

**YOUTH PERSPECTIVES ON PARTICIPATION IN DISASTER RISK REDUCTION:
AN ASSET-BASED APPROACH**

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Abstract

An all-of-society approach is foundational for increasing disaster resilience and creating adaptive capacity in the face of disasters and climate change. Youth participation within disaster risk reduction (DRR) and disaster risk management (DRM) is an inclusive strategy to engage youth in an all-of-society approach. While this is an emerging and fast-growing area of study, ingraining social inclusion in practice is slow. Through a series of four articles, this dissertation describes two separate qualitative studies exploring youth participation in DRR and DRM through the youth perspective. Participatory research methodologies dismantle power dynamics inherent in traditional research, and they are well-suited for research on youth participation. As such, our first study used Photovoice methodology to explore youth perceptions of youth capabilities in disasters, and to understand their experiences of the COVID-19 pandemic. Examples of youth participation initiatives in DRR are scattered, necessitating exploration of the process of participation in diverse contexts and types of disaster events. We conducted the second study using case study methodology to explore facilitators of—and barriers to—youth contributions towards DRR efforts in the context of local flooding, tornado, and pandemic events in Ottawa, Ontario, Canada. This dissertation provides insight on how to promote youth resilience, capacity, and strengths in disasters. Based on these findings, we argue that a paradigm shift in DRR towards an asset-based approach is essential to implement youth participation in practice. An asset-based approach aligns with the capability-oriented worldview in youth participation literature and theories. The complexity arises in attempting to apply asset-based lessons from the literature into the traditionally needs-based orientation of DRR policy and DRM practice. More research is needed to document youth actions in DRR and to determine asset indicators to evaluate implementation efforts. This dissertation begins an important conversation

around applying an asset-based approach to youth participation in DRR through the perspectives of youth.

Dedication

To my parents Lynn Cummings and Norm Pickering, who taught me to lead life with curiosity, compassion, and tenacity. I dedicate this dissertation to you.

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The land on which this dissertation was conducted is the traditional unceded territory of the Algonquin Anishinaabe People. The Algonquin People have lived on this land since time immemorial. As a disaster and population health researcher, it is my responsibility to respect this land by ensuring equity and environmental sustainability in my research and work with communities. I am grateful for the opportunity to conduct research in this territory.

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Dr. Christina Julie Pickering

Collaboration and Contributions of Co-authors

For each component of this dissertation, I (CJP) led all activities for ethics approval, data generation, analysis, and preparation of the written document. For study 1, due to the participatory nature of the research design, the other team members assisted with data management (e.g., transcribing) and analysis. For study 2, I collected and analyzed all the data, consulting with my supervisor throughout the process. I am lead author and wrote all four papers stemming from this research, with contributions added by my co-authors. This dissertation was written under the direct supervision of my supervisor, Dr. Tracey O’Sullivan. She guided the development of the studies, data collection and analysis, made suggestions for revisions, and approved the final dissertation draft before submission.

Compliance with Ethical Standards

The University of Ottawa's Research Ethics Board approved the study and data collection protocols – Photovoice study file number: H-09-18-1136, and case study file number: H-02-20-5495. We secured informed consent and assent for participation in these studies, and additional consent to include Photovoice co-researchers as co-authors on all Photovoice manuscripts. A copy of the ethics approval and consent forms are provided in the annex.

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Legend of Acronyms

CBPR	Community-Based Participatory Research
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
Health EDRM	Health Emergency and Disaster Risk Management
LTC	Long Term Care
PPE	Personal Protective Equipment
SDG	Sustainable Development Goals
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNDRR	United Nations Office for Disaster Risk Reduction
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children’s Fund
WHO	World Health Organization
YRT	EnRiCH Youth Research Team

Chapter 1: Introduction

Across the globe, humanity faces the growing challenge of extreme climate change and severe disasters (World Meteorological Organization, 2021). Reducing the risks of disasters and implementing climate action are important public health and social justice strategies to address these growing threats. According to the United Nations Office for Disaster Risk Reduction (UNDRR) (2022), risks are increasing faster than the progress to reduce them.

The UNDRR and United Nations (UN) General Assembly (2016) define a disaster as a hazardous event causing serious disruption to societal function, leading to human, material, economic, and/or environmental impacts or losses. Disasters occur when a community is 1) exposed to a hazard; 2) experiences vulnerable social, economic, or physical conditions; and 3) has reduced ability to cope (Public Safety Canada, 2012; UNDRR & UN General Assembly, 2016). Hazards can be environmental (e.g., loss of biodiversity), technological (e.g., chemical spills), geophysical (e.g., earthquakes), hydrometeorological (e.g., floods and tornadoes), or biological (e.g., pandemics). When disasters surpass a population's ability to cope, this can result in losses and harms to lives and the environment (UNDRR & UN General Assembly, 2016).

Disaster risk reduction (DRR) can be summarized as the theory and process of reducing disaster risks (UNDRR & UN General Assembly, 2016). This includes creating strategies and plans to mitigate exposure to hazards, reduce vulnerability of people, properties, and the environment, and improve preparation strategies in case of disasters (Public Safety Canada, 2012). DRR is the policy objective of disaster risk management (DRM) (UNDRR & UN General Assembly, 2016). DRM is the *application* of DRR policies and strategies to prevent new risk, remove or reduce existing risk and manage residual risk (i.e., risk that cannot be reduced) (UNDRR & UN General Assembly, 2016). Managing residual risk involves strengthening

individual and community resilience through preparedness, response and recovery activities, and implementation of financial social safety nets. Community-based DRM promotes the involvement of citizens in activities at the local level (UNDRR & UN General Assembly, 2016). Throughout this dissertation, we use the term DRR; rather than both DRR and DRM. When we use DRR, we insinuate both the policy/strategy of DRR and the implementation/practice of DRM, and the need for youth participation in both.

Health is both a determinant and outcome of DRR with disasters leading to excess morbidity and mortality from increasing public health needs (Chan & Shi, 2017). Exposure to disasters has direct effects on mental health, physical health, and wellbeing, as well as indirect public health implications such as changes to health-care facilities and public risk perception (Leppold et al., 2022). Given the increasing challenge of extreme disasters and climate change, disasters are a contemporary public health issue for which resources are needed to reduce disaster risks. To reduce disaster risks, global guiding documents across disciplines encourage the use of innovative approaches to increase disaster and climate resilience, and create adaptive capacity (UNDRR, 2015; United Nations, 2015b, 2015a). The UNDRR and UN General Assembly (2016) defines resilience as follows:

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. (p. 22)

Contributing to resilience is the concept of adaptive capacity, which is the ability of a community or system to prepare for, respond to, and recover from disasters using economic, social, informational and community resources with the goal of reducing risks and building

resilience (Barnes et al., 2020; Gallopin, 2006; Norris et al., 2008). Empowerment, collaboration, and innovation are important drivers in the development of adaptive capacity before, during, and after disaster events (O’Sullivan et al., 2014).

DRR is dominated by top-down models of risk reduction (T. Mitchell et al., 2008; Muzenda-Mudavanhu, 2016) in which decision-making around policymaking and implementation occurs at the highest levels of management and governance, and are then communicated downward (e.g., to other teams, departments, organizations, and the public). While government involvement is important to lead and coordinate disaster response, central authorities often experience challenges accurately and efficiently identifying needs and coordinating resources in response to disasters (Haeffele & Storr, 2020). A bottom-up response in DRR encompasses collaboration between individuals, communities, and local organizations to respond to needs in a disaster (Haeffele & Storr, 2020). The potential benefits of bottom-up efforts in disasters are often overlooked by DRR policymakers.

Disaster literature reinforces the need to give attention to capacities and vulnerabilities in DRR. Capacities are the set of diverse knowledge, skills, and resources citizens’ possess, have access to, and use in disasters (Gaillard et al., 2019; Norris et al., 2008). Capacities can be individual and collective, and shared with others in a community of people (e.g., family, neighbours, etc.). They are the positive conditions or abilities people possess that can be combined to prevent, prepare for, respond to, and recovery from disasters (Ahmed et al., 2012). The concept of capacities is rooted in advocacy, as a rationale for community participation, and therefore more equitable sharing of power between community members and traditional actors of DRR (Gaillard et al., 2019).

An approach that might be helpful to explore both bottom-up and top-down responses to DRR, is one focused on strengths, capabilities, and assets. Bottom-up responses are actions driven by community actors (Grube, 2020), relying on social networks and resources, skills and expertise to collaboratively respond to and recover from disasters (Aldrich, 2015; Shaw & Goda, 2004; Storr et al., 2017). Given that capacities (Gaillard et al., 2019), adaptive capacity (Barnes et al., 2020; Gallopin, 2006; Norris et al., 2008), as well as empowerment, collaboration, and innovation (O’Sullivan et al., 2014) are important concepts in DRR, the dominant needs-based approaches of disaster management are insufficient to identify these positive-leaning, community-based concepts. An approach focused on identifying assets and capabilities, as well as needs, is not only more appropriate and innovative, but essential to explore the bottom-up response within DRR.

Over the last six years, the need for community preparedness in Ottawa, Canada, has become more apparent. In that time, the city and surrounding areas experienced numerous record-breaking natural disasters, in addition to the COVID-19 pandemic. In spring 2017, the region experienced extensive flooding (CBC News, 2017); on September 21st, 2018, the region was hit by two tornados (an EF-2 in south Ottawa; and an EF-3 in rural west Ottawa, and Mont-Bleu in Gatineau), causing widespread damage and power-outages (Nease, 2018); and in spring 2019, the region once again experienced substantial flooding (CBC News, 2019b).

More recently in May 2022, Ottawa and large areas of Ontario experienced a derecho causing widespread damage and lengthy power outages (Bernstien, 2022), and outside assistance was required to restore hydro. A derecho is characterized as a large, long-lasting, and fast-moving series of wind- and thunderstorms with powerful straight-line winds causing widespread destruction (The American Meteorological Society, 2020). Not only was the storm intense in

nature, its timing on the May long weekend and expansive geographic area covering the most densely populated corridor in Canada resulted in the storm that affected more than 40 percent of Canada's population (Scott, 2022). While losses and damage were experienced throughout the Highway 401 corridor, Ottawa and surrounding areas experienced the most extreme damage, with multiple hydro transmission lines brought down by the storm. Given the severe and widespread damage to property, urban forest, and electrical infrastructure, Hydro Ottawa (2022) proclaimed the May 2022 derecho to be Ottawa's biggest storm yet – bigger than the Ice Storm of 1998 and the tornadoes in 2018.

These disasters followed a Statistics Canada (2016) report that stated that less than half of households in Ottawa-Gatineau had an emergency kit with supplies to survive a disaster. Given widespread risk and lack of readiness, disaster preparedness in Canada needs improvement. Youth are a potential resource to help promote preparedness and minimize disaster impacts. In the Philippines, children collaborated with adults in the community to restore mangrove ecosystems to protect against climate change impacts and protect communities from typhoon winds (Tanner et al., 2009). After Hurricane Katrina, youth engaged in bottom-up disaster response activities donating items, fundraising for disaster victims, restoring wetlands, rebuilding homes, supporting mental health (e.g., sending cards and letters, hosting Christmas parties and vacations), and developing social programs and new organizations for long term public health social change (Peek et al., 2020). The participation of children and youth in disaster prevention, preparedness, response and recovery outside of, and in collaboration with, adult contributions is an important strategy shown to improve a community's ownership over, and sustainability of, disaster response activities, and reduce disaster risks (Cox et al., 2019; Lopez et al., 2012; Muzenda-Mudavanhu, 2016; Peek et al., 2020).

Youth played important roles before, during, and after the disasters in Ottawa. For instance, before and during the spring flooding in 2019, the entire student population of West Carleton High School filled more than 11,000 sandbags in one day (CTV News, 2019). Their contributions made a notable difference and highlight youth capabilities in DRR. There is a need for more research on youth participation in DRR in Canada (Amri et al., 2018). To examine the most effective means of engaging youth, it is important to understand the perspectives of youth who have experience contributing to DRR.

Research Questions and Objectives

The purpose of this multi-pronged study was to explore youth participation in DRR through the eyes of youth already engaged in DRR in Ottawa, Ontario, Canada. Through this doctoral research, we addressed the following research questions: 1) What are the perceptions of youth, on youth capabilities in DRR and climate change?; 2) How did youth experience the first wave of the COVID-19 pandemic and in what ways were youth engaged in the pandemic response?; 3) What are the experiences of youth volunteers and essential workers contributing to DRR and the COVID-19 pandemic?; and 4) What are the perceptions of youth on barriers and facilitators to youth participation in DRR?

Purpose and Structure of the Document

This dissertation consists of 10 chapters, within which are four stand-alone papers from two research studies. In chapter 1, we introduce the research topic, and follow this with a review of the literature in chapter 2. In chapter 3, we outline the theoretical underpinnings of this thesis. In chapter 4, we provide an overview of the methodologies and methods from both studies, followed by our Photovoice protocol paper published in the journal *Qualitative Health Research* (chapter 5), which provides a thorough breakdown of our methods. In chapters 6 and 7, we

include two published empirical articles stemming from our Photovoice study (published in *Qualitative Health Research* and the *International Journal of Disaster Risk Reduction*). In chapter 8, we present the manuscript for the case study, followed by a discussion section tying the two studies together in chapter 9. In chapter 10, we offer conclusions from our research. The appendices contain the interview guides, copies of ethics approval, and consent/assent forms. The articles are presented in their most recent state in the peer-review process, with published articles appearing in their postprint format, prior to copyediting by the journal. Tables and figures from the articles are numbered serially as they appear in this thesis manuscript. In table 1, we outline the research questions and in which chapter(s) they are answered.

Table 1

Thesis Chapters and Corresponding Research Questions

Thesis Chapter	Research Questions
Chapter 6	What are the perceptions of youth, on youth capabilities in DRR and climate change?
Chapter 7	How did youth experience the first wave of the COVID-19 pandemic and in what ways were youth engaged in the pandemic response?
Chapter 8	What are the experiences of youth volunteers and essential workers contributing to DRR and the COVID-19 pandemic? What are the perceptions of youth on barriers and facilitators to youth participation in DRR?

Chapter 2: Literature Review

In chapter two, we provide a review of extant literature on youth participation in DRR. We cover disasters, global guiding documents, youth in disasters, important terminology and definitions, benefits and barriers to youth participation, youth capacity and facilitating factors for youth participation. We conclude with a table summarizing areas in the literature on youth participation in disasters in need of further research.

Global Guiding Documents

The Sendai Framework for Disaster Risk Reduction is a global disaster risk reduction guideline from the UNDRR (2015) that provides concrete actions to protect development from the risks of adverse events. The international framework adopted by UN Member States details four priorities for action:

Priority 1: Understanding disaster risk

Priority 2: Strengthening disaster risk governance to manage disaster risk

Priority 3: Investing in disaster risk reduction for resilience

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction. (UNDRR, 2015, p.14)

These priorities are further broken into seven global targets focused on reducing risks and promoting resilience to be achieved by 2030, including: 1) “reduce disaster mortality”; 2) “reduce the number of affected people”; 3) “reduce direct economic loss in relation to gross domestic product (GDP)”; 4) “reduce disaster damage to critical infrastructure and disruption of basic services”; 5) “increase the number of countries with national and local disaster risk reduction strategies”; 6) “substantially enhance international cooperation to developing countries”; and 7) “increase the availability of and access to multi-hazard early warning systems”

(UNDRR, 2015, p. 12). Importantly, in adopting this framework, UN Member States recognized that while led by the State, responsibility and power over reducing disaster risks should be shared with other stakeholders (e.g., local government, private sector, communities, etc.).

While the Sendai Framework has distinct goals and evaluation mechanisms, there are synergies between the Sendai Framework, the Paris Agreement (United Nations, 2015a) and Sustainable Development Goals (SDGs) (United Nations, 2015b), all adopted in the same year. The three international guiding documents, especially the Paris Agreement and SDGs, are mutually reinforcing. They work in tandem towards a sustainable and resilient future, recommending inclusive agendas to include vulnerable populations in the design and implementation of policies and plans. The Sendai Framework uses the term an “*all-of-society approach*” to describe the need for all citizens to be engaged in DRR, and more specifically, engaging children and youth as agents of change in DRR (UNDRR, 2015).

The last two decades have shown a movement for a more grassroots, inclusive, child-centred disaster risk reduction agenda (Peek et al., 2020). Internationally, there has been growing interest in increasing the roles of volunteers in disasters (Carlton et al., 2022). Additionally, the introduction of the United Nations Convention on the Rights of the Child (UNCRC) in 1989 explicitly discussed children in the context of their human and political rights, including the right to participate in matters that affect them (UN General Assembly, 1989).

The COVID-19 pandemic set back international agendas to build sustainable DRR and climate-resilience, as outlined in the Paris Agreement, SDGs, and Sendai Framework. The pandemic created disproportionate vulnerability for women, older adults, persons with disabilities, and youth, renewing the urgency for new and inclusive all-of-society approaches to build resilience (UNDRR, 2022). This global movement towards inclusive community

engagement in DRR emphasizes the importance of contributions of youth and other populations disproportionately affected by disasters. These contributions alongside professionals working in DRR and public health experts are crucial to improve disaster resilience and adaptive capacity in the face of worsening disasters (Saum-Manning, 2021).

Youth in DRR

Youth participation in DRR is one of three major branches of research within the subfield of studies exploring children and youth in disasters (Peek et al., 2018). Amri et al. (2018) identified the three areas of research on youth and disasters as follows: 1) impact of disasters on youth; 2) DRR education for youth; and 3) youth participation in DRR. While there is a larger body of research on the impacts of disasters on youth, research, policy, and practice on youth participation is smaller and slower progressing, with most studies occurring in the Global South (Amri et al., 2018). From an inequity standpoint, this is important as countries in the Global South tend to be more vulnerable to the impacts of disaster given larger rates of poverty, less access to information, and lack of access to critical services and infrastructure (International Federation of Red Cross and Red Crescent Societies, 2014).

Inequity is an important topic in DRR, and especially relevant when discussing youth. The UNDRR first promoted the active participation of youth in DRR in 2011. This change in DRR approach is significant as nearly one-third of the world's population is made up of children under 18 years of age (United Nations International Children's Emergency Fund [UNICEF], 2014), with 16% of the world population in 2019 being youth aged 15 to 25 years (United Nations, 2020a). An estimated 100 million children are affected by disasters each year (UNDRR, 2011); this is expected to grow to 200 million by 2025 (UNICEF, 2015).

The promotion of youth participation in DRR by the UN is a step towards reducing child morbidity and mortality rates. Children make up 30-50% of fatalities from natural disasters (World Health Organization, UNDRR, & Public Health England (PHE), 2011). Children who experience disasters are also likely to experience negative mental health impacts (Jia et al., 2010; Norris et al., 2002; Peek, 2008; Thompson et al., 2021) and experience educational vulnerability through schooling interruptions or declining academic performance (Peek, 2008; Suleman et al., 2020; Thompson et al., 2021; UN General Assembly, 1989). These events can have lasting effects into adulthood. Research is needed to explore the potential long-term mental health and educational impacts of school closures and other impacts from the COVID-19 pandemic on youth (Suleman et al., 2020; Thompson et al., 2021). Given the increasing disaster risks (World Meteorological Organization, 2021), youth need to be aware of the risks, be prepared, and be allowed to participate in DRR as members of their communities.

DRR policy documents label children and youth broadly as a “vulnerable group” (P. Mitchell & Borchard, 2014; Peek, 2008). Vulnerable groups are populations who are more prone to the impacts of disasters due to physical, social, economic, and environmental factors (UNDRR & UN General Assembly, 2016). However, youth are a heterogeneous population with complex determinants (e.g., gender, culture), which influence their capabilities and vulnerabilities in the context of disasters (Cutter et al., 2003; Lopez et al., 2012; Peek, 2008). Broadly documenting youth as vulnerable is important for them to receive necessary supports in disasters, but highlighting their capabilities is required to view them as capable contributors to DRR.

Disasters and public health emergencies thrive on and worsen existing inequities in society (IFRC, 2022). Age is but one key social indicator that a child is likely to be disproportionately affected by disasters. These numbers and inequitable impacts increase for

children and youth living at the intersection of complex determinants of health, including youth living in poverty, youth living with disabilities, girls and young women, young people of ethnicities who have been minoritized, immigrants, and more (Cutter et al., 2003; Lopez et al., 2012; Peek, 2008). This underscores the importance of equitable preparedness frameworks that take into consideration populations in need of the most support by supporting social programming, universal health coverage, and fostering inclusion in DRR and DRM (IFRC, 2022). For scholars, practitioners and policymakers in DRR and DRM, this means including children and youth with diverse demographic characteristics, in particular girls, youth who are members of racial and ethnic minorities, and youth from lower socioeconomic backgrounds in decision-making and disaster preparedness actions, as these youth are at increased risk of experiencing psychological, physical, and educational impacts from disasters (Peek, 2008).

Youth are seen as passive victims in disasters (T. Mitchell et al., 2008); however, over the last 15 years, scholars have challenged this view by focusing on how youth can contribute to actions influencing disasters (Cox et al., 2019; T. Mitchell et al., 2008; Muzenda-Mudavanhu, 2016; Peek, 2008; Pfefferbaum et al., 2018; Pickering, Guy, et al., 2021). Concurrently, today's youth are becoming more politically active on environmental and human rights issues. Young leaders like Swedish climate activist, Greta Thunberg (BBC News, 2019); Anishinaabe Indigenous water activist, Autumn Peltier (The Canadian Press, 2019); Pakistani education advocate and Nobel Peace Prize recipient, Malala Yousafzai (CBC News, 2018); Flint, Michigan water crisis activist, Mari Copeny (CBS News, 2016); and global youth-led climate strikes (Barclay & Amaria, 2019) are evidence youth can make powerful contributions to social issues.

Youth Participation in DRR

Terminology and Definitions

Despite evidence of the disproportionate impact of disasters on youth, there is a lack of understanding of the concept of youth participation in DRR (Barber, 2009; Fleming, 2013).

Although there are many definitions, youth participation can be summarized as youth having influence in society by engaging on issues that affect them through decision-making, processes, activities, or programs (T. Mitchell et al., 2008). The challenge is determining how to operationalize youth participation in practice so that it is meaningful (Muzenda-Mudavanhu, 2016).

There is also a wide variety of terminology used to label youth participation. For instance, the terms *youth engagement*, *youth participation*, *youth empowerment*, and *youth voice* can be used interchangeably (Cox et al., 2019). Other common terminologies include, but are not limited to, *child-centred DRR*, *child-focused DRR*, *child-led DRR*, and *children's engagement in DRR*. For clarity, in my dissertation we use the term “*youth participation in DRR*” to discuss the role of children and youth in DRR. We chose this term because youth participation implies going beyond studies ‘centred’ and ‘focused’ on youth, towards positive action that includes youth as both leaders and collaborators.

To further complicate matters, there are differing definitions of children and youth. The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines youth as people between 15-24 years, although they describe the term as flexible to interpretation (UNESCO, 2017). The UNCRC defines children as anyone under 18 years (UN General Assembly, 1989). Going forward, we use the term “youth” to refer to both children and youth.

For my dissertation research, we recruited youth ages 12-24 years. While 12-17 year olds are legally deemed ‘*children*’, they are often given responsibilities of youth, as demonstrated by the minimum age (i.e., 12 years of age) set by the City of Ottawa to volunteer during disasters in the region (CBC News, 2019a).

The Capacity of Youth

William Anderson (2005), a foundational author on youth participation in disasters, argued that children and youth are not passive, dependent, victims in disasters; rather, they are dynamic agents of change. Though youth lack power in society over decision-making, the knowledge base clearly shows youth have the capacity to contribute in DRR (Amri et al., 2018; Back et al., 2009; Bessaha et al., 2022; Lopez et al., 2012; T. Mitchell et al., 2008; Peek, 2008; Peek et al., 2018; Pfefferbaum et al., 2018). According to Percy-Smith and Thomas (2010), youth are capable of great agency and often have the tenacity to recover from negative situations. This is due to their passion, creativity, and diverse social networks (Muzenda-Mudavanhu, 2016; Pancer et al., 2002; US Department of Health and Human Services & Office of the Assistant Secretary for Preparedness and Response, 2017), amongst other assets.

Literature on youth participation in disasters stipulates children and youth should be recognized for their capacities and contributions to DRR and DRM (Peek et al., 2020). My dissertation research recognizes the strengths and assets youth possess by exploring their existing contributions and witnessing their recommendations to improve opportunities for further engagement. Much of the extant literature on youth participation in DRR focuses on the roles of youth as leaders or collaborators in bottom-up responses to disasters (Peek et al., 2020). My dissertation explores this bottom-up response and extends the literature by exploring how youth collaborate within the top-down response systems dominating DRR.

Since the publication of Anderson's (2005) article, the literature documenting children and youth contributions in disasters has grown, but it remains an emerging field. More evidence is needed to document youth actions in DRR (Peek, 2008; Peek et al., 2020). To address this need, in the chapters that follow, we (CJP and TO) highlight youth contributions to DRR and provide action recommendations to improve opportunities for youth participation in DRR to create systemic change.

Benefits of Youth Participation in DRR

Overall, studies indicate positive outcomes for youth and their communities when youth participate in DRR activities (Amri et al., 2018; Lopez et al., 2012; T. Mitchell et al., 2008; Save the Children, 2008; Tanner, 2010; UNICEF, 2012). Benefits include empowering youth to accept and adapt to change (US Department of Health and Human Services & Office of the Assistant Secretary for Preparedness and Response, 2017); this in turn reduces their vulnerabilities to hazardous events, enhances their resilience and adaptive capacity (Muzenda-Mudavanhu, 2016; Peek, 2008; Pfefferbaum et al., 2018), and increases their sense of social worth (Matthews, 2003). There is increasing empirical research suggesting that youth participation in DRR can benefit the adaptive capacity of the entire community as well (Michaelson & Nakamura, 2001; P. Mitchell & Borchard, 2014; Pancer et al., 2002; Ronan & Johnston, 2001).

Barriers to Youth Participation in DRR

DRR is a complex population health issue involving physical, social, cultural, political, and economic contexts (Muzenda-Mudavanhu, 2016). Adults control these contexts, and thus resistance from adults to youth participation in DRR can pose a significant challenge (Malone & Hartung, 2010; Martin, 2010; Matthews, 2003; Muzenda-Mudavanhu, 2016). Adults may disapprove of youth participation in DRR for many reasons, including the perception that youth

lack the capability, interest, and maturity to participate (Matthews, 2003; Muzenda-Mudavanhu, 2016). Others believe integrating youth will take too much time and effort (Lundy, 2007).

Parental views on protecting and preserving childhood (Malone & Hartung, 2010; Martin, 2010; T. Mitchell et al., 2008) and fears of losing power over their children (Muzenda-Mudavanhu, 2016) may also contribute to participation barriers for youth. To address some of these barriers, a better understanding of youth participation in DRR is needed, in addition to resources to operationalize participation.

Facilitators to Participation

Little is known about specific factors promoting youth participation in DRR (Muzenda-Mudavanhu, 2016). Adults have essential roles to guide, encourage, support, and supervise youth participation (Amri et al., 2018; Chawla & Driskell, 2006; Lundy, 2007; Wong et al., 2010).

Parents can support their children by consenting to their participation in DRR activities and integrating DRR lessons in their home (Haynes et al., 2010; Seballos & Tanner, 2011).

Areas in Need of More Research Addressed in This Dissertation

Despite the growing body of knowledge documenting youth capacities in DRR, youth are often viewed as dependent on adults and unqualified to participate in decision-making and leadership (Peek et al., 2020). Thus, youth regularly remain voiceless in disaster policy and practice (Petal et al., 2020; Rauhaus & Guajardo, 2021). Across the literature, researchers call for institutions to engage youth as experts of their own environments, acknowledging their unique life experiences and knowledge in disasters (Peek et al., 2020). Along with this call, is the need for more research on youth volunteer actions in DRR (Carlton et al., 2022) to learn how to provide age-appropriate roles for youth (Newnham et al., 2019). This need is even more striking, considering the Sendai Framework does not identify a specific role for youth in DRR (Chatterjee

et al., 2015). My dissertation builds on the identified literature focused on youth as strategic partners in DRR (Shidiq et al., 2021) and explores areas identified in the literature as requiring further research about this process (see summary provided in Table 2).

Table 2

Topics in the Literature in Need of Further Research, Which are Explored in this Dissertation

Topics in Need of Further Research	Citations
Research focused on how youth who are not directly affected by disasters contribute to DRR.	(Peek et al., 2020)
Use of participatory and arts-based research projects to explore youth stories, so they are featured amidst adult-centric disaster response and recovery processes.	(Peek et al., 2020; Trejo-Rangel et al., 2021)
Identify barriers and facilitators encountered in operationalization of youth engagement in policy and practice.	(Bessaha et al., 2022; Peek et al., 2018, 2020)
Documentation of youth contributions through collaboration with established and emergent organizations in DRR.	(Anderson, 2005; Peek et al., 2020)
Mapping the complexity of youth experiences and contributions in disasters.	(Newnham et al., 2019; Peek et al., 2020)
Document efforts to promote youth participation in DRR in research, policy, and practice.	(Cumiskey et al., 2015; Peek et al., 2018).
Detailed examples of collaboration between researchers and practitioners creating programs that engage youth in DRR.	(Bessaha et al., 2022; Shidiq et al., 2021; Trejo-Rangel et al., 2021)

Research on the process of youth volunteer engagement in disaster response, particularly in the form of case studies.	(Anderson, 2005; Carlton et al., 2022)
Research on the contributions of youth in diverse disaster events around the world.	(Peek et al., 2018)
Research on the resilience, capacities, and strengths of youth.	(Peek et al., 2018)
Research, policy, and practice going beyond listening to youth voices, to action.	(Trejo-Rangel et al., 2021)
Examples of structured and institutionalized opportunities for youth in DRR.	(Shidiq et al., 2021)

Despite the increase in youth participation studies over the last decade, DRR remains dominated by a top-down model viewing youth as passive victims (T. Mitchell et al., 2008; Muzenda-Mudavanhu, 2016). Through this dissertation research, our objective is to contribute to the growing empirical evidence reshaping this perception to youth as capable of meaningful contributions to adaptive capacity. The following section details the epistemological and theoretical frameworks behind this research.

Chapter 3: Theoretical Framework

For this chapter, we provide an overview of the epistemology and theoretical frameworks that guided and informed this thesis. We conclude this chapter with a positionality statement from the lead author (CJP).

Epistemology

Disaster risk reduction practices are dominated by positivist epistemologies with top-down one-way systems approaches (T. Mitchell et al., 2008). In this dissertation, we approach DRR from a social constructionist epistemology, in which knowledge is seen as continually created through the social interactions between humans (e.g., through language) and objects in their world (Berger & Luckmann, 1967; Crotty, 1998). This worldview is relativist (Patton, 2015), meaning that socially-created knowledge changes across time and place. Within the relativist ontological stance, there is no one truth and truth is constantly changing. Social constructionism also embeds the meaning of knowledge creation in cultural contexts, meaning that human thoughts, emotions, and reality are socially constructed (Crotty, 1998).

Power is an important concept in this epistemology as members of society with the most influence over language and social practices will have more control over defining shared beliefs (Berger & Luckmann, 1967; Patton, 2015). The social constructionist view is heavily shaped by Foucault's conceptualization that power is everywhere and that certain knowledge will seem more 'truthful' because knowledge is shaped by power structures within society (Burr, 2015). Therefore, dominant constructions of reality will most likely benefit the privileged, while disproportionately negatively affecting more powerless populations, like youth (Patton, 2015). This dissertation emphasizes the critical ideological background of social constructionism in which power structures are identified and torn down (Crotty, 1998).

In social constructionism, knowledge and meaning are historical and cultural interpretations of experiences (Berger & Luckmann, 1967; Crotty, 1998). Social constructionism enables researchers to create opportunities to engage populations who are oppressed, to challenge the current perceived reality of their world (Crotty, 1998). This critical approach attempts to contribute to social change where unjust power structures within social and cultural practices are transformed. Thus, this approach lends itself to the study of inclusion of youth in DRR.

Theoretical Frameworks

Asset-Based Approach

An asset-based approach focuses on identifying the resources and capabilities of individuals, communities, organizations, and institutions which contribute to adaptive capacity (Morgan & Ziglio, 2007). The asset-based approach was developed as an upstream health promotion strategy to complement deficit models that dominate population health issues (Morgan & Ziglio, 2007) by highlighting capabilities over needs. Within this perspective, needs and areas of support are still recognized, but the focus is on asset identification to maintain or create health (Van Bortel et al., 2019). The asset-based approach draws on Antonovsky's (1996) Theory of Salutogenesis, which focuses on the formation of health and resilience, as opposed to the production of disease and vulnerability. Morgan and Ziglio (2007) developed the asset model for public health as a systematic way to apply the asset approach to health issues and address inequities.

The asset-based approach owes much to the work on capabilities and human development by Sen (2000) and Nussbaum (2000). The Capabilities Approach (CA) is a theoretical social justice framework focused on the positive capacities individuals possess, and how society can be

improved to develop freedoms to achieve life goals (Nussbaum, 2011; A. Sen, 2004). Sen (2000) identified five basic freedoms as the most valuable elements of a satisfactory life: 1) political freedoms (e.g., the ability to criticize authority); 2) economic facilities (e.g., access to financial institutions); 3) social opportunities (e.g., access to education); 4) transparency guarantees (e.g., the public right to know); and 5) protective security (e.g., safety nets such as disaster relief).

Nussbaum (2011) identified the following 10 central capabilities as the bare minimum freedoms required for a life worthy of human dignity, including the freedom to: a life of a normal length, bodily health, bodily integrity, senses, imagination, and thought, emotions (e.g., love, attachments, grief), practical reason (e.g., engage in critical reflection on one's own life), affiliation (e.g., social interaction); other species (i.e., to live in concern for animals, nature and people), play, and control over one's environment (both political and material). It is clear through Sen and Nussbaum's tenants of freedoms that CA encompasses major concepts that underlie the asset-based approach, such as human rights, human dignity, and human development.

Both the asset-based approach and CA are concerned with social justice and inequity as a result of discrimination and marginalization (Nussbaum, 2011). In CA, inequities around class, gender, and communities are packaged as the "urgent task to government and public policy—namely, to improve quality of life for all people, as defined by their capabilities."(Nussbaum, 2011, p.19). For the asset-based approach, at an organizational or institutional level, policymakers and practitioners ask how they can maximize assets to impact the broader determinants of health to reduce inequities through the creation of health and encourages the full participation of local communities in the health development process (Morgan & Ziglio, 2007). While the asset-based approach focuses on the resources individuals, communities, institutions,

and systems have, and their ability to apply them to achieve health and well-being, the capabilities approach focuses on what people are able to do and be with these resources (Nussbaum, 2011; A. Sen, 2004).

Similarly, the asset-based approach compliments the concept of capacities in DRR (Gaillard et al., 2019) and may address limitations of capacities literature. Of note, the term capacities differs from the concepts of adaptive capacity (i.e., the ability to adapt) and the broader concept of capabilities (as defined by Sen (2000) and Nussbaum (2000)). While harnessing capacities is recognized as integral to support disaster response strategies, Gaillard et al. (2019) acknowledge that the concept lacks theoretical appreciation as much of its original epistemological essence has been left behind over time. Like the synergies between CA, the asset-based approach overlaps in some key components of capacities. For instance, both capacities and the asset-based approach emphasize that it is not enough to simply have resources, capacities, or assets. People must also possess the understanding of said resources, as well as the skills to use them (Gaillard et al., 2019; O'Sullivan et al., 2018).

Further, the concept of capacities aligns with a social constructionist epistemology. As a rationale for advocacy to include people in DRR, fostering people's capacities requires efforts to identify and dismantle power relations between traditional holders of power in DRR and DRM, and the citizens who face the hazards (Gaillard et al., 2019). To do so, also requires acknowledging issues of equity in DRR, understanding that a person or populations' access to resources, quality of resources, and ability to apply these resources varies by age, gender, ethnicity, socioeconomic status, and other key social determinants of health (Cutter et al., 2003; Gaillard et al., 2019; International Federation of Red Cross and Red Crescent Societies, 2014, 2022; Lopez et al., 2012; Peek, 2008).

DRR practices continue to use a top-down approach focusing on needs, deficits and vulnerabilities, rather than assets and capabilities that contribute to resilience (O’Sullivan et al., 2013; Peek et al., 2018). Thus, DRR strategies and programs require more comprehensive approaches to complement and challenge traditional deficit-oriented mindsets. An asset-based approach is one such comprehensive theoretical framework to expand extant research on youth participation in DRR by focusing on resilience, capacity, and strengths of youth (Peek et al., 2018).

An asset-based approach influenced every stage of this dissertation research. It informed the purpose for each study and influenced interview questions to capture both barriers and facilitators to youth engagement. It also inspired the use of a collaborative form of reflexive thematic analysis in the Photovoice study, as well as our focus on youth capabilities in DRR during coding and theme creation.

In partnership with this approach is the need to build asset literacy, which is the adaptive capacity to move from awareness of assets to actioning them as a context changes (O’Sullivan et al., 2014). Asset literacy supports resilience through a cyclical process in which individuals and communities first, identify the resources and strengths of a community or individual; then, recognize the value of the identified assets and their potential to support resilience; followed by cognizance of how to access and use the assets effectively; concluding with motivation and self-efficacy to take action (O’Sullivan et al., 2018). Efforts to enhance asset literacy can be integrated across micro, meso, and macro system levels to support resilience (O’Sullivan et al., 2014).

Youth Participation Theories

The field of DRR lacks a theoretical framework on youth participation (Lopez et al., 2012; T. Mitchell et al., 2008), however, many frameworks exist on non-disaster, general contexts for youth participation. Cox et al. (2019) identified some of the most recognized theoretical models on youth participation as Hart's (1992) Ladder of Youth Participation, Treseder's (1997) Degrees of Participation, Shier's (2001) Pathways to Participation, and Wong et al.'s (2010) Typology of Youth Participation and Empowerment Pyramid. The work by Hart (1992) and Frank (2006) inform the basis of my thesis as Hart's model is arguably the most well-known theoretical model on youth participation, while Frank (2006) endeavored to identify common principles of youth participation across the varied theories and cases in the literature. Their complementary definitions of youth participation capture the growth of the theories over time.

Roger Hart's (1992) Ladder of Youth Participation is a theoretical model on the participation of youth in community decision-making. Hart adapted his model from Sherry Arnstein's (1969) Ladder of Citizen Participation – one of the earliest models of participation. Hart's model illustrates different levels of inclusion along eight ladder rungs. The rungs read from bottom to top as follows: “1) Manipulation, 2) decoration, 3) tokenism, 4) assigned, but informed, 5) consulted and informed, 6) adult-initiated, shared decisions with children, 7) child-initiated and directed, and 8) child-initiated, shared decisions with adults.” (Hart, 1992, p. 8). The bottom three rungs are considered non-participation, and thus potentially harmful to youth. Meanwhile, the top five levels are considered genuine forms of participation given the increasingly equitable sharing of power between adults and youth in the participation process along each rung of the ladder. Despite the visual imagery of hierarchy, Hart emphasized that no

one form of participation is better than others. Rather, it is the ability of youths to choose how they participate that is of most importance (Hart, 1997). He also states that for children living with intersecting impacts of poverty, disaster, armed conflict, or family dissention, their participation will look different and require opportunities tailored more to supporting them in acting upon their own lives, rather than the needs of the wider community.

Many find Hart's (1992) model to be a powerful evaluation tool and discussion of youth participation (Kellett, 2009; Shier, 2001), but his model is not without critique. Treseder (1997) laments the lack of acknowledgement of cultural contexts within Hart's ladder. Meanwhile, some criticize the theoretical framework because the structure of a ladder implies linearity and hierarchy of values (Hart, 2008; Kellett, 2009). Other frameworks over the years have attempted to build on, and restructure, Hart's principles of youth participation in the form of pyramids, circles, and other shapes representing less linearity across the principles (e.g., Treseder, 1997; Shier, 2001; Wong et al., 2010).

Frank (2006) identified core principles that connect these various theories on youth participation as follows: "(1) Give youth responsibility and voice; (2) build youth capacities; (3) encourage youthful styles of working; (4) involve adults throughout the process; and (5) adapt the sociopolitical context" (p. 367). She identified these as important lessons for youth participation to be effective in practice. Together, these core principles recognize that youth participation can have the most benefit to individuals and society with assistance from adults because it is adults who possess the necessary power and resources to enable inclusive participation.

Both Hart's (1992) theoretical model and Frank's (2006) literature review are useful to frame how professionals include or exclude youth from meaningful and effective decision-

making and activities. Equity is an important concept within youth participation theories with the aim to address the power imbalances that exist between youth and adults in activities, planning, and societal processes (Cox et al., 2019; Frank, 2006; Hart, 1992). Furthermore, the core principles and qualities are inherently asset-based approaches requiring an understanding of youth assets, how to harness them, and sustain their use over time, while focussing on dismantling the socially constructed power imbalances inherent in DRR.

Positionality Statement

Reflexivity is an ongoing process of explicit self-awareness and self-assessment on a researcher's influence on their research (Braun & Clarke, 2022). An individual's positionality, or worldview regarding their research, is created from social, political, and situational contexts (Foote & Gau Bartell, 2011; Savin-Baden, 2013). Since reflexivity informs positionality, and in an effort to practice the reflexivity required of Braun and Clarke's (2006) reflexive thematic analysis, I (CJP) will take a moment here to be transparent in my reflections on my potential influence on the research process, outcomes, and results of this dissertation.

I am a white, heterosexual, middle class, non-disabled, cisgender, bilingual female citizen of Ottawa, Ontario, Canada. I have lived in Ottawa since I was five years old. As such, I am familiar with the geographic area, as well as social and cultural contexts of the areas affected by disaster. While I was not personally affected by the natural disasters that affected our city and build the case for study two, I was affected by the COVID-19 pandemic.

The participants in both studies are between 12 and 24 years of age. When I started conceptualizing this study, I was 23 years old – and as I write this chapter, I am now 29 years old. When I began this study, I was a member of the age group I wished to study. Even after aging out of the 15-24 youth category during data collection, I still identified mentally and

emotionally as an older youth. My young age had the advantage of creating rapport with my participants. Another advantage is that I am both a youth and young adult, depending on who you ask, and what global definitions you choose. I also have experience running a community-based youth group promoting youth participation in DRR (Pickering, Guy, et al., 2021).

A potential disadvantage to being close in age to my population of interest, as well as having personal experience leading youth participation in DRR in practice, is the risk of letting my own assumptions and personal experiences preclude me from seeing participant experiences that might contradict my own. I practiced reflexivity at every stage of data collection, analysis and writing. I practiced memo-ing, spent extra time with participant data that contradicted my assumptions, and built in member reflections (Braun & Clarke, 2022; Smith & McGannon, 2018; Tracy, 2010). I also used collaborative team analysis during the Photovoice study, and held meetings with colleagues and my thesis supervisor to tease out hidden assumptions. For example, given my own experiences with youth participation in society, I found it challenging to reflect on when youth participation in DRR may not be feasible or desired.

My connection to participants in the Photovoice study was instrumental in fostering a safe environment for deep discussions, allowing us to deviate from more structured methods within Wang and Burris' (1994) Photovoice methodology. For instance, we did not use the SHOWeD method typically used to facilitate focus group discussions (Wang, 1999), rather, our natural rapport with co-researchers allowed for more informal probes to delve into deeper discussions. These relationships strengthened as we collaborated on this study. I also established strong partnerships for myself and the Photovoice study participants with members of The Canadian Red Cross. This partnership opened doors for interdisciplinary and cross-generational knowledge sharing and action outcomes.

Similar to other researchers in the subfield of youth participation in DRR (Back et al., 2009; Marchezini et al., 2017; Trejo-Rangel et al., 2021), I felt it was my role as researcher to proactively support youth participation in DRR through my thesis by using community-based participatory research and arts-based approaches to support youth voices and action. As such, throughout the two studies, me, the research assistants, and my supervisor took the position that youth are capable actors and can contribute to DRR.

Summary

In this dissertation, we approach youth participation in DRR from a social constructionist epistemology. The theoretical underpinnings of the dissertation stem from an asset-based approach, while drawing on Roger Hart's (1992) model of youth participation, and Kathryn Frank's (2006) core principles of youth participation. The following section details the methodologies we used in two separate studies.

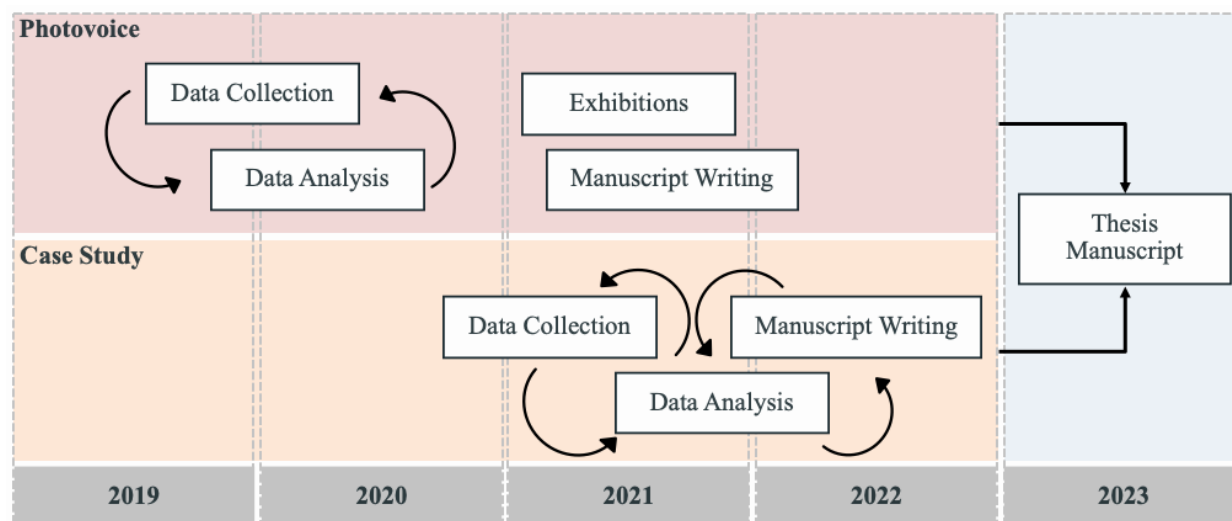
Chapter 4: Methodological Overview

In chapter 4, we provide an overview of the methodology used for this dissertation, which included two separate studies exploring youth participation in DRR. For study 1, we used Photovoice to address research questions one and two of this thesis: 1) What are the perceptions of youth on youth capabilities in DRR and climate change?; and 2) How did youth experience the first wave of the COVID-19 pandemic and in what ways were youth engaged in the pandemic response? Using a qualitative participatory research design, we explored youth participation in DRR using Photovoice as a methodology and Instagram as a tool for engaging youth throughout the research process.

In study 2, we used case study methodology to address research questions three and four of this thesis: 1) What are the experiences of youth volunteers and essential workers contributing to DRR and the COVID-19 pandemic?; and 2) What are the perceptions of youth on barriers and facilitators to youth participation in DRR? (See figure 1 for a timeline of how the two studies fit within the multi-pronged dissertation from 2019 through 2023). In this chapter, we present an overview of the methods used in study 1, then study 2, and conclude with an overview of data analysis in these studies.

Figure 1

Overview of the Multi-Pronged Research Design Across Time



Study 1: Photovoice

Study Design

We used Photovoice (Wang & Burris, 1994) as a qualitative research methodology to engage high school students in the co-creation of knowledge and action on youth participation in DRR, climate change, and COVID-19. Photovoice is a form of community-based participatory research (CBPR) that creates space for citizens to share their lived experiences and co-create knowledge alongside researchers – attempting to dismantle the power imbalances inherent in research (Wang, 1999; Wang & Burris, 1994, 1997). The tenants of CBPR align with the values of social constructionist epistemology and the theoretical frameworks of this dissertation. They align with these epistemologies and frameworks because the collaborative methodology empowers critical thinking and problem-solving, and thus CBPR is a valuable forum for populations, like youth, who are often excluded from decision-making in society (Budig et al., 2018; Graham et al., 2013; Wang & Burris, 1994). Given this emphasis on reducing power

imbalances, participants are considered co-researchers, rather than participants, in Photovoice research.

Critiques of Photovoice involve concerns around power imbalances in the research context (Castleden et al., 2008) and the ethical complexity of these projects given community expectations of social change (Nykiforuk et al., 2011; Wang & Burris, 1994; Wang & Redwood-Jones, 2001). Though it may not be possible to fully eliminate power imbalances in research, we used several strategies to create an environment in which community members could collaborate as peers throughout the process, including building in time for connection, supporting them in leading decision-making throughout the project, and including them as co-authors on the manuscripts from this project. Despite already having strong established connections with co-researchers and collaborative relationships with community stakeholders (i.e., The Canadian Red Cross), we endeavoured to continue to build that trust and meaningful engagement (Carlson et al., 2006) – an important component in CBPR to address the ethical complexity of such studies. For more information on our strategies to reduce power differentials and build trust in our study, see chapter 5 (i.e., our Photovoice protocol manuscript).

We adapted Wang and Burris' (1994) Photovoice methodology, using focus groups to collect data in the form of pictures and descriptions (Latz, 2017; Wang & Burris, 1994). Co-researchers are viewed as experts in their own lives and are actively involved throughout the entire research process (Budig et al., 2018; Graham et al., 2013; Latz, 2017). During focus groups, the co-researchers determine topics and research questions they would like to explore. These topics and research questions informed the final wording of the overarching research questions for this study. Between focus groups, the co-researchers take pictures related to the topic and present them at the following focus group (Latz, 2017). Discussion during these

sessions is collaborative, with co-researchers actively participating in conversations about each picture once individuals are done presenting to the group. Given the CBPR nature of Photovoice, the study concludes with an action-oriented output in the form of a Photovoice exhibition. We hosted two virtual Photovoice exhibitions and published three manuscripts as outputs from this study.

Study Context

We hosted nine focus groups in Ottawa, Ontario, Canada from February 2019 to August 2020. Six focus groups occurred in-person at our research lab at the University of Ottawa prior to the COVID-19 pandemic. With the onset of the pandemic in 2020, our participants requested three more Photovoice sessions because they had many opinions to share about the youth experience of the COVID-19 pandemic. The three virtual sessions occurred from June to August 2020 during the first wave of the pandemic (CTV News Ottawa, 2021). We published the results from the first six sessions and the last three sessions as separate empirical articles (see chapters 6 and 7).

Ethics and Participants

This study received ethics approval from the University of Ottawa's Office of Research Ethics and Integrity (See Appendix A). We obtained consent from participants 16 years and older and assent from participants under 16 years. We also received consent from parents/caregivers of participants under age 16. See Appendix B for a copy of the assent and consent forms for this study.

The researchers and co-researchers of our Photovoice project are members of the EnRiCH Youth Research Team (YRT), a community-based youth mentoring program focused on DRR knowledge mobilization (Pickering, Guy, et al., 2021). The request to conduct this study

came from the high school students on the EnRiCH YRT. This request unfolded from a conversation about qualitative research methodologies in DRR during a regular EnRiCH YRT afterschool meetings. We were discussing a previous study which used Photovoice, and the students became excited at the existence of arts-based methods in research. This developed into some members asking if we could do a Photovoice study about DRR with the EnRiCH YRT. As such, these community members were able to collaborate in decision-making and study design from project inception. After receiving ethics approval, we invited the high school students on the EnRiCH YRT who were absent on the days these conversations took place.

Of the 24 youth mentees on the team, four elected to participate as youth co-researchers in this study. All team members, including the students and lab director, identify as female. In terms of gender proportions, this team membership is representative of the individuals partaking in disaster relief at family and community levels. Three youth co-researchers identify as women of colour. Though we will not disclose further specifics on the identities of the youth co-researchers, it is important to note that in addition to being youth and identifying as female, each youth co-researcher exists at the intersection of at least one more determinant of health that categorizes them as members of equity-owed groups. Thus, while a small sample, they are members of equity-owed groups who historically are not included at the proverbial table.

The four participants elected to participate because they had the time in their high school schedules to accommodate the project, and they were interested in learning more about Photovoice, while having their voices heard on DRR. The other youth team members were either uninterested in or unavailable for the time commitment required to collaborate on the Photovoice project. Participants did not differ in sociodemographic characteristics compared to the 20 youth team members who elected not to participate as the majority of the EnRiCH YRT was made up

of young women of various ethnicities, similarly to the four who elected to participate. What differentiates the four from the rest of the team was predominantly their higher level of engagement with the EnRiCH YRT over the years.

TO and I (CJP) led the project. Two senior team mentors on the EnRiCH YRT, both undergraduate and graduate students at uOttawa, worked as research assistants. As co-researchers, the high school students were actively engaged in activities such as contributing to the design of the project, taking photographs, participating in focus groups, selecting photo assignments, consulting on codes, themes, and manuscripts, and implementing the Photovoice exhibitions.

Data Collection

The eight members of the Photovoice team attended all nine focus groups. Each focus group was two-hours, audio-recorded, and facilitated by the principal investigators (CJP and TO). Two research assistants took notes as the four youth co-researchers shared and discussed their photos. Our research protocol was similar to traditional Photovoice approaches from Wang and Burris (1994) with three marked differences: we did not use the SHOWeD method originated by Wang and Burris, the participants expressed themselves in a variety of art forms (e.g., photography, interactive art displays, lino block art, Word Art, and water colour painting), and we combined modern techniques of community engagement by using Instagram, inspired by Yi-Frazier and colleagues (2015). We deviated from their methods to allow the co-researchers to express themselves how they felt most comfortable. For instance, the SHOWeD method consists of a set of structured questions to stimulate conversation during Photovoice sessions (Wang, 1999). The acronym stands for the following set of probing questions: “What do you See here? What is really **H**appening here? How does this relate to **O**ur lives? **W**hy does this situation,

concern, or strength exist? What can we **Do** about it?” (Wang, 1999, p. 188). The co-researchers did not respond to the rigidity of the SHOWeD method of questioning, therefore, we omitted it as a technique. Many of the co-researchers had artistic abilities and found it easier to express more abstract concepts through art. Thus, they created their artwork, photographed it, and showed the photograph to the team. Finally, from the beginning of the project, the co-researchers expressed curiosity about using Instagram given the focus of the app on photo sharing and communication, hence the use of Instagram for knowledge translation. These departures from Wang and Burris’ (1994) methods are consistent with the need for flexibility towards community context in CBPR methodology.

Photovoice Exhibitions

Consistent with traditional Photovoice protocols (Wang & Burris, 1994), we hosted two Photovoice exhibitions with our community partners at The Canadian Red Cross to connect our co-researchers with professionals in DRR. We used online engagement strategies to host two virtual sessions. The first was an Instagram gallery at the handle @yrtphotovoiceproject which hosts the results from all nine focus groups in one location. We used Instagram as both a data collection tool (i.e., youth co-researchers uploaded their pictures to the account to encourage discussions between focus groups) and as a knowledge translation tool (i.e., as a virtual exhibition space). While it did not work for us as a data collection tool (see chapter 5 for our reflections on this), it was a successful exhibition space for the youth co-researchers to further express themselves and connect with professionals and community members.

The second exhibition was a conference workshop over Zoom at the *Disaster and Resilience Summit 2021* in which we presented a selection of themes in collaboration with the Canadian Red Cross. We selected themes based on topics the youth co-researchers were most

excited to discuss face-to-face with decision-makers. Additionally, two of the youth co-researchers presented on behalf of the team to an international audience of health promotion stakeholders at an international conference (i.e., The International Union for Health Promotion and Education Conference) in 2022. The students had a positive experience presenting virtually, and their presentation was well-received by the audience of health promotion experts. Our Photovoice protocols are outlined in detail in the three published manuscripts from this study. We provide an overview of our data analysis at the end of this chapter detailing the analysis method used for this project (study 1) and the case study described next (study 2).

Study 2: Case Study

Study Design

For study 2, we used an instrumental single case study research design (Merriam, 1988) to explore the experiences and opinions of youth about their participation in DRR. Case studies provide in-depth understanding of a phenomenon through the description and analysis of cases (Creswell, 2013; Merriam, 1988). The purpose of study 2 was to build an in-depth case study of youth contributing to disasters in Ottawa, Ontario, Canada to understand facilitators and barriers to their participation. Our case study addressed research question three and four of this thesis: 1) What are the experiences of youth volunteers and essential workers contributing to DRR and the COVID-19 pandemic?; and 2) What are the perceptions of youth on barriers and facilitators to youth participation in DRR?

Study Context

The case was bounded by four disasters in Ottawa-Gatineau: Floods in spring 2017, tornados on September 21st, 2018, floods in spring 2019, and the COVID-19 pandemic in 2020-2021. To be included in this study, participants must have been a volunteer or essential worker in

Ottawa during at least one of the four disasters. Of note, the May 2022 derecho in Ottawa (Scott, 2022) occurred after data collection was complete for this study, and thus does not fit within the bounds of this case. Nevertheless, it remains an important example of the new disaster patterns occurring locally, and globally.

Ethics and Participants

This study adhered to the Tri Council Policy Statement: Ethical Conduct for Research Involving Humans (Canadian Institutes of Health Research et al., 2018) and the ethical aspects of it were approved by the University of Ottawa's Office of Research Ethics and Integrity (See Appendix C). At the beginning of each interview, we obtained verbal consent from participants 16 years and older; we obtained verbal assent from participants under 16 years of age, and verbal consent from their parents or legal guardians. We provided a list of mental health resources and contact information in the consent forms in the event that participants found the discussions around disasters upsetting. See Appendix D for a copy of the consent and assent forms for this study.

Participants were youth with experience participating in DRR inclusion criteria included: 1) Being between the ages of 12 and 24 years, as defined by the minimum age to volunteer with the City of Ottawa (i.e., 12 years of age) (CBC News, 2019a) and the maximum age to qualify as youth by UNESCO (2017); 2) having experience volunteering before, during, or after the four disasters in Ottawa; 3) having experience as a volunteer or essential worker during the COVID-19 pandemic; and 4) the ability to speak English or French.

Data Collection

We collected data using qualitative semi-structured interviews (Creswell, 2014) to elicit deep insights and explanations about experiences, opinions, and behaviours (Guest et al., 2013).

We specifically wanted to inquire about the *how* and *why* of youth participation in DRR to understand the perspectives of youth about barriers and facilitators with their experiences. I (CJP) conducted one-on-one interviews with 12 participants. Given the rich discussions and unstable internet signals requiring changing between modes of communication (i.e., Zoom video to telephone calls) during some interviews, interviews ranged in length from one to four hours. One-on-one interviews allowed me to focus on the content of the interviewees responses, note their tone and body language, maximize my ability to build rapport with participants, and ensure confidentiality (Guest et al., 2013). See Appendix E for the complete semi-structured interview guides. I audio recorded and transcribed each interview verbatim.

We used photo-elicitation (Harper, 2002) during interviews as stimuli to spark discussion and recollection of details from their volunteer or work experiences (Wagner, 1979). Participants shared pictures and videos taken during their time participating in DRR with the understanding that no imagery was collected as data. Photo-elicitation methods help participants reflect on their experiences by engaging them in a more active and dynamic fashion (Barrington et al., 2017). Using images during interviews can create awareness of deeper memories and feelings about their social existence, more than words alone (Harper, 2002), and thus allow for deeper understanding of youth experiences participating in DRR. This in-depth exploration of their social existence is consistent with the social constructionist epistemology with which this research was undertaken.

Consistent with the case study research design (Creswell, 2013; Merriam, 1988), we used snowball and intensity sampling (Creswell, 2013) to connect with youth with volunteer and work experiences in DRR (Creswell & Poth, 2018). Some participants had multiple volunteer or essential work experiences across several of the disasters that affected the Ottawa region, and

others had experiences beyond the disasters selected for this study. In case study research, sample size is flexible as it is not as important as bounding the cases (Merriam, 1988). Using Braun and Clarke's (2021) guide on how to determine when to stop data collection, we capped recruitment at 12 participants for the following reasons: 1) We had a sample with participants representing all four disasters bounding the case; 2) each of the 12 interviews were rich and complex providing a large quantity of data to explore; 3) pragmatic constraints of the project; and 4) the final sample size of 12 participants falls within the acceptable sample size range (i.e., four to 10 participants per case) of foundational authors on qualitative research methods (Creswell & Plano Clark, 2011).

Data Analysis

We used reflexive thematic analysis (Braun & Clarke, 2019) to code and interpret findings in both study 1 (Photovoice) and study 2 (case study). Our analysis was data-driven, while drawing from the asset-based approach (Morgan & Ziglio, 2007) to focus our exploration of the data on barriers and facilitators to youth participation in DRR. Using both an inductive and deductive approach allowed codes and themes to relate strongly to the data, while applying the asset-based approach (Morgan and Ziglio, 2007) and exploring relevant youth participation theories (Patton, 2015). Braun and Clarke's (2006) foundational work on reflexive thematic analysis provides a rigorous approach to thematic analysis while remaining flexible and recursive (Braun & Clarke, 2019, 2022). In this approach, researcher subjectivity is seen as a resource, with the final themes actively generated through deep immersion in the data, reflection, and thoughtfulness (Braun & Clarke, 2019).

We followed the six steps for thematic analysis, as outlined by Braun and Clarke (2006) to recursively search for meanings and patterns in the data:

- 1) Became familiar with the data by conducting the interviews, transcribing interviews, actively reading and re-reading the data, and taking notes on initial ideas;
- 2) generated initial codes through open-coding by systematically highlighting interesting pieces of data across the entire data set;
- 3) searched for themes by organizing codes into potential themes;
- 4) reviewed themes by checking that the data works within that theme and compared to the entire data set, and by creating a thematic map;
- 5) defined and named themes to refine them and the overall story of the analysis; and
- 6) wrote the report by choosing participant quotations to exemplify themes, relating themes back to our questions and the literature.

We practiced reflexivity at every stage of research in both studies. As lead investigator, I (CJP) kept several reflexive journals on my computer from the beginning of our studies. I had one journal reserved for memos, thoughts, and assumptions from our Photovoice project, another for the case study, and a final journal dedicated towards the overall takeaways from my dissertation and both studies together. In these journals, I reflected on my positionality, my assumptions, my growth in thinking over time, and ways to improve the reflexive process. I stopped to memo at every stage of data management and analysis. For instance, immediately following each focus group and interview, I budgeted time to write down my thoughts, questions, and assumptions. While generating codes and themes, in addition to journaling, I added comments and tags with my reflections on the overall story being told, and what information might require further analysis.

We also incorporated several collaborative reflexive processes throughout both studies. Between the two studies there were slight differences in how we applied the reflexive thematic

analysis process. During study 1, we analyzed the data from the Photovoice study collaboratively between the undergraduate and graduate research assistants, and the lead author (CJP), meeting consistently throughout data collection and analysis to analyze and present themes to the lab director (TO) and youth co-researchers for member reflections (Braun & Clarke, 2022; Smith & McGannon, 2018; Tracy, 2010). The youth co-researchers did not participate in the coding because they expressed being overwhelmed coping with the pandemic and school. Thus, consistent with the flexibility and community-led nature of CBPR, together with the youth co-researchers, we reflected on this hurdle and resolved it by deciding to build in space for member reflections at several checkpoints. We built in space for member reflections after initial coding, thematic analysis, and manuscript writing was completed by the senior team members. This pivot allowed the youth co-researchers to remain collaborators on the project from beginning to end, while adjusting to their own capacity to participate. To force complete collaboration of the youth co-researchers at every stage, despite their expression of concern for their busy schedules, would not have aligned ethically or morally with CBPR principles.

The research assistants transcribed the focus groups under the supervision of CJP and TO. We used Microsoft Word and PowerPoint to code the data to facilitate remote collaborative work during the pandemic lockdowns. The purpose of having multiple coders was to gain rich and refined insights on the data, rather than a form of consensus (Braun & Clarke, 2022). To write the manuscripts, we had a recursive feedback loop with youth co-researchers participating in populating the protocol manuscript outline, and providing feedback and approval on every draft for the three Photovoice manuscripts. Our feedback and approval process for each manuscript involved youth co-researchers making suggested edits via tracked changes in Word, and giving written approval/disapproval in their email reply.

During study 2, I (CJP) transcribed the interviews and analyzed them using the data management software NVivo (released in March 2020). Throughout the reflexive thematic analysis process, I met regularly with my thesis supervisor to formulate and refine themes. These meetings also provided opportunity for reflexivity for us both. We used these meetings to overtly discuss our assumptions, experiences, and perspectives on youth participation in DRR, as well as tearing down and building up different themes.

The case study interview guides were created with the idea of exploring principles of youth participation (Frank, 2006; Hart, 1992) using asset-based language (Morgan & Ziglio, 2007) and asset literacy building strategies (O’Sullivan et al., 2014, 2018). However, the interview guides stop short of using specific youth participation principles language (e.g., “tokenism”, “child-initiated decision-making”) as we left questions purposefully broad (e.g., asking about barriers and facilitators to their volunteer experiences rather than lines of questioning about specific principles of participation) to allow participants control over the conversation. While the youth co-researchers chose the topic areas for each focus group session in the Photovoice study, the researchers (CJP and TO) edited the topic questions to frame them in an asset-oriented lens to promote discussion of both assets and needs. We tie the youth theories back into our findings in the dissertation discussion in chapter 9. Asset literacy principles were applied throughout coding and theme building as the purpose of this dissertation was to apply an asset-lens to the exploration of youth participation in DRR. Table 3 provides a summary of the two studies in this dissertation.

Table 3*Summary of the Two Research Studies*

	<i>Study 1</i>	<i>Study 2</i>
<i>Research Design</i>	Photovoice	Case Study
<i>Methods</i>	Focus Groups (9)	Interviews (12)
<i>Number of Participants</i>	4	12
<i>Age Range of Participants</i>	14 to 16 years old	12 to 24 years old
<i>Data Analysis</i>	Reflexive Thematic Analysis	Reflexive Thematic Analysis
<i>Data Collection Timeline</i>	2019 to 2020	2021 to 2022

Introducing the Following Chapters

Previous versions of the articles in this dissertation were published. In the following chapter, chapter 5, we included the first of three published manuscripts from our Photovoice study. The first article is a protocol manuscript published in the journal *Qualitative Health Research* which provides a detailed explanation of our research process. In chapters 6 and 7, we present the two empirical articles published from our Photovoice study. Our Photovoice study produced a large quantity of rich data on youth participation in DRR. As such, we split the results into two papers with the first article covering the results from our original Photovoice sessions prior to the COVID-19 pandemic, while the second discusses the COVID-19 session results. The articles are published in *Qualitative Health Research* and *the International Journal of Disaster Risk Reduction*. Our youth co-researchers are co-authors on all three Photovoice articles.

The fourth and final article from this thesis stems from Study 2, the case study, and is presented in Chapter 8. At the time of thesis submission, this article was under peer review in a journal. The formatting for each article depends on the journal requirements, and thus differs slightly from the formatting of other chapters in this dissertation.

Chapter 5: Photovoice Protocol Manuscript (Article #1)

Photovoice and Instagram as Strategies for Youth Engagement in Disaster Risk Reduction

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Abstract

Community involvement is essential for an all-of-society approach to disaster risk reduction. This requires innovative consultation methods, particularly with youth and during pandemic restrictions. This article outlines methods used for a Photovoice project in which we brought together student co-researchers from multiple levels (high school, undergraduate and graduate health sciences) to explore the topic of youth engagement in disaster risk reduction. Over a two-year period, our team used Photovoice as an arts-based participatory methodology to collaborate with members of our EnRiCH Youth Research Team. We adapted the protocol to continue our project during the COVID-19 pandemic and presented our work in a Photovoice exhibition using Instagram. This article was written from the perspectives of high school and university students on the project. Our hybrid Photovoice protocol facilitated participation through the pandemic, including a virtual presentation at an international conference and online consultation with the Canadian Red Cross.

Keywords: Photovoice, community-based participatory action research, qualitative research methods, youth engagement, youth participation, youth as co-researchers, knowledge mobilization, empowerment

Background

The Sendai Framework for Disaster Risk Reduction 2015 – 2030 was adopted by United Nations (UN) member states and endorsed by the UN General Assembly in 2015, with the aim to significantly reduce disaster risks and losses in all areas of life (UNDRR, 2015). In 2021, the United Nations Office for Disaster Risk Reduction (UNDRR) published the UNDRR Strategic Framework to delineate focused areas to accelerate the implementation of the Sendai Framework for the years 2022 – 2025 (UNDRR, 2021). One of the priority areas for the next four years includes action in disaster risk reduction (DRR) through partnerships and engagement with stakeholders (UNDRR, 2021). The Sendai Framework stipulates the need for an ‘all-of-society’ approach to engagement and partnership to reduce disaster risks, support community resilience, and leverage power and reach of diverse stakeholders (UNDRR, 2021), including youth groups (UNDRR, 2015).

Youth are one of the populations at highest risk in disasters (Bartlett, 2008; Peek, 2008; UNDRR, 2015). However, youth have limited agency and decision-making power in DRR, and both are needed to move local, national, regional, and global DRR agendas forward (Cox et al., 2019). As such, youth participation in DRR is a relatively new strategy to improve community resilience in disaster management (Amri et al., 2018; Muzenda-Mudavanhu, 2016). As Cox et al. (2019) stipulate, one challenge to youth engagement is ensuring their participation is “more than a checkbox” (p.2), and as such is meaningful and youth centric. This view aligns with the need to change current dominant top-down models in DRR and DRM, in which youth are viewed as passive victims in disasters, rather than active agents of change (T. Mitchell et al., 2008; Muzenda-Mudavanhu, 2016).

Photovoice is a community-based participatory research (CBPR) methodology in which people take pictures to capture their lived experiences and aspects of their environment, to share with others (Wang & Burris, 1994). As a collaborative approach, Photovoice (Wang & Burris, 1994) is a solution to support bottom-up, meaningful, youth-led collaboration to improve community resilience and adaptive capacity. Photovoice is a methodology for researchers to use to support efforts to build community capacity and social capital, thus removing tokenistic youth participation in DRR (Manyena et al., 2008). Capacity building and social capital are key to creating meaningful social change and sustainable community resilience (Poortinga, 2012). Social capital is the impact of social relationships on individual health and wellbeing, public health, and economic development (Szreter & Woolcock, 2004). Photovoice builds social capital by engaging participants as co-researchers and creating opportunities for dialogue with decision-makers.

Collaboration with youth through Photovoice can be time consuming, take greater coordination, and be more difficult than working with adults (Drew et al., 2010; Kramer et al., 2013; Strack et al., 2004). Other critiques regarding methods used in Photovoice include concern over co-researcher engagement and empowerment (Carlson et al., 2006), power imbalances (Castleden et al., 2008), and meaningful dissemination of results to inform social change (Latz, 2017; C. Mitchell, 2017). We took these important considerations into account during our study by dismantling power differentials, fostering engagement, and ensuring meaningful dissemination of results through youth engagement.

Our study provided a meaningful and youth-centric opportunity for youth to participate in DRR research and contribute to resilience in their community by understanding their perspectives on youth engagement in DRR. The purpose of this article is to provide a detailed

account of our methodology and methods for a hybrid model of Photovoice (in-person and virtual), including a virtual conference presentation and online exhibition using social media. We also discuss the lessons we learned in building a meaningful opportunity for community collaboration. The findings are available in two separate articles or can be viewed on our Photovoice Instagram exhibition page @yrtphotovoiceproject.

Methods

Participants as Co-researchers

Photovoice is a community-based participatory action research (PAR) methodology (Liebenberg, 2018). In Photovoice studies, participants are viewed as equal collaborators throughout the research process and are referred to as “co-researchers” along with academic researchers (Latz, 2017; Wang & Burris, 1994). In this article, at times when it is important to distinguish between co-researchers, we refer to youth participants as high school students and research assistants/principal investigator as university students/lab director.

Study Design

Photovoice, as a research methodology, was developed by Wang and Burris (1994) to enable people to communicate their experiences, community strengths and weaknesses, support critical dialogue about individual and community problems through focus group discussions of visual media, and promote dialogue with policymakers (Wang, 1999). As such, Photovoice combines community-based participatory research (CBPR)/participatory action research (PAR), visual research methods, and qualitative narrative data. CBPR and PAR are forms of research in which researchers and communities collaborate and share decision-making with the goal of creating meaningful social change (Israel, 2013; Pickering, Phibbs, et al., 2021). Furthermore, visual research methods use visual media (e.g., photographs, diagrams, film, etc.) to answer

research questions (Rose, 2012), while qualitative narrative data are descriptive oral or written explanations of participants' perceptions and lived experiences (Latz, 2017). To promote collaboration and social change, and collect photographic and narrative data, Photovoice studies use focus groups as a method of data collection (Latz, 2017; Wang, 1999; Wang & Burris, 1994).

Our Photovoice protocol modified research methods from Wang (1999), and integrated modern community engagement strategies using Instagram, as inspired by Yi-Frazier et al. (2015). Below, in Table 1, we provide a stepwise description of our research protocol.

Table 1. Our Photovoice research protocol, modified from Wang (1999).

Steps	Actions
1) Identify objectives and intended outcomes	Discuss study objectives / intended outcomes with youth team members who initiated the project.
2) Submit application for ethics approval	Submit ethics application.
3) Recruitment and information session	Invite youth team members to participate; host parent/participant information session, to introduce Photovoice, outline expectations, and obtain written informed consent.
4) Focus group #1: Facilitated discussion and explanation of first Photovoice assignment	Orientation for the group; discuss initial photo assignment; review rules on data sources and use of Instagram as a research tool.
5) Take pictures between focus group sessions	Take pictures for photo assignment (high school students).

6) Transcribe audio recordings and create initial codes between focus group meetings	Transcribe focus group recordings and create codes (university students).
7) Focus groups #2 – 9: Member check codes from previous session, present pictures, group discussions, decide next assignment	Review codes from previous session with the team; presentation of pictures by the high school students; group discussion about the pictures and designated topic for the session; reach group consensus on the next photo assignment; plan for exhibition in the final focus group session.
8) Identify themes	Code and identify themes (university students).
9) Refine themes through member reflections	Refine themes through member reflections with high school students.
10) Plan Photovoice exhibitions with community partners	Distribute invitations, prepare display, host exhibitions.
11) Host Photovoice exhibitions	Present pictures and themes; facilitate discussion with policymakers and community leaders.

Participant Recruitment

Our study, which spanned 2019 to 2021, was based in Ottawa, Ontario, Canada, and is an initiative of the EnRiCH Youth Research Team—a youth-led, grassroots, community-based program offered through the EnRiCH Research Lab at the University of Ottawa (Pickering, Guy, et al., 2021). The YRT is composed of youth aged 13 and over who participate in research and

knowledge mobilization activities in DRR; we use a youth development and mentorship model in which the post-secondary students mentor the high school students on the team. For the Photovoice initiative, four high school students between the ages of 14 – 16 years of age participated throughout the duration of the study. All team members, including the students and lab director, identify as female.

Identify Objectives, Intended Outcomes, and Ethics

The high school students on our youth research team initiated the conversation about doing a Photovoice project; as such, we had interested participants before establishing our research objectives. Together we discussed study objectives, possible outcomes, and design with the co-researchers prior to ethics submission. We received ethics approval through the University of Ottawa's Office of Research Ethics and Integrity.

Focus Groups and Picture Taking

We held nine youth-led focus group sessions, each two hours in duration, over a period of two years (2019 – 2020). The format for our focus groups changed between 2019 and 2020 due to the global COVID-19 pandemic. We hosted six focus groups in-person in 2019 and three focus groups virtually using Zoom, in 2020, following a similar format to Wang and Burris (1994):

- 1) Summarize key themes from the previous focus group (member reflections (Braun & Clarke, 2022; Smith & McGannon, 2018; Tracy, 2010) and stimulated recall);
- 2) Introduce the research question/topic of interest for the current focus group (which was preselected at the end of the previous session);
- 3) Roundtable presentation and discussion of new pictures taken by co-researchers;
- 4) Reach team consensus on the photo assignment for the next focus group session.

Prior to our first session, we hosted an information meeting to present the project, the proposed research process, and review the consent/assent forms with parents/parental guardians and high school students. In this meeting, everyone was given the opportunity to ask questions and express their preferences for scheduling the focus groups.

During our first focus group, we reviewed rules around data sources and tools, and we came to a consensus on the first photo assignment. Between focus groups, the high school students took 4-5 pictures representing their thoughts, feelings or experiences on the photo assignment. During the focus groups, co-researchers did “show and tell”, presenting their photographs and how they related to the photo assignment (López et al., 2013). In Photovoice, pictures are used to enable participants to explore their worldviews, communicate their ideas to others, and stimulate critical dialogue about issues (Wang et al., 1996). At each session, the high school students presented their pictures and their meanings, followed by an open dialogue about the pictures and photo assignment. At the end of each session, we came to consensus about the topic for the next photo assignment, based on what the high school students wanted to discuss. Consensus was reached by creating a running list of potential topics at the end of each session and discussing preferences in a roundtable format. This technique helped avoid potential conflicts, though the high school students were generally in agreement on which topics they wished to delve into deeper. There were eight people present for most focus group sessions: four high school students who were generating the photos, and three university students and the lab director who participated and helped guide the discussion.

Data Sources. Pictures can be used in several ways: co-researchers can take their own pictures, use pictures preselected by researchers, or use pictures, memes, and GIFs from the

internet (Latz, 2017). For this study, we limited data collection to visual images taken by co-researchers either on their personal smartphones or digital cameras. One co-researcher decided to use a digital camera, while the other three used their smartphones. As a team, and in consultation with the University of Ottawa's Office of Research Ethics and Integrity, we decided on the following safety restrictions regarding picture taking: No pictures of other people where persons are readily identifiable; and no pictures of themselves where they are identifiable. In addition to visual images as data, we audio-recorded all in-person and virtual Photovoice sessions. During the sessions, we displayed the images on a laptop for the whole group to see the image being discussed.

Instagram as a Tool. In our initial discussions with the YRT about doing a Photovoice project, the high school students asked if it was possible to incorporate Instagram. During the data collection phase, we created a private Instagram account accessible to all team members to facilitate picture sharing and focus group discussions. In contrast to Yi-Frazier et al. (2015), who used Instagram to replace in-person focus groups, our study used Instagram to complement the focus groups during data collection—as well as a venue for our Photovoice exhibition. Before each focus group session, the high school students had the option of uploading their photos to either the private Instagram account or a private Google Share Folder.

Strategies to Maintain Focus During Focus Group Sessions with Youth. Studies have found that working with youth on Photovoice projects can be difficult, for example, youth struggle to know what to photograph (Drew et al., 2010; Kramer et al., 2013; Strack et al., 2004). We experienced some difficulty maintaining focus during some discussions. To address this, we provided snacks, pens/paper for drawing, we alternated turns for presenting pictures, and we included time to socialize informally before and after the sessions.

The SHOWeD Method. Wang (1999) outlined the ‘SHOWeD’ method for structuring questions —to stimulate conversation during Photovoice sessions. The acronym stands for the following questions:

1. “What do you **S**ee here?”
2. “What is really **H**appening here?”
3. “How does this relate to **O**ur lives?”
4. “**W**hy does this situation, concern or strength exist?” and
5. “What can we **D**o about it?” (Wang, 1999, p. 188)

While the SHOWeD strategy has shown value in Photovoice research to help groups move from superficial discussions to situating images within larger issues (Liebenberg, 2018), it did not facilitate in-depth discussions for our team. Our experience is not unique, with other authors describing the need for different strategies to facilitate Photovoice discussions (Hergenrather et al., 2009; McIntyre, 2003). We found our team worked best in an informal discussion setting, using more natural probes such as, “That is a really unique image - what else can you tell me about it?” or “Thank you for sharing. Before we move to the next picture, does anyone else want to comment?” or “What does this picture mean to everyone else?” or “How would you change ‘x’ issue?”

Focus Groups During a Pandemic. We originally planned to host six focus group sessions in 2019, and finish data analysis in 2020. However, during one of our virtual data analysis meetings during the pandemic, the high school students expressed interest in adding more sessions. In 2020, during the first wave of the pandemic in Canada, we received ethics approval to add three more focus groups and modify our protocol to host the sessions virtually using Zoom. We began every meeting with computer cameras on for a quick roundtable, then

turned videos off to use the Zoom recording function. The virtual focus groups provided a safe, non-judgmental, space where high school students were able to connect with peers over their fears and frustrations of the global COVID-19 pandemic —and connect at a time when video conferencing was one of the only options to socialize safely.

Data Management and Analysis

In total, the high school students took over 40 pictures and provided 18 hours of audio recordings from focus group discussions. Analysis was done concurrently with data collection and occurred in four phases: 1) initial coding, 2) member reflections (Braun & Clarke, 2022; Smith & McGannon, 2018; Tracy, 2010) for the codes, 3) grouping codes into themes, and 4) member reflections for the themes. Initial coding involved a mix of in vivo, inductive, and deductive coding. Wang and colleagues recommend co-researcher engagement throughout analysis, facilitated by summarizing themes from the previous session at the start of each session (Wang, 1999; Wang & Burris, 1994). In our project, after reading each theme aloud, the university students asked if their interpretation accurately reflected the high school students' discussion and whether there was anything missing. This step provided an opportunity for the university students, who identify as older youth/young adults, to check their positionality through reflexive practice (Braun & Clarke, 2019). After revision of the themes, we finished analysis with 15 umbrella themes and 70 subthemes; these results will be published in two separate articles and can be viewed in full at our Instagram exhibition page @yrtphotovoiceproject.

Knowledge Mobilization

Photovoice exhibitions are an important output to enable stakeholder engagement with co-researchers, meaningful dissemination of findings, and social change (Wang, 1999; Wang & Burris, 1994, 1997). Our knowledge mobilization activities included an online Instagram

exhibition and a youth-led conference presentation at two international conferences (one in 2021 and another in 2022). In this section, we explain how we planned our original exhibition in 2019, and how we adapted exhibitions to an online format. We end this section with a detailed outline of our process creating the youth-led conference workshop and Instagram exhibition, finishing with reflections on direct actions and new opportunities that stemmed from our exhibitions.

Our Knowledge Mobilization Planning and Implementation

A point of concern in Photovoice research is the meaningful dissemination of findings and how study results are used to inform change (Latz, 2017; C. Mitchell, 2018). Knowledge mobilization is an important final step in the research process—one sometimes missed or rushed. In Photovoice, knowledge mobilization is typically built into the action-based research process in the form of exhibitions and, in our experience, guest lectures or presentations following the project.

The Evolution of our Hybrid Model Photovoice Exhibitions

In 2019, we used the second half of our final focus group session to plan an in-person art gallery style exhibition in anticipation of using a rented space in downtown Ottawa. We planned to invite influential stakeholders and incorporate interactive booths and discussion tables to enable direct conversation between high school students and stakeholders with the power to create change.

In 2020, when Canada went into COVID-19 lockdowns, we decided on two online exhibitions as our knowledge mobilization strategy: one using Instagram, and another in the form of a workshop. For both events, we collaborated with stakeholders from the Canadian Red Cross, which is an important national disaster response organization—and as such an important

stakeholder and knowledge user for our study on youth participation in DRR. We had strong engagement from the Canadian Red Cross throughout the exhibition planning process.

The International Disaster and Resilience Summit 2021 Workshop

The main purpose of our conference exhibition was to create an opportunity for stakeholders and high school students to talk about action strategies to support youth participation in DRR and public health sectors. We selected a small sample of 10 themes from our Photovoice data to present at the conference. Our interactive youth-led workshop was hosted in collaboration with representatives from the Canadian Red Cross. We designed our 1.5-hour virtual Zoom conference workshop to take the following format:

- 1) Brief overview of youth engagement in DRR and the EnRiCH Youth Research Team Photovoice Project
- 2) High school students present a small selection of the Photovoice themes
- 3) Breakout rooms #1 for direct discussion between students and workshop attendees
- 4) Full group discussion – debrief on breakout room discussions
- 5) Brief presentation by the Canadian Red Cross about the importance of stakeholder action on the results of our Photovoice exhibition
- 6) Breakout rooms #2 with workshop attendees to brainstorm action strategies for youth engagement in DRR in their respective organizations
- 7) Full group discussion – debrief on breakout room discussions
- 8) Concluding remarks

For the high school students, it was their first time presenting at an academic conference. To help create a safe space and support capacity building, we scheduled several team meetings leading up to the conference to provide opportunities for the team to ask questions and practice

the presentation. We also hosted a practice workshop session with community stakeholders two days before the actual conference presentation; attendees included researchers and clinicians from Public Health Ontario, PhD students, professors and administrators - all relevant knowledge users to our study. We received positive feedback from stakeholders during this practice session and experienced productive discussions between stakeholders and youth. As a result, going into the conference, our team felt confident presenting and using technology —and had confirmation that youth voices are valued. During the conference workshop presentation, we engaged with knowledge users from Ministère de la Sécurité publique, Public Safety Canada, and the Canadian Red Cross. Both the practice and actual workshop presentations resulted in important discussions on how to harness the results of our study into action, through policy, practice —and solid commitments and opportunities going forward. For instance, members of the Canadian Red Cross committed to supporting our youth team by peer reviewing our community resource projects (i.e., disaster education modules and children’s book on earthquake preparedness). We also had opportunities to further present our work since the workshops, such as presentations on youth engagement in DRR to new members of the Canadian Red Cross; graduate students in a research methods course; and an international conference in 2022 in which two high school student co-researchers presented by themselves on behalf of the team to an international audience of health promotion stakeholders.

Maximizing Participation Through Support and Mentorship. For the virtual conference workshop, the breakout room discussions were hosted by three members of our team (a high school student, a university team member, and a member of the Canadian Red Cross). The high school students facilitated the discussion with workshop attendees —with the understanding that the university team member and Canadian Red Cross representative were

there to support them. The members of the Canadian Red Cross participated in the workshops in dual roles, as both co-facilitators and important knowledge users/stakeholders in the field; they participated actively in all discussions, bringing in examples from their own organization and potential action strategies.

The Instagram Photovoice Exhibition

The social media expertise and experiences of the high school students were integral in our decision to use Instagram as a platform for our virtual exhibition. Their expertise was essential in the design of the account and Instagram posts. Our Instagram post development process consisted of five steps: 1) Designing the Instagram posts in Canva; 2) creating the Instagram account; 3) scheduling posts; 4) editing the posts and captions; and 5) posting the prepared content/pre-determined hashtags and tagging accounts.

To create the Instagram posts, we used a free graphic design platform called Canva to help convert the thematic results for an Instagram audience. We created a group account to centralize our posts. For project feasibility, we designed a template to standardize the aesthetic of the account posts. Every team member selected one to four umbrella themes to translate into conversational style Instagram posts using the Canva template. The template had the following standardized design elements to ensure clarity, ease of reading, and to capture the audience's attention:

- Simple coloured outer border with a thinner inner border.
- Every first slide consisted of a theme title, a subtheme title, and the associated photo.
- Standardized and readable font and font size.
- Themes explained within the posts, as opposed to the captions.
- Use of white space, short explanations, and conversational language.

- Quotations displayed in italics.
- Bold font and underlining to emphasize key words.
- Free graphics (e.g., a graphic of a mask, or youth celebrating) to provide visual aid.
- Every post concluded with a final slide that read “Join the Discussion” to encourage followers to reflect on the information presented.
- The Photovoice team logo on every slide.
- Preselected colour scheme to ensure each post was aesthetically complementary and professional.

Designing the Instagram account itself was another important step in creating our social media exhibition; the business account features enabled us to see the metrics of our audience (e.g., gender, location, age group, etc.). We chose the username @yrtphotovoiceproject because it is memorable and can be associated quickly with our project. During the exhibition, our team followed a schedule that consisted of posting once daily. During the week of the International Disaster and Resilience Summit, we increased our posting to twice a day to build on increased viewership resulting from the conference workshop. Tagging other accounts was essential to ensure relevant organizations and stakeholders would receive notifications about our post. Hashtags also helped our posts appear in searches on Instagram, thereby enlarging our reach and visibility online. Finally, we also developed a stakeholder engagement strategy for interacting with other Instagram accounts throughout the exhibition. Figure 1 is a QR code, which upon scanning with a cellphone camera, will take readers directly to our Photovoice Instagram Exhibition.



Figure 1. QR code for the EnRiCH Youth Research Team's Photovoice Instagram Exhibition.

It is important to note that virtual exhibitions, while extending reach, are limited by the current state of technical advances, technical problems, and a lack of control over who attends and interacts with the posts. For the conference, we were unsure who would attend and the number of participants to expect. We had a plan to adjust our conference format for larger or smaller numbers. For the Instagram exhibition, while we could see how many people were interacting with our page, there were limited interactions on each individual post. However, the platform provides an accessible location for people to view the digital exhibition, which gives it exposure over a longer time period (for example, when we refer to it in our presentations).

Reflections and Lessons Learned

In this section, we reflect on important elements of our Photovoice protocol, such as emphasizing community voices, building capacity, and social capital. We also reflect on lessons learned, such as creating a safe space, and using Instagram as a tool.

Emphasizing Community Voices

Throughout our project, we emphasized and maintained a co-development and partnership process (Knowledge Institute for Child and Youth Mental Health Addictions, 2021). The high school students noted it was empowering to feel engaged as co-researchers. They

described their previous experiences with other organizations engaging youth, where it felt consultative—or tokenistic—and they did not enjoy this type of collaboration. Shared power in decision making for this Photovoice project was one of the most important and valued aspects highlighted by high school students; it was integral for their motivation to participate, sustained enjoyment of the collaboration, and feeling fulfilled, empowered, and meaningfully engaged.

Building Capacity and Social Capital

To support empowerment and engagement in Photovoice research (Carlson et al., 2006) and protect against power imbalance (Castleden et al., 2008), we emphasized equitable reciprocity through youth development and capacity building. The high school students benefitted from 1) equal opportunities for decision-making and control as co-researchers, 2) learning qualitative research skills; and 3) opportunities to build their resumes/CVs (i.e., co-researcher on a Photovoice study, co-creators of an Instagram Photovoice Exhibition, co-authors on three peer-reviewed manuscripts, presenters at a conference, and guest lecture panelists). Much of the strength behind our Photovoice project stemmed from strong bonding social capital amongst our team, supporting bridging social capital with other youth-led community organizations on Instagram, and building linking social capital through sustained collaboration with the Canadian Red Cross.

Creating a Safe Space

Photovoice has the potential for power imbalances in the research context (Castleden et al., 2008). Knowing this, our priority was to create a safe environment to support co-researchers working together effectively (Wang & Burris, 1997). We were careful to avoid the classic interviewer/interviewee power dichotomy. Our strategies to create a safe space included the following: 1) setting clear expectations and boundaries regarding equal collaboration, 2)

eliminating structural barriers to participation (e.g., geographical, monetary, and time barriers), 3) transparency about informed consent, 4) selecting a familiar meeting space (i.e., our research lab in downtown Ottawa), and 5) providing time to socialize informally before and after meetings.

Instagram as a Tool

While Instagram worked well as a virtual venue for our Photovoice exhibition, it did not work well as a data collection tool. We offered the option of posting on our private account between sessions, to share photos and comments, but there was little co-researcher engagement on the account, and they explained it was cumbersome to switch between their personal accounts and the group account. In a future project, we would use Google Shared Folders as our data collection tool and use Instagram solely for a virtual Photovoice exhibition.

Conclusion

Photovoice is an engaging qualitative research method to include community members historically excluded from DRR (Wang & Burris, 1994). Important considerations for using this methodology for youth engagement includes dismantling power differentials, fostering engagement, and ensuring there is meaningful dissemination of results. The hybrid Photovoice protocol we described here was useful for addressing some barriers to traditional in-person implementation and maintaining momentum during the context of pandemic lockdown. For instance, the accessibility offered through a hybrid Photovoice protocol can be leveraged to support inclusion in DRR initiatives (e.g., for persons with disabilities or language barriers, neurodivergent individuals, geographic limitations, and caregivers).

Instagram provides a suitable exhibition space for knowledge mobilization, with its broad reach—but must be accompanied with engagement strategies to maximize impact. Future

research could build on this method by incorporating Instagram and other forms of social media (e.g., Tik Tok) into Photovoice research, or other virtual formats for exhibitions (e.g., online virtual art gallery space, YouTube, etc.). Further, using social media helps support a youth-centric approach to participation in DRR and thus enables meaningful engagement.

Our hybrid Photovoice model, with an emphasis on youth development, is a strong method to foster meaningful community engagement and stakeholder partnerships to reduce disaster risk and losses and mobilize the all-of-society approach set out by the Sendai Framework. Further implications for DRR include providing youth, and other groups historically excluded from DRR, with an environment that supports their agency and provides them with decision-making power to move local, national, regional, and global DRR agendas forward in a way that reflects the needs and assets of the community.

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References

- Amri, A., Haynes, K., Bird, D. K., & Ronan, K. (2018). Bridging the divide between studies on disaster risk reduction education and child-centred disaster risk reduction: A critical review. *Children's Geographies, 16*(3), 239–251.
<https://doi.org/10.1080/14733285.2017.1358448>
- Bartlett, S. (2008). Climate change and urban children: Impacts and implications for adaptation in low- and middle-income countries. *Environment & Urbanization, 20*(2), 501–519.
<https://doi.org/10.1177/0956247808096125>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589–597.
<https://doi.org/10.1080/2159676X.2019.1628806>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE Publications.
- Carlson, E. D., Engebretson, J., & Chamberlain, R. M. (2006). Photovoice as a social process of critical consciousness. *SAGE Visual Methods, 16*(6), v4-131–852.
<https://doi.org/10.1177/1049732306287525>
- Castleden, H., Garvin, T., & Huu-Ay-Aht First Nation. (2008). Modifying Photovoice for community-based participatory Indigenous research. *Social Science & Medicine, 66*(6), 1393–1405. <https://doi.org/10.1016/j.socscimed.2007.11.030>
- Cox, R. S., Hill, T. T., Plush, T., Heykoop, C., & Tremblay, C. (2019). More than a checkbox: Engaging youth in disaster risk reduction and resilience in Canada. *Natural Hazards, 98*(1), 213–227. <https://doi.org/10.1007/s11069-018-3509-3>

- Drew, S. E., Duncan, R. E., & Sawyer, S. M. (2010). Visual storytelling: A beneficial but challenging method for health research with young people. *Qualitative Health Research*, 20(12), 1677–1688. <https://doi.org/10.1177/1049732310377455>
- Hergenrather, K. C., Rhodes, S. D., Cowan, C. A., Bardhoshi, G., & Pula, S. (2009). Photovoice as community-based participatory research: A qualitative review. *American Journal of Health Behavior*, 33(6), 686–698. <https://doi.org/10.5993/AJHB.33.6.6>
- Israel, B. A. (2013). *Methods for community-based participatory research for health* (2nd ed.). Jossey-Bass.
- Knowledge Institute for Child and Youth Mental Health Addictions. (2021). *Quality standard for youth engagement*. <https://www.cymha.ca/Modules/ResourceHub/?id=64172b4d-af0d-432a-8d66-880ba2292486>
- Kramer, L., Schwartz, P., Cheadle, A., & Rauzon, S. (2013). Using Photovoice as a participatory evaluation tool in Kaiser Permanente’s Community Health Initiative. *Health Promotion Practice*, 14(5), 686–694. <https://doi.org/10.1177/1524839912463232>
- Latz, A. O. (2017). *Photovoice research in education and beyond: A practical guide from theory to exhibition*. Routledge.
- Liebenberg, L. (2018). Thinking critically about Photovoice: Achieving empowerment and social change. *International Journal of Qualitative Methods*, 17(1), 1–9. <https://doi.org/10.1177/1609406918757631>
- López, E. D. S., Robinson, N., & Eng., E. (2013). Photovoice as a CBPR method: A case study with African American breast cancer survivors in rural eastern North Carolina. In B. A. Israel, E. Eng, A. J. Schulz, & E. A. Parker (Eds.), *Methods for community-based participatory research for health* (2nd ed., pp. 489–516). Jossey-Bass.

- Manyena, S. B., Fordham, M., & Collins, A. (2008). Disaster resilience and children: Managing food security in Zimbabwe's Binga District. *Children Youth and Environments*, 18(1), 303–331. <https://doi.org/10.7721/chilyoutenvi.18.1.0303>
- McIntyre, A. (2003). Through the eyes of women: Photovoice and participatory research as tools for reimagining place. *Gender, Place and Culture : A Journal of Feminist Geography*, 10(1), 47–66. <https://doi.org/10.1080/0966369032000052658>
- Mitchell, C. (2017). “The girl should just clean up the mess”: On studying audiences in understanding the meaningful engagement of young people in policy-making. *International Journal of Qualitative Methods*, 16(1). <https://doi.org/10.1177/1609406917703501>
- Mitchell, C. (2018). *Participatory visual methodologies: Social change, community and policy*. SAGE Publications Ltd.
- Mitchell, T., Haynes, K., Hall, N., Choong, W., & Oven, K. (2008). The roles of children and youth in communicating disaster risk. *Children, Youth and Environments*, 18(1), 254–279. <https://doi.org/10.7721/chilyoutenvi.18.1.0254>
- Muzenda-Mudavanhu, C. (2016). A review of children's participation in disaster risk reduction. *Jamba: Journal of Disaster Risk Studies*, 8(1), 1–6. <https://doi.org/10.4102/Jamba.V8i1.218>
- Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience — An introduction. *Children, Youth and Environments*, 18(1), 1–29. <http://www.jstor.org/stable/10.7721/chilyoutenvi.18.1.0001>
- Pickering, C. J., Guy, E., Al-Baldawi, Z., McVean, L., Sargent, S., & O'Sullivan, T. (2021). “I believe this team will change how society views youth in disasters”: The EnRiCH Youth

- Research Team: A youth-led community-based disaster risk reduction program in Ottawa, Canada. *Canadian Journal of Public Health*, 112(5), 957–964.
<https://doi.org/10.17269/s41997-021-00486-8>
- Pickering, C. J., Phibbs, S., Kenney, C., & O’Sullivan, T. (2021). Qualitative research. In R. Kayano, V. Murray, M. Clarke, & E. Y. Y. Chan (Eds.), *WHO guidance on research methods for health emergency and disaster risk management* (pp. 383–401). World Health Organization. https://extranet.who.int/kobe_centre/en/project-details/GUIDANCE_ResearchMethods_HealthEDRM
- Poortinga, W. (2012). Community resilience and health: The role of bonding, bridging, and linking aspects of social capital. *Health & Place*, 18(2), 286–295.
<https://doi.org/10.1016/j.healthplace.2011.09.017>
- Rose, G. (2012). *Visual methodologies: An introduction to researching with visual materials* (3rd ed.). SAGE.
- Smith, B., & McGannon, K. R. (2018). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*, 11(1), 101–121. <https://doi.org/10.1080/1750984X.2017.1317357>
- Strack, R. W., Magill, C., & Mcdonagh, K. (2004). Engaging youth through Photovoice. *Health Promotion Practice*, 5(1), 49–58. <https://doi.org/10.1177/1524839903258015>
- Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *International Journal of Epidemiology*, 33(4), 650–667. <https://doi.org/10.1093/ije/dyh013>
- Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative

- research. *Qualitative Inquiry*, 16(10), 837–851.
<https://doi.org/10.1177/1077800410383121>
- UNDRR. (2015). *Sendai Framework for Disaster Risk Reduction*.
http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf
- UNDRR. (2021). *UNDRR Strategic Framework 2022-2025*.
<https://www.undrr.org/publication/undrr-strategic-framework-2022-2025>
- Wang, C. C. (1999). Photovoice: A participatory action research strategy applied to women's health. *Journal of Women's Health*, 8(2), 185–192.
<https://doi.org/10.1089/jwh.1999.8.185>
- Wang, C. C., & Burris, M. A. (1994). Empowerment through photo novella: Portraits of participation. *Health Education & Behavior*, 21(2), 171–186.
<https://doi.org/10.1177/109019819402100204>
- Wang, C. C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior*, 24(3), 369–387.
<https://doi.org/10.1177/109019819702400309>
- Wang, C. C., Burris, M. A., & Ping, X. Y. (1996). Chinese village women as visual anthropologists: A participatory approach to reaching policymakers. *Social Science & Medicine*, 42(10), 1391–1400. [https://doi.org/10.1016/0277-9536\(95\)00287-1](https://doi.org/10.1016/0277-9536(95)00287-1)
- Yi-Frazier, J. P., Cochrane, K., Mitrovich, C., Pascual, M., Buscaino, E., Eaton, L., Panlasigui, N., Clopp, B., & Malik, F. (2015). Using Instagram as a modified application of Photovoice for storytelling and sharing in adolescents with type 1 diabetes. *Qualitative Health Research*, 25(10), 1372–1382. <https://doi.org/10.1177/1049732315583282>

Chapter 6: Results (Article #2)

“It’s like youth are talking into a microphone that is not plugged in”: Engaging youth in DRR through Photovoice

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Abstract

Over the last decade, youth have been acknowledged as agents of change in the fight against climate change, and more recently in disaster risk reduction. However, there is a need for improved opportunities for youth to participate and have their voices heard in both contexts. Our Photovoice study explores youth perceptions of the capability of youth to participate in disaster risk reduction and climate change action. We conducted six focus groups from February 2019 to June 2019 with the same four teenaged youth participants in Ottawa, Canada, hosting two virtual Photovoice exhibitions in 2021. Our results highlight 11 themes across a variety of topics including youth as assets, youth-adult partnerships, political action on consumerism, social media, education, accessibility, and art as knowledge translation. We provide four calls to action, centering youth participation and leadership across all of them, to guide stakeholders in how to improve disaster risk reduction and climate change initiatives by meaningfully including youth as stakeholders.

Keywords: Disaster, disaster risk reduction, climate change, youth, youth participation, youth engagement, Photovoice, community-based participatory research, community resilience

Background

Across the globe, humanity faces the growing challenge of extreme climate change and cascading disasters. Young leaders like Greta Thunberg, Autumn Peltier, Malala Yousafzai, Mari Copeny, and youth-led climate strikes are evidence that youth are passionate and vocal leaders in global efforts towards a more sustainable and equitable future. Beyond the individual level, there are youth-focused programs at the community, government, and international levels. For instance, a community-based program such as Preparing our Home (Preparing our Home, n.d.) – a project based in Canada to empower Indigenous youth as community leaders in emergency preparedness – designs projects with youth to build their capacity to lead disaster risk reduction (DRR). The majority of youth DRR programs in Canada are focused on education about preparedness and resilience, such as the school-based Master of Disaster Program from Emergency Management British Columbia (Cox et al., 2019).

In the Philippines, school-based science clubs are a space in which youth spread disaster knowledge between their school, family, and community (Fernandez & Shaw, 2015). There are also examples of non-DRR community programs which became integral to DRR in the face of disasters, such as the Vietnamese American Young Leaders Association who became an important resource for the Vietnamese community during the response and recovery from Hurricane Katrina in New Orleans (e.g., translating information for non-English speaking relatives, and raising community morale) (Mitchell et al., 2008).

Internationally, opportunities such as the United Nations Major Group for Children and Youth (UNMGCY) DRR Working Group – an international network of young people meaningfully engaged in United Nations (UN) processes – influence DRR at a policy level (United Nations Major Group for Children and Youth, n.d.). Despite some existing opportunities

and evidence of youth leadership, children and youth lack structured and sustained opportunities for meaningful participation in DRR and climate change decision-making and activities.

In 2015, three major global UN agreements were adopted: The Sustainable Development Goals (SDGs), The Paris Agreement on Climate Change, and the Sendai Framework for Disaster Risk Reduction. These UN agreements were designed to support action toward a more sustainable future, climate change adaptation, and reducing risks from disasters. The SDGs are a global agenda for action towards sustainable development (United Nations, 2015b); the Paris Agreement is an international treaty on climate change to combat climate change and invest in a sustainable low carbon future (United Nations, 2015a). The Sendai Framework for DRR is a global framework to reduce vulnerability to disasters; it emphasizes disaster preparedness and strategies to enable disaster recovery —and ultimately to foster resilience (UNDRR, 2015). There are synergies between these agendas, such as reducing risk across all hazards through a sustainable and equity-based approach to economic, social, and environmental development (Handmer et al., 2019). The global agendas focus on the need to enhance adaptive capacity, increase resilience, and limit vulnerability (Handmer et al., 2019).

Importantly, each of the three UN agendas emphasizes inclusive approaches and community engagement. The Sendai Framework stresses the need for inclusive measures to strengthen disaster resilience and an all-of-society approach to reducing disaster risk (UNDRR, 2015); the SDGs emphasize the need for participation across all stakeholders and people (United Nations, 2015b), and the Paris Agreement calls for the enhancement of public participation in climate change (United Nations, 2015a). The Sendai Framework takes these recommendations a step further by specifying how all-of-society partnership requires social empowerment through inclusive, accessible, and non-discriminatory engagement opportunities (UNDRR, 2015;

Witvorapong et al., 2015). Similarly, Shaw (2012) states that sustainable community-based DRR strategies are dependent on partnership, participation, and ownership of local communities.

Children and youth are historically excluded from DRR and climate change decision-making and opportunities for engagement in policy and practice. At the same time, they are also considered a high-risk population in disasters due to their increased risk of experiencing negative health outcomes (Bartlett, 2008; Peek, 2008; UNDRR, 2015). Over the last decade, youth have been acknowledged as agents of change (UNDRR, 2015) in the fight against climate change, and more recently in reducing disaster risks (Amri et al., 2018), by bridging the divide between youth and the UN system through international working groups (United Nations Major Group for Children and Youth [UNMGCY], 2016), or restoring mangrove ecosystems in the Philippines (Tanner, 2010). Aligning with Article 12 in the UN Convention on the Rights of the Child, which states that children have the right to participate in decisions that affect them and express their views freely (UN General Assembly, 1989), the Sendai Framework recommends the promotion of youth contributions and leadership opportunities in DRR (UNDRR, 2015). The difficulty lies in the implementation of these recommendations in practice at local, national, and international levels through programs that meaningfully engage youth in initiatives with real world implications.

Such engagement requires exploration of the capabilities and assets of individuals, communities, and organizations. Thus, the theoretical underpinnings of our research stem from the asset-based approach (Morgan & Ziglio, 2007), which highlights capabilities, over needs, when addressing inequities. The asset approach draws from the Theory of Salutogenesis (Antonovsky, 1996), which highlights how health is formed, rather than how disease is produced (i.e., pathogenesis). In the context of disasters, this approach focuses on assets that support

resilience, and in the case of youth, how engagement can be facilitated by focusing on assets, resources, and capabilities.

Given the global guidelines advocating for inclusive, all-of-society engagement in DRR and climate change efforts, the purpose of this Photovoice project was to provide an opportunity for youth to participate in disaster research, while exploring their perceptions of youth capabilities in DRR and climate change action. Our article concludes with four calls to action to support stakeholders in engaging youth in DRR and climate change initiatives to create social change.

Methods

Study Design

We used Photovoice to engage and empower high school students and foster youth participation in action toward climate change and DRR. Photovoice is a community-based participatory research methodology intended to create space for community members to share their lived experiences and co-create knowledge with researchers (Wang, 1999; Wang & Burris, 1994, 1997). Using this method, community members are viewed as both participants and co-researchers with the understanding they are experts in their own lives (Latz, 2017). Co-researchers are invited to take pictures from their personal experiences and express their ideas through photo elicitation discussions on a given topic (Latz, 2017), and they are actively involved throughout every step of the Photovoice project. Given the collaborative, arts-based nature of expression, Photovoice is particularly useful for populations whose voices have been historically excluded from social change policy and practice (Wang & Burris, 1994), such as youth.

Participants and Ethics

This study was approved for ethics by the University of Ottawa Research Ethics Board. Consent was obtained from participants 16 years of age and over and parents of participants under 16 years of age, while assent was obtained from participants under age 16 years. All researchers and participants are members of the EnRiCH Youth Research Team (EnRiCH YRT), which is a community-based youth-led program in which youth aged 13 – 30 years collaborate on DRR research and knowledge mobilization (Pickering, Guy, et al., 2021). The request for a Photovoice study came directly from the youth team members of the community group. For more context about the EnRiCH YRT, see (Pickering, Guy, et al., 2021). As a group of youth engaged in disaster preparedness and knowledge mobilization, they wanted their voices to be heard and to take part in a research study, where they have agency; this is one of the reasons we chose Photovoice as the methodology.

All study participants were recruited from the EnRiCH YRT. In total, we recruited four participants out of a possible 24 youth team members. The four participants elected to participate because they had the time in their high school schedules to accommodate the project, and they were interested in learning more about Photovoice, while having their voices heard on DRR. The small sample size is an appropriate size for focus group research as it allows each participant sufficient time to speak and permits in-depth data collection on the subject. Participants and researchers already knew each other, given their collaboration on projects in the EnRiCH YRT. This helped facilitate rapport and in-depth conversation during the focus groups. All four participants were active members of the community group, with several years' experience in DRR. They participated throughout the entirety of our project, located in Ottawa, Canada, from February 2019 to June 2021.

In classic qualitative research terms, the four high school students would be called ‘participants’; however, given the collaborative nature of Photovoice the high school student participants are referred to as ‘youth co-researchers’ for the remainder of the article. In our study, co-researchers are akin to actively engaged participants —as opposed to researchers trained in ethics or methods. This means, in addition to their role as participants taking photographs and participating in focus group discussions, they helped design the project, selected photo assignments and topics for each focus group, provided member reflections (Braun & Clarke, 2022; Smith & McGannon, 2018; Tracy, 2010) on codes and themes, wrote bullet points for the outline of our methods paper about the Photovoice project (Pickering et al., 2022), were consulted on all manuscripts providing feedback and approval on every draft, and actively led, designed, and implemented both Photovoice exhibitions. Our feedback and approval process for each manuscript involved youth co-researchers making suggested edits via tracked changes in Word, and giving written approval/disapproval in their email reply. The youth co-researchers were 14 – 16 years of age when we started data collection; the University of Ottawa researchers included undergraduate and graduate students and a professor. Of the eight members of our team, four identify as non-white, three of whom are youth co-researchers.

Data Collection

This study is part of a larger project through which we hosted nine focus groups from 2019 to 2020 —six of them were in-person sessions in our research lab at the University of Ottawa from February to June 2019 (and are presented here). In 2020, we added three virtual sessions between June and August to discuss youth experiences of the COVID-19 pandemic – the data from those three virtual sessions is published separately.

Each two-hour focus group session was attended by the eight members of our team. The principal investigators (CJP and TO) led each focus group by asking the research questions and facilitating group discussions, while the two research assistants took notes. The four youth co-researchers responded to the research questions and shared their photos. We did not use the SHOWeD method typically used for facilitating focus group discussions in Photovoice (Wang, 1999) as the strategy was too formal and rigid to facilitate in-depth discussions for our group. Rather, we used more informal and naturally occurring probes such as “What else can you tell me about this image?” to maintain the natural flow of conversation. In this article, we present the results from the six in-person sessions, which focused on our views on youth engagement in DRR and climate change.

Our research protocol was similar to traditional Photovoice approaches from Wang and Burris (1994) (e.g., using focus groups to collect data), while incorporating modern techniques of community engagement, taking inspiration from Yi-Frazier and colleagues (2015) who modified the Photovoice methodology using Instagram to collaborate with adolescents. Before we began data collection, we identified research objectives, received ethics approval, and hosted a parent information session with potential participants. Our first focus group was dedicated to selecting the inaugural Photovoice assignment and explaining the rules about what could—and could not—be photographed (i.e., no pictures of other people or themselves where a person is readily identifiable). Given their advanced understanding of Instagram and photography, no photography training or exercises were necessary for our study group.

Between sessions, the youth co-researchers took pictures based on the assignment using their cell phones (with one participant opting to borrow a digital camera from the research lab) and posted their pictures to the private team Instagram account; the youth co-researchers were

encouraged to comment on the pictures from their own cell phones, to facilitate discussion. Youth co-researchers also elected to use multiple art forms including photography, interactive art displays, lino block art, Word Art, and water colour painting to express themselves. Meanwhile, the university researchers transcribed the audio-recordings from the focus group discussions and coded the data from previous sessions. The length between sessions ranged from two to four weeks, depending on everyone's schedules, with the goal of completing data collection before the beginning of the upcoming school year. The decision to host six sessions was to enable the high school students to feasibly balance the project with their existing school and work schedules, while providing enough time to express themselves effectively.

During the focus groups, the photographs were used to facilitate discussion. Each youth co-researcher took turns showing their photos to the group and explaining what the photo represented to them, and how they aligned with the photo assignment. The other youth co-researchers were then invited to discuss the photos and the meanings presented. This format often led to long, in-depth and organic discussions, rarely requiring probing questions from the facilitators. Our meeting agenda included the following: 1) checking codes with the youth co-researchers, 2) youth co-researchers sharing new pictures, 3) youth co-researcher group discussions about the pictures, and 4) selecting the next Photovoice assignment. We also allowed time for discussion related to planning the Photovoice exhibitions. Figure 1 summarizes our Photovoice research protocol.

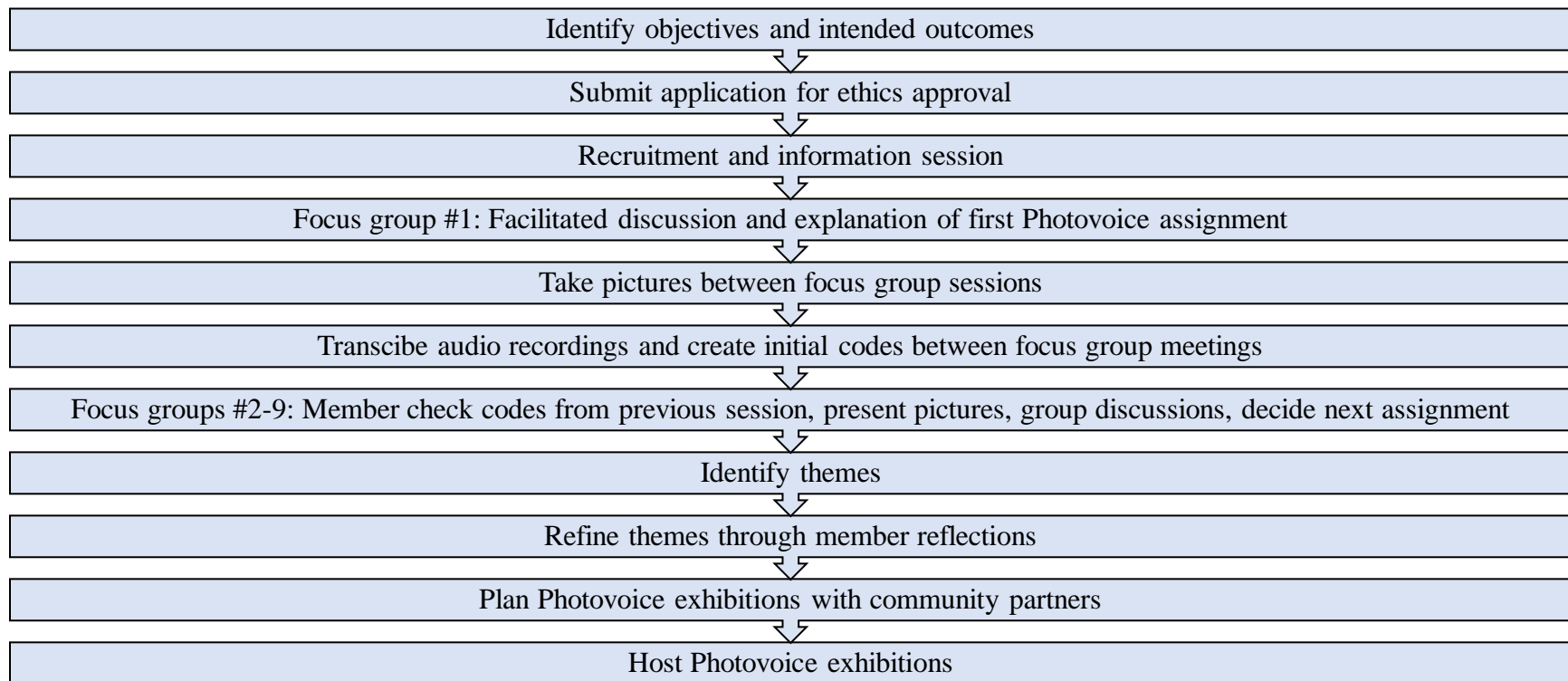


Figure 1. Our Photovoice research protocol.

Data Analysis

We used reflexive thematic analysis (Braun & Clarke, 2019) to code data and create themes, using Word and PowerPoint to facilitate remote collaborative analysis throughout the pandemic. Reflective of the community-based, collaborative nature of Photovoice research methods (Wang & Burris, 1997), after the university researchers created codes and themes, we refined them through member reflections (Braun & Clarke, 2022; Smith & McGannon, 2018; Tracy, 2010) during focus group sessions.

Throughout the analysis process, we protected confidentiality and anonymity by keeping transcripts and audio recordings separate, removing all identifying information from the transcripts (e.g., names), using password-protection on documents, and de-identifying quotations to enable youth co-authorship.

Photovoice Exhibitions

Consistent with traditional Photovoice protocols (Wang & Burris, 1994), but applying online engagement strategies, we hosted two virtual Photovoice exhibitions with our community partners at the Canadian Red Cross to connect with community stakeholders. Community stakeholders included researchers and clinicians from Public Health Ontario, graduate students, professors, and university administrators, knowledge users from Ministère de la Sécurité publique and Public Safety Canada, and members of the Canadian Red Cross. These stakeholders are relevant to our study as they are knowledge users in DRR and public health, and experts in education, government or community practice. Our first exhibition was a public Instagram exhibition, available at the Instagram handle @yrtpotovoiceproject, which showcases the themes from all nine focus groups from 2019 to 2020. Our second exhibition was held as a workshop over Zoom at the *Disaster and Resilience Summit 2021*; our eight-member team, in collaboration with members of the Canadian Red Cross, presented a selection of themes to attendees and fostered interactive discussions on how to implement youth engagement strategies in policy and practice. The Canadian Red Cross was our community partner for both exhibitions.

Results

In this section, we present our results pertaining to the six focus groups held in 2019 and a selection of data related to discussions of social media from the 2020 sessions. The results are written from the perspectives of the youth co-researchers on our team – therefore the terms ‘we’

and ‘our’ in this section represent solely the voices of the high school student participants. Our results are divided into four calls to action for DRR and climate change, based on 11 themes covering broad topics, including: the power of youth to create change, youth as assets, youth-adult partnerships, political action on consumerism, social media, disaster education, accessible communication, and art as a tool for knowledge translation. Figure 2 is a conceptual model summarizing the themes as they relate to our four calls to action for social change in DRR and climate change.

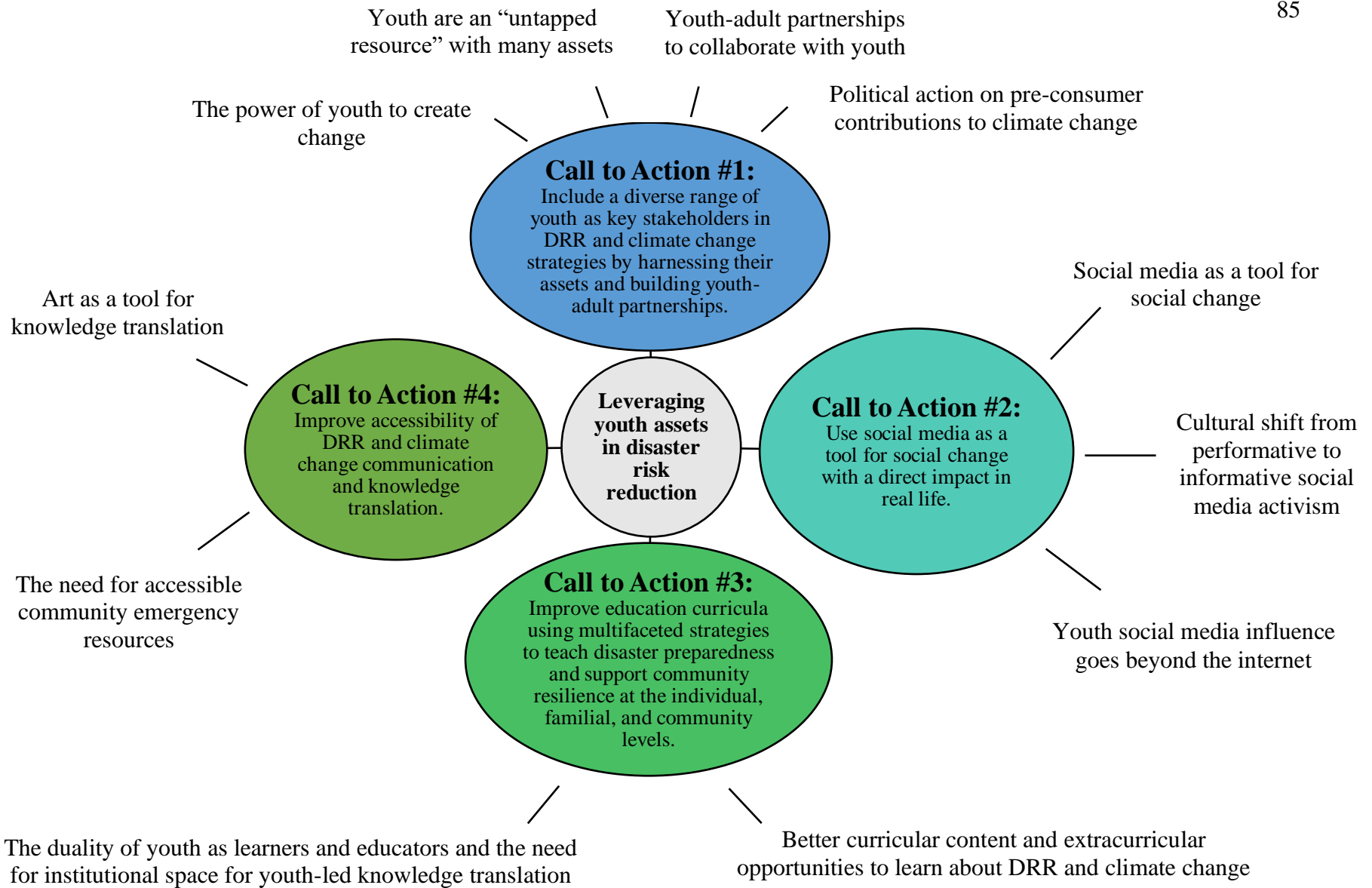


Figure 2. Overview of thematic results as they relate to four calls to action to create social change in DRR and climate change.

Call to Action #1: Youth as Key Stakeholders and the Importance of Youth-Adult Partnerships

Our first call to action is to include a diverse range of youth as key stakeholders in DRR and climate change strategies by harnessing their assets and building youth-adult partnerships. We discussed four themes that led to this call to action: 1) The power of youth to create change; 2) youth are an “untapped resource” with many assets; 3) youth-adult partnerships to collaborate with youth; and 4) political action on pre-consumer contributions to climate change.

The Power of Youth to Create Change

Youth have a voice, but it feels “unplugged” (Image 1): “...it represents youth voices not being heard so even though youth are talking into the microphone, it is not plugged in so it is not going anywhere.” (Session 4, April 27th 2019). Adults are not listening to youth as we voice our concerns and the need for immediate action on climate change; this is problematic because words precede action. We feel it is important for adults to reflect on how and what youth are messaging:

“The way I am portraying influence here is... we can convince people through words... like people say actions are stronger than words, but things that prompt actions are usually words. So it is a double-edged sword, and I [represented] that by having influence surrounded by words and influence being words.” (Session 4, April 27th 2019).

Nothing will change unless we act. Everyone has some degree of influence, which we can leverage to take collective action at all levels on climate change:

“...I did a little word art with this ... we are influence, influence surrounds us and I just put words around influence that I feel are synonymous with them... you have got global influence in terms of politics and local influence... and then familial influence... you and your family in the way you guys act and behave, the influence of your siblings’ action[s] and your own... And then social [influence] is just like you and your group of friends and you guys influence what you guys do and there is peer pressure and influence and media is influencing how people think...” (Session 4, April 27th 2019).



Image 1. Word art created by a youth co-researcher representing the important influence youth have in their lives, which only accrues power through adult support.

Youth are essential assets in the fight against climate change and reducing disaster risk. Given appropriate opportunities, youth have the power and drive to reduce disaster risks and fight climate change. We are passionate about the power our generation inherently possesses, but we need adult support to meaningfully contribute.

“... I recently went to this conference for the Ottawa-Carleton District School Board [organized, planned, and led by students from different schools] and so it was just a bunch of youth. All students came together and there was also a bunch of representatives and people in the school board that were high up and they were all listening to us. So youth came up on the stage... and they were telling their stories and you could see – they were really passionate ... They were telling [the school board representatives] the change they wanted... I feel like we should go for it and go to our school representatives, people who are high up in power.” (Session 2, March 2nd 2019).

Youth are an “Untapped Resource” With Many Assets

As Image 2 represents, youth feel the urgency and need for climate change action and DRR, given the impact both will have on our futures. While today’s adults might not live to see the effects of climate change, youth are acutely aware that is the uncertain future we face: *“...this youth [is] looking out at disasters like ‘the disaster is there but only the youth can see it’...So this*

is youth looking out and seeing what is happening and adults are kind of like ‘oh what’s up?’”

(Session 6, June 1st 2019).



Image 2. A young woman looks out the window, frightened by an impending disaster. The image represents the fear and urgency youth feel around the need to act on climate change and DRR.

Despite this fear, youth are resilient and work together in the face of adversity. Image 3 shows a picture of a lino block, created by a youth co-researcher for art class. The purpose of the print is to symbolically depict climate change, something that we view as affecting our day-to-day lives. Despite the overwhelming emotions associated with the big tasks ahead, youth stand ready and resilient to face the problem head on:

“... The print is of a boy (a youth) and around the boy’s neck there are leaves that are choking him. The symbolism behind it relates to climate change and the involvement and education about it. The boy represents the youth around the world and how rapidly the climate is changing and how that greatly affects our lives and how our future looks bleak. Although the leaves are choking him, he looks up and he is visibly resilient (not letting the leaves affect him). This represents how even though youth, and our future, is negatively affected by the rapidly changing climate and the consequences that stem from it (more natural disasters), we continue to raise awareness and work together in the face of adversity.” (Session 4, April 27th 2019).

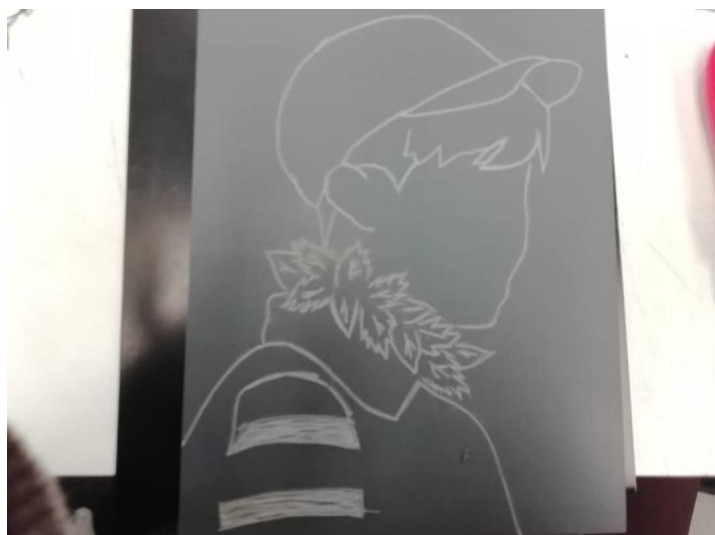


Image 3. A piece of artwork created by a youth co-researcher. This carved out lino block represents the fear and anxiety youth feel around the effects of climate change and the need to engage in climate change action. However, youth are resilient —and we continue to collectively raise awareness and fight back despite these anxieties.

Given our strong feelings of anxiety and fear, and urgency to act, youth are strong assets in climate change and DRR initiatives. Youth action has the potential to contribute to DRR and climate change initiatives, if only adults took our contributions and capabilities seriously. For instance, the impacts from youth actions are already noted in the form of student-led clubs and school events:

“...my school runs these events called coffee houses and they are student run. Students do everything and we raise money for certain charities. In this case, it did not relate to disasters, but it can... We made lots of money for the charity and it shows that we can [make an impact].” (Session 2, March 2nd 2019).

In addition to our thirst for knowledge, and skills with new and emerging technologies, youth are creative, passionate, and bring diverse perspectives to the table. We are not a homogenous population – we mirror the diversity in the general community.

Inclusion of diverse groups of youth in DRR and climate change awareness and education will reach high-risk, marginalized, and historically excluded populations in our community.

Youth-Adult Partnerships to Collaborate with Youth

While youth have the power to create change, meaningful contributions will be possible by partnering with stakeholders in DRR and climate change – leveraging each other’s assets and strengths to create innovations, opportunities, and change. Youth and adults have complementary assets; youth-adult partnerships provide opportunities to highlight potential contributions from everyone. For instance, youth are proficient with technology and social media; we can teach adults how to effectively navigate social media to improve disaster and climate change awareness. We bring different skills to the table, and we are interested in being there; adults need to give us the opportunity for a place at the table, and take us seriously.

“...even though youth are powerful and all, we do not have the same power as somebody that is a lot older and more experienced and also can really be politically involved without any restraint as to age or money so they are probably the most accessible, but the hardest audience to reach...” (Session 4, April 27th 2019).

We believe specific efforts are needed to build youth-adult partnerships with politicians so we can contribute effectively to DRR and climate change. Politicians and people in power have control over laws, policies, and practice. These are the stakeholders that youth want opportunities to connect and consult with. Image 4 represents the need for youth-adult partnerships in DRR and climate change action. Our message to politicians is: *“Listen and actually try and hear what we are saying – do not just brush us off”* (Session 3, March 30th 2019). Adults in power can listen and understand global problems from the perspectives of youth, while providing opportunities for youth to be politically active.

“We always say that no one knows about us, we are an untapped resource and stuff, but a way to convey this is to go out to politicians and do activism and show how important disaster risk reduction and mitigation [is] and how it will influence us...” (Session 3, March 30th 2019).



Image 4. A youth co-researcher wearing a “Be the Difference” bracelet, representing the need for politicians to create youth-adult partnerships, to support DRR and climate change together.

Political Action on Pre-consumer Contributions to Climate Change

Image 5 represents our feelings on climate change: *There is no Planet B.* We are running out of time to act on climate change. We feel the stress and responsibility of time moving forward and nature continuing to deteriorate.

“We have until 2030 or 2050 to change the world so it will not come down crashing and burning because of what we did to it... this just represents like nature fading a little bit because of how sparse it is.” (Session 2, March 2nd 2019).



Image 5. A picture of a clock and sparse plants, representing how humanity is running out of time to protect our dying environment from the effects of climate change.

We discussed consumerism as an area in which politically-based youth-adult partnerships can be beneficial in tackling climate change. On an individual level, thrifting is an example of a trend that reflects a cultural shift to responsible consumerism. Thrift stores previously were stigmatized — associated with poverty and lack of funds to buy clothes from fast fashion stores— but today, thrift store clothing is a fashion statement:

“A couple of years ago, maybe like 2012 or 2013, if you go into a thrift store, it is because, it was for people that could not afford fast fashion, but like now... people go to thrift stores as a hobby... it is a big thing. There is a verb for it.” (Session 6, June 1st 2019).

The verb for thrift store shopping is “thrifting”; it is seen as “cool” in its ability to save the shopper money, while owning style, and being eco-conscious:

“If you go shopping at Value Village, you are helping the environment because new clothes do not have to be made. It helps you, because it is super cheap clothes, it helps Diabetes Canada because part of the proceeds go towards that. It is just a win-win-win situation, you know?” (Session 6, June 1st 2019).

However, our biggest grievance with consumerism and climate change lies with fast-fashion companies. While changes to individual consumerism (e.g., shopping at thrift stores) are important, the ecological changes with the biggest impact will occur when big companies practice responsible consumerism. *“For a person throwing out one garbage can that day, a company throws out 70. So that is a really huge impact on the Earth considering that companies use a lot of the Earth’s resources.”* (Session 6, June 1st 2019).

We want to see political action getting big companies to cooperate and make a difference on climate change. Companies have the power to change the fast-fashion cycle, reduce emissions, and landfill waste. Through youth-adult partnerships, we can tackle climate change using the resources already at our fingertips, as represented by Image 6. We have the tools we need to make drastic changes to the way humans live and companies produce; we just need to

shift our priorities to apply our science and technology capabilities to climate change initiatives:

“What I was trying to do with this hand is convey what we can do as humans, like our humanity to the world...we changed so much of the world in only a few hundred years, so if humans could do something for the better... humans could put that same energy from science and technology into giving a little bit more attention to the environment.” (Session 6, June 1st 2019)



Image 6. A hand covered in paint splatter represents how humanity already has the knowledge, resources, and tools at our fingertips to tackle climate change, we just need to apply them.

Call to Action #2: Social Media as a Tool for Offline Social Change

Our second call to action is for stakeholders to use social media as a tool for social change with a direct impact in real life. Youth are an asset in harnessing the power of social media to effect change. We generated three themes from our discussions and photos on social media: 1) social media as a tool for social change; 2) cultural shift from performative to informative social media activism; and 3) youth social media influence goes beyond the internet. The themes relating to this call to action differ slightly from the others as the data span pre- and post-COVID-19 pandemic focus group sessions.

Social Media as a Tool for Social Change

Image 7 depicts a social media apps folder on a cellular phone, representing the prominence of social media in our lives. Social media can make disaster preparedness and awareness “cool”, creating a cultural shift in which it is “uncool” to be unprepared for disasters. This can be done through the influence of individuals with a social platform:

“This is super unrealistic, but if Kim Kardashian was like ‘oh just made my disaster preparedness kit using like Supreme’s disaster bag’ then everyone would be like ‘oh my god I need this.’ The whole culture of influencers can totally change the mainstream, what is cool, literally overnight...” (Session 3, March 30th 2019).



Image 7. A screenshot of popular social media apps on a cellular phone, representing the reach of social media in our day-to-day lives.

Social media is a strong resource to raise awareness of DRR and climate change because it is a fast channel for communication that youth are skilled at using:

“A lot of people say this, and it is really true how social media is one of the biggest resources to spread awareness... For example, stuff spreads really fast, like the Kim K. drama that is going on right now... something could happen, and it is instant. I just want to say we should really be [using it], for disaster risk stuff and also for climate change, it is a really good resource, and also youth know a lot about it.” (Session 2, March 2nd 2019).

Social media is also a strong communication platform given message framing and distribution of power. Social media platforms, such as TikTok, are an excellent source of information sharing

for youth because the model presents information in a digestible manner and uses humour to reach and relate to the audience; this framing is a contributing factor to its popularity.

Additionally, social media applications like TikTok use an algorithm that more evenly distributes power in the hands of all users, as opposed to a select few. This allows for increased information sharing from non-celebrity youth to reach wide ranging audiences and effect change.

“Plus, in what you mentioned about TikTok... it is an extremely good source for sharing information because, unlike YouTube, [which] just pushes things out based on how popular the content creator was before, [TikTok] pushes out anything possible. It is a genuinely good place to find content, especially content for activism. Plus, TikTok has a way of wrapping its message up in comedy so it makes it a little bit more like easily digestible.” (Session 7, June 17th 2020).

“And also something I have noticed is that a lot of the popular creators are made popular by actual people on the app and like youth. So I feel like that is another contributing factor” (Session 7, June 17th 2020).

The more even distribution of power influences our trust in social media over news media for reliable information. People are becoming more conscious about where they get their sources of important information such as reports on BLM protests or COVID-19. We prefer social media over news media to access information because it feels more truthful, given the more equitable distribution of power, compared to news media. Information on social media feels less biased than news media.

“... I have seen a lot of opinions going around saying like, ‘oh, I can only trust social media right now’ because the news they are not really showing what is happening, which is kind of true because, there are threads on Twitter about police inflicting violence on [BLM] protesters. But if you look at the [news] media they are talking about how rioters are the ones that are creating violence and burning down buildings. But if you look at social media, it is [produced] by the people – it is not really easy to skew it...” (Session 7, June 17th 2020).

However, social media should be used with caution. Just because someone ‘shares’ a social media campaign, does not mean any real action occurs offline. Some social media users will interact genuinely with online campaigns, while others interact superficially to avoid being

judged negatively by their peers; it is difficult to distinguish between the two. For social media to work as an awareness tool, there needs to be a direct impact in reality:

“...I wanted to critique a little bit how social media, although it is a really good resource to spread awareness... We should not think that we have done enough just because we have shared something...” (Session 2, March 2nd 2019).

Cultural Shift from Performative to Informative Social Media Activism

Social media shaped our upbringing – we are the digital generation: *“...we grew up, all of us, with media. Especially millennials and Gen Z’s so I feel like, in a way, media has already shaped us from the beginning...”* (Session 4, April 27th 2019). With this upbringing, what we saw happening with social justice campaigns on social media in 2019 was performative, static information, and lack of action. At the time, social media was being used to spread awareness, but there was no real action. Some campaigns existed only to follow the pressures of social media trends, without necessarily following up on the actions they pretend to promise for the publicity – they are simply performative:

“As you can see there are static pictures at the front so it is... like people posting on Instagram like ‘oh if you like this post you will plant trees’ so you are trying to spread awareness, but there is no real action to it. More like static information that you pass on to other people because people keep posting them and then there is no real action taken. We do not know that they are actually going to plant trees [from this campaign]” (Session 4, April 27th 2019).



Image 8. Old tv boxes with static images in an art exhibit at the Ottawa Art Gallery, representing performative activism through static information sharing on social media platforms. (Art installation credit: Darsha Hewitt, Electrostatic Bell Choir, 2013, Electromechanical sound installation, cathode ray tube televisions, bells, pith balls, metal, electronic control system, Carbon + Light: Juan Geuer’s Luminous Precision at the Ottawa Art Gallery)

Our overall perception about how people use social media changed in light of the context of COVID-19, BLM and the crisis in Yemen. Social media posts began trending away from performative activism to informative activism. A performative social media presence can be situated within performative allyship – it involves users passively sharing information with the intent to protect their social image, rather than to contribute meaningful action to a cause.

An informative social media presence is genuine online engagement with a cause, as indicated by what a user is sharing and long-term sustainment with the cause. For instance, in 2020, social media users leveraged online platforms to move beyond statements standing in solidarity with a cause:

“...they are sharing more petitions and more impactful things other than, say [just] the ‘standing in solidarity’ [post] – even though [those posts are] important too. I feel like social media has become a more important tool [during the pandemic].” (Session 7, June 17th 2020).

Thus, it is now considered “cool” to be overtly socially conscious by using your social media presence to call out non-compliance of pandemic guidelines (e.g., not wearing masks) and share impactful information (e.g., petitions against police brutality). We identified several reasons for this cultural shift. First, people were angry and scared because of the uncertainty around the pandemic, and second, the compounding effects of cascading disasters and global social movements made citizens emotionally responsive. Third, citizens relied on social media to

stay connected to rapidly changing news, and to their social networks during the pandemic. The outcome is that emotionally charged citizens were regularly exposed to emotionally charged social issues, resulting in more active online community engagement and pressure to take action.

“People are actually starting to get more angry, and they are starting to see it more as being a flex to be woke. People are genuinely starting to step up and be like ‘yo, something is wrong’ and trying to educate people. People are not taking any crap anymore, sort of because it is the BLM [movement] and the [COVID-19 pandemic] coming so soon together. People are just starting to get more pissed that nothing is happening. People are starting to notice... this is an important issue... because it is really taxing to be around that environment for a really long time.” (Session 7, June 17th 2020).

“But what I have noticed the past couple of weeks is that people share a lot on their... Instagram stories, or through TikTok, video after video about what is happening right now. ... what I think it helps to do is to create pressure. If you are bombarded with all these posts, and all these opinions and statistics all the time, you are pressured to look at it and you are pressured to care ... So you cannot, especially [with] COVID-19, you cannot really turn off your phone and be oblivious because you use social media now to communicate because you cannot really go outside and talk to people. And you cannot go to school. So seeing that all the time, like bombarding your face or pressure to look into it, and read about it, and take action.” (Session 7, June 17th 2020).

Youth Social Media Influence Goes Beyond the Internet

Being ‘woke’ (aware of social justice issues, especially racism) can take place on social media and in day-to-day practices and conversations offline. Youth are taking conversations beyond social media and trying to incite changes in their lives. They are taking actionable steps by addressing social justice issues —by educating those around them about the information they learned online. In this way, youth are acting as knowledge brokers, transmitting and explaining what they see on social media to family members who do not have an online presence.

“... sometimes it is not only what you see on social media that is creating an impact but what people take away from [it] and what they say to their family members or what they educate them [on]. There is more impact being done beyond social media.” (Session 7, June 17th 2020).

“Like when my parents [and grandma] asked why they were protesting, I explained to [them] how George Floyd was killed and what was going on. At first, my grandma took the side that the rioters are bad because of the violence, which by the way was started by

police officers. So, I told her and she started to be more empathetic about the protestors. So, I felt like that was a good change.” (Session 7, June 17th 2020).

Call to Action #3: Disaster Preparedness Education to Support Community Resilience

Our third call to action is to improve education curricula using multifaceted strategies to teach disaster preparedness and support community resilience at individual, familial, and community levels. Education is an important area in which youth can affect change on DRR and climate change. We constructed two themes from our discussions on how to leverage the education system in DRR and climate change: 1) Better curricular content and extracurricular opportunities to learn about DRR and climate change; and 2) the duality of youth as learners and educators and the need for institutional space for youth-led knowledge translation.

Better Curricular Content and Extracurricular Opportunities to Learn about DRR and Climate Change

Existing content in educational curricula is insufficient to teach practical preparedness skills and DRR knowledge. Image 9 shows an interactive art installation at one of the youth co-researcher’s schools. They were asked about their thoughts on climate change – an example of a fun school-based initiative to discuss climate change. DRR content needs improvement and expansion for students to gain these skills through a combination of interactive and exciting strategies.

“... Because we know what to do during fires, and we know what to do during other stuff like that, but we do not know what to do during an earthquake or like a hurricane. So if schools were to dedicate a week or maybe a few days of a certain month [to disaster education]... I was a little bit disappointed with the lack of how they talked about preparedness for disasters because we only did a project about disasters, but not what to do after a disaster.” (Session 5, May 11th 2019).

“...and make it fun. Because often times when [it is fun], students tend to talk about it. Like a fun trip or a fun little event, or something unique, students remember it and they talk about it and it stays in their mind. Because day to day classes, you take that information and you use it on the test, and then you dump it out.” (Session 5, May 11th 2019).

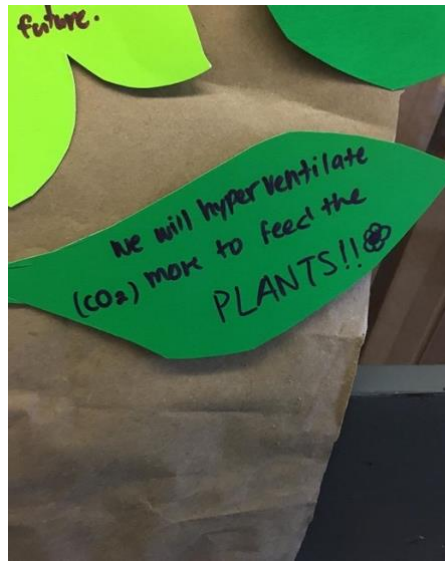


Image 9. An interactive art installation in which students added their own thoughts on climate change.

Through improved curricular content and greater extracurricular DRR and climate change opportunities, the education system can reach hard-to-reach populations on these topics. There is a need to address the knowledge gap most individuals have regarding disaster preparedness, especially for youth who might be hard-to-reach. The education system infrastructure is an asset that can be mobilized to reach this population: “...we can have a bit of an emphasis on disaster relief [in schools to reach students living in low-income neighbourhoods].” (Session 5, May 11th 2019).

The Duality of Youth as Learners and Educators and the Need for Institutional Space for Youth-led Knowledge Translation

Youth can and do exist in dual roles as learners and educators. The artwork in Image 10 depicts a young woman sharing her DRR and climate change knowledge. Proper DRR and climate change education in schools can provide youth with a strong foundation to stand on our

own as community leaders, thus raising awareness in our communities. The next step is to provide youth with platforms to apply and disseminate this knowledge: *“This is a youth researcher ... I decided to go through the knowledge route. [She is holding] papers... doing research and presenting the information, hence the speech bubble in the background. [She is] passing her knowledge on”* (Session 4, April 27th 2019).



Image 10. Artwork by a youth co-researcher depicting a young woman passing her DRR and climate change knowledge on to others, representing youth as community educators.

One way to support youth as educators in the community is to provide the institutional space for youth-led knowledge translation opportunities, such as youth-led conferences. Youth-led conferences could involve peer mentorship and learning amongst youth, supported by professionals. Learning could occur through hands-on workshops that allow youth to actively interact with disaster risk science and climate change. When youth have opportunities to attend and lead conferences, they gain new skills that they can then share with their friends, family, and community: *“You do not have to be necessarily taught by professors, you know? You can learn through your peers, and you [are] still gaining knowledge”* (Session 3, March 30th 2019).

Call to Action #4: Accessible Communication and Creative Knowledge Translation

Our final call to action is about improving accessibility of DRR and climate change communication and knowledge translation, with a focus on equality and equity. Accessibility of preparedness resources and communication strategies and inclusive services are all important to consider when enacting policy and practice changes. We generated two themes from our discussions on communication in DRR and climate change: 1) The need for accessible community emergency resources; and 2) art as a tool for knowledge translation.

The Need for Accessible Community Emergency Resources

Existing strategies to reduce disaster risks include using signs, posters, advertisements, and media campaigns to translate knowledge to citizens about what to do in disasters. While this is a good strategy, it should be done intentionally and communicated effectively to create behaviour change. Content, audience, layout, and placement are all important factors to consider when creating accessible and useful informational posters, such as the one depicted in Image 11. Content needs to be easily understood and comprehensive without overwhelming the audience with information. Posters should be placed in a location with a clear view, unencumbered by objects blocking visual or physical access to the poster, such as telephone cords. The following quotations stem from our discussion about Image 11:

“[The writing is] very tiny. Like you cannot take the time during an earthquake to [read what is on the poster]” (Session 2, March 2nd 2019).

“They do not even go through these drills in the first place, so how would you know what to do? Like would you just be standing there [reading the poster like,] ‘oh no an earthquake. No.’ and something topples on your head and you pass out?” (Session 2, March 2nd 2019).

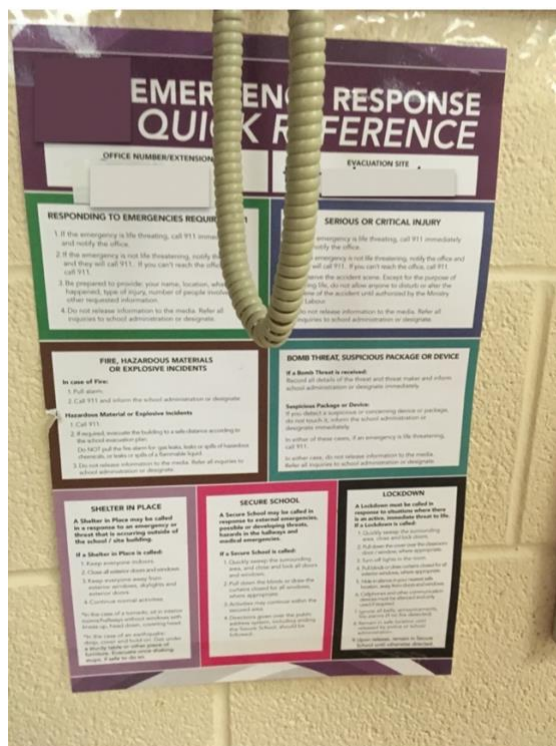


Image 11. An emergency response poster in a high school classroom. The content is difficult to read due to the telephone cord hanging in front. The list of categories on the poster included the following: Shelter in place, responding to emergencies, serious critical injuries, fire, bomb threats, secure school, and lockdown.

Communication services such as news broadcasts, social media posts, pamphlets, and websites need to be universally accessible. Some examples of inclusive services are voice-to-text, T9-1-1, sign language interpreters, subtitles, and Braille. Unfortunately, these services are not always available. Before, during, or after a disaster, lack of such services, and poor quality of these services, can be fatal.



Image 12. A youth co-researcher signing ‘disaster’.

“...it is so easy to get people to interpret properly like that is not a hard thing to do – there are so many interpreters. Then everything about disasters, a lot of it is just so hearing reliant.” (Session 5, May 11th 2019).

“It is not like people who are hard of hearing are rare either. There [are] a lot of Deaf people out there, there [are] a lot of blind people... even though people that can see and hear are the majority, you need to think of the minority, because maybe that deaf person knows something you do not, maybe that blind person can do something that you ...” (Session 5, May 11th 2019).

Resources directing citizens about disaster risks and response procedures need to be accessible to the public. This means making citizens aware of the resources, while also educating them on how to use said resources. Access to community emergency and education resources contributes to improved preparedness, which leads to better adaptive capacity for the entire community.

There are many facets that should be considered when discussing accessibility and DRR awareness. First, the accessibility of spaces and services for people in the community to access education around DRR. When discussing an art exhibit about earthquakes, one co-researcher had this to say about accessibility: *“...This gallery is in the middle of downtown, and it is very accessible to see because the entire gallery is free...”* (Session 4, April 27th 2019). Here, we highlight geographic and monetary barriers in society to access DRR education. Money can also

be a social barrier for citizens in creating grab bags, a suggested step from stakeholders for citizens to prepare for disasters: *“Everything disaster risk is expensive. Even something as simple as a grab bag takes money and effort to make.”* (Session 4, April 27th 2019).

Art as a Tool for Knowledge Translation

We believe that art is a powerful tool to connect with citizens and stakeholders; educate and create change in DRR and climate change; create cross cultural awareness; and promote inclusive collaboration. Image 13 shows an art piece that represents how art can cross multi-cultural boundaries to effect change.

Cultural constraints can make it difficult to have conversations on topics such as climate change. However, art is a tool that can cross cultural boundaries and effectively transmit “hard truths” about climate change. Every culture has different forms of artistic expression which can be harnessed to discuss difficult topics, facilitate inter- and intracultural communication, and relate to others on these issues.

“There [are] a lot of cultures out there that kind of ignore the fact that our Earth is dying. If we talk about [it] with our parents about like, ‘hey the earth is kind of dying,’ they are like, ‘oh no it is not. Stop being hooligans.’ Because they just choose to ignore it... The fact that you know the Earth is dying is not something that you want to think about. It is scary...” (Session 6, June 1st 2019).

“For hard-to-reach populations and for a lot of people, especially like Muslim culture, you will find a lot of paintings. In Iraq, you will find a lot of artists and people who generally enjoy art and putting message through art ... you [could] probably do something [DRR or climate change related] into art and make it pleasing to look at. Maybe people will start doing something about [climate change].” (Session 6, June 1st 2019).



Image 13. A youth co-researcher’s painting depicting diverse members of society in celebration of Eid. This picture represents the capability of art to cross cultural boundaries as an education and collaboration tool in DRR and climate change.

Art is an accessible medium to share information. DRR and climate change science can be combined with art, such is the case in Image 14, to spread awareness about disaster risk, disaster preparedness, and actions to combat climate change to a broad audience.

“[This art piece] is from an art exhibit that I went to at the Ottawa Art Gallery. The artist[’s] name is Juan Geuer and he uses both art and science to show emotion and spread information... He talks about sustainability in his artworks and [then there is this piece which is] really interactive about earthquakes as well. What I wanted to talk about was how art is a really good medium to share insight and information ... it is really easy to show emotion and in turn because of this, people are more drawn to it.” (Session 4, April 27th 2019).



Image 14. An art piece by Juan Geuer on display at the Ottawa Art Gallery representing how art and science can be combined to create exciting educational opportunities around DRR and climate change. (Art installation credit: Juan Geuer, Loom Drum, 1986-1992, Steel frame, Plexiglas, various materials, motor, lights, Twelve volt circuits, map, lens system, Carbon + Light: Juan Geuer's Luminous Precision at the Ottawa Art Gallery).

Finally, we interpreted art as a collective and collaborative process enabling stakeholders to hear from the community and for citizens to communicate with each other, thereby promoting inclusive opportunities in DRR and climate change. Interactive art can enable social learning and create influence in DRR and climate change through opportunities for participation. This can help share knowledge and educate society using a fun, learn-by-doing, strategy.

Discussion

The purpose of our Photovoice project was to explore youth perspectives on youth engagement in DRR and climate change, while connecting with stakeholders in the field. Our four calls to action can support DRR and climate change decision-making, policy, and practice.

Our first call to action is to include a diverse range of youth as key stakeholders in DRR and climate change strategies by harnessing their assets and building youth-adult partnerships. Youth are not a homogeneous population; stakeholders should strive to create opportunities for a diverse group of youth to engage and collaborate on DRR and climate change decision-making, policy, and practice. These opportunities should be meaningful and avoid using the often applied top-down, patronizing, or tokenistic youth engagement strategies by adults, by asking youth how they want to participate (Bessant, 2004; Vromen, 2003). Additionally, these opportunities should use a youth development approach in which youth contribute to their communities and practice, while learning and growing in return (Cox et al., 2019; Pickering, Guy, et al., 2021).

To support stakeholders in creating opportunities, and thus support the Sendai Framework, Paris Agreement, and SDGs in engaging in inclusive practices, stakeholders can also apply an asset-based approach. Morgan and Ziglio (2007) developed the asset model as a way to systematically apply an asset-based approach to population health issues and challenge the dominant deficit model. Asset models highlight capabilities and needs of people, environments, and contexts to tackle social inequities. Given that all three global agreements emphasize the importance of an equity lens, an asset-based approach would have stakeholders ask what capabilities youth have to support DRR and climate change—rather than focusing on their needs. In this way, and in consultation with youth, stakeholders can apply a bottom-up, youth-centred strategy to harness the power of youth to create change in these fields.

Youth engagement through volunteerism or work in DRR and climate change benefits society by contributing to social integration and cohesion (Reynolds, 2010), thus building social capital (Aldrich, 2015). The act of participation is also protective to the individual. There are many benefits to youth engagement in DRR, for instance, youth engagement in the creation and

implementation of DRR initiatives can help youth learn about disaster preparedness while fostering teamwork, leadership, and social skills (Mahoney et al., 2003). In turn, youth represent a potential resource to help improve disaster preparedness in households and communities—and minimize the impacts when a disaster occurs.

Opportunities for youth participation should include learning opportunities, as the learning process builds confidence and skills, with long-term payout (Head, 2011). An example of a good practice supporting the SDGs and youth participation in DRR and climate change using learning processes is the Enhanced Rural Resilience in Yemen (ERRY) project (United Nations Department of Economic and Social Affairs, 2020). This project helped women and youth establish their own solar-powered micro-businesses by providing them with learning experiences on sustainable energy and entrepreneurship, as well as providing a stable income. In turn, the women and youth businesses supported the community and the environment by investing in local, self-reliant, sustainable energy sources to power their communities.

It is important to set deliberate and achievable goals to engage with hard-to-reach youth, for example youth living in poverty, or refugees. Youth who already have knowledge, communication and organizational skills are more likely to engage in opportunities; this is an ongoing challenge for stakeholders in DRR and climate change, policy, and practice (Head, 2011). As a population historically excluded from participation in policy and practice, youth are valuable assets to reach hard-to-reach youth and other populations. The Student Volunteer Army is an example of a DRR initiative engaging hard-to-read youth. This initiative created opportunities for youth volunteers who are refugees to help with post-earthquake clean up after the earthquakes in Canterbury, New Zealand (Carlton, 2015).

A common thread across our calls to action is the importance of youth engagement in these improvements. Youth want opportunities for engagement; however, there is a gap in what we can do, what resources we have access to, and what we want to do – this is called a civic empowerment gap (Levinson, 2010). To reduce this gap, the power and resources of adults must be leveraged using youth-adult partnerships. Youth-adult partnership (Y-AP) is both a developmental process and a community practice, in which multiple generations collaborate to address common issues (Camino, 2000; Zeldin et al., 2012). Y-AP is a fundamental strategy to engage youth in DRR and climate change initiatives, mobilize assets, and promote positive youth development. Zeldin and colleagues (2012) identified authentic decision making, mentorship, reciprocity, and community connectedness as central to Y-AP.

Youth are perceived as having weak political influence — not enough to make a difference in government decision-making (Frank, 2006). In the context of DRR and climate change, we want to see more Y-AP between politicians and youth. We would like to use the power that politicians have over policies, laws, and practice to create change that reflects diverse voices, including those of youth.

Y-AP between youth and politicians would be beneficial in reducing the ecological footprint of the fashion industry. Pre- and post-consumer, the fashion industry has a large ecological footprint (Dhir, 2021; Peters et al., 2021). Peters et al. (2021) found that most of the impacts on climate change stemming from the fashion industry occurred pre-consumer, in the clothing production and dissemination stages. We want to work with politicians to address SDG number 12, “responsible consumption and production,” by reducing the fashion industry’s ecological footprint and switching to renewable energy (United Nations, 2015b).

Our second call to action is to use social media as a tool for social change with a direct impact in real life. Social media is a strong tool to complement or initiate community engagement in disaster preparedness initiatives, thereby supporting an all-of-society approach to DRR (UNDRR, 2015). It is an effective tool for DRR and climate change education, awareness, and social change—but only if there is a direct impact offline. Youth are an important stakeholder with widespread expertise on social media, as well as trust in social media for news and informative learning compared to news media. Gatekeeping theory (Shoemaker, 2009) views people who decide what information gets messaged to society as gatekeepers. We view the select few with gatekeeping power in news media as biased and holding too much power for such a small number of people. Social media helps to distribute the gatekeeping power more evenly, allowing our social networks to become additional gatekeepers (Bro & Wallberg, 2014).

Social media use needs to be informative, not performative, or risk losing societal trust. Performative activism, also known as performative allyship, occurs when members of nonmarginalized populations say they stand in solidarity with a marginalized population, but without follow through (Kalina, 2020). To dismantle oppressive societal power structures in DRR and climate change activism, antiracist and decolonial allies must avoid performative allyship. Performative allyship includes empty gestures (i.e., saying something with limited to no effect) (Blair, 2021). To support informative activism and solidarity, Blair (2021) suggests the following ethical approaches to solidarity and empty gestures: 1) Actions, defined by persons oppressed by societal power systems, are meant to dismantle oppressive power structures; 2) do research and learning prior to taking action; and 3) attention is on the act of disruption and not the person taking action. These meaningful actions can look like research, critical thinking,

reflection, learning and unlearning, donating, and following Black, Indigenous, and People of Colour (BIPOC) and Indigenous leadership.

Our third call to action is to improve education curricula using multifaceted strategies to teach disaster preparedness and support community resilience at the individual, familial, and community levels. Current education on DRR is insufficient in Canada. In Ontario, we currently do not have a curriculum focused on DRR and community resilience. In the Ontario curriculum, grade nine geography has a dedicated disaster unit (Ontario Ministry of Education, 2018). Despite sections B1.1 to B1.5 being dedicated to the physical environment and human activities, most of the focus is on risk, with minimal reference to the need for minimizing disaster impacts and disaster preparedness. We would like to see the following multifaceted curricular and extracurricular changes to improve disaster education in Ontario: 1) Curricular content on disaster preparedness and risk reduction; 2) more integration of DRR and climate change across different disciplines (e.g., math questions, English assignments, disaster management as a potential career path in Civics and Careers courses, etc.); 3) disaster and climate change course electives with student presentations and class projects on local disaster risks and preparedness, hands-on learning, and high quality teaching; and 4) extracurricular events, such as guest speakers, half-day school assemblies, disaster preparedness week, seminars and workshops, field trips, and clubs. This education is important to improve resilience to disasters, while reducing disaster risks.

Education and disaster awareness is yet another area in which youth can participate and lead. By engaging youth in knowledge creation and creating opportunities for participation in the field of DRR, we can become effective teachers and share our knowledge with those around us, including our parents (Ronan & Johnston, 2001). The literature shows that this knowledge

exchange benefits us and supports DRR in our families and the wider community (Haynes & Tanner, 2015; T. Mitchell et al., 2008; Ronan et al., 2015; Tanner, 2010; UNICEF, 2012). This makes youth prime candidates for community leaders on disaster prevention/mitigation, preparedness, response, and recovery.

Youth-led conferences are an example of an institutional space where youth can lead knowledge translation activities with confidence and gain leadership experience, and thus positive youth development (Larson, 2006; Lerner et al., 2011; Maton, 2008). For example, in 2015, 200 young professionals and students from across the world collaborated in the Children and Youth Forum at the Third UN World Conference on Disaster Risk Reduction (WCDRR) (Cumiskey et al., 2015). Youth were brought together by a youth-led organizing committee to exchange ideas on reducing disaster risks, building resilient communities, and advocating for the inclusion of youth priorities within the Sendai Framework. The participants said the conference was an excellent way to network with other young people and experts, build knowledge, and contribute to change (Cumiskey et al., 2015). Attendees emphasized the need for youth mentoring programs to continue post-conference, which emphasizes our own recommendation for Y-AP. These former participants, or any young person, could organize similar forums and conferences at local, provincial/territorial or national levels for youth.

Our fourth call to action is to improve accessibility of DRR and climate change communication and knowledge translation. Inclusive and universally accessible communication and language is a human right (United Nations, 2006), this includes disaster information sharing. Article 11 in the Convention on the Rights of Persons with Disabilities (CRPD) stipulates that states take all necessary steps to ensure the safety of persons with disabilities in situations of risk, such as disasters (United Nations, 2006).

Inclusion is a guiding principle of DRR through promotion of empowerment and accessible and non-discriminatory all-of-society participation to achieve widespread engagement (UNDRR, 2015). In addition to accessible communication, stakeholders should also work to provide accessible DRR strategies. For example, not everyone has access to the resources (e.g., time, money, education) to create a 72-hour preparedness kit (Pickering et al., 2018). Populations also have the right to accessible emergency services through voice to text and T9-1-1. To create accessible DRR strategies, and inclusive communication campaigns, persons with disabilities, persons experiencing homelessness, persons living in poverty, youth, and other populations historically excluded from decision-making need opportunities to contribute to decision-making, policy, practice, and research.

The arts have the power to address issues upstream and make public health programs more accessible and equitable for diverse populations (Sonke et al., 2021). Not only should messaging be accessible, it should also be digestible and palatable for citizens. Art can foster emotional responses to messaging (Lafrenière et al., 2014) and be a venue for meaningful and engaging dialogue which can influence behaviours, assumptions, and catalyze social change (Sonke et al., 2021). When combining arts and science as a strategy for knowledge translation it is important to collaborate with stakeholder groups to identify the need for an arts-based strategy, as well as what art form is most appropriate to convey the messaging (Archibald et al., 2018). Community art, art freely available in community spaces, can promote health, social cohesion, and community resilience post disasters (Baumann et al., 2021). For instance, Baumann and Burke (2021) created a virtual art gallery for community members to submit artwork representing connecting during the COVID-19 pandemic and found that the act of creating art itself had mental health and social benefits.

CBPR, such as Photovoice, is an effective tool to engage populations historically excluded from decision-making in deep, meaningful conversation, and contributions (Israel et al., 2012). As our Photovoice study demonstrated, we combined a variety of art mediums (i.e., photography, interactive art displays, lino block art, Word Art, and water colour painting) to express ourselves on emotional and complex topics in DRR and climate change. Though we intended to only use photography, early in the project we began expressing ourselves using multiple art forms, triggering powerful engagement, and thus inspiring our theme ‘art as a tool for knowledge translation.’ This freedom of self-expression enabled strong social connection internally (between our research team) and externally (with community partners and stakeholders), thereby promoting passionate dialogue and creative problem-solving, and sustainable opportunities for an all-of-society approach to DRR and climate change.

Limitations

It is important to consider the findings of this study within the context of its limitations. While diverse in ethnicity, the small group all identified as female, were from the same city, and do well in academics. All participants had previous experience participating in a youth program focused on DRR; they were familiar with the researchers through this program. This recruitment limited the breadth of opinions captured in this study, but it provided a strong foundation for rapport and engagement from the beginning of the project. Future studies are needed to include a diverse collection of youth voices on youth participation in DRR and reinforce further calls to action.

Next Steps

Strong partnerships were formed between researchers, participants, and community partners during this study. We continue to collaborate through the EnRiCH Youth Research

Team with the Canadian Red Cross to translate the knowledge gleaned from our study into action in DRR.

Conclusion

Our study highlights the power of youth to design and implement inclusive, holistic, and multifaceted DRR and climate change strategies. Our Photovoice project provided an opportunity for high school and university students to collaborate and add our voices to DRR and climate change research. Youth are important stakeholders for inclusive, all-of-society participation – an integral pillar of the SDGs, Paris Agreement, and Sendai Framework – to reduce disaster risks and the effects of climate change. Building youth-adult partnerships and protecting inclusive policies and practice, youth, adults, and society can work together to change the current climate and disaster profile —and promote community resilience.

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References

- Aldrich, D. P. (2015). Social capital in post disaster recovery: Strong networks and communities create a resilient East Asian community. In D. P. Aldrich, S. Oum, & Y. Sawada (Eds.), *Resilience and recovery in Asian disasters: Community ties, market mechanisms, and governance* (pp. 19–34). Springer Japan. https://doi.org/10.1007/978-4-431-55022-8_2
- Amri, A., Haynes, K., Bird, D. K., & Ronan, K. (2018). Bridging the divide between studies on disaster risk reduction education and child-centred disaster risk reduction: A critical review. *Children's Geographies, 16*(3), 239–251.
<https://doi.org/10.1080/14733285.2017.1358448>
- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promotion International, 11*(1), 11–18. <https://academic.oup.com/heapro>
- Archibald, M. M., Hartling, L., Ali, S., Caine, V., & Scott, S. D. (2018). Developing “My Asthma Diary”: A process exemplar of a patient-driven arts-based knowledge translation tool. *BMC Pediatrics, 18*(1), 186–196. <https://doi.org/10.1186/s12887-018-1155-2>
- Bartlett, S. (2008). Climate change and urban children: Impacts and implications for adaptation in low- and middle-income countries. *Environment & Urbanization, 20*(2), 501–519.
<https://doi.org/10.1177/0956247808096125>
- Baumann, S. E., & Burke, J. G. (2021). Creating community during COVID-19: A virtual art gallery to address social isolation during a pandemic. *Health Promotion Practice, 9*–11.
<https://doi.org/10.1177/15248399211064638>
- Baumann, S. E., Merante, M. M., Sylvain-Holmgren, M.-A., & Burke, J. G. (2021).

- Exploring community art and its role in promoting health, social cohesion, and community resilience in the aftermath of the 2015 Nepal earthquake. *Health Promotion Practice*, 22(1_suppl), 111S-121S. <https://doi.org/10.1177/1524839921996083>
- Bessant, J. (2004). Mixed messages: Youth participation and democratic practice. *Australian Journal of Political Science*, 39(2), 387–404.
<https://doi.org/10.1080/1036114042000238573>
- Blair, K. (2021). Empty gestures: Performative utterances and allyship. *Journal of Dramatic Theory and Criticism*, 35(2), 53–73. <https://doi.org/10.1353/dtc.2021.0005>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597.
<https://doi.org/10.1080/2159676X.2019.1628806>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE Publications.
- Bro, P., & Wallberg, F. (2014). Digital gatekeeping: News media versus social media. *Digital Journalism*, 2(3), 446–454. <https://doi.org/10.1080/21670811.2014.895507>
- Camino, L. A. (2000). Youth-Adult Partnerships: Entering new territory in community work and research. *Applied Developmental Science*, 4(sup1), 11–20.
https://doi.org/10.1207/S1532480XADS04Suppl_2
- Carlton, S. (2015). Reprint of: Connecting, belonging: Volunteering, wellbeing and leadership among refugee youth. *International Journal of Disaster Risk Reduction*, 14, 160–167.
<https://doi.org/10.1016/j.ijdr.2015.10.010>
- Cox, R. S., Hill, T. T., Plush, T., Heykoop, C., & Tremblay, C. (2019). More than a checkbox: Engaging youth in disaster risk reduction and resilience in Canada. *Natural Hazards*, 98(1), 213–227. <https://doi.org/10.1007/s11069-018-3509-3>

- Cumiskey, L., Hoang, T., Suzuki, S., Pettigrew, C., & Herrgård, M. M. (2015). Youth participation at the Third UN World Conference on Disaster Risk Reduction. *International Journal of Disaster Risk Science*, 6(2), 150–163.
<https://doi.org/10.1007/s13753-015-0054-5>
- Dhir, Y. J. (2021). Hazards of fashion and textile waste: Approaches for effective waste management. In R. Nayak & A. Patnaik (Eds.), *Waste Management in the Fashion and Textile Industries* (pp. 31–58). Woodhead Publishing. <https://doi.org/10.1016/B978-0-12-818758-6.00002-8>
- Fernandez, G., & Shaw, R. (2015). Youth participation in disaster risk reduction through science clubs in the Philippines. *Disasters*, 39(2), 279–294. <https://doi.org/10.1111/disa.12100>
- Frank, K. (2006). The potential of youth participation in planning. *Journal of Planning Literature*, 20(4), 351–371. <https://doi.org/10.1177/0885412205286016>
- Handmer, J., Stevance, A.-S., Rickards, L., & Nalau, J. (2019). *Policy brief: Achieving risk reduction across Sendai, Paris, and the SDGs*. https://council.science/wp-content/uploads/2019/05/ISC_Achieving-Risk-Reduction-Across-Sendai-Paris-and-the-SDGs_May-2019.pdf
- Haynes, K., & Tanner, T. (2015). Empowering young people and strengthening resilience: Youth-centred Participatory Video as a tool for climate change adaptation and disaster risk reduction. *Children's Geographies*, 13(3), 357–371.
<https://doi.org/10.1080/14733285.2013.848599>
- Head, B. W. (2011). Why not ask them? Mapping and promoting youth participation. *Children and Youth Services Review*, 33(4), 541–547.
<https://doi.org/10.1016/j.childyouth.2010.05.015>

- Israel, B. A., Eng, E., Schulz, A. J., & Parker, E. A. (Eds.). (2012). *Methods for community-based participatory research for health* (2nd ed.). Jossey-Bass.
- Kalina, P. (2020). Performative allyship. *Technium Social Sciences Journal*, *11*, 478–481.
<https://doi.org/10.47577/tssj.v11i1.1518>
- Lafrenière, D., Hurlimann, T., Menuz, V., & Godard, B. (2014). Evaluation of a cartoon-based knowledge dissemination intervention on scientific and ethical challenges raised by nutrigenomics/nutrigenetics research. *Evaluation and Program Planning*, *46*, 103–114.
<https://doi.org/10.1016/j.evalprogplan.2014.06.002>
- Larson, R. (2006). Positive youth development, willful adolescents, and mentoring. *Journal of Community Psychology*, *34*(6), 677–689. <https://doi.org/10.1002/jcop.20123>
- Latz, A. O. (2017). *Photovoice research in education and beyond: A practical guide from theory to exhibition*. Routledge.
- Lerner, R., Lerner, J., Lewin-Bizan, S., Bowers, E., Boyd, M., Mueller, M. K., Schmid, K., & Napolitano, C. (2011). Positive Youth Development: Processes, programs, and problematics. *Journal of Youth Development*, *6*(3), 38–62.
<https://doi.org/10.5195/JYD.2011.174>
- Levinson, M. (2010). The civic empowerment gap: Defining the problem and locating solutions. In L. R. Sherrod, J. Torney-Purta, & C. A. Flanagan (Eds.), *Handbook of Research on Civic Engagement in Youth* (pp. 331–361). John Wiley & Sons, Inc.
<https://doi.org/10.1002/9780470767603.ch13>
- Mahoney, J. L., Cairns, B. D., & Farmer, T. W. (2003). Promoting interpersonal competence and educational success through extracurricular activity participation. *Journal of Educational Psychology*, *95*(2), 409–418. <https://doi.org/10.1037/0022-0663.95.2.409>

- Maton, K. I. (2008). Empowering community settings: Agents of individual development, community betterment, and positive social change. *American Journal of Community Psychology, 41*(1), 4–21. <https://doi.org/10.1007/s10464-007-9148-6>
- Mitchell, T., Haynes, K., Hall, N., Choong, W., & Oven, K. (2008). The roles of children and youth in communicating disaster risk. *Children, Youth and Environments, 18*(1), 254–279. <https://doi.org/10.7721/chilyoutenvi.18.1.0254>
- Morgan, A., & Ziglio, E. (2007). Revitalising the evidence base for public health: An assets model. *Promotion & Education, 14*(2), 17–22.
<https://doi.org/10.1177/10253823070140020701x>
- Ontario Ministry of Education. (2018). *The Ontario curriculum—Grades 9 and 10: Canadian and world studies*.
<http://www.edu.gov.on.ca/eng/curriculum/secondary/canworld910curr2018.pdf>
- Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience — An introduction. *Children, Youth and Environments, 18*(1), 1–29.
<http://www.jstor.org/stable/10.7721/chilyoutenvi.18.1.0001>
- Peters, G., Li, M., & Lenzen, M. (2021). The need to decelerate fast fashion in a hot climate—A global sustainability perspective on the garment industry. *Journal of Cleaner Production, 295*. <https://doi.org/10.1016/j.jclepro.2021.126390>
- Pickering, C. J., Al-Baldawi, Z., Amany, R. A., McVean, L., Adan, M., Baker, L., Al-Baldawi, Z., & O’Sullivan, T. (2022). Photovoice and Instagram as strategies for youth engagement in disaster risk reduction. *Qualitative Health Research, 32*(12), 1897–1906.
<https://doi.org/10.1177/10497323221116462>

- Pickering, C. J., Guy, E., Al-Baldawi, Z., McVean, L., Sargent, S., & O’Sullivan, T. (2021). “I believe this team will change how society views youth in disasters”: The EnRiCH Youth Research Team: A youth-led community-based disaster risk reduction program in Ottawa, Canada. *Canadian Journal of Public Health, 112*(5), 957–964.
<https://doi.org/10.17269/s41997-021-00486-8>
- Pickering, C. J., O’Sullivan, T. L., Morris, A., Mark, C., McQuirk, D., Chan, E. Y., Guy, E., Chan, G. K., Reddin, K., Throp, R., Tsuzuki, S., Yeung, T., & Murray, V. (2018). The promotion of ‘grab bags’ as a disaster risk reduction strategy. *PLoS Currents, 10*.
<https://doi.org/10.1371/currents.dis.223ac4322834aa0bb0d6824ee424e7f8>
- Preparing our Home. (n.d.). *Preparing Our Home: Enabling Indigenous youth to reach their potential in becoming emergency preparedness leaders in their communities*. Preparing Our Home. <http://preparingourhome.ca/>
- Reynolds, T. (2010). Editorial introduction: Young people, social capital and ethnic identity. *Ethnic and Racial Studies, 33*(5), 749–760. <https://doi.org/10.1080/01419870903325644>
- Ronan, & Johnston, D. M. (2001). Correlates of hazard education programs for youth. *Risk Analysis, 21*(6), 1055–1064. <https://doi.org/10.1111/0272-4332.216174>
- Ronan, K., Alisic, E., Towers, B., Johnson, V., & Johnston, D. (2015). Disaster preparedness for children and families: A critical review. *Current Psychiatry Reports, 17*(7), 1–9.
<https://doi.org/10.1007/s11920-015-0589-6>
- Shaw, R. (2012). *Community-based disaster risk reduction*. Emerald.
- Shoemaker, P. J. (2009). *Gatekeeping theory*. Routledge.
<https://doi.org/10.4324/9780203931653>
- Smith, B., & McGannon, K. R. (2018). Developing rigor in qualitative research: Problems and

- opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*, 11(1), 101–121. <https://doi.org/10.1080/1750984X.2017.1317357>
- Sonke, J., Rodríguez, L., & Valerio-Shewmaker, M. A. (2021). Toward a culture of health in the United States: Introducing the HPP Arts in Public Health Supplement. *Health Promotion Practice*, 22(1_suppl), 5S-7S. <https://doi.org/10.1177/15248399211002512>
- Tanner, T. (2010). Shifting the narrative: Child-led responses to climate change and disasters in El Salvador and the Philippines. *Children and Society*, 24(4), 339–351. Scopus. <https://doi.org/10.1111/j.1099-0860.2010.00316.x>
- Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry*, 16(10), 837–851. <https://doi.org/10.1177/1077800410383121>
- UN General Assembly. (1989). *Convention on the rights of the child*. <https://www.ohchr.org/en/professionalinterest/pages/crc.aspx>
- UNDRR. (2015). *Sendai Framework for Disaster Risk Reduction*. http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf
- UNICEF. (2012). *UNICEF and child-centred disaster risk reduction*. <http://www.unicefinemergencies.com/downloads/eresource/docs/DRR/Child-centred%20DRR.pdf>
- United Nations. (2006). *Convention on the rights of persons with disabilities*. <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/convention-on-the-rights-of-persons-with-disabilities-2.html>

United Nations. (2015a). *Paris Agreement*.

https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

United Nations. (2015b). *Sustainable Development Goals*. <https://sdgs.un.org/goals>

United Nations Department of Economic and Social Affairs. (2020). *SDG good practices: A compilation of success stories and lessons learned in SDG implementation*.

<https://sdgs.un.org/publications/sdg-good-practices-2020>

United Nations Major Group for Children and Youth, Disaster Risk Reduction Working Group [UNMGCY]. (2016). *Young scientists adopt roadmap for implementation of Sendai Framework*. <https://www.preventionweb.net/news/view/48688>

United Nations Major Group for Children and Youth. (n.d.). *Major Group for Children and Youth*. UNMGCY. <https://www.unmgcy.org/drr>

Vromen, A. (2003). "People try to put us down ...": Participatory citizenship of "Generation X." *Australian Journal of Political Science*, 38(1), 79–99.

<https://doi.org/10.1080/1036114032000056260>

Wang, C. C. (1999). Photovoice: A participatory action research strategy applied to women's health. *Journal of Women's Health*, 8(2), 185–192.

<https://doi.org/10.1089/jwh.1999.8.185>

Wang, C. C., & Burris, M. A. (1994). Empowerment through photo novella: Portraits of participation. *Health Education & Behavior*, 21(2), 171–186.

<https://doi.org/10.1177/109019819402100204>

- Wang, C. C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3), 369–387.
<https://doi.org/10.1177/109019819702400309>
- Witvorapong, N., Muttarak, R., & Pothisiri, W. (2015). Social participation and disaster risk reduction behaviors in tsunami prone areas. *PLoS ONE, 10*(7).
<https://doi.org/10.1371/journal.pone.0130862>
- Yi-Frazier, J. P., Cochrane, K., Mitrovich, C., Pascual, M., Buscaino, E., Eaton, L., Panlasigui, N., Clopp, B., & Malik, F. (2015). Using Instagram as a modified application of Photovoice for storytelling and sharing in adolescents with type 1 diabetes. *Qualitative Health Research, 25*(10), 1372–1382. <https://doi.org/10.1177/1049732315583282>
- Zeldin, S., Christens, B. D., & Powers, J. L. (2012). The psychology and practice of youth-adult partnership: Bridging generations for youth development and community change. *American Journal of Community Psychology, 51*(3–4), 385–397.
<https://doi.org/10.1007/s10464-012-9558-y>

Chapter 7: Results (Article #3)

Insights on the COVID-19 Pandemic: Youth Engagement Through Photovoice

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Abstract

Youth engagement in disaster risk reduction is a growing area of research, practice and policy. The COVID-19 pandemic highlighted the need for improved opportunities for youth to participate and have their voices heard. Our Photovoice study explores experiences, perceptions, and insights of youth regarding the COVID-19 pandemic, while providing an opportunity for youth to participate in disaster risk reduction and contribute to resilient communities. We conducted nine focus groups from February 2019 to August 2020 with four teenaged youth; we analyzed the data using reflexive thematic analysis and hosted two virtual Photovoice exhibitions. Our results explore youth experiences of public health measures, impacts of the pandemic, pandemic magnification of social inequities, and the power of youth to create change. We provide six calls to action, focusing on a holistic, upstream, all-of-society approach for stakeholders to collaborate with youth in creating change on complex social justice issues to support COVID-19 recovery.

Keywords: COVID-19, disaster, youth, youth participation, Photovoice, community resilience

1. Introduction

The Sendai Framework for Disaster Risk Reduction (2015) is a global framework to reduce vulnerability to disasters; it emphasizes preparedness and strategies to enable disaster recovery and foster resilience (UNDRR, 2015). One recommendation from the Sendai Framework is to strengthen disaster preparedness among high-risk populations, through all-of-society engagement and partnership (UNDRR, 2015). This requires empowerment through inclusive, non-discriminatory participation and community engagement (UNDRR, 2015; Witvorapong et al., 2015). Sustainability of disaster risk reduction (DRR) strategies depends on partnership and ownership of local communities (Shaw, 2012); this can be facilitated through action research that enables co-creation of knowledge by individuals who are experts on their own lived experiences.

Similarly, the *United Nations (UN) Research Roadmap for the COVID-19 Recovery* emphasizes inclusive solutions and a human rights lens for transformative societal change, for an equitable, resilient, and sustainable future (United Nations, 2020b). Amongst the 25 research priorities, the *Roadmap* emphasizes the need to scale up knowledge mobilization, improve social cohesion and community resilience, and engage marginalized populations; these are essential for pandemic recovery.

In 2011, the United Nations Office for Disaster Risk Reduction (UNDRR) estimated over 100 million young people are affected by disasters every year (UNDRR, 2011). Research has shown that youth are at heightened risk of experiencing disaster-related negative health outcomes (e.g., injury, psychological trauma, loss, death, etc.) (Bartlett, 2008; Peek, 2008; UNDRR, 2015). The Sendai Framework recognizes children and youth as agents of change, with recommendations to promote youth leadership, and create opportunities for youth to contribute

to DRR (UNDRR, 2015). These principles align with Article 12 in the UN Convention on the Rights of the Child, which states children have the right to participate in decisions that affect them and have the right to express their views freely in everything, in any form (UN General Assembly, 1989).

Over the last decade more research and initiatives placed children at the center of DRR (Amri et al., 2018). However, given the ongoing nature of the COVID-19 pandemic, more research is needed to explore the youth experience of the pandemic—in real time—and the unique challenges stemming from this transitional life stage (Rogers et al., 2021). Hence, the purpose of this article is to present findings from a Photovoice project focused on youth engagement in the context of disasters and COVID-19. The full project spans 2019 to 2021; this timeframe includes knowledge mobilization. The purpose was the same pre-pandemic and during the pandemic (to explore youth participation in DRR), with the additional objective to explore youth experiences of the pandemic. In this article we present results related to youth experiences and perceptions of the social contexts of the COVID-19 pandemic.

2. Methods

2.1 Study Design

We used Photovoice methodology (Wang & Burris, 1994) to foster participation and co-creation of knowledge on youth experiences and insights on the COVID-19 pandemic.

Photovoice is a form of community-based participatory research (CBPR) that uses pictures and descriptions to explore topics of importance to participants and their communities (Latz, 2017; Wang & Burris, 1994). Consistent with traditional approaches to Photovoice, participants are considered experts of their own lives, and the research approach empowers critical thinking and problem solving (Budig et al., 2018; Graham et al., 2013). As such, participants are considered

co-researchers and are involved in every aspect of the research project —from project design to implementation (Latz, 2017).

2.2 Student Context and Participants

The co-researchers in our study are members of the EnRiCH Youth Research Team (EnRiCH YRT); a youth-led, community-based initiative in which youth aged 13 – 30 years collaborate on DRR research, knowledge mobilization, and community-based projects (Pickering, Guy, et al., 2021). The request for the Photovoice study came directly from the youth members of the EnRiCH YRT. Of the 24 youth members of the team, four elected to participate. We (the co-researchers) participated in the conception of the research, chose the research topic (i.e., youth engagement in DRR), designed Photovoice assignments for each session, contributed to data analysis, designed and assembled the exhibitions.

This study was approved by the University of Ottawa Research Ethics Board and consent to participate in the study was obtained from youth co-researchers and parents prior to the first session. Our study took place in Ottawa, Ontario, Canada. Ottawa is the capital of Canada with a population of approximately 1.4 million people (City of Ottawa, 2022). English and French are both widely spoken languages, given the close geographic and economic ties with Gatineau, Quebec. Our team lives in various neighbourhoods scattered across the city, and into Quebec. Our Photovoice group was created from the EnRiCH YRT, a youth mentoring program focused on DRR (Pickering, Guy, et al., 2021).

From February 2019 to June 2021, four of us participated as youth co-researchers in this study; at the start of the project we were between the ages of 14 – 16 years. The remaining four members of our team include undergraduate and graduate students and a professor. Of the eight

members of our Photovoice research team, four identify as non-white, three of whom are youth co-researchers.

At the time of the COVID-19 focus groups from June to August 2020, pandemic measures in our region were slowly being relaxed with declining cases leading out of the first wave of the pandemic. On June 12th 2020, Ottawa went into “Stage 2 Reopening” with re-opening of malls and stores inside buildings; outdoor sports fields, ball diamonds, and splash pads; and barber shops and salons (CTV News Ottawa, 2021). By July 17th 2020, Ottawa entered “Stage 3 Reopening” with the return of dine-in options at restaurants, indoor gyms, and indoor movies. Mitigation measures included plexiglass barriers in businesses, mandatory masks in public indoor spaces (which became a bylaw on July 15th 2020), limited gathering capacities, strict social bubbles, social distancing of six feet or more, community testing sites, travel restrictions, and COVID-19 isolation periods. By the end of August, cases started to rise again, eventually leading to more shutdowns and restrictions, with Ottawa entering the second wave of the pandemic in mid-September that year.

2.3 Data Collection and Analysis

Over a 16-month period, our team hosted nine focus group sessions: six in-person sessions (from February to June 2019) and three virtual sessions in 2020 (between June and August). Each session lasted two hours and was audio recorded. Every session was attended by four youth co-researchers, three research assistants, and the lab director. In this article we present the results from the three virtual sessions, which focused on the COVID-19 pandemic. Data from the 2019 focus group sessions is published separately.

Our Photovoice protocol was similar to Wang and Burris (1994), and we used Instagram inspired by the work of Yi-Frazier and colleagues (Yi-Frazier et al., 2015). The youth co-

researchers used cell phones to take pictures, with the option of borrowing a digital camera from our lab (one participant used the digital camera).

Our Photovoice Research Protocol:

- 1) Identify objectives and intended outcomes;
- 2) Submit application for ethics approval;
- 3) Recruitment and information session;
- 4) Focus group #1: Facilitated discussion and explanation of first Photovoice assignment;
- 5) Take pictures between focus group sessions;
- 6) Transcribe audio recordings and create initial codes between focus group meetings;
- 7) Focus groups #2 – 9: Member check codes from previous session, present pictures, group discussions, decide next assignment;
- 8) Identify themes;
- 9) Refine themes through member reflections;
- 10) Plan Photovoice exhibitions with community partners; and
- 11) Host Photovoice exhibitions.

We used reflexive thematic analysis (Braun & Clarke, 2019) to analyze the data. After transcribing all focus group sessions, the undergraduate and graduate students read through all transcripts and created a set of initial codes using the comment box in Microsoft Word to select a section of text and tag it with a code label. We also used PowerPoint to facilitate remote collaborative analysis throughout the pandemic while transforming codes into themes. Consistent with Braun and Clarke's (2022) work on reflexive thematic analysis, the purpose of our use of multiple coders was not to reach consensus on every code. Rather, it was to collaboratively gain

richer and more refined insights into the data. Consistent with Wang and Burris (1997), we further refined these codes allowing space for member reflections (Braun & Clarke, 2022; Smith & McGannon, 2018; Tracy, 2010) with the youth co-researchers, turned the codes into themes and confirmed them with the team.

2.4 Photovoice Exhibitions

We hosted two Photovoice exhibitions in 2021 to showcase our work and connect with community stakeholders. The first exhibition was an online gallery on Instagram. This exhibition includes themes from all our focus group sessions and is available at the following Instagram handle: @yrtpotovoiceproject. The second exhibition occurred at the *The Disaster and Resilience Summit 2021* in a virtual workshop format; our full team, along with community partners from The Canadian Red Cross, presented a selection of results to attendees. Our workshop included discussions with attendees about how to implement youth engagement in their respective organizations.

3. Results

In this section, we present our results pertaining to the COVID-19 pandemic; written from the perspectives of the high school students on our team —therefore the terms ‘we’ and ‘our’ represent the voices of the high school students. Our results are divided into four categories: 1) experiences with COVID-19 measures during the first wave; 2) impacts of COVID-19 public health measures; 3) pandemic magnification of social inequities; and 4) the power of youth. Figure 1 is a conceptual model summarizing the pandemic themes from our discussions.

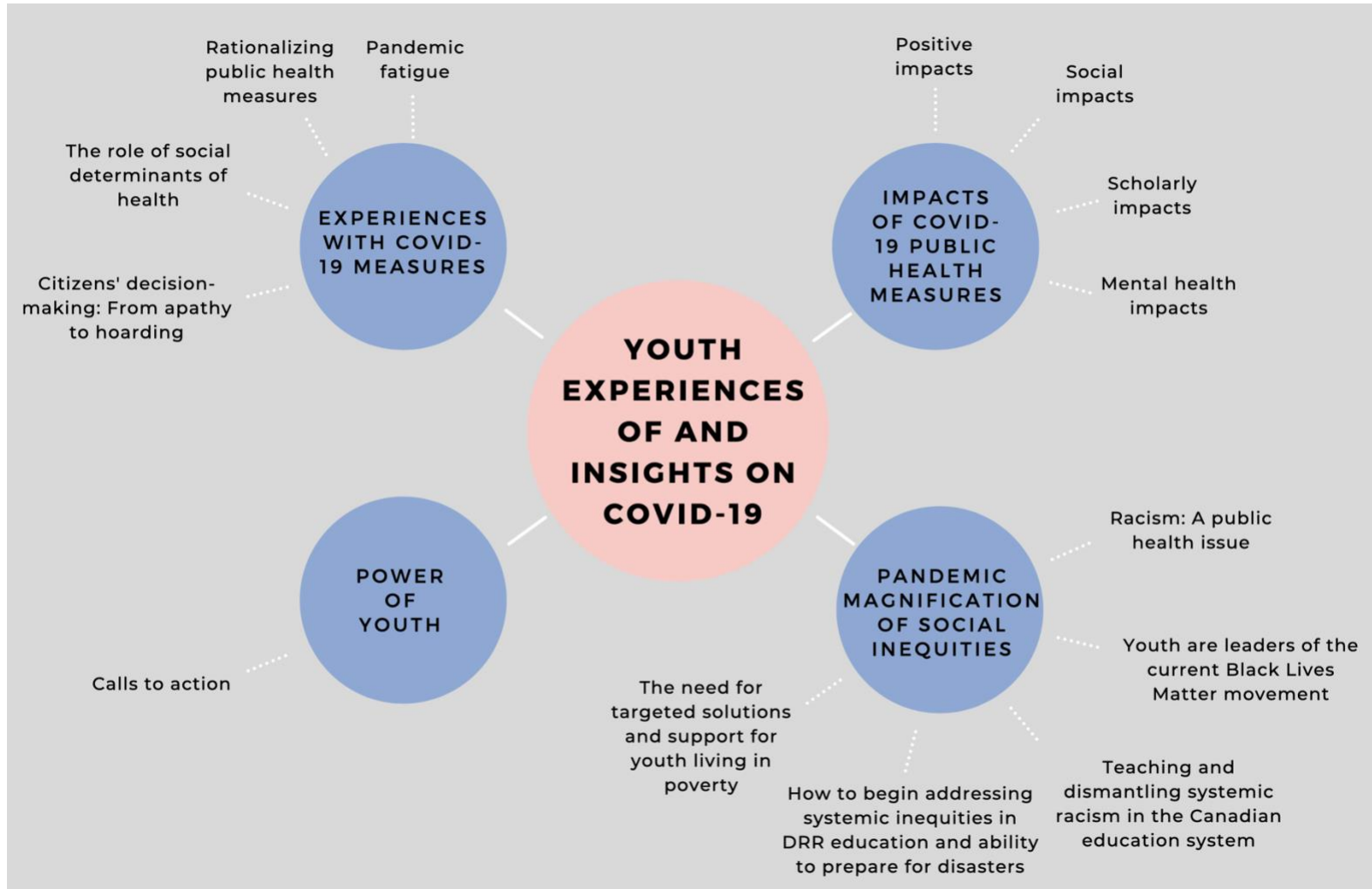


Figure 1. COVID-19 themes from the first wave of the pandemic.

3.1 Experiences with COVID-19 Measures

We generated four themes with regards to youth perceptions and observations of COVID-19 response measures: 1) citizens' decision-making: from apathy to hoarding; 2) the role of social determinants of health; 3) rationalizing public health measures; and 4) pandemic fatigue. We talked about our perceptions of the pandemic and decision-making around public health measures; we expressed concern about lack of public compliance with the restrictions and how this reflects different attitudes toward the pandemic, social justice, and governmental regulation.

3.1.1. Citizens' Decision-making: From Apathy to Hoarding

We believe many people are apathetic about social justice issues, climate change, and disasters until they are personally affected by them:

"...I saw this Tik Tok about a girl not caring about COVID and staying quarantined and [she] had gone out despite the warning, and accidentally ended up passing COVID to her grandma ... she sent out that warning to a lot of people ... there were a lot more people that started to actually care and realize it as an actual risk..." (Session 7, June 17th 2020).

Apathy and lack of awareness of risk were apparent during the COVID-19 pandemic. Despite continuous public health messaging, some citizens continued to flout COVID-19 measures, posting social gatherings or mask-less interactions on social media. To combat apathy and ill-informed decision-making in a crisis, we believe there is a need for better education on disaster preparedness: *"That whole hoarding craze was harmful because groups of people that were actually at risk of COVID-19 were not able to access resources — the food that they needed."* (Session 7, June 17th 2020).

For instance, better education and messaging about disaster preparedness could have prevented the panic buying and toilet paper hoarding that occurred at the start of the pandemic:

"... you cannot prepare completely for a pandemic, but I feel like a lot of people at the start went about it in a totally wrong way, like the whole toilet paper thing... Educating people on how to properly prepare themselves [is very important]..." (Session 7, June 17th 2020).

3.1.2. The Role of Social Determinants of Health

We recognize the impacts of COVID-19 disproportionately affect certain populations:

“...COVID-19 is obviously hitting certain populations harder than others, for example in the U.S., there are Indigenous groups, [like the] Navaho Nation, and they are getting hit the worst, even though they are a small population. When we are talking about COVID-19, we should be looking at it from a diverse lens” (Session 7, June 17th 2020).

When discussing how to respond and recover from the pandemic, it is important to include populations at heightened risk and consider the social determinants of health using a public health lens. We understand how socioeconomic status and social location influence the way a person experiences and navigates this pandemic. For example, one team member reflected on how she can stay safe at home, while many others do not have that option: *“... I live in a single home, and I do not have to go to work... We have to look at economic differences and how they affect different people and how [some] are more vulnerable”* (Session 7, June 17th 2020).

3.1.3. Rationalizing Public Health Measures

Many of us juggle part time jobs and school. For us, social distancing was hard to rationalize because, in our roles as essential workers we were forced to be around countless strangers throughout the workday; yet during the same time period we could not see friends or family members outside of our households:

“I find it so hard to force myself to social distance working in a service job. Because it feels like I am exposed to so many people and like why not make it another and hang out with my friend? And I know that I cannot because that would mean exposing my friend to all of the people too... it feels wrong being like, I can talk to probably a thousand people a day [at my service jobs], but not one more.” (Session 8, June 24th 2020).

While we are aware public health measures stop the transmission of the virus, we feel our lived experience as essential workers contradicts the messaging:

“I have three jobs right now, and so, I am seeing so many people. Like I am genuinely probably seeing so many more people than I have ever seen before, and we are in a pandemic and it feels so weird.” (Session 8, June 24th 2020).

3.1.4. Pandemic Fatigue

In June 2020, Ottawa emerged from its first lockdown. Citizens were experiencing pandemic fatigue and they were desensitized to public health messaging —feeling less anxious about the virus and eager to move forward with their lives:

“...I read an article saying people are starting to become less anxious about COVID... Basically, they are forgetting to bring masks, forgetting about two meter distance rules, so once that [end of lockdown] hits, everyone is just like ‘oh let’s forget about PPE.’” (Session 8, June 24th 2020).

We thought of many factors that contribute to pandemic fatigue: heightened focus and emotional energy redirected towards the Black Lives Matter Movement; fewer COVID cases in Ottawa compared to bigger cities like Toronto; and the transition into summer:

“I think one of the dilemmas, is [COVID-19] is not the top priority in people’s minds at the moment. People are more focusing on the Black Lives Matter movement, which is equally, if not more, important, but then I feel like for a lot of people, there is only space to focus on one thing at a time so [COVID-19] does not take priority.” (Session 8, June 24th 2020).

We noticed how pandemic fatigue emerged so early in the pandemic. Outdoor spaces were packed with people not wearing masks:

“...This [picture was] taken at Andrew Haydon Park. I went there today. It was super empty. But unlike the day I took this photo, it was literally filled and bustling with people, and that kind of contradicts every other picture I took... people are kind of clumping up in parks and it is a bit concerning because a lot of these people are not wearing masks or taking proper social distancing measures...” (Session 8, June 24th 2020).



Image 1. Semi-empty parking lot at a park where outdoor spaces were usually packed.

Despite public health measures, we observed large groups of people entering small businesses, customers not wearing masks in food service locations, and food servers not always wearing masks either. We believe some public health measures, like plexiglass covering food service areas, are useless:

“There is a bit of entitlement going on, mostly from the customers. I say entitlement as in ‘we do not need to wear [a mask]. It is not going to hurt us.’ And then, I do not know why we [employees in my workplace] do not wear masks. Honestly, it is dumb.” (Session 8, June 24th 2020).

“...We have shields above the counter, but they do not do anything. It is basically two plexiglass squares and then everywhere else there is nothing. So they are totally useless, they just kind of hit us in the face when we are trying to [serve customers].” (Session 8, June 24th 2020).

We assume inconvenience, itchiness, discomfort, and difficulty breathing are reasons people might be struggling to follow public health masking rules. We found public health violations sparked feelings of fear around the virus: *“...when I was hanging out with my friends the other day [outdoors], we saw this group of like 50 people gathered in one place... it was kind of terrifying to see that many people not caring about the restrictions.”* (Session 8, June 24th 2020).

3.2. Impacts of COVID-19 Public Health Measures

The impacts of the pandemic span social networks, family, school, and work. While some impacts were positive, other impacts —such as adverse effects on mental health— were detrimental to our well-being. We constructed four themes from our discussions and photos about the impacts of COVID-19 measures: 1) positive impacts, 2) social impacts, 3) scholarly impacts, and 4) impacts on mental health.

3.2.1. Positive Impacts of the Pandemic

The positive impacts from the pandemic were calmness and stillness during the first lockdown and acts of pandemic kindness. One of the silver linings of the pandemic is that it

allowed everyone to slow down; people were able to enjoy outdoor spaces, like in Image 2, and physical activities more with fewer vehicles on the road: “[The parking lot] is quiet. You can walk through it and nobody is going to run you over. Or you can practice how to drive... It has been really nice having empty parking lots to skate in...” (Session 8, June 24th 2020).



Image 2. An empty movie theatre parking lot provides new space for leisure.

During the pandemic we did wholesome acts of kindness we would normally not consider doing, such as delivering care packages to our friends. We were creative in the ways we connected with family and friends, and how we showed them love and support:

“...There are three boxes, those are for my best friends, and then in the front, those bags have little cookies I made that I delivered to a whole bunch of my friends. In the back there is a book I gave to my kids that I nanny. So, these are just a little bit different – something I do not think I ever would have considered doing. Like dropping off a care package for my friends... because I would have just been like ‘hey let’s hang out’. We all gave each other stuff [during the pandemic].” (Session 8, June 24th 2020).



Image 3. Care packages assembled and delivered to friends during the pandemic.

3.2.2. Social Impacts of the Pandemic

The social impacts of the pandemic were interesting, and we had five themes on this topic: 1) youth as essential workers; 2) major life transitions cloaked by the pandemic; 3) feelings of boredom; and 4) changes to socialization: together, but apart.

3.2.2.1. Youth as Essential Workers. During the first lockdown in 2020, some of us continued to work as essential workers in several jobs. One youth co-researcher supported a local surgeon by working as their nanny, Image 4. She explained that despite everything happening in the world—and the constant news about COVID—the children were blissfully unaware:

“... these are the kids I have been nannying. They are one and three, and their mother is a surgeon, so she has been at work... So I have been looking after them... that has been definitely an important part of my quarantine personally because it has been a totally different experience working with kids... because they have no idea of anything that is happening right now. All that they know is that they get to stay home and have fun and play all day... Which is totally weird to be around people who like do not know that there is a pandemic going on. They are completely unaware of it.” (Session 8, June 24th 2020).



Image 4. A child goes for a walk with his younger sibling and nanny during the pandemic.

For our team member, time with the kids was refreshing since she was able to ‘forget’ about the uncertainty and chaos of the pandemic for a few hours. She was able to create a fun environment for the kids and maintain a sense of normalcy, and she found activities to pay the positivity forward, such as colouring a colouring page that says, “not all heroes wear capes”

(Image 5) and gifting it to their local mail carrier. While working with children was protective, she stated that it was a lot of work to take on, when the rest of the world was staying home and slowing down:

“Definitely [nannying has contributed] positively [to my mental health and coping]. It has been a total relief to interact with people [who] are not my family. And also babies are just fun to hang out with. The only thing has been that it is a lot of work. Knowing every day that people are like ‘oh whatever I will sleep in and do a bit of my school work and whatever.’ And it is like, no, I have to get up at eight AM, go to work for four hours, come home, do school work for two hours, go back to work for two hours, sometimes go to a different job, and then come home and do more school work... that was definitely really difficult for a while to do.” (Session 8, June 24th 2020).



Image 5. A colouring craft “Not all heroes wear capes” done by the nanny with the children.

Our team member’s commitment to her job during the pandemic is an important example of the active societal roles youth played as essential workers throughout the pandemic. We believe the government needs to promote greater awareness of the contributions youth essential workers made during the COVID-19 pandemic: *“I feel like if the government came out and somehow talked about it —talked about the youth as essential workers or about compensating them in whatever way— then people would be aware of it.”* (Session 7, June 17th 2020). Many jobs deemed essential during the pandemic are low seniority roles filled by youth. We feel society either does not recognize youth fill these roles or does not care. It is especially important to acknowledge these roles and the compounding effects of young age, low seniority in the

workplace, and the pandemic context:

“... I was going to talk about being appreciative... I have heard a lot of horror stories, of how customers treat youth workers or young people working... the whole ‘the customer is always right’ and that whole power dynamic. They push that to the breaking point a lot.” (Session 7, June 17th 2020).

Youth workers in essential service jobs faced added stress of being relatively new in the workplace and/or having low seniority positions. Additional challenges came from adapting to changes in workplace policies as the pandemic context changed. The visibly young age of youth essential workers —combined with low seniority positions in customer service roles— places these workers in precarious positions where they may be disrespected by customers:

“...I saw a picture of a sign at the McDonalds drive-thru that is like ‘keep in mind that these kids are young, this is their first job, be nice.’ And it is kind of sad that people need that reminder...” (Session 7, June 17th 2020).

3.2.2.2. Major Life Transitions Cloaked by the Pandemic. During the pandemic, some of us experienced typical high school transitions, such as graduation and moving out on our own for the first time; this was a big deal for us, and we watched friends experience transitions in different ways. Some official celebrations, like graduation ceremonies and high school proms, were cancelled. Many students were not able to celebrate important milestones and achievements with friends and family:

“I feel for all of the graduates. I really do feel for [name] a little bit because all she got was a little name on a screen and that is it. Four years [of school] and not to have it be properly recognized...”(Session 8, June 24th 2020).

3.2.2.3. Feelings of Boredom. The pandemic cancelled many events such as concerts, vacations, and other forms of socialization. As such, COVID-19 enabled people to enjoy more family time, spend time with pets, and do puzzles and activities that would normally not fit into busy schedules. While some of us enjoyed the stillness from the first lockdown, others equated this time with feelings of boredom:

“...I had a totally different quarantine experience than most people who were at home 24/7 because I have been working. But there was about three weeks I was not working or doing anything and this picture is from those three weeks. This is one of the only pictures I have of quote unquote “normal”. It is just me doing a puzzle with my cat. And I feel like that represents a lot of people’s time at home, as doing mundane activities, hanging out with your pets because there is not really anyone to hang out with...” (Session 8, June 24th 2020).



Image 6. A puzzle in progress —completed over two and a half months during lockdown.

3.2.2.4. Changes to Socialization: Together, but Apart. The way humans socialize changed drastically during the pandemic. For example, ‘going out with friends’ came to mean going online and chatting using applications like Facetime. This temporary transition to socializing solely online meant skipping yearly traditions (e.g., holidays, graduations, birthdays) or adapting traditions to online. In many cases, traditions and events were simplified to fit the minimal options provided by virtual gatherings. We found adapted traditions and events were often disappointing because they were ‘just not the same’; we also fear some traditions may never return:

“At the Mayfair every month, they do a showing with a shadow cast and call backs and me and my friends go every single month without fail... And we tried so hard to host one online where we all got dressed up and tried to do the call backs and it just would not work. We got maybe 20 minutes into the movie and it was so disappointing. It is a tradition that we just had to let go of because we could not do it.” (Session 8, June 24th 2020).

Throughout the pandemic, people relied on technology to stay connected, through social media, email, video conferencing, or text messages. With public health measures advising people

to stay at home, reduce in-person contacts and eliminate non-essential travel, people found other ways to connect. Replacing in-person traditions with virtual substitutions was disappointing for many; but technology was also an unexpected opportunity. Technology allowed people to attend events that would otherwise not be as accessible or affordable if the events were in person (e.g., conferences):

“I got invited to a conference for youth online... I do feel without having online stuff, I do not think the conference itself would have happened. And it is interesting how we can network through Zoom or online even though we are so many kilometres apart. And it is actually very interesting to do that,” (Session 8, June 24th 2020).

This permitted new networking opportunities, with many people making new friends online during the pandemic:

“... the relevance to Zoom right now is definitely going to change how [we] interact in society and who we feel we can interact with. Because I know before it was super taboo to have internet friends and have people you have only met online, but now... everyone is only interacting online more or less. So, I think it is a different culture that we will come back into,” (Session 8, June 24th 2020).

3.2.3. Scholarly Impacts of the Pandemic

At the beginning of the pandemic, schools closed abruptly; there was a scramble to adapt schooling online. Given the uncertainty around COVID-19, public health guidelines were released in two-week intervals. Schools went from being closed for two weeks, to being closed for the rest of the school year. For most of us, school was a burden, given the expectation placed on us to focus on school work while being worried about the future of our schooling, and the virus itself: *“At the start, [school] was in the back of my head. Like [with] the pandemic, it was like, what? You want me to think of school while people are dying?”* (Session 7, June 17th 2020).

We experienced different levels of motivation and ability to focus in school. One of our team members said they were motivated at first to self-learn, but then slowly lost that motivation the longer we were told that schools would stay closed: *“... for me in the beginning, it gave me*

motivation to actually learn by myself, but as it went on, I have lost all of my motivation...”

(Session 7, June 17th 2020). Other team members had no motivation to begin with.

3.2.4. Mental Health Impacts of the Pandemic

We discussed ways in which COVID-19 negatively affected our mental health in 2020, and ways to improve mental health for youth. We generated six themes from these discussions and photos: 1) uncertainty around the repercussions of the pandemic on youth; 2) pressure to be productive; 3) social media overload and mental health; 4) mental health literacy; 5) social isolation and access to mental health resources; and 6) protecting the mental health of essential workers.

3.2.4.1. Uncertainty Around the Repercussions of the Pandemic on Youth. We felt increased stress, anxiety and uncertainty about our future given the pandemic. We felt uneasy about our near futures (i.e., post-secondary and jobs):

“I am applying to university in a couple of months. Like would I even be able to go to school, you know? So there is the whole uncertainty about the future that hits youth more than adults... I think that is a different pressure on youth.” (Session 7, June 17th 2020).

We saw adults as having more stable lives throughout the pandemic, and having more stability post-pandemic, due to their stage of life:

“It is already hard to navigate university decisions or job decisions and what you want to do in the future, but adding a whole pandemic on it, and the repercussions of a pandemic afterwards? It is like a whole different level...” (Session 7, June 17th 2020).

We acknowledge adults were also impacted by the pandemic; however, our perspective is contextualized within the unique pressures COVID-19 placed on youth. Especially in high school, youth are in a unique transition stage in life and the pandemic will significantly influence our future life trajectories:

“... It is a whole wave of uncertainty for a year or two...And that year or two for people from ages 16 to 19 can really mess things up. Whereas, if you are in your 30s or your 40s, it is just another year sort of...” (Session 7, June 17th 2020).

3.2.4.2. The Pressure to be Productive. We felt we were not doing enough productive work during the early stages of the pandemic, especially around school work, or using our new found downtime to learn new skills (e.g., learning a new language). When talking about motivation to accomplish schoolwork once we moved to the online format, one team member said: “... for me, I never had any motivation in the first place but I did feel guilty for not doing as much as I could have. But I am like oh well. I’ll probably learn this later.” (Session 7, June 17th 2020). We assumed online learning would not last through the end of the school year and we would have an opportunity to learn at a later date in a traditional environment. We reflected on how society places value on productivity, measuring self-worth by levels of productivity:

“...a big problem school teaches subconsciously, I even have this problem ... placing your self worth in your productivity... if you are not productive, you are like ‘oh my god I hate myself’... And honestly it got worse during COVID-19, when you are bombarded with everything. You are forced to be productive, there is [still] that push to be productive,” (Session 7, June 17th 2020).

This emphasis on productivity is true in our day-to-day lives, but it was emphasized during the pandemic because of the perception of having more free time to reach ahead, rather than use that time for self-care. This pressure for constant productivity has negative consequences on mental health:

“Even my own mom said at the beginning of the pandemic, ‘You have extra time so you should build on skills while you are in the pandemic. Your friends are going to come out of the pandemic with a skill’ but I knew for myself, not everything needs to be accomplished, even though you have extra time because the pandemic itself is already taxing for people, even for myself. So, I was focusing on myself first and then, if I have the time and energy, I move on to building new skills.” (Session 7, June 17th 2020).

3.2.4.3. Social Media Overload and Mental Health. We talked at length about how social media was saturated with heavy, energy draining content during the pandemic; people relied heavily on social media to connect with others and keep updated on current events. Under the lens of the pandemic, social media felt saturated with constant change and uncertainty around

COVID-19, the resurgence of the Black Lives Matter Movement, and global disasters (e.g., hurricanes, wildfires, the explosion in Beirut, the crisis in Yemen, etc.). We needed to step away from social media because our mental health was suffering from constant bombardment of uncertainty and worrying about what the next crisis might be. We experienced compassion fatigue and news fatigue; but we acknowledge our privilege in being able to take a break from issues of social justice, despite caring passionately about them.

“I kind of have been avoiding [social media] to be honest. I was not in the first week or so [of the Black Lives Matter protests]. I was posting things on my stories. But then I was like this is really taxing and I am already like panicking about the virus and everything else going on, so for my mental health I decided to back off...” (Session 7, June 17th 2020).

3.2.4.4. The Need for Mental Health Literacy. Improved access to mental health resources is needed —especially mental health curriculum in schools. Some students feel shame when asking for help as a result of there being no discussion about mental health in schools:

“... I think [resources are] a really important thing. Because a lot of people go around with bad mental health and keep it to themselves because they cannot turn to anyone. They do not know they have resources around them to help.” (Session 7, June 17th 2020).

“... some people feel ashamed going to guidance counsellors and reaching out for help, because nobody has really talked to them about it in school. [Teachers talking about mental health in] schools, where teachers are considered authority by students, I think they [would] feel much better going to guidance counsellors or seeking support.” (Session 7, June 17th 2020).

Shame and stigma are major barriers in talking about mental health and accessing support services. We feel the education system should be a safe place for conversations about mental health; this can be done by having more discussions in school between teachers and students to normalize discussions about mental health and accessing supports.

The school system is an important resource meant to prepare students for the future. Lack of mental health literacy in schools is a major gap in our education. We want to see the same

emphasis on mental health as physical health in schools. Mental health literacy in school is a strong prevention tool:

“I think especially surrounding COVID right now, it would be really important for the school to consider their mental health literacy because I do not think there is really any point in time where schools have taught us about our mental well-being... they have an emphasis in health class for how to take care of your physical body but no one has really taught us how to take care of our mental health...” (Session 7, June 17th 2020).

“...prevention would make it a lot better. Because you would have learned all of the tools you need to make your mental health on the better side of the scale, and I think then the provincial governments would not have to spend [as much on] accessible services if we would start with education and making sure that people know how to maintain their own good mental health.” (Session 7, June 17th 2020).

As image 7 illustrates, mental health matters. We want to see school systems value the mental health of their students over pressure to get good grades: *“A lot of people and parents put school over their mental health just to get good grades and treat it like it is the end of the world. That is a lot pressure...”* (Session 7, June 17th 2020). We envision mental health literacy curriculum that not only teaches self-care, but how to manage stress, and how to identify symptoms of poor mental health versus mental illness:

“I guess there is this whole self-care thing. But I also think we should delve deeper into... understanding what mental illnesses are and the difference between bad mental health and good mental health. And how you can have bad mental health without having a mental illness.” (Session 7, June 17th 2020).



Image 7. A page from a bullet journal that states “your mental health matters.”

We would like to see discussions about how trivializing the seriousness of mental health through dismissive or diminishing remarks can be a barrier to helpful discussions around mental health:

“... a lot of people trivialize mental health, turn it into a joke. Especially ironically enough, people that suffer from it themselves... There is a lot of things school does not teach you, like 1) mental health and 2) your grades do not equal how good of an adult you will become. ... how to do things that nobody else will teach you, like taxes or how to manage your mental health and how to manage your stress. Those are two very real problems you will face as an adult and I feel like school is one of the few places that will prepare you for the future, other than your parents. But not everybody has parents that actually could talk to them, so school is your second line of defence for stuff like that.” (Session 7, June 17th 2020).

Finally, we would like to see discussions about how there is no one-size-fits-all solution to mental health. For instance, self-care has limited effectiveness for youth living in poverty. To holistically understand and address youth mental health, perspectives that consider the impacts of systemic inequities and the social determinants of health must be understood and acted on:

“... I feel as though people are like ‘do not forget about self-care’ but self-care is not going to help [youth living in poverty], and we need to dismantle this one lens look at mental health, or problems that arise from the pandemic.” (Session 9, August 11th 2020).

Strategies such as talking to a therapist might not be feasible for youth living in poverty because of lingering trauma and struggles. While therapy, if accessible, is a good solution to learn coping mechanisms, it should be paired with practices that target the ‘causes of the causes’ of the trauma to support youth in managing their vulnerable circumstances. One example is helping families with food and living expenses. A multipronged approach is needed to address the complex root causes of inequities, which lead to disproportionate impacts of disasters.



Image 8. A sticky note reminder “Don’t forget about self-care! #mentalhealthhelp” on a mask.

3.2.4.5. Social Isolation and Access to Mental Health Resources. Social isolation was a pertinent and universal challenge during the pandemic. Quarantine and lockdowns reduced opportunities for social interaction and people felt cut off from their social circles—an important mental health resource:

“... being cut off from everyone and being stuck inside, and not communicating with people, that takes a toll on your mental health. And if you do not have the tools to navigate that and if you are not taught mental health literacy, it is hard to get back up from that...”
(Session 7, June 17th 2020).

We worry isolation can be harmful for mental health when people do not have access to necessary resources and tools to cope. To ensure people can manage their mental health, adequate supports and resources need to be in place prior to future disasters. Some people do not have access to mental health resources, such as counsellors or therapists—due to financial barriers, long waitlists, lack of access to online services, lack of awareness about resources, and how to access them. There is a need for action to raise awareness about mental health and how to access mental health resources. Current efforts by the provincial government are insufficient; more needs to be done to increase access to in-person therapy sessions and reduce wait times.

When people get access to these services, more sessions should be provided, as well as alternatives to online services for those who might have financial/technological barriers:

“...a lot of Ontarians do not have access to mental health [services] because it is actually really hard to access mental health counsellors or therapists ... if you do not have the money, you will need to go on a really long waitlist, through your family health team, or through community organizations, like Family Services Ottawa... I heard from the provincial government that they have added more money to increase mental health but that it is not enough. It is only online, and it is self-help. You know some people might take self-help seriously, but some people might not have access to online services and there has to be a pathway for people to have access to services like this and also make the services longer. Because when I was researching that... the family health team, they can only go for 12 sessions and that is it. I think there needs to be more.” (Session 7, June 17th 2020).

We mentioned examples of how to fill this gap at individual and community levels by creating easily accessible mental health coping guides and social support communities. For instance, one team member manages an Instagram account for their high school’s mental health club that is solely dedicated to talking about mental health and highlighting important community resources:

“...sometimes people do not really know that they have opportunities to access services such as the Youth Services Bureau, so I think for my own part, what I have been doing during the pandemic with my friend is managing our school’s mental health club [Instagram] account, for which we created resources and brought that awareness to light. I think that is another good thing we can do. And also some practical advice when you are feeling low and need a ‘pick me up’ kind of day. There should be a guide or a way to kick start that.” (Session 7, June 17th 2020).

3.2.4.6. Protecting the Mental Health of Essential Workers. During the pandemic, essential workers are a large group whose mental health is at risk. Doctors and nurses were dealing with the pandemic on the frontlines and with this responsibility comes emotional and psychological stressors. Other essential workers, like grocery store clerks, were also at increased risk of exposure in their workplaces. We recommend the government take action to improve accessible mental health resources, particularly to protect essential workers during pandemic:

“... A really big group that I feel their mental health is especially going to be very affected are the essential workers, like the doctors and nurses, seeing death every day, that takes a

toll on you... As well as people working in essential work. So, I feel like getting them very accessible mental health help is also something the government should be looking into” (Session 7, June 17th 2020).

It is important to move beyond words of appreciation to tangible and improved protections for essential workers. Essential workers —many of whom are youth— risked their health by working in jobs deemed essential during the pandemic. While words of appreciation in the form of ‘thank you essential workers’ signs are nice gestures, they lack meaningful action and respect towards essential workers:

“I have seen this sign at the gas station: ‘Thank you essential workers.’ And I am just like ‘you are literally not doing anything with that’... What is the thank you going to do? Give them more money? Give them safety?... Because it is nice, but it is not doing anything really.” (Session 7, June 17th 2020).

We feel essential workers are not getting the compensation, recognition and appreciation they deserve. More meaningful expressions of gratitude to essential workers would be to donate money to increase their earnings, and improve safety measures.

3.3. Pandemic Magnification of Social Inequities

While the pandemic was top of mind in 2020, the issues of social injustice and racism took a front seat after the murder of George Floyd. Protests broke out in major cities in the United States and Canada to highlight injustice and systemic racism inherent in North American society. Our themes reflect our passion about the Black Lives Matter movement, combatting racism and addressing social inequities.

3.3.1. Racism: A Public Health Issue

For people who are Asian, the discrimination, threat of violence, and violence stemming from anti-Asian racism adds a layer of mental health strain and complexity to the impacts from the pandemic. For example, some basic acts, such as sneezing or coughing, became anxiety-provoking:

“With this picture, it was during an afternoon where I could not go out because there was really bad pollen – I suffer with allergies. My friend and I, we sometimes talk about allergies and how she went out on an evening run [during the pandemic] and accidentally coughed in public and sneezed. People looked at and judged her in a really weird way. So I think for me, as a South Asian person, I have fear that if I sneeze or cough in public because of my allergies, that I cannot go out just because of that” (Session 8, June 24th 2020).



Image 9. Sunlight in a bedroom window represents feeling trapped indoors during allergy season for fear of sneezing in public as a person of South Asian descent.

Our team talked about the importance of attending the BLM protests, see Image 10, and the need to show support and solidarity: *“...I definitely felt it was more important [to attend] - the benefits outweighed the risks, for the protests. And there [were] so many safety measures taken. There [were] people handing out masks and hand sanitizer everywhere.” (Session 8, June 24th 2020).*



Image 10. People attend a Black Lives Matter protest in Ottawa, Canada in 2020.

3.3.2. Youth are Leaders of the Current Black Lives Matter Movement

One of our team members, who attended BLM protests in Ottawa in 2020, noticed most protesters were young and they wondered if reduced risk of COVID-19 transmission might have influenced people’s decisions to attend. They felt there might be generational differences in opinions about what solutions are needed to address systemic racism. The protests themselves were organized and led by youth who wanted to see drastic changes in their community around policing. This is yet another example of the capability of youth to take action and make a difference:

“I would say like 98% were youth, people below 25 or 30... It was all organized by youth. All the volunteers were youth, and it is just very telling of how, more often than not, adults will kind of go ‘oh youth cannot do anything.’ They are like ‘Just wait! It is going to be your turn eventually.’ Like no, we can do a lot of stuff, we can organize protests with thousands of people, we can make changes. The protests were very much youth run, youth-led ... I mean, also it could be a matter of older people being more at risk [of COVID-19] and so not wanting to show up.” (Session 8, June 24th 2020).



Image 11. People attend a Black Lives Matter protest in Ottawa, Canada in 2020.

3.3.3. Teaching and Dismantling Systemic Racism in the Canadian Education System

We believe education must include the history of racism in Canada. We are frustrated how school curricula gloss over major events in Canadian history, such as Residential Schools, or the 60's Scoop; we worry that even when courses do discuss historical events, they may be tainted by bias:

“In my grade 10 history class, I purposefully asked my teacher ‘are we going to be talking about residential schools, the history of the Indigenous people, anything of the form?’ and she goes, ‘No. We do not have time. We only can cover things from the curriculum.’ Which first of all, on a teacher level: “we do not have time” to cover one of the most important crises that happened in Canada’s history?! And then from a curriculum, or board, or Ontario-wide level, there is nothing about it in the curriculum. There is nothing about Residential schools in the curriculum, there is nothing about the 60’s Scoop, ... you do not learn anything about the culture, or the way the culture was stripped away at all.” (Session 8, June 24th 2020).

We need to dismantle systemic racism within the education system. For instance, there is a link between systemic racism and DRR education. Some schools, in more affluent neighbourhoods have more resources to provide opportunities to learn about DRR. Not every student can afford to pay to attend conferences or field trips to learn more about disasters outside of school. Due to systemic racism, many people living on or just above the poverty line in more impoverished neighbourhoods are black, Indigenous, or new immigrants:

“... I used to live in an area where it was predominantly Black and people who were on or just above the poverty line. And I think they might not have the same resources we do. Or also the same opportunities to learn about disaster risk reduction. Because I attend [school name] and...people consider it the crème de la crème, and I think... even though it is the same curriculum, for Ontario kids, the thing is we do not have the same opportunities... especially with schools... Because I know [some people]... do not have the same opportunities as me to go, for example, to a health conference like HOSA [Health Occupations Students of America], DECA [Distributive Education Clubs of America], any of those experiences, because money is a big issue for them, because they cannot have these enrichment experiences that they can go on and learn more about these kinds of things...” (Session 8, June 24th 2020).

Similarly, many of the disaster preparedness guidelines from experts involve buying and stocking up on supplies to be prepared for 72 hours without emergency services. This may not be possible for people living paycheck to paycheck; it creates unfair disadvantage. Inequities need to be addressed and factored into community disaster preparedness planning:

“...there is a higher level of people of color living in poverty and living in more impoverished neighbourhoods due to systemic racism... When you are living paycheck to paycheck, it is not possible to have this two week store [of supplies] that they recommended for COVID... And then, if disaster did happen, rebuilding is so incredibly costly. That leads to homelessness... If you can only afford your food and your rent for the month and just about nothing else, how are you going to rebuild? You cannot reduce the risk or like mitigate any future risks when you cannot get rid of the current crisis that they are in” (Session 8, June 24th 2020).

3.3.4. How to Begin Addressing Systemic Inequities in DRR Education and Ability to Prepare for Disasters

In terms of solutions, we suggest youth create organizations and social media accounts to educate citizens on opportunities to get involved in DRR, spread information about DRR, and educate society on how systemic inequities are barriers to preparedness and participation:

“... There has been an uprise where youth have actually taken up opportunities to make an organization or like an awareness page, especially on Instagram. So, there has been a few that have been related to COVID. There has also been just generally letting youth know about opportunities, especially in their communities, and I think one way we can start is if we create some sort of organization, like our Youth Research Team, that can go beyond uOttawa itself, I do feel if we reach out to other schools and let ourselves be known more in the daylight, I do feel like the education will come across better, especially throughout the rest of Ottawa.” (Session 8, June 24th 2020).

We believe it is important to value different types of expertise —such as expertise that comes from formal education, work experience, and lived experiences. In this way, the term “expert” becomes more inclusive to a variety of people who can be included at the decision-making table. It is important for those currently in power to reframe this term to learn to value people who would usually not be deemed “experts” on big societal issues like DRR, climate change, the pandemic, and systemic racism:

“A lot of it is education, I would say [that makes somebody an expert] ... a lot of people would consider a PhD [or a master’s] would make somebody an expert... But I feel like there is more to it than that. You can get education from different ways... an expert [on racism] could be someone who is black, because they have lived experience. So I think it is a lot of the education aspect, either through formal education, or through lived experiences.” (Session 8, June 24th 2020).

3.3.5. The Need for Targeted Solutions and Support for Youth Living in Poverty

A subpopulation overlooked in discussions about youth engagement, equitable access to mental health support, disaster preparedness, and the pandemic are youth living in poverty. We discussed how this group is often hit the worst during disasters, like the current pandemic. This is a unique population that needs specific targeted practices, policies, and support. We believe there is a need to dismantle the classist lens through which we look at these issues and related solutions by breaking down problems to their root causes. Image 12 represents the absence of the voices of youth living in poverty from important discussions:

“I wanted to represent a group of people. I noticed when we talk about youth engagement and involvement, equitable access to mental health, or disasters and preparing for them, we tend to overlook a certain group of people and we always look at it through a certain lens or we look at it through the average youth, like a 14- to 18-year-old person in school. But we do not tend to talk about youth living in poverty or [who are] homeless. These people are especially hit the worst in all aspects in this pandemic, or through environmental disasters. We need to look at ways to directly provide them with help rather than rely on other solutions... We have to be careful when we talk about this because we do not want to look at it through a classist lens either.” (Session 9, August 11th 2020).



Image 12. Items left outside in the rain representing how youth living in poverty are often forgotten in important discussions.

One way to begin to dismantle the classist lens is to provide more opportunities for people who are often overlooked, like youth living in poverty. Opportunities like grassroots volunteer organizations focused on including diverse voices in disaster education and preparedness, partnering with big organizations, like the Canadian Red Cross, who can provide resources and vertical communication channels:

“... For example, having diversity not only age, but gender and also class differences as well. So, we can have all of these different perspectives instead of just one perspective. Ethnicity, religion as well. Because it is not just one kind of youth. We cannot really box everyone into one category, so diversity is very important, not only listening to them, but also providing more opportunities to them as well.” (Session 9, August 11th 2020).

3.4. Power of Youth and Calls to Action

Youth have a desire and willingness to contribute to DRR and create organizations that help make a difference in awareness and advocacy. However, we worry our advocacy might not have a noticeable impact at higher levels (e.g., government) or even at the community level. We have opinions and ideas on how to improve major social justice issues and barriers we observed and experienced personally during the pandemic, as represented by Image 13:

“So this picture, I did a really quick sketch today... I thought of things happening throughout our community and issues that surround for example, Black Lives Matter, [gender] equity, LGBTQ+, mental health, etc. There are tons and tons out there. What is

really interesting, I have seen this phenomenon on Instagram during the pandemic, teens are creating organizations, like youth, and all of us are wanting to make a difference, but at the end of the day, there is no real change. Even though there is change in awareness, advocacy, etc., but there is no real change in terms of the government level or ... real change that you can see in the community.” (Session 9, August 11th 2020).

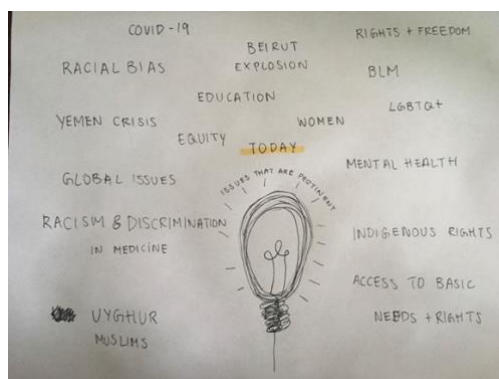


Image 13. Sketch representing the desire of youth to be included in matters that affect them and to be taken seriously as potential contributors.

4. Discussion

Strategies are needed to create opportunities for youth participation. Below, we outline six calls to action to support stakeholders in creating opportunities. Recommended actions focus on the impacts of COVID-19 measures, pandemic magnification of social inequities, and the power of youth to create change (Figure 2).

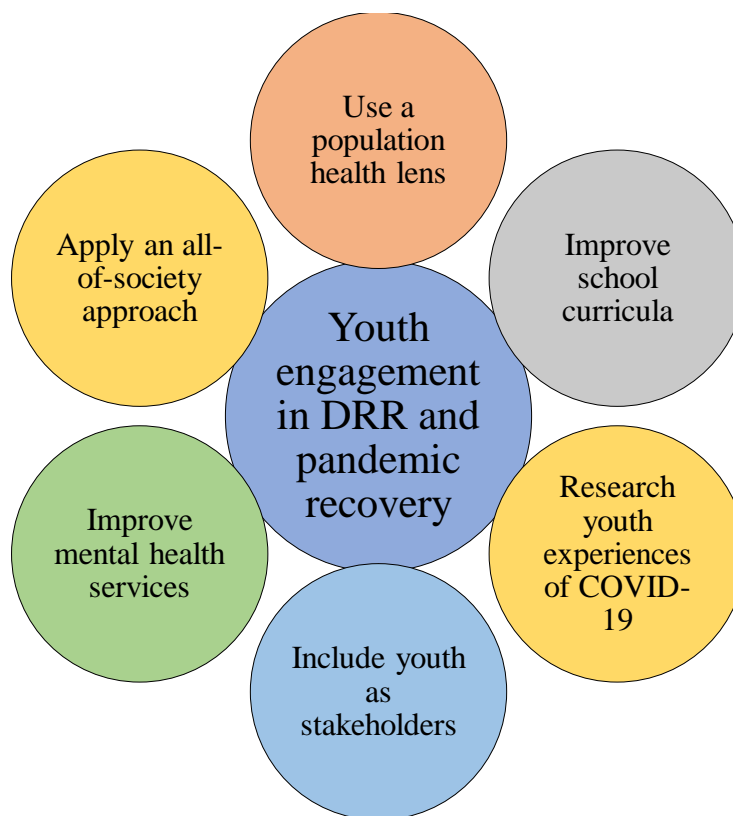


Figure 2. Six calls to action to create social change in DRR and COVID-19 recovery.

4.1. Call to Action #1: Use a Population Health Lens

Apply a population health lens to COVID-19 recovery to ensure those disproportionately affected by disasters are prioritized and included in discussions.

We approached our discussions with a critical population health lens – the study of health status and determinants of health of populations (Young, 2005), placing the role of social and moral determinants of health at the center (Berwick, 2020). This lens addresses the underlying social, economic, and environmental conditions upstream of the issue, to shift the distribution of health risk (Hawe & Potvin, 2009), reduce health inequalities and inequities (Public Health Agency of Canada, 2012), and prevent disease and promote health (Young, 2005). The COVID-19 pandemic exacerbated existing inequities, while revealing and creating new social, economic,

and environmental vulnerabilities (United Nations, 2020b). We emphasize the importance of reducing inequities in COVID-19 recovery through preventative policies and actions addressing mental health and systemic racism through education, and applying an all-of-society approach to DRR.

4.2. Call to Action #2: Improve School Curricula

Improve school curricula by including educational materials and open discussions about DRR, systemic racism in Canada, and mental health literacy in schools.

DRR education can improve disaster preparedness for the next pandemic or disaster. As Ronan and colleagues note, creating disaster education programs with interconnected curricula, teaching real world scenarios, and applying a variety of teaching methods can not only improve youth disaster preparedness, but community resilience (Ronan, 2005; Ronan et al., 2015; Ronan & Johnston, 2001; Ronan & Towers, 2014). Disaster education improves disaster risk perceptions and can improve uptake of public health measures in future disasters and pandemics (Ronan et al., 2015).

There is an urgency to teach the history of racism in Canada in our education system by embracing anti-racist teachings (such as the use of reflexive storytelling) (Alderman et al., 2021). This can be done by incorporating learning resources with contributions from Indigenous authors, such as Greenwood et al. (2018), and teaching students about the Truth and Reconciliation Commission of Canada (2015) 94 calls to action, in school curricula. These resources, among many others, explore determinants of health of Indigenous peoples (Greenwood et al., 2018) and promote evidence-based, strategies for social change (Truth and Reconciliation Commission of Canada, 2015).

Mental health literacy is defined as knowledge and beliefs about mental disorders (Jorm, 2012). It is an important skill to recognize, manage, and prevent mental illness, and a gap in the Ontario education system. Improving mental health literacy can contribute to increased use of mental health services (Bonabi et al., 2016). Useful strategies for teaching healthy mental health literacy include whole-of-community campaigns, interventions in education settings, Mental Health First Aid training, and informative websites (Jorm, 2012). Applying a social and moral determinants of health lens (Berwick, 2020) to improvements within the education system will ensure populations at higher risk receive access to opportunities for DRR learning, and high-quality education (United Nations, 2020b). Curricular and extracurricular opportunities can be implemented to improve education on DRR, racism, and mental health literacy.

4.3. Call to Action #3: Research Youth Experiences of COVID-19

More research on youth experiences and insights on the COVID-19 pandemic and DRR.

The experiences of youth during COVID-19—and implications for our well-being—remain relatively unknown (Rogers et al., 2021). Our study explored our experiences and unique challenges as adolescents during the pandemic. Youth, specifically during adolescence, is characterized by major shifts in personal relationships, physiological changes, increased need for social belonging and independence (Rogers et al., 2021). The multi-year pandemic will continue to have social and mental health impacts on our lives. Included under research priority 2.3, the UN (2020b) *Roadmap* emphasizes the need for research on the long-term impacts of pandemic school closures, and how to reduce educational disruptions in future emergencies. Future studies should explore potential delays in post-secondary schooling, detrimental effects on learning, postponement of our workforce trajectory (United Nations, 2020b), and the economic, mental, and social impacts of the pandemic on a diverse range of youth, using an asset-based and critical

population health lens. It is critical the youth perspective, especially youth from lower socioeconomic conditions (Marques de Miranda et al., 2020), be included in pandemic recovery to support safe environments and our wellbeing (Rogers et al., 2021).

4.4. Call to Action #4: Include Youth as Stakeholders

Include youth as stakeholders in DRR and pandemic recovery by creating opportunities for engagement and collaboration.

Youth are important stakeholders in DRR and pandemic recovery; we would like to be taken seriously as stakeholders with opportunities to participate in decision-making activities, assume leadership roles in DRR and climate change action, as well as pandemic response and recovery initiatives. Youth are not a homogenous population; it is critical to dismantle the dominant classist lens through which major issues like DRR and the COVID-19 pandemic are viewed.

Stakeholders should meaningfully include youth as active stakeholders in pandemic response and recovery planning and implementation (Cox et al., 2019; Haynes & Tanner, 2015; Pickering, Guy, et al., 2021; Tanner, 2010). To support an equity lens in pandemic recovery, research priority 5.1 of the UN (2020b) *Roadmap* emphasizes the importance of identifying mechanisms that ensure marginalized populations are included in decision-making, to improve social cohesion and community resilience. Opportunities for high-risk youth (e.g., youth living in poverty) to participate and contribute to DRR are essential to ensure diverse youth voices are included; it will increase the likelihood of successful implementation of recovery solutions (Aldrich, 2015). Safe and meaningful youth-adult partnerships are integral for effective intergenerational collaboration (Camino, 2000).

Youth engagement in DRR is a relatively new field of study, and an upstream, asset-

based approach to including all-of-society in DRR. Benefits of youth engagement include a sense of empowerment and agency (Haynes & Tanner, 2015; Mitchell et al., 2008; Peek, 2008; Tanner, 2010). With the pandemic, we felt an acute sense of lack of agency and control, lack of self-determination and bleak prospects for the future. Opportunities such as coordinating with informal volunteer activities (Whittaker et al., 2015), engaging in DRR and pandemic research (Pickering, Guy, et al., 2021), creating opportunities for youth-led initiatives and organizations, and having a seat at policy and decision-making tables (Heritage, 2018) are examples of how adults can partner with youth to collaborate on DRR.

The youth engagement lens requires stakeholders to challenge their current understanding of who qualifies as an ‘expert’ —and to include those with lived experiences (Budig et al., 2018; Graham et al., 2013; Witvorapong et al., 2015). Youth have the power to create social change either by partnering with adults, or starting their own initiatives; also the desire to be included in matters that affect them (Haynes & Tanner, 2015; Mitchell et al., 2008; Peek, 2008; Tanner, 2010).

4.5. Call to Action #5: Improve Mental Health Services

Governmental action to create more accessible mental health services, and raise awareness about mental health literacy and how to access resources.

In addition to teaching mental health literacy in schools, there should be greater action from government (at all levels) to raise awareness about mental health literacy and how to access mental health resources. We call on the provincial government to improve the accessibility of mental health services by increasing access to in-person services, reducing wait times, providing access to more therapy sessions per person, and offering alternatives to online services for those who might have barriers (e.g., lack of technology or technological expertise). In preparation for

the next pandemic or disaster, governments must prioritize the wellbeing of essential workers — increase accessibility to mental health services, increase pay, mandate fair paid sick leave, and improve occupational safety measures.

Our results are consistent with literature on pandemic fatigue (MacIntyre et al., 2021), compassion fatigue (Lang & Micah Hester, 2021; Ledoux, 2015; Ruiz-Fernández et al., 2020), and news media fatigue (Buneviciene et al., 2021; Song et al., 2017). Future studies should explore these experiences through youth engagement, to help improve public compliance with public health measures and protect the mental health of citizens; youth have unique social networks adults often do not have access to, as well as strong social media presence.

Mental health during the COVID-19 pandemic was an important topic, not only for our team, but for society in general. Feelings of loneliness, fear, uncertainty, and less social connectedness, contributed to negative mental health during the pandemic (Galea et al., 2020; Liang et al., 2020; Ornell et al., 2020; Rogers et al., 2021). For youth making big life decisions (e.g., post-secondary education, moving out, building independent and romantic relationships, competing for entry-level jobs, etc.) the pandemic exacerbated an already stressful transitional life stage. Future studies should explore the feelings of uncertainty for youth during the pandemic given the unique challenges faced in this delicate stage of development. Strategies to address the mental health impacts of the pandemic should include marginalized populations, including youth, and essential workers (United Nations, 2020b).

4.6. Call to Action #6: Apply an All-of-Society Approach

Apply an all-of-society approach to DRR and pandemic recovery by placing value on different types of expertise, such as lived experiences, and bringing diverse groups to the table.
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We emphasized the need for supports for youth, essential workers, and other high-risk populations. We reflected on our privileges, experiences as women, and for some team members experiences as women of colour, and how to create social change for the wider community. The Sendai Framework highlights the need for all-of-society engagement and partnership to reduce risks and improve community resilience to disasters (UNDRR, 2015). This requires empowerment through inclusive, accessible, and non-discriminatory participation and community engagement (UNDRR, 2015; Witvorapong et al., 2015). Sustainable strategies are dependent on partnership, participation and ownership by local communities (Shaw, 2012).

An all-of-society approach to DRR and COVID-19 would have individuals and communities collaborate with organizations, government and experts to reduce risks (UNDRR, 2015); recommendations for this type of approach are well-established in the literature from previous disasters. Throughout the pandemic, examples of local community engagement in DRR shone through, such as “Cooking for a Cause Ottawa” organized by the Parkdale Food Centre in which the community helped respond to the food insecurity exacerbated by the pandemic (Secord, 2020). Given the global interdependence amongst people, systems, and generations, and the need for transformative change for an equitable, resilient, and sustainable future (United Nations, 2020b), an all-of-society approach to DRR and COVID-19 recovery is an inclusive and human rights centred strategy to address and harness our shared risks and responsibilities.

4.7 Limitations

Our study has several limitations which are important to consider. Our group is small, and we live in the same city. While we have racial diversity in our group, we all do well academically, and we all identify as female. Because of our involvement in the EnRiCH YRT, all members of our group were familiar with the university researchers prior to starting the

Photovoice project. While our prior experiences with the team limited broader recruitment for participation in this study, it provided a strong foundation for rapport and engagement. We recommend future studies recruit a diverse array of youth voices to expand on the findings from this study.

5. Conclusion

Our community-based participatory approach to data collection provided an opportunity for high school students and university students to collaborate and add our voices to research on the COVID-19 pandemic. Youth are important stakeholders in DRR and building back better during pandemic recovery. An upstream, asset-based approach is needed to complement and promote an all-of-society approach to DRR, and post-pandemic recovery. Inclusive engagement of diverse youth will support public health and DRR practitioners in reducing disaster risks and improve community resilience. The tapestry of disasters is changing – so too should the faces of those working to reduce risk and improve community resilience.

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References

- Alderman, D., Narro Perez, R., Eaves, L. E., Klein, P., & Muñoz, S. (2021). Reflections on operationalizing an anti-racism pedagogy: Teaching as regional storytelling. *Journal of Geography in Higher Education*, *45*(2), 186–200.
<https://doi.org/10.1080/03098265.2019.1661367>
- Aldrich, D. P. (2015). Social capital in post disaster recovery: Strong networks and communities create a resilient East Asian community. In D. P. Aldrich, S. Oum, & Y. Sawada (Eds.), *Resilience and recovery in Asian disasters: Community ties, market mechanisms, and governance* (pp. 19–34). Springer Japan. https://doi.org/10.1007/978-4-431-55022-8_2
- Amri, A., Haynes, K., Bird, D. K., & Ronan, K. (2018). Bridging the divide between studies on disaster risk reduction education and child-centred disaster risk reduction: A critical review. *Children's Geographies*, *16*(3), 239–251.
<https://doi.org/10.1080/14733285.2017.1358448>
- Bartlett, S. (2008). Climate change and urban children: Impacts and implications for adaptation in low- and middle-income countries. *Environment & Urbanization*, *20*(2), 501–519.
<https://doi.org/10.1177/0956247808096125>
- Berwick, D. M. (2020). The moral determinants of health. *The Journal of the American Medical Association*, *324*(3), 225–226. <https://doi.org/10.1001/jama.2020.11129>
- Bonabi, H., Müller, M., Ajdacic-Gross, V., Eisele, J., Rodgers, S., Seifritz, E., Rössler, W., & Rüschi, N. (2016). Mental health literacy, attitudes to help seeking, and perceived need as predictors of mental health service use: A longitudinal study. *The Journal of Nervous and Mental Disease*, *204*(4), 321–324. <https://doi.org/10.1097/NMD.0000000000000488>

- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589–597.
<https://doi.org/10.1080/2159676X.2019.1628806>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE Publications.
- Budig, K., Diez, J., Conde, P., Sastre, M., Hernán, M., & Franco, M. (2018). Photovoice and empowerment: Evaluating the transformative potential of a participatory action research project. *BMC Public Health, 18*(1), 432–432. <https://doi.org/10.1186/s12889-018-5335-7>
- Buneviciene, I., Bunevicius, R., Bagdonas, S., & Bunevicius, A. (2021). COVID-19 media fatigue: Predictors of decreasing interest and avoidance of COVID-19–related news. *Public Health, 196*, 124–128. <https://doi.org/10.1016/j.puhe.2021.05.024>
- Camino, L. A. (2000). Youth-Adult Partnerships: Entering new territory in community work and research. *Applied Developmental Science, 4*(sup1), 11–20.
https://doi.org/10.1207/S1532480XADS04Suppl_2
- City of Ottawa. (2022). *Why choose Ottawa* [Government]. Ottawa. <https://ottawa.ca/en/living-ottawa/immigrating-ottawa/why-choose-ottawa#:~:text=Ottawa%20is%20the%20nation's%20capital,the%20Ottawa%20River%20in%20Quebec>.
- Cox, R. S., Hill, T. T., Plush, T., Heykoop, C., & Tremblay, C. (2019). More than a checkbox: Engaging youth in disaster risk reduction and resilience in Canada. *Natural Hazards, 98*(1), 213–227. <https://doi.org/10.1007/s11069-018-3509-3>
- CTV News Ottawa. (2021). Interactive timeline: 365 days of COVID-19 in Ottawa. *CTV News Ottawa*. <https://ottawa.ctvnews.ca/specials/interactive-timeline-365-days-of-covid-19-in-ottawa>

- Galea, S., Merchant, R. M., & Lurie, N. (2020). The mental health consequences of COVID-19 and physical distancing: The need for prevention and early intervention. *JAMA Internal Medicine, 180*(6), 817–818. <https://doi.org/10.1001/jamainternmed.2020.1562>
- Graham, L. F., Matiz Reyes, A., Lopez, W., Gracey, A., Snow, R. C., & Padilla, M. B. (2013). Addressing economic devastation and built environment degradation to prevent violence: A Photovoice project of Detroit youth passages. *Community Literacy Journal, 8*(1), 41–52. <https://doi.org/10.1353/clj.2013.0019>
- Greenwood, M., De Leeuw, S., & Lindsay, N. M. (Eds.). (2018). *Determinants of indigenous peoples' health: Beyond the social* (2nd ed.). Canadian Scholars.
- Hawe, P., & Potvin, L. (2009). What is population health intervention research? *Canadian Journal of Public Health, 100*(1), I8–I14. <https://doi.org/10.1007/BF03405503>
- Haynes, K., & Tanner, T. (2015). Empowering young people and strengthening resilience: Youth-centred Participatory Video as a tool for climate change adaptation and disaster risk reduction. *Children's Geographies, 13*(3), 357–371. <https://doi.org/10.1080/14733285.2013.848599>
- Heritage, C. (2018, January 29). *Prime Minister's Youth Council*. <https://www.canada.ca/en/campaign/prime-ministers-youth-council.html>
- Jorm, A. F. (2012). Mental health literacy: Empowering the community to take action for better mental health. *The American Psychologist, 67*(3), 231–243. <https://doi.org/10.1037/a0025957>
- Lang, K. R., & Micah Hester, D. (2021). The centrality of relational autonomy and compassion fatigue in the COVID-19 era. *American Journal of Bioethics, 21*(1), 84–86. <https://doi.org/10.1080/15265161.2020.1850914>

- Latz, A. O. (2017). *Photovoice research in education and beyond: A practical guide from theory to exhibition*. Routledge.
- Ledoux, K. (2015). Understanding compassion fatigue: Understanding compassion. *Journal of Advanced Nursing*, *71*(9), 2041–2050. <https://doi.org/10.1111/jan.12686>
- Liang, L., Ren, H., Cao, R., Hu, Y., Qin, Z., Li, C., & Mei, S. (2020). The effect of COVID-19 on youth mental health. *Psychiatric Quarterly*, *91*(3), 841–852. <https://doi.org/10.1007/s11126-020-09744-3>
- MacIntyre, C. R., Nguyen, P.-Y., Chughtai, A. A., Trent, M., Gerber, B., Steinhofel, K., & Seale, H. (2021). Mask use, risk-mitigation behaviours and pandemic fatigue during the COVID-19 pandemic in five cities in Australia, the UK and USA: A cross-sectional survey. *International Journal of Infectious Diseases*, *106*, 199–207. <https://doi.org/10.1016/j.ijid.2021.03.056>
- Marques de Miranda, D., da Silva Athanasio, B., Sena Oliveira, A. C., & Simoes-e-Silva, A. C. (2020). How is COVID-19 pandemic impacting mental health of children and adolescents? *International Journal of Disaster Risk Reduction*, *51*, 101845. <https://doi.org/10.1016/j.ijdrr.2020.101845>
- Mitchell, T., Haynes, K., Hall, N., Choong, W., & Oven, K. (2008). The roles of children and youth in communicating disaster risk. *Children, Youth and Environments*, *18*(1), 254–279. <https://doi.org/10.7721/chilyoutenvi.18.1.0254>
- Ornell, F., Schuch, J. B., Sordi, A. O., & Kessler, F. H. P. (2020). “Pandemic fear” and COVID-19: Mental health burden and strategies. *Brazilian Journal of Psychiatry*, *42*(3), 232–235. <https://doi.org/10.1590/1516-4446-2020-0008>

- Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience — An introduction. *Children, Youth and Environments*, 18(1), 1–29. <http://www.jstor.org/stable/10.7721/chilyoutenvi.18.1.0001>
- Pickering, C. J., Guy, E., Al-Baldawi, Z., McVean, L., Sargent, S., & O’Sullivan, T. (2021). “I believe this team will change how society views youth in disasters”: The EnRiCH Youth Research Team: A youth-led community-based disaster risk reduction program in Ottawa, Canada. *Canadian Journal of Public Health*, 112(5), 957–964. <https://doi.org/10.17269/s41997-021-00486-8>
- Public Health Agency of Canada. (2012). *What is the population health approach?* <http://www.phac-aspc.gc.ca/ph-sp/approach-proche/index-eng.php>
- Rogers, A. A., Ha, T., & Ockey, S. (2021). Adolescents’ perceived socio-emotional impact of COVID-19 and implications for mental health: Results from a U.S.-based mixed-methods study. *The Journal of Adolescent Health*, 68(1), 43–52. <https://doi.org/10.1016/j.jadohealth.2020.09.039>
- Ronan, & Johnston, D. M. (2001). Correlates of hazard education programs for youth. *Risk Analysis*, 21(6), 1055–1064. <https://doi.org/10.1111/0272-4332.216174>
- Ronan, K. (2005). *Promoting community resilience in disasters: The role for schools, youth, and families* (1st ed.). Springer. <https://doi.org/10.1007/b102725>
- Ronan, K., Alisic, E., Towers, B., Johnson, V., & Johnston, D. (2015). Disaster preparedness for children and families: A critical review. *Current Psychiatry Reports*, 17(7), 1–9. <https://doi.org/10.1007/s11920-015-0589-6>
- Ronan, K., & Towers, B. (2014). Systems education for a sustainable planet: Preparing children for natural disasters. *Systems (Basel)*, 2(1), 1–23. <https://doi.org/10.3390/systems2010001>

- Ruiz-Fernández, M. D., Ramos-Pichardo, J. D., Ibáñez-Masero, O., Cabrera-Troya, J., Carmona-Rega, M. I., & Ortega-Galán, Á. M. (2020). Compassion fatigue, burnout, compassion satisfaction and perceived stress in healthcare professionals during the COVID-19 health crisis in Spain. *Journal of Clinical Nursing*, 29(21–22), 4321–4330.
<https://doi.org/10.1111/jocn.15469>
- Secord, K. (2020, May 11). *NEW! Cooking for a Cause Ottawa*.
<https://parkdalefoodcentre.ca/2020/05/11/new-cooking-for-a-cause-ottawa/>
- Shaw, R. (2012). *Community-based disaster risk reduction*. Emerald.
<https://login.proxy.bib.uottawa.ca/login?url=http://www.emeraldinsight.com/2040-7262/10>
- Smith, B., & McGannon, K. R. (2018). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*, 11(1), 101–121. <https://doi.org/10.1080/1750984X.2017.1317357>
- Song, H., Jung, J., & Kim, Y. (2017). Perceived news overload and its cognitive and attitudinal consequences for news usage in South Korea. *Journalism & Mass Communication Quarterly*, 94(4), 1172–1190. <https://doi.org/10.1177/1077699016679975>
- Tanner, T. (2010). Shifting the narrative: Child-led responses to climate change and disasters in El Salvador and the Philippines. *Children and Society*, 24(4), 339–351. Scopus.
<https://doi.org/10.1111/j.1099-0860.2010.00316.x>
- Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry*, 16(10), 837–851.
<https://doi.org/10.1177/1077800410383121>

- Truth and Reconciliation Commission of Canada. (2015). *Truth & reconciliation: Calls to action*. Truth and Reconciliation Commission of Canada.
https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/indigenous-people/aboriginal-peoples-documents/calls_to_action_english2.pdf
- UN General Assembly. (1989). *Convention on the rights of the child*.
<https://www.ohchr.org/en/professionalinterest/pages/crc.aspx>
- UNDRR. (2011, October 13). UNISDR says the young are the largest group affected by disasters—UNISDR. *UNISDR News Archives*. <https://www.unisdr.org/archive/22742>
- UNDRR. (2015). *Sendai Framework for Disaster Risk Reduction*.
http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf
- United Nations. (2020). *UN research roadmap for the COVID-19 recovery: Leveraging the power of science for a more equitable, resilient and sustainable future*.
<https://www.un.org/en/pdfs/UNCOVID19ResearchRoadmap.pdf>
- Wang, C. C., & Burris, M. A. (1994). Empowerment through photo novella: Portraits of participation. *Health Education & Behavior*, 21(2), 171–186.
<https://doi.org/10.1177/109019819402100204>
- Wang, C. C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior*, 24(3), 369–387.
<https://doi.org/10.1177/109019819702400309>
- Whittaker, J., McLennan, B., & Handmer, J. (2015). A review of informal volunteerism in emergencies and disasters: Definition, opportunities and challenges. *International Journal of Disaster Risk Reduction*, 13, 358–368.
<https://doi.org/10.1016/j.ijdr.2015.07.010>

Witvorapong, N., Muttarak, R., & Pothisiri, W. (2015). Social participation and disaster risk reduction behaviors in tsunami prone areas. *PLoS ONE*, *10*(7).

<https://doi.org/10.1371/journal.pone.0130862>

Yi-Frazier, J. P., Cochrane, K., Mitrovich, C., Pascual, M., Buscaino, E., Eaton, L., Panlasigui, N., Clopp, B., & Malik, F. (2015). Using Instagram as a modified application of Photovoice for storytelling and sharing in adolescents with type 1 diabetes. *Qualitative Health Research*, *25*(10), 1372–1382. <https://doi.org/10.1177/1049732315583282>

Young, T. K. (2005). *Population health: Concepts and methods*. Oxford University Press.

Chapter 8: Results (Article #4)

Promoting Inclusive Institutional Culture Through Intergenerational Collaboration in Disaster Risk Reduction and Disaster Risk Management

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Abstract

Disasters are becoming increasingly complex; disaster prevention, mitigation, response, and recovery must continue to transform to meet that complexity. Global guidelines stipulate using an “all-of-society” approach to disaster risk reduction (DRR) and disaster risk management (DRM) as a strategy to include those disproportionately negatively affected by disasters (e.g., youth). Youth participation in DRR and DRM is one way to apply this approach, but implementation of it can be challenging. As the COVID-19 pandemic and other disasters have shown, youth are volunteering and working before, during, and after disasters. In this study, we interviewed 12 youth between 12 and 24 years of age who have experience volunteering or working in local disasters in Ottawa, Ontario, Canada, to explore perceived barriers and facilitators to meaningful youth participation in DRR and DRM. We used reflexive thematic analysis to analyze the interviews and found that institutional and age-based discrimination are central barriers to effective youth participation. Intergenerational collaboration is integral to dismantling systemic social barriers, like ageism, to implement meaningful youth participation and promote inclusive institutional cultures across disciplines. Provided youth-specific supports such as strong communication, mentorship, training, advocacy, and recognition, intergenerational collaboration can create sustainable opportunities to integrate youth in DRR decision-making and DRM activities. These strategies support community resilience and adaptive capacity for future disasters, including pandemics.

Keywords: COVID-19, essential worker, disaster, youth, ageism, Sendai Framework

1. Introduction

The frequency and severity of disasters have increased around the globe, with magnification of the climate crisis. Global guiding documents across disciplines encourage an “all-of-society” approach to disaster risk reduction (DRR) and disaster risk management (DRM) to increase resilience and create adaptive capacity (UNDRR, 2015; United Nations, 2015a, 2015b). DRR is the policy objective of DRM and DRM is the application of DRR policies and strategies to prevent, remove, reduce, or manage risks (UNDRR & UN General Assembly, 2016). Throughout this article, we use the term DRR; rather than both DRR and DRM. When we use DRR, we insinuate both the policy/strategy of DRR and the implementation/practice of DRM, and the need for youth participation in both.

An all-of-society approach differs from traditional top-down DRR strategies (Laverack & Labonte, 2000); here, communities, especially those disproportionately affected by disasters, are “in the driving seat” (World Health Organization, 2019, p. v). Effective Health Emergency and Disaster Risk Management (Health EDRM) policy and practice are guided by several core principles, including the need for an inclusive, people- and community-centred approach. Stakeholders often underrepresented in disaster management spaces —such as women, persons living with chronic illnesses or living in poverty, migrants, older adults, and youth— must have opportunities to have their voices heard (UNDRR, 2015; World Health Organization, 2019).

More disasters means more response; more complex disasters mean more complex responses. The COVID-19 pandemic demonstrated the importance of essential workers (e.g., hospital administrators, grocery workers) as part of the response. The pandemic also revealed the importance of many jobs occupied by youth. These jobs are essential for societal functioning, and working youths take similar risks as adults in food services, health, and education services.

Prior to the pandemic, other disasters highlighted the important contributions of youth. Greta Thunberg, for instance, is immediately recognizable as a climate justice activist, leading one of the largest global climate strikes in history in 2019 at age 16 (Barclay & Amaria, 2019). With 4.9 million followers on Twitter (Thunberg, n.d.) and 14.6 million followers on Instagram (Thunberg, n.d.), her global influence on climate action is undeniable.

The Sendai Framework for Disaster Risk Reduction is an international document adopted by United Nations (UN) member states in 2015 providing action recommendations to reduce disaster risks (UNDRR, 2015). The document includes four priorities for action:

Priority 1: Understanding disaster risk.

Priority 2: Strengthening disaster risk governance to manage disaster risk.

Priority 3: Investing in disaster reduction for resilience.

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction. (UNDRR, 2015, p. 14).

Accompanying documents such as Words into Action provide guidance on how children and youth can support these DRR priorities (UNDRR, 2020). Despite this guidance, uncertainty remains about how to implement youth engagement in policy and practice.

Over the last two decades, published literature and priorities in global guiding documents have cited the importance of youth participation in DRR, nevertheless, the literature remains limited, and there has been minimal action from institutions and governments in practice (Higuera Roa, 2020; Rodriguez-Giralt et al., 2020). Underscoring the need for more research and guidelines on youth participation in DRR is the knowledge that ageism is the most prevalent form of discrimination (Abrams et al., 2011) with the WHO (2021) reporting that one in two people across the globe hold ageist attitudes.

It is important to hear youth voices and learn from their experiences with COVID-19 and disaster volunteerism. As more marginalized voices, like those of youth, are included in DRR, knowledge on factors that contribute to and reduce risk will improve (Anderson, 2005). Youth participation in DRR will also contribute to an all-of-society approach and reduce age-based systemic barriers to inclusivity in disaster risk management. In this article, we explore perceived barriers and facilitators to youth participation in DRR from the perspectives of youth volunteers and essential workers in disasters in Ottawa, Ontario, Canada. We focused on two research questions: 1) What are the experiences of youth volunteers and essential workers contributing to DRR and the COVID-19 pandemic? and 2) What are their perceptions of barriers and facilitators to youth participation in DRR?

2. Methods

2.1 Study Design

We view an all-of-society approach to DRR through the lens of social justice, which requires an asset-oriented approach to support population health. Thus, the theoretical underpinnings of this study stem from Antonovsky's (1996) Theory of Salutogenesis, which focuses on the formation of health as opposed to the production of disease. We applied this theory using an asset-based approach (Morgan & Ziglio, 2007) to explore barriers and facilitators to youth participation to facilitate an all-of-society approach to DRR.

We used an instrumental single case study research design (Merriam, 1988) to gain in-depth understanding of youth participation in DRR through description and analysis of cases (Creswell, 2013; Merriam, 1988). The case was bounded by limiting participation to youth in Ottawa, Ontario, Canada who contributed time to local disaster preparedness, response, or recovery between 2017 and 2021.

2.2 Disaster Contexts

Over five years, Ottawa experienced four disasters requiring substantial multi-level response. In spring 2017, the region experienced extensive flooding (CBC News, 2017); in September 2018 two tornados (an EF-2 and EF-3) caused widespread damage and power-outages (Nease, 2018); in spring 2019, the region again experienced substantial flooding (CBC News, 2019); and beginning in 2020, the global COVID-19 pandemic (CTV News Ottawa, 2021).

Youth volunteerism and contributions as essential workers became apparent during these recent disasters in Ottawa, Ontario, Canada. Our study took place in Ottawa with data collection spanning from November 2020 to July 2021. Youth essential workers and volunteers discussed their experiences throughout the pandemic up to the time of their interview. At the onset of the interviews, the city had an “orange restrict level,” which allowed restaurants, gyms, and other indoor businesses to open, with limited capacity. COVID-19 public testing centres were open, physical distancing was encouraged and mandatory mask mandates continued. Mid-December 2020, healthcare workers began receiving COVID-19 vaccines. At the end of December 2020 through January 2021, Ottawa was in a provincewide lockdown. Also in January, vaccines were rolled out for residents in long term care (LTC) homes as case counts continued to rise. Students began the school year with in-person classes, went back to online schooling during the lockdowns, and returned to in-person learning at staggered rates the following month (CTV News Ottawa, 2021). From March to July 2021, COVID-19 cases fluctuated, with daily case counts decreasing into the summer months. Through spring/summer 2021, COVID-19 vaccines were rolled out to the broader community.

2.3 Participants and Ethics

The participants in our case study were youth volunteers or essential workers during the disaster events described in section 2.2. Some participants had multiple experiences across different disasters. They ranged in age from 12 to 24 years, with a median age of 18.5 years. We recruited 12 participants, several of whom volunteered or performed essential work within and beyond the disasters selected for this study. The final sample included six volunteers, five essential workers, and one participant with both essential work and volunteer experience. For inclusion in the study, participants had to be between the ages of 12 and 24 years; have experience volunteering before, during or after the flooding or tornado events and/or have experience volunteering or working in Ottawa during the COVID-19 pandemic; and be able to speak English or French.

This study was approved by the University of Ottawa Research Ethics Board. We employed snowball, purposeful and intensity sampling to recruit youth with rich volunteer or work experiences in DRR (Creswell, 2013; Creswell & Poth, 2018). At the beginning of each interview, we obtained verbal consent from participants over 16 years of age; we obtained verbal assent and consent from participants under age 16 and their parents, respectively. A list of mental health resources and contact information were provided in the consent forms in the event that participants were upset by the discussion of disasters.

2.4 Data Collection

From November 2020 to July 2021, the lead author (CJP) conducted 12 one-on-one, semi-structured qualitative interviews, ranging in length from one to four hours. Interviews varied in length given several factors: 1) high volume of volunteer/work experiences of the participants; 2) technical difficulties with Wi-Fi and Zoom; and 3) personal anecdotes about the

effect of the pandemic on their lives. All three factors were present during the four-hour interview with a participant who had recently lost a family member to COVID-19 and needed space to discuss the recent event. From a moral and ethical perspective, it was important not to interrupt and to be sensitive to their need to express their intense experience. Given pandemic restrictions, interviews were conducted over Zoom using video. Some interviews were transferred to telephone calls when internet signals were intermittent. All interviews were audio recorded and transcribed verbatim.

We stopped collecting data after the interview with the 12th participant for the following reasons: 1) We had a sample with participants representing all four disasters bounding the case; 2) each of the 12 interviews were rich and complex providing ample data to explore; 3) pragmatic constraints of the project; and 4) the final sample size of 12 participants falls within the acceptable sample size range (i.e., four to 10 participants per case) of foundational authors on qualitative research methods (Creswell & Plano Clark, 2011). These criteria were chosen based on Braun and Clarke's (2021) guide on how to determine when to stop data collection in reflexive thematic analysis.

During the interviews, we used photo-elicitation (Harper, 2002) to prompt deep reflection and recollection from participants using visual images. To protect participant anonymity, images and videos were not collected as data, rather they were used for what Wagner (1979) referred to as 'interview stimuli' to elicit responses from participants. Photo-elicitation helps stimulate reflection about a topic by actively engaging participants in remembering details of their experience (Barrington et al., 2017).

2.5 Data Analysis

We used reflexive thematic analysis (Braun & Clarke, 2019, 2022) to code and interpret findings using an inductive (data-driven) and deductive (theory-driven) coding approach. We generated codes and themes through deep immersion in the data, reflection, and thoughtfulness (Braun & Clarke, 2019). Reflexive thematic analysis provided a rigorous approach, while remaining fluid and recursive. The lead author (CJP) familiarized herself with the data through interview transcription, actively reading and re-reading the data, and taking notes on initial ideas, interpretations, and assumptions about the data through reflexive memoing. She wrote memos in a dedicated memo journal at the conclusion of each interview, throughout coding and generation of themes, and the manuscript writing process. Using NVivo software, she generated initial codes through open coding across the entire data set, then explored potential themes by organizing and reorganizing codes into patterns and ideas. After naming and defining themes to tell the overall story of the analysis, she refined themes by selecting exemplar participant quotes. These steps were recursive, moving back and forth through this process over a prolonged period (Braun & Clarke, 2006).

Throughout the process, the co-authors held meetings to practice reflexivity by discussing their assumptions on the topic, the direction of storytelling, and troubleshoot themes in need of further thought. We presented rough themes to colleagues in the field to provide space for critical reflection on the balance between the authors' voices, participant voices, and areas in need of further refinement. Throughout this reflexive practice, we mapped and re-mapped the themes to mirror our changing thinking on the data and research topic.

3. Results

In this study, we explored 12 participants' perceptions on barriers and facilitators to youth participation in DRR, and their experiences working and volunteering in this context. Of the six volunteers, three were paramedic students volunteering at local COVID-19 testing drives and vaccine clinics to support the pandemic response; two participants volunteered with sandbagging, community cleanup, and fundraising before and after the flooding events and tornadoes in Ottawa. Another volunteered with a grassroots volunteer initiative to procure and distribute personal protective equipment (PPE) supplies to frontline workers during the pandemic. Of the five essential workers, three participants worked in LTC or retirement homes, one worked in a hospital, and one held several essential non-healthcare related jobs throughout the pandemic. Finally, one participant was both a volunteer and essential worker during the COVID-19 pandemic, volunteering at a COVID-19 vaccine clinic and working in LTC. Table 1 summarizes the participant characteristics.

Table 1. Participant characteristics and DRR experience

PARTICIPANT NUMBER	AGE	GENDER IDENTITY^a	ETHNIC IDENTITY^b	BORN IN CANADA	EDUCATION LEVEL	ROLE	DISASTER	JOB
1	17	Female	Latina (Brazilian)	Yes	In grade 12	Essential Worker	COVID-19 pandemic	Receptionist at a retirement home
2	22	Not specified	Not specified	Not specified	In college	Volunteer	COVID-19 pandemic; tornados	Paramedic student at COVID-19 PPE drives and testing clinics; donated items, picked up donations, and drove residents to community centre to look for lost items after tornados
3	24	Female	European (White)	Yes	Undergraduate university degree	Essential Worker	COVID-19 pandemic	Hospital clerk
4	19	Male	Brazilian (White)	No	In college	Volunteer	COVID-19 pandemic	Paramedic student at COVID-19 testing clinics
5	22	Not specified	Not specified	Not specified	Undergraduate university degree	Essential Worker	COVID-19 pandemic	COVID-19 screener and activities coordinator in long term care home
6	22	Female	Italian/French Canadian (Caucasian)	Yes	In college	Volunteer	COVID-19 pandemic	Paramedic student COVID-19 testing and vaccine clinics
7	17	Female	African (Black)	No	In grade 12	Essential Worker	COVID-19 pandemic	Resident assistant in long term care
8	18	Female	Southeast Asian	No	In grade 12	Both	COVID-19 pandemic	Resident assistant in long term care and volunteer at COVID-19 vaccine clinic

9	18	Female	White	Yes	First year university	Essential Worker	COVID-19 pandemic	Several non-healthcare related roles in food services, childcare, tutoring and grocery
10	12	Male	European/ Russian/ Canadian (White)	Yes	In grade six	Volunteer	Floods; tornados	Fundraising, sandbagging, tornado clean up
11	14	Male	European/ Russian/ Canadian (White)	Yes	In grade eight	Volunteer	Floods; tornados	Fundraising, sandbagging, tornado clean up
12	24	Male	Persian (Iranian)	No	In medical school	Volunteer	COVID-19 pandemic	Fundraising, procurement, and delivery of medical supplies to health services

^a The participants’ self-reported gender. The question we asked in the interview was “What is your gender?”

^b The participants’ self-reported ethnic identities demonstrate some ambiguity in the way such terms are interpreted and applied to themselves. The question we asked in the interview was “What is your ethnic background?”

Given the volume of data generated in this study, here we present results related to youth experiences as essential workers/volunteers and perceived barriers and facilitators to implementing meaningful youth participation in DRR. See Table 2 for a summary of the themes and recommendations presented in this article. We begin this section by exploring themes on perceived barriers to youth participation in DRR. We conclude our results with a summary of action recommendations for intergenerational collaboration as a strategy to dismantle barriers, facilitate youth participation in DRR, and foster inclusive institutional cultures.

Table 2. Summary of themes and action recommendations.

	Overarching Themes	Subthemes Level 1	Subthemes Level 2
Themes: Barriers	Feeling undervalued is a potent barrier to participation.	Institutional limitations to youth participation in DRR.	
		Ageist stereotypes, prejudices, and discrimination.	The paradox of feeling discriminated through ageism and holding ageist views.
			Limiting views of other ages devalue their potential contributions.
Action Recommendations	Fostering inclusive institutional cultures and intergenerational collaboration	Communicate opportunities for participation.	
		Provide mentorship and training for intergenerational collaboration.	
		Advocate for diverse voices.	
		Overt recognition of youth contributions.	

3.1 Feeling Undervalued is a Potent Barrier to Participation

The youth we spoke to have a strong desire to contribute to DRR, but they feel undervalued by professionals in the field. The areas in which participants felt undervalued varied

depending on their experiences. Either they felt valued in smaller social scenarios or not at all. A common perception was that their voice had weight at an individual and organizational level, but was unheard at a national level or on a political stage. They emphasized the importance of having advocates in the field who provide space for youth voices to be heard within these institutions.

“...I think we do have voices as long as people are willing to listen. I do not think I have a voice at a national level. Or a governmental level. But at an individual, or an organizational level, yes. You need someone to advocate for your voice as well. I had the [volunteer] organization ... that whole organization advocating for our voice to be heard, but not everyone has that. There is no way my voice would be heard if I tried to go at it alone.” (P12, Male, 24).

Other participants never felt valued. *“A lot of stuff that I do it is very indirect in terms of improving disasters... there is no avenue for me to give feedback, you know nationally or provincially, or even locally at this point.”* (P8, Female, 18). This participant perceived she had no power to affect direct change at any level because there was no system to provide feedback on how DRR and healthcare was provided in LTC and at the COVID-19 vaccine clinics.

Feeling unheard is problematic as youth are important contributors to inform decision-making and disaster activities. One participant who has a background in healthcare felt she could not speak up within the institutional spaces she was volunteering.

“...My least favorite part so far is that I am a healthcare professional and where I am volunteering the protocols of cleaning have not been kept up... it is not my role as a volunteer to say anything... sometimes I feel like you just have to bite your tongue... I have that healthcare knowledge and then coming into a position where you do not really think you can say something, and it is a valid opinion... but is it going to get implemented? Meh.” (P6, Female, 22)

The youth in this study aspired to be integrated into existing DRR institutional spaces classically dominated by adults. They want intergenerational collaboration to become mainstream within these formal spaces. However, they discussed practical institutional limitations, and ageism as barriers to youth integration into DRR spaces.

3.1.1. Institutional Limitations to Youth Participation in DRR

In this section we present participant reflections on institutional barriers to youth participation in adult-centric DRR spaces. These reflections point to their awareness of the complexity of disaster response and integration into professional workspaces. The participants highlighted the following barriers that could limit adults' desire and ability to include youth: perceptions of youth as too busy, safety regulations and insurance liabilities, job hierarchies within the system, and how the DRR workforce is overworked and overwhelmed.

One participant reflected that perhaps adult assumptions are less negatively laden than youth think. While it may be tempting to jump to ageist assumptions, it is possible professionals in DRR assume youth are uninterested, or too busy with school and extracurriculars, to have time to volunteer in DRR, or that adults assume youth are incapable of contributing the quantity of time needed. These are assumptions that can result in adults overlooking youth as potential collaborators in DRR. One participant, in reflecting on why older adults are asked to volunteer rather than youth, expressed:

“...They are looking for the retired people [to volunteer] because they have the time, and they think that we are too busy. So, let us ask the 60-year-old to volunteer 30 hours a week, because we need the commitment so high that the young students, the kids and the teenagers are not capable of volunteering.” (P6, Female, 22)

In some cases, participants acknowledged there may be safety regulations that prevent professionals from engaging youth in all aspects of DRR.

“...there were some people who had to walk across water and some people had to use kayaks so I do not think youth would be able to do that because some areas [of flooding] were taller than an average 13-year-old... I do not think an adult would trust a kid to kayak across the water with sandbags.” (P10, Male, 12).

Some participants highlighted insurance and liability as another potential barrier. Barriers around insurance and liability are not necessarily barriers that should be surmounted as they are

in place to protect people from unnecessary risk or harm. Despite aspiring to fulfill larger roles in DRR, the participants understood their vision of involvement had some practical barriers.

“...It would have been nice if there were a lot more opportunities... I would have liked to have been on the front lines a little bit more. But of course, it is very difficult in a volunteer organization... you have people to worry about, you have insurance responsibilities. You cannot just be throwing your volunteers at deadly diseases... I know that it was not feasible for the organization...” (P2, Undisclosed, 22)

Another barrier highlighted by participants were workplace hierarchies. Youth tend to occupy entrance level positions – low ranking positions with less interaction with upper management. The youth in this study wondered if professionals with established careers might dismiss new, lower ranking employees.

“Given what happened with this pandemic, it is kind of hard to have a voice in a disaster. I think there is probably like 1000 voices shouting at upper management and the people in control, and they are probably only going to actually listen to the 10 voices that are nearest to them, right? It is really hard to have a voice that gets through all of that noise...” (P3, Female, 24).

“... You can tell [adults] are not going to fully listen to you. They have an air of like ‘Oh. You are just an RA [Resident Assistant]. ‘You are just...’ maybe they are thinking this, but they have never said it out loud like, ‘You are an RA. You are young. I am not going to listen to you, I have been here so long, and you have been here for a couple of months.’ (P7, Female, 17)

Finally, the participants acknowledged that the DRR workforce is stressed and overloaded, and as such may not have the resources to support youth participation. They suggested, however, that youth could help by bringing in fresh energy. For instance, in LTC support from youths during the pandemic helped employees through the worst of the pandemic.

“... ‘Anything that I can help with, I am down.’ That kind of attitude is super helpful because then you can put [youth] in any position, and they will just do the best with what they have... They are just like, ‘I am helping by just following the instructions.’ ...if you already are working in healthcare and then there is a pandemic on top of that, it is just so overwhelming...you are already burnt out and exhausted... except for youth who have never experienced this before. It is kind of like an excitement of like ‘Oh this is so intense. Like woohoo. Exciting!’ Instead of it being like, ‘Oh my gosh I cannot take it anymore. My back is breaking already’ ... In my experience... [LTC workers] are super overworked – they will take anyone. Like even me with no experience...” (P5, Undisclosed, 22)

3.1.2. Ageist Stereotypes, Prejudices, and Discrimination

We observed ageist stereotypes and prejudices as pervasive discourse in the interviews. This was an unexpected finding and salient barrier to the implementation of youth participation and an all-of-society approach in DRR. Ageism was discussed openly by participants and appeared as subtext throughout the interviews. We identified the following themes in the discourse: 1) the paradox of feeling discriminated through ageism, but also holding ageist views that discriminate against others; and 2) limiting views of other ages devalue their potential contributions.

3.1.2.1. The Paradox of Feeling Discriminated Through Ageism and Holding Ageist Views. Most examples of ageist discourse revealed a paradox in which youth felt stereotyped for their age yet participated in stereotyping. These findings point to ageism as a bidirectional barrier to youth participation in DRR. Ageism was bidirectional as participants believed adults discriminated against youth capabilities, while also expressing their own reductive assumptions about adult capabilities. This paradox demonstrates a dialogue in which participants perceived themselves as less or more capable than adults depending on the skill set. Interestingly, it appears the self-ageism of adults, in the form of self-deprecating jokes, influenced some youth perceptions about adults' capabilities.

“...it is usually in a joking manner, but older people sometimes say like, ‘Oh, you are young and spry. Why don't you go do that for me?’ Or you know, like ‘Get the youngins to pick up the heavy stuff.’ ... I think that is how they see youth abilities is that they are young, so... they have more energy, they have younger muscles that could be utilized... that is a perception that I have seen.”
(P2, Undisclosed, 22).

The participants' assumptions about adults also stem from observations in their volunteer roles. Again, the participants perceived adults as less energetic and slower learners compared to

youth. *“When you are younger you have a lot more energy than some older folks ... [Youth] could sandbag for a little bit longer ... probably fill more bags faster...”* (P11, Male, 14).

“... But I think youth are in an opportunistic role to do more than someone in an older age category. I would put emphasis on training the younger people to higher levels before the older individuals, because... it is more difficult in some cases to teach older age groups the material... they just seem more lost than someone who is younger who picks up on the information quicker and is a lot easier to teach...” (P2, Undisclosed, 22).

While the participants perceived themselves as more capable above, they also believed that adults' view youths as less skilled and thus less capable than adults. This perceived bias illuminated stereotypes of younger generations as incapable, self-centred, and lazy.

“I think there is a lot of stigma around youth being capable of helping. Our abilities are underestimated... you know how people when they are old suffer with ageism? I think it is like that, but for young people. We are defined as incapable, self-centred, non-motivated, lazy, non-hardworking, people.” (P6, Female, 22)

Intriguingly, the participants also held biases against younger generations. One participant confessed to holding these same biases and noted how these assumptions about younger people might be held across all ages, and this may stem from viewing younger generations as a reflection of personal development of older generations since their youth.

“I think there is definitely, just in general, a bias towards looking at younger people and thinking that they are unskilled... and it is something everybody is guilty of, including me. You know, I look at my little brother ... and I think of an earlier version of myself, right? And now you think of yourself as someone, something, better than you were before, right? It is just natural to look at younger people and think you know, maybe they are not as knowledgeable as I am at this point...” (P4, Male, 19)

This bias of youth as less capable than adults made some participants feel infantilized by adults. Though examining the cultural differences around concepts of ageism is beyond the scope of this study, it is important to note that views on ageism and infantilization might differ for youth with lived experience in cultures which emphasize hierarchy and respect for elders.

However, for some participants, they felt this infantilization and stated that it trivializes their potential strengths and contributions.

“I feel like it is the same thing ... You do not know anything about the world so like why should we include you?’ ... I feel like a lot of adults think high schoolers do not know anything. They infantilize us a lot...” (P7, Female, 17)

3.1.2.2. Limiting Views of Other Ages Devalue their Potential Contributions. The assumptions within the discussions were that people see other ages as a limiting factor. For the participants, adults appear close-minded to the possibility of youth possessing useful skills for DRR. They described how this devalues and disregards their potential contributions.

“I think there is this preconception that because youth are young, they are perhaps less capable than adults... there is that idea that because adults have more experience with life... there is this preconception that youth perhaps do not belong... that teenagers are rowdy, loud, rebellious and that they do not have a place in environments where people’s lives or well-being is at stake. There definitely are individuals that fit that role...but I think that there is a bit of ignorance to the power and the impact that youth could have in disasters. That stereotype may be a barrier that could be overcome to benefit disaster relief.” (P1, Female, 17)

Unequal power dynamics in workplaces and sectors that are historically “adult-centred” can result in youth voices going unheard and youth feeling undervalued. The youngest participant believed adults would have this to say about his sandbagging contributions before the flooding: *“Thanks for helping out. You really did not do that much, but it still helped us.”* And that adults would view the youth contribution as: *“Overall I think the youth did 10%. We [the adults] did 90%.” (P10, Male, 12).*

The participants believed adults lack respect for youth knowledge, experiences, and skills. They assumed this disrespect also extends to tools valued by youth, such as social media. While social media is a valued tool and skillset possessed by younger generations, participants expressed this may be the reason adults consider it unworthy of importance in DRR.

“...I feel like a lot of adults have this old way of thinking like ‘Oh social media. There is

nothing good about it.’ They do not see how important it is, and because this is a strength of youth, they relate it to the way youth contribute as not important...But I feel like adults they see social media as a waste of time... they infantilize it and they do not see the point of it...” (P7, Female, 17)

The participants highlighted how age-based discrimination is a barrier to youth participation in DRR. They explained that youth feel the discrimination and thus disregard DRR as a potential venue for their own participation: “*A lot of people do not think of youth when they think of disaster risk management and that is translated onto us. So, we are like, ‘They are not going to listen to us. Why should we bother?’” (P7, Female, 17).* The youth assumptions of age-based weaknesses identified in section 3.1.2.1. similarly devalues the potential contributions of adults, creating intergenerational tension. Thus, bidirectional ageism is an obstacle that limits innovation and capacity in DRR.

3.2 Fostering Inclusive Institutional Cultures and Intergenerational Collaboration

The participants want to be included within disaster risk management institutional systems and structures; however, they identified institutional limitations and ageism as barriers which make youth feel devalued within adult-centric DRR spaces. The question remains —how does one implement youth participation in DRR with a workplace that is already overloaded? How do we balance the dichotomy of youth as a catalyst to revitalize an overworked workforce that, by definition, may not have the resources to support youth engagement?

To tackle the inherent complexity in integrating youth participation in DRR, the participants identified intergenerational collaboration as a solution to dismantle deficit-oriented assumptions and promote inclusive institutional culture to support innovation in DRR.

“...it takes the experience and exposure of working with younger people for the stigma to end. Because right now the stigma of my parents’ generation is that we are lazy, we want big money and we want little job responsibility, but we want the \$400,000 a year. We want the big titles, but we have no motivation to get them. That is how that generation views us...” (P6, Female, 22)

To promote institutional cultures where inclusion is at the forefront, participants suggested that systemic changes must start at the top. In other words, effective, non-discriminatory, and safe participation for youth requires support from leaders within the institution. In turn, this promotes more broadly an all-of-society approach to DRR. They identified several action recommendations to facilitate intergenerational collaboration, and thus improve inclusivity in institutional spaces. We present a summary of their recommendations in the sections that follow. Figure 1 lists their recommended actions for professionals in DRR to build capacity for intergenerational collaboration.

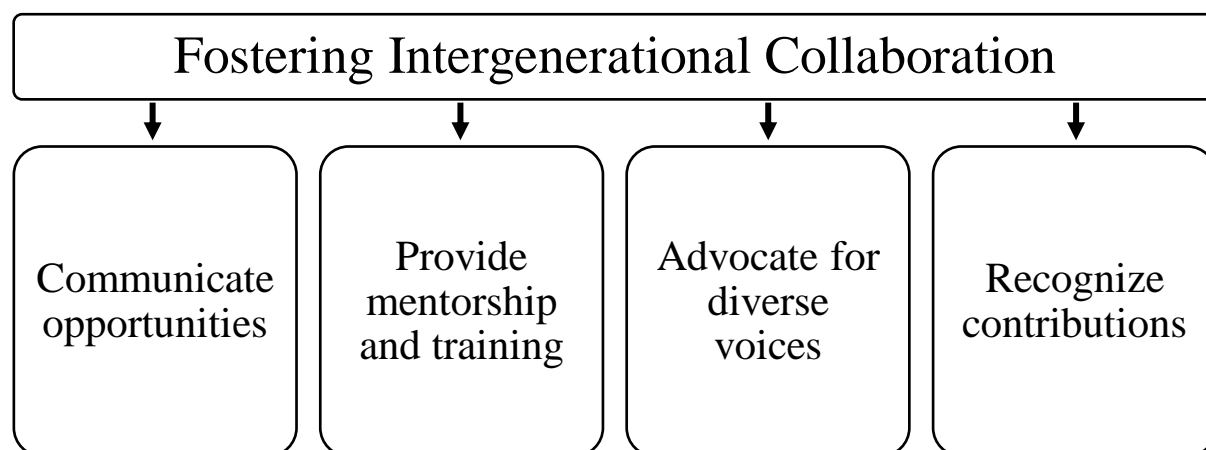


Figure 1. Action recommendations to foster intergenerational collaboration.

3.2.1. Communicate Opportunities for Participation

Participants emphasized the importance of improving communication about opportunities for youth to participate in DRR to increase accessibility. They advised doing outreach through youth-centric environments, such as online, in community organizations, and through schools. This is an important way to bridge the gap between youth- and adult-centric spaces to promote intergenerational collaboration.

“...How would I reach out to [youth]? Well, you have to connect with them. How do they connect? They connect via social media. They do not use the newspaper... They probably would not even use email... you have to communicate with the people at their level of communication...”

you want that 12-year-old to come volunteer? Yeah, put it on Facebook, Instagram, Twitter, Tik Tok. Whatever they use at that time... So you have to communicate in the way that that generation uses the world... or into different communities, like put it into different churches, or community organizations where people go, or different workplaces.” (P6, Female, 22)

3.2.2. Provide Mentorship and Training for Intergenerational Collaboration

Participants believed that intergenerational collaboration is not only feasible, but effective, provided youth have access to proper mentorship and training: *“Mentorship and having someone available to provide them guidance and support is very important...”* (P12, Male, 24). For participants, the role of leaders is to know who they are working with, what their capabilities are, and where they need guidance. They acknowledged that DRR and health related fields can be highly specialized and result in real world consequences on livelihoods. They unanimously envisioned a mentorship model to foster intergenerational collaboration in which youth learn by doing, in a low risk, low stress, training capacity.

“...I think there was something called like ‘Be Mayor for a Day’. Maybe incentives like that where people can have short term, but immersive experiences in disaster prevention or disaster response. It would be really beneficial because that gives them that immersive experience that I am personally fond of and have had good experiences with... but also having opportunities that are not necessarily long term or high stress that it would not be so important or so weighted that it would decentivize youth from becoming involved.” (P1, Female, 17)

This strategy protects youth and maintains DRR practice standards, while allowing youth to gain the necessary skills to contribute to DRR. Every participant identified comprehensive training and directed delegation as essential elements of mentorship to support youth integration within intergenerational collaboration.

“...having roles assigned to them and then getting maybe like a 3:1, or a 2:1 ratio of youth to adults. Having them mentor the youth on what roles they play, what they need to do, and then delegating some tasks to provide them with a sense of responsibility so they can also contribute to whatever degree they are able.” (P12, Male, 24)

3.2.3. *Advocate for Diverse Voices*

Within disaster risk management institutional spaces, the voices of practitioners and experts are prioritized; conscious room must be made for the voices of youth within and outside these spaces. Professionals can intentionally create space for youth by listening to, advocating for, and amplifying youth voices. Advocating for youth voices provides youth a sense of belonging within adult-centric spaces. This in turn can alter the narrative that youth contributions are not valued by professionals, facilitating intergenerational collaboration.

“...I know what a good program looks like. I am part of one ... I think a big part of [what makes it a good community program] is the ability to have a conversation where you are equals with people of different experience levels and different ages... if you somehow make it clear that everyone’s ideas and contributions are super important – you are not going to dismiss people’s ideas for being younger or for not knowing as much or for being wrong sometimes. Everyone’s ideas are valued and that is like the most important thing to getting youth involved. Especially because teenagers, they are friggin sensitive... if a 15-year-old walks into a room and they feel like they are not cared about or that their ideas do not matter, then they are going to not come back. More so than a 30-year-old who is well adjusted...” (P9, Female, 18)

3.2.4. *Overt Recognition of Youth Contributions*

Finally, professionals can overtly recognize youth contributions by demonstrating gratitude for youth efforts and showing how youth contributions impact other DRR efforts. This recognition from older generations helps boost morale, contribute to personal fulfilment, bolster confidence, and reaffirm that youth contributions are both recognized and valued. Positive recognition helps motivate youth, buffering against perceived ageism and creating sustainable intergenerational collaboration.

“...There was definitely a lot of support, a lot of praise from the [paramedic] school for the people that did volunteer. It is not something that we expected for sure ... I definitely did not expect all of the praise...getting awards and stuff. I mean, it feels a little wrong and it feels like overkill, but you know, I am sure a lot of people appreciate that. There was also definitely a good amount of support from family members and people thanking us for volunteering ... they were thankful and that is definitely a motivational boost.” (P4, Male, 19)

“...any adult who saw any kid sandbagging would say ‘Really good job! Keep it up!’ to give you that extra encouragement... I would have been Grade 5 in the first flood. Even if it was just like a role model to me, like a Grade 8, and he said, ‘Good job!’, I would think so much of it because I would think, ‘Woah, what a leader!’... it would really boost my confidence and then you would get more work done... every time I was going to volunteer, [my parents] would always be very happy and would support me... a couple of times my dad’s friends were walking past me and they would say, ‘Hey good job. Go do it!’ That really encouraged me.” (P11, Male, 14)

Highlighting the larger impact of their contributions was another form of overt recognition of youth efforts. For many participants, their favourite part of volunteering was knowing how their contribution was significant – beyond their self-described “mundane” and “small” actions. These reminders helped create a sense of belonging for volunteers and essential workers, which contributed to their sense of self-worth and agency.

“When I was emptying boxes of masks into bags... it was a good two or three hours that we were doing that ... and I was just thinking like ‘Man. This is what I would imagine women working in factories during the Second World War would have felt.’ [Doing] a mundane task, but [knowing] it had so much weight behind it, even though it seemed so insignificant. So, getting to feel that the world is in crisis, but I am helping. And it might seem like I am not doing a lot, but the clinics, the doctors, they are going to get their PPE and they are going to be able to open back up, accept patients again, help people...” (P2, Undisclosed, 22)

Figure 2 summarizes how the recommended strategies to foster intergenerational collaboration can promote an inclusive institutional culture. In turn, an inclusive institutional culture promotes an all-of-society approach to DRR, integrates youth participation in DRR, and begins to dismantle ageist assumptions. Finally, this contributes to building community capacity and resilience to disasters.

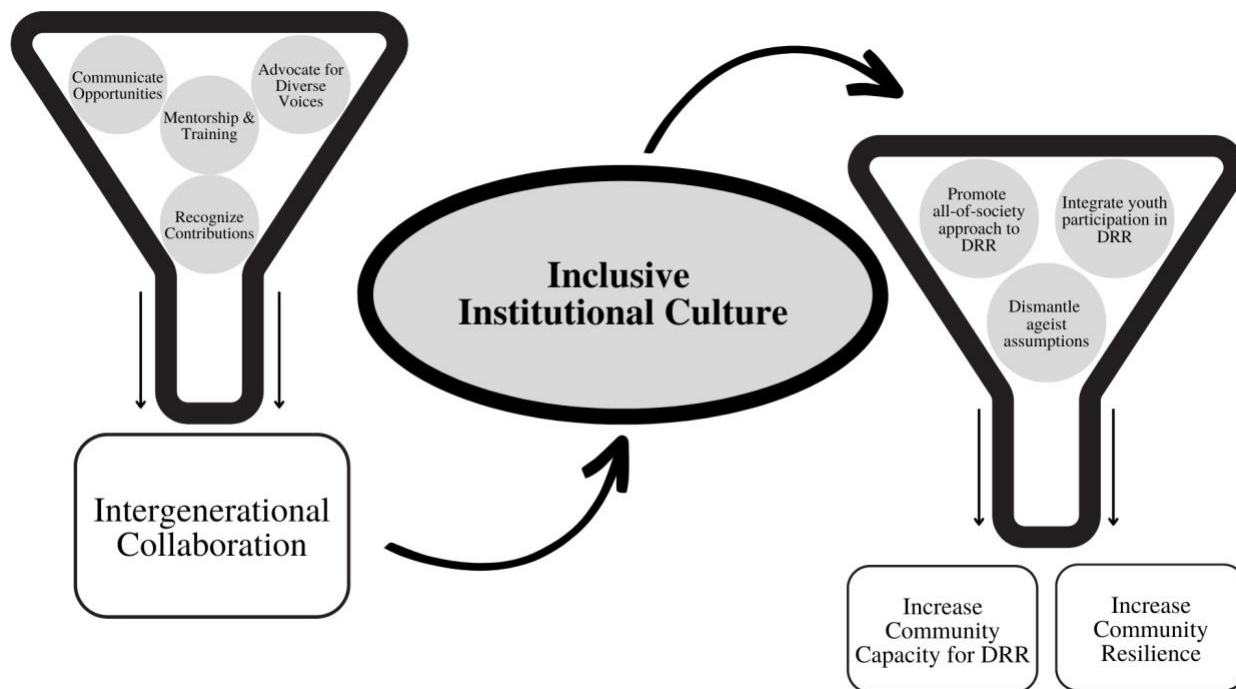


Figure 2. Promoting inclusive institutional culture through intergenerational collaboration.

4.0 Discussion

Global guidelines call for more inclusive, bottom-up approaches to DRR in which the community plays an active role (UNDRR, 2015). Including youth in decision-making and disaster activities is one such holistic approach (Fernandez & Shaw, 2015; Haynes & Tanner, 2015). Youth-led DRR provides opportunities for active participation, reducing disaster risks, and contributing to community resilience (Higuera Roa, 2020). These opportunities must be meaningful, inclusive, accessible, non-discriminatory, collaborative and effective (UNDRR, 2020; World Health Organization, 2019). Implementing feasible strategies that meet these qualifications for youth engagement is a challenge. Implementation requires institutional change and flexibility from the community.

Youth desire agency over decisions that affect them and want to make a difference in society (Fleming, 2013; Pfefferbaum et al., 2018; Wong et al., 2010) – so do our youth

participants. Specifically, youth desire integration within adult-centric DRR institutional spaces through intergenerational collaboration. *The Children's Charter for DRR*, an action plan developed with over 600 children and youth, calls for governments and institutions to engage youth in DRR and climate change adaptation (Plan International et al., 2011). However, to meet an all-of-society approach to DRR, Rodriguez-Giralt et al. (2020) argue this requires a reimagining of the place of youth in the classic “adultist” culture of disaster risk management. Within these institutional spaces, the voices of practitioners and experts are prioritized, thus conscious room must be made for the voices of youth.

One of the most salient observations stemming from our study is that youth want to participate in DRR but perceive ageism as a barrier to collaboration. Ageism research often focuses on discrimination experienced by older adults; however, younger populations also experience discrimination. In their European study, Bratt et al. (2017) found that younger people reported the highest levels of age-based discrimination. Ageism can be explicit or implicit, and it occurs when how people think (stereotypes) and how people feel (prejudices) about others, influences how they act, resulting in discrimination (World Health Organization, 2021). Like other forms of prejudice, age discrimination is a form of social exclusion that can hinder accessibility in shared spaces and social cohesion across populations (Levy & Macdonald, 2016). This poses a complex challenge for institutions looking to implement an all-of-society approach to DRR.

Children and youth under 30 years represent over 50% of the world's population (UNDRR, 2020; United Nations Population Fund, 2014). They experience disproportionate impacts from disaster, such as interruptions to education, physical and mental health. Not only is it a right for youth to have their needs met in these contexts, but it is also their right to contribute

to DRR efforts (UN General Assembly, 1989). Despite this right, the World Economic Forum Global Shapers Survey found that 55.9% of young people believe their views are ignored in decision-making (Brodie, 2017). The results from our study align with these beliefs.

Discussions of ageism are even more salient when compared to guidance from the *United Nations (UN) Research Roadmap for the COVID-19 Recovery* (United Nations, 2020b), which emphasizes inclusive solutions for pandemic recovery by improving social cohesion, community resilience and engaging marginalized populations. The Roadmap highlights how interdependence across systems and generations results in shared risks and responsibilities, requiring solutions based in equity, resilience, and sustainability. The challenge facing DRR practitioners and policymakers is in learning how to harness these interdependencies. We argue the need for inclusive institutional cultures which actively work to dismantle systemic social barriers, such as ageism, by supporting an all-of-society approach to DRR through intergenerational collaboration across disciplines.

4.1. Limitations

There is no one way to engage youth - the amount and form depends on many different factors (Shier, 2001). Our participants' action recommendations do not consider the preferences and capacity of the institutions and communities within which the participants wish to be included. These recommendations are from the perspective of youth sharing an ideal vision of their integration within DRR institutional spaces. While their action recommendations for intergenerational collaboration provide suggestions for supporting youth in an adult-centric system, it might not be feasible for all professionals or organizations to implement. We recognize that many employees and volunteers in disaster risk management and health are often dealing with extraordinary workloads. Our study captured rich, nuanced perspectives on youth

participation in DRR from youth in one city in a high-income country – one perspective of a multifaceted issue. Future studies should explore the perspectives of DRR and health professionals, other societal groups considered marginalized, as well as youth in low- and middle-income countries. Future studies should strive to bridge the intergenerational gaps within their research by hosting focus groups in partnership with youth and professionals in DRR to discuss strategies to implement intergenerational collaboration in DRR.

4.2. Implications

There are many barriers to youth participation in DRR including, but not limited to, a lack of knowledge, lack of community support and lack of resources (Fernandez & Shaw, 2015). Our study revealed institutional barriers and bidirectional ageism as further barriers. In reflecting on the bidirectional ageism revealed in our study, it is helpful to consider how participants' perceptions of age-based limitations can result in self-limiting behaviours (World Health Organization, 2021). These perceptions can impact how youths see themselves and cause divides between generations. Age-based discrimination prevents society from benefiting from the ideas and skillsets of diverse populations to improve adaptive capacity and community resilience to disasters. This results in inequity in terms of who accesses opportunities.

As Rodriguez-Giralt et al. (2020) highlighted, disaster risk management culture values the voices of professionals and experts over all others. There is a need for a cultural shift towards inclusivity within DRR institutions to open the door to an all-of-society approach to DRR. Fostering intergenerational collaboration within these institutions can reduce age-based inequities, create accessible spaces, and foster youth participation in DRR.

Opportunities are needed for all of society, and more specifically youth, to participate in DRR, but implementation is complex. There is a knowledge gap in research and practice about

how to implement meaningful participation of marginalized populations in institutions (United Nations, 2020b). Future studies on this topic can help determine innovative implementation strategies that are both ideal and feasible for diverse stakeholders to integrate all-of-society meaningfully and sustainably in DRR.

5. Conclusion

All our participants agreed that youth are important assets in DRR but felt that potential contributions from youth are not valued by professionals. They desire more opportunities for youth integration within adult-centric institutional spaces. Innovation and shifts in institutional culture can help create opportunities for youth that are sustainable, meaningful, and mutually beneficial for all stakeholders. Strategies that foster intergenerational collaboration allow youth and professionals to remove institutional and age-based barriers to promote an inclusive institutional culture. Intergenerational collaboration is not possible, however, if different generations only see deficits. Thus, it is important to have open discussions to break down barriers, while highlighting generational assets, and providing youth-specific supports. Intergenerational collaboration, like DRR, is complex. Nevertheless, it is an inclusive strategy to improve community resilience and adaptive capacity, with a vision to build future capacity through an all-of-society approach to DRR.

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References

- Abrams, D., Russell, P. S., Vauclair, C.-M., & Swift, H. S. (2011). *Ageism in Europe and the UK: Findings from the European Social Survey* [Technical Report]. AgeUK.
<https://kar.kent.ac.uk/29733/>
- Anderson, W. A. (2005). Bringing children into focus on the social science disaster research agenda. *International Journal of Mass Emergencies and Disasters*, 23(3), 159–175.
<http://ijmed.org/articles/376/>
- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promotion International*, 11(1), 11–18. <https://academic.oup.com/heapro>
- Barclay, E., & Amaria, K. (2019, March 17). Photos: Kids in 123 countries went on strike to protect the climate. *Vox*. <https://www.vox.com/energy-and-environment/2019/3/15/18267156/youth-climate-strike-march-15-photos>
- Barrington, C., Villa-Torres, L., Abdoulayi, S., Tsoka, M. G., & Mvula, P. M. (2017). Using photo-elicitation methods to understand resilience among ultra-poor youth and their caregivers in Malawi. *Health Education & Behavior*, 44(5), 758–768.
<https://doi.org/10.1177/1090198117728756>
- Bratt, C., Abrams, D., Swift, H., Vauclair, M., & Marques, S. (2017). Perceived age discrimination across age in Europe: From an ageing society to a society for all ages. *Developmental Psychology*, 54(1), 167–180. <https://doi.org/10.1037/dev0000398>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>

- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589–597.
<https://doi.org/10.1080/2159676X.2019.1628806>
- Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health, 13*(2), 201–216.
<https://doi.org/10.1080/2159676X.2019.1704846>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE Publications.
- Brodie, C. (2017, August 28). *5 things we learned from one of the world's biggest survey's of young people*. World Economic Forum.
<https://www.weforum.org/agenda/2017/08/global-shapers-survey-2017-5-things-we-learned/>
- CBC News. (2017, May 14). The Ottawa and Gatineau flood: A photo timeline. *CBC News*.
<https://www.cbc.ca/news/canada/ottawa>
- CBC News. (2019, May 17). Spring flooding in Ottawa-Gatineau, by the numbers. *CBC News*.
<https://www.cbc.ca/news/canada/ottawa>
- Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). SAGE Publications.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). SAGE Publications.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

CTV News Ottawa. (2021). 365 days of COVID-19 in Ottawa. *CTV News Ottawa*.

<https://ottawa.ctvnews.ca/specials/interactive-timeline-365-days-of-covid-19-in-ottawa>

Fernandez, G., & Shaw, R. (2015). Youth participation in disaster risk reduction through science clubs in the Philippines. *Disasters*, 39(2), 279–294. <https://doi.org/10.1111/disa.12100>

Fleming, J. (2013). Young people's participation—Where next? *Children & Society*, 27(6), 484–495. <https://doi.org/10.1111/j.1099-0860.2012.00442.x>

Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies*, 17(1), 13–26. <https://doi.org/10.1080/14725860220137345>

Haynes, K., & Tanner, T. (2015). Empowering young people and strengthening resilience: Youth-centred Participatory Video as a tool for climate change adaptation and disaster risk reduction. *Children's Geographies*, 13(3), 357–371.

<https://doi.org/10.1080/14733285.2013.848599>

Higuera Roa, O. (2020). *The power of youth engagement in disaster risk reduction activities* [Technical Report]. <https://doi.org/10.13140/RG.2.2.15308.95366>

Laverack, G., & Labonte, R. (2000). A planning framework for community empowerment goals within health promotion. *Health Policy and Planning*, 15(3), 255–262.

<https://doi.org/10.1093/heapol/15.3.255>

Levy, S. R., & Macdonald, J. L. (2016). Progress on understanding ageism. *Journal of Social Issues*, 72(1), 5–25. <https://doi.org/10.1111/josi.12153>

Merriam, S. B. (1988). *Case study research in education: A qualitative approach* (1st ed.).

Jossey-Bass.

- Morgan, A., & Ziglio, E. (2007). Revitalising the evidence base for public health: An assets model. *Promotion & Education, 14*(2), 17–22.
<https://doi.org/10.1177/10253823070140020701x>
- Nease, K. (2018, September 29). Anatomy of a storm: Revisiting the devastation caused a week ago, when six tornadoes hit Ottawa, Gatineau, Que., and surrounding areas. *CBC News*.
<https://www.cbc.ca/news/canada/ottawa>
- Pfefferbaum, B., Pfefferbaum, R. L., & Van Horn, R. L. (2018). Involving children in disaster risk reduction: The importance of participation. *European Journal of Psychotraumatology, 9*(sup2). <https://doi.org/10.1080/20008198.2018.1425577>
- Plan International, Save the Children International [SCI], United Nations Children’s Fund [UNICEF], & World Vision International [WVI]. (2011). *Children’s charter: An action plan for disaster risk reduction for children by children*. Plan International.
<https://www.preventionweb.net/publications/view/19894>
- Rodriguez-Giralt, I., Mort, M., & Delicado, A. (2020). Concluding remarks: Reimagining children’s place in disaster risk management. In M. Mort, I. Rodriguez-Giralt, & A. Delicado (Eds.), *Children and young people’s participation in disaster risk reduction: Agency and resilience* (pp. 151–160). Policy Press.
- Shier, H. (2001). Pathways to participation: Openings, opportunities and obligations. *Children and Society, 15*(2), 107–117. <https://doi.org/10.1002/chi.617>
- Thunberg, G. [@gretathunberg]. (n.d.). *Posts [Instagram profile]* [Instagram].
<https://www.instagram.com/gretathunberg/?hl=en>

Thunberg, G. [@GretaThunberg]. (n.d.). *Tweets [Twitter profile]* [Twitter].

https://twitter.com/GretaThunberg?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor

UN General Assembly. (1989). *Convention on the rights of the child*.

<https://www.ohchr.org/en/professionalinterest/pages/crc.aspx>

UNDRR. (2015). *Sendai Framework for Disaster Risk Reduction*.

http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf

UNDRR. (2020). *Words into Action: Engaging children and youth in disaster risk reduction and resilience building*. <https://www.undrr.org/publication/words-action-guidelines-engaging-children-and-youth-disaster-risk-reduction-and-resilience-building>

UNDRR, & UN General Assembly. (2016). *Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction*.

https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf

United Nations. (2015a). *Paris Agreement*.

https://unfccc.int/sites/default/files/english_paris_agreement.pdf

United Nations. (2015b). *Sustainable Development Goals*. <https://sdgs.un.org/goals>

United Nations. (2020b). *UN research roadmap for the COVID-19 recovery: Leveraging the power of science for a more equitable, resilient and sustainable future*.

<https://www.un.org/en/pdfs/UNCOVID19ResearchRoadmap.pdf>

United Nations Population Fund. (2014). *The power of 1.8 billion: Adolescents, youth and the transformation of the future*. https://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP14-Report_FINAL-web.pdf

https://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP14-Report_FINAL-web.pdf

Wagner, J. (Ed.). (1979). *Images of information: Still photography in the social sciences*. SAGE Publications.

Wong, N., Zimmerman, M., & Parker, E. (2010). A typology of youth participation and empowerment for child and adolescent health promotion. *American Journal of Community Psychology*, *46*(1), 100–114. <https://doi.org/10.1007/s10464-010-9330-0>

World Health Organization. (2019). *Health emergency and disaster risk management framework*. World Health Organization. <https://apps.who.int/iris/handle/10665/326106>

World Health Organization. (2021). *Global report on ageism*. World Health Organization. <https://apps.who.int/iris/handle/10665/344701>

Chapter 9: Discussion

This dissertation contributes to the fast-growing, emerging subfield of youth participation in DRR (Amri et al., 2018; Peek et al., 2018). Promoting youth participation within DRR is an inclusive strategy to engage populations disproportionately affected by disasters. Given that children under 18 years of age make up a third of the world's population (United Nations International Children's Emergency Fund [UNICEF], 2014) and 16% of the world's population was between the ages of 15-25 years in 2019 (United Nations, 2020a), youth are a large population base with potential assets to contribute. Despite international agendas calling for youth engagement in DRR (UNDRR, 2015) and growth in literature over the last decade, implementation in policy and practice remains scattered and more information is needed on youth participation in this field. To overcome these hurdles, it is important to explore youth participation in DRR and DRM, from the perspectives of youth (Head, 2011).

In this chapter, we present the major findings and contributions of this dissertation. Presenting each article in turn, we briefly summarize salient findings. Then, we discuss how this research contributes to literature and practice. This chapter ends with reflections on the strengths, limitations, and implications of the research findings on youth participation in DRR.

Summary of Major Findings

In this dissertation, we discussed barriers and facilitators to youth participation in DRR, climate change, and the COVID-19 pandemic. The two studies explored youth experiences contributing to DRR in volunteer and essential work, and they provide action recommendations to operationalize youth participation in practice. We explored the experiences of youth during the COVID-19 pandemic and their perceptions of pandemic public health measures in partnership with youth. In the first article, we presented a detailed account of our Photovoice methodology,

describing our hybrid model of consultation that provided a youth-centric opportunity for youth to contribute to resilience building in their communities through Photovoice. Our study applied CBPR and arts-based research methodologies to support youth agency throughout the research process, promoted the voices of youth above those of adults (Peek et al., 2020; Trejo-Rangel et al., 2021), and connected youth with professionals in the field of DRR to facilitate action-based outcomes (Trejo-Rangel et al., 2021) in the form of Photovoice exhibitions.

In the second article, we explored how youth view youth capabilities in DRR and climate action. Drawing on their experiences contributing to DRR and other lived experiences, the youth co-researchers highlighted diverse topics, emphasizing the power of youth to implement inclusive DRR and climate action strategies. The most pertinent findings from this study were an exploration of youth assets, identifying how youth can contribute, and what supports youth participation (e.g., nurturing youth-adult partnerships) to promote community resilience. They developed four calls to action for professionals in DRR and climate change research, policy, and practices (See Table 6 in Appendix F for a summary of action recommendations across the three empirical articles). The focus groups for article #2 occurred prior to the COVID-19 pandemic; thus, the findings from article #2 contribute to literature on youth participation in DRR from the perspectives of youth who were not directly affected by disasters (Peek et al., 2020).

In article #3, we captured the perspectives of disaster-affected youth (Peek et al., 2020) on their experiences of the pandemic, and their contributions to COVID-19 recovery. The youth co-researchers discussed public health impacts of disasters, climate action, and pandemics on complex social justice issues like racism and mental health, and the role youth have in supporting COVID-19 recovery. The salient findings include insights on their perceptions of COVID-19 public health measures, expressing concerns over pandemic fatigue and public compliance with

restrictions. The youth co-researchers also provided valuable insight into the impacts of public health measures on their lives, highlighting social, educational, and mental health impacts. They discussed how the pandemic magnified existing social inequities – providing a lens into youth perceptions of racism as a public health issue in which youth can, and do, lead. This article provides six calls to action (See Table 6 in Appendix F), centred around the idea of supporting a holistic, upstream population health strategy to promote an all-of-society approach to DRR and COVID-19 recovery. Both the Photovoice and case study provide further evidence identifying roles and action youth take in disaster contexts (Peek, 2008; Peek et al., 2020).

Finally, in the fourth article, we explored perceived barriers and facilitators to youth participation in DRR from the perspectives of youth volunteers and essential workers. This study extends the literature beyond the evidence of youth participation in disasters within a limited number of large-scale events (Peek et al., 2018) by exploring youth contributions in local disasters in Ottawa, Ontario, Canada. The main findings of this article suggest institutional and age-based discrimination are central barriers to effective youth participation in DRR. The participants highlighted how they feel undervalued in DRR and COVID-19 response and recovery. They acknowledged this sometimes stems from institutional limitations (e.g., liability issues), but that the most harmful barrier was ageist stereotypes, prejudices and discrimination towards other generations. This article explores the implicit and explicit ageist biases that limit views of other generations and devalues their potential contributions. Like the empirical articles from the Photovoice study, the case study article provides action recommendations to dismantle these barriers, based on facilitating factors participants highlighted in their volunteer and work experiences (See Table 6 in Appendix F). Unlike the Photovoice findings that highlighted a need for more youth-centric institutional space in DRR and climate action, the participants in study 2

showed a desire to provide support for stakeholders to incorporate youth into adult-centric institutional spaces, by fostering opportunities for intergenerational collaboration and youth training. Their suggestions align with literature outlining the need for more institutionalization of opportunities for youth participation in DRR (Shidiq et al., 2021).

Across both studies, all participants agreed youth are important assets in DRR, climate action, and COVID-19 response and recovery, but the power of youth has not been harnessed to its full potential for social change. This dissertation contributes to literature and practice by reinforcing and extending the use of current youth participation theories towards DRR, while challenging current needs-based approaches to DRR in practice.

Methodological Contributions

Our Photovoice protocol article (article #1) contributes to the methodological advancement of youth participation in DRR through research. Scholars emphasize the need for participatory and arts-based research methodologies as a strategy to promote youth voices in a field dominated by adults (Peek et al., 2020; Trejo-Rangel et al., 2021). Photovoice, like other forms of CBPR, is meant to amplify marginalized voices by dismantling existing inequities in power between researchers and participants (Wang & Burris, 1994). The youth co-researchers noted our efforts to dismantle power differentials as key to their fulfilment collaborating on our study. For instance, we disseminated our findings through youth-centric social media channels in which the youth co-researchers were skilled at navigating. As our project was a collaboration between youth, the EnRiCH Research Lab, and members of The Canadian Red Cross, our study also aligned with extant knowledge which emphasizes the importance of documenting collaboration between practitioners and academia (Bessaha et al., 2022; Shidiq et al., 2021; Trejo-Rangel et al., 2021). This collaboration was intentional to incorporate action-based

outcomes into our research, thereby contributing to fill another gap in the literature and changes in practice.

In study #2, we contribute to literature on youth participation in DRR within adult-centric spaces, using case study methodology. Thus, the methodological implications differ from those of study #1. In implementing our Photovoice study (study #1), we prioritized creation of an accessible and safe institutional space for youth to contribute. We created a youth-centric space in which they had agency and decision-making power over the research agenda. The findings from this study have implications for youth participation within youth-centric institutional spaces. Differing from these findings, the case study explores youth engagement within adult-centric institutional spaces (Trejo-Rangel et al., 2021). Anderson (2005) listed case study methodology as an important form of research to explore youth participation in DRR, while Carlton et al. (2022), identified the need for more systematic analysis of the role of youth volunteers in disaster response. Through study 2, we contribute to these areas in the literature in need of further development.

An Asset-based Approach to Youth Participation in DRR

Youth are considered a ‘vulnerable group’ in disasters (P. Mitchell & Borchard, 2014; Peek, 2008). This is an important distinction which allows them to receive necessary supports in disasters. However, the reductive language fails to capture the heterogeneity of youth as a population and the breadth of their capabilities. The participants in both our studies emphasized the power of youth to create this change and the need for recognition of their capabilities by professionals in the field. Given that disasters thrive on and worsen existing inequities in society (IFRC, 2022), it is also important to include youth with diverse demographic characteristics (e.g., girls, youth living in poverty, youth of ethnicities who have been marginalized), backgrounds,

and experiences as they are at risk of experiencing disproportional impacts from disasters compared to other youth (Cutter et al., 2003; Lopez et al., 2012; Peek, 2008). Diversity and equity-focused inclusion was important to our co-researchers and participants across both studies.

From an asset lens, these same youth also have a unique and diverse range of capabilities and skills to create change and promote resilience in the face of hazardous events. The literature suggests using an asset-oriented label, such as ‘dynamic agents of change’ (Anderson, 2005), to ensure youth are treated as capable contributors to DRR by professionals. This is an important asset-oriented step to move forward the all-of-society agenda, especially youth participation in DRR. Equitable inclusion has the potential to reduce youth morbidity and mortality in disasters while improving community resilience and adaptive capacity.

Participants across both our studies agreed youth are undervalued and more action is needed to promote youth as dynamic agents of change in DRR. This aligns with extant literature that clearly states that promoting youth participation in DRR requires a mindset shift to consider youth as strategic partners who are adept at solving social problems (Anderson, 2005; Cox et al., 2019; Peek et al., 2020; Pfefferbaum et al., 2018; Shidiq et al., 2021). Less understood is how to best incorporate this partnership into current policy and practice (Bessaha et al., 2022; Peek et al., 2018, 2020). This dissertation expands on this assertion and provides action recommendations for how to operationalize this in practice.

An asset-oriented lens (Morgan & Ziglio, 2007), and accompanying asset-based activities (such as asset mapping to improve asset literacy), is a necessary paradigm shift away from the pervasive emphasis on vulnerability, needs, and gaps in the traditional top-down model of DRR (Peek et al., 2018). Based on the findings from our studies and our experience in community-

based DRR programming, this is one of the biggest barriers currently undermining the translation of youth participation knowledge into practice. Creating DRR strategies and implementing them through DRM programming is complex. Youth participation within policy and practice is one of many all-of-society approaches, which can improve community resilience within DRR and DRM. An all-of-society approach to DRR is an important strategy touted by international agendas to support innovative actions to combat climate change, reduce disaster risks, and promote resilience (UNDRR, 2015; United Nations, 2015a, 2015b). To implement this approach, a mindset shift is necessary to promote asset-oriented knowledge creation.

The knowledge base on youth participation, whether or not explicitly defined by scholars, inherently aligns with an asset-oriented world view. The complexity is in applying the lessons from scholars into the top-down, traditionally needs-based orientation of DRR policy and practice. Asset-based activities, such as inclusive participation and asset mapping, support asset literacy—and complement other types of DRR activities (O’Sullivan et al., 2014, 2018). This is one of the recommendations put forth by the co-researchers in our Photovoice study. An upstream asset-oriented approach not only supports DRR and improves resilience, but it can also be used to address underlying social inequities.

As an institutional exercise, asset mapping can help build collective asset literacy, and support a paradigm shift to see value in individuals and community groups typically labelled by their needs (Morgan & Ziglio, 2007). Asset mapping is the process of establishing a catalog connecting individual, community, and organizational strengths and how to access them (Kretzmann & McKnight, 1993; Morgan & Ziglio, 2007). As a strategy, asset mapping enables individuals to think positively about the people and resources in their lived environments and build on existing strengths in the community (Morgan & Ziglio, 2007). Asset mapping is an

inclusive approach to building community capabilities to improve health (Fuller et al., 2002). Similarly, it is a necessary paradigm shift for organizations, institutions, and governments seeking to implement, or improve DRR efforts, and include youth participation in their work.

Strategies for DRR are slowly moving away from traditional deficit-based approaches toward asset-oriented, upstream approaches to building disaster resilience and adaptive capacity. We applied an asset-based lens to this dissertation because it aligns with the asset-oriented worldview we observed across the literature on youth participation in DRR. Though scholars rarely indicate that an asset-based lens was used, an asset lens is still evident in the tenants of youth participation. For instance, within youth participation all forms of knowledge are seen as valuable (Fothergill & Peek, 2015; Hore et al., 2018) and youth are viewed as experts in their environments who are capable of unique contributions (Peek et al., 2020). In this way, youth are seen as assets within DRR and DRM in youth participation literature. We challenge scholars and practitioners to take this a step further by intentionally applying an asset-based approach in their work and advocating for this approach to extend to practice.

Applying an asset-lens to data collection and analysis enabled us to explore different forms of expertise and discuss how to harness them to promote youth participation in DRR. This idea is echoed in asset-based literature with Morgan and Ziglio (2007) explaining that asset mapping is an important step in operationalizing policies tackling health inequities. Our Photovoice study is an example of an organization (i.e., The Canadian Red Cross) collaborating with youth to build asset literacy, completing the cyclical process (O'Sullivan et al., 2014, 2018) through Photovoice Exhibitions and post-study follow-up with the organization. We identified youth strengths, recognized their value to promote community resilience to disasters, learned how to access and apply these strengths, and followed through with the motivation and self-

efficacy to implement the identified assets into action. Building asset literacy through asset mapping activities can help identify indicators to measure and evaluate implementation efforts (Morgan & Ziglio, 2007). This is an area for future research.

It is important to note that centring data collection around an asset-lens did not preclude discussion of deficits, as discussions naturally flowed from capabilities to needs. This is similar to previous research with other populations disproportionately affected by disasters in which an asset-oriented lens provided a balanced representation of both assets and needs (O'Sullivan et al., 2014). As such, a paradigm shift will not *replace* efforts supporting community needs in the context of disasters; rather, it will complement it, providing insight for practitioners on how to create conditions that promote health (Morgan & Ziglio, 2007).

The asset-based approach is thought to lead to improved problem-solving and participation in developing health and resilience (Morgan & Ziglio, 2007; Van Bortel et al., 2019). In our experience, an asset lens is needed to foster inclusion and intergenerational collaboration. In the case study, we identified ageism as an invisible barrier to youth participation in DRR. Using an asset lens, intergenerational collaboration could be viewed as a solution to help overcome ageism and its negative impacts on youth participation.

The results of this dissertation further the agenda put forth in the Sendai Framework for an age perspective on policy and practice, promotion of youth leadership, and organized volunteer work for citizens (UNDRR, 2015). Through our two studies, we argue that youth are agents of change and deserve space and support to contribute to DRR; the corresponding action recommendations (see Appendix F) provide insight into what this might look like and how youth would like opportunities to evolve.

Youth Participation Theories and DRR

Hart's Ladder of Youth Participation

In this dissertation, we show how youth participation theories align with youth operational participation within the context of DRR and DRM. Hart's (1992) model of youth participation illustrates youth inclusion in decision-making along eight rungs of a ladder: "1) Manipulation, 2) decoration, 3) tokenism, 4) assigned, but informed, 5) consulted and informed, 6) adult-initiated, shared decisions with children, 7) child-initiated and directed, and 8) child-initiated, shared decisions with adults." (Hart, 1992, p. 8). The co-researchers in the Photovoice study explicitly warned against and lamented tokenistic engagement when it comes to engaging youth – reinforcing that the bottom three rungs are not considered authentic forms of participation. Not only did co-researchers and participants agree these were not authentic, they also emphasized how these forms of non-participation can have negative consequences on youth mental health and satisfaction with engagement opportunities.

Hart (1992) emphasized that the top five rungs of his model were degrees of participation, highlighting the importance of youth choice in how they participate. He also emphasized the value of adult involvement throughout the engagement process because he saw the greatest community impact when youth had access to adult power (Hart, 1997). Our studies extend this belief by confirming that youth also see partnerships with adults as a strong strategy in which they can make the most impact for DRR, DRM and building community resilience.

Frank's Core Principles of Youth Participation

The findings presented in this dissertation align with several core principles of youth participation identified by Frank (2006). She identified the core principles as follows: "(1) Give youth responsibility and voice; (2) build youth capacities; (3) encourage youthful styles of

working; (4) involve adults throughout the process; and (5) adapt the sociopolitical context” (p. 367). As mentioned previously, an essential element of supporting youth collaboration in DRR decision-making is first acknowledging they are dynamic agents of change to give youth the opportunity to contribute and be heard (principle 1). In alignment with asset-based approaches to health, building youth capacities (principle 2) is an important factor within youth participation and an all-of-society approach – and another important concept for the participants and co-researcher of these studies. Our research closely aligns with and extends principle 4 with our salient themes across both studies about the need for intergenerational partnerships to support youth participation in DRR.

Supporting Youth in Adult- and Youth-centric Institutional Spaces. A common finding across both the Photovoice project and case study is the need to provide accessible and youth-friendly institutional spaces to promote youth participation in DRR. Interestingly, the findings defining these institutional spaces differ slightly in each study. In the Photovoice study, the co-researchers approached the discussion from the point of view of the institutional spaces being youth-centric, such as providing opportunities for youth workshops or conferences (Trejo-Rangel et al., 2021), grassroots youth-led opportunities (Pickering, Guy, et al., 2021), or making DRR education accessible in institutional spaces already accessed by youth (e.g., school). Whereas participants in study 2 emphasized making adult-centric institutional spaces (e.g., government, NGO, and private sector workplaces) more accessible and youth-friendly for collaboration within these spaces.

The emphasis from case study research participants on their desire for integration within adult-centric institutional spaces was an unexpected finding on how youth envision their collaboration within DRR efforts. Much of the extant literature and programming resembles the

findings from our Photovoice study in that programs focus on institutional spaces in which youth have the power and agency to lead, from grassroots, bottom-up, community-based initiatives. These programs tend to mimic the state of youth participation described by Hart (1992) in the top two rungs of his ladder on youth participation: ‘child-initiated and directed’ and ‘child-initiated, shared decisions with adults.’ For instance, in New Zealand, the Student Volunteer Army (SVA) is a student-led volunteer crisis group that responds to disasters (Carlton et al., 2022). Since the program is youth-led with collaboration with adults in other organizations, it could be categorized under rung eight, ‘child-initiated, shared decisions with adults.’ Less is known about existing opportunities within adult-run organizations and institutions in DRR and their efforts to engage youth within their work. The findings from this dissertation shed light on two elements of this lesser-known topic: 1) youth volunteers and essential workers believe their efforts can have the biggest impact within adult-centric institutions (e.g., The Canadian Red Cross, or Public Safety Canada); 2) supports they would need to foster such inclusion.

Asset mapping exercises within these institutions in partnership with community members could identify further assets to enable collaboration and establish asset indicators to evaluate the effectiveness of any future implementation actions (Morgan & Ziglio, 2007). However, this might not be feasible for all adult-centric institutions given that DRR remains dominated by a top-down model (T. Mitchell et al., 2008; Muzenda-Mudavanhu, 2016) and institutions may lack the resources to support youth integration within workspaces. With this idea in mind, a blend of the findings from both branches of this dissertation might be an interim solution to supporting bottom-up approaches to youth participation, with greater support and credibility from professionals in the field. For instance, U-INSPIRE is a science and technology program in Indonesia run by youth and young professionals to support DRR policy and action.

The platform was recognized as an official platform for youth and young professionals in DRR by the Indonesian government (Shidiq et al., 2021). They did this to bring together youth and adult efforts in DRR.

It is important to explore how to engage youth within the existing top-down model in addition to the bottom-up, grassroots examples that dominate literature and practice. Opportunities for youth participation can occur in many forms – they can be led by youth, working with youth, organizations specific to DRR, and organizations with some activities related to DRR (Shidiq et al., 2021). This variety mirrors Hart’s (1992) “Degrees of Participation” and his emphasis that there is no best way to engage youth. Our study extends the literature by exploring both bottom-up and top-down action recommendations to implement youth participation in DRR. Based on these results, our recommendations echo the literature and theories on youth participation advocating for a variety of strategies, dependent on the context, individuals, and resources available: 1) bottom-up organizations run by youth at the grassroots level; 2) bottom-up organizations run by youth at the grassroots level, with formal support from official DRR government and organizations; and 3) top-down efforts to integrate youth within adult-centric DRR workspaces. The third strategy will require organizational restructuring. Rodriguez-Giralt et al. (2020) discussed how incorporating youth in the adult-centric DRR workforce requires reimagining the place of youth within these spaces to build room for the voices of youth – our study provides action recommendations to support this reimagining. An asset-based lens is essential to implement this.

Supporting Youth by Promoting Intergenerational Partnerships. Despite progress on youth participation in DRR, youth are often still viewed as dependent on adults (Peek et al., 2020) and regularly remain voiceless in DRR (Petal et al., 2020; Rauhaus & Guajardo, 2021).

The participants and co-researchers across both studies in this dissertation presented partnerships between adults and youth as a strategy to foster youth engagement in DRR. They believe these partnerships would have a multi-pronged impact, promoting intergenerational collaboration, reducing age-based biases, and increasing tolerance between generations. These expected outcomes align with Billig (2019) who found that introducing adolescents into formally adult-only emergency response teams gave both adults and youth an opportunity to learn more about each other's abilities, as well as identify their own capabilities and limitations. This reflection increased adults' respect and trust of youth in emergency situations.

The findings in this dissertation are also consistent with literature on youth-adult partnerships (Y-AP). Camino (2000) and Zeldin et al. (2012) describe Y-AP as a community practice which encourages collaboration across multiple generations to address common issues. Y-APs naturally emphasize power-sharing between youth and adults, as well as mutual ownership over outcomes of shared decision-making (Cox et al., 2019). Zeldin and colleagues (2012) identified authentic decision making, mentorship, reciprocity, and community connectedness as central to Y-AP. While all these elements were not covered by the participants in our studies, they did identify mentorship and learning opportunities for youth as integral for mobilizing intergenerational collaboration to improve experience and knowledge. The need for Y-APs and intergenerational collaboration also align with the core theoretical youth participation principle "involve adults throughout the process" (Frank, 2006, p. 367). This strategy also aligns with Hart's view that adult involvement (in various forms) across the engagement process provides the greatest community impact (Hart, 1997).

Strengths and Limitations

In this dissertation, we demonstrate the salience of existing youth participation theories and extends understanding of the process of youth participation from the youth perspective. This was achieved through the application of an asset-based approach in data collection and analysis. The asset-based approach promoted exploration of both assets and needs in youth participation in DRR. This approach allowed us to create lines of questioning for the case study research project that aligned with youth participation theories without borrowing language from the theories that could have potentially unduly influenced participants' responses. Rather, we asked open-ended questions using an asset-lens to discuss barriers and facilitators to the process of engagement. Interestingly, participant answers overlapped with principles of youth participation theories.

This research benefitted from the use of arts-based research methodologies, which allowed for deep connection and rich understanding of youth perspectives on their participation in DRR, climate change, and the COVID-19 pandemic. The small sample sizes for each study allowed each participant the time they needed to feel seen and understood on topics in which they expressed often feeling voiceless (Petal et al., 2020; Rauhaus & Guajardo, 2021). The Photovoice study allowed us as researchers to align our words and actions. Not only did we advocate for opportunities for youth agency in DRR, but we also provided this opportunity to the co-researchers by using a CBPR approach and connecting them with stakeholders at The Canadian Red Cross to extend research findings into action. The collaborative approach to analysis and the Photovoice exhibitions facilitated inclusion and enhanced our knowledge mobilization strategies. Our familiarity with participants in the Photovoice study strengthened the trust and further reduced power imbalances between researchers and participants, enabling in-depth conversations.

One limitation of this study is the limited participant recruitment. The Photovoice study stemmed from a request from members of our EnRiCH Youth Research Team to participate in a collaborative research study. This was both a strength and potential limitation of our study as our familiarity with the participants could have resulted in desirability bias in the focus group discussions. However, we found that strong connections with co-researchers enabled positive and sustained collaboration and thus the strengths of this approach influenced the decision to limit participation to this group. Similarly, the case study has a limited sample size. This allowed for in-depth analysis but provided a small snapshot of youth contributions in DRR, which we previously established as diverse, grassroots, and scattered in nature. More studies are needed to document youth roles and actions in DRR.

Our study echoes the literature that explores the *process* of youth participation in DRR (Le Dé et al., 2021) rather than *outcomes* of youth participation on youth, institutions, and the community. More studies are needed on both processes and outcomes. Additionally, we did not use evaluation research to measure process and outcomes. While beyond the scope of the studies in this dissertation, evaluation research is an important step to develop and test metrics of the benefits and outcomes of youth participation in DRR. Evaluation research will lend credibility to youth participation in DRR as an effective strategy, improve outcome metrics, and establish areas of best practice in this emerging field.

Each study captured the views of youth with experience in DRR, in Ottawa, Ontario Canada. Though our participants were racially diverse, we had small sample sizes and the youth lived in the same city. Additionally, none of the youth participants or co-researchers identified as having a disability. We recommend future studies recruit diverse youth voices to expand on the findings from this study using local disaster contexts from other cities. Not captured in these

studies are the perspectives of professionals working in DRR. Future studies could explore youth engagement processes within historically adult-led institutions to further operationalize practices in DRR policy and practice.

When communities and institutions meaningfully engage youth in decision-making processes, social equity and social justice tends to increase for the community (Rauhaus & Guajardo, 2021). As more interventions emerge in practice, more evaluation research and policy-based research are needed (Bessaha et al., 2022; Peek et al., 2018) to build the evidence-base on the effectiveness of strategies to engage youth in DRR, climate change, and COVID-19 recovery.

Implications

As Peek et al. (2018) summarize, the study of youth and disasters, and more widely disaster research, is highly practical and complex. Our research confirms and extends extant knowledge, providing further insight into power imbalances in DRR. The findings inform leaders and decision-makers on how to allocate resources and improve youth engagement in DRR by applying an asset-based approach to improve community resilience and adaptive capacity.

Opportunities are needed for all-of-society, and more specifically youth, to participate in DRR, but implementation is complex. There is a knowledge gap in research and practice about how to implement meaningful participation of marginalized populations in institutions. We present action recommendations to operationalize youth participation in DRR and provide insight into youth experiences of the COVID-19 pandemic. This has implications for creating new models of engagement for youth in DRR at grassroots and institutional levels using asset-oriented activities. The findings can also facilitate novel interventions to address institutional cultures that may be barriers to youth involvement, such as strategies to reduce bidirectional ageism.

Chapter 10: Conclusion

More frequent and severe disasters have become the new-normal. This research supports and extends literature showing how youth are dynamic agents of change with strong desires to contribute to reducing disaster risks in their communities. We explored youth perspectives on barriers and facilitators to youth participation in DRR and climate action, and youth experiences of the COVID-19 pandemic. Using Photovoice and adopting the cases of local disasters and the COVID-19 pandemic, our main research questions were:

- 1) What are the perceptions of youth, on youth capabilities in DRR and climate change?;
- 2) How did youth experience the first wave of the COVID-19 pandemic and in what ways were youth engaged in the pandemic response?;
- 3) What are the experiences of youth volunteers and essential workers contributing to DRR and the COVID-19 pandemic?; and
- 4) What are the perceptions of youth on barriers and facilitators to youth participation in DRR?

These questions were formed based on dominant guidance from international agendas which encourage inclusive all-of-society approaches to reduce disaster risks, promote climate action and COVID-19 pandemic recovery (UNDRR, 2015; United Nations, 2015a, 2015b, 2020b). We approached this study from the epistemological standpoint that knowledge is always changing and socially constructed such that power structures can be identified and torn down to improve equity in society (Crotty, 1998). We approached this process applying an asset-based approach (Morgan & Ziglio, 2007) and youth participation theories (Frank, 2006; Hart, 1992) to the exploration of youth participation in DRR.

The findings from our studies highlight that youth have the desire and capacity to contribute to DRR. Not only did we establish that youth contributions are valuable to DRR, but they also have unique experiences during disaster events, and are concerned about social equity in their communities. The studies in this dissertation are part of a growing body of literature studying these unique perspectives and contributions (Peek et al., 2020; Trejo-Rangel et al., 2021). The co-researchers and participants envisioned youth participation as both youth-led, and collaborative across generations. Adult support throughout the process was emphasized as an important resource to promote youth participation, reduce ageist assumptions, and remove institutional barriers to intergenerational collaboration. These findings provide evidence to create models of engagement to fit UN agendas on inclusive all-of-society engagement in DRR.

Youth have the power to create systemic and social change in disasters. However, youth contributions are often invisible, and their capabilities are undervalued by professionals. A paradigm shift away from the traditional needs-based models of risk reduction towards an asset-based approach is essential to implement youth participation in practice. This is one of the biggest hurdles stalling translation of knowledge on youth participation into practice.

Ultimately, the results of this dissertation align with youth participation theories and core principles of engagement (Frank, 2006; Hart, 1992). For an all-of-society approach to DRR and DRM to succeed at building resilience in practice, a paradigm shift is needed within the field to build asset literacy and focus on collective assets. This shift in mindset towards asset-oriented activities will improve implementation of youth participation in practice, bridging the divide between the concept of youth participation and practice.

References

- Abrams, D., Russell, P. S., Vauclair, C.-M., & Swift, H. S. (2011). *Ageism in Europe and the UK: Findings from the European Social Survey* [Technical Report]. AgeUK.
<https://kar.kent.ac.uk/29733/>
- Ahmed, I., Fuenfgeld, H., & McEvoy, D. (2012). *Integrated disaster and climate change participatory capacity and vulnerability analysis (PCVA) toolkit for community-based fieldworkers*. Oxfam Australia.
https://unfccc.int/files/adaptation/cancun_adaptation_framework/adaptation_committee/application/pdf/pcva_toolkit_oxfam_australia.pdf
- Alderman, D., Narro Perez, R., Eaves, L. E., Klein, P., & Muñoz, S. (2021). Reflections on operationalizing an anti-racism pedagogy: Teaching as regional storytelling. *Journal of Geography in Higher Education*, 45(2), 186–200.
<https://doi.org/10.1080/03098265.2019.1661367>
- Aldrich, D. P. (2015). Social capital in post disaster recovery: Strong networks and communities create a resilient East Asian community. In D. P. Aldrich, S. Oum, & Y. Sawada (Eds.), *Resilience and recovery in Asian disasters: Community ties, market mechanisms, and governance* (pp. 19–34). Springer Japan. https://doi.org/10.1007/978-4-431-55022-8_2
- Amri, A., Haynes, K., Bird, D. K., & Ronan, K. (2018). Bridging the divide between studies on disaster risk reduction education and child-centred disaster risk reduction: A critical review. *Children's Geographies*, 16(3), 239–251.
<https://doi.org/10.1080/14733285.2017.1358448>

- Anderson, W. A. (2005). Bringing children into focus on the social science disaster research agenda. *International Journal of Mass Emergencies and Disasters*, 23(3), 159–175.
<http://ijmed.org/articles/376/>
- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promotion International*, 11(1), 11–18. <https://academic.oup.com/heapro>
- Archibald, M. M., Hartling, L., Ali, S., Caine, V., & Scott, S. D. (2018). Developing “My Asthma Diary”: A process exemplar of a patient-driven arts-based knowledge translation tool. *BMC Pediatrics*, 18(1), 186–196. <https://doi.org/10.1186/s12887-018-1155-2>
- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216–224. <https://doi.org/10.1080/01944366908977225>
- Back, E., Cameron, C., & Tanner, T. (2009). *Children and disaster risk reduction: Taking stock and moving forward* (Children in a Changing Climate). Institute of Development Studies.
http://www.preventionweb.net/files/12085_ChildLedDRRTakingStock1.pdf
- Barber, T. (2009). Participation, citizenship, and well-being: Engaging with young people, making a difference. *Young*, 17(1), 25–40. <https://doi.org/10.1177/110330880801700103>
- Barclay, E., & Amaria, K. (2019, March 17). Photos: Kids in 123 countries went on strike to protect the climate. *Vox*. <https://www.vox.com/energy-and-environment/2019/3/15/18267156/youth-climate-strike-march-15-photos>
- Barnes, M. L., Wang, P., Cinner, J. E., Graham, N. A. J., Guerrero, A. M., Jasny, L., Lau, J., Sutcliffe, S. R., & Zamborain-Mason, J. (2020). Social determinants of adaptive and transformative responses to climate change. *Nature Climate Change*, 10(9), 823–828.
<https://doi.org/10.1038/s41558-020-0871-4>

- Barrington, C., Villa-Torres, L., Abdoulayi, S., Tsoka, M. G., & Mvula, P. M. (2017). Using photo-elicitation methods to understand resilience among ultra-poor youth and their caregivers in Malawi. *Health Education & Behavior, 44*(5), 758–768.
<https://doi.org/10.1177/1090198117728756>
- Bartlett, S. (2008). Climate change and urban children: Impacts and implications for adaptation in low- and middle-income countries. *Environment & Urbanization, 20*(2), 501–519.
<https://doi.org/10.1177/0956247808096125>
- Baumann, S. E., & Burke, J. G. (2021). Creating community during COVID-19: A virtual art gallery to address social isolation during a pandemic. *Health Promotion Practice, 9*–11.
<https://doi.org/10.1177/15248399211064638>
- Baumann, S. E., Merante, M. M., Sylvain-Holmgren, M.-A., & Burke, J. G. (2021). Exploring community art and its role in promoting health, social cohesion, and community resilience in the aftermath of the 2015 Nepal earthquake. *Health Promotion Practice, 22*(1_suppl), 111S-121S. <https://doi.org/10.1177/1524839921996083>
- BBC News. (2019, September 23). *Greta Thunberg: “Leaders failed us on climate change.”*
<https://www.bbc.com/news/world-49795270>
- Berger, P. L., & Luckmann, T. (1967). *The social construction of reality: A treatise in the sociology of knowledge*. Anchor Press.
- Bernstien, J. (2022, May 25). *What’s a derecho and why is it so destructive? The science behind this powerful storm*. CBC News. <https://www.cbc.ca/news/science/derecho-causes-havoc-in-canada-1.6464409>
- Berwick, D. M. (2020). The moral determinants of health. *The Journal of the American Medical Association, 324*(3), 225–226. <https://doi.org/10.1001/jama.2020.11129>

- Bessaha, M., Hayward, R. A., & Gatanas, K. (2022). A scoping review of youth and young adults' roles in natural disaster mitigation and response: Considerations for youth wellbeing during a global ecological crisis. *Child and Adolescent Mental Health, 27*(1), 14–21. <https://doi.org/10.1111/camh.12517>
- Bessant, J. (2004). Mixed messages: Youth participation and democratic practice. *Australian Journal of Political Science, 39*(2), 387–404. <https://doi.org/10.1080/1036114042000238573>
- Billig, M. (2019). Incorporating volunteer youth in emergency teams: The effect of the cognitive-emotional spiral. *Cogent Psychology, 6*(1). <https://doi.org/10.1080/23311908.2019.1704610>
- Blair, K. (2021). Empty gestures: Performative utterances and allyship. *Journal of Dramatic Theory and Criticism, 35*(2), 53–73. <https://doi.org/10.1353/dtc.2021.0005>
- Bonabi, H., Müller, M., Ajdacic-Gross, V., Eisele, J., Rodgers, S., Seifritz, E., Rössler, W., & Rüschi, N. (2016). Mental health literacy, attitudes to help seeking, and perceived need as predictors of mental health service use: A longitudinal study. *The Journal of Nervous and Mental Disease, 204*(4), 321–324. <https://doi.org/10.1097/NMD.0000000000000488>
- Bratt, C., Abrams, D., Swift, H., Vauclair, M., & Marques, S. (2017). Perceived age discrimination across age in Europe: From an ageing society to a society for all ages. *Developmental Psychology, 54*(1), 167–180. <https://doi.org/10.1037/dev0000398>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>

- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589–597.
<https://doi.org/10.1080/2159676X.2019.1628806>
- Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health, 13*(2), 201–216.
<https://doi.org/10.1080/2159676X.2019.1704846>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE Publications.
- Bro, P., & Wallberg, F. (2014). Digital gatekeeping: News media versus social media. *Digital Journalism, 2*(3), 446–454. <https://doi.org/10.1080/21670811.2014.895507>
- Brodie, C. (2017, August 28). *5 things we learned from one of the world's biggest survey's of young people*. World Economic Forum.
<https://www.weforum.org/agenda/2017/08/global-shapers-survey-2017-5-things-we-learned/>
- Budig, K., Diez, J., Conde, P., Sastre, M., Hernán, M., & Franco, M. (2018). Photovoice and empowerment: Evaluating the transformative potential of a participatory action research project. *BMC Public Health, 18*(1), 432–432. <https://doi.org/10.1186/s12889-018-5335-7>
- Buneviciene, I., Bunevicius, R., Bagdonas, S., & Bunevicius, A. (2021). COVID-19 media fatigue: Predictors of decreasing interest and avoidance of COVID-19–related news. *Public Health, 196*, 124–128. <https://doi.org/10.1016/j.puhe.2021.05.024>
- Burr, V. (2015). *Social constructionism* (3rd ed.). Routledge, Taylor & Francis Group.

Camino, L. A. (2000). Youth-adult partnerships: Entering new territory in community work and research. *Applied Developmental Science*, 4(Suppl. 1), 11–20.

https://doi.org/10.1207/S1532480XADS04Suppl_2

Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council. (2018, December). *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*.

<https://ethics.gc.ca/eng/documents/tcps2-2018-en-interactive-final.pdf>

Carlson, E. D., Engebretson, J., & Chamberlain, R. M. (2006). Photovoice as a social process of critical consciousness. *SAGE Visual Methods*, 16(6), 836–852.

<https://doi.org/10.1177/1049732306287525>

Carlton, S. (2015). Reprint of: Connecting, belonging: Volunteering, wellbeing and leadership among refugee youth. *International Journal of Disaster Risk Reduction*, 14, 160–167.

<https://doi.org/10.1016/j.ijdrr.2015.10.010>

Carlton, S., Nissen, S., Wong, J., & Johnson, S. (2022). “A shovel or a shopping cart”: Lessons from ten years of disaster response by a student-led volunteer group. *Natural Hazards*, 111(1), 33–50. <https://doi.org/10.1007/s11069-021-05043-7>

Castleden, H., Garvin, T., & Huu-Ay-Aht First Nation. (2008). Modifying Photovoice for community-based participatory Indigenous research. *Social Science & Medicine*, 66(6), 1393–1405. <https://doi.org/10.1016/j.socscimed.2007.11.030>

CBC News. (2017, May 14). *The Ottawa and Gatineau flood: A photo timeline*.

<https://www.cbc.ca/news/canada/ottawa>

CBC News. (2018, September 27). “You can make the world a better place,” Malala Yousafzai tells crowd in 1st Montreal appearance.

<https://www.cbc.ca/news/canada/montreal/malala-yousafzai-montreal-north-star-academy-students-1.4840247>

CBC News. (2019a, April 28). *2019 floods: How to volunteer.*

<https://www.cbc.ca/news/canada/ottawa>

CBC News. (2019b, May 17). *Spring flooding in Ottawa-Gatineau, by the numbers.*

<https://www.cbc.ca/news/canada/ottawa>

CBS News. (2016, May 4). *8-year-old Flint resident: “Mind was blown” when Obama wrote back.* <https://www.cbsnews.com/news/flint-mari-copeny-water-crisis-president-obama-writes-back-mind-blown/>

Chan, E. Y. Y., & Shi, P. (2017). Health and risks: Integrating health into disaster risk reduction, risk communication, and building resilient communities. *International Journal of Disaster Risk Science*, 8(2), 107–108. <https://doi.org/10.1007/s13753-017-0131-z>

Chatterjee, R., Shiwaku, K., Das, G., Nakano, G., & Shaw, R. (2015). Bangkok to Sendai and beyond: Implications for disaster risk reduction in Asia. *International Journal of Disaster Risk Science*, 6(2), 177–188. <https://doi.org/10.1007/s13753-015-0055-4>

Chawla, L., & Driskell, D. (2006). The Growing Up in Cities Project: Global perspectives on children and youth as catalysts for community change. *Journal of Community Practice*, 14(1–2), 183–200. https://doi.org/10.1300/J125v14n01_11

City of Ottawa. (2022). *Why choose Ottawa* [Government]. Ottawa. <https://ottawa.ca/en/living-ottawa/immigrating-ottawa/why-choose-ottawa#:~:text=Ottawa%20is%20the%20nation's%20capital,the%20Ottawa%20River%20in%20Quebec>.

- Cox, R. S., Hill, T. T., Plush, T., Heykoop, C., & Tremblay, C. (2019). More than a checkbox: Engaging youth in disaster risk reduction and resilience in Canada. *Natural Hazards*, 98(1), 213–227. <https://doi.org/10.1007/s11069-018-3509-3>
- Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). SAGE Publications.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). SAGE Publications.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. SAGE Publications.
- CTV News. (2019, April 30). *West Carleton students step up*. CTV News. https://ottawa.ctvnews.ca/video?clipId=1672214&playlistId=1.4389435&binId=1.1164511&playlistPageNum=1#_gus&_gucid=&_gup=twitter&_gsc=qZM2LQQ
- CTV News Ottawa. (2021). *365 days of COVID-19 in Ottawa*. <https://ottawa.ctvnews.ca/specials/interactive-timeline-365-days-of-covid-19-in-ottawa>
- Cumiskey, L., Hoang, T., Suzuki, S., Pettigrew, C., & Herrgård, M. M. (2015). Youth participation at the Third UN World Conference on Disaster Risk Reduction. *International Journal of Disaster Risk Science*, 6(2), 150–163. <https://doi.org/10.1007/s13753-015-0054-5>

- Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly*, 84(2), 242–261. <https://doi.org/10.1111/1540-6237.8402002>
- Dhir, Y. J. (2021). Hazards of fashion and textile waste: Approaches for effective waste management. In R. Nayak & A. Patnaik (Eds.), *Waste Management in the Fashion and Textile Industries* (pp. 31–58). Woodhead Publishing. <https://doi.org/10.1016/B978-0-12-818758-6.00002-8>
- Drew, S. E., Duncan, R. E., & Sawyer, S. M. (2010). Visual storytelling: A beneficial but challenging method for health research with young people. *Qualitative Health Research*, 20(12), 1677–1688. <https://doi.org/10.1177/1049732310377455>
- Fernandez, G., & Shaw, R. (2015). Youth participation in disaster risk reduction through science clubs in the Philippines. *Disasters*, 39(2), 279–294. <https://doi.org/10.1111/disa.12100>
- Fleming, J. (2013). Young people’s participation—Where next? *Children & Society*, 27(6), 484–495. <https://doi.org/10.1111/j.1099-0860.2012.00442.x>
- Foote, M. Q., & Gau Bartell, T. (2011). Pathways to equity in mathematics education: How life experiences impact researcher positionality. *Educational Studies in Mathematics*, 78(1), 45–68. <https://doi.org/10.1007/s10649-011-9309-2>
- Fothergill, A., & Peek, L. A. (2015). *Children of Katrina*. University of Texas Press.
- Frank, K. (2006). The potential of youth participation in planning. *Journal of Planning Literature*, 20(4), 351–371. <https://doi.org/10.1177/0885412205286016>
- Fuller, D., Guy, T., & Pletsch, C. (2002). *Asset mapping: A handbook*. Canadian Rural Partnership. http://www.rural.gc.ca/conference/documents/mapping_e.phtml

- Gaillard, J. C., Cadag, J. R. D., & Rampengan, M. M. F. (2019). People's capacities in facing hazards and disasters: An overview. *Natural Hazards*, *95*(3), 863–876.
<https://doi.org/10.1007/s11069-018-3519-1>
- Galea, S., Merchant, R. M., & Lurie, N. (2020). The mental health consequences of COVID-19 and physical distancing: The need for prevention and early intervention. *JAMA Internal Medicine*, *180*(6), 817–818. <https://doi.org/10.1001/jamainternmed.2020.1562>
- Gallopín, G. C. (2006). Linkages between vulnerability, resilience, and adaptive capacity. *Global Environmental Change*, *16*(3), 293–303. <https://doi.org/10.1016/j.gloenvcha.2006.02.004>
- Graham, L. F., Matiz Reyes, A., Lopez, W., Gracey, A., Snow, R. C., & Padilla, M. B. (2013). Addressing economic devastation and built environment degradation to prevent violence: A Photovoice project of Detroit youth passages. *Community Literacy Journal*, *8*(1), 41–52. <https://doi.org/10.1353/clj.2013.0019>
- Greenwood, M., De Leeuw, S., & Lindsay, N. M. (Eds.). (2018). *Determinants of indigenous peoples' health: Beyond the social* (2nd ed.). Canadian Scholars.
- Grube, L. E. (2020). The what, how, and why of bottom-up rebuilding and recovery after natural disasters. In S. Haefele & V. H. Storr (Eds.), *Bottom-up responses to crisis* (pp. 13–28). Springer Nature. https://doi.org/10.1007/978-3-030-39312-0_2
- Guest, G., Namey, E. E., & Mitchell, M. L. (2013). *Collecting qualitative data: A field manual for applied research*. SAGE. <https://doi.org/10.4135/9781506374680>
- Haefele, S., & Storr, V. H. (2020). Introduction. In S. Haefele & V. H. Storr (Eds.), *Bottom-up responses to crisis* (pp. 1–11). Springer Nature. https://doi:10.1007/978-3-030-39312-0_6
- Handmer, J., Stevance, A.-S., Rickards, L., & Nalau, J. (2019). *Policy brief: Achieving risk reduction across Sendai, Paris, and the SDGs*. <https://council.science/wp->

content/uploads/2019/05/ISC_Achieving-Risk-Reduction-Across-Sendai-Paris-and-the-SDGs_May-2019.pdf

- Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies*, 17(1), 13–26. <https://doi.org/10.1080/14725860220137345>
- Hart, R. A. (1992). *Children's participation: From tokenism to citizenship*. UNICEF.
- Hart, R. A. (1997). *Children's participation: The theory and practice of involving young citizens in community development and environmental care*. Earthscan.
- Hart, R. A. (2008). Stepping back from 'the ladder': Reflections on a model of participatory work with children. In A. Reid, B. B. Jensen, J. Nickel, & V. Simovska (Eds.), *Participation and learning: Perspectives on education and the environment, health and sustainability* (pp. 19–31). Springer. https://doi.org/10.1007/978-1-4020-6416-6_2
- Hawe, P., & Potvin, L. (2009). What is population health intervention research? *Canadian Journal of Public Health*, 100(1), I8–I14. <https://doi.org/10.1007/BF03405503>
- Haynes, K., Lassa, J., & Towers, B. (2010). *Child-centred disaster risk reduction and climate change adaptation: Roles of gender and culture in Indonesia* (Children in a Changing Climate). <https://www.preventionweb.net/publications/view/17381>
- Haynes, K., & Tanner, T. M. (2015). Empowering young people and strengthening resilience: Youth-centred participatory video as a tool for climate change adaptation and disaster risk reduction. *Children's Geographies*, 13(3), 357–371. <https://doi.org/10.1080/14733285.2013.848599>
- Head, B. W. (2011). Why not ask them? Mapping and promoting youth participation. *Children and Youth Services Review*, 33(4), 541–547. <https://doi.org/10.1016/j.childyouth.2010.05.015>

- Hergenrather, K. C., Rhodes, S. D., Cowan, C. A., Bardhoshi, G., & Pula, S. (2009). Photovoice as community-based participatory research: A qualitative review. *American Journal of Health Behavior, 33*(6), 686–698. <https://doi.org/10.5993/AJHB.33.6.6>
- Heritage, C. (2018, January 29). *Prime Minister's Youth Council*.
<https://www.canada.ca/en/campaign/prime-ministers-youth-council.html>
- Higuera Roa, O. (2020). *The power of youth engagement in disaster risk reduction activities* [Technical Report]. <https://doi.org/10.13140/RG.2.2.15308.95366>
- Hore, K., Gaillard, J. L., Johnston, D., & Ronan, K. (2018). *Child-centred risk reduction research-into-action brief: Child-centred disaster risk reduction*. Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector.
<https://reliefweb.int/report/world/child-centred-risk-reduction-research-action-brief-child-centred-disaster-risk>
- Hydro Ottawa. (2022, June 29). *Derecho: Our biggest storm yet*.
<https://hydroottawa.com/en/blog/derecho-our-biggest-storm-yet>
- IFRC. (2022). *World disasters report 2022*. IFRC. <https://www.ifrc.org/document/world-disasters-report-2022>
- International Federation of Red Cross and Red Crescent Societies. (2014). *World disasters report 2014*. IFRC. <https://www.ifrc.org/sites/default/files/WDR-2014.pdf>
- Israel, B. A. (2013). *Methods for community-based participatory research for health* (2nd ed.). Jossey-Bass.
- Israel, B. A., Eng, E., Schulz, A. J., & Parker, E. A. (Eds.). (2012). *Methods for community-based participatory research for health* (2nd ed.). Jossey-Bass.

- Jia, Z., Tian, W., He, X., Liu, W., Jin, C., & Ding, H. (2010). Mental health and quality of life survey among child survivors of the 2008 Sichuan earthquake. *Quality of Life Research*, *19*(9), 1381–1391. <https://doi.org/10.1007/s11136-010-9703-8>
- Jorm, A. F. (2012). Mental health literacy: Empowering the community to take action for better mental health. *The American Psychologist*, *67*(3), 231–243. <https://doi.org/10.1037/a0025957>
- Kalina, P. (2020). Performative allyship. *Technium Social Sciences Journal*, *11*, 478–481. <https://doi.org/10.47577/tssj.v11i1.1518>
- Kellett, M. (2009). Children and young people's participation. In H. Montgomery & M. Kellett (Eds.), *Children and young people's worlds: Developing frameworks for integrated practice* (pp. 43–60). Policy Press.
- Knowledge Institute for Child and Youth Mental Health Addictions. (2021). *Quality standard for youth engagement*. <https://www.cymha.ca/Modules/ResourceHub/?id=64172b4d-af0d-432a-8d66-880ba2292486>
- Kramer, L., Schwartz, P., Cheadle, A., & Rauzon, S. (2013). Using Photovoice as a participatory evaluation tool in Kaiser Permanente's Community Health Initiative. *Health Promotion Practice*, *14*(5), 686–694. <https://doi.org/10.1177/1524839912463232>
- Kretzmann, J., & McKnight, J. (1993). *Building communities from the inside out: A path towards building and mobilising a communities assets*. Northwestern University.
- Lafrenière, D., Hurlimann, T., Menuz, V., & Godard, B. (2014). Evaluation of a cartoon-based knowledge dissemination intervention on scientific and ethical challenges raised by nutrigenomics/nutrigenetics research. *Evaluation and Program Planning*, *46*, 103–114. <https://doi.org/10.1016/j.evalprogplan.2014.06.002>

- Lang, K. R., & Micah Hester, D. (2021). The centrality of relational autonomy and compassion fatigue in the COVID-19 era. *American Journal of Bioethics*, 21(1), 84–86.
<https://doi.org/10.1080/15265161.2020.1850914>
- Larson, R. (2006). Positive youth development, willful adolescents, and mentoring. *Journal of Community Psychology*, 34(6), 677–689. <https://doi.org/10.1002/jcop.20123>
- Latz, A. O. (2017). *Photovoice research in education and beyond: A practical guide from theory to exhibition*. Routledge.
- Laverack, G., & Labonte, R. (2000). A planning framework for community empowerment goals within health promotion. *Health Policy and Planning*, 15(3), 255–262.
<https://doi.org/10.1093/heapol/15.3.255>
- Le Dé, L., Gaillard, J., Gampell, A., Loodin, N., & Hinchliffe, G. (2021). Fostering children’s participation in disaster risk reduction through play: A case study of LEGO and Minecraft. *International Journal of Disaster Risk Science*, 12(6), 867–878.
<https://doi.org/10.1007/s13753-021-00375-1>
- Ledoux, K. (2015). Understanding compassion fatigue: Understanding compassion. *Journal of Advanced Nursing*, 71(9), 2041–2050. <https://doi.org/10.1111/jan.12686>
- Leppold, C., Gibbs, L., Block, K., Reifels, L., & Quinn, P. (2022). Public health implications of multiple disaster exposures. *The Lancet Public Health*, 7(3), e274–e286.
[https://doi.org/10.1016/S2468-2667\(21\)00255-3](https://doi.org/10.1016/S2468-2667(21)00255-3)
- Lerner, R., Lerner, J., Lewin-Bizan, S., Bowers, E., Boyd, M., Mueller, M. K., Schmid, K., & Napolitano, C. (2011). Positive Youth Development: Processes, programs, and problematics. *Journal of Youth Development*, 6(3), 38–62.
<https://doi.org/10.5195/JYD.2011.174>

- Levinson, M. (2010). The civic empowerment gap: Defining the problem and locating solutions. In L. R. Sherrod, J. Torney-Purta, & C. A. Flanagan (Eds.), *Handbook of Research on Civic Engagement in Youth* (pp. 331–361). John Wiley & Sons, Inc.
<https://doi.org/10.1002/9780470767603.ch13>
- Levy, S. R., & Macdonald, J. L. (2016). Progress on understanding ageism. *Journal of Social Issues*, 72(1), 5–25. <https://doi.org/10.1111/josi.12153>
- Liang, L., Ren, H., Cao, R., Hu, Y., Qin, Z., Li, C., & Mei, S. (2020). The effect of COVID-19 on youth mental health. *Psychiatric Quarterly*, 91(3), 841–852.
<https://doi.org/10.1007/s11126-020-09744-3>
- Liebenberg, L. (2018). Thinking critically about Photovoice: Achieving empowerment and social change. *International Journal of Qualitative Methods*, 17(1), 1–9.
<https://doi.org/10.1177/1609406918757631>
- López, E. D. S., Robinson, N., & Eng, E. (2013). Photovoice as a CBPR method: A case study with African American breast cancer survivors in rural eastern North Carolina. In B. A. Israel, E. Eng, A. J. Schulz, & E. A. Parker (Eds.), *Methods for community-based participatory research for health* (2nd ed., pp. 489–516). Jossey-Bass.
- Lopez, Y., Hayden, J., Cologon, K., & Hadley, F. (2012). Child participation and disaster risk reduction. *International Journal of Early Years Education*, 20(3), 300–308.
<https://doi.org/10.1080/09669760.2012.716712>
- Lundy, L. (2007). ‘Voice’ is not enough: Conceptualising Article 12 of the United Nations Convention on the Rights of the Child. *British Educational Research Journal*, 33(6), 927–942. <https://doi.org/10.1080/01411920701657033>

- MacIntyre, C. R., Nguyen, P.-Y., Chughtai, A. A., Trent, M., Gerber, B., Steinhofel, K., & Seale, H. (2021). Mask use, risk-mitigation behaviours and pandemic fatigue during the COVID-19 pandemic in five cities in Australia, the UK and USA: A cross-sectional survey. *International Journal of Infectious Diseases, 106*, 199–207.
<https://doi.org/10.1016/j.ijid.2021.03.056>
- Mahoney, J. L., Cairns, B. D., & Farmer, T. W. (2003). Promoting interpersonal competence and educational success through extracurricular activity participation. *Journal of Educational Psychology, 95*(2), 409–418. <https://doi.org/10.1037/0022-0663.95.2.409>
- Malone, K., & Hartung, K. (2010). Challenges of participatory practice with children. In B. Percy-Smith & N. Thomas (Eds.), *A handbook of children and young people's participation: Perspectives from theory and practice* (pp. 24–38). Routledge.
- Manyena, S. B., Fordham, M., & Collins, A. (2008). Disaster resilience and children: Managing food security in Zimbabwe's Binga District. *Children Youth and Environments, 18*(1), 303–331. <https://doi.org/10.7721/chilyoutenvi.18.1.0303>
- Marchezini, V., Trajber, R., Olivato, D., Muñoz, V., Oliveira Pereira, F., & Oliveira Luz, A. (2017). Participatory early warning systems: Youth, citizen science, and intergenerational dialogues on disaster risk reduction in Brazil. *International Journal of Disaster Risk Science, 8*(4), 390–401. <https://doi.org/10.1007/s13753-017-0150-9>
- Marques de Miranda, D., da Silva Athanasio, B., Sena Oliveira, A. C., & Simoes-e-Silva, A. C. (2020). How is COVID-19 pandemic impacting mental health of children and adolescents? *International Journal of Disaster Risk Reduction, 51*, 101845.
<https://doi.org/10.1016/j.ijdr.2020.101845>

- Martin, M.-L. (2010). Child participation in disaster risk reduction: The case of flood-affected children in Bangladesh. *Third World Quarterly*, *31*(8), 1357–1375.
<https://doi.org/10.1080/01436597.2010.541086>
- Maton, K. I. (2008). Empowering community settings: Agents of individual development, community betterment, and positive social change. *American Journal of Community Psychology*, *41*(1), 4–21. <https://doi.org/10.1007/s10464-007-9148-6>
- Matthews, H. (2003). Children and regeneration: Setting an agenda for community participation and integration. *Children & Society*, *17*(4), 264–276. <https://doi.org/10.1002/CHI.745>
- McIntyre, A. (2003). Through the eyes of women: Photovoice and participatory research as tools for reimagining place. *Gender, Place and Culture : A Journal of Feminist Geography*, *10*(1), 47–66. <https://doi.org/10.1080/0966369032000052658>
- Merriam, S. B. (1988). *Case study research in education: A qualitative approach* (1st ed.). Jossey-Bass.
- Michaelson, M., & Nakamura, J. (Eds.). (2001). *Supportive frameworks for youth engagement*. Jossey-Bass.
- Mitchell, C. (2017). “The girl should just clean up the mess”: On studying audiences in understanding the meaningful engagement of young people in policy-making. *International Journal of Qualitative Methods*, *16*(1).
<https://doi.org/10.1177/1609406917703501>
- Mitchell, C. (2018). *Participatory visual methodologies: Social change, community and policy*. SAGE Publications Ltd.

- Mitchell, P., & Borchard, C. (2014). Mainstreaming children's vulnerabilities and capacities into community-based adaptation to enhance impact. *Climate and Development, 6*(4), 372–381. <https://doi.org/10.1080/17565529.2014.934775>
- Mitchell, T., Haynes, K., Hall, N., Choong, W., & Oven, K. (2008). The roles of children and youth in communicating disaster risk. *Children, Youth and Environments, 18*(1), 254–279. <https://doi.org/10.7721/chilyoutenvi.18.1.0254>
- Morgan, A., & Ziglio, E. (2007). Revitalising the evidence base for public health: An assets model. *Promotion & Education, 14*(2), 17–22.
<https://doi.org/10.1177/10253823070140020701x>
- Muzenda-Mudavanhu, C. (2016). A review of children's participation in disaster risk reduction. *Jamba: Journal of Disaster Risk Studies, 8*(1), 1–6.
<https://doi.org/10.4102/Jamba.V8i1.218>
- Nease, K. (2018, September 29). *Anatomy of a storm: Revisiting the devastation caused a week ago, when six tornadoes hit Ottawa, Gatineau, Que., and surrounding areas*. CBC News.
<https://www.cbc.ca/news/canada/ottawa>
- Newnham, E. A., Tearne, J., Gao, X., Guragain, B., Jiao, F., Ghimire, L., Balsari, S., Chan, E., & Leaning, J. (2019). Tailoring disaster risk reduction for adolescents: Qualitative perspectives from China and Nepal. *International Journal of Disaster Risk Reduction, 34*, 337–345. <https://doi.org/10.1016/j.ijdr.2018.12.020>
- Norris, F. H., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981—2001. *Psychiatry, 65*(3), 207–239. <https://doi.org/10.1521/psyc.65.3.207.20173>

- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology, 41*(1–2), 127–150.
<https://doi.org/10.1007/s10464-007-9156-6>
- Nussbaum, M. C. (2000). *Women and human development: The capabilities approach*. Cambridge University Press.
- Nussbaum, M. C. (2011). *Creating capabilities: The human development approach*. Belknap Press of Harvard University Press.
- Nykiforuk, C. I. J., Vallianatos, H., & Nieuwendyk, L. M. (2011). Photovoice as a method for revealing community perceptions of the built and social environment. *International Journal of Qualitative Methods, 10*(2), 103–124.
<https://doi.org/10.1177/160940691101000201>
- Ontario Ministry of Education. (2018). *The Ontario curriculum—Grades 9 and 10: Canadian and world studies*.
<http://www.edu.gov.on.ca/eng/curriculum/secondary/canworld910curr2018.pdf>
- Ornell, F., Schuch, J. B., Sordi, A. O., & Kessler, F. H. P. (2020). “Pandemic fear” and COVID-19: Mental health burden and strategies. *Brazilian Journal of Psychiatry, 42*(3), 232–235.
<https://doi.org/10.1590/1516-4446-2020-0008>
- O’Sullivan, T. L., Fahim, C., & Gagnon, E. (2018). Asset literacy following stroke: Implications for disaster resilience. *Disaster Medicine and Public Health Preparedness, 12*(3), 312–320. <https://doi.org/10.1017/dmp.2017.66>

- O'Sullivan, T. L., Kuziemy, C. E., Corneil, W., Lemyre, L., & Franco, Z. (2014). The EnRiCH Community Resilience Framework for High-Risk Populations. *PLoS Currents Disasters*, 6. <https://doi.org/10.1371/currents.dis.11381147bd5e89e38e78434a732f17db>
- O'Sullivan, T. L., Kuziemy, C. E., Toal-Sullivan, D., & Corneil, W. (2013). Unraveling the complexities of disaster management: A framework for critical social infrastructure to promote population health and resilience. *Social Science & Medicine*, 93, 238–246. <https://doi.org/10.1016/j.socscimed.2012.07.040>
- Pancer, S. M., Rose-Krasnor, L., & Loiselle, L. D. (2002). Youth conferences as a context for engagement. *New Directions for Youth Development*, 96, 47–64. <https://doi.org/10.1002/yd.26>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications.
- Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience — An introduction. *Children, Youth and Environments*, 18(1), 1–29. <http://www.jstor.org/stable/10.7721/chilyoutenvi.18.1.0001>
- Peek, L., Abramson, D. M., Cox, R. S., Fothergill, A., & Tobin, J. (2018). Children and disasters. In H. Rodríguez, W. Donner, & J. E. Trainor (Eds.), *Handbook of disaster research* (pp. 243–262). https://doi.org/10.1007/978-3-319-63254-4_13
- Peek, L., Austin, J., Bittel, E., Domingue, S., & Brunsvold, M. (2020). Children take charge: Helping behaviors and organized action among young people after Hurricane Katrina. In S. Haefele & V. H. Storr (Eds.), *Bottom-up responses to crisis* (pp. 87–112). Springer Nature. https://doi:10.1007/978-3-030-39312-0_6

- Percy-Smith, B., & Thomas, N. (2010). Conclusion: Emerging themes and new directions. In B. Percy-Smith & N. Thomas (Eds.), *A handbook of children and young people's participation: Perspectives from theory and practice* (pp. 356–366). Routledge.
- Petal, M., Ronan, K., Ovington, G., & Tofa, M. (2020). Child-centred risk reduction and school safety: An evidence-based practice framework and roadmap. *International Journal of Disaster Risk Reduction*, *49*, 101633. <https://doi.org/10.1016/j.ijdr.2020.101633>
- Peters, G., Li, M., & Lenzen, M. (2021). The need to decelerate fast fashion in a hot climate—A global sustainability perspective on the garment industry. *Journal of Cleaner Production*, *295*. <https://doi.org/10.1016/j.jclepro.2021.126390>
- Pfefferbaum, B., Pfefferbaum, R. L., & Van Horn, R. L. (2018). Involving children in disaster risk reduction: The importance of participation. *European Journal of Psychotraumatology*, *9*(Suppl. 2). <https://doi.org/10.1080/20008198.2018.1425577>
- Pickering, C. J., Al-Baldawi, Z., Amany, R. A., McVean, L., Adan, M., Baker, L., Al-Baldawi, Z., & O'Sullivan, T. (2022). Photovoice and Instagram as strategies for youth engagement in disaster risk reduction. *Qualitative Health Research*, *32*(12), 1897–1906. <https://doi.org/10.1177/10497323221116462>
- Pickering, C. J., Guy, E., Al-Baldawi, Z., McVean, L., Sargent, S., & O'Sullivan, T. (2021). “I believe this team will change how society views youth in disasters”: The EnRiCH Youth Research Team: A youth-led community-based disaster risk reduction program in Ottawa, Canada. *Canadian Journal of Public Health*, *112*(5), 957–964. <https://doi.org/10.17269/s41997-021-00486-8>
- Pickering, C. J., O'Sullivan, T. L., Morris, A., Mark, C., McQuirk, D., Chan, E. Y., Guy, E., Chan, G. K., Reddin, K., Throp, R., Tsuzuki, S., Yeung, T., & Murray, V. (2018). The

- promotion of ‘grab bags’ as a disaster risk reduction strategy. *PLoS Currents*, 10.
<https://doi.org/10.1371/currents.dis.223ac4322834aa0bb0d6824ee424e7f8>
- Pickering, C. J., Phibbs, S., Kenney, C., & O’Sullivan, T. (2021). Qualitative research. In R. Kayano, V. Murray, M. Clarke, & E. Y. Y. Chan (Eds.), *WHO guidance on research methods for health emergency and disaster risk management* (pp. 383–401). World Health Organization. https://extranet.who.int/kobe_centre/en/project-details/GUIDANCE_ResearchMethods_HealthEDRM
- Plan International, Save the Children International [SCI], United Nations Children’s Fund [UNICEF], & World Vision International [WVI]. (2011). *Children’s charter: An action plan for disaster risk reduction for children by children*. Plan International.
<https://www.preventionweb.net/publications/view/19894>
- Poortinga, W. (2012). Community resilience and health: The role of bonding, bridging, and linking aspects of social capital. *Health & Place*, 18(2), 286–295.
<https://doi.org/10.1016/j.healthplace.2011.09.017>
- Preparing our Home. (n.d.). *Preparing Our Home: Enabling Indigenous youth to reach their potential in becoming emergency preparedness leaders in their communities*. Preparing Our Home. <http://preparingourhome.ca/>
- Public Health Agency of Canada. (2012). *What is the population health approach?*
<http://www.phac-aspc.gc.ca/ph-sp/approach-approche/index-eng.php>
- Public Safety Canada. (2012). *Emergency management vocabulary*.
http://publications.gc.ca/collections/collection_2012/tpsgc-pwgsc/S52-2-281-2012.pdf

- Rauhaus, B. M., & Guajardo, J. M. (2021). The practice of youth inclusion in community planning and resiliency: The case of post-Hurricane Harvey. *Journal of Health and Human Services Administration, 44*(1), 67–85. <https://doi.org/10.37808/jhhsa.44.1.4>
- Reynolds, T. (2010). Editorial introduction: Young people, social capital and ethnic identity. *Ethnic and Racial Studies, 33*(5), 749–760. <https://doi.org/10.1080/01419870903325644>
- Rodriguez-Giralt, I., Mort, M., & Delicado, A. (2020). Concluding remarks: Reimagining children's place in disaster risk management. In M. Mort, I. Rodriguez-Giralt, & A. Delicado (Eds.), *Children and young people's participation in disaster risk reduction: Agency and resilience* (pp. 151–160). Policy Press.
- Rogers, A. A., Ha, T., & Ockey, S. (2021). Adolescents' perceived socio-emotional impact of COVID-19 and implications for mental health: Results from a U.S.-based mixed-methods study. *The Journal of Adolescent Health, 68*(1), 43–52. <https://doi.org/10.1016/j.jadohealth.2020.09.039>
- Ronan, K. (2005). *Promoting community resilience in disasters: The role for schools, youth, and families* (1st ed.). Springer. <https://doi.org/10.1007/b102725>
- Ronan, K., Alisic, E., Towers, B., Johnson, V., & Johnston, D. (2015). Disaster preparedness for children and families: A critical review. *Current Psychiatry Reports, 17*(7), 1–9. <https://doi.org/10.1007/s11920-015-0589-6>
- Ronan, K., & Johnston, D. M. (2001). Correlates of hazard education programs for youth. *Risk Analysis, 21*(6), 1055–1064. <https://doi.org/10.1111/0272-4332.216174>
- Ronan, K., & Towers, B. (2014). Systems education for a sustainable planet: Preparing children for natural disasters. *Systems, 2*(1), 1–23. <https://doi.org/10.3390/systems2010001>

- Rose, G. (2012). *Visual methodologies: An introduction to researching with visual materials* (3rd ed.). SAGE.
- Ruiz-Fernández, M. D., Ramos-Pichardo, J. D., Ibáñez-Masero, O., Cabrera-Troya, J., Carmona-Rega, M. I., & Ortega-Galán, Á. M. (2020). Compassion fatigue, burnout, compassion satisfaction and perceived stress in healthcare professionals during the COVID-19 health crisis in Spain. *Journal of Clinical Nursing*, 29(21–22), 4321–4330.
<https://doi.org/10.1111/jocn.15469>
- Saum-Manning, L. (2021). Best practices and lessons learned from community engagement and data collection strategies in post-Hurricane Maria Puerto Rico. *Journal of Homeland Security and Emergency Management*, 18(3), 225–250. <https://doi.org/10.1515/jhsem-2020-0075>
- Save the Children. (2008). *Legacy of disasters: The impact of climate change on children*.
<https://resourcecentre.savethechildren.net/library/legacy-disastersthe-impact-climate-change-children>
- Savin-Baden, M. (2013). *Qualitative research: The essential guide to theory and practice*. Routledge.
- Scott, C. (2022, May 23). *Nearly half of Canada's population hit by derecho, why it was harmful*. <https://www.theweathernetwork.com/en/news/weather/forecasts/nearly-half-of-canadas-population-hit-by-derecho-why-it-was-harmful>
- Seballos, F., & Tanner, T. (2011). *Enabling child-centred agency in disaster risk reduction* (Global Assessment Report on Disaster Risk Reduction).
<https://www.preventionweb.net/english/hyogo/gar/2011/en/home/annexes.html>

- Secord, K. (2020, May 11). *NEW! Cooking for a Cause Ottawa*.
<https://parkdalefoodcentre.ca/2020/05/11/new-cooking-for-a-cause-ottawa/>
- Sen, A. (2004). Capabilities, lists, and public reason: Continuing the conversation. *Feminist Economics*, 10(3), 77–80. <https://doi.org/10.1080/1354570042000315163>
- Sen, A. K. (2000). *Development as freedom*. Anchor Books.
- Shaw, R. (2012). *Community-based disaster risk reduction*. Emerald.
- Shaw, R., & Goda, K. (2004). From disaster to sustainable civil society: The Kobe experience. *Disasters*, 28(1), 16–40. <https://doi.org/10.1111/j.0361-3666.2004.00241.x>
- Shidiq, F., Bisri, M. B. F., Hanifa, N. R., Dwiyani, R., Rafliana, I., & Kodijat, A. (2021). Leveraging youth engagement in disaster risk reduction through science, engineering, technology, and innovation in Indonesia. In R. Djalante, M. B. F. Bisri, & R. Shaw (Eds.), *Integrated research on disaster risks* (pp. 251–278). Springer International Publishing. https://doi.org/10.1007/978-3-030-55563-4_14
- Shier, H. (2001). Pathways to participation: Openings, opportunities and obligations. *Children and Society*, 15(2), 107–117. <https://doi.org/10.1002/chi.617>
- Shoemaker, P. J. (2009). *Gatekeeping theory*. Routledge.
<https://doi.org/10.4324/9780203931653>
- Smith, B., & McGannon, K. R. (2018). Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology*, 11(1), 101–121. <https://doi.org/10.1080/1750984X.2017.1317357>
- Song, H., Jung, J., & Kim, Y. (2017). Perceived news overload and its cognitive and attitudinal consequences for news usage in South Korea. *Journalism & Mass Communication Quarterly*, 94(4), 1172–1190. <https://doi.org/10.1177/1077699016679975>

- Sonke, J., Rodríguez, L., & Valerio-Shewmaker, M. A. (2021). Toward a culture of health in the United States: Introducing the HPP Arts in Public Health Supplement. *Health Promotion Practice, 22*(1_suppl), 5S-7S. <https://doi.org/10.1177/15248399211002512>
- Statistics Canada. (2016). *Emergency preparedness and resilience: Community-based fact sheets—Community of Ottawa-Gatineau (CMA), Ontario*.
http://www.statcan.gc.ca/pub/85-002-x/2016001/article/14638/s3/s3_2-eng.htm
- Storr, V. H., Haeffele-Balch, S., & Grube, L. E. (2017). Social capital and social learning after Hurricane Sandy. *The Review of Austrian Economics, 30*(4), 447–467.
<https://doi.org/10.1007/s11138-016-0362-z>
- Strack, R. W., Magill, C., & Mcdonagh, K. (2004). Engaging youth through Photovoice. *Health Promotion Practice, 5*(1), 49–58. <https://doi.org/10.1177/1524839903258015>
- Suleman, S., Ratnani, Y., Stockley, K., Jetty, R., Smart, K., Bennett, S., Gander, S., & Loock, C. (2020). Supporting children and youth during the COVID-19 pandemic and beyond: A rights-centred approach. *Paediatrics & Child Health, 25*(6), 333–336.
<https://doi.org/10.1093/pch/pxaa086>
- Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *International Journal of Epidemiology, 33*(4), 650–667. <https://doi.org/10.1093/ije/dyh013>
- Tanner, T. (2010). Shifting the narrative: Child-led responses to climate change and disasters in El Salvador and the Philippines. *Children and Society, 24*(4), 339–351.
<https://doi.org/10.1111/j.1099-0860.2010.00316.x>
- Tanner, T., Garcia, M., Lazcano, J., Molina, F., Molina, G., Rodriguez, G., Tribunalo, B., & Seballos, F. (2009). Children’s participation in community-based disaster risk reduction

and adaptation to climate change. *Participatory Learning and Action*, 60(1), 54–64.
<https://eprints.soas.ac.uk/31355/>

The American Meteorological Society. (2020, August 21). *Defining derechos is complicated—Even for meteorologists*. <https://blog.ametsoc.org/2020/08/21/defining-derechos-is-complicated-even-for-meteorologists/>

The Canadian Press. (2019, September 28). *Canadian Indigenous water activist Autumn Peltier addresses UN on clean water*. CBC News. <https://www.cbc.ca/news/world/canadian-indigenous-water-activist-autumn-peltier-addresses-un-on-clean-water-1.5301559>

Thompson, J., Spencer, G., & Curtis, P. (2021). Children’s perspectives and experiences of the COVID-19 pandemic and UK public health measures. *Health Expectations*, 24(6), 2057–2064. <https://doi.org/10.1111/hex.13350>

Thunberg, G. [@gretathunberg]. (n.d.). *Posts [Instagram profile]* [Instagram].
<https://www.instagram.com/gretathunberg/?hl=en>

Thunberg, G. [@GretaThunberg]. (n.d.). *Tweets [Twitter profile]* [Twitter].
https://twitter.com/GretaThunberg?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor

Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry*, 16(10), 837–851.
<https://doi.org/10.1177/1077800410383121>

Trejo-Rangel, M. A., Marchezini, V., Rodriguez, D. A., & da Silva Oliveira, M. (2021). Participatory 3D model to promote intergenerational engagement for disaster risk reduction in São Luiz do Paraitinga, Brazil. *Disaster Prevention & Management*, 30(3), 308–326. <https://doi.org/10.1108/DPM-08-2020-0262>

- Treseder, P. (1997). *Empowering children and young people training manual: Promoting involvement in decision-making*. Save the Children.
- Truth and Reconciliation Commission of Canada. (2015). *Truth & reconciliation: Calls to action*. Truth and Reconciliation Commission of Canada.
https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/indigenous-people/aboriginal-peoples-documents/calls_to_action_english2.pdf
- UN General Assembly. (1989). *Convention on the Rights of the Child*.
<https://www.ohchr.org/en/professionalinterest/pages/crc.aspx>
- UNDRR. (2011, October 13). *UNISDR says the young are the largest group affected by disasters—UNISDR*. UNISDR News Archives. <https://www.unisdr.org/archive/22742>
- UNDRR. (2015). *Sendai Framework for Disaster Risk Reduction*.
http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf
- UNDRR. (2020). *Words into Action: Engaging children and youth in disaster risk reduction and resilience building*. <https://www.undrr.org/publication/words-action-guidelines-engaging-children-and-youth-disaster-risk-reduction-and>
- UNDRR. (2021). *UNDRR Strategic Framework 2022-2025*.
<https://www.undrr.org/publication/undrr-strategic-framework-2022-2025>
- UNDRR. (2022). *Global assessment report on disaster risk reduction 2022: Our world at risk: Transforming governance for a resilient future*. <https://www.undrr.org/gar2022-our-world-risk>
- UNDRR, & UN General Assembly. (2016). *Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction*.
https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf

UNESCO. (2017). *UNESCO with, by and for youth*. <https://www.unesco.org/en/youth>

UNICEF. (2012). *UNICEF and child-centred disaster risk reduction*.

<http://www.unicefinemergencies.com/downloads/eresource/docs/DRR/Child-centred%20DRR.pdf>

UNICEF. (2015, March 20). *UNICEF welcomes new Sendai Framework securing children's role in shaping disaster risk reduction*. ReliefWeb. <https://reliefweb.int/report/world/unicef-welcomes-new-sendai-framework-securing-children-s-role-shaping-disaster-risk>

United Nations. (2006). *Convention on the rights of persons with disabilities*.

<https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/convention-on-the-rights-of-persons-with-disabilities-2.html>

United Nations. (2015a). *Paris Agreement*.

https://unfccc.int/sites/default/files/english_paris_agreement.pdf

United Nations. (2015b). *Sustainable Development Goals*. <https://sdgs.un.org/goals>

United Nations. (2020a). *World Youth Report: Youth social entrepreneurship and the 2030 agenda*. <https://www.un.org/development/desa/youth/wp-content/uploads/sites/21/2020/07/2020-World-Youth-Report-FULL-FINAL.pdf>

United Nations. (2020b). *UN research roadmap for the COVID-19 recovery: Leveraging the power of science for a more equitable, resilient and sustainable future*.

<https://www.un.org/en/pdfs/UNCOVID19ResearchRoadmap.pdf>

United Nations Department of Economic and Social Affairs. (2020). *SDG good practices: A compilation of success stories and lessons learned in SDG implementation*.

<https://sdgs.un.org/publications/sdg-good-practices-2020>

United Nations International Children’s Emergency Fund [UNICEF]. (2014). *The state of the world’s children 2014 in numbers: Every child counts.*

<https://reliefweb.int/sites/reliefweb.int/files/resources/EN-FINAL%20FULL%20REPORT.pdf>

United Nations Major Group for Children and Youth. (n.d.). *Major Group for Children and Youth.* UNMGCY. <https://www.unmgcy.org/drr>

United Nations Major Group for Children and Youth [UNMGCY]. (2016). *Young scientists adopt roadmap for implementation of Sendai Framework.*

<https://www.preventionweb.net/news/view/48688>

United Nations Population Fund. (2014). *The power of 1.8 billion: Adolescents, youth and the transformation of the future.* https://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP14-Report_FINAL-web.pdf

US Department of Health and Human Services, & Office of the Assistant Secretary for Preparedness and Response. (2017). *NPRSB-NACCD joint youth leadership report.* US Department of Health and Human Services.

<https://www.phe.gov/Preparedness/legal/boards/nbsb/meetings/Documents/joint-youth-ldrshp-rpt.pdf>

Van Bortel, T., Wickramasinghe, N. D., Morgan, A., & Martin, S. (2019). Health assets in a global context: A systematic review of the literature. *BMJ Open*, 9(2), e023810.

<https://doi.org/10.1136/bmjopen-2018-023810>

Vromen, A. (2003). “People try to put us down ...”: Participatory citizenship of “Generation X.” *Australian Journal of Political Science*, 38(1), 79–99.

<https://doi.org/10.1080/1036114032000056260>

- Wagner, J. (Ed.). (1979). *Images of information: Still photography in the social sciences*. SAGE Publications.
- Wang, C. C. (1999). Photovoice: A participatory action research strategy applied to women's health. *Journal of Women's Health, 8*(2), 185–192.
<https://doi.org/10.1089/jwh.1999.8.185>
- Wang, C. C., & Burris, M. A. (1994). Empowerment through photo novella: Portraits of participation. *Health Education & Behavior, 21*(2), 171–186.
<https://doi.org/10.1177/109019819402100204>
- Wang, C. C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3), 369–387.
<https://doi.org/10.1177/109019819702400309>
- Wang, C. C., Burris, M. A., & Ping, X. Y. (1996). Chinese village women as visual anthropologists: A participatory approach to reaching policymakers. *Social Science & Medicine, 42*(10), 1391–1400. [https://doi.org/10.1016/0277-9536\(95\)00287-1](https://doi.org/10.1016/0277-9536(95)00287-1)
- Wang, C. C., & Redwood-Jones, Y. A. (2001). Photovoice ethics: Perspectives from Flint Photovoice. *Health Education & Behavior, 28*(5), 560–572.
<https://doi.org/10.1177/109019810102800504>
- Whittaker, J., McLennan, B., & Handmer, J. (2015). A review of informal volunteerism in emergencies and disasters: Definition, opportunities and challenges. *International Journal of Disaster Risk Reduction, 13*, 358–368.
<https://doi.org/10.1016/j.ijdrr.2015.07.010>

- Witvorapong, N., Muttarak, R., & Pothisiri, W. (2015). Social participation and disaster risk reduction behaviors in tsunami prone areas. *PLoS ONE*, *10*(7).
<https://doi.org/10.1371/journal.pone.0130862>
- Wong, N., Zimmerman, M., & Parker, E. (2010). A typology of youth participation and empowerment for child and adolescent health promotion. *American Journal of Community Psychology*, *46*(1), 100–114. <https://doi.org/10.1007/s10464-010-9330-0>
- World Health Organization. (2019). *Health emergency and disaster risk management framework*. World Health Organization. <https://apps.who.int/iris/handle/10665/326106>
- World Health Organization. (2021). *Global report on ageism*. World Health Organization. <https://apps.who.int/iris/handle/10665/344701>
- World Health Organization, UNDRR, & Public Health England. (2011). *Disaster risk management for health fact sheets: Child health*.
<https://www.undrr.org/publication/disaster-risk-management-health-child-health>
- World Meteorological Organization. (2021). *WMO atlas of mortality and economic losses from weather, climate and water extremes (1970-2019)*.
https://library.wmo.int/index.php?lvl=notice_display&id=21930#.ZFzEjSVE2aO
- Yi-Frazier, J. P., Cochrane, K., Mitrovich, C., Pascual, M., Buscaino, E., Eaton, L., Panlasigui, N., Clopp, B., & Malik, F. (2015). Using Instagram as a modified application of Photovoice for storytelling and sharing in adolescents with type 1 diabetes. *Qualitative Health Research*, *25*(10), 1372–1382. <https://doi.org/10.1177/1049732315583282>
- Young, T. K. (2005). *Population health: Concepts and methods*. Oxford University Press.
- Zeldin, S., Christens, B. D., & Powers, J. L. (2012). The psychology and practice of youth-adult partnership: Bridging generations for youth development and community change.

American Journal of Community Psychology, 51(3–4), 385–397.

<https://doi.org/10.1007/s10464-012-9558-y>

Appendix A: University of Ottawa Ethics for Photovoice Study

Appendix A contains the original ethics approval from the Research Ethics Board at the University of Ottawa for the Photovoice study, as well as the Modification Approval to add the study to this dissertation.

17/01/2019

Université d'Ottawa

Bureau d'éthique et d'intégrité de la recherche

University of Ottawa

Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	H-09-18-1136
Titre du projet / Project Title	Supporting Disaster Resilience Through Community Engagement and Social Participation: Youth Engagement Through Photovoice
Type de projet / Project Type	Recherche de professeur / Professor's research project
Statut du projet / Project Status	Approuvé / Approved
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	17/01/2019
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	16/01/2020

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
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Appendix B: Consent/Assent Form for Photovoice Study

Appendix B contains the original consent and assent forms which were signed by participants and their parents/legal guardians prior to joining the study. Upon initial recruitment, only one consent/assent form was provided to the participant and their parent/legal guardians to lessen the burden of information intake on families. We amended the consent form several times during the project to adjust for COVID-19 related changes (e.g., moving focus groups to Zoom) and community requests (e.g., requesting to be co-authors on the manuscripts).



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Participant and Parental Consent Form

Title of the Research Project: Supporting Disaster Resilience Through Community Engagement and Social Participation: Youth Engagement Through Photovoice

Principal Investigator:

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This project is funded by:

Social Sciences and Humanities Research Council of Canada (SSHRC)

Our EnRiCH research team at the University of Ottawa is conducting a research project exploring the perceptions of adolescents on youth engagement in disaster risk reduction.

Why?

It is an opportunity for youth to:

- 1) Share their lived experiences and generate discussion with their peers
- 2) Identify important assets and capabilities in their lives that can support their engagement in disaster risk reduction strategies
- 3) Create a digital gallery of photographs and narratives to share with the wider community

What is Photovoice?

Photovoice is a research method where participants take photos that are meaningful to them in relation to the research topic.

A Photovoice group (about 6-10 people) meets once per month, taking pictures throughout the month. At the following meeting, everyone shares and discusses their photos with the group. After 6 months, the group hosts exhibitions to display the photos and invite the community to discuss the topic. The exhibitions are an important aspect of Photovoice because they provide participants the opportunities for their voices to be heard by decision makers, and members of the community.

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 Faculty of Health
 Sciences

Interdisciplinary School
 of Health Sciences

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 Canada
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This study will also integrate Instagram by allowing participants to use their smartphones to take pictures and post them to a private team Instagram account. Participants will be able to follow and interact with this private account, and their peers between in-person photo sessions. A second Instagram will be created and made public at the end of the project to provide an online version of the exhibitions – the goal being increased dialogue on the issue and an extension of the exhibitions.

Participation:

Participants are being asked to participate in a 6-month Photovoice initiative (6 sessions and the exhibition). All sessions will take place in Dr. O’Sullivan’s research lab at 200 Lees Ave (Room E155E) This location will be familiar to participants as it is the permanent location for the monthly EnRiCH Youth Research Team meetings.

The Photovoice sessions will be held once per month starting in February 2019 and will be approximately 2 hours each. All group sessions will be audio-recorded. The first session is an orientation session where the group will talk about the project, discuss the process and ethics of community photography, social media safety, and distribute and discuss how to use the digital cameras (for those who do not have/want to use a smartphone). The group will then decide on a photo assignment to do over the next month. Photo assignment topics may include lived experiences participating in disaster risk reduction education or initiatives, what youth engagement means to youth, what household disaster preparedness means to youth, what assets and capabilities youth bring to the field of disaster risk reduction, assets within their community that foster (or have the potential to foster) collaborative youth engagement in disaster risk reduction, and what adults can do to support youth engagement. These topics will be examined in the context of disaster preparedness and disaster risk reduction.

Participants will be asked to take 5-6 photos each month, to post them on the private group Instagram account, interact (i.e. comment/like pictures posted by other participants) with the group account using their personal Instagram, and bring the photos to share and discuss at the next session. A similar process will be followed each month.

Benefits:

Participation in this study will contribute to awareness about opinions of youth engagement in disaster risk reduction among youth. It will also be an opportunity for participants to network with other people in the community and share their lived experiences and views.

This study was designed in response to a request from members of EnRiCH Youth Research Team. The team expressed an interest in using the Photovoice method in an innovative way by using Instagram as a mode of communication and exhibition. Interest was specifically expressed to experience Photovoice as participants. This study provides this opportunity to collect data, analyze data, and experience the qualitative research study process as co-researchers.

Confidentiality and Anonymity:

Group Sessions:

The nature of the group discussions in Photovoice make it difficult to ensure confidentiality. While participants will be asked to respect the confidentiality of the members in the project and what is said during group discussions, it is not possible to guarantee that this will be followed.

The group discussions will be audio-recorded to ensure the transcripts are accurate representations of the conversation. In the transcripts, all identifying information (eg. names) will be removed. This information will only be accessed by the researchers and research assistants working under Professor O'Sullivan's supervision for this project. Any students or research assistants working with the data (audio-recordings and pictures) will sign a privacy and confidentiality form.

Pictures:

While the members of the group will be asked to respect the confidentiality of the members in the project, it is not possible to guarantee that this will be followed. Given that photos will be used to explain concepts related to the project, displayed in the exhibition and posted online— this will make it difficult to ensure confidentiality or anonymity. Consent for using the pictures will be done near the end of the study, prior to the exhibition.

Given the nature of this project, some participants may also want their name to be displayed with their photos / comments – in such cases confidentiality and anonymity is not possible. Participants who choose to have their name revealed will only have their first name revealed – no last names will be used. Participants will be given the option to provide consent to have their name remain anonymous or public, as well as the use of their photos (including pictures in which they made themselves the subject) in presentations, publications, the Instagram photo gallery, and/or the photo exhibition. Participants will be provided with the opportunity to choose their level of confidentiality (i.e. use of first name and quotes) prior to the study, and again at the last Photovoice session.

Instagram:

To maximize confidentiality and anonymity online, a private group research study Instagram account will be created. Participants will be provided the password for the account and will post their Photovoice pictures here throughout the study. Participants can then use their personal Instagram accounts to follow the team account and comment on fellow participants' pictures. Participants can also decide to opt-out of the Instagram dialogue.

While the members of the group will be asked to respect the confidentiality of the members in the project, it is not possible to guarantee that this will be followed. Given that photos will be used to explain concepts related to the project, displayed in the exhibition and posted online— this will make it difficult to ensure confidentiality or anonymity. Participants will be asked not to share any of the pictures from the private group research account. Participants will have the opportunity to share pictures after the

sessions are completed and the team has decided on which pictures will be used for a separate public online exhibition Instagram account.

Exhibitions:

Photovoice exhibitions can take many forms. The type and number of exhibitions will be decided by the participants in the final Photovoice session. The exhibitions will showcase the pictures taken by participants, pairing pictures with the themes and key quotations to explain their meaning. Participants will decide as a team which pictures and quotations get featured. Exhibitions will take variations of two main forms: 1) Public exhibition where key stakeholders (like emergency managers, politicians, researchers, friends, family, teachers, etc.) are invited to attend and view the posters/slideshows and talk to the participants about the project; and 2) A public online exhibition using an Instagram (separate to the account used throughout the study) in which the link to the account may be shared formally (sending relevant stakeholders the link via email, linking the account to the EnRiCH Research Lab website), and informally (i.e. the account will be public and people will discover the account on their own). Featured pictures on the Instagram account will be decided on by the participants using relevant themes/quotes as picture captions and hashtags. Only Christina Pickering and Dr. Tracey O'Sullivan will have access to the login details to this exhibition account.

By signing this consent form, participants understand that their responses included in the transcripts for the group discussions and pictures submitted will be used for the purposes of this project. To protect confidentiality, participants have been assured that in written reports, presentations, and publications, names will be disguised – unless the participant wishes to have their first name associated with their responses and photos. Participants can withdraw at any point during the study. If a participant chooses to withdraw, photos may be withdrawn, but discussions about the photo will remain (removing any identifying information).

Conservation of data:

The data collected (photos, digital recordings of the group discussions, and transcripts of the recordings) will be kept in a secure manner. They will be stored on a computer with a secure password. Only Dr. O'Sullivan (lead researcher) and the student research assistants working under Dr. O'Sullivan's supervision will have access to the data. The data will be conserved for 10 years.

Risks:

For some participants, travel to the research site (200 Lees Avenue, [Redacted]) will be time consuming. It is the responsibility of the parent and child to ensure transportation and safety to and from meetings.

Participants may refuse to answer any questions they do not wish to answer, and have the right to withdraw from the study at any time. Photovoice sessions are similar to traditional focus groups and if participants choose to withdraw from the study, it will not be possible to withdraw their data from the focus group transcripts. While discussions of pictures submitted by the participant will be kept, participants who withdraw from the

study can withdraw their pictures. Discussion about pictures will remove any identifying information, and the images will not be published or displayed in any exhibits.

Quotations:

Participants may be quoted in the research study reports, presentations and publications, but no names or identifying information will be used (unless participants express that they want to be identified).

It is the participant's choice whether to be quoted. Participants can change this permission at any time.

Please initial beside your choice:

- *I agree to be quoted from the group discussions, but all personally identifying information shall be removed or altered and contents of the quotation shall not be revelatory of my identity _____.*
- *I would like my name (first name only) to appear with my comments about the photos _____.*
- *I do not wish to be quoted from the group discussions _____.*

Signatures:

My participation is voluntary and there is no financial compensation or volunteer hours provided for my participation in this study. I understand I am free to withdraw from the study at any time. I understand that my withdrawal from the study does not mean I have to withdraw from the regular EnRiCH Youth Research Team meetings. I understand that I am welcome on the EnRiCH Youth Research Team with or without participation in this study. My signature on this form indicates I understand the information regarding my participation in the research project and agree to participate.

Participants and parents are invited to contact the research assistant (Christina Pickering) or principal investigator (Dr. Tracey O'Sullivan) for more information.

Christina Pickering

Email: [Redacted]

Phone: [Redacted]

Dr. Tracey O'Sullivan

Email: [Redacted]

Phone: [Redacted]

Note: If you have any questions concerning your rights as a participant in this research, please contact The Protocol Officer for Ethics in Research at the University of Ottawa at the following address, phone number or email:

Mailing address: Protocol Officer for Ethics in Research
Office of Research Ethics and Integrity
University of Ottawa
Tabaret Hall (154)

Ottawa, ON K1N 6N5

Phone: 613-562-5387 Email: ethics@uottawa.ca

Participant Consent:

I have read this consent form with my parents and have been given the opportunity to ask questions. I consent to participating in this study.

Participant name (please print): _____

Participant signature: _____

Date: _____

Parental Consent:

I have read this consent form with my child and have been given the opportunity to ask questions. I agree with my child's decisions on quotations above. I give my permission for my child to participate in this study.

Participant name (please print): _____

Signature of Parent(s) or Legal Guardian(s):

Date: _____

Research Signature:

Researcher signature (please print): _____

Researcher signature: _____ Date: _____

Please sign and date this letter and return to Christina Pickering at [Redacted] before the first focus group session.

There are 2 copies of this consent form, one of which is yours to keep.
Thank you for your interest and contribution to this project.

Participant and Parental Consent Form: Confidentiality Revisited & Consent for use of Pictures

(to be completed at the last Photovoice session – in preparation for the exhibition)

The following consent form concerns the use of participants' pictures, and revisits the use of participants' quotations. This consent form is to be signed after completion of the Photovoice group sessions, in preparation for the exhibitions. Pictures taken for this project may be displayed in exhibitions, presentations, posted online, and in publications. It is the participant's choice whether the pictures they generated for this project will be displayed in any of these venues.

Please initial beside all the options below for which you agree:

- *I give permission for my photos (including photo's where I am identifiable) that I generated for this project to be used for:*
 - *Exhibitions and presentations* _____.
 - *Academic publications* _____.
 - *Team Instagram photo gallery* _____.
- *I agree that my photos (not including photos where I am identifiable) may be used for:*
 - *Exhibitions and presentations* _____.
 - *Academic publications* _____.
 - *Team Instagram photo gallery* _____.

Quotations (revisited):

Participants may be quoted in the research study reports, presentations and publications, but no names or identifying information will be used (unless participants express that they want to be identified).

It is the participant's choice whether to be quoted. Participants can change this permission at any time.

Please initial beside your choice:

- *I agree to be quoted from the group discussions, but all personally identifying information shall be removed or altered and contents of the quotation shall not be revelatory of my identity* _____.
- *I would like my name (first name only) to appear with my comments about the photos* _____.
- *I do not wish to be quoted from the group discussions*_____.

Participant Consent:

I have read this consent form with my parents and have been given the opportunity to ask questions.

Participant name (please print): _____

Participant signature: _____

Date: _____

Parental Consent:

I have read this consent form with my child and have been given the opportunity to ask questions. I agree with my child's decisions on use of their pictures and quotations above.

Participant name (please print): _____

Signature of Parent(s) or Legal Guardian(s):

Date: _____

Research Signature:

Researcher signature (please print): _____

Researcher signature: _____ Date: _____

Appendix C: University of Ottawa Ethics for Case Study Interviews

Appendix C contains the original ethics approval from the Research Ethics Board at the University of Ottawa for the case study interviews.



The linked image cannot be displayed. The file may have been moved, renamed, or deleted. Verify that the link points to the correct file and location.

Appendix D: Consent/Assent Forms for Case Study Interviews

Appendix D contains the consent/assent forms for the qualitative interviews in Study 2. Only one form was provided to the participant and their parent/legal guardians to lessen the burden of information intake on families. Parents/legal guardians and the participants were provided the opportunity to consent to participate verbally after reviewing the consent forms with them at the beginning of the interview, or to provide consent via email prior to the interview. The two English consent forms are included in appendix D, the first for youth volunteers ages 12 to 15 and their parents, and the second for youth volunteers ages 16 to 24.



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Participant and Parental Consent Form

Title of the study:

A Study on the Opinions of Youth on Youth Participation in Disasters

Principal Investigator:

Christina Pickering
 Faculty of Health Sciences, University of Ottawa
 200 Lees Avenue
 Phone: [Redacted]
 Email: [Redacted]

Thesis Supervisor:

Dr. Tracey O'Sullivan
 Faculty of Health Sciences, University of Ottawa
 25 University Pvt.
 Phone: [Redacted]
 Email: [Redacted]

Invitation to Participate:

You are invited to participate in this research study led by Christina Pickering as part of her PhD Thesis under the supervision of Dr. Tracey O'Sullivan.

Purpose of the Study:

The purpose of the study is to learn about your opinions on, and experiences with, volunteering before, during, or after disasters in the Ottawa-Gatineau region. We would like to learn about your experience volunteering in any of the four major disasters that recently hit the Ottawa-Gatineau area: 1) floods in 2017; 2) tornados in 2018; 3) flooding in 2019; and/or 4) the COVID-19 pandemic in 2020. If you were an essential worker during the COVID-19 pandemic we would also like to learn about your experience contributing to the community through your work.

Participation:

Your participation will involve one 45-60-minute interview with Christina Pickering via the Zoom teleconferencing platform. During the one-on-one interview, you will be asked about your experience volunteering before, during, or after a disaster, or working as an essential worker during COVID-19. The interviews will be scheduled at a time that works for you and will be audio-recorded.

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École interdisciplinaire
 des sciences de la santé

University of Ottawa
 Faculty of Health
 Sciences

Interdisciplinary
 School of Health
 Sciences

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 Ottawa ON K1N 6N5
 Canada
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Use of Pictures and Videos:

You will be asked if you took any pictures or videos during your time volunteering/working and whether you would be open to showing them to Christina during the interview. If you choose to share some images, please select a few prior to the interview and place them in a separate album on your phone. These pictures and videos will NOT be collected by Christina for data. Rather, your pictures will stay with you and will simply be used to spark conversation about your experience and give Christina some context into your experience. Note that you do not have to share any pictures or videos to participate in the interviews.

Risks:

During the interview, you will be asked to share information about why you volunteered/worked before, during, or after a disaster, what you liked and disliked about your experience, and your opinions on adult support during your volunteering. Given the nature of your volunteer/work experience, it is possible you may be facing anxiety related to the disaster. If you feel overwhelmed or anxious there are resources available to you in the community:

Ottawa Public Health:

- PDF with multiple resources: https://www.ottawapublichealth.ca/en/public-health-topics/resources/Documents/mental_health_resource_guide_en.pdf
- Mental Health Crisis Line Website: www.crisisline.ca
- Mental Health Crisis Line: (613) 722-6914

Youth Services Bureau:

- Website: www.ysb-bsj.ca
- Email: headoffice@ysb.on.ca
- 24/7 Crisis Line: 613-260-2360

Every effort will be made to reduce these risks by minimizing discussion of the actual disaster events. Should you become upset, you may choose to end the interview. You may also refuse to answer any questions you do not wish to answer, and you have the right to stop participating in the study at any time, with no negative consequences.

Benefits:

Your participation in this study will give you the opportunity to be listened to and included on matters related to disasters that affect you. Your participation in this study will help to increase awareness about the opinions of youth on youth participation in disasters. It will also be an opportunity for you to share your experiences and opinions.

Confidentiality and Anonymity:

You have received assurance from Christina that the information you share will remain private. You understand that the contents will be used only for Christina Pickering's PhD study on youth participation in disasters and that your privacy will be protected. The interviews will be audio-recorded, with access to the audio-recordings limited to

Christina Pickering and Tracey O’Sullivan. After the interview, Christina will type up the recordings. In the typed-up version of the interviews, your name and any other information (for example, where you work, or your job title) that can serve to identify you, will be removed to ensure nobody knows that you are the person being interviewed in that text. Privacy will also be maintained by storing audio recordings, parental consent emails, and typed-up interview documents separately, and limiting access to this information to Christina Pickering and Tracey O’Sullivan alone. This information will be stored on password protected computers. Access to your personal information will be limited to Christina Pickering and Dr. Tracey O’Sullivan. Any researchers assisting us with the data will sign a privacy and confidentiality form. Your name and any identifying information will not be revealed in publications about this study. Pictures and videos that you show Christina during interviews will not be collected or saved anywhere – the images stay with you.

Anonymity cannot be achieved during the interview, as Christina will know identifying details such as your name, face, and contact information. However, your identity will be protected in publications as your name will never appear in reports, publications, or presentations.

Conservation of data:

The data collected (audio recordings, typed-up recording documents, researcher notes, and parental consent emails) will be stored in a secure manner for 15 years in the EnRiCH Research lab at the University of Ottawa and on a secure back-up drive with Christina Pickering after completion of the study. Data will be stored on password protected computers. Access to the data will be limited to Christina Pickering and Dr. Tracey O’Sullivan.

Voluntary Participation:

You do not have to participate and if you do choose to participate, you can leave the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If you choose to stop the interview, your recordings will be deleted and will not be used for the study.

Acceptance:

Before the interview begins, you and your parents will be given the opportunity to ask Christina Pickering questions. At the start of the Zoom interview, you will also be provided the opportunity to tell Christina Pickering out loud whether you agree to participate in the interview for the study discussed above. Your parents should also be present at the beginning of the interview to confirm whether they agree to your participation in the interview. Both statements will be audio-recorded by the interviewer and filed. Parents will then be asked to leave for the remainder of the interview.

Should your parents be unavailable at the time of the scheduled Zoom interview, please have your parents email Christina Pickering indicating their approval of your participation in the above study.

If you, or your parents/legal guardians, have any questions about the study, contact Christina Pickering, or her supervisor, Dr. Tracey O'Sullivan.

If you, or your parents/legal guardians, have any questions regarding the ethical conduct of this study, contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5.

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

Thank you for your interest and contribution to this project!



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Participant Consent Form

Title of the study:

A Study on Youth Perceptions of Youth Participation in Disasters

Principal Investigator:

Christina Pickering
 Faculty of Health Sciences, University of Ottawa
 200 Lees Avenue
 Phone: [Redacted]
 Email: [Redacted]

Thesis Supervisor:

Dr. Tracey O'Sullivan
 Faculty of Health Sciences, University of Ottawa
 25 University Pvt.
 Phone: [Redacted]
 Email: [Redacted]

Invitation to Participate:

You are invited to participate in the abovementioned research study conducted by Christina Pickering as part of her PhD Thesis under the supervision of Dr. Tracey O'Sullivan.

Purpose of the Study:

The purpose of the study is to learn about your opinions on, and experiences with, volunteering before, during, or after disasters in the Ottawa-Gatineau region. We would like to learn about your experience volunteering in any of the four major disasters that recently hit the Ottawa-Gatineau area: 1) floods in 2017; 2) tornados in 2018; 3) flooding in 2019; and/or 4) the COVID-19 pandemic in 2020. If you were an essential worker during the COVID-19 pandemic, we would also like to learn about your experience contributing to the community through your work.

Why?

It is an opportunity for you to:

- 4) Identify important assets and capabilities in your life that can support your engagement in disaster risk reduction strategies
- 5) Have your voice heard on matters that affect you
- 6) Improve opportunities for youth to participate in disaster initiatives.

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 Sciences

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 Ottawa ON K1N 6N5
 Canada
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Participation:

Your participation will consist of one 45-60-minute interview conducted by Christina Pickering via the Zoom teleconferencing platform. During the one-on-one interview, you will be asked about your experience volunteering before, during, or after a disaster, or working as an essential worker during COVID-19. The interviews will be scheduled at a time convenient to you and will be audio-recorded.

Use of Pictures and Videos:

You will be asked if you took any pictures or videos during your time volunteering and whether you would be open to showing them to Christina during the interview. If you choose to share some images, please select a few prior to the interview and place them in a separate album on your phone. These pictures and videos will NOT be collected by the researcher for data. Rather, your pictures will stay with you and will be used as a communication tool to spark discussion about your experience and give the researcher some context into your experience. Note that you do not have to share any pictures or videos to participate in the interviews.

Risks:

Your participation in this study will entail that you share information about what motivated you to volunteer before, during, or after a disaster, what you liked and disliked about your experience, and your opinions on adult support throughout the process. Given the nature of your volunteer/work experience, it is possible you may be facing anxiety related to the disaster. If you feel overwhelmed or anxious there are resources available to you in the community:

Canadian Mental Health Association – BounceBack Service:

- Website: <https://www.ementalhealth.ca/index.php?m=record&ID=9863>
- Email: bb-referral@cmha-yr.on.ca

Ottawa Public Health:

- PDF with multiple resources: https://www.ottawapublichealth.ca/en/public-health-topics/resources/Documents/mental_health_resource_guide_en.pdf
- Mental Health Crisis Line: (613) 722-6914
- Mental Health Crisis Line Website: www.crisisline.ca

You have received assurance from the researcher that every effort will be made to minimize these risks by minimizing discussion of the actual disaster events. Should you become upset, you may end the interview. You may also refuse to answer any questions you do not wish to answer, and have the right to withdraw from the study at any time.

Benefits:

Your participation in this study will provide you the opportunity to be heard and included on matters related to disasters that affect you. Your participation in this study will contribute to increasing awareness about the opinions of youth on youth participation in disasters. It will also be an opportunity for you to share your lived experiences and views.

Confidentiality and Anonymity:

You have received assurance from the researcher that the information you will share will remain strictly confidential. You understand that the contents will be used only for Christina Pickering's PhD study on youth participation in disasters and that your confidentiality will be protected. The interviews will be audio-recorded to ensure the transcripts are accurate representations of the conversation. In the transcripts, all identifying information (*e.g.* names, identifying organizations or job titles) will be removed. Confidentiality will be maintained by storing audio recordings, and transcripts separately, removing identifying information from transcripts, and controlling access to the data. Data will be stored on password protected computers. Access to the data will be limited to Christina Pickering and Dr. Tracey O'Sullivan. Any researchers assisting us with the data (audio-recordings and transcripts) will sign a privacy and confidentiality form. Your name and any identifying information will not be revealed in publications. Pictures and videos will not be collected as data.

Anonymity cannot be attained with interviews, as researchers will know identifying details such as your name, and contact information. However, anonymity will be protected in publications as no identifying information will be used in reports, publications, or presentations.

Conservation of data:

The data collected (audio recordings, transcripts, and researcher notes) will be stored in a secure manner for 15 years in the EnRiCH Research Lab and on a secure back-up drive with Christina Pickering after completion of the study. Data will be stored on password protected computers. Access to the data will be limited to Christina Pickering and Dr. Tracey O'Sullivan.

Voluntary Participation:

You are under no obligation to participate and if you choose to participate, you can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If you choose to withdraw, all data gathered until the time of withdrawal will be withdrawn from the study.

Acceptance:

Before the interview begins, you will be given the opportunity to ask questions. At the start of the Zoom interview, you will be provided the opportunity to provide verbal consent to participate in the above PhD research study conducted by Christina Pickering of the Faculty of Health Sciences at the University of Ottawa, whose research is under

the supervision of Dr. Tracey O'Sullivan. This will be audio-recorded by the interviewer and filed.

If you have any questions about the study, contact Christina Pickering, or her supervisor, Dr. Tracey O'Sullivan.

If you have any questions regarding the ethical conduct of this study, contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5.

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

Thank you for your interest and contribution to this project!

Appendix E: Interview Guides for Case Study Interviews

Appendix E contains the two interview guides for the semi-structured interviews from the case study project. The first interview guide was used for COVID-19 essential workers; the second interview guide was used for disaster volunteers.

Semi-structured interview guide – COVID-19 Essential Workers

[Turn on recorder]

Preamble after verbal consent is obtained and audio-recorded:

Thank you for agreeing to participate in this study. The interview will take approximately 45-60-minutes. Before we begin I would like to remind you that the interview is being audio recorded. Is it still alright with you if I keep recording the interview? If at any time, you would like to turn the recorder off, let me know and I will do so. I also want to remind you that you have the right to stop this interview at any time.

The purpose of this interview is to learn about your experience working during COVID-19 as an essential worker and to understand your views on youth participation in disasters. This interview will be used as part of my thesis. Any questions before we begin?

- 1) Please tell me about your work experience.
 - a. Probe: Where did you work? Did you work there before the pandemic? Do you still work there now?
 - b. Probe: How were you personally affected by COVID-19?
 - c. Probe: What was your role where you worked?
 - d. Probe: How often did you work during the crisis?
 - e. Probe: How did your work experience evolve throughout the pandemic? (e.g., installation of Plexiglass barriers, PPE, your roles, customer/patient interactions, etc.)

Thank you for your discussion about your work experience during COVID-19. I'd like to continue this line of discussion by bringing in your photos/videos from your experience working during COVID-19.

- 2) What does this picture show? *[Note: Repeat this line of questioning for each photo/video they wish to discuss. If no photos/videos provided skip to question 3]*
 - a. Probe: Ask for elaborations on details they bring up in the photograph
 - b. Probe: Why did you take this picture?
 - c. Probe: What does this photo mean to you?
 - d. Probe: How does this photo make you feel?
 - e. Probe: What is not shown in this photo?
 - f. Probe: Can you please comment on the pictures/videos as a whole?
- 3) Thank you for sharing your pictures/videos with me. I'd like to continue with this discussion by asking about motivation. What motivated you to work during the crisis?
- 4) How has the pandemic changed your perspective about your job?
- 5) How does it feel to be considered an essential worker?
- 6) What was your favourite part about working during COVID-19?
- 7) What was your least favourite part about working during COVID-19 ?
 - a. Probe: Any feedback for leadership? (e.g., government, work place, community)
Anything you would have changed? Remind them that this will not be shared with their work places.
- 8) What were your interactions like with the adults you worked with during COVID-19?
- 9) Have you had any other experience participating during disasters either through work or volunteering?
 - a. *Give examples as prompts if they need it.*

For the second half of this interview, I'd like to talk about your views on youth participation in disasters.

- 10) What role do you think youth should play in disasters?
- 11) What strengths do youth bring to reducing risks of disasters?
- 12) If there were no restrictions on your ability to contribute, how would you like to be included in disaster activities and decision-making?
 - a. Probe. How much control should youth have over disaster prevention in their communities? *Explain disaster prevention to participant.*
 - b. Probe: How much control should youth have over disaster preparedness in their communities? *Explain disaster preparedness to participant.*
- 13) What kind of supports do you need to participate in disaster decision-making and activities?
 - a. Probe: How were you supported during your work experience?
- 14) Do you feel your voice has influence when it comes to disasters? Explain.
 - a. If not, what can be done to change this?
- 15) In your opinion, what are the barriers to you participating in disaster activities?
 - a. Probe: How can we change this?
- 16) How do you think adults view youths' abilities to contribute to disasters?
- 17) If you were asked to design a youth participation program for reducing disaster risks, what would it look like?
- 18) I would like to conclude by asking you some quick demographic information.
 - a. What is your age?
 - b. What is your gender?

- c. What is your ethnic background?
- d. *For middle and high school students:* What grade are you in?
- e. *For college and university students:* What year of college/university are you in?
- f. Were you born in Canada?
 - i. *Probe:* If not, how long has your family lived in Canada?
 - ii. *Probe:* If not, where did you move to Canada from?
- g. Are you from a two parent household?
- h. Do you live with your parents?
 - i. If so, do your parents work outside of the house right now (during the COVID-19 pandemic)?
- i. Do you rent or own your home?

Closing statement:

Those were all my questions. I want to thank you again for taking the time to talk with me. Your responses are going to be very helpful to improving opportunities for youth to participate in disasters through work and volunteerism. Before I go:

- 19) Are there any other topics or questions that I did not cover that you think are important to get into?

[Thank participant again for their time. Ask them if I can contact them if I have any additional questions or if I need to clarify an answer.]

[Turn off recorder]

Semi-structured interview guide - Volunteers

[Turn on recorder]

Preamble after verbal consent is obtained and audio-recorded:

Thank you for agreeing to participate in this study. The interview will take approximately 45-60-minutes. Before we begin I would like to remind you that the interview is being audio recorded. Is it still alright with you if I keep recording the interview? If at any time, you would like to turn the recorder off, let me know and I will do so. I also want to remind you that you have the right to stop this interview at any time.

The purpose of this interview is to learn about your experience volunteering after Ottawa-Gatineau's major disasters and your views on youth participation in disasters. This interview will be used as part of my thesis. Any questions before we begin?

20) Please tell me about your volunteer experience.

- a. Probe: For which disaster(s) did you volunteer your time?
- b. Probe: Were you personally affected by the disaster(s)?
- c. Probe: Where did you volunteer?
- d. Probe: What was your volunteer role?
- e. Probe: How long did you volunteer for?
- f. Probe: Who did you volunteer with?

Thank you for your discussion about your volunteer experience. I'd like to continue this line of discussion by bringing in your photos/videos from your experience volunteering.

21) What does this picture show? *[Note: Repeat this line of questioning for each photo/video they wish to discuss. If no photos/videos provided skip to question 3]*

- a. Probe: Ask for elaborations on details they bring up in the photograph

- b. Probe: Why did you take this picture?
 - c. Probe: What does this photo mean to you?
 - d. Probe: How does this photo make you feel?
 - e. Probe: What is not shown in this photo?
 - f. Probe: Can you please comment on the pictures/videos as a whole?
- 22) Thank you for sharing your pictures/videos with me. I'd like to continue with this discussion by asking about your motivation to participate. Why did you decide to volunteer?
- a. Probe: Would you volunteer in the next disaster?
- 23) What was your favourite part about volunteering after the *[fill in disaster here]*?
- 24) What was your least favourite part about volunteering after the *[fill in disaster here]*?
- a. Probe: Any feedback for organizers? Anything you would have changed?
- 25) What were your interactions like with the adults involved during your volunteer experience?
- 26) Have you had any other experience participating in reducing disaster risks?
- a. *Give examples as prompts if they need it.*

For the second half of this interview, I'd like to talk about your views on youth participation in disasters.

- 27) What role do you think youth should play in disasters?
- 28) What strengths do youth bring to reducing risks of disasters?
- 29) If there were no restrictions on your ability to contribute, how would you like to be included in disaster activities and decision-making?

- a. Probe. How much control should youth have over disaster prevention in their communities? *Explain disaster prevention to participant.*
 - b. Probe: How much control should youth have over disaster preparedness in their communities? *Explain disaster preparedness to participant.*
- 30) What kind of supports do you need to participate in disaster decision-making and activities?
- a. Probe: How were you supported during your volunteer experience?
- 31) Do you feel your voice has influence when it comes to disasters? Explain.
- a. If not, what can be done to change this?
- 32) In your opinion, what are the barriers to you participating in disaster activities?
- a. Probe: How can we change this?
- 33) How do you think adults view youths' abilities to contribute to disasters?
- 34) If you were asked to design a youth participation program for DRR, what would it look like?
- 35) I would like to conclude by asking you some quick demographic information.
- a. What is your age?
 - b. What is your gender?
 - c. What is your ethnic background?
 - d. *For middle and high school students:* What grade are you in?
 - e. *For college and university students:* What year of college/university are you in?
 - f. Were you born in Canada?
 - i. *Probe:* If not, how long has your family lived in Canada?
 - ii. *Probe:* If not, where did you move to Canada from?

- g. Are you from a two parent household?
- h. Do you live with your parents?
 - i. If so, do your parents work outside of the house right now (during the COVID-19 pandemic)?
- i. Do you rent or own your home?
- j. Are you currently employed? Is so, is it part time?

Closing statement:

Those were all my questions. I want to thank you again for taking the time to talk with me. Your responses are going to be very helpful to improving opportunities for youth to participate in disasters. Before I go:

- 36) Are there any other topics or questions that I did not cover that you think are important to get into?

[Thank participant again for their time. Ask them if I can contact them if I have any additional questions or if I need to clarify an answer.]

[Turn off recorder]

Appendix F: Table 6 - Summary of Action Recommendations

Disaster research is highly practical in nature (Peek et al., 2018) and there is a need for more research on how to operationalize youth participation in policy and practice (Bessaha et al., 2022; Peek et al., 2018, 2020). As such, action recommendations can support policymakers and practitioners in implementing youth participation in practice. Each of the three empirical articles from this dissertation provide action recommendations from the perspectives of youth who have experience contributing to DRR. Table 7 summarizes the action recommendations presented across the three studies.

Table 7

Summary of Overarching Recommendations for Practitioners and Policymakers

Central Purpose of the Recommendations		
Promote youth learning and leadership on complex public health issues in DRR, climate change, and COVID-19.	Foster inclusive institutional cultures and intergenerational collaboration.	
Summary of Action Recommendations		
Article 2	Article 3	Article 4
<p>Youth as Key Stakeholders and the Importance of Youth-Adult Partnerships Youth are untapped resources with power to create change. Youth-adult partnerships support collaboration and leverage youth assets.</p>	<p>Use a Population Health Lens Apply a population health lens to COVID-19 recovery to ensure those disproportionately affected by disasters are prioritized and included in discussions.</p>	<p>Communicate Opportunities to Participate in DRR using More Accessible Channels Advertise opportunities for youth engagement more widely and accessibly to maximize reach.</p>
<p>Social Media as a Tool for Offline Social Change Youth have social media skills that are assets which can create social change both on- and offline. Social media can only be an effective form of activism if there is a cultural shift from empty performative support to meaningful activism informed support.</p>	<p>Improve School Curricula Improve school curricula by including educational materials and open discussions about DRR, systemic racism in Canada, and mental health literacy in schools.</p>	<p>Provide Mentorship and Training for Intergenerational Collaboration Intergenerational collaboration cannot occur without investing resources into supports like youth mentorship and training to build their knowledge and skillsets for meaningful collaboration.</p>
<p>Disaster Preparedness Education to Support Community Resilience Create better curricula and extracurricular opportunities for youth to learn about DRR. Youth can fulfill dual roles as</p>	<p>Research Youth Experiences of COVID-19 More research is needed on youth experiences and insights on the COVID-19 pandemic and DRR.</p>	<p>Advocate for Diverse Voices in Adult-Centric Spaces Make conscious room for youth voices within and outside DRR institutional spaces by amplifying diverse youth voices.</p>

<p>learners and educators to improve community resilience, provided institutional spaces welcome and support youth-led knowledge translation.</p>		
<p>Accessible Communication and Creative Knowledge Translation Accessible communication and resources are important in disasters. Art can be an accessible tool for creative knowledge translation.</p>	<p>Include Youth as Stakeholders Include youth as stakeholders in DRR and pandemic recovery by creating opportunities for engagement and collaboration.</p>	<p>Overt Recognition of Youth Contributions for Sustainable Engagement Identify how youth contributions influence DRR efforts and show appreciation for their efforts to boost morale and motivation.</p>
	<p>Improve Mental Health Services Governmental action is needed to create accessible mental health services, and raise awareness about mental health literacy and accessing resources.</p>	
	<p>Apply an All-of-Society Approach Apply an all-of-society approach to DRR and pandemic recovery by valuing different types of expertise, such as lived experiences, and include diverse groups in decision-making.</p>	