their traditional foods all in one area, in one of the communities where they feel safe, they feel protected. That gets rid of the racism and gets rid of the insecurities."* -Participant 12

Training and self-care

Participant 1 stated that while training is "really important," that you have to "observe and respond, not just lead based on the experience and the training that practitioners have received." Participant 4 added it is important to practice "an open mind and an open heart and just being available to accompany evacuees." Therefore, ESS will be better equipped to observe and respond when ESS responders practice caring for their own mental, spiritual, physical and emotional well-being.

Words to remember

This project set out to explore the question: What is cultural safety in the context of ESS? Through participant feedback, a few themes emerged on how to achieve mental, emotional, physical, spiritual, and cultural well-being, including cultural and language support and familiarity with spaces, faces, and food. "We can't treat cultural safety and humility like the new buzzword...we actually have to practice cultural safety and humility through these systems and part of that is, of course, making sure that it's free of racism and discrimination, but also really looking at that cultural humility piece...recognizing the lived realities of the individuals that are utilizing the services" (Participant 2).

As we continue this learning journey, I'm reminded that "safety is defined by those who receive the service, not those who provide it" (Ward et al., 2016, p. 30). My deep gratitude for everyone who shared their wise words and contributed to this work.

Kayla Pepper Kayla Pepper is of mixed-European descent and she lives on the unceded, traditional lands of the Secwépemc Nation. She contributes this article following the recent completion of a Master of Arts in Leadership thesis at Royal Roads University.

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To protect the anonymity of participants, a pseudonym number was assigned to each participant (i.e. Participant 1-23).

"I think the article is really well written. I have met Kayla Pepper through EMBC and partnership tables. I love her compassion and knowledge about cultural safety. In my opinion the one thing that could be addressed a little more is the fact that any group lodging would have potential to trigger an Indigenous person. Many of the residential schools had dormitory style sleeping arrangements. The fact that the residential school was used for lodging was beyond horrific.

On a personal note, I feel the buildings should be destroyed and the land made sacred. In June, our band [Adams Lake Indian Band] is having a Bringing Our Spirit Home ceremony and they will be having members walking from the residential school in Kamloops back to Chase. It will take about three days. It would be a great idea for people that are advocating for cultural safety to participate in any such events within their community.

It is much easier to have empathy for a person or group when you actually see them and make an effort to understand their story before they are in a crisis.

I don't know how it could be feasible, but it would be amazing if we could have nation-wide EOC and lodging plans. If we could have safe spaces and necessary equipment in trailers and available to send to whichever community that needs it I feel it would be beneficial. I think it would also make our community members more likely to reach out for the services they may need. It could be something that is introduced to community members during emergency preparedness workshops, and they could be familiar with what is in them before they need it. It would also be a good idea to have traditional food and medicine hampers that could be handed out to evacuees to bring with them if they are staying with friends and family. Many of our people are still living well below the poverty line and if they have extra people it may cause a great deal of strain on already limited resources. Many elders don't know how to navigate the system when they have been evacuated.

So much of our culture is based around food and meals." - Sheri Lysons, Fire Chief, Adams Lake Indian Band.

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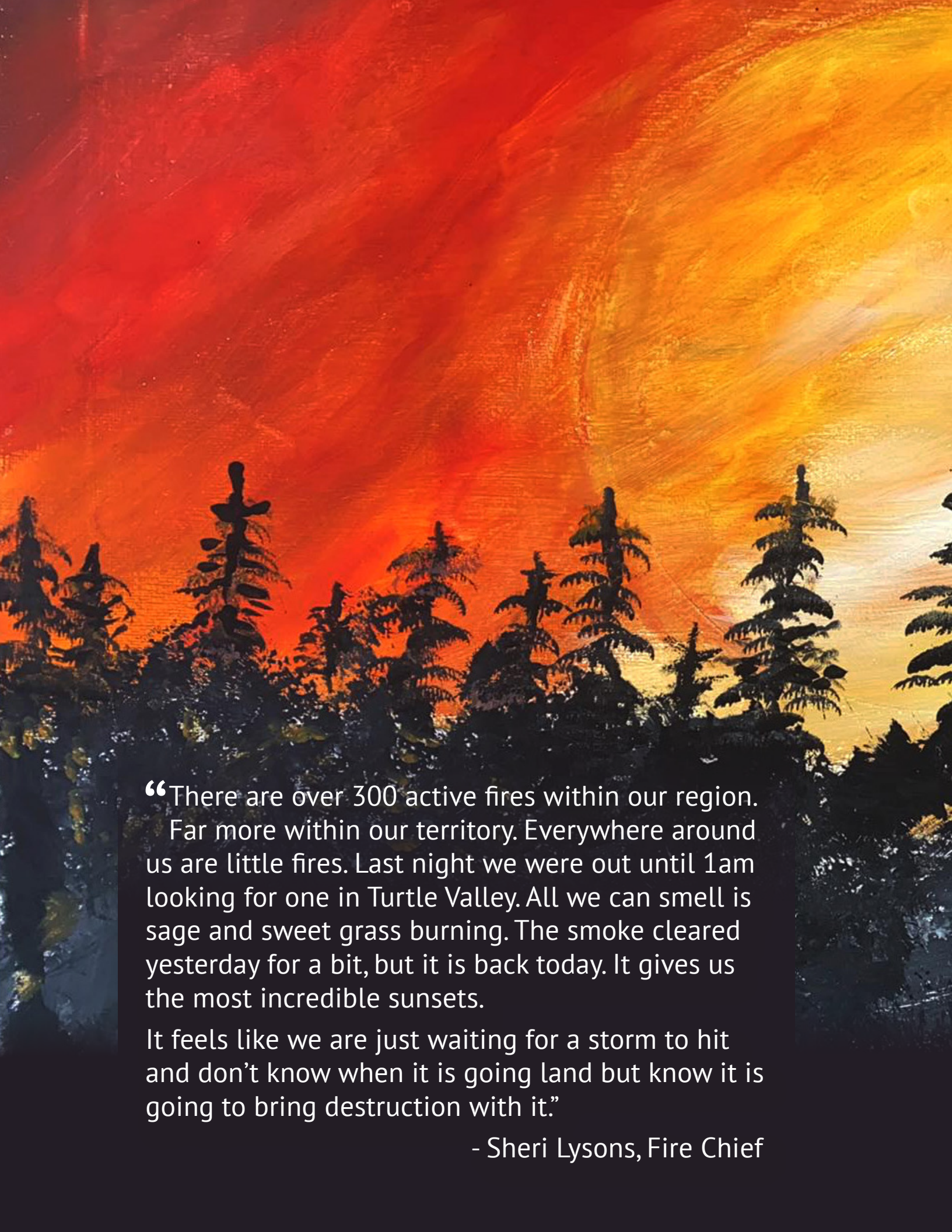
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"There are over 300 active fires within our region. Far more within our territory. Everywhere around us are little fires. Last night we were out until 1am looking for one in Turtle Valley. All we can smell is sage and sweet grass burning. The smoke cleared yesterday for a bit, but it is back today. It gives us the most incredible sunsets.

It feels like we are just waiting for a storm to hit and don't know when it is going land but know it is going to bring destruction with it."

- Sheri Lysons, Fire Chief

Artwork and text by Sheri Lysons, Fire Chief, Adams Lake Indian Band.

Recovering from COVID-19 and lessons for the future of the city

By Aphrodite Bouikidis and Meg Holden

PANDEM

URBAN STUDIES AND RE

As public health measures were implemented in response to the global pandemic in March 2020, Simon Fraser University (SFU) pivoted to fully online courses and research. As we dealt with the abrupt transition to an all-digital engagement, students and faculty in the Urban Studies program also began questioning how this pandemic would affect people and urban life, and what it would mean for the future of the city and urban policy and practice.

To provide a space for dialogue, critical reflection and real-time learning on the impacts of the pandemic on our urban future and urban alternatives, SFU Urban Studies in collaboration with SFU Public Square - with financial support from the Initiative in Urban Sustainable Development - delivered the remote lecture series Pandemonium: Urban Studies and Recovering from COVID-19. The series brought together thirty-eight panelists and more than 1,400 participants in seven events from May 2020 to March 2021. The series of episodes focused thematically on important and critical questions related to a range of interrelated issues, including health, housing, sociability, public space, economy, long-range planning, and resilience.

MONIUM

COVERING FROM COVID-19

Shining a light on existing solutions

The pandemic amplified all kinds of pre-existing urban challenges, but it also shone a spotlight on the value of existing solutions for healthier, more equitable, and ultimately, more resilient communities. Here we share some of the creative and impactful approaches for contributing to community health, quality housing, social connectedness and online youth engagement featured in the Pandemonium discussions. Many of these initiatives began before the pandemic but their purpose and impact have been amplified during the crisis. They offer important lessons for our cities as we work on recovery and plan for the future, acknowledging other interrelated crises and uncertainties.

A community health approach in Toronto: From a community health approach, health is not just individual but relational, affected by our relationships with our communities, environments, cultures, economies and power relations. This approach recognizes that community health depends on more than just curing diseases – it also depends upon structures and options available for people to engage with the health care system, and therefore requires complex adaptive solutions. Dr. Kate Mulligan illustrated how the neighbourhoods hit hardest by COVID-19 in Toronto are also the neighbourhoods already known to have the highest levels of deprivation along a host of social and economic dimensions. Not only was testing less available as in other parts of the city, community members were less likely to take advantage of testing

when needed because of historical and ongoing discrimination and poor lived experiences interacting with the health care system.

The creative and empowering pandemic response from the members of the Alliance for Healthier Communities convened testing services in these neighbourhoods that were culturally friendly, and cognizant of the colonial and disempowering legacies of conventional health care approaches. This work fits within the practice of "social prescribing," an approach the Alliance advocates for, where 'prescriptions' for social and cultural activities or supports (from dance classes or walking outdoors to housing and food security) are as important as drug prescriptions. Dr. Mulligan encouraged viewing community health as "local but structural kindness," and urged government agencies to recognize matters of kindness and social conscience as central to health.

Community Housing: The COVID-19 pandemic emphasized the importance of secure shelter and healthy housing – where people are supported and connected – as essential for people's wellness and health. Dr. Rebecca Schiff discussed how this insight was already understood in the Community Housing (CH) sector. This sector encompasses a variety of different models, and is also referred to as "social" housing (public ownership or support) or "affordable" housing (below market rents): housing that is designed to accommodate the one in eight Canadians who need support in obtaining a safe, affordable and adequate home. Dr. Schiff shared some early findings from a recent Cooperative Housing Federation of Canada (CHF Canada) survey, suggesting that cooperative housing residents seem to be more financially resilient and less negatively affected by the pandemic overall than those living in market housing. Additional research is needed on the impact of the pandemic on households in different housing types. Moving forward from the pandemic, and to avoid returning to the "normal" of the pre-pandemic housing challenges, Dr. Schiff emphasized the need to recognize the multiplier effect of community housing and to provide more support for the stability and expansion of the sector.

Housing and sociability: The safety measures required to address the public health emergency of the pandemic have restricted social life and contributed to social isolation and loneliness. The Hey Neighbour Collective (HNC) is a community-of-practice-based project housed at the SFU Morris J. Wosk Centre for Dialogue in Vancouver, BC. It brings together residents of multi-unit housing, housing providers, non-profits, researchers, local and regional governments, housing associations, and health authorities to experiment with and learn about ways of alleviating loneliness and social isolation while building capacity for neighbourly support and mutual aid.

Project Director Michelle Hoar described how HNC is founded upon research showing that social connections help protect people against numerous health risks and help individuals and communities to survive and recover from emergencies. Knowing their neighbours even a little bit makes people more likely to give and accept help in a crisis. HNC is a 2020 National Housing Strategy Demonstrations Initiative recipient. Its practice partners include Catalyst Community Developments Society, Building Resilient Neighbourhoods, Brightside Community Homes Foundation, Concert Properties, and the West End Seniors' Network.

Youth engagement in virtual spaces: Ethós Lab in Surrey, BC launched in 2020 as a response to a critical lack of Black youth representation in science, technology, engineering and mathematics (STEM) fields in schools and workplaces. It is a space for youth aged 13-18 to experiment with emerging technologies, realize their fullest potential, and influence their own futures. Anthonia Ogundele and Joan Wandolo described how Ethós Lab brought together teenagers in physical and virtual spaces as a community of impassioned technologists and innovators. Together, beginning at a hackathon, they created a virtual world called Atlanthos. As the COVID-19 pandemic has created a heightened reliance on the digital realm, the practices and spaces within Ethós Lab serve as a model of kindness and integrity for youth seeking to find places of meaning in the city.

The initiatives described above are just a few featured examples in the Pandemonium series discussions. They offer lessons for how we can make our pandemic recovery efforts transformative for our cities and communities.

Meg Holden is the Director of the Urban Studies Program, 2018-2021 and a Professor in Urban Studies and Resources and Environmental Management at Simon Fraser University (SFU).

Find out more

The pandemic amplified pre-existing urban challenges but also revealed existing solutions and new lessons for the future of our communities and cities. Visit the Pandemonium website for a summary of insights, themes and questions that were raised throughout the series; and a list of the names of the panelists and moderators of all the events in the series, along with the videos and written summaries.

Aphrodite Bouikidis is a graduate student in the SFU Urban Studies Program.

Pivoting emergency management training to a new reality

By Perron S. Goodyear

Image Credit: The Salvation Army

History

The Salvation Army's Emergency Disaster Services program in Canada started in response to the Halifax Explosion on December 6, 1917. The explosion and subsequent tsunami-like wave destroyed much of the city of Halifax, killed more than 1,600 people, and injured thousands more. The Army dispatched personnel from across the country and Newfoundland to assist with relief efforts, which lasted for months. In addition to providing for the practical needs of those impacted, such as food and clothing, Salvation Army personnel provided emotional and spiritual support to responders. "We do not know how we would have gotten along without them," wrote R.T. MacIlreith, Chairman of the Relief Committee (The Salvation Army, 2021).

Following the terrorist attacks in the United States on September 11, 2001, The Salvation Army in North America developed the National Disaster Training Program (NDTP). The NDTP is a detailed emergency response training program whereby personnel are trained in every aspect of Salvation Army emergency response.

Present day

Today, The Salvation Army's Emergency Disaster Services (EDS) has grown into an international network involving thousands of trained personnel worldwide, including many volunteers. As a result, The Salvation Army plays a critical role in all aspects of the emergency management continuum: mitigation/prevention, preparedness, response, and recovery.

The Salvation Army utilizes volunteers in every aspect of EDS, particularly in response. Full training is provided through our NDTP, and only pre-trained, pre-registered personnel are called on during an emergency or disaster response. This training allows personnel from all over North America to support relief efforts across the two countries and bring much-needed capacity where it is needed most.

COVID-19

Early in 2020, EDS began planning and preparing for the COVID-19 pandemic. This included updating pandemic plans as well as planning for response to other possible emergencies during a pandemic. Our Territorial Rapid Emergency Assistance Team (TREAT) members were assigned to small groups representing the various functions of an incident management team and asked to consider the ramifications of this function during a pandemic. Based on these findings, each group made a series of recommendations.

It was quickly identified that our usual in-person NDTP training might not be feasible. As a result of response to the pandemic, however, the need to recruit and train additional personnel would be increased. In addition, the usual movement of personnel across provincial and territorial borders may not be possible, so increasing local capacity would be critical. We would need to address this significant gap to sustain response efforts if the pandemic became a reality.

Image Credit: The Salvation Army

Virtual training

We developed a task force to look at the possibility of adapting our NDTP in-person training for a virtual environment. NDTP courses focus on teaching adult learners using a variety of techniques, including short lectures, videos, and group exercises. It also allows facilitators to assess the capabilities, capacities, and limitations of potential responders. Going virtual would mean adjusting exercises for an online environment as well as finding a way to assess potential volunteers' skills and abilities without seeing them in person.

Starting with our Introduction to Emergency Disaster Services course, a pilot was launched using Zoom in early April with one trainer and three additional training aides. The training aides assisted with answering questions, monitoring the chat, and helping in break-out exercises. Exercises were re-vamped to provide the same learning outcomes while changing the structure to be conducive to virtual learning.

Following the successful launch of the initial course, subsequent courses were added over the spring and summer. These included Fundamentals of Holistic Care, Disaster Food Service and Canteen Operations, Incident Command System, and Understanding Emergency Management. Advanced courses such as Finance and Administration, Planning, and The Policy Group were added to provide additional leadership capacity to local teams.

After each course, participants were sent a virtual evaluation form to provide anonymous feedback on the course materials and instruction. The feedback from participants has been overwhelmingly positive. After taking the Introduction to Emergency Disaster Services, Donna shared, "The course was well presented, and although we were not able to meet in person, the facilitators made sure people were engaged and able to share personal experiences. The ability to connect with people from across the nation with similar passion for helping others was refreshing".

Image Credit: The Salvation Army

INTRODUCTION TO EMERGENCY DISASTER SERVICES

National Disaster Training Program

Supporting international partners

With the shift to virtual learning, new opportunities opened up to expand the training beyond geographical boundaries. As part of a pilot program to provide technical support to our partners, Salvation Army project officers from Liberia were invited to participate in the virtual courses. The training helped equip them to develop emergency response projects on the ground in Liberia. "The training was rich and resourceful," said Major Abraham Collins, project officer for The Salvation Army in the Liberia and Sierra Leone Command. "It prepared me to organize a locally trained disaster management team."

In addition, training personnel from The Salvation Army in the United States and our International Headquarters in London, England joined training sessions in an effort to replicate what was being done in Canada. The revised training materials were shared to expedite their ability to train personnel virtually, since Canada was the first to make this shift.

Adapting to a new normal

Prior to the pandemic we would not have considered using virtual training due to limitations in making assessments on personnel. However, we learned it is possible to change the delivery model while maintaining the original objectives of the courses. Although it is expected that in-person training will resume once it is safe, we also anticipate that some training will continue virtually, and we foresee adding self-directed online training as another tool to our learning environment. This hybrid model will allow for greater flexibility and expand our reach beyond physical borders. What started as a necessary change has provided the opportunity to reimagine our training program now and for the long-term.

Image Credit: The Salvation Army

Perron S. Goodyear is the Territorial Director of Emergency Disaster Services for The Salvation Army in Canada and Bermuda. He recently completed a Master of Arts in Disaster and Emergency Management from Royal Roads University.

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Building Climate Resilient Communities in Pandemic Recovery

By Gordon McBean, Paul Kovacs, and Brennan Vogel

Climate change is impacting all countries, but Canada has experienced warming at about twice as fast as the global average, and three times as fast in the Canadian Arctic (Bush and Lemmen, 2019). As global emission targets are missed, the accelerated warming will lead to a continued increase of hazardous climate events, with urban areas being especially affected because of density, development and populations (Rosenzweig et al., 2018).

The 2021 World Economic Forum Global Risks Report ranked, in terms of impacts and likelihood, the risks of climate change:

- Infectious Diseases, first for impacts and fourth most likely
- Climate Action Failure (climate-change adaptation and mitigation), second for both impacts and likelihood; and
- Extreme Weather, eighth for impacts and first most likely.

It is clear any interaction of these risks leads to devastating results, as we have borne witness for the past few decades, and most recently with the COVID-19 pandemic. Therefore, societies need to address these risks together and not as separate modalities. This paper outlines how the proposed pan-Canadian National Adaptation Strategy (McBean et al., 2021) is well positioned to address these risks.

Climate actions in pandemic recovery

As the world pivots to recover from the pandemic, the relationship between risks needs to be considered. In 2021, the UN Secretary General stated, "As we rebuild, we cannot revert to the old normal. Pandemic recovery is our chance to change course." The Canadian Task Force for a Resilient Recovery, launched in 2020, prioritized investments in climate-resilient and energy efficient buildings, estimating for every $1 investment in resilience, as much as $6 in future benefits. In April 2021, Prime Minister Trudeau spoke of Canada's green recovery for the COVID-19 pandemic, stating, "Let us continue to take decisive and ambitious action to ensure we leave our children and grandchildren with a cleaner, healthier, and more resilient planet" (Government of Canada, 2021).

Building climate resilient communities

Given the interconnected nature of risk, the focus for climate adaptation and building resilience needs to be on urban communities, where Canadian and global populations are increasingly concentrated (Rosenzweig et al., 2018). Integrating actions to advance resilient communities, homes, and infrastructure into economic and social recovery efforts from the pandemic can support building prosperous and climate-resilient communities equipped for future challenges and opportunities.

The proposed National Adaptation Strategy (Government of Canada, 2020) could provide means and ways to increase investments in resilience through multi-level governance and multi-stakeholder approaches for implementing plans through policies, programs, and investments moving forward.

Understanding and reducing disaster risk depends on the impacted community's exposure and vulnerability to hazardous events, which depend on geographic, socio-economic, and cultural environments. Climate action failure, extreme weather (for example, heat, storms, floods) and infectious diseases will all play key roles informing the context within which pandemic recovery and climate actions will take place (Figure 1).

Recently, a team of 22 Canadian experts synthesized the state of scientific knowledge about strategic opportunities for actions to build climate resilient communities (McBean et al., 2021). Six key areas for analysis were chosen and through reviews of the academic literature and policies, and discussion with individuals across sectors, including Indigenous communities, the state of play was identified regarding the strengths and weaknesses of Canadian communities for addressing adaptation actions and resilience building.
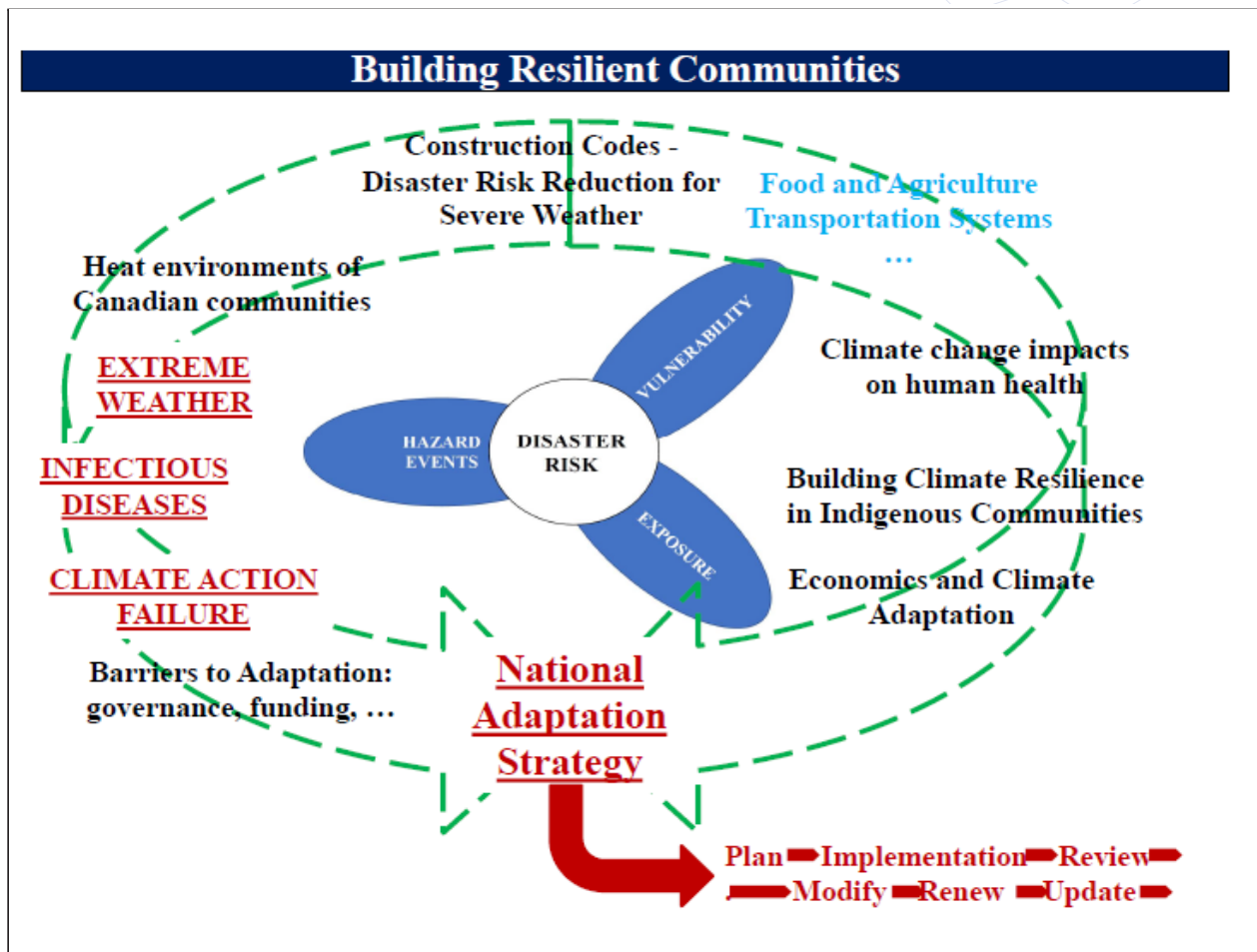

Figure 1. *Building Healthy, Climate-Resilient Communities (McBean, Kovacs et al.,2021)*

Translating strategy into action

For **urban heat environments**, there are increasing risks of urban warming and severe weather, such as tornadoes. To ameliorate these risks requires taking advantage of windows of opportunity for adaptive planning to reduce health impacts, which in turn depends on improved science and mapping of present risks and projected occurrences of future changes to determine which actions are needed.

For **urban infrastructure,** greater efforts to quantify infrastructure characteristics and disaster risks are needed to inform vulnerability studies and risk reduction efforts. Local flooding due to heavy precipitation has caused disproportionate impacts which depend on community risk sensitivity and exposure, exemplifying where there are contextual vulnerabilities that need to be addressed.

Human health in all Canadian communities is adversely affected by climate change with significant social, health and economic impacts at the local scale. Adaptation strategies need to address interconnected environment and health issues to build community-scale resilience across all health systems and societies.

In **Indigenous communities**, self-determination, self-sufficiency, and adaptive capacity building are recognized as socio-political and cultural factors contributing to Indigenous resiliency. Combining western science and Indigenous ways of knowing provides a timely opportunity for overcoming the broader context of social inequities and governance gaps exacerbating climate risks in Indigenous communities. Creating new collaborative spaces for policy integration of climate resilience through Indigenous reconciliation efforts and initiatives provides a key opportunity for integrated actions in the recovery effort.

The **economics of adaptation in Canada** examined the major issues related to the lack of funding and guidance from senior governments to provide policy direction for adaptation planning and addressing climate resilience at the community level. Some Canadian communities have prepared high-level adaptation plans; however, there are fewer examples of detailed implementation within established multi-level governance funding frameworks. The Institute for Catastrophic Loss Reduction Cities Adapt program (Kovacs et al., 2020) documents many of these challenges and opportunities. It appears that many actions to build community resilience are reactive, taking place in recovery efforts following a disaster.

Overcoming barriers

There are many barriers to the implementation of the above-mentioned strategies, including financial, governance, and others. The National Adaptation Strategy with federal, provincial, and territorial support for adaptation actions could facilitate implementation at the community level, helping to address these barriers. Addressing integrated policy issues associated with resiliency while advancing community-level implementations to iteratively build climate and pandemic-resilient communities across Canada should leverage and build on the expert-community's proven policy tools. One issue is the need for integrated early warning systems and better prevention strategies for hazards, which require coordinated governance.

Concluding remarks

The development and implementation of a Pan-Canadian National Adaptation Strategy would provide a significant opportunity for addressing integrated resiliency policy issues while advancing community-level implementation of actions that can iteratively build climate-proof and pandemic-resilient communities across Canada. The final Strategy needs to address the lack of funding and guidance from senior governments. Federal funding along with operational policy and accountability requirements in a well-informed and integrated green recovery strategy would provide collaborative opportunities for municipalities and Indigenous communities to reduce GHG emissions and advance resilience to climate impacts.

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Acknowledgements

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Health care and societal resilience during COVID-19

By Luca Galbusera and Gianluca Pescaroli

After one and a half years, COVID-19 is still challenging risk and disaster management worldwide, calling for systemic approaches to mitigate its effects (Hynes, Linkov, and Trump, 2020). Research and practice related to the pandemic has often focused on the direct impacts to the health care sector. Yet, the pandemic has highlighted that an effective response requires multidisciplinary thinking and awareness of societal interdependencies.

Our research groups at University College London and European Commission's Joint Research Centre (JRC) cooperated on a pan-European survey study titled "Covid-19: Emergency, Recovery and Improvement". This explored risk perceptions, emergency communication and management, future developments of the pandemic and lessons learned. The study took place between May and July 2020, a phase following the first epidemic wave peak in most regions of interest. Based on public and voluntary participation, we collected over 3000 responses. Most of them came from Italy, Romania, Spain, and the United Kingdom. The survey results were later elaborated and discussed in a scientific publication (Pescaroli et al., 2021).

Perceptions of the emergency

Our analysis suggests how the contagion outbreaks in Italy "represented a critical 'tipping point' which changed the perception of COVID-19 from being a faraway event, to a collective and European 'emergency'". Participants identified several reasons for the spread of the virus, most prominently lockdown measures being implemented too late or not restrictive enough, jointly with the indifference, carelessness, or lack of caution among the population. Before the outbreak, respondents considered an epidemic in Europe to be rather unlikely. Moreover, national civil protection services were felt as somehow inadequately prepared, albeit with country differences.

We investigated preparedness measures adopted at the individual/household level, such as keeping medicine and food supplies, reading official information on what to do in a pandemic or other events, and organizing for working or studying remotely. The largest proportion of respondents did not take any such measure. Nevertheless, some differences emerge in the minority that did, which was highest for reading official information about the pandemic and organising for working/studying remotely.

Psychological well-being was affected more than workplace, family, and economic well-being. Key concerns included the impacts of the event on the health of participants and their families, the consequences on economy, work and study, and the saturation of hospital and emergency facilities.

As expected, patterns of consumption and access to services displayed significant changes compared to before lockdown. In particular, the daily consumption of food, water, electricity and heating appears to have increased, jointly with the use of telephone and internet services. At the same time, we registered a drop in the use of transport, health services, hospitals, banking and financial services.

The respondents worried mainly about the direct consequences of the primary crisis. Generally, there was less apprehension about other possible contingencies such as disruptions of essential services, the concurrence of events such as flooding, or risks of intentional damage actions such as terrorist acts or riots.

Emergency communication and management

During the emergency, the main information sources were the Internet and television. Some news (real or fake) were considered particularly worrying, including the blockage of imports of protective equipment such as gloves and masks, conspiracy theories, prioritization of younger patients, and the total closure of supermarkets and pharmaceutical services.

Quality of emergency communication was perceived as comparatively better when addressing restrictions of free movement and measures to prevent the infection, and worse for recommendations about physical and psychological well-being. In terms of emergency support tools, top scores were attributed to symptom-tracking apps and the free distribution of videos that teach good practice.

Future developments

Nearly half of the respondents thought that they could sustain restrictive measures for a few months and a further third for a few weeks. In this case, country differences were noticeable, also depending on the specific epidemic trends at the time of the survey. On the other side, a strong agreement was found on the idea that activities could be revived through a combination of measures to promote a progressive restart, rather than no measures or total lockdown strategies.

In terms of personal priorities after the lockdown, participants stressed a return to regular study or work conditions, getting back together with one's family, mobility without geographical restrictions, and full access to health services. We also assessed awareness of national social and economic measures, participation in forms of volunteering, and socioeconomic priorities deemed to be the most important. The latter, in particular, were topped by investment in health and research and financial support for families and vulnerable categories (see Figure 1 for further details).
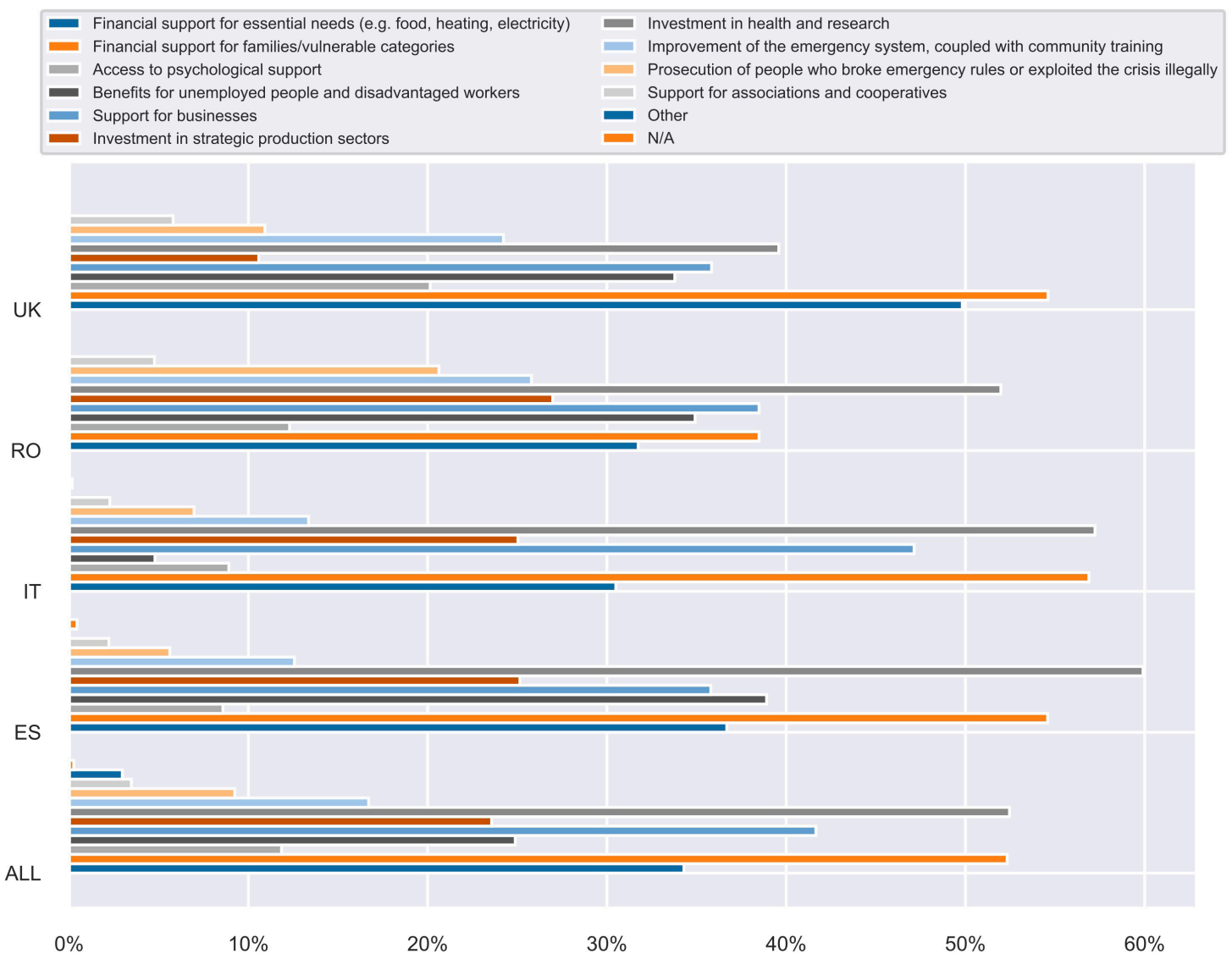

Figure 1. Results for question *"On a personal level, what will be your priorities during the recovery?"*.
Abbreviations: ALL (all countries), ES (Spain), IT (Italy), RO (Romania), UK (United Kingdom).

Finally, we investigated if and how the experience gained during the COVID-19 emergency can help to improve disaster management and societal resilience. In this sense, we registered a tendency towards optimism, especially as far as emergency support logistics and technologies are concerned.

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Discussion and conclusions

Our study has to be considered indicative rather than representative of general populations in Europe. Nevertheless, it allowed us to gain some new insights into this crisis. In particular, we understand that "the root causes for the spread of the disease were attributed to factors that reflected global interdependencies or general mismanagement, rather than to the magnitude of the hazard itself". This needs to be taken into account in future emergency preparedness and response strategies for pandemics and systemic crises in general. Aspects to be addressed include the strengthening of supranational governance, as well as the integration and coordination of regional response systems.

Our study reflected a shift in the use of essential services, potentially able to induce long-term changes such as higher penetration of internet-based solutions. Moreover, our data suggest the need of understanding better how pandemics could interact with climate change scenarios and technological dependencies. Further actions should promote better use of the information available for prioritising targeted resilience measures, raising public awareness of concurrent events, and enhancing communication in times of crisis.

Finally, we mention that a cognate study on public perceptions of COVID-19 has been performed in Japan (Suppasri et al., 2021) and that the JRC conducted a study on emergency and business continuity in critical infrastructures during COVID-19 (Galbusera, Cardarilli, and Giannopoulos, 2021).

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The health care emergency management experience during COVID-19:

Lessons from a Pan-Canadian study

By Jeffrey Tochkin, John Richmond, and Attila Hertelendy

The health care system in Canada has faced enormous pressures during the three consecutive waves of COVID-19 response. Without the efforts of emergency management practitioners, the health care system response would have been rendered less effective and less coordinated. This generational crisis not only challenged health systems, but had much broader societal impacts, which will be experienced for years to come. In this article we distill findings from a Pan-Canadian study which speaks to the COVID-19 experience of emergency management practitioners in health care organizations. Based on these experiences, we present the practical implications for emergency management practitioners working in health. From this analysis, it becomes clear that emergency management will have an integral role in strengthening systems following the pandemic.

Concluding remarks

From the time a mysterious novel coronavirus disease first appeared in Wuhan, China, the later named COVID-19 quickly spread globally. As Canadian cases first began to present in Toronto, provincial and territorial health care systems across Canada struggled to provide consistent guidance to health providers. As health care organizations scrambled to prepare for the impending presentations of COVID-19, services were constricted to focus efforts on building capacity for the anticipated volume of patients. Simultaneously, a variety of disaster preparedness activities were undertaken to ready these organizations for what was to come.

As discovered in our exploratory study (n=150) of emergency management practitioners (EMPs) - those with emergency management sole, primary, secondary or emergent responsibilities - on COVID-19 health care preparedness and response activities (Richmond, Tochkin, and Hertelendy, 2021, pp.1-12), a number of activities were enacted including pandemic plan reviews, personal protective equipment (PPE) training, activation of incident management (IM), clinical management strategies, setting up an emergency operations centre, multi-agency training, scenario planning and use of simulations. The prevalence (between 0-100%) and perceived effectiveness (between 1-5) of these activities are shown in Table 1.

On average, EMPs enacted 5 out of 9 preparedness activities. While pandemic planning was found to be the most prevalent activity (82%) it was also rated the least effective (4.07 of 5). This was likely due to the previous pandemic plans being more influenza-specific, outdated (52% of organizational plans were reviewed prior to 2018), and a lack of overall organizational knowledge of the plan. Effectiveness was rated on a likert scale and based on the perception of the survey respondents. Meanwhile, simulation-based exercises were the least prevalent at 25%, but found to have a significant and strong positive correlation with the effectiveness of two other activities: training for multi-agency response and activating IM. Donning and doffing PPE ranked as most effective (4.6 of 5).

While pandemic planning was found to be the most prevalent activity (82%) it was also rated the least effective (4.07 of 5)

Summary Statistics							
Variable	**N**	**% (n/150)**	**Mean**	**Standard Deviation**	**Min**	**Median**	**Max**
Activity effectiveness							
Pandemic plan review	122	8	4.07	0.97	1	4	5
Donning and doffing PPE training	122	75	4.61	0.76	1	5	5
Activating Incident Management	108	73	4.39	0.85	1	5	5
Clinical management strategie	91	61	4.44	0.76	1	5	5
Setting up a physical EOC	79	53	4.20	0.91	1	4	5
Training for multi-agency response	73	49	4.32	0.78	1	4	5
Table-top only scenario planning	70	47	4.16	0.81	2	4	5
Setting up a virtual EOC	68	46	4.49	0.82	1	5	5
Simulation Based Exercises	38	26	4.32	0.77	3	4.5	5

Table 1. Disaster preparedness activities in Canadian health care organizations (adapted from Richmond, Tochkin, and Hertelendy, 2021, pp 1-12)

Dedicated resources lead to effective response activities

These activities, which commenced prior to the onset of provincial declarations of emergencies, continued through the response. Interestingly, increasing activity prevalence in the organization had much to do with whether the EMP was dedicated as a sole function, as opposed to a secondary or emergent responsibility. In addition, prevalence increased when IM training was provided to incident leaders, often health executives, prior to COVID-19. The effectiveness of these activities was significantly associated with the prevalence of activities overall, and specifically if the incident response was managed by either a singular IM lead or multiple IM leads.

In summary, if the organization's incident management team was trained prior, there was a singular leader, and the EMP was a dedicated position, disaster preparedness activities were found to be more prevalent and effective. It is also important to note that there may have been activities that occurred that EMPs may not have been aware of. In addition, it is important to recognize other factors may influence the effectiveness of an activity (ie. PPE training is extremely effective; however, a lack of human resources can create PPE fatigue, leading to a seemingly lower effectiveness rate.)

Emergency Management Responsibility		
Sole	30	20%
Primary	30	20%
Secondary	59	39%
Emergent	31	21%
Total	150	100%

The leadership challenge

Health care systems are complex and continuously evolving (Figueroa, et al., 2019, p.2). Leadership has to be adaptive to potential risks; however, there is an emergency management competency gap for leaders in health organizations (Hertelendy, et al., 2021, pp. 1-4). More specifically, leaders often do not understand incident management systems and planning cycles, as well as lack familiarity with intersecting municipal and provincial emergency management systems. This is compounded when the emergency is experienced beyond the health care organization and is more complex in nature. In this case, the EMP within the organization must gain trust within the core leadership group. Compounding this, the EMP commonly reports to middle level management and often has limited exposure and ability to convey messaging to senior management. As a result, the messaging can lose its original intent and effectiveness.

Highlighting the need to reduce this gap, Richmond, Tochkin, and Hertelendy (2021, pp. 1-12) found that only 68% of IM leads were trained in their roles and were familiar with lines of responsibility found in an IM system. Where leaders were trained, organizations took more action to prepare for COVID-19. In addition, as described above when the IM system was led by a single trained individual, as opposed to an untrained leader or multiple individuals cycling through the role, response activities were more effective. This decisiveness is helpful during times of uncertainty as experienced during the current pandemic (Schmidt, 2021, p. 1). Compounding this, terminology fatigue and unfamiliar language (ie. only used during emergencies) presents challenges to how the system is embraced. Therefore, more clarity and consistency is needed in how health care organizations adopt incident management systems.

Table 2. Emergency management responsibility in Canadian health care organizations (adapted from Richmond, Tochkin, and Hertelendy, 2021, pp 1-12)

Lesson Observed vs. Lesson Applied

How health care organizations apply lessons learned and transfer knowledge varies greatly. Francescutti, Sauve, and Prasad (2016, p. 54) suggest that health care organizations are underachievers in learning from past lessons due to a number of factors, including reputational management superseding honest public disclosures and lack of engagement and transparency with frontline staff. That being said, it is important to note that the ability for an organization to take action may be limited, in some cases, due to the complexity of the issue and cost. Underfunding in the healthcare system is a constant challenge for organizations to overcome. This can create a vicious cycle, where past mistakes are repeated and lessons not applied, leading to a less resilient health care system and one which is unable to adapt to ongoing events. Fortunately, many positive changes to the health care system followed SARS (Silverman, Clark, and Stranges, 2020, p. 1797; Webster, 2020, p. 936) at both the provincial, territorial, and federal level. The spirit of continuous improvement, including following a pandemic event, will undoubtedly need to follow a much more severe experience such as COVID-19 in order to apply lessons learned.

Incident Management Leadership		
Sole Non-Medical Leader	56	38%
Sole Medical Leader	18	12%
Sole Emergency Manager	7	5%
Sole Subject Matter Expert	8	5%
Multi-led team	54	39%
Total	146	100%

Conclusion

From this analysis, it becomes clear that effective emergency management is more likely when EMPs are a dedicated resource and have a place at the leadership table. In addition, leaders within organizations need to participate in IM training, understand their roles, and have a desire to increase their skill set in EM (Hertelendy, et al., 2021, pp. 1-4). All organizations need to consider potential risks, plan accordingly, respond in a measured fashion and evolve to the ever changing environment. Given the increasing frequency of disasters and multitude of complexities arising from this reality, leadership needs to be adaptive and open to change and health leadership - in particular, to solidify their commitment to emergency management.

While we have much to be proud of in this response, the next pandemic will take its own shape with specific challenges. Emergency management has its work cut out to impart lessons within the organization. These efforts are paramount in a more effective response to adverse events and building further community resiliency. We must learn from our experience and apply it in meaningful ways.

Table 3. *Incident Management leadership in Canadian health care organizations (adapted from Richmond, et al., 2021)*

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GBA+
An analysis of the interplay of climate change, COVID-19, and housing

By Dr. Dawn Hoogeveen, Kerri Klein, Jordan Brubacher, and Dr. Maya Gislason

BC is already experiencing climatic changes which are predicted to become more widespread and significant over time. From flooding to drought to an increase in extreme weather events, research points towards the inevitability of a changing environment. These changes in climate will impact populations unevenly, making housing equity a crucial principle to guide government responses. This article uses a GBA+ lens to examine the interplay of climate change and COVID-19, and how policy demands to improve housing have been clearly illuminated, presenting a catalyst for change.

Image Credit: Nicole Spence

In late June 2021, Environment and Climate Change Canada issued an extreme heat alert for British Columbia (BC) as temperatures broke record highs in the region. For those of us who have been tracing climate change impacts, this was no surprise. In fact, it is understood as one of many more heat waves and domes to come. This burst of warm temperatures fell on the heels of a relief in COVID-19 restrictions, as BC entered Phase 2 of its reopening plan. This move to Phase 2 was generally approached with caution, with questions about how to 'bounce back better' in an age where the interplay between social justice, health, and climate change impacts are increasingly visible.

But what does this mean at a population level, on the unceded and ancestral lands of what is known in settler colonial terms as British Columbia, home to a host of First Nations and Métis whose land on which non-Indigenous peoples continue to occupy? The health costs of climate change have been well documented, and research shows those who experience overlapping forms of systemic discrimination (e.g. misogyny, racism, colonialism, ageism, etc.) will continue to be at greatest risk to the impacts of climate change.

Image Credit: Nicole Spence

Climate change, COVID-19, and housing

In response to climate impacts and in collaboration with the Climate Action Secretariat of BC, we (researchers and practitioners from Simon Fraser University and SHIFT Collaborative) used a gender-based analysis plus (GBA+) lens to analyze the impacts of climate change. GBA+ involves the consideration of sex, gender, race, ethnicity, religion, age, and mental or physical ability (among other identity factors) to promote socially-just policy.

Our GBA+ preliminary report on the impacts of climate change across sub-populations included statistical analysis, a case study on the social impacts of the floods of Grand Forks in 2018, and a review of climate impacts in relation to intersectionality, which we broadly understand as overlapping forms of discrimination. A key finding of our work was around housing, which in of itself is part of a much larger conversation. For the purposes of this article, our focus is on the **interplay of climate change and COVID-19, and how policy demands to improve housing have been clearly illuminated**, presenting a catalyst for change — or silver lining, if you will.

Structural in/equity

Policy makers across jurisdictional spaces have been drawing on a GBA+ lens, informed by intersectional theory and method, to approach climate change and COVID-19. This is timely to help understand climate impacts as GBA+ provides methods and tools to understand, plan for, and mitigate the impacts of climate change across populations.

BC is already experiencing climatic changes which are predicted to become more widespread and significant over time. From flooding to drought to an increase in extreme weather events, research points towards the inevitability of a changing environment. Changes in climate will impact populations unevenly, making housing equity a crucial principle to guide government responses.

The question of how to address housing equity remains a challenge, particularly in a province where the lines between sovereignty and equity are blurred. This begs the question, **what are the commonalities between how COVID-19 and climate change impact unhoused or precariously housed populations?**

When disasters such as floods and wildfires happen, it is an opportunity to challenge 'business as usual'

Image Credit: Nicole Spence

values, assumptions, priorities, and practices. The extreme weather events accelerated by climate change provide a catalyst for making changes to social policies that underpin existing structural inequities in BC. Climate change also provides an opportunity to look for co-benefits that strengthen social equity and adapt to climate change at the same time. In this way, **major climate events — much like the COVID-19 pandemic — create opportunities for re-assessment of social and environmental change.**

COVID-19 as a catalyst for housing supports

Housing is a key determinant for how impacted and adaptive communities can be to climate change, just as housing is a key determinant of poverty. People who are housing insecure are at risk of exposure to physical impacts from climate hazards, including wildfires, floods, and heatwaves, and face significant challenges in recovering and adapting to climate impacts. One leverage point for addressing the social impacts to climate change in BC is to house the most vulnerable.

> **"There's an opportunity for policy in the social realm; if we are going to be taking care of the most vulnerable communities because of climate change, then let's advocate [to get] the most vulnerably-housed in BC—let's start there."** - *Interview Participant*.

Major climate events like wildfires and floods also impact the level of available housing stock in a community. In communities with already low vacancy rates, this creates problems with housing supply, especially for low-income people. Those on low incomes who have lost their housing due to a wildfire or flood, or from the economic fallout caused by COVID-19, have few options available to them.

Interviews from Grand Forks indicated that those who were most impacted by the 2018 flood were people who did not have high levels of financial or housing security, including those with low income, renters, those living in poverty, and single parents. This mirrors the impacts of COVID-19. What lessons can be learned to help policy makers create better housing security on a local level considering climate change?

Though far from perfect, intergovernmental collaborations amongst different agencies and across jurisdictions have built on relationships that have the potential to promote better housing supports moving forward. COVID-19 acted as a catalyst for deeper work and community supports between BC Housing, provincial health authorities, Health Canada, and the BC Centre for Disease Control, that otherwise might not have taken place. Through its broad reaching and devastating impacts, the **COVID-19 pandemic ultimately helped governments better understand how housing impacts health.**

Lasting effects in an ever-changing environment

Discussions with policy experts, frontline workers, and health care professionals working in communities impacted by climate change made it apparent that we have tended to the downstream impacts (which are critical), but neglected the upstream assessment, preparedness, and planning for how climate change or a pandemic puts people at risk. Yet how climate change impacts populations, including those who are most at risk, remains less apparent.

In late June, parts of Mount Currie and Pemberton, located north of Whistler, experienced an evacuation order due to the rise in water levels from the Lillooet River. Shortly after, wildfires reached out of control levels, burning through communities causing irreparable damage, including in Lytton where the highest ever temperature in Canada was recorded. Climate change and major environmental events are not going anywhere and we must address the cascading impacts of these events on individuals and communities. Our work on the interplay of climate change, COVID-19, and housing has begun to answer questions around the disproportionate social impacts of climate in BC, though there is much more to be done.

We know that BC spent the most on the emergency response, including the highest social support to individuals per capita – but will it continue? Or will things return to the status quo? This uncertainty is a call to action to those who work in climate change and housing, to ensure the positive policy changes under COVID-19 continue to grow and evolve to address the worsening impacts of climate change.

Dr. Dawn Hoogeveen is a University Research Associate at Simon Fraser University in the Faculty of Health Sciences. Her work examines what it means to do ethically engaged social and environmental health justice research, including on the health impacts of climate change and resource development in Indigenous communities. Dawn is a settler of Dutch and British ancestry who grew up on Williams Treaty lands near Peterborough, Ontario. She lives on unceded Coast Salish territories in British Columbia with her partner and two kids.

Kerri Klein is a process designer, learning specialist and facilitator with expertise in the human, social and equity dimensions of climate change. She has worked for the last 15 years designing and leading collaborative planning and engagement processes with a wide range of sectors and communities. She has supported dozens of provincial, regional and community climate initiatives by facilitating collaboration, learning and engagement around climate risks, health, and building capacity to adapt. Kerri is the Co-Founder and Director of SHIFT Collaborative.

Jordan Brubacher is an interdisciplinary scientist with expertise in health sciences, GIS and ecology. He is passionate about the environment and has focussed his career around studying issues at the intersection of the environment and human health. Jordan embraces the understanding that humans are not separate from the environment, but rather that part of it and that as humans impact the health of the environment, the health of the environment in turn impacts the health of humans, and so on.

Dr. Maya K. Gislason is an assistant professor at Simon Fraser University's Faculty of Health Sciences, lead for the Planetary Health Research Group, a Michael Smith Foundation for Health Research Scholar, an Ecohealth International board member, and founder of the Research for Equitable Ecosocial Transformation (RESET) team at SFU. A defining characteristic of her research is the integration of social inequities in health scholarship, intersectionality, and gender-based analysis plus with ecosystem approaches to health.

HazNet Magazine is a bi-annual publication that serves as the information dissemination platform of the Canadian Risks and Hazards Network.

Our mandate is to foster an interdisciplinary and cross-sectoral education and engagement to enhance understanding of resilience, emergency management and disaster risk reduction.

We tell Canada's resilience story.

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Canadian Risk and Hazards Network (CRHNet) is a not-for-profit organization established in 2003 to promote and strengthen disaster risk reduction and emergency management in Canada.

The Network creates an environment for hazards research, education and emergency management practitioner communities to effectively share knowledge and innovative approaches that reduce disaster vulnerability.

Vision

CRHNet envisions a disaster and climate resilient Canada.

Mission

CRHNet brings together the disaster risk management community to increase resiliency through the transfer of knowledge, the building of relationships, and the exchange of best practices.

Values

Collaboration, Innovation, Inspiration, Diversity, Integrity, Respect, Transparency

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CRHNet brings together the disaster risk management community to increase reiliency through the transfer of knowledge, the building of relationships, and the exchange of best practices.

The goal of the Canadian Risk and Hazards Network is to create a safer and more resilient Canada. This can be better accomplished if you join.

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