Ontario physical distancing policies and epidemiology from January - September 2020: A case report

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Conflicts of Interest

No conflicts of interest were reported.

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Table of contents

Tables and figures

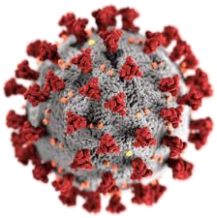
Links to supplementary materials

Study proposal
Informed consent
Interview guide
COVID-19 Country characteristics database

I. Introduction and project description

A new disease that spread around the world

On December 31, 2019, the World Health Organization (WHO) was notified of a cluster of individuals with pneumonia of unknown cause in Wuhan, China.(1) On January 12, 2020, China shared the genetic sequence of the novel coronavirus with other countries to help develop diagnostic tests.(1) Thailand reported the first known case of the novel coronavirus outside of China on January 13, 2020. WHO declared the novel coronavirus (2019-nCoV) outbreak a Public Health Emergency of International Concern on January 30, 2020 with 7,711 confirmed cases, 12,167 suspected cases, and 170 deaths in China and 83 cases in 18 countries outside of China.(1,2) The disease was later named COVID-19 for coronavirus disease 2019 and the virus referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).(1) WHO declared COVID-19 a pandemic on March 11, 2020.(1)



Physical distancing policies and knowledge gaps

As an emerging infectious disease, there are no effective vaccines or preventive treatments for SARS-CoV-2 on a wide scale. Therefore, governments have had to rely on the use of public policies to combat the spread of the virus.(1-4) Creating policies has been difficult due to the large amount of information and ongoing uncertainty around the characteristics of the virus and who it affects.(4) One of the most commonly used policy to mitigate (slow) the spread of the virus that causes COVID-19 centres on physical or social distancing, which relies on separating people to reduce the transmission of the virus.(5) However, it is still unclear when is the best time to institute such policies and what happens when distancing policies are eased. There are many aspects of distancing, such as recommendations for maintaining a physical distance in public, banning group gatherings, or complete lockdowns, that complicate their assessment.(5) There are also many factors that have been attributed to people acquiring or having a worse outcome from COVID-19.(6-11) However, there is no harmonized database available with all the policies, epidemiology and contextual information that is needed in order to perform comparative analyses useful to informing policy making.

About this project

The Policy Frameworks and Epidemiology of COVID-19 Working Group was developed after a "CONVERGE Virtual Forum: COVID-19 Working Groups for Public Health and Social Sciences Research." A group of international researchers convened to explore what physical distancing policies countries implemented and their effects on the epidemiology of COVID-19. The Working Group was further supported through an award from CONVERGE and the Social Science Extreme Events Research (SSEER) Network. CONVERGE is a National Science Foundation-funded initiative headquartered at the Natural Hazards Center at the University of Colorado Boulder.

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II. Methods

Research design

A qualitative embedded multiple case study research design was used to compare countries (or subnational jurisdictions, such as provinces, states or territories). The suite of public policies and resulting changes in the epidemiology of COVID-19 are examined within their specific country setting. Our cases start in January 2020 and end in August 2020. (Please see full study proposal). Research ethics approval was obtained by the Hamilton Integrated Research Ethics Board (HIREB) (Project # 11243).

Data collection

For each country, the setting, such as health systems, political systems and demographics were described to help with interpretation of findings and potential transferability, or the degree to which findings are applicable to other sites or future research.

Publicly available data was first collected on the jurisdiction following a standardized data collection form. Epidemiological data was drawn from publicly available data. WHO, World Bank, Central Intelligence Agency and other publicly available sources were used for timelines and country characteristics, where possible. Other sources of information included governmental and non-governmental websites, news articles, government reports, and peer-reviewed journals.

Next, key informant interviews were conducted to fill in gaps, verify information found through the documentary searches, and identify further participants and documentary sources of relevant information. (See informed consent and interview guide) Key informant interviews were conducted with policymakers, health workers, researchers and other stakeholders as appropriate to fill in knowledge gaps.

Data analysis and presentation

Our COVID-19 policies and epidemiology databases harmonize data on setting characteristics, policies, demographic characteristics and epidemiological risk factors and outcome metrics. These will further be described in single country or jurisdiction case reports. Comparisons will be selected based on both literal and theoretical replication. Countries that have similarities in either policies or epidemiological trends can be considered literal comparisons, whereas countries that differ will be used as theoretical comparisons. These comparisons will be submitted to peer-reviewed journals for publication.

III. Findings

A. Setting characteristics

Geographic, environmental, social and economic contextual factors

Ontario is a province in Canada. Canada is in the WHO Region of the Americas.(12) Ontario has a population of 13,448,494, land area of 908,699 km^2 and a population density of 14.8 (2016).(13) However, most of the population lives in the Southern part of Ontario. 68.1% of people live in large urban centres, 18.1% live in medium to small population centres and 13.8% live in rural areas.(14)

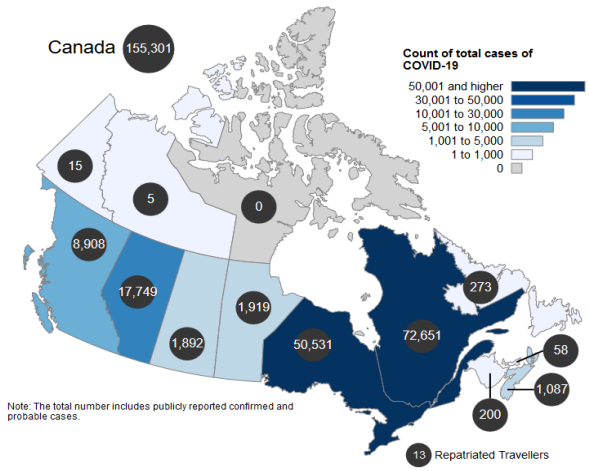

Figure 1. Map of Canada with total COVID-19 cases, as of 29 September 2020 (15)

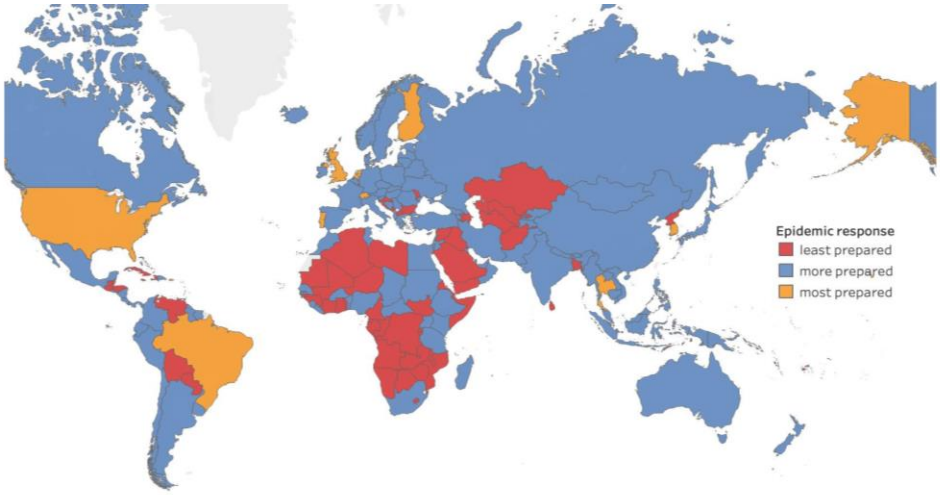

Figure 2. Global Health Security epidemic preparedness rank category

Table 1. COVID-19 relevant contextual factors for Ontario (Canadian numbers are used for indicators collected at the national level)

Global Health Security, 2019 (Overall Index Score out of 100 and category) (16)	75.3 - Most prepared (Canada)
Global Health Security, 2019 (Epidemic Preparedness Index Score out of 100 and category) (16)	60.7 - More prepared (Canada)
Particulate matter (PM2.5) air pollution, mean annual exposure, 2016 (micrograms per cubic meter) (17)	7.7 in Northern Ontario 6.6 in Southern Ontario
PM2.5 air pollution, population exposed to levels exceeding WHO guideline value, 2015 (% of total) (18)	0.7 (Canada)
International migrant stock, 2015 (% of population) (19)	21.8 (Canada)
Trust in national government, 2018 (% of population) (20)	65.09 (Canada)
Mobile cellular subscriptions, 2019 (per 100 people) (21)	92.53 (Canada)
Individuals using the internet, 2017 (% of population) (22)	92.7 (Canada)
Index of economic freedom, 2020 (Rank and category) (23)	78.2 - Mostly free (Canada)
World Bank classification, 2020 (24)	High income (Canada)
Gini Index, 2017 (25)	33.3 (Canada)
GDP per capita, PPP, 2019 (Current international $) (26)	51,341.71 (Canada)
GNI per capita, PPP, 2019 (Current international $) (27)	50,810 (Canada)
Current health expenditure, 2017 (%) (28)	10.6 (Canada)
Vulnerable employment, total, 2020 (% of total employment) (29)	10.68 (Canada)
Vulnerable employment, female, 2020 (% of female employment) (29)	9.39 (Canada)
Vulnerable employment, male, 2020 (% of male employment) (29)	11.84 (Canada)
Homelessness, 2016 (%) (30)	0.36 (Canada)
Adult literacy rate, 2018 (%) (31)	99 (Canada)
Literacy rate, adult female, 2003 (% of females 15 and above) (32)	99 (Canada)
Literacy rate, adult male, 2003 (% of males 15 and above) (33)	99 (Canada)
Primary school enrolment, 2017 (% net) (34)	99.88 (Canada)

GDP - gross domestic product; **GNI** - gross national income; **PPP** - purchasing power parity

Population health characteristics

Life expectancy at birth in Ontario is 82.4yrs (2018).(35) For males, life expectancy at birth is 80.3yrs, and for females it is 84.4yrs.(35) Non-communicable diseases are believed to play a role in who develops severe symptoms of COVID-19. In Canada, the proportional mortality from cardiovascular diseases was 25%, cancers 31%, chronic respiratory diseases 7%, and diabetes 3%.(36) (See Figure 3.) The probability of dying between ages 30-70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease was 9.8% for all adults, and 11.5% and 8.1% for males and females, respectively.(37)

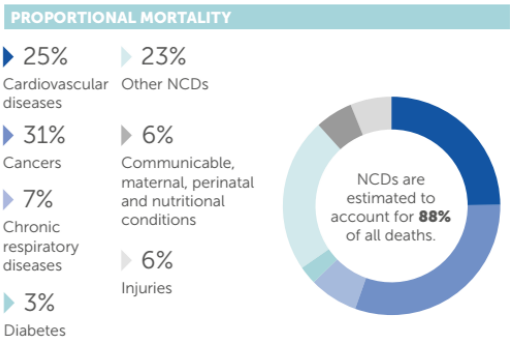

Figure 3. Proportional mortality from non-communicable diseases (NCDs) - Canada, 2016 (36)

Table 2. Age and health characteristics for Ontario (Canada where labeled)

	Male	Female	Total
Population ages 0-14, total, 2019 (% of total population) (38)	1,159,381 (7.97)	1,111,155 (7.64)	2,270,536 (15.61)
Population ages 15-64, total (% of total population) (38)	4,889,078 (33.61)	4,875,806 (33.52)	9,764,884 (67.14)
Population ages 65 and above, total (% of total population) (38)	1,136,265 (7.81)	1,373,033 (9.44)	2,509,298 (17.25)
Current smoker, daily or occasional, 12+, 2019 (%) (39)	17.1	10.6	13.8
High blood pressure, ages 12+, 2019 (%) (39)	18.4	17.8	18.1
Diabetes, ages 12+, 2019 (%) (39)	9.8	7.6	8.6
Body Mass Index, adjusted self-reported (18 yrs+), obese, 2019 (%) (39)	28.0	27.4	27.7
Prevalence of Human Immunodeficiency Virus (HIV), 2019 (% of population ages 15-49) (40)			-- (Canada)
Bacillus Calmette-Guérin (BCG) Immunization coverage estimates (%) (41)			N/A (Canada)
Prevalence of undernourishment, 2018 (% of population) (42)			3 (Canada)

Governance and health systems

Ontario is one of 10 provinces in Canada. Canada is a federal democratic country with responsibility for health assigned to the provinces under the Constitutions Acts of 1867 and 1982.(43,44) This constitutional division of powers means the national government has limited influence over health policy decisions in the provinces: the provincial government and Premier are responsible for health and public health actions for Ontario. The current Progressive Conservative government, which is considered conservative or centre-right in terms of political ideology, has been in place since June 29, 2018.(45) Public health in Ontario is divided into 34 public health units, which are responsible for implementing provincial policy but also developing local policies on public health issues.(46) Public health and healthcare in Canada have different governance, funding and delivery structures. There are 14 health districts, which are responsible for funding and coordinating hospital and physician services.(47) Ontario has been restructuring its health system since 2019.(48) Health in Ontario is funded through a mix of revenues. Hospital and physician services are funded by general taxation and are free at the point of service. Vision, dental and medications prescribed in the community are not included in publicly-funded health services except through specific programs for targeted groups. They are generally covered through private insurance or paid for by patients out-of-pocket. Public health is funded through local, provincial and federal government revenues.(46)

Table 3. Political and health system indicators for Canada

Fragile States Index score, 2020 (maximum 120, lower is better) (49)	18.7
Fragile States Index rank, 2020 (out of 178 countries, higher is better) (49)	171
Global Freedom score and status, 2020 (50)	98 - Free
Internet Freedom score and status, 2020 (51)	87 - Free
World press freedom index, 2020, global score (0-100, lower is better) and rank (out of 180 countries, lower is better) (52)	15.29 - 16
Physician density, 2015 (physician/1,000 pop) (Ontario) (53)	2.2
Acute care beds per capita, 2018 (beds/1,000 pop) (Ontario) (54)	1.7

Pandemic experience and preparedness

One of the most recent defining moments for infectious diseases in Canada was the Severe Acute Respiratory Syndrome (SARS) epidemic in 2003, where there were 438 probable or suspected cases of SARS and 44 deaths in Canada.(55) Ontario reported the majority of these, mainly centred in Toronto, Ontario, with 247 probable cases. All 44 Canadian deaths linked to SARS were in Ontario.(55) Following SARS, the Public Health Agency of Canada (PHAC) was created at the federal level, and Public Health Ontario (PHO) and the Health System Emergency Management Branch (HSEMB) were created at the provincial level to support emergency management activities within the Ministry and the healthcare system and infectious disease surveillance, respectively.(56-58) The 2009 H1N1 pandemic flu virus infected 33,509 people from 2009-2010 in Canada, with 428 deaths.(59) A review of Canada's response to H1N1 highlighted the need to improve federal and provincial/territorial collaboration, improved emergency management and strengthening science-based communication.(60)

There have been no cases of Middle East Respiratory Syndrome (MERS) or Ebola found in Canada.(61,62)

There has been much discussion about the need for pandemic planning. The Government of Ontario created an Ontario Health Plan for an Influenza Pandemic in 2013.(63) The most recent Hazard Identification Report was created in 2019 for Ontario.(64) This report includes a section on "Infectious Disease Outbreak", which covers potential threats caused by infectious diseases, but it does not provide any details as to actions to be taken in case of such an event. The Boards of Health, which lead the public health units, are given direction under the Health Protection and Promotion Act (HPPA), following the Ontario Public Health Standards.(65)

Ontario has a mix of laboratory systems, including public health, hospital, academic centres, and private laboratories. At the beginning of the COVID-19 pandemic, tests from Ontario were sent to specific centres in the province and then sent to Winnipeg for confirmation tests.(66,67) There were delays in reporting during this time, compounded by a lack of coordination between these different laboratory systems, restrictive testing criteria, and lack of capacity and supplies for collecting samples and running the lab tests.(66,68) COVID-19 testing and reporting in Ontario has been coordinated by public health units and Public Health Ontario (PHO).(69) Assessment centres dedicated to collecting samples were set up starting March 12, 2020.(70)

B. Policies and epidemiology

Cases and physical distancing policies

Ontario's first case of COVID-19 was recorded on January 25, 2020, and Ontario had 100 cases on March 14, 2020.(71-73) A state of emergency was declared on March 17, 2020; at that time, there were 186 cases and 1 death.(73,74) As of October 5, 2020, there were 54,814 cases and 2,980 deaths in Ontario.(73) Figure 4 shows the number of daily cases and deaths in Ontario and dates for select policies from January to October 1, 2020.

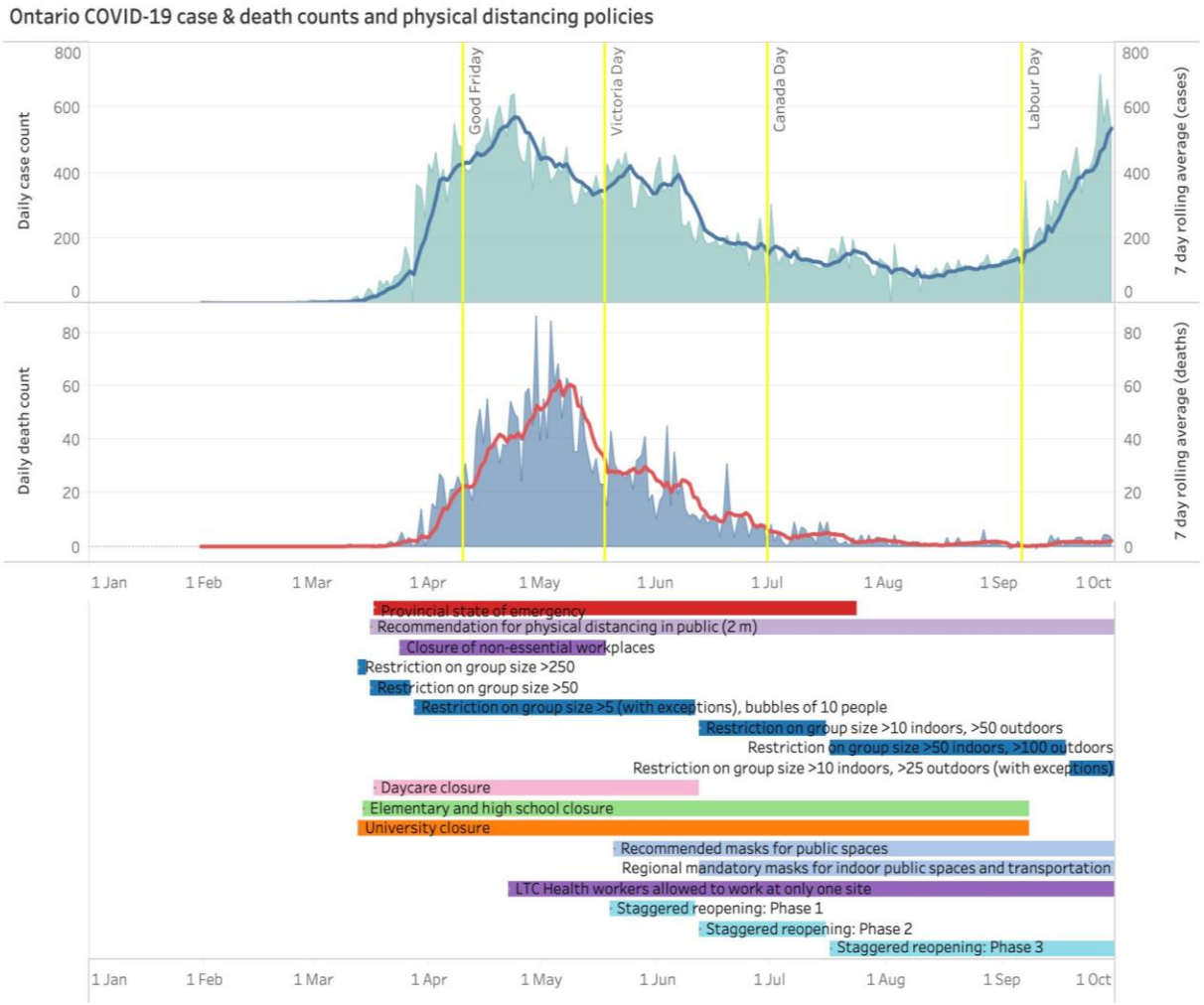

Figure 4. Number of reported COVID-19 cases and deaths in Ontario with select policies from January to October 1, 2020

Description of events in Ontario

The main spokesperson for Ontario's COVID-19 response has been Premier Doug Ford. He, along with Ontario's Chief Medical Officer of Health, Dr. David Williams, and the Minister of Health, Christine Elliott, have provided updates on the COVID-19 situation and have led the creation of and informed the public about upcoming policies used to mitigate COVID-19.(74,75) A new response structure was set up in Ontario with a number of tables, including a "Command Table," to help manage the pandemic response.(76) At the federal level, Prime Minister Justin Trudeau has provided communication about policy actions, while Health Minister Patty Hadju and Chief Public Health Officer of Canada, Dr. Teresa Tam have provided guidance on COVID-19 measures. Local health units have been tasked with implementing provincial policies, which were used, among others, to define and manage people with COVID-19.(67,77) Operational decisions not covered directly by provincial recommendations or policies were decided by the Medical Officer of Health (MOH) or Associate Medical Officer of Health (AMOH) in the local public health units.(77)

Canada and Ontario have followed what can be called a mitigation strategy. Messaging on this strategy has remained consistent in that there has been a call to "flatten the curve" and "not overwhelm the healthcare system", as was seen in other countries, namely Italy.(66,67,74,75,77) Ontario was already dealing with overcrowding in hospitals and long wait times for elective procedures.(78) For this reason, many citizens realized the severity of COVID-19 early in the pandemic and acted quickly, even before the government enacted the state of emergency, by moving university classes to online learning, working from home, and cancelling travel plans. At the beginning of the pandemic, there was public support for federal and provincial government actions.(77,79-81)

Ontario had its first case of COVID-19 on January 25, 2020. The first documented cases were travel-related, and not many Canadians were affected directly by COVID-19 until March, when there were hospital and intensive care unit (ICU) cases and evidence of community transmission.(77) On March 12, the Province announced that public schools would close for 2 weeks after spring break, making March 14 the first day students were out of regular classroom settings.(82) A state of emergency was enacted on March 17, 2020 by Premier Doug Ford.(74) This included closing all facilities providing indoor recreational programs, public libraries, all private schools and licensed child care centres, all bars and restaurants (with the exception of those that had the capacity to facilitate take-away), and all theatres and concert venues.(74) Elective medical procedures / surgeries were ramped down starting March 15, 2020 in anticipation of the need for medical services directed to treating people with COVID-19.(83)

Travel recommendations were mixed at the beginning of March, creating confusion for the public. Non-essential travel outside of Canada was not recommended by several public health officials by March 13, 2020, but at the same time, the Premier of Ontario was recommending for families to enjoy their March Break vacation travel.(84,85) At the federal level, international travel bans came into effect on March 18, 2020, with United States of America (USA) / Canada border closures on March 21, 2020.(86-89)

The Ministry of Health recommended physical distancing in public (at least 2 meters) a day before declaring a state of emergency.(90) Those over the age of 70 and immunocompromised individuals were advised to self-isolate for 14 days.(90) However, masks in public were not recommended early on due to a lack of personal protective equipment (PPE) for frontline workers and a shortage of masks generally. The province recommended the use of masks at the end of May, but making masks mandatory was left to the municipalities.(91-93) Even though there had been increased cleaning and disinfection for public settings, including transit, started on March 11, masks were not made mandatory on the largest public transit system in Toronto, Ontario until July 2.(93)

The size of groups permitted to gather in different settings has varied over the course of the pandemic. Groups over 250 people were banned on March 13, 2020.(85) The size of permitted gatherings was reduced on March 16 (50 people) and again on March 28 (5 people, except for funerals and specific childcare centres).(74,90,94) Gathering sizes began to increase again in June and July as the province moved through a staged process of re-opening. On June 12, Stage 2 re-openings allowed for gatherings of 10 people for indoor funerals (50 people if outdoors). On July 17, this was increased to 50 people indoors (under certain circumstances) and 100 people outdoors as part of Stage 3 of reopening.(95) On July 21, 2020, the province of Ontario gave Royal Assent to Bill 195, Re-opening Ontario (A Flexible Response to COVID-19) Act, 2020 ("Bill 195").(96) Bill 195 came into force on July 24, 2020, bringing an end to the declared State of Emergency in Ontario. However, many of the orders continued, including limits to the size of gatherings.

The uptake of policy interventions at the beginning of the pandemic was bolstered by a sense of community responsibility and altruism, and was supported by financial incentives from the provincial and federal governments.(77) Social media was used to emphasize a ‘better together’ message and placed ownership on the public, which provided hope and control during a time of uncertainty and fear.(66) Overall, key informants stated that the approach in Ontario was successful for mitigation. There was balance between keeping people safe and hospitals not being overwhelmed, along with social and economic considerations.(66,77) Physical distancing, limits on public gatherings and making masks mandatory were helpful in combating COVID-19.(75,77) One interviewee felt that while closing down at the beginning of the pandemic may have worked well during a time of such uncertainty, it may not work well in future pandemics.(66)

Some challenges were also highlighted. There have been inconsistencies in messaging, especially from government officials.(66) For example, Premier Ford was criticized for going to his cottage during Easter after telling the public not to do so.(97) More recently, due to the large demand for testing, people were encouraged to only get tested if they were symptomatic, moving away from earlier encouragement to get more people tested.(98) People started acting before the government created policies, signaling that more could have been done by taking the situation seriously earlier on and being more proactive, such as closing borders and businesses sooner and banning group gatherings.(77) There was also lack of PPE and testing

capacity and supplies, including caps on tests in assessment centres.(66) One interviewee felt that not having enough PPE influenced the policy decisions made, such as having to close things down, as there was not enough PPE to handle a large influx of patients in the hospitals.(67) The long-term care (LTC) sector was particularly vulnerable, and many issues were brought to the fore because of COVID-19. Once this situation was better understood, directives were put in place, such as workers not being allowed to work at more than one LTC facility, testing for new workers and residents who were on leave, and restrictions on visitors, which helped mitigate some of the cases in LTC.(77) There has been pushback from family members and stakeholders who have been concerned about increasing isolation and subsequent physical and cognitive declines in LTC residents.(99) Understanding and compliance with policies by the public were also challenges, which was exemplified by social bubbles, which was an attempt to increase people's social contacts beyond their household in a safe and controlled way.(94) However, the concept of social bubbles was later dropped as people did not understand or follow this recommendation.(75)

After the initial round of restrictions, Ontario took a staged approach to re-opening.(95) Stage 1 focused on businesses considered "low risk" that were able to meet public health measures. Stage 2 was a regional approach focused on opening more businesses and services, while gradually phasing in the opening of community and recreational spaces. Stage 3 began in mid-July with the reopening of most businesses and all public spaces. Since this time, various regions have moved between Stage 3 and a "modified Stage 2" (additional restrictions on businesses such as indoor dining and movie theatres), depending on the status of COVID-19 cases in their region. At the end of August, the Premier announced the reopening of schools in September with parents having an in-class option or a remote option for elementary children. Over sixty percent of parents chose to have their children attend in-class learning.(100)

Physical distancing policies were supported through economic relief for individuals and businesses. Starting as early as March 11, 2020, the federal government introduced measures to support workers affected by COVID-19.(101) By March 19, Ontario passed legislation to protect workers who self-isolated or quarantined, retroactive to January 25, which was when the first case of COVID-19 was identified in Ontario.(102) On March 25, the federal government, through Bill C-13, the COVID-19 Emergency Response Act, provided further economic incentives including setting up the Canada Emergency Response Benefit (CERB) which provided a taxable benefit of $2,000 /month to workers who lost their income due to COVID.(103) Eviction freezes and mortgage deferrals were also used to support individuals and businesses.(104,105)

Several suggestions for future waves of the COVID-19 pandemic or future pandemics were provided by interviewees.

- It was highlighted that for public trust, and therefore compliance of public health measures, it is important that government spokespeople are seen as a team.

- Clear public messages are important. Social bubbles were discussed as a failure as people did not understand how social bubbles worked or how to apply this concept.

- Late start in testing, including incubation, testing and obtaining results, led to increased community transmission.

- The delayed call to wear masks or mandate their use in public was also considered a failure in this pandemic. Some jurisdictions did not wait for evidence on the effectiveness of masks and moved forward with policy decisions. It was felt that sometimes there does not need to be certainty to make these decisions.

- Preventive measures such as social distancing and remote work, where possible, were seen to help mitigate COVID-19 cases.

- Pre-existing networks helped build successful responses across institutions within regions. It was noted by three interviewees that provincial pandemic plans and other directives from the province were high-level and needed implementation decisions to be made at the local level.

- Curiously, none of the interviewees were sure how much of Ontario's guidance followed WHO recommendations. One explanation provided was that WHO tries to make evidence-based decisions, and therefore they are slow in suggesting policy decisions. Furthermore, WHO's use of the terms pandemic or epidemic was not considered relevant at the local level as actions needed to be taken to deal with what was happening locally.

- For public health, provincial announcements were often their first heads up of upcoming changes, giving public health units very little time to adjust their practices. In the early days, there were daily and sometimes hourly announcements, making it difficult to keep up in practice.

- In the community, having established networks helped in mobilizing resources, avoiding duplication and learning from implementation challenges. This approach also required an "all of health" response, in which all relevant parties were at the table, including public health, healthcare and social support organizations, along with other governmental agencies. A "whole of community approach with a whole of government solution" is needed for emergency management of crises, which helps mobilize resources but also streamlines governance for the response.

- Information technology (IT) was very important in scaling up response measures at the institutional level. However, IT was also important for remote work, remote learning and sharing of information about COVID-19. There are people who still do not have access to technologies, which could exacerbate inequities.

- Due to a lack of PPE early in the response, earlier planning for PPE needs to be included in any pandemic plan.

- The gaps identified in the LTC sector need to be addressed.(106,107) Investments in prevention in LTC facilities would save further spending in acute care.

- Mobile assessment centres could help meet the needs of the community, especially those lacking transportation options or with time constraints.

- Transportation and housing were issues that arose throughout the pandemic to support the most vulnerable within communities.

- COVID isolation centres could provide resources and shelter for those needing to quarantine or recover from COVID-19.

- It has been difficult to manage travel-related (federal level) and case-related (local level) quarantine, under two different regulatory acts, and lack of communication between the federal and provincial/local levels.

- Even though Ontario was in a wave of healthcare reform, and there was confusion around roles of the local health integration networks (LHINs), none of the interviewees felt these factors affected the ability of public health or healthcare to respond to the pandemic. They felt there was more confusion caused around locally developed policies and later Ministry policies, some of which contradicted local policies. One interviewee suggested that learning from other jurisdictions was important and that localities had to advocate back to the Ministry to address implementation challenges.

- However, given the proposed changes to the public health system in Ontario prior to the pandemic, if the public health system had been in transition when COVID-19 hit, there could have been serious issues in dealing with the pandemic.

- A range of success measures are needed besides number of cases and deaths, including hospitalizations, human resource capacity, and time to contact cases. Also, understanding that success in public health means absence of cases and that success may be measured differently in different phases of the response.

- Lastly, it is important to find ways for government and unions to work together and agree in discussions of how to support government actions and messaging. This was seen as an area that could have improved with teachers' unions and return to school where the end goals were the same, but the unions and government were publicly opposed in how to go about re-opening schools.

Disproportionately affected populations

There are certain groups that have been affected disproportionately in Ontario.

Long-term care (LTC) residents and workers

There are 623 long term care facilities in Ontario housing 75,676 seniors. By the end of August, there were 190 recorded outbreaks of COVID-19 in LTC homes, including 5,218 residents and resulting in 1,452 deaths.(108) Among other measures taken for protecting LTC residents and workers, LTC workers were restricted to only working at one site on April 22.(109,110) At the time the change was announced, there were 93 outbreaks and over 130 COVID deaths in LTC.(110)

Migrant workers

Ontario contracts more than 20,000 migrant workers per year under the Canadian Seasonal Agricultural Worker Program.(111) These workers are often housed in cramped living quarters, and by the end of August, over 1300 migrant workers tested positive for COVID-19, resulting in 3 deaths.(112) As a result, Premier Doug Ford announced a three point action plan to keep agri businesses open while expanding testing for migrant workers and allowing asymptomatic workers to continue working.(113)

Comparisons with other provincial / territorial responses

There are many concerns in trying to compare countries' responses to COVID-19. This is shaped by limitations of the data itself and differences in contextual factors. A separate paper by this working group describes limitations of COVID-19 data. (Submitted) Table 4 presents a list of Canadian provinces and territories and their use of different physical distancing policies.

Table 4. Comparative responses to COVID-19 by province or territory – updated November 17, 2020 (filled in means policy was implemented in that jurisdiction)

AB - Alberta; **BC** - British Columbia; **MN** - Manitoba; **NB** - New Brunswick; **NFL** - Newfoundland;, **NWT** - Northwest Territories; **NS** - Nova Scotia; **NV** - Nunavut; **ON** - Ontario; **PEI** - Prince Edward Island; **QC** - Quebec; **SK** - Saskatchewan; **YK** - Yukon

IV. Discussion of main findings, limitations, and next steps

Ontario has a population of 13,448,494, with 50,531 cases and 2,840 deaths as of September 29, 2020. This is no doubt an undercount of cases, as there was a delay in setting up testing at the beginning of the pandemic, and Ontario dealt with a lack of testing supplies, lack of laboratory capacity, and strict criteria for testing at the outset. There may be further limitations to data on COVID-19 due to not collecting race-based or sociodemographic data from the outset.(114) Since then, supplies have been secured for testing as well as for PPE. With an upsurge in numbers of cases, people have been urged to test if symptomatic or at high risk. Pharmacies are set to start testing for those who are at lower risk.(98)

As schools and businesses have re-opened, Ontario has seen an upsurge in numbers of cases and is now in its second wave of the pandemic. Ontario has launched a website to inform the public of numbers of cases in publicly-funded schools and daycare centres.(115) As of September 29, 2020, there were 308 school-related cases in students and staff in schools, with 2 schools closed, and 126 confirmed cases in child care centres and homes, with 36 daycare centres closed and 176 homes closed. There are also LTC trackers for Canada. In Ontario, there were 2086 deaths in LTC residents and 8 deaths in LTC staff as of September 29, 2020.(116)

There have been instances of mainly younger people not following public health guidelines in recent weeks.(117,118) The effects of these events, combined with school and workplace opening, and public resistance to public health measures are yet to be seen. CERB, which supported workers whose jobs had been affected by COVID, is set to end on October 3, 2020.

Conclusions

It is without a doubt that COVID-19 has caused significant loss of life, economic hardship and social changes in Ontario. Long-term effects have yet to be fully understood. There are already restrictive measures being put in place due to the increase in numbers, such as scaling back on the group sizes allowed in public. However, further contextualized research needs to be conducted to determine which physical distancing policies are the most effective for specific settings. It is also imperative to improve surveillance and reporting systems internationally to deal with this and future pandemics. Comparative work is being conducted by this Working Group to understand what policies work, where and why.

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