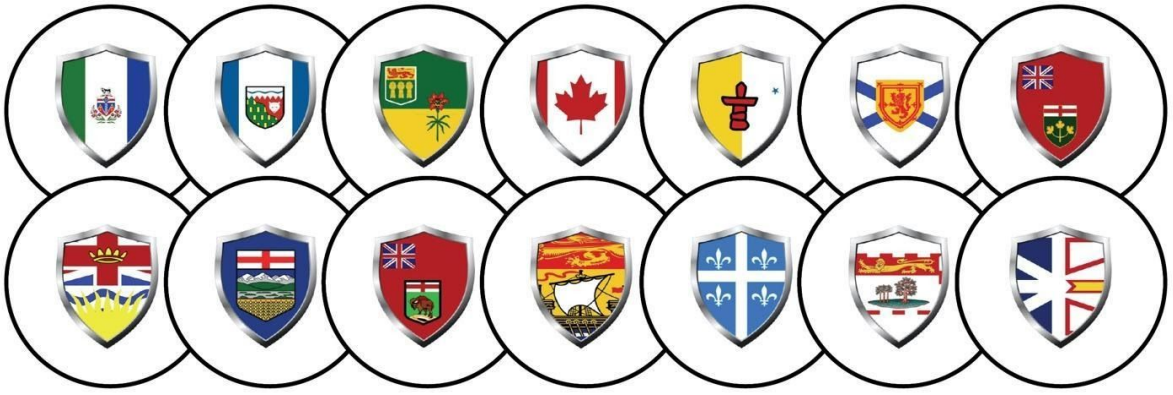


Building the Canadian Shield

A New Strategy to Protect Canadians From COVID and From the Fight Against COVID

The COVID Strategic Choices Group

December 30, 2020

The COVID Strategic Choices Group is an interdisciplinary taskforce with experience across different domains of expertise (including epidemiology, public health, public policy, economics and business) and regions of Canada. Members serve in their individual capacity and not as representatives of any organization. It is independent of any government.

The Group's goal is to identify and assess different strategies to manage the pandemic until vaccines are fully deployed. Not all participants will agree with every observation or recommendation. The vote to proceed with publication of this document was: 14 Yes; 1 No; 1 Abstain.

Global Canada provides the secretariat support for the COVID Strategic Choices Group. Global Canada (https://global-canada.org) is a non-governmental, non-partisan organization committed to enhancing Canada's global impact and to identifying global best practices that can assist Canada in addressing its own challenges. Global Canada would like to thank Group members who provided world-class modelling, analytical support, research and insights. Global Canada would like to thank Jasmine Gill, Doug Miller, and Sarah Tougher for their important research, editing and analytical contributions. A special thanks to Dr. Joanne Liu for her contributions throughout this process.

The COVID Strategic Choices Group

(arranged alphabetically)

- **Mark Agnew**: Senior Director of International Policy, Canadian Chamber of Commerce
- **Tasha Ayinde**: Associate Director, Faculty of Medicine and Health Sciences, McGill University
- **André Beaulieu**: SVP Corporate Services, Bell Canada
- **Professor Christopher Cotton**: Jarislowsky-Deutsch Chair in Economic & Financial Policy, Professor of Economics, and Director of the John Deutsch Institute, Queen's University; Research Director, Limestone Analytics
- **Professor Caroline Colijn**: Canada 150 Research Chair in Mathematics for Infection, Evolution and Public Health, Simon Fraser University
- **Marion Crowe:** Chief Executive Officer, First Nations Health Managers Association
- **Dr. Irfan Dhalla**: Medical Doctor and Associate Professor, Dalla Lana School of Public Health, University of Toronto
- **Justin Ferbey**: Deputy Minister, Department of Economic Development, Yukon Government
- **Robert Greenhill**: former Deputy Minister, Professor of Practice McGill University, Executive Chair, Global Canada
- **Professor Blayne Haggart**: Associate Professor and Graduate Program Director, Department of Political Science, Brock University
- **Brett House**: Vice-President and Deputy Chief Economist, Scotiabank
- **Ryan Imgrund**: Biostatistician and educator
- **Jack Jedwab**: President of the Association for Canadian Studies
- **Dr. Jaspreet Khangura**: Emergency Physician and Clinical Lecturer in the University of Alberta's Department of Emergency Medicine
- **Dr. Jeff Kwong**: Professor, Department of Family and Community Medicine and the Dalla Lana School of Public Health, University of Toronto
- **Dr. Chris McCabe**: Executive Director and CEO, Institute of Health Economics
- **Dr. Andrew Morris**, Infectious Diseases Specialist, Sinai Health and University Health Network, and Professor, Department of Medicine, University of Toronto
- **Jean-Paul R. Soucy**: Studying for a Doctoral degree in infectious disease epidemiology at the Dalla Lana School of Public Health, University of Toronto
- **Professor Ashleigh Tuite**: Assistant Professor, Dalla Lana School of Public Health, University of Toronto

Determined action over the next few weeks could save 5,000 lives, create 320,000 jobs, and generate $37 B of economic growth in 2021 compared to Canada's present, failing COVID mitigation strategy.

By seizing the moment, Canada's leaders could:

- Reduce new cases by 75% by the end of January
- Maintain steady new COVID case declines from February through April
- Achieve fewer than 40 new COVID cases per day across Canada by May 1
- Allow a fuller opening of Canada's economy and society throughout the summer
- Sustain near-zero COVID levels until widespread vaccination makes this plague a memory.

We call this approach *Building the Canadian Shield*: it is designed to shield Canadians and our economy from both COVID and the unintended consequences of the fight against COVID.

For decision-makers, there are 3 key actions:

1. Sustain an effective lockdown until COVID cases are low enough that testing, tracing and isolation can work effectively.
2. Relax restrictions only to the extent that new COVID cases continue a steady decline of 17% - 25% per week. In the fight against COVID, if you are not winning (i.e., new cases are not going steadily down) you are losing. Any new increases will likely lead to a 3rd set of lockdowns in the spring.
3. Proactively assist the individuals, businesses and communities most affected by these policies.

Let us be clear, this is not a minor change in tactics; this is an explicit change of strategy. Nor is it easy. It requires the same level of decisive, courageous leadership, of community engagement, and of personal commitment that we saw this spring.

Success will allow Canadians, within a few weeks, to take back collective control of their lives, their hospitals, their businesses and their communities.

By severely reducing COVID's ability to spread, the Canadian Shield strategy will help protect Canadians from emerging variants, such as the one recently detected in the UK (officially titled VOC-202012) that may be more transmissible or cause more severe disease.

This strategy arose from intense interdisciplinary discussions and analyses over the last month by the independent COVID Strategic Choices Group. Expert participants looked beyond tactical questions (e.g., on what date to impose a hard lockdown) to examine the best strategy for the next year, given what we have learned over the last 9 months. The group developed a number of strategic scenarios and members built epidemiological and economic models to compare them.

Canada presently has two COVID strategies deployed, each being followed by half of our 14 provincial, territorial and Federal governments.

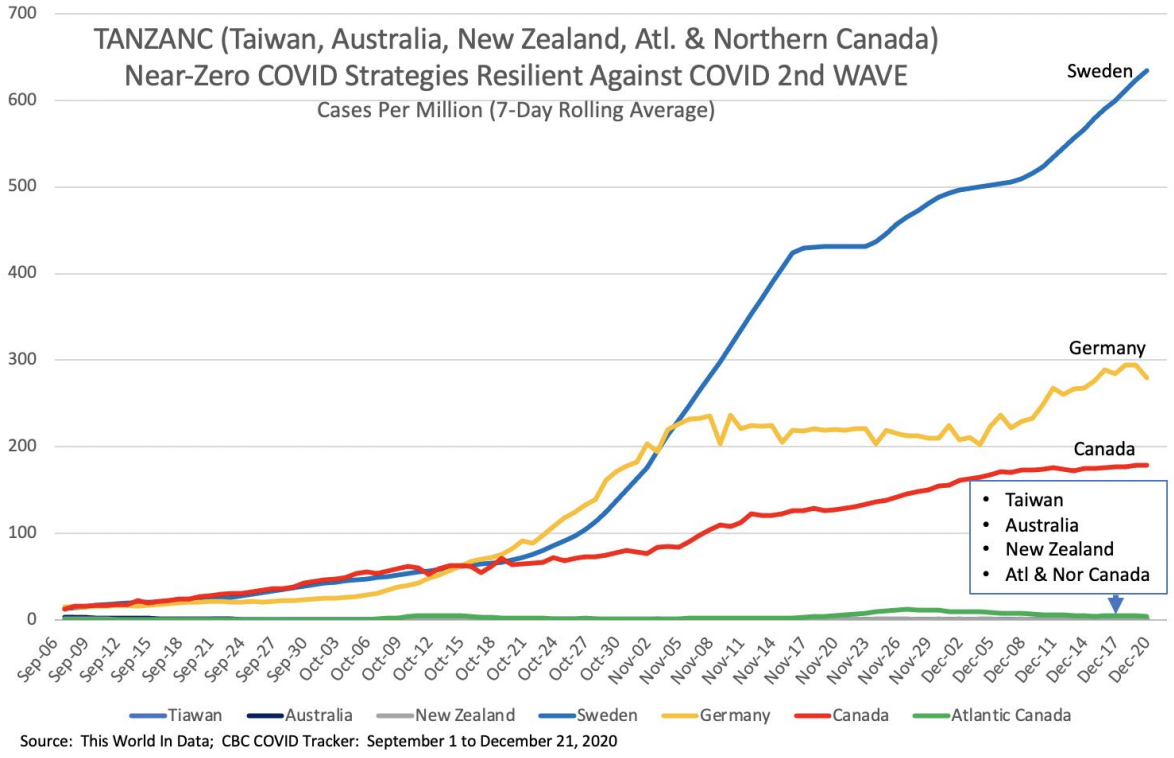
The 4 Atlantic Provinces and the 3 territories adopted a *near-zero COVID strategy*, aggressively dealing with any outbreaks and restricting travel from high-COVID areas. This has worked relatively well. Atlantic Canada is the only Canadian region where cases remain below the first wave peak. Atlantic Canada experienced smaller economic declines than the rest of Canada in 2020. Its Premiers enjoy much higher support for their COVID policies than the rest of Canada.

Table: **Health, prosperity and satisfaction in Atlantic Canada compared to the rest of Canada**

	Health COVID cases per million (7-day average, December 21, 2020)	**Prosperity** 2020 GDP Growth (Scotiabank Forecast Tables, December 2020)	**Satisfaction** with measures to fight COVID (Leger/ACS Dec. 14, 2020)
Atlantic Canada	4	-4.6%	78%
Rest of Canada	187	-5.8%	57%

Sources: CBC COVID Tracker; Bank of Nova Scotia; Leger

The Atlantic Provinces, Northern Territories and other democratic jurisdictions with near-zero COVID policies (Australia, Taiwan, New Zealand) have been much more successful in resisting the COVID second wave.



Source: This World In Data; CBC COVID Tracker: September 1 to December 21, 2020

The other 6 provinces and the Federal government followed a *COVID mitigation strategy*, trying to maintain COVID at a manageable level[1]. Despite tremendous efforts, this strategy has failed to protect lives or to keep economies open. Severe lockdowns are planned or in-place across at least 4 of the 6 provinces. Deaths from the 2nd wave will exceed first

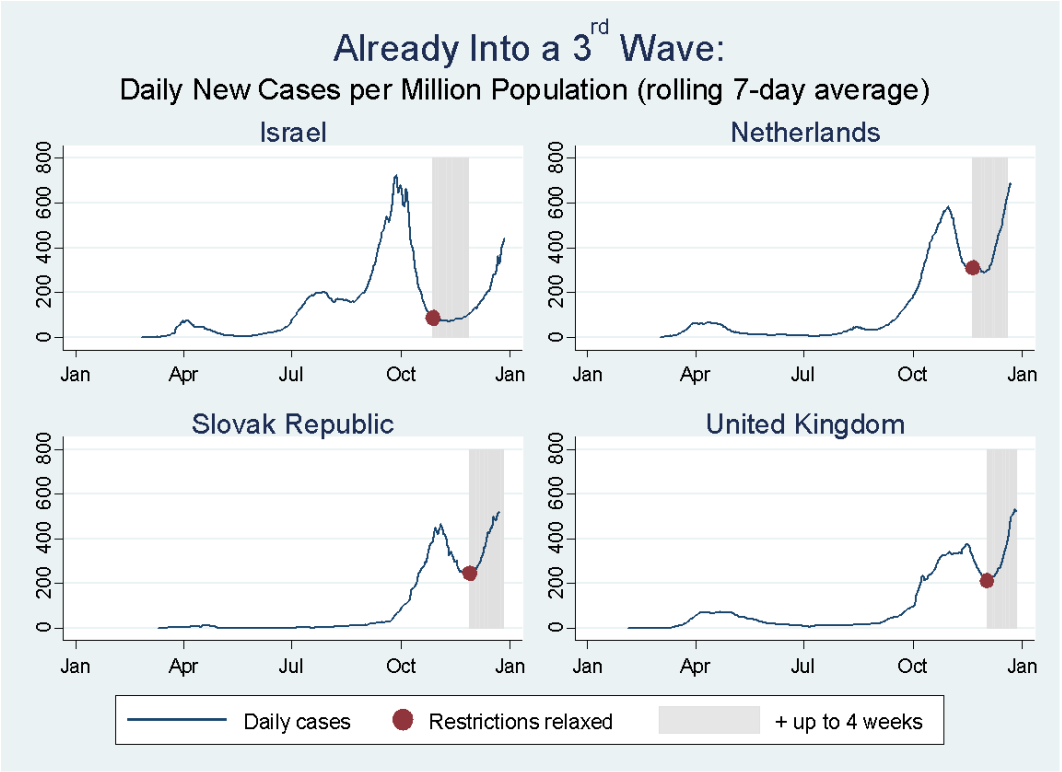
1

wave deaths by February and have already exceeded them in Western Canada.

COVID mitigation strategies have failed to perform as hoped for across the Western world. Countries that performed well in the first wave, such as Germany and Greece, as well as countries that fared poorly, such as Italy and Spain, have been badly hurt by the second wave.

The sad reality is that even the most aggressive or innovative tactics cannot save a failing strategy. Recently, several countries with mitigation strategies that temporarily adopted strict lockdowns (Israel, U.K., Netherlands) or novel nation-wide testing (Slovakia) have already given up much or all of their gains in a few short weeks. Israel and the U.K. are back into a 3rd set of lockdowns.

Figure: New daily confirmed cases of COVID-19 per million population

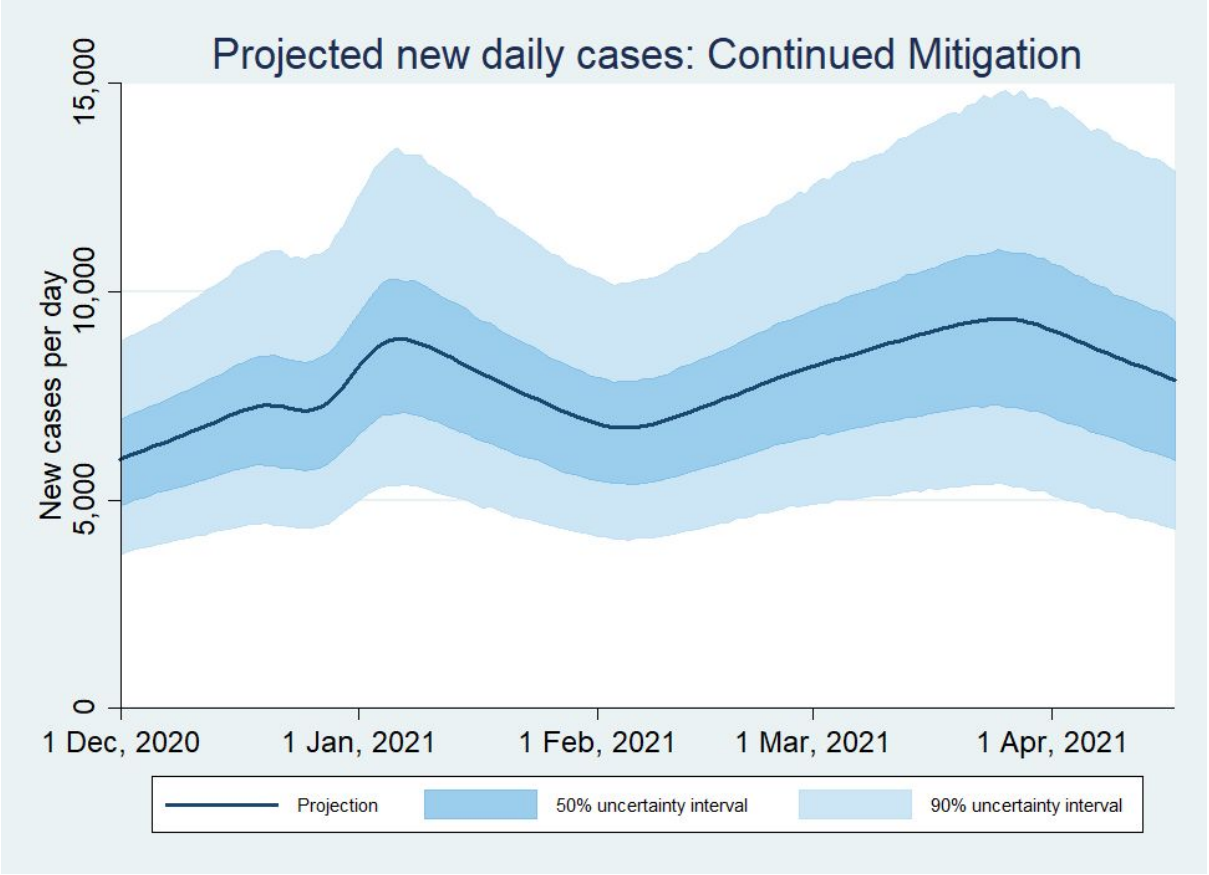


Notes: Figure displays new daily confirmed cases of COVID-19 per million population. The red dot indicates the date restrictions were relaxed, as measured by the Stringency Index compiled by the Oxford COVID-19 Government Response Tracker. The grey shaded area indicates up to 28 days following this date. Data shown up to December 23rd in the Netherlands and Slovak Republic due to limited reporting over the Christmas holidays in these countries. Source: Data from Roser, Ritchie (2) and Hale and Webster (3)

Professor Caroline Colijn of Simon Fraser University oversaw epidemiological modelling of Canada's COVID strategic choices. A compartmental model for each province captured broad social distancing and was fit to reported case counts from past months. This modelling procedure produces estimates of the strength of control measures throughout the pandemic. With this model, it is possible to envision what it would mean to continue

with a continued mitigation strategy for a period from mid-December 2020 to mid-April 2021, and to compare this to strategic alternatives.

Not surprisingly, given COVID mitigation's consistent failure in other countries, the epidemiological model suggests that, without a fundamental change in strategy, Canada will likely experience a 3rd wave this spring with a potential peak of over 9000 cases per day.



Source: Caroline Colijn; Elisha Are; model assumes constraints are in place through January, then relaxed in line with summer and fall 2020 practices

Further analysis estimates that, even if 3 million high-risk Canadians are successfully vaccinated by March 31, the peak number of COVID cases in this 3rd wave will likely require over 3,000 hospital beds. This is the level of national hospital bed use at the height of the first wave and again when lockdowns were announced across several provinces this December (4). Therefore, with the continued mitigation strategy, there is a significant risk of a 3rd set of lockdowns in late March or early April—around the time of spring festivals and Easter.

Building the Canadian Shield

Another strategic option is a short, sharp 4-6 week lockdown to regain control over the virus, followed by a focused, sustained set of interventions to keep cases declining while

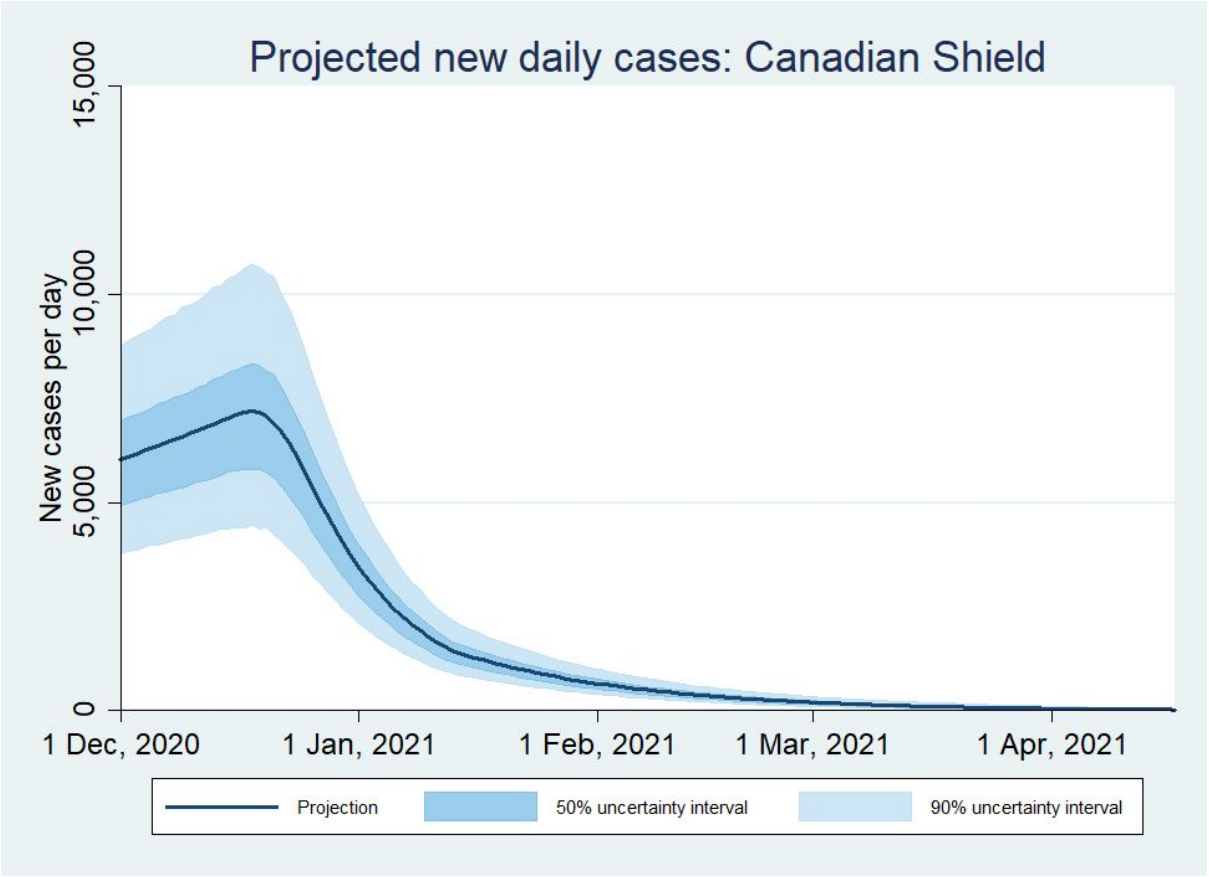
minimizing economic and societal costs (described below in "How to Build the Canadian Shield). Key to this strategy is keeping the effective Reproductive Rate (Rt) post-lockdown below 0.85 - 0.90 until near-zero COVID levels are reached, i.e., less than 1 new daily case per million population, or less than 40 per day across the country. This corresponds to an ongoing decline of roughly 2.5% to 4% per day, or 17% to 25% per week.

During this time, individuals, communities and businesses most affected by these measures should receive sufficient support to compensate their losses, and to enable them to do the right thing. Thus, *Building the Canadian Shield* aims to shield Canadians both from the health impact of continued COVID transmission and from the socio-economic impacts of addressing COVID.

The Canadian Shield strategy is conceptually similar to the "No More Waves" approach recently proposed by Andrew Morris and Jack Mintz, particularly with their call for an "immediate period of strong suppression, targeting sustained low regional incidence and an *Rt* of comfortably less than 1" (5).

The Canadian Shield is a persistent suppression strategy (i.e., persistently reducing cases each week until near-zero levels are reached) with a goal of zero community transmission. It is a near-zero COVID strategy, in that it recognizes that maintaining zero COVID cases is not feasible until a vaccine is widely available. However, it applies the hard-won learning that zero is the best target, and the most stable position from which to fight new COVID infections. In this way, it is similar to the successful strategies presently being employed in Atlantic and Northern Canada.

COVID case projections for *Building the Canadian Shield* applied epidemiological projections for a lockdown of one month similar in intensity to that of Melbourne, Australia followed by an Rt of 0.85 – 0.90 thereafter. The initial lockdown reduces daily new cases by an estimated 75%. With an Rt of 0.90, Canada could reduce cases to less than 40 per day (1 per million population) in 24 weeks, or roughly 170 days. If it maintains an Rt of 0.85, Canada could reduce cases to less than 40 per day in 17 weeks, or roughly 120 days. If fully launched by January 1, Canada could reach this goal by May 1.



Source: Caroline Colijn, Elisha Are modelling of lockdown for first month; sustained Rt of 0.85 applied thereafter

The Melbourne Model

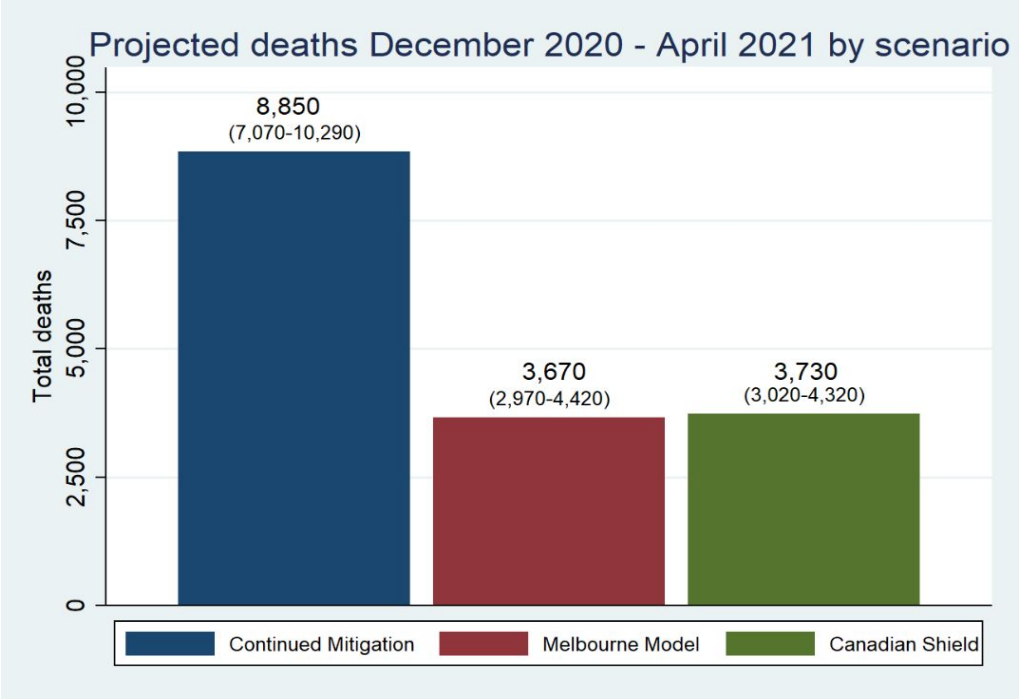
A further option examined by the COVID Strategic Choices Group is that Canada adopts the aggressive approach used in Melbourne by Victoria State, Australia. *The Melbourne Model* entails a sustained hard lockdown over a number of months until there is near-zero community transmission in order to reap the subsequent accelerated economic and social opening this provides.

The epidemiological modelling concludes that, with the Melbourne Model, Canada could reduce cases to less than 40 new cases per day (1 per million population) in 14 weeks, about 100 days. However, the societal and short-term economic costs of such an approach are significant

Health Impact of Different Scenarios

Biostatistical analysis concludes that the Melbourne Model and Canadian Shield could both save more than 5,000 lives by the end of April compared to Canada's present COVID mitigation strategy. This is with the expected vaccination of 3 M of the most vulnerable

Canadians by March 31. If there is a major delay in vaccinations, the number of lives saved would grow.



Source: Public Health Ontario case fatality rates; Model projections of cases; Team analysis

As the Canadian Shield and Melbourne Models result in significantly fewer cases than the present mitigation strategy, they result in fewer long-term effects from COVID. Also, by reducing COVID-related pressure on hospital facilities, the Melbourne Model and Canadian Shield strategies would reduce the considerable ongoing indirect health costs of the present mitigation strategy.

Economic Impact

There is often a perceived trade-off between attacking COVID and preserving the economy. Professor Christopher Cotton led a team of economists from Limestone Analytics and Queen's University, applying their Short-Term Under-Capacity Dynamic Input-Output (STUDIO) economic model to assess the three scenarios. The present mitigation strategy had the worst economic outcomes of the 3 options. Building the Canadian Shield had the best.

"The analysis clearly illustrates how a more intense early year lockdown can be less costly for the economy than less-intense, shorter duration lockdowns spread across a longer period of time. We show that this is the case even under an expectation that vaccinations will be widely available in the second half of the year... This is because full economic activity does not immediately resume with the lifting of economic restrictions; rather the economy takes time to fully recover. This means that an intense lockdown that allows for full reopening afterwards may result in fewer overall jobs lost and a lower decline in GDP than on-again, off-again lockdowns where new restrictions are required every few months before the economy has a chance to fully recover the previous round of restrictions" (6).

The best economic performance is provided by the Canadian Shield strategy, as it avoids both the costs of a multi-month lockdown (Melbourne Model) and the debilitating effects of on-again, off-again policies due to new COVID waves (Continued Mitigation).

The STUDIO economic model assessed the ongoing cost to the Canadian economy of the COVID pandemic. A Canadian Shield strategy creates an estimated $37 billion more economic growth than a Continued Mitigation strategy—$48 billion better if there is a significant delay in expected vaccinations.

Table: Impact of COVID on the Canadian Economy ($ Millions)

	Q1	Q2	Q3	Q4	Total
Continued Mitigation	-$54,166	-$50,269	-$65,534	-$32,367	**-$202,336**
Mitigation with vaccine delay	-$54,166	-$50,269	-$65,534	-$42,890	**-$212,859**
Melbourne Model	-$87,958	-$54,179	-$24,455	-$21,659	**-$188,251**
Canadian Shield	-$77,937	-$41,838	-$23,369	-$21,443	**-$164,587**

Projections from Limestone Analytics STUDIO model

Many of the sectors most affected by COVID are highly labour intensive. The economic model projects that a Canadian Shield strategy could create over 320 thousand full-time equivalent jobs in 2021 compared with a Continued Mitigation strategy.

Table: Impact of COVID on Employment (Full Time Equivalent)

	Q1	Q2	Q3	Q4	Total
Continued Mitigation	-1,329,678	-1,276,069	-1,696,058	-691,784	**-1,248,397**
Mitigation with vaccine delay	-1,329,678	-1,276,069	-1,696,058	-1,152,321	**-1,363,531**
Melbourne Model	-2,035,019	-1,219,115	-536,303	-304,625	**-1,023,766**
Canadian Shield	-1,828,970	-1,056,690	-521,106	-300,765	**-926,883**

Projections from Limestone Analytics STUDIO model

The Canadian Shield avoids the yo-yo of new COVID waves and resulting policy responses in the mitigation approach. Compared to the uncertainty and volatility of the Continued Mitigation strategy, the Canadian Shield has considerably more predictability. This allows citizens and businesses to plan their summer free from the fear of new COVID waves or of new government lockdowns. The Canadian Shield Strategy reinforces a climate of confidence and social cohesion, while saving lives and accelerating a full economic recovery.

These analyses confirm for Canada what has been observed in other jurisdictions that pursued near-zero COVID strategies: low COVID levels support economic growth and renewed personal freedoms. Cross-country studies consistently show that more restrictive

initial approaches yield both better public health results and lower total costs over time (7, 8).

Table : Health, liberty and prosperity impact of COVID in Taiwan, Australia and Canada

	Health COVID cases per million (7-day average, December 21, 2020)	**Prosperity** 2020 GDP Growth (EIU projections)	**Liberty** (Oxford Stringency Metric: Most constrained = 100)
Taiwan	0.2	2.4%	19
Australia	1	-4.1%	47
Canada	176	-5.8%	64

Sources: Ourworldindata.org; Economist Intelligence Unit

How to Build the Canadian Shield

The basic unit in *Building the Canadian Shield* is the province. Each province must create an effective shield to protect its citizens and to limit the flow of new infections within and across its borders. As different provinces succeed, the shields can be brought together into a shield wall. In this way, Atlantic Canada had an Atlantic shield wall that withstood several months of pounding from the COVID second wave. Popularly referred to as a "bubble", it did not "pop" a few weeks ago—each province stepped back to reinforce their own provincial shield, which they are successfully doing. In the future, the Atlantic shield wall will reform and, potentially, expand.

It would be preferable if all Canadian governments adopted a similar strategy at the same time (as Australia did in July, when it adopted a common goal of "suppression with a goal of zero community transmission" (9). However, individual provinces, or groups of provinces, could successfully adopt a Canadian Shield strategy (as Atlantic and Northern Canada did with their near-zero COVID strategies) before there is a national consensus.

Building the Canadian Shield is the most attractive but arguably the most complex of the strategic options. A whole of society commitment (at the provincial level) will be necessary to achieve a 75% reduction in COVID cases during a 4-6 week lockdown followed by an ongoing 17% - 25% weekly reductions while minimizing economic and societal costs. It will require thoughtful targeting and outstanding execution by governments.

Measures in spring 2020 were broad-brush instruments. We know that COVID affects communities differently. In large cities, COVID has disproportionately affected poorer communities with crowded housing and large numbers of essential workers. A low-income neighborhood in one large Canadian city has an infection rate almost 3 times that of a high-income neighborhood. We also know that actions to fight COVID affect communities, and business sectors, differently. Small and independent retailers have been badly hit by COVID restrictions compared to big-box and on-line retailers. Young children, and children with special needs, can be disproportionately affected by lengthy school closures. Building the Canadian Shield requires a targeted and nuanced mix of measures customized to each province in order to maximize suppression of COVID while minimizing the human and economic cost.

Several recent studies provide insight on which measure are most effective in managing this trade-off (11, 12), including a recent summary by Andrew Morris and Jack Mintz:

Table 1: Prioritizing nonpharmacologic interventions according to short-run economic impact, social impact and effect on viral transmission

Short-run economic impact	Social impact: Low — Large R_t effect	Low — Small R_t effect	Medium — Large R_t effect	Medium — Small R_t effect	High — Large R_t effect	High — Small R_t effect
Low	• Nonessential border restrictions • Enhance detection/ surveillance systems • Universal mask mandates	• Requests to follow public health guidelines by leaders • Temperature and symptom checks (airport, workplace)	• Small indoor gathering cancellation	• Small outdoor gathering cancellation • Restaurant/bar crowding restrictions or reduced hours	• Gym (high occupancy) closures • Indoor team sport/dance restrictions	• Gym (low occupancy) closures • Outdoor team sport/dance restrictions
Medium	• Mass gathering cancellation • Government assistance to vulnerable populations for isolation support and pay	• Nonessential business crowding restrictions	• Restaurant/bar closures • Guaranteed quarantining (e.g., quarantine hotels, daily in-person checks, etc.)	• Quarantine on entry to country/ region	• Nonessential regional travel restrictions • High school and postsecondary school closures	• Daycare closures • Primary school closures
High	• Essential border restrictions		• Nonessential high-density retail closure • Nonessential manufacturing closures	• Nonessential low-density retail closures • Nonessential low-density manufacturing closures	• Essential high-density retail closures • Essential high-density manufacturing closures	• Essential low-density retail closures • Essential low-density manufacturing closures • Public transit closures

Note: We used a qualitative approach to categorization.[7,8]
The intent of the table is to identify relative priorities, with the effectiveness of any nonpharmacologic interventions and the magnitude of their economic and social impact being dependent on local contexts. Interventions in green should be introduced earlier; those in grey should be used when aggressive and rapid reductions in case numbers are required.

Source: Morris & Mintz (5)

Building the Canadian Shield will require governments to:

- Provide strategic clarity:
  - Explicitly shift strategy from “mitigation” to “persistent suppression” (i.e., persistently reduce cases each week until near-zero levels are reached)
  - Set clear goals (e.g., 75% case reduction before coming out of lockdown, 17-25% weekly reductions until <1 case per million in their province)

- Make tough calls early and consistently to restore clarity, credibility and predictability:
  - If necessary, expand and lengthen the constraints presently in place to ensure that COVID cases numbers are driven low enough to allow testing, tracing, and isolation to work effectively. Consider “Stay in place” orders or other measures to minimize all unnecessary interactions for 4-6 weeks.
  - If, for example, bars in some large urban centres cannot re-open until the spring, make it clear early and provide appropriate compensation

- If any part of the province has an increase in cases, immediately strengthen measures in that part: “no more waves” starts with “no more ripples”

- Be considerate and humane:
  - Recognize the asymmetric effects of the lockdown policies across individuals, businesses, and communities, and provide direct assistance to those most affected
  - Prioritize the relaxation of restrictions where they are likely to cause severe and irreversible long-run harm, including the relaxation of restriction on in-person primary schooling, or that limit access to mental health and other social services
  - Provide more direct assistance to essential workers and their families (e.g., with PPE, with support in case of exposure to COVID) starting during the period of lockdown
  - Lay out plans for social interaction post lockdown, supported by home testing, screening etc., that are reasonable and sustainable for several months.

- Move faster than the virus with testing and tracing, isolation and support. These remain among the greatest underleveraged opportunities to reduce COVID’s Rt without restricting individual freedoms or constraining economic growth:
  - Massively expand quick testing of asymptomatic Canadians, with strong engagement and advice from affected communities
  - Massively expand PCR tests and ensure they are located within the most affected communities
  - Massively expand wastewater testing across the country to monitor progress and quickly identify future outbreaks
  - Push for voluntary uploading of the COVID App by at least 60% of Canadians with phones, at least 80% of the most affected groups
  - Massively increase isolation and support: fast testing and tracing are not useful if people do not have the means to isolate. In-community isolation reduces spread because it eliminates chains of household transmission. It particularly protects people in multi-age households and in communities with lower income and more crowded households.

- Engage and empower the most affected communities to develop and apply customized strategies to beat COVID. Hospitals and governments ultimately do not stop infectious diseases—communities do:
  - Support communities in providing information, services, material and support in their language and in their way. Help these communities play a stronger role in communicating government guidelines, testing and in-community isolation.
  - Support Indigenous leadership on and off-reserve to ensure that the direct and indirect consequences of COVID are being fully addressed
  - In the context of getting near-zero by May 1, craft an effective value-proposition and outreach strategy for 15-35 year-olds—among the

least affected by COVID, but the most hurt by society's measures against COVID, and presently the most disaffected.

- Significantly strengthen internal and, especially, international borders to prevent COVID transmission while maintaining trade and service flows.
    - Enhance the perceived fairness and effectiveness of international air travel controls. Who should be allowed to fly in or out of Canada, for what reason, and with what tests and controls? There is an opportunity to enhance COVID prevention measures at the border through a combination of pre-departure and on-arrival testing to ensure only non-infectious individuals are traveling.
    - Further enhance US – Canada land crossing controls with quick testing and/or vaccination of the 200-300 thousand truckers and few thousand essential workers that make up the bulk of cross-border crossings.
    - Judiciously but effectively restrict non-essential movement within and between provincial borders where there are significant differences in new COVID cases (as Atlantic and Northern Canada have done).

Beyond governments, a Canadian Shield strategy requires citizens of every age to renew their spring-time commitments to social distancing and other key measures; it requires every community to be more completely involved; it requires business, that played such an important, constructive role this spring, to actively support measures that keep COVID cases declining.

Of course, it would be preferable if everybody were doing all these things today. They are not because today's strategy is neither clear nor credible. With a renewed clear, credible strategy with weekly reconfirmations of progress, renewed engagement is possible.

Can we achieve ongoing reductions of 17 - 25% a week in COVID cases? As with so many issues involving COVID, this cannot be known for sure. Sustained weekly declines of over 20% in new cases were last achieved Canada-wide in June, when cases dropped from a 7-day average of over 1,000 on May 28 to under 300 a month later. This was in a context of strong commitment, effective testing and tracing, and summer conditions.

Today, we face winter conditions and the threat of more infectious variants. On the other hand, we have broader mask mandates than this summer, businesses and individuals are better prepared, we increasingly understand which interventions work best, and new technologies, such as rapid tests, are becoming more broadly available.

Over the last month, in the middle of winter, Atlantic Canada achieved weekly reductions of some 25% in new cases through targeted measures, innovative use of quick testing and strong community support. Atlantic Canada went from a 7-day rolling average of 29 cases a day on November 26 to less than 8 on December 29. This indicates that 25% a week reductions may be possible. Even more important than speed, however, in the Canadian Shield strategy is the direction: consistently down.

The Canadian Shield Strategy is not guaranteed to succeed. However, it is a credible, attractive alternative to the likely setbacks and disappointments, the human and economic

cost, of the present Mitigation Strategy, and the enormous upfront social and economic sacrifice of the Melbourne Model.

Provincial leaders struggling with a failing COVID Mitigation Strategy can seize on the unavoidable reality of a post-Christmas lockdown to shift to a winning strategy. They can achieve massive progress against COVID in 4-6 weeks and could reduce cases to less than 1 per million (less than 15 per day in Ontario, less than 2 per day in Saskatchewan) by May 1.

Building the Canadian Shield is a challenging strategy requiring quick, decisive actions by government and a whole of society engagement. However, it is achievable, and massively better than the status quo. It is possible, it is optimistic, it is constructive, it is Canadian.

References

1. See Statement from the Chief Public Health Officer of Canada on October 26, 2020 [press release]. Public Health Agency of Canada2020. "The following is the latest summary on…the actions we all need to be taking to maintain COVID-19 at manageable levels across the country."
2. Roser M, Ritchie H, Ortiz-Ospina E, Hasell J. Coronavirus pandemic (COVID-19). Our World in Data. 2020.
3. Hale T, Webster S. Oxford COVID-19 government response tracker. 2020.
4. Public Health Agency of Canada. Canada COVID-19 weekly epidemiology report (13 December to 19 December, 2020). Ottawa: Public Health Agency of Canada; 2020.
5. Morris AM, Mintz JM. A "No More Waves" strategy for COVID-19 in Canada. CMAJ. 2020.
6. Cotton C, Crowley B, Kashi B, Lloyd-Ellis H, Tremblay F. COVID-19 Planning for 2021: Comparing the Economic Impact of Alternative Recovery Scenarios. Limestone Analytics; 2020.
7. International Monetary Fund. (2020). *Navigating the pandemic: A multispeed recovery in Asia*. Retrieved from https://www.imf.org/en/Publications/REO/APAC/Issues/2020/10/21/regional-economic-outlook-apd.
8. Dizikes P. The data speak: Stronger pandemic response yields better economic recovery. MIT News Office. 2020 31 March 2020.
9. Australian Health Protection Principal Committee (AHPPC) statement on strategic direction [press release]. Canberra, 24 July 2020 2020.
10. Santé Montréal. Situation of the Coronavirus (COVID-19) in Montréal: Santé Montréal,; 2020 [Available from: https://santemontreal.qc.ca/en/public/coronavirus-covid-19/situation-of-the-coronavirus-covid-19-in-montreal/#c43674.
11. Haug N, Geyrhofer L, Londei A, Dervic E, Desvars-Larrive A, Loreto V, et al. Ranking the effectiveness of worldwide COVID-19 government interventions. Nat Hum Behav. 2020;4(12):1303-12.
12. Brauner JM, Mindermann S, Sharma M, Johnston D, Salvatier J, Gavenciak T, et al. Inferring the effectiveness of government interventions against COVID-19. Science. 2020.