

ENVIRONMENTAL SCAN

Lockdown Duration and Re-opening including Considerations for COVID-19 Variants of Concern

01/29/2021

Key Points

- Based on the evidence that exists, longer duration lockdowns (e.g. 42-60 days) appear to be more effective at reducing Coronavirus Disease 2019 (COVID-19) cases than shorter interventions.
- A low reproduction number and a low incidence of infection (before re-opening) are important to successfully re-open after a lockdown. Commonly reported strategies to mitigate risk for resurgence on re-opening include: social distancing, testing, contact tracing and isolation, supports for at-risk individuals, and gradual (vs. abrupt) release from lockdown.
- The emergence of variants of concern (VOC) with increased transmissibility and possibly more frequent fatality outcomes across all age groups (e.g., B.1.1.7 lineage, also known as VOC 202012/01, or 20I/501Y.V1, or the United Kingdom [UK] Variant) requires that swift and stricter decision thresholds be considered for easing and reinforcing public health measures than would have previously been applied to non-variant strains of COVID-19. A prevention-based strategy maintaining low case numbers has been suggested.
- When VOC 202012/01 was first identified, Denmark was already in a state of partial lockdown, while Ireland and England were in stages of easing their previous lockdown measures. In response to VOC 202012/01 (also known as B.1.1.7 lineage, or 20I/501Y.V1, or the UK Variant), England, Ireland, and Denmark introduced national lockdown measures including: moving school online, closure of non-essential retail, closure of restaurants and bars, and stricter gathering limits.
 - England reported its highest daily COVID-19 case growth (averaged over seven days) on January 4, 2021, and has reported a decline in incidence of newly identified COVID-19 cases since initiating a national lockdown on January 5, 2021. The prevalence of VOC 202012/01 remains high in England.
 - Ireland reported a significant increase in daily case counts following an easing of restrictions to level 3 measures on December 1, 2020. Modified level 5 measures were initiated to control significant increases in daily case counts, but transmission was not curtailed until full level 5 measures (the strictest measures used by Ireland over the course of the pandemic) were implemented at the end of December.

- Denmark reported decreases in COVID-19 case incidence during the initial partial lockdown beginning December 7, 2020, and a subsequent increase in incidence when VOC 202012/01 was first identified. Denmark has since reported a decline in the incidence of newly identified COVID-19, since suspending travel from the UK and implementing national lockdown measures on January 5, 2021.
- England, Ireland, Denmark moved education online and incorporated considerations for vulnerable children and students into their school closure/remote learning plans.

Purpose and Scope

The Ontario provincial framework, *Keeping Ontario Safe and Open*, is currently paused with a provincial Stay-at-Home order and Declaration of Emergency in effect, expiring February 9, 2021.¹ In the context of emerging Coronavirus Disease 2019 (COVID-19) variants, Public Health Ontario (PHO) aimed to summarize relevant evidence regarding duration of lockdowns and easing of restrictions, in the current evolving context of variants of concern (VOCs) and early vaccination restricted to some high-risk groups.

To inform consideration for public health measures, this document summarizes evidence regarding:

- Effectiveness of varied lockdown durations and considerations for easing of restrictions (peer-reviewed literature);
- Select jurisdictions' responses to controlling the spread of COVID-19 during the emergence of VOC 202012/01 (grey literature);
- Select strategies for managing the COVID-19 pandemic, with a particular focus on prevention strategies to maintain low community transmission (grey literature).

Background and Ontario Context

Ongoing review of data surrounding the exponential growth and distribution of the Variant of Concern (VOC) 202012/01 throughout England indicates an association with substantially increased transmissibility,² and new analyses of recent data suggests the variant strain may be associated with increased risk of death compared to non-variant strains.³ There have been calls for countries to address the evolving context through prevention.⁴ In addition, it is recognized that stringent public health measures are challenging for communities, rendering a prevention-based approach a potential option.⁵

Ontario implemented a province-wide shut down on December 26, 2020.⁶ Cases continued to rise at concerning rates and Ontario initiated a Stay-at-Home order on January 14, 2021.⁷ Measures which were slated to expire on January 20, 2021 were extended for another 30 days until February 19, 2021 noting the concern for health care system capacity and a need to protect vulnerable populations.⁸

The VOC 202012/01 has been detected in multiple communities in Ontario and is responsible for a large outbreak in a long-term care home.⁹ The variant has been identified in individuals without a travel history, suggesting community spread.

With concerning risks of COVID-19 VOCs, vaccination outside priority groups of long-term care and front line health care workers not immediate, Ontario also faces several more months of cold weather, requiring the population to largely remain indoors, where COVID-19 transmission risks are higher.¹⁰ The

province is at risk for resurgence in a health system with reduced capacity, with risk of greater impacts due to VOCs.

Methods

For a focused evidence review, a search was conducted by PHO Library Services on January 25 and 26, 2021 using the MEDLINE database. Search terms included but were not limited to: COVID-19, circuit break, lockdown, quarantine, closures, infections, deaths, efficacy. The full search strategy is available upon request. Peer-reviewed English language articles that examined evidence regarding optimal duration for lockdowns and considerations for re-opening after lockdown were included. Editorials, letters, viewpoint and news articles were excluded. A single reviewer screened titles, abstracts and full texts and extracted the data.

A rapid jurisdictional scan of documentation of lockdown measures and epidemiological context implemented in response to VOCs identified in select jurisdictions (England, Ireland, and Denmark). Records were obtained through online searches conducted between January 27 and 28, 2021 of recent policies, media articles, government websites, official press and reports. Given that all three countries re-instated school closures as part of their public health measures, information was collected on how they may have mitigated harms from school closures, relevant to public health.

A rapid scan of strategies to achieve low community prevalence of COVID-19 is summarized in this document given the lens of VOC emergence. The summarized strategies include the Canadian Shield, the Melbourne Model (a “Near-Zero” COVID-19 Strategy), and “COVID Zero”. The current approach in place for jurisdictions including Ontario is also summarized as Continued COVID Mitigation. The strategies are summarized based on a focused review of two reports published in December 2020, that present approaches to achieving low community transmissions of COVID-19, based on the experiences of international and Canadian jurisdictions that have achieved low or no community transmission.^{11,12}

Findings

Focused Evidence Review

The library search identified 374 articles, of which 18 were included and discussed below. Five articles discussed duration of lockdowns, 11 discussed re-opening from lockdowns and 2 discussed vaccine use.

It is important to note that evidence on VOC’s and public health measures is nascent and therefore was not accounted for in the literature described below.

DURATION OF LOCKDOWNS

The evidence identified related specifically to lockdown duration was limited. Five articles studied the duration of lockdowns. All studies were modelling studies and the majority (n=3) demonstrated longer lockdowns (e.g. 42-60 days) to be more effective than shorter ones in terms of reducing COVID-19 cases.¹³⁻¹⁵ However, a single study reported that lockdowns of 14 and 21 days were sufficient in reducing cases and that lockdowns exceeding 42 days did not result in measurable improvement.¹⁶ One study had equivocal results in comparing long and short lockdowns.¹⁷

- Ray et al. conducted a modelling study comparing the effects of hypothetical durations of lockdown on reducing the number of active and new infections in India.¹³ They concluded that a

longer lockdown between 42–56 days is preferable to a shorter lockdown of 21-28 days to substantially “flatten the curve”. They also noted the importance of having some measures of suppression in place after the lockdown has ended for increased benefit (in terms of reducing the number of cases). Similarly, an international modelling study by Chowdhury et al. has found that **an alternating cycle of 50 days of lockdown followed by 30 days of easing could be an effective strategy for reducing cases, deaths and intensive care admissions from COVID-19.**¹⁴ This strategy would reduce the R number to 0.5 and keep intensive care unit (ICU) demand within national capacity in all countries. It would result in a longer pandemic, exceeding 18 months in all countries studied, but considerably fewer people would die during that period. However, researchers from the Global Dynamic Interventions note that this would need to be accompanied by efficient testing, case isolation, contact tracing, and shielding of vulnerable people.

- Ibarra-Vega conducted a modelling study comparing three lockdown scenarios; A) one extended lockdown (60 days), B) two medium lockdowns of 30 days, with a 30-day smart lockdown space (i.e., where activities are resumed, but guaranteeing a reduction in daily contacts of at least 50%), and C) an initial 40-day lockdown and then a 30-day smart lockdown (i.e., guaranteeing a limit of contacts of up to 40% of the contacts in ordinary life).¹⁵ Once the lockdown scenarios were over, contacts were restricted to 50%, to prevent future infection so that it can gradually return to normal activities. According to their modelling **the authors recommend an extended initial lockdown and then gradually return to activities, controlling social contacts so that at the end of this period should only be a maximum of 40% of the contacts they had before the quarantine.**
- A modelling study conducted in India by Ambikapathy et al. compared COVID-19 transmission in India for lockdowns of 4, 14, 21, 42, and 60 days.¹⁶ They found that **the model predicted marked reductions in cases for lockdowns of 14 and 21 days; lockdowns exceeding 42 days did not result in measurable improvement.**
- Caulkins et al. conducted a modelling study examining different lockdown models balancing the tradeoff between health and economic outcomes.¹⁷ They concluded that both an ‘eradication strategy’ (i.e., long lockdowns that significantly reduce the negative health effects but also reduce economic activity) and ‘curve flattening strategy’ (i.e., shorter lockdown that reduces peak number of infected individuals to limit effects of health care capacity, but without much harm to economic activity) can be optimal. **They authors could not conclude whether a short or long lockdown period is best.**

RE-OPENING AFTER LOCKDOWN

Eleven articles (one scoping review and 10 modelling studies) examined exit strategies and re-opening after a lockdown. Commonly reported strategies to help mitigate the burden on re-opening include: social distancing,¹⁸⁻²³ testing,^{21,24} contact tracing and isolation,^{20,24} protecting vulnerable individuals¹⁸ and gradual (vs. abrupt) release from lockdown.^{25,26} **It was noted that a low reproduction number and a low incidence of infection (before re-opening) are key to successfully re-open after a lockdown.**²⁵

SOCIAL DISTANCING, TESTING, CONTACT TRACING, ISOLATION

- D'Angelo et al., conducted a scoping review summarising literature on strategies for exiting lockdown during the COVID-19 pandemic or other similar pandemic with a focus on reopening schools and returning to work.²⁴ Note: They excluded studies if they dealt with an

epidemic/pandemic crisis in the presence of a vaccine or herd immunity. The authors report that the **maintenance of social distancing, large-scale testing and contact tracing, and isolation were strategies that allowed for easing of a lockdown**. However, they highlight that each strategy needs to be based on the specific epidemiological situation and local circumstances of each jurisdiction.

- Hoertel et al., conducted an epidemiological modelling study to examine the potential impact of post-quarantine measures, including social distancing, mask-wearing, and shielding of the population the most vulnerable to severe COVID-19 infection, on the disease's cumulative incidence and mortality, and on ICU-bed occupancy in France.¹⁸ They conclude that while lockdowns were effective in containing COVID-19 spread, they would not likely prevent a rebound in cases after the lockdown ended, regardless of its duration. Social distancing and mask-wearing, although effective in slowing the epidemic and in reducing mortality, would also be ineffective in preventing the overwhelming of ICUs and a second lockdown. **However, when social distancing and mask-wearing were coupled with shielding of vulnerable individuals lower cumulative incidence of COVID 19 cases, mortality, and maintaining an adequate number of ICU beds to prevent a second lockdown were achieved.**
- Di Domenico et al., proposed possible exit strategies from lockdowns in Ile de France and estimated their effectiveness using modelling.²⁰ Different types and durations of social distancing were simulated, including progressive and targeted strategies, with large-scale testing. They conclude that lifting the lockdown with no exit strategy would lead to an additional wave overwhelming the health care system; however, **intensive forms of social distancing along with extensive case finding and isolation would allow the partial release of the lockdown without exceeding healthcare demand and capacity.**
- Gupta et al., used modelling simulate lockdown relaxation scenarios and increased testing in India and found that as lockdowns are relaxed, other measures need to be scaled up.²¹ For example, the authors note that **when lower levels of social distancing are coupled with increased testing, similar levels of outbreak control are achieved compared to aggressive social distancing measures.**
- Liu et al., modelled the spread of COVID-19 under different reopening strategies using data from the United States (US).²² They estimated the rates of new COVID-19 cases under different scenarios with varying levels of social distancing and found that **if social distancing was eliminated, the number of COVID-19 cases would increase significantly.** Therefore, the authors suggest that **reasonably high levels of social distancing need to be maintained during the reopening of the economy.**
- Sun et al. conducted a patch modelling study in Hubei, China.¹⁹ They examined two scenarios: 1) changing contact rates within each patch at different time points, and 2) different time of lifting the lockdown in Hubei with various contact rates. They concluded that if strict interventions (i.e., keeping contact rates relatively low) were implemented after work resumption there would be little effect on the epidemic in the Hubei province, if the contact rate increases to higher levels after work resumption, another outbreak may appear. **They conclude that strict interventions for maintaining the contact rate at a relatively low level is critical to avoid a second outbreak of after work resumption or lifting the lockdown in Hubei province.**

GRADUAL VS ABRUPT RE-OPENING

- Mégarbane et al. conducted a modelling study examining the effectiveness of lockdown on SARS-CoV-2 epidemic progression in nine different countries (New Zealand, France, Spain, Germany, the Netherlands, Italy, the UK, Sweden, and the US).²⁵ They found that countries that had an early-onset lockdown followed by gradual deconfinement resulted in a rapid reduction in COVID-19 individuals and a rapid recovery time compared with other countries that had an abrupt deconfinement period which resulted in a prolonged plateau of COVID-19 infections, with elevated R0 (4.9 and 4.4, respectively) and non-ending recovery. They concluded **that a gradual deconfinement out of lockdown allowed for shortening the COVID-19 pandemic.** However, they note that the effect on healthcare utilization and demand and fatalities remains to be determined.
- Rawson et al., conducted a modelling study examining the efficacy of two potential lockdown release strategies, using the UK population as a test case.²⁶ The authors conclude that to prevent recurring spread of COVID-19, **a gradual release strategy (i.e., end the lockdown of the public from quarantine through multiple staggered releases) is preferable to an on-off release strategy** (i.e, lockdown is lifted for the entire population simultaneously, but can subsequently be reinstated when necessary). Specifically, the authors suggest **releasing approximately half the population 2–4 weeks from the end of an initial infection peak, then wait another 3–4 months to allow for a second peak before releasing everyone.** The authors also note that **lockdown should not be ended until the number of new daily confirmed cases reaches a sufficiently low threshold.**

OTHER CONSIDERATIONS

- Glass, D.H. modelled various levels of lockdown relaxation/re-opening in six countries (France, Germany, Italy, Spain, the UK and the US).²⁷ **The results demonstrate that a 50% relaxation in lockdown measures could result in large second waves in all countries if further measures were not put in place; however, a 25% relaxation of lockdown measures could lead to slow the decline in cases in all countries except the US where a 25% relaxation would result in a second wave.**
- Marziano et al. used modelling to estimate the health impact of different lockdown exit strategies in Italy.²⁸ They report that while reopening workplaces in selected industrial activities might have had a minor impact on the transmissibility, and re-opening educational settings had a marginal effect, the opening of high schools resulted in a marked increase of the disease burden. The authors also highlight **two critical conditions that must be met for a successful reopening 1) a low reproduction number and 2) a low incidence of infection.**

VACCINES

- Two modelling studies (US and South African contexts) were included that examined lockdown and vaccination scenarios. The articles indicate that vaccination on its own (with 75% or more coverage), does not ensure control of COVID-19 infection. They conclude that **vaccination combined with social distancing, restricting gatherings and mask-wearing, for example, are necessary, particularly in terms of reducing contacts and burden on the health care system.**^{29,30}

Jurisdictional Scan

COMMUNITY-BASED PUBLIC HEALTH MEASURES AND VARIANTS OF CONCERN

In response to the identification of SARS-CoV-2 VOC 202012/01, jurisdictions have implemented restrictive, lockdown public health measures. England, Ireland, and Denmark are examples of jurisdictions that have implemented restrictive, lockdown measures in response to the identification and spread of SARS-CoV-2 VOC 202012/01.

ENGLAND

Identifying variants of concern

On December 14, 2020, SARS-CoV-2 VOC 202012/01 was first identified in the UK and consequently retrospectively identified in samples as early as September 20, 2020.³¹ When this VOC was first identified, the COVID-19 response framework in England (which began on December 2, 2020) included schools, retail, and personal care services remaining open in all tiers of the framework, with no curfew in place. Work from home was encouraged, social gathering limits remained in place (maximum six people), and in the highest alert level residents could not travel out of their local area except for necessary purposes.³² This framework followed a period of national lockdown in England, in place from November 5 to December 2, 2020.³³

Community-based public health measures

On January 5, 2021, England implemented lockdown measures in response to an increasing incidence in COVID-19 case incidence and of SARS-CoV-2 VOC 202012/01. Lockdown measures implemented during this national lockdown are captured in **Appendix A, Table 1**. A key difference between these measures and the measures at the time of the identification of SARS-CoV-2 VOC 202012/01, is the transition of all learning (primary, secondary, and adult education) to remote/online.

Under these new lockdown restrictions implemented on January 5, 2021 all schools have moved to providing online teaching, except for vulnerable children and children of key workers who are still allowed to attend in-person.³⁴ On January 27, 2021, England's Prime Minister announced that face-to-face learning will not resume for the majority of students until March 8, 2021 at the earliest.³⁵

Epidemiological context

Key dates related to changes in epidemiology are provided below, with changes to public health or lockdown measures on or around that date. The 7-day rolling average rate of people with at least one positive COVID-19 test result per 100,000 population has increased since SARS-CoV-2 VOC 202012/01 was identified on December 14, 2020:³⁶

- December 2, 2020: 150.5 cases per 100,000 population (month-long period of **national lockdown was lifted** in England on December 2, 2020)
- December 14, 2020: 242.2 cases per 100,000 population (**VOC 202012/01 officially identified**)
- January 5, 2021: 654.5 cases per 100,000 population (**national lockdown measures implemented**, and on January 4, 2021 case rates reached the highest in the pandemic to date at 680.4 cases per 100,000)

- January 23, 2021: 373.2 cases per 100,000 population (current data; three weeks of national lockdown)

The percentage of positive tests compatible with the VOC 202012/01 increased rapidly since December and surpassed estimated percentage testing positivity of other strains/variants.³⁷ Percentage of positive tests which are compatible with the new variant (ORF1ab- and N-gene positive) based on nose and throat swabs:

- December 28, 2020 to January 2, 2021: 61% positive for ORF1ab and N genes.³⁷
- January 11 to 17 2021: 60% positive for ORF1ab and N genes.³⁸

IRELAND

Identifying variants of concern

Early November marked the earliest retrospective identification of VOC 202012/01 (also known as B.1.1.7 or 501Y.V1) in Ireland; however, it was not a significant proportion of the circulating strains until the end of December 2020.³⁹ The last few weeks of December 2020 to the first week of January 2021 there was a reported increased prevalence of VOC 202012/01 from 8.6% to 45.7%.

Sporadic cases of B.1.351 (South Africa variant) had been identified in Ireland: 3 cases on January 7, 2021, and 6 additional cases on January 25, 2021).⁴⁰ No reports of P.1 (Brazil variant) were found in Ireland.⁴¹

Community-based public health measures

Ireland's changes to restriction levels (**Appendix A, Table 2**) has been in response to the rates of SARS-CoV-2 cases in general without specific indication that additional measures were implemented in response to the increasing proportion of VOC 202012/01 in the population. However, health authorities have acknowledged that VOC 202012/01 is responsible for a large number of cases and is likely a considerable contributing factor to the rates that Ireland is experiencing due to its significantly increased transmissibility.⁴²⁻⁴⁴ At the time of this report, Ireland had already reverted to the strictest measures that have been implemented since the beginning of the global pandemic (level 5 restrictions), including all schools closed with some specific exceptions.⁴⁵ Previously, keeping schools open had been said to be acceptable as schools with appropriate public health measures have been deemed safe for staff and students.^{40,46} Therefore, the effect on the new case rates of SARS-CoV-2 due to school closures cannot be determined from the overall effect of lockdown.

From December 1 to 21, 2020 Ireland had been under modified level 3 restrictions.⁴⁷ A decision was made due to increasing rates to move to a modified level 5 lockdown ahead of the holiday season.⁴⁸ Finally, due to increasing rates not reduced by modified level 5 lockdown, Ireland enacted full measures of level 5 on December 30, 2020 and has since extended measures until at least March 5, 2021.^{43,49,50} Full level 5 measures has been effective to rapidly reduce daily case rates over the past 4 weeks that it has been implemented with the effect of lockdown leading to a plateau of cases after one week.

International travel restrictions were in place for the UK and South Africa during the holiday season, which was noted as too late to prevent VOC 202012/01 from circulating in the community.^{51,52} Travel restrictions have since been changed to requiring mandatory quarantine in a designated facility for individuals who arrive from Brazil and South Africa, the origins of two additional variants of concern, P.1

(501Y.V3) and B.1.351 (501Y.V2), respectively. A negative polymerase chain reaction (PCR) test from within 72 hours of departure is required for travel to Ireland and upon arrival from any international travel destination, a passenger locator form is to be completed and individuals self-isolate at home and restrict movement for 14 days.^{51,53} Concerns have been raised about travel to and from Northern Ireland to have less strict measures in place.⁵⁴

Epidemiological context

Key dates related to changes in epidemiology (7-day average of newly identified cases of COVID-19 per 100,000 population) are provided below, with changes to public health or lockdown measures on or around that date.⁵⁵

- December 1, 2020: 5.4 per 100,000 (date of relaxing restrictions to level 3)
- December 17, 2020: 7.1 per 100,000 (approximately two weeks following relaxation of measures to level 3, the beginning of proportions of VOC 202012/01 rising in Ireland, and one week before modified level 5 restrictions)
- December 25, 2020: 16.9 per 100,000 (second day over 1,000 new daily cases, less than a week until full level 5 restrictions)
- January 1, 2021: 27.2 per 100,000 (first day following full level 5 restrictions)
- January 8, 2021: 122.5 per 100,000 (peak daily new cases, approximately one week since full level 5 restrictions)
- January 15, 2021: 88.7 per 100,000 (one week following peak new daily cases, approximately two weeks since full level 5 restrictions)
- January 26, 2021: 37.6 per 100,000 (current data)

Reported on January 21, 2020, R_t has been reduced to between 0.5 and 0.8.⁵⁶

DENMARK

Identifying variants of concern

The State Serum Institute (Denmark's infectious disease authority) identified Denmark's initial cases of VOC 202012/01 by re-testing COVID-19 tests carried out between November 14 and December 14, 2020.⁵⁷ Sequencing data reported by Denmark to GISAID EpiCoV have identified a proportion of VOC 202012/01 from samples collected in week 53, 2020 (2.84%), which is similar to that reported in week 45, 2020 in the UK (2.78%).⁵⁸

Danish modelling studies indicate that VOC 202012/01 is expected to be the dominant circulating virus in mid-February 2021. Denmark is reporting significant community transmission of this variant, with most of the recent VOC 202012/01 cases not being travel-associated.⁵⁸

Community-based public health measures

On December 21, 2020 Denmark suspended all incoming flights from the UK, in response to the newly identified VOC 202012/01.⁵⁹ The restrictive measures in place from December 7 to January 3, 2021 were extended until January 17, 2021; these measures included: online school attendance for children in

grade five and up, closure of non-essential (e.g., malls, hairdressers, tailors), and the closure of bars/restaurants except for takeaway only.^{60,61} These measures were replaced by a more restrictive, national lockdown on January 5, 2021.

On January 5, 2021, Denmark imposed new lockdown measures aimed at curbing the rapid spread of a new coronavirus variant that is believed to be more transmissible. The national measures are applicable until the February 28, 2021, with select measures set to end on February 7, 2021.^{62,63} All measures implemented as part of the national lockdown can be found in **Appendix A, Table 3**.

The national lockdown restrictions include lowering the limit on public gatherings to five (reduced from 10 person limit), introducing a two-meter distancing rule in all public areas (including shops), and introducing online learning for all levels of education.⁶² This follows a lockdown in December 2020 that included closing bars, restaurants, non-essential shops, and online learning for secondary students and universities.⁶⁴

Epidemiological context

The 7-day rolling average of new confirmed COVID-19 cases per 100,000 population in Denmark peaked around the time VOC 202012/01 was officially identified. The incidence has declined steadily since January 5, 2021, when the national lockdown measures were introduced.

Key dates related to changes in epidemiology (7-day average of newly identified cases of COVID-19 per 100,000 population) are provided below, with changes to public health or lockdown measures on or around that date.⁶⁵

- December 7, 2020: 30 new cases per 100,000 population (prior to the identification of VOC 202012/01 Denmark entered a partial lockdown on December 7, 2020)
- December 14, 2020: 50.6 new cases per 100,000 population (one week after partial lockdown initiated; VOC 202012/01 officially identified)
- December 21, 2020: 60.9 new cases per 100,000 population (two weeks after partial lockdown initiated; suspension of all flights from the UK, due to the identification and prevalence of VOC 202012/01)
- December 28, 2020: 45.0 new cases per 100,000 population (three weeks after partial lockdown initiated)
- January 5, 2021: 35.4 new cases per 100,000 population (new national lockdown measures implemented)
- January 11, 2021: 29.5 new cases per 100,000 population (one week of national lockdown measures)
- January 18, 2021: 17.6 new cases per 100,000 population (two weeks of national lockdown measures)
- January 25, 2021: 13.3 new cases per 100,000 population (current data; three weeks of national lockdown)

In late December, the State Serum Institute reported that they re-tested COVID-19 tests carried out between November 14 and December 18, 2020, and found that based on a re-test of nearly 14% of the test samples, 0.4% of infections were compatible with VOC 202012/01's genome.⁵⁷ The B.1.1.7 lineage (also referred to as VOC 202012/01) has so far been found among 632 people in Denmark in the period from November 14, 2020 to January 20, 2021.⁶⁶

SUPPORTING VULNERABLE CHILDREN DURING PERIODS OF SCHOOL CLOSURE

In January 2021, England, Ireland, Denmark moved education online to help control the spread of COVID-19, during the emergence of SARS-CoV-2 VOC 202012/01. These jurisdictions have incorporated considerations for vulnerable children and students into their resurgence school closure plans. For more details on the approaches to mitigate harms during school closure, see **Appendix B**.

- On January 5, 2021, England introduced a comprehensive plan to allow vulnerable children and children of critical workers to return to in-person learning, during the current lockdown period. Vulnerable children and critical workers are clearly defined by England's Department of Education (see **Appendix B**), certain supports are continuing to be offered to students attending school during this period (i.e., the distribution of free school lunches).^{67,68}
- On January 11, 2021, Ireland moved all education online for all students, including for vulnerable students. Supports have been maintained during virtual attendance (e.g., meal programs, provision of learning resources to parents to support student with individualized education needs). Childcare services, however, are available for parents who are critical workers.^{69,70}
- During Denmark's current national lockdown, students in primary and secondary school have been moved to virtual learning. Denmark initially kept schools open for younger children (<11 years), but as of January 5, 2021 a school closure is in effect with all students attending school virtually. While Denmark's COVID-19 web page indicates vulnerable students are excluded from the remote learning plan, there is no information is available on in-person learning for vulnerable students.⁷¹

STRATEGIES TO ACHIEVE LOW COMMUNITY PREVALENCE OF COVID-19

Strategies to maintain low community prevalence of COVID-19 have been implemented successfully in several countries and are suggested as a useful strategy to implement for addressing emerging VOCs.⁴ In the proposed pan-European defense against COVID-19 variants, a guiding principle is "to reduce case numbers as quickly as possible as this has strong advantages for health, society and economy". Defining targets for low case numbers and a prevention strategy supported by public motivation and participation is described as the first tenet of the proposed approach for Europe, which is relevant for Ontario with gradually improving epidemiology.⁷²

A recently published approach relevant to the Ontario context has been termed the 'Canadian Shield' strategy, proposed by the COVID Strategic Choices Group. Due to recent release of this proposed approach focusing on prevention with the Canadian lens, this scan reviewed published documentation related to the Canadian Shield. The COVID Strategic Choices Group is described as an interdisciplinary taskforce with experience across different domains of expertise (including epidemiology, public health, public policy, economics and business) and regions of Canada.⁷³ The Canadian Shield approach is a pan-Canadian strategy largely modelled on the success of Melbourne, Australia intended for achieving low community transmission of COVID-19 which is defined as <1 new daily case per million population, or

less than 40 new cases per day across Canada. This approach recognizes that sustaining zero COVID-19 transmission is not possible until vaccines are widely available.¹²

The Canadian Shield and other strategies to achieve low community prevalence of COVID-19 are summarized in **Appendix C**, including: the Canadian Shield, the Melbourne Model (a “Near-Zero” COVID-19 Strategy), and “COVID Zero”. The current approach in place for jurisdictions including Ontario is also summarized as “Continued COVID-19 Mitigation”. **Appendix C** summarizes the strategies’ goals/objectives, epidemiological targets, components, role of vaccination, geography, health and economic impact. The strategies were proposed, and reported on, prior to the emergence of VOCs, including SARS-CoV-2 VOC 202012/01.

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Appendix A: Lockdown measures implemented in response to COVID-19 variants of concern

Table 1. Public health measures in England implemented on January 5, 2021

Type of measure	England's national lockdown measures ⁷⁴⁻⁷⁶
Face coverings/masks	Mandatory in all public indoor settings.
Curfew	None.
Population mobility	Can only leave home for essential purposes (work, grocery, education). Only local travel is recommended, and legal reasons are required for international or within-UK travel.
Schools	All schools moved online; vulnerable children (for which there are specific eligibility criteria) and children of critical workers may attend in-person.
Work	Should be done from home where possible.
Retail	Non-essential retail closed, except for click-and-collect.
Bars/restaurants	Closed with the exception of providing food and non-alcoholic drinks for takeaway (until 11:00 pm), click-and-collect and drive-through.
Social gatherings	Prohibited outside of household or support bubble; Cannot leave home for recreational or leisure purposes (e.g., picnic, social meeting).
Religious gatherings	Open with social distancing; separate guidance for the safe use of places of worship and religious services.
Event/banquet/entertainment venues	Closed (i.e., casinos, galleries, personal care facilities, cinemas).
Weddings, funerals, civil ceremonies	Funerals can be attended by a maximum of 30 people. Weddings and civil partnership ceremonies must only take place with up to 6 people.
Recreation	Closed (indoor and outdoor leisure/sport facilities).

Table 2. Public health measures in Ireland December 1, 2020 to January 27, 2021

Type of measure	Ireland Level 3 (December 1 – December 21, 2020) ^{*47}	Ireland Modified Level 5 (December 22 – December 29, 2020) ⁴⁸	Ireland Level 5 (December 30, 2020 – March 5, 2021) ⁵⁰
Face coverings/ masks	Required in indoor public areas; recommended for visiting long-term care homes (LTCHs), travelling in a vehicle outside your bubble, crowded workplaces, places of worship, busy or crowded outdoor spaces, and whenever 2 meters distance cannot be maintained.	Same as level 3.	Same as level 3.
Curfew	None	None	None
Population mobility	Travel permitted anywhere in Ireland.	Residents must remain within their county (as opposed to within 5 km of their home) apart from travel for work, education or other essential purposes.	<p>People must remain at home with the exception of essential reasons and are permitted to exercise within 5 km of home.</p> <p>Public transport capacity should be restricted at 25%.</p> <p>Non-essential international travel is not permitted. PCR tests required prior to arrival, various mandatory quarantine measures in place for arrivals.</p>
Schools	<p>Open with protective measures.</p> <p>Higher, further and adult education should remain primarily online.</p>	<p>Childcare services, early learning and schools remain open.</p> <p>Higher, further and adult education should remain primarily online.</p>	<p>Closed; online only.</p> <p>Childcare available for vulnerable children and children of essential workers.</p>

Type of measure	Ireland Level 3 (December 1 – December 21, 2020) ^{*47}	Ireland Modified Level 5 (December 22 – December 29, 2020) ⁴⁸	Ireland Level 5 (December 30, 2020 – March 5, 2021) ⁵⁰
Work	Work from home unless absolutely necessary to attend in person.	Work from home unless essential services work cannot be done from home.	Work from home unless essential services work cannot be done from home. Construction closed with few exceptions.
Retail	Retail and shopping centers are open. Personal services are open with strict adherence to protective measures.	Non-essential retail may remain open. The retail sector will be requested to defer January sales events.	Essential retail only. Non-essential retail may only offer delivery and not curb-side pickup. Personal services must close.
Bars/ restaurants	Indoor dining with restrictions allowed. No live entertainment. Wet pubs may provide delivery and take-away only.	Closed; take away food and delivery only.	Same as modified level 5.
Social gatherings	Visiting with maximum of two other households. Outdoor settings away from home or garden allows 3 households to gather with strict physical distancing. No organized indoor gatherings may take place (exception of cinemas).	Varied across time from two households permitted to visit down to no visitors permitted except for essential reasons. No clearly reported measures for indoor and outdoor gatherings and LTCH visitations – may be similar to level 3 or 5.	No visitors are permitted in private homes/gardens except for essential reasons. No organized or informal indoor or outdoor gatherings are permitted. LTCH visiting: suspended, aside from critical and compassionate circumstances.

Type of measure	Ireland Level 3 (December 1 – December 21, 2020) ^{*47}	Ireland Modified Level 5 (December 22 – December 29, 2020) ⁴⁸	Ireland Level 5 (December 30, 2020 – March 5, 2021) ⁵⁰
	Organized outdoor gatherings may take place for up to 15 people. Limited visitation to LTCHs.		
Religious gatherings	Open for services up to 50 people.	Christmas service allowed, but then places of worship must move online except for private prayer.	Online only, but open for private prayer.
Event/banquet/entertainment venues	Hotels, guesthouses and B&B's can open, but with services limited to residents. Hotel restaurants can open to non-residents. No matches/events should take place except for professional and elite sports and horse racing and greyhound racing behind closed doors. Museums and galleries can open with protective measures in place. Libraries are available for browsing, e-services, and call and collect. No seating or events.	Hotels may only open for essential non-social and non-tourist purposes except for guests who already have a booking and are due to check in up to and including 26 December. No matches/events should take place except for professional and elite sports and horse racing and greyhound racing behind closed doors No clearly reported measures for museums, galleries or libraries – may be similar to level 3 or to level 5.	Hotels, guesthouses and B&Bs are open for those with essential non-social and non-tourist purposes. No matches/events should take place except for professional and elite sports and horse racing and greyhound racing behind closed doors Museums, galleries, libraries and other cultural attractions are closed.
Weddings, funerals, civil ceremonies	Up to 25 guests at weddings; 25 mourners at funerals.	Same as level 3.	Up to 6 guests at weddings; 10 mourners at funerals.
Recreation	Gyms, leisure centers and swimming pools may	Same as level 3.	Individual training only is permitted indoors and

Type of measure	Ireland Level 3 (December 1 – December 21, 2020) ^{*47}	Ireland Modified Level 5 (December 22 – December 29, 2020) ⁴⁸	Ireland Level 5 (December 30, 2020 – March 5, 2021) ⁵⁰
	<p>remain open for individual training only.</p> <p>Individual training only is permitted indoors. No indoor exercise or dance classes are permitted.</p> <p>Non-contact training only in pods of up to 15 outdoors, except for professional and elite sports exemptions.</p> <p>Outdoor playgrounds, play areas and parks to remain open with protective measures in place.</p>		<p>gatherings of ‘individual training’ are not permitted. No indoor exercise or dance classes are permitted.</p> <p>Gyms, leisure centers and swimming pools are closed.</p> <p>Outdoor golf and tennis are not permitted.</p> <p>Outdoor playgrounds, play areas and parks to remain open with protective measures in place.</p> <p>People may exercise with one other household in outdoor settings.</p>

*For simplicity the measures for modified level 3 applied from December 19-24, 2020 were used to describe modified level 3, for which the measures were generally less strict than level 3 measures in place from December 1-18, 2020.

Table 3. Public health measures in Denmark implemented on January 5, 2021

Type of measure	Denmark’s national lockdown measures ^{62,71,77-79}
Face coverings/masks	Mandatory in all indoor public spaces.
Curfew	None identified.
Population mobility	None identified.
Schools	Closed; remote and online classes for all primary, secondary and adult education students except for those that meet the criteria of a “vulnerable student”.

Type of measure	Denmark's national lockdown measures ^{62,71,77-79}
Work	Encouraged to work from home.
Retail	Closed (except grocery, pharmacy, medical equipment, take-away food/drink). Departments of department stores selling food and drinks can stay open to the public, but they must not sell items from other departments.*
Bars/restaurants	Closed.*
Social gatherings	Limited to five people.
Religious gatherings	The five person limit on gatherings does not apply to religious ceremonies performed on regular premises of Evangelical Lutheran Church of Denmark and other religious communities (if performed outside of their regular premises they are subject to dispersal order by police). The ban on gatherings of more than 500 people applies.
Event/banquet/entertainment venues	Closed.*
Weddings, funerals, civil ceremonies	The five person limit on gatherings does not apply to religious ceremonies (e.g., weddings, baptism) performed on regular premises of Evangelical Lutheran Church of Denmark and other religious communities. If performed outside of regular premises, ceremonies are subject to dispersal order by police. Outdoor weddings limited to five people (10 if all from same household). Outdoor burials and funerals limited to 50 people.
Recreation	Closed.*

*Measures set to be applicable until February 7, 2021 (as of the date this information was collected on January 27, 2021). The other measures are all set to be applicable until at least February 28, 2021.

Appendix B: Approaches to Support Vulnerable Children during Resurgence School Closure

Table 1. Approaches to mitigate negative impacts of school closures among vulnerable children in England, Ireland, and Denmark

Components of Approach	England	Ireland	Denmark
School attendance plan	<p>Children of critical workers and vulnerable children and young people are eligible to attend school in-person.</p> <p>Definition of vulnerable children and young people:</p> <ol style="list-style-type: none"> 1. Are assessed under section 17 of the Children Act 1989 (“child in need plan”, “child protection plan”, “looked-after child”) 2. Have an education, health and care plan 3. Identified as vulnerable by educational providers or local authorities (e.g., social services), and who could therefore benefit from continued full-time attendance in school, this includes the following children: being referred to children’s services; adopted/special guardianship order; at-risk of becoming not in employment or education; living in temporary accommodation; young 	<p>Remote learning for all students, including those with special needs, is to take place until February 1, 2021</p> <p>Children in special schools and special classes were not granted permission for extended in-person learning. Initially these students were permitted in-person school attendance for three days a week.⁸⁰</p>	<p>Pupils in primary and lower secondary school are receiving education online/remotely during the current lockdown until and including February 7, 2021.</p> <p>Vulnerable students in primary and lower secondary schools can attend in-person.⁷¹</p>

Components of Approach	England	Ireland	Denmark
	<p>carers; difficulty engaging with remote education at home (e.g., lack of devices, lack of quiet space to study); care leavers; others at the provider and local authority's discretion (including pupils and students who need to attend to receive support or manage risks to their mental health)</p> <p>Children of critical workers</p> <p>Those whose work is critical to the coronavirus and EU transition response (at least one parent must meet this definition).</p> <p>Sectors defined as critical include: health and social care, education and childcare, key public services, critical government administrators, production/processing of food and necessary goods, public safety and national security, transport and border staff, essential utilities/communications/financial services staff⁶⁷</p>		
Supports provided to students attending school in-person	<p>Rapid Testing: available for schools and colleges in January 2021, to help identify asymptomatic cases and limit the spread of the virus.⁸¹</p> <p>Free meals: During the period of national lockdown, schools continue to provide meal options for all pupils who are in school. Meals are free of charge to all infant pupils</p>	None identified	None identified

Components of Approach	England	Ireland	Denmark
	<p>and pupils eligible for benefits-related free school meals who are attending school in-person.⁶⁸</p> <p>Wraparound supports and extra-curricular activities: Schools continue to offer wraparound supports (e.g. breakfast and afterschool clubs) for children eligible to attend school, to ensure critical workers can continue to work, and to provide enriching activities for vulnerable children that improve their wellbeing or support their education. Schools have flexibility to provide music and physical activity programming to students eligible to attend school during lockdown.⁶⁸</p>		
Supports for students attending school virtually	<p>Free meal and lunch supports are also offered to students attending school at home, via vouchers than can be emailed or sent to the home.⁸²</p>	<p>Provision of online resources to support parents during school closures in October, 2020. Several documents provide guidance on the continuity of schooling for parents of children at risk of educational disadvantage and for students with Special Education Needs.</p> <p>Home School Community Liaison coordinators work with school principals to identify those families and pupils most in need of support and assist in the provision of: School meals, learning resources and materials, and the maintenance of a</p>	None identified

Components of Approach	England	Ireland	Denmark
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supportive link between the school and families.^{70,83}

Appendix C: Overview of strategies to achieve low community prevalence of COVID-19

Table 1. Overview of the Canadian Shield, Near-Zero COVID-19 Strategies, Continued Mitigation Strategies, and COVID Zero

Strategy Characteristics	Canadian Shield ¹²	Near-zero COVID-19 Strategy (Key Example: Melbourne Model) ^{12,84}	COVID Zero ^{11,85}	Continued Mitigation Strategy (Key Example: Current approach in Ontario) ¹²
Goals/ Objectives	<p>Through a concerted pan-Canadian effort, the provinces, territories and federal government will shield Canadians and the economy from both COVID-19 and the unintended consequences of the fight against COVID-19.</p> <p>The strategy recognizes that maintaining zero cases of COVID-19 is not feasible until a vaccine is widely available (recognizing that until then, there will be occasional importations and community outbreaks).</p>	<p>The Melbourne Model (based on Victoria, Australia's success in eliminating COVID-19) is what the COVID Strategic Choices Group suggests that Canada should adapt to create the <i>Canadian Shield</i>.</p> <p>The Building the Canadian Shield report suggests that Australia, Taiwan and New Zealand have implemented successful near-zero COVID-19 policies and approaches. This report also suggests that the Atlantic provinces (i.e., NB, NS, NL, PEI) and territories (i.e., YT, NT, NU)</p>	<p>Eliminate community spread of SARS-CoV-2, successfully control all local infections and eradicate occasional new cases until the vaccine is widely available.</p> <p>The Should Canada Go for Zero report suggests that Taiwan, Australia, New Zealand, Atlantic and Northern Canada have achieved and sustained COVID-zero (defined as zero COVID-19 community transmission and successful/swift control of subsequent outbreaks).</p>	<p>To maintain COVID-19 at a manageable level; this is the current approach of Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, and the Canadian Federal Government.</p>

Strategy Characteristics	Canadian Shield ¹²	Near-zero COVID-19 Strategy (Key Example: Melbourne Model) ^{12,84}	COVID Zero ^{11,85}	Continued Mitigation Strategy (Key Example: Current approach in Ontario) ¹²
	have adopted a near-zero COVID-strategy.			
Epidemiological Targets	<p>Four month approach to reduce to <1 new daily case per million population, or less than 40 new cases per day across Canada</p> <p><u>Short term target:</u> reduce new cases by 75% in 4 to 6 weeks through strict lockdown.</p> <p><u>Mid-term target:</u> post-lockdown, to maintain Rt below 0.85 – 0.90 until near-zero COVID-19 levels are reached</p> <p><u>Long-term target:</u> Sustain near-zero case numbers after the four month goal is achieved until vaccination reduces transmission to zero.</p>	Same end target as the <i>Canadian Shield</i> approach, without stated short-term and mid-term goals.	Rt remains <1 with zero community transmission.	Rt <1.0; no strict targets.
Geography	<p>Intended to be applicable to Canada at the national-level.</p> <p>The basic unit of this approach are the provinces and territories; each must</p>	Regions with success in achieving near-zero cases have any number of these characteristics:	Regions with success in obtaining zero community transmission share the following characteristics:	Comparable land mass and multiple metropolitan centres, accessibility and fluid-interprovincial borders like Ontario.

Strategy Characteristics	Canadian Shield ¹²	Near-zero COVID-19 Strategy (Key Example: Melbourne Model) ^{12,84}	COVID Zero ^{11,85}	Continued Mitigation Strategy (Key Example: Current approach in Ontario) ¹²
	create an effective 'shield' to protect its residents and as the provinces/territories succeed they will form the national 'shield'.	<p>Isolated (e.g., Canadian territories) and/or island-based (e.g., Australia, Newfoundland)</p> <p>Small population sizes (e.g., Nova Scotia)</p> <p>Relatively small land mass (e.g., Prince Edward Island)</p> <p>Limited number of metropolitan centers (e.g., compared to Southern Ontario, Victoria state has a single urban center that accounts for around 75% of the total population which is half the total population of Southern Ontario in twice the land mass of Southern Ontario).</p>	<p>Controllable borders</p> <p>Relatively small population (largest so far being Taiwan with 23M and Australia with 26M)</p> <p>Mid-size urban centres (e.g., 7M in the Taipei-Keelung metropolitan area of Taiwan)</p>	
Components of Approach	<p>Building the Canadian Shield presents the following components as part of building the Canadian Shield:</p> <p>4-6 week lockdown followed by a sustained set of supportive interventions.</p>	<p>The approach of Victoria, Australia consisted of a multi-month lockdown. Public health measures included:</p> <p>Strict lockdown with heavy police enforcement</p>	<p>Aggressive control measures (e.g., lockdown) followed by ongoing pressure to control COVID-19 <i>until there is zero community transmission</i>.</p> <p>Jurisdictions that have achieved no community</p>	Current Ontario measures are an example of what Continued COVID Mitigation Strategies look like in practice.

Strategy Characteristics	Canadian Shield ¹²	Near-zero COVID-19 Strategy (Key Example: Melbourne Model) ^{12,84}	COVID Zero ^{11,85}	Continued Mitigation Strategy (Key Example: Current approach in Ontario) ¹²
	<p>Effective testing, tracing, and isolation. This includes: support for home testing, screening that can be sustained for several months, massive expansion of asymptomatic testing, and ensuring priority in the most affected communities.</p> <p>Improve COVID App uptake.</p> <p>Add isolation centers to alleviate burden of disease in multi-age households and communities with lower income and more crowded households.</p> <p>Community-specific empowerment and targeting youth for buy-in.</p> <p>Widely accessible vaccinations.</p> <p>Restrictions varied based on new COVID cases trajectory.</p> <p>Proactively assist the individuals, businesses and communities most affected</p>	<p>Tight curfews and significant limitations on mobility</p> <p>Complete shutdown of non-essential businesses</p> <p>Schools closed, online learning only</p> <p>Restricted travel from endemic areas.</p> <p>This approach included stable expectations of the duration of measures, for those most affected by lockdown measures.</p>	<p>transmission implemented the following:</p> <p>Strict enforcement of borders, quarantines, and physical distancing.</p> <p>Barriers to preserve state/provincial/territorial borders.</p> <p>Aggressive testing, contact tracing, and isolation of cases.</p> <p>Clear public health messaging and political commitment.</p> <p>Meaningful supports for people affected by pandemic measures.</p> <p>Quick, decisive reaction to outbreaks with a zero-tolerance policy to new infections.</p>	<p>Unknown duration and when more/less measures may be implemented.</p>

Strategy Characteristics	Canadian Shield ¹²	Near-zero COVID-19 Strategy (Key Example: Melbourne Model) ^{12,84}	COVID Zero ^{11,85}	Continued Mitigation Strategy (Key Example: Current approach in Ontario) ¹²
	<p>by these policies (e.g., financial compensation.)</p> <p>Stable expectations of measure duration for those most affected by lockdown measures.</p> <p>Enact clear and fair travel restrictions internationally and inter-provincially.</p>			
Role of vaccination	<p>The proposed Canadian Shield Strategy intends to manage the COVID-19 pandemic at near-zero levels <u>until vaccines are fully deployed to the Canadian population.</u></p>	<p>The key example of Near-Zero COVID-19 in the Building the Canadian Shield report is the Melbourne Model which <u>does not specify the role of vaccines.</u></p> <p>Victoria, Australia achieved near-Zero COVID levels without a widespread vaccination campaign.</p>	<p>COVID Zero intends to successfully stop all local COVID-19 infections and eradicate any occasional new cases <u>until vaccines are widely available.</u></p> <p>Recommendations: Mass vaccination events (e.g., modelled on New Brunswick's free flu vaccine events hosted on weekends), vaccination of cross-border truckers to support safe trade with the United States.</p>	<p>Examples: Current approaches to vaccination in Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia</p> <p>Modelling in the Building Canadian Shield report states that even if 3 million high-risk Canadians are vaccinated by March 31, 2021, the peak number of COVID-19 cases in the 3rd wave will likely require 3000 hospital beds (down from a projected 9000 beds without this level of vaccination).</p>

Strategy Characteristics	Canadian Shield ¹²	Near-zero COVID-19 Strategy (Key Example: Melbourne Model) ^{12,84}	COVID Zero ^{11,85}	Continued Mitigation Strategy (Key Example: Current approach in Ontario) ¹²
Metrics/ Thresholds	Following initial strict lockdown measures (implemented for 4-6 weeks), continue <u>a steady 17% - 25% decline in COVID cases per week</u> .	<u>Less than 1 new daily case per million population.</u> Cited examples of Canadian regions (i.e., Atlantic Canada) succeeding in this approach were estimated to be currently at 4 per 1,000,000 COVID cases (7-day average) as of December 21, 2020.	Not Reported	Example: Current Ontario metrics/thresholds.
Health Impact	If implemented at the end of December 2020, then projected national deaths from December 2020 to April 2021 were 3,730 (3,020-4,320).	If implemented at the end of December 2020, then Projected national deaths from December 2020 to April 2021 were 3,670 (2,970-4,420).	Not Reported	If implemented at the end of December 2020, then projected national deaths from December 2020 to April 2021 were 8,850 (7,070-10,290).
Economic Impact	If implemented at the end of December 2020, then estimated \$164.587 billion in national economic losses Q1-Q4. The economic models applied predict the least losses using the Canadian Shield approach. National job losses are estimated at 926,883.	-4.6% 2020 GDP growth of Atlantic provinces in Canada. -4.1% 2020 GDP growth in Australia. +2.4% GDP growth in Taiwan. Depending on the strictness of the approach (e.g., 14-16 week aggressive measures the same as Victoria, Australia), short-term	Not Reported	-5.8% 2020 GDP growth of non-Atlantic provinces in Canada Estimated \$202.336 billion in national economic losses Q1-Q4 with vaccine established and being widely distributed in second half of the year expected in second half of year.

Strategy Characteristics	Canadian Shield ¹²	Near-zero COVID-19 Strategy (Key Example: Melbourne Model) ^{12,84}	COVID Zero ^{11,85}	Continued Mitigation Strategy (Key Example: Current approach in Ontario) ¹²
		<p>economic impacts could be drastic, but may allow better long-term economic outcomes (no data provided).</p> <p>If implemented at the end of December 2020, then estimated \$188.251 billion in national economic losses Q1-Q4.</p> <p>National job losses estimated at 1,023,766.</p>		<p>If implemented at the end of December 2020, then estimated \$212.859 billion in national economic losses Q1-Q4 if vaccine is delayed.</p> <p>National job losses estimated at 1,248,397 (for <i>Continued Mitigation Strategy</i>) and 1,363,531 (for <i>Mitigation with Vaccine Delay Strategy</i>).</p>

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