

ENVIRONMENTAL SCAN

(ARCHIVED) Resurgence of COVID-19, Lockdown Measures and Impact : A Rapid Scan

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Key Points

- To mitigate wave two Coronavirus Disease 2019 (COVID-19) resurgence, many countries have implemented restrictive public health measures similar to those employed during their first wave of the pandemic.
- From a scan of nine jurisdictions, the most common wave two restrictive, 'lockdown' measures observed include: limitations on population mobility and social gatherings, and the closure of bars/restaurants, retail, entertainment venues and recreation facilities. Mandatory face coverings/masks were also commonly implemented.
- Certain jurisdictions maintained consistent strict measures throughout the specified duration of their resurgence lockdown period, while others altered (relaxed or further restricted) measures during the course of their lockdown period.
- Among all jurisdictions, there was variation with schools; some were closed for a limited time or not at all.
- Overall, epidemiological indicators such as hospitalizations, deaths, case incidence, and test percent positivity began to decline two weeks after the initiation of the resurgence lockdown measures. While most jurisdictions experienced a decline in hospitalizations, deaths, case incidence and test positivity, Italy and Wales continue to report higher incidences of these indicators than were observed at the beginning of their resurgence lockdown periods.
- While the implementation of strict public health measures is an essential element of COVID-19 pandemic response, other interventions such as enhanced testing, tracing, isolation, and support for cases and for populations or sectors impacted by the lockdown measures, with an equity lens, are at the core of an effective response.

- All national lockdowns were preceded by some level of regional-level measures; England, Australia and France had clearly reported restrictive measures in place regionally prior to the national lockdowns, while other jurisdictions had varying levels of restrictive measures in place in different regions prior to the implementation of national lockdown measures.

Purpose and Scope

To inform public health decision making in the second and subsequent waves of COVID-19 resurgence in the Province of Ontario, this document summarizes contextual information from selected countries and regions, on restrictive community-based public health measures. The selected countries and regions described are: England, Wales, Northern Ireland, Belgium, France, Spain, Italy, Israel and Australia (Regional Victoria and Metropolitan Melbourne). This document can be used by public health decision-makers to understand the types of measures implemented in select jurisdictions in the context of COVID-19 resurgence and the impact these measures had on each jurisdiction's epidemiology.

Background

Since early 2020, many countries have implemented restrictive community-based public health measures to reduce the spread of the COVID-19 pandemic (wave one). During fall 2020, Canada began experiencing its second rise of COVID-19 cases, surpassing the number of cases observed during the first wave.¹

In recent months, restrictive ('lockdown') community-based public health measures have been implemented in various jurisdictions (national and regional) to manage the resurgence of COVID-19 infections. Similar to Ontario, the jurisdictions included in this document have re-implemented restrictive, lockdown measures in response to a resurgence of COVID-19, following an earlier stage of restrictive measures and a corresponding decrease in cases following wave one.

Methods

We conducted a rapid scan of documentation on restrictive (lockdown) community-based public health measures from selected countries and jurisdictions relevant to Ontario. Records were obtained through online searches conducted between November 27 to December 3, 2020 of recent policies, media articles, government websites, official press and reports from England, Wales, Northern Ireland, Belgium, France, Spain, Italy, Israel and Australia. These jurisdictions were selected due to the relevance of their public health and healthcare system infrastructure in relation to Ontario, as well as having experienced pandemic control after the first wave, followed by resurgence requiring community-based public health measures. While England, Wales and Northern Ireland are all part of the United Kingdom (UK), they are considered separately for the purposes of this scan as their pandemic response governance has operated at the individual country level; thus, relevant to Ontario.

This document describes each jurisdiction in terms of: public health measures in place prior to the second wave lockdown, measures implemented during second wave lockdowns, epidemiological indicators (i.e., hospitalizations, deaths, cases and test positivity) during the lockdown, and any changes to the lockdown measures during that timeframe. It is important to note that the sources of the epidemiological indicators extracted for this scan are regularly updated, which may result in small discrepancies, even for the dates listed in this report.

Overall Findings

Impact of resurgence lockdown measures on epidemiology

All jurisdictions used some level of regional approaches to applying measures prior to national resurgence lockdown. The strictness of the measures prior to lockdown varied and three jurisdictions (Australia, France, England) had regional areas enter lockdown before the national resurgence lockdown was ordered. As a result, some local areas in these jurisdictions had few changes to their existing public health measures once the national lockdown was initiated. In other jurisdictions, such as Spain, some cities and local areas applied lockdown measures prior to national lockdown; however, the measures were comparably less strict than those applied regionally in Australia, France and England prior to the national lockdown.

Jurisdictions varied in their approach to making changes to the restrictive public health measures over the course of the resurgence lockdown period. England's lockdown measures remained the same during the intended five week period of lockdown. Italy and Spain introduced additional restrictive measures two weeks into their lockdown periods. Other jurisdictions relaxed their lockdown measures three weeks (Israel, Belgium, Wales) and four weeks (Northern Ireland, France) after the initiation of their respective resurgence lockdowns. Regional Victoria, in Australia, maintained the longest period of consistent restrictive public health measures, only altering them after a period of six weeks of consistent lockdown measures.

Additionally, jurisdictions varied in their approach regarding school closures. Schools in some jurisdictions such as England, France and Spain remained open, while others were closed and/or provided online learning. Some school closures such as those in Wales and Northern Ireland occurred during planned half-term breaks. The relative impact of school closures as part of resurgence lockdown interventions could not be elucidated based on this environmental scan and warrants further study; however, it is noteworthy that England and France observed an improvement in their epidemiology despite schools remaining open. The short duration or lack of school closures in resurgence lockdowns is expected to reflect the complex challenges related to longer term school closures and child health and wellbeing outcomes.

Overall, epidemiological indicators did not start to decline until two weeks after the initiation of the lockdown measures. While most jurisdictions did experience a decline in hospitalizations, deaths, case incidence and test percent positivity over the course of the lockdown period, some experienced a delay in reporting a decline in these epidemiological indicators. The differences across jurisdictions in the ability to curb COVID-19 infections may be due in part to the period of lockdown and when the jurisdictions relax or further restrict their lockdown measures. Adherence to public health measures might also vary between jurisdictions, which may have impacted the effectiveness of such measures.

Italy and Wales, for example, continued to report higher incidence of these indicators than was observed at the beginning of the resurgence lockdown period. Italy's decline in COVID-19 case incidence and test positivity was observed after they added further restrictive measures, two weeks after the start of the national lockdown. This suggests that some jurisdictions required further restrictions after the initiation of the resurgence lockdown period, to curb rising COVID-19 infections.

The period of lockdown measures in Wales was the shortest of all jurisdictions included in this review. Wales entered a two-week lockdown (also termed fire break/circuit breaker), where cases temporarily

dropped in the first few weeks, but returned to similar pre-lockdown case numbers by five weeks post-lockdown. In this specific case, shorter-term lockdown appears to not be an effective strategy to curb rising COVID-19 infections.

Ontario applicability and current context

The jurisdictions included in this document were selected due to relevance to Ontario in terms of health system context and having experienced relative control over COVID-19 infections after the first wave, followed by COVID-19 resurgence requiring re-escalation of community-based public health measures.

As of November 7, 2020 the weekly COVID-19 cases per 100,000 in Ontario were 571.0 per 100,000, which rose to 780.8 per 100,000 by November 28.^{2,3} On December 7, 2020 Ontario reported a record-high single day increase in COVID-19 cases, reporting 1,925 cases in a single day.^{4,5}

On November 3, 2020 Ontario released the *COVID-19 Response Framework*, placing all regions across the province in one of five levels of public health measures. On November 23, Toronto and Peel entered a 28-day lockdown period, involving sector-specific restrictive measures that close a variety of settings to break chains of COVID-19 transmission.⁶ As of December 7, 2020, six regions are in the “prevent” stage of measures which closes only the highest-risk settings.⁶ The remaining 28 regions across the province are in more restrictive stages of closure, with Toronto and Peel in lockdown and six regions in the control stage one level below lockdown.⁶

The municipalities of Toronto and Peel have been the most impacted regions from COVID-19 in Ontario.^{7,8} They are, however, part of a greater urban and suburban geography which encompasses 110 municipalities in the Greater Golden Horseshoe area,⁹ which is home to 9 million people. One quarter of the Canadian population lives in this region.¹⁰ In addition, the population of the Greater Golden Horseshoe area is about one third of the population of Ontario,⁹ and currently represents 90.1% of the current COVID-19 caseload in the province.¹¹ Worldwide, there has been increased impact of COVID-19 on cities and urban areas.¹² Metropolitan Melbourne, Australia is a large urban centre; however, it is located on a coast and largely surrounded by the Yarra mountain range and rural areas.¹³ Given that the Greater Golden Horseshoe Area is a contiguous urban and suburban area with expected close connections across internal borders for local work, travel and other activities, as well as a large international airport and connections to the United States, it may be difficult to translate the regional approach used for Metropolitan Melbourne to Ontario. Theory relevant to disasters and emergencies, specifically complexity theory, would support the importance of the concept of an emergency context as an ‘open’, interconnected system in developing mitigation and management strategies, also relevant to public health emergencies.^{14,15} Based on the jurisdictions examined, Australia, England, and France began with strict regional lockdowns prior to their national resurgence lockdowns, similar to what Ontario has implemented. Approaches in Ontario, particularly southern Ontario, may require more regional interventions to encompass denser, contiguous urban and suburban areas, such as in the UK and Europe, in order to achieve impact.

Detailed Findings by Jurisdiction

The findings below describe the lockdown/restrictive public health measures implemented in various jurisdictions (national and regional) as well as the context, duration, and epidemiological impact of these wave two measures. A high-level summary of all restrictive public health responses by scope of intervention is provided in the Appendix.

UNITED KINGDOM (ENGLAND)

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

On July 18, 2020 the *COVID-19 Contain Framework: a guide for local decision makers* and accompanying new legislation granted local authorities in England powers to respond to and prevent COVID-19 transmission in their local area. The regulations covered under these powers included: restricting access to, or closing, individual premises; prohibiting events (or types of events) from taking place; and restricting access to, or closing, public outdoor places.¹⁶ Watch lists were regularly released to classify areas of concern (i.e., high COVID-19 incidence) across the local authorities.¹⁷

England has reported a steady increase in test positivity that began at the end of August, 2020.¹⁸ On October 12, 2020, the government introduced a framework for local intervention based on three local COVID-19 alert levels (medium, high and very high).¹⁹ A postcode checker was available on the UK government's website, which indicated the alert level applied in each area and the NHS COVID-19 app also directed people to this information. The government subsequently released regular reports indicating which locales moved into or out of the medium, high and very high alert levels.^{19,20}

PUBLIC HEALTH MEASURES AT LOCKDOWN

National lockdown measures were implemented from November 5, 2020 to December 3, 2020. During the period of restriction, schools remained open, no curfews were implemented, and face coverings were required in all indoor/enclosed public spaces.^{21,22} Residents were encouraged to avoid all non-essential travel by private or public transport, and were not permitted to leave home for holidays or stay overnight away from their main home unless permitted by law. Social gatherings were only permitted among those that residents live with, in indoor and outdoor settings. Working outside of the home was allowed where it could not be done from home, non-essential retail was closed, and bars/restaurants were only open for click and collect/drive-through/delivery. Places of worship were limited to independent prayer, funerals, broadcast, or to provide essential voluntary services. Funerals were allowed for a maximum of 30 people (with social distancing), and weddings were not permitted except where one of those getting married is seriously ill, in these cases the limit was six people. Sport facilities and entertainment venues were closed, including community centres which were only open to allow access information technology services to those with limited home access.²²

National lockdown measures were replaced on December 2, 2020 with a regionally-differentiated approach, in which the most restrictive measures are implemented in regions where COVID-19 prevalence is highest. The approach has three tiers (medium, high and very high), each with different levels of restrictions.^{23,24} Although the tiers are labelled consistently with the framework from October 2020, the levels of restriction differ from the earlier framework. In the new framework, implemented on December 2, 2020, schools, retail, personal care services are open in all tiers, and there is no curfew. Work from home is still encouraged, social gathering limits remain in place (maximum six people at all alert levels), and in the highest alert level residents cannot travel out of their local area except for necessary purposes.^{23,24}

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes epidemiological trends during England's nationwide lockdown measures implemented from November 5, 2020 to December 2, 2020. The data is only available up to week three after the initiation of lockdown (reporting week of November 20 – 26, 2020).

Table 1. Epidemiological context during England's lockdown measures

Context/Indicators	At time of lockdown	Week 1	Week 2	Week 3
Public Health Measure Changes	N/A	None	None	None
Hospitalizations^a	10,438	12,171	13,467	13,098
Deaths^b	1,771	2,274	2,471	Data Not Available
Cases^c (per 100,000)	247.2	274.3	229.3	162.3
Test positivity^d (%)	9.8%	9.6%	8.8%	6.7%

a - 7-day average of patients in hospital due to COVID-19.²⁵

b - Weekly deaths due to COVID-19.²⁶

c - 7-day average of new cases of COVID-19 per 100,000 population.²⁷

d - Percentage of people tested who are testing positive for COVID-19 in each reporting week.²⁸⁻³⁰

UNITED KINGDOM (WALES)

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

In September, 2020, many jurisdictions (more than half of the population) were subjected to tighter restrictions. Pubs, cafes and restaurants were required to stop their activities at 10:00 p.m. every night, licensed premises closing earlier, off-licences and supermarkets were not allowed to sell alcohol after 10:00 p.m. and hospitality businesses could provide table service only.³¹ No more than six people could meet indoors under an extended household (comprised of up to four different households).³¹ Up to 30 people could meet outdoors as long as they maintained social distancing. Additionally, staff and pupils returned to school and students started university in September.³¹ Face coverings were required in shops and other indoor spaces starting on September 14, 2020. However, masks were not required by workplaces or schools and children under age 11 were not required to wear one.³¹ In lockdown areas, individuals were not allowed to leave the local area unless they had a reasonable excuse.³¹ Weddings and funerals were allowed for up to 30 people indoors as long as masks were worn and social distancing was maintained. Swimming pools gym and leisure centers were allowed to re-open.³¹

PUBLIC HEALTH MEASURES AT LOCKDOWN

On October 23, 2020, Wales entered a 'fire break' or short-term lockdown.³² The fire break in Wales was 17 days long, and lasted until November 9, 2020.³³

During the lockdown non-essential businesses (including bars and restaurants) were closed, with the exception of food markets which were considered essential.³² Residents were ordered to stay home (except for exercise) and were asked to work from home if possible.³² Residents were ordered to avoid social gatherings indoors or outdoors with people outside of their household (except for support bubbles).³² Places of worship were closed (except for wedding/civil partnership ceremonies and

funerals).³⁴ Recreational facilities (e.g., golf and tennis clubs) were also closed.³² The lockdown was timed during a mid-term break for schools. Primary and special schools re-opened after half-term break (4 to 11 year-olds).³² Secondary schools re-opened after the half-term for children in years seven and eight (11 to 12 year-olds). Pupils were able to take exams but other pupils continued learning from home for an extra week.³²

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes epidemiological trends during Wales' nationwide lockdown measures implemented on October 23, 2020 with easing of restrictions on November 9, 2020.

Table 2. Epidemiological context during Wales' lockdown measures.

Context/Indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4	Week 5
Public Health Measure Changes	N/A	No change	No change	Restrictions loosened ^a	No change	No change
Hospitalizations^b	93	85.9	95.4	86	73.3	75.4
Deaths^c	14.6	17.9	25	25.7	23	21
Cases^d	1182	1269.7	929	812.9	901.6	1121
% of Population Testing Positive^e	0.86% (95% CI 0.41%- 1.58%)	0.89% (95% CI 0.40%- 1.66%)	1.16% (95% CI 0.84% - 1.53%)	0.61% (95% CI 0.38% - 0.88%)	0.54% (95%CI 0.34% - 0.78%)	0.60% (95%CI 0.40% - 0.84%)

a - After November 9, 2020, there was relaxation of restrictions, including allowing bubbles with two households; gatherings of four people in bars and restaurants (no alcohol after 10:00 p.m.); and 15 people able to participate in indoor exercise activities (30 outside).³³ Individuals were told to avoid non-essential travel as much as possible; however, there were no legal restrictions on travel within Wales for residents (individuals could only travel into and out of Wales with a reasonable excuse).³³

b - COVID patients admitted to hospital, 7-day average.³⁵

c - Number of COVID-related deaths (within 28 days of positive test), the 7-day average.³⁶

d - 7-day average of cases.³⁷

e - Percentage of the population testing positive for COVID-19.³⁸

NORTHERN IRELAND

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

On August 10, 2020, it became mandatory to wear a face covering in a relevant places, such as shops or shopping centres.³⁹ Face coverings have been mandatory on public transport since July 10, 2020.³⁹ In September, 2020, all school re-opened for the first time since March, 2020.⁴⁰ Safety measures in school included staggered start times, one-way systems requiring face coverings for post-primary students.⁴⁰ On September 22, COVID-19 restrictions were added; households were prevented from mixing and no

more than six people were allowed to meet outside.⁴¹ Drink only pubs were allowed to open on September 23, 2020 (with the exception of County Armagh).⁴² However, they were only allowed to serve drinks outdoors and provide table service only (no bar service, standing).⁴² On September 30, 2020 bars and pubs were required to close at 11:00 p.m.⁴³

PUBLIC HEALTH MEASURES AT LOCKDOWN

Lockdown was initiated on October 16, 2020. Restrictions were implemented on October 16 and were intended to be in place for a period of four weeks. However, media reports suggest the lockdown period has since been extended.⁴⁴

During the lockdown, social bubbles were restricted to a maximum of 10 people from two households and no overnight stays in a private home were permitted unless in a bubble.⁴⁵ Individuals were encouraged to work from home unless unable to do so, and no unnecessary travel was permitted.⁴⁵ Schools were closed for two weeks (including the half-term holiday) starting from October 19, 2020.⁴⁶ Universities and further education delivered distance learning to the maximum extent possible. Essential face-to-face learning was permitted where was necessary and unavoidable.⁴⁵ The retail sector was permitted to stay open at this time with the exception of close contact services such as hairdressers and beauticians. Off-licenses and supermarkets were not permitted to sell alcohol after 8:00 p.m.⁴⁵ Bars and restaurants were closed except for deliveries and takeaways for food, with the existing closing time of 11:00 p.m. remaining.⁴⁵ Places of worship remained open with a mandatory requirement to wear face coverings when entering and exiting.⁴⁵ Funerals were limited to 25 people with no pre- or post-funeral gatherings and wedding ceremonies and civil partnerships to be limited to 25 people with no receptions (this was implemented on October 19).⁴⁵ No indoor sport of any kind or organised contact sport involving household mixing other than at the elite level was permitted. However, gyms remained open for individual training.⁴⁵

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes epidemiological trends during Northern Ireland's nationwide lockdown measures implemented from October 16, 2020 with restrictions easing starting on November 12, 2020.⁴⁷

Table 3. Epidemiological context during Northern Ireland's lockdown measures

Context/Indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4	Week 5
Public Health Measure Changes	N/A	No change	No change	No change	Restrictions loosened ^a	No change
Hospitalizations^b	44	46.9	49.3	46.9	43.3	41.9
Deaths^c	3.7	4.7	9.6	9.4	9.9	11.7
Cases^d (per 100,000)	507.0	704	753	663	492	426

Context/Indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4	Week 5
% of Population Testing Positive^e	1.01% (95% CI	1.32% (95% CI	1.36% (95% CI	0.97% (95% CI 0.62%-	0.74% (95% CI 0.48%-	0.69% (95% CI
Note: Test positivity data not available.	0.64%- 1.50%)	0.68%- 2.38%	0.73%- 2.31%)	1.41%)	1.07%)	0.44%- 1.01%)

a - On November 12, the government agreed to extend COVID-19 restrictions for between one and two weeks.⁴⁸ Close-contact services such as barbers, beauty salons and driving lessons were allowed to open again on November 20 by appointment only.⁴⁷ Shops were allowed to stay open and cafes and coffee shops could open the same day, with hours restricted to 8:00 p.m. Other sections of the hospitality trade (e.g., hotels, pubs and bars), were allowed to reopen on November 27.⁴⁷

b - Hospital admissions, 7-day average⁴⁹

c - Number of deaths within 28 days of positive test, 7 day average⁵⁰

d - 14-day incidence based on new positive tests per 100,000⁵¹⁻⁵⁶

e - Percentage of the population testing positive for COVID19⁵⁷

BELGIUM

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

Effective October 1, 2020 and despite rising numbers of cases, face mask requirements were eased to be made mandatory only in crowded places where physical distancing cannot be maintained (including public transport, shops, cinemas, and crowded streets) and no longer mandatory in most other outdoor places.⁴⁸ Limits on contacts outside of households were lifted from five per household to recommending five per person in the household per month. Quarantine due to contact with an infected person was reduced from 14 days to seven days, contingent on the testing of the contact. Outdoor gatherings of 400 people and indoors of 200 with physical distancing were allowed.

Effective October 6, 2020 nationally, closure of bars was required by 11:00 p.m., and social groups limited to no more than four people invited inside a home, seated at a single cafe table or gathered outside.⁴⁸ Only three close non-household contacts were allowed, reduced from five. Regionally in Brussels on October 6, consumption of alcohol in public outdoor spaces was prohibited.⁴⁸ Further, cafes and bars were closed on October 8. Restaurants serving meals remained open.

Nationally on October 19, 2020, bars and restaurants were closed (except for delivery and takeout), a curfew of midnight until 5:00 a.m. was enforced, and alcohol sales are banned after 8:00 p.m.⁴⁸ Residents were allowed only one non-household contact, down from three, and work from home was required wherever possible. A day later, postponement of all non-essential hospital procedures was ordered and testing would only occur for those symptomatic patients.

On October 23, 2020, additional national measures were put in place due to worsening epidemiological indicators.⁴⁸ The added restrictions included: no spectators at sporting events, limits to capacity in cultural spaces, and amusement parks were closed. Regionally in Brussels on October 26, 2020 all sport and cultural facilities were closed and curfew would be from 10:00 p.m. to 6:00 a.m. Stores must have closed by 8:00 p.m. Masks became required in all public spaces.⁴⁸

PUBLIC HEALTH MEASURES AT LOCKDOWN

Tightened restrictions (reinforced lockdown) were placed country-wide on November 2, 2020 shortly after initial lockdown-like restrictions were declared on October 23, 2020.⁴⁸ Even so, stricter variations of the national measures have been applied regionally.

Reinforced restrictions included delaying return to school by two weeks (except for vulnerable students), only one person allowed to perform errands, closure of all non-essential retail, bars and restaurants (except for curbside pickup/takeout and delivery), essential stores to remove non-essential items from sales on shelves, significant restrictions that all but eliminated gatherings of any sort indoors or outdoors, and recreation, event and entertainment centers were closed with few exceptions.⁴⁸

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes national epidemiological trends during Belgium's lockdown measures implemented on November 2, 2020 with easing of restrictions beginning November 16, 2020.^{48,58} Epidemiological measures reported below were aligned with weekly reporting dates and represent national values. Since lockdown on November 2, 2020, the rate of new cases as of November 27, 2020 remains over 10 times higher than the lowest periods between first and second waves. There was a marked decrease in case incidence in the first 14 days of lockdown, in particular between weeks one and two of the national lockdown.

Table 4. Epidemiological context during Belgium's lockdown measures

Context/Indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4
Public health measure changes	N/A	No change	No change	Restrictions loosened ^a	Restrictions loosened ^b
Hospitalizations^c (per 100,000)	34	38	32	23	16
Deaths^d (per 100,000)	7	11	12	11	9
Cases^e (per 100,000)	891	668	383	245	167
Test positivity^f (%)	25.9%	26.6%	21.8%	16.3%	11.3%

a – Public health measures changed week 3: Return of primary and secondary school students on November 16, 2020 after two weeks of prolonged coronavirus school holidays; secondary school students will have alternating in-person and online education

b – Public health measures changed week 4: Non-essential shops (except personal service settings other than for authorized medical treatment) reopened on December 1, 2020 but must close by 10:00 p.m., patrons must shop alone and spend no more than 30 minutes inside; museums and swimming pools reopened

c - New COVID-19 hospitalizations per 100,000 population per week averaged over a two-week period

d - Number of COVID-19 attributed deaths per 100,000 population per week averaged over a two-week period

e - New confirmed cases per 100,000 population per week averaged over a two-week period
f - Test positivity proportion from all tests (non-sentinel surveillance) averaged over a two-week period (%)

FRANCE

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

Masking has been mandatory since July 20, 2020 in indoor spaces and on public transport across the nation, and since September 1, 2020 masks are required in all enclosed, shared workplaces.⁴⁸ Some regions require masks to be worn in crowded outdoor public areas as well.

In mid-September, additional measures were introduced to areas such as Nice, Marseilles and Bordeaux.⁴⁸ These measures included limiting the hours of bars to (closed 12:30 a.m. to 6:00 a.m.), preventing sales of take-away alcohol after 8:00 p.m., reducing attendance of large public events to 1,000 from 5,000 and prohibiting public gatherings of more than 10 people, and stricter rules for beach gatherings and visits to care homes. By late September, numerous other French cities including Paris also implemented these restrictions.

Metropolitan lockdowns occurred in selected cities (e.g., Paris, Marseilles, Aix-en-Provence, Guadeloupe) starting September 26, 2020, with others following suit by October 5, 2020. In these areas, bars, and in some regions restaurants (except for takeout and delivery), were closed.⁴⁸ Recreation centres and cultural and entertainment venues were open under varying rules all with strict health protocols, except in some regions where they were closed. There were discrepancies between regions in terms of having similar alert levels but differing public health measures, which caused some protests. Work from home was strongly recommended.

A curfew (9:00 p.m. to 6:00 a.m.) was initiated in Paris and eight other cities (e.g., Marseille, Toulouse, Montpellier, Rouen) starting on October 17, 2020, alongside a declaration of a state of emergency.⁴⁸ On October 24, 2020, the same curfew was implemented in other areas of the country covering around two thirds of the population of France.

PUBLIC HEALTH MEASURES AT LOCKDOWN

Lockdown was initiated on October 30, 2020 in metropolitan France and Martinique.⁴⁸ Prior to lockdown there were many variations in regional measures even when being assigned the same national alert level. However, uniformity of measures appeared to be achieved once national lockdown was declared in metropolitan France and Martinique.

An exemption certification was required for leaving one's household, adult learning institutions were required to continue online, work from home became a requirement, non-essential stores were closed and financial aid provided to closed businesses, non-essential items removed from sale from essential stores, bars and restaurants became takeout/delivery only, social gatherings were prohibited unless fulfilling exemption criteria, sports clubs and facilities were closed; however, parks, gardens and beaches remained open.⁴⁸

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes national epidemiological trends beginning when metropolitan France and Martinique lockdown measures were implemented on October 30, 2020 with easing of restrictions beginning November 28, 2020.^{48,59,60} Epidemiological measures reported below were aligned with

weekly reporting dates and represent national values. Since the lockdown on October 30, 2020, the incidence rates of new COVID-19 cases as of December 1, 2020 remains well over 10 times higher than the lowest periods between first and second waves.⁵⁹

Table 5. Epidemiological context during France's lockdown measures

Context/Indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4
Public health measure changes	N/A	No change	No change	No change	Restrictions loosened ^a
Hospitalizations^b (per 100 000)	24	29	29	23	17
Deaths^c (per 100,000)	3	5	6	6	6
Cases^d (per 100,000)	446	575	439	273	183
Test positivity^e (%)	19.1%	20.8%	19.3%	16.2%	Data not yet reported

a – Public health measures changed as follows on week 4:

- As of November 28, 2020, all businesses except bars, restaurants, cultural venues and sports facilities reopened with a closing time of 9:00 p.m.
- Limitations on movement allow for travel of three hours at a distance of 20 km and religious services may resume with a capacity of 30 people

b - New COVID-19 hospitalizations per 100,000 population per week averaged over a two-week period

c - Number of COVID-19 attributed deaths per 100,000 population per week averaged over a two-week period

d - New confirmed cases per 100,000 population per week averaged over a two-week period

e - Test positivity proportion from all tests (non-sentinel surveillance) averaged over a two-week period (%)

SPAIN

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

Since May 21, 2020, face masks for all residents over the age of six have been mandatory in indoor and outdoor public spaces where a two meter distance cannot be maintained.⁶¹ On August 14, 2020, Spanish authorities ordered the closure of nightclubs, advised against gatherings of more than ten people and banned smoking in outdoor areas where social distancing was not possible. On September 4, 2020, authorities limited all outdoor and indoor gatherings to ten people, and placed gathering limits on funerals, burials, weddings, religious celebrations, and guided tourism.⁶²

In September, schools in Spain reopened for the new school year, with all children over the age of six required to wear a mask while in school.⁶³ On September 21, 2020 parts of the Madrid region entered a two week lockdown where residents of the worst-affected districts were only permitted to leave their homes for school, work, medical purposes or food. Social gatherings throughout the Madrid region were

limited to six people, and in some areas public parks closed and commercial businesses ceased operations at 11:00 p.m. local time.⁶⁴

On October 2, 2020, a partial lockdown was put in place in Madrid and nine nearby towns to restrict non-essential travel in and out of the city.⁶⁵ Bars and restaurants could not serve after 10:00 p.m. and the maximum six person limit on gatherings was extended beyond Madrid to its neighbouring towns.⁶⁶ On October 15, 2020 the region of Catalonia (where Barcelona is located) closed bars and restaurants for 15 days, to further curb the spread of COVID-19.⁶⁷ The measures in Catalonia also required the closure of entertainment venues, including amusement parks, casinos, and bingo halls.⁶⁷

PUBLIC HEALTH MEASURES AT LOCKDOWN

A national state of emergency was declared on October 25, 2020, which initiated lockdown measures nationally, that have since been altered at regional levels.⁶⁸ A nationwide curfew was initiated from 11:00 p.m. to 6:00 a.m. with each regional government allowed to modify the start from between 10:00 p.m. and midnight and the end from between 5:00 a.m. and 7:00 a.m.. Residents were prohibited from engaging in non-essential travel and movement between regions, with the exception of the Canary Islands. Social gatherings were set to a maximum of six people and bars/restaurants were ordered to stop serving at 10:00 p.m. in all local time zones across Spain.⁶⁸

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes epidemiological trends during nationwide lockdown measures, and the regional alterations to these measures on November 6, 2020 and November 23, 2020.

Table 6. Epidemiological context during Spain's lockdown measures

Context/Indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4
Public health measure changes	N/A	No change	Tightened ^a	No change	Loosened ^b
Hospitalizations^c (per 100,000)	18.1	18.2	16.5	12.4	7.5
Deaths^d (per 100,000)	0.29	0.34	0.90	0.59	0.56
Cases^e (per 100,000)	33.47	42.63	43.74	39.64	29.98
Test positivity^f (%)	10.1%	11.9%	12.2%	11.7%	10.2%

a - On November 6, 2020 the Castilla and Leon regions shutdown bars and restaurants. The Asturias region also shut down bars and requested authorisation for a home confinement, which was rejected by the health ministry. Catalonia (where Barcelona is located), closed down eateries and restricted travel across its borders. ⁶⁹

b - Spain's Catalonia region (where Barcelona is located) will allow bars, restaurants, gyms and cinemas to reopen

from November 23, 2020, the curfew from 10:00 p.m. to 6:00 a.m. remains. The regional government will allow gatherings of up to 10 people (increased from six) from December 21, 2020. Catalonia is the worst-hit Spanish region after Madrid, accounting for one fifth of the national COVID-19 death toll.⁷⁰

c - Weekly new hospital admissions due to COVID-19 per 100,000 people.⁷¹

d - 7-day average of daily deaths per 100,000 people due to COVID-19.⁵⁹

e - 7-day average of daily cases per 100,000 people.⁵⁹

f - 7-day average of the share of COVID-19 tests that had a positive result.⁵⁹

ITALY

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

On October 1, 2020, Italy extended their national state of emergency to January 2021 to continue providing powers to the central government throughout the pandemic response.⁷² The state of emergency began on January 31, 2020, and provides the government power to impose restrictions such as limits on social gatherings, and other decision-making to respond to potential COVID-19 outbreaks.⁷³

On October 7, 2020, Italian officials made face masks mandatory in all public spaces for residents over the age of six, including outdoor settings.^{74,75} On October 22, 2020, regional authorities in the Lombardy (where Milan is located), Lazio (where Rome is located), and Campania (where Naples is located) regions imposed a curfew (11:00 p.m. to 5:00 a.m.) and prohibited in-person attendance at all secondary schools.⁷⁶ In addition, the Lombardy region suspended amateur sporting events and prohibited the consumption of food and drink in public outdoor areas.⁷⁶

PUBLIC HEALTH MEASURES AT LOCKDOWN

Restrictive public health measures were nationally initiated on October 25, 2020. Face coverings/masks were mandatory in all public places, including the outdoors, for residents over the age of six.^{74,75,77} A nationwide curfew of 10:00 p.m. – 5:00 p.m. was implemented, and residents were advised not to leave home except for essential reasons (e.g., work, health emergencies). School attendance was virtual for secondary school students, and work was allowed where it cannot be done at home. Retail was allowed to open, bars/restaurants could only stay open until 6:00 p.m., and social gatherings were allowed for a maximum of six people.^{77,78} Places of worship could open with appropriate social distancing, but entertainment venues and recreation facilities (e.g., gyms, pools) were ordered to close.^{77,79}

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table provides epidemiological context during Italy's nationwide lockdown, and alterations to these measures.

Table 7. Epidemiological context during Italy's lockdown measures

Context/indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4	Week 5
Public health measure changes	N/A	No change	Tightened ^a	No change	No change	No change
Hospitalizations^b	21.9	34.5	48.3	58.7	63	60.6

Context/indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4	Week 5
(per 100,000)						
Deaths^c (per 100,000)	0.21	0.35	0.6	0.9	0.92	0.89
Cases^d (per 100,000)	26.35	43.33	53.34	57.51	54.42	41.65
Test positivity^e (%)	10%	14%	16%	16.2%	15.3	12.4%

a - The President of the Council of Ministers tightened the nationwide lockdown measures on November 5, 2020 using a tiered system based on ICU capacity and reproduction number, which was set to last until December 3, 2020.⁸⁰ As of November 5, 2020, in highest risk regions residents are prohibited from leaving their home unless for essential purposes (e.g., work, health, emergencies). All bars, restaurants, and non-essential retail businesses were ordered to close.⁸¹

b - Weekly new hospital admissions due to COVID-19 per 100,000 people.⁷¹

c - 7-day average of daily deaths per 100,000 people due to COVID-19.⁵⁹

d - 7-day average of daily cases per 100,000 people.⁵⁹

e - 7-day average of the share of COVID-19 tests that had a positive result.⁵⁹

ISRAEL

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

On September 3, 2020, Israel was experiencing difficulty in containing COVID-19 infections with about 3,000 new cases reported daily in a population of nine million.⁸² On September 7, 2020, 30 cities that were classified in the 'red' zone were placed into lockdown.⁸³ This involved banning schools with the exception of preschools and special education will be closed and gatherings will be limited to ten people in closed spaces and 20 in open spaces. Non-essential businesses will be required to close during curfew hours. However, entering and exiting these cities will not be restricted.⁸⁴ On September 11, 2020 (the start of the Jewish High Holiday season), nationwide restrictions were implemented.⁸⁵ These included shutting down schools, restaurants and hotels along with other businesses; movement restrictions were also implemented.⁸⁵

PUBLIC HEALTH MEASURES AT LOCKDOWN

A partial lockdown was initiated on September 18, 2020, with a full lockdown implemented on September 25, 2020.⁸⁶ Restrictive measures were implemented nationally in Israel, through until October 11, 2020.⁸⁷

During the lockdown, masks required whenever outside of homes, except during exercise.⁸⁸ Residents were ordered to stay within 500 meters of their home with exceptions (e.g., work, buying medications, medical treatment, funeral, prayer).⁸⁷ There was a curfew between 7:00 p.m. and 5:00 a.m. (implemented September 7, 2020).⁸⁹ Social gatherings were limited to 10 inside, 20 outside, and indoor gatherings were limited to an individual's household.⁸⁷ Initially, workplaces were allowed to stay open but were subsequently ordered to close on September 24, 2020.⁸⁶ Businesses still open to the public

(including bars and restaurants) were closed, with the exception of essential stores (e.g., food stores, pharmacies).⁸⁷ Schools were ordered to close during this period.⁸⁷ Recreation facilities were also closed.⁸⁷ Places of worship were closed with exceptions for Rosh Hashanah and Yom Kippur. Exceptions included permission to attend prayer within 500 meters of an individual's home.⁸⁷ While weddings were not explicitly prohibited under the lockdown regulations, they are not exempt from the limit on travel, (unlike funerals and circumcisions).⁹⁰

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes epidemiological trends during Israel's nationwide lockdown measures implemented from September 25, 2020 with easing of restrictions on October 18, 2020.

Table 8. Epidemiological context during Israel's lockdown measures

Context/indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4	Week 5
Public Health Measure Changes	N/A	No change	No change	Restrictions loosened ^a	No change	No change
Hospitalizations	N/A	N/A	N/A	N/A	N/A	N/A
Deaths^b (per 1,000,000)	3.15	3.78	4.26	4.11	3.23	2.61
Cases^c (per 1,000,000)	677.09	648.85	477.61	443.28	117.12	77.09
Test positivity^d (%)	10.9%	13.1%	10.1%	5.8%	2.9%	2.2%

a - On 18 October 2020 Israel eased lockdown restrictions in non-'red' cities. This included reopening of kindergartens and nurseries, eateries open to take-out in addition to delivery, travel no longer restricted to 1 km from home, indoor gatherings of up to 10 people, and outdoor gatherings up to 20, reopening of prominent religious sites in Jerusalem (e.g., Western Wall) and reopening of beaches and national parks.^{91,92}

b - 7-day rolling average of confirmed COVID deaths per million people⁵⁹

c - 7-day rolling average of daily new confirmed COVID cases per million people⁵⁹

d - 7-day rolling average of the share of daily COVID tests that are positive⁵⁹

AUSTRALIA (METROPOLITAN MELBOURNE AND REGIONAL VICTORIA)

CHANGES IN PUBLIC HEALTH MEASURES LEADING UP TO LOCKDOWN

Local lockdowns of Melbourne suburbs which were hotspots of COVID-19 occurred on July 1, 2020 (11:59 p.m.).⁴⁸ Stay at home orders were implemented and four reasons were given as the only acceptable reasons to leave home: going to work or school, care or care giving, daily exercise, and buying food and other essentials. Checkpoints were set up by local police in order to enforce stay at home orders.

Further local lockdowns of Melbourne suburbs occurred leading up to Metropolitan Melbourne being placed under stage 3 restrictions for a minimum of six weeks on July 9, 2020. Stage 3 restrictions entailed restaurants closing for indoor dining, businesses offering personal services are closed, public gatherings limited to two people, and households may no longer have visitors.⁴⁸ Even under stage 3 restrictions, masks are not required. However, on July 23, 2020 masks became mandatory outside of homes in metropolitan Melbourne and district of Mitchell Shire.⁴⁸ This was expanded to all of Victoria on August 3, 2020.

PUBLIC HEALTH MEASURES AT LOCKDOWN

Public health measures were steadily increased in metropolitan suburbs until the implementation of significant lockdown measures in metropolitan Melbourne, excluding regional Victoria on August 2, 2020.⁴⁸ Regional Victoria remained in stage 3 restrictions.

In lockdown regions strict curfew was imposed, allowable distances to travel was extremely limited, schools moved to online learning only, work from home was mandatory, social gatherings were all but banned, and non-essential services were closed including bars and restaurants.⁴⁸ Australia's lockdown measures were extremely strict compared to lockdown measures in other regions and included active widespread police enforcement.

EPIDEMIOLOGICAL CONTEXT DURING LOCKDOWN

The following table describes state-wide epidemiological trends during Victoria's metropolitan Melbourne lockdown measures implemented on August 2, 2020 with easing of restrictions beginning September 14, 2020.^{48,93-95} Epidemiological measures reported below were aligned with weekly reporting dates and represent state-wide values for Victoria. Announced on November 24, 2020, Victoria had no active cases in hospital for the first time since February 29, 2020.⁴⁸

Table 9. Epidemiological context during Australia's lockdown measures

Context/indicators	At time of lockdown	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Public health measure changes	N/A	No change	No change	No change	No change	No change	Restrictions loosened ^a
Hospitalizations^b (per 100,000)	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Deaths^c (per 100,000)	0.3	0.2	0.08	0.05	0.02	0.02	0
Cases^d (per 100,000)	49	43	29	19	11	7	0
Test positivity^e (%)	2.3%	2.0%	1.3%	1.0%	0.5%	0.4%	0%

a – Public health measures changed since week 6 up to week 16 as follows:

- On September 14, 2020 in metropolitan Melbourne the nightly curfew was amended to 9:00 p.m. to 5:00 a.m., public gatherings of two people, or a household, were permitted for up to two hours daily, and restaurants may offer takeout/delivery services
- Regional Victoria entered the third step of reopening on September 16, thus allowing increased reopening for sport, recreation, ceremonies and special occasions, up to five people may be hosted at a household, public gatherings up to 10 people are permitted, and 20 allowed at funerals, nonessential retail outlets and hairdressers may open (other personal service settings remain closed), and school reopens with strict health measures; contact tracing measures were increased and restrictions on distance of travel were lifted except that residents may not enter areas with higher restrictions
- Some restrictions were modified at the end of September 2020 as metropolitan Melbourne moved to the second step of the reopening roadmap (e.g., curfew lifted, childcare centres reopened, visits to hospitals and aged care facilities resumed with strict conditions, and outdoor gatherings were limited to five people from two households)
- On October 11, 2020 fitted masks became mandatory in public spaces (i.e. face shields, bandanas and scarfs were no longer acceptable as a face covering)
- On October 19, 2020 residents of Melbourne could travel up to 25 km from their home for exercise or shopping; hairdressers, tennis courts, golf courses, and skate parks reopened; gatherings of up to ten people from two different households were permitted (time limits may still apply), and outdoor socializing without time limits was allowed
- Regionally on October 19, 2020 two adults and two children were allowed to visit another person's home, hospitality venues could accommodate up to 70 patrons outside and 40 inside
- On October 28, 2020 metropolitan Melbourne left lockdown restrictions and entered stage 3 alongside regional Victoria, however with modified restrictions; the change allowed residents of metropolitan Melbourne to leave home for any reason
- Regionally on October 28, capacity restrictions on gyms, indoor pools, food courts, and school graduation ceremonies were eased
- November 22, 2020 a significant change in easing measures occurred across Victoria as part of the last step of re-opening including no longer requiring face masks at all times outside of homes, more visitors to households was permitted, restrictions on visiting hospital and care facilities were lifted, adult education in person resumed, phased return to work with capacity restrictions, expanded capacity limits for venues indoors and outdoors, personal service settings opened, recreation opened for indoors with capacity limits, larger religious gatherings may occur indoors or outdoors, but not both at the same time, and cultural venues and entertainment opened with capacity limits

b - New COVID-19 hospitalizations per 100,000 population per week averaged over a two-week period

c - Number of COVID-19 attributed deaths per 100,000 population per week averaged over a two-week period

d - New confirmed cases per 100,000 population per week averaged over a two-week period

e - Test positivity proportion from all tests (non-sentinel surveillance) averaged over a two-week period (%)

Conclusions

To mitigate 'wave two' COVID-19 resurgence, many countries have implemented restrictive ('lockdown') community-based public health measures similar to, but less restrictive than, those employed during their first wave of the pandemic. From a scan of nine jurisdictions, the most common wave two 'lockdown' measures observed include: limitations on population mobility and social gatherings, curfew, and the closure of bars/restaurants, retail, entertainment venues and recreation facilities. Certain jurisdictions maintained consistent strict measures throughout the specified duration of their resurgence lockdown period, while others altered (relaxed or further restricted) measures during the course of their lockdown period.

Overall, lockdowns appear to be effective in reducing the transmission of COVID-19 in this second wave, which is consistent with evidence on the effectiveness of lockdowns. The epidemiological indicators of

interest (i.e. hospitalizations, case incidence, and test percent positivity) began to decline two weeks after the initiation of the resurgence lockdown measures. Limited impact was reported from the two-week circuit breaker lockdown in Wales. While the implementation of strict public health measures is an essential element of COVID-19 pandemic response, other interventions, such as enhancing testing, tracing, isolation, and support initiatives with an equity prioritization lens are at the core of an effective response. A caveat about the applicability of these findings to Ontario is that the test percent positivity rates seen in some European jurisdictions are much higher to those seen in Ontario, which suggests that the level of control Ontario currently has over COVID-19 resurgence is relatively higher than other jurisdictions.

References

1. Government of Ontario. How Ontario is responding to COVID-19: weekly summary of cases in Ontario [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 09]. Available from: <https://www.ontario.ca/page/how-ontario-is-responding-covid-19#section-1>
2. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Weekly epidemiologic summary: COVID-19 in Ontario – focus on November 1, 2020 to November 7, 2020 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 16]. Available from: <https://www.publichealthontario.ca/-/media/documents/ncov/epi/2020/11/covid-19-weekly-epi-summary-report-nov-7.pdf?la=en>
3. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Weekly epidemiologic summary: COVID-19 in Ontario – focus on November 22, 2020 to November 28, 2020 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 16]. Available from: <https://www.publichealthontario.ca/-/media/documents/ncov/epi/2020/11/covid-19-weekly-epi-summary-report-nov-28.pdf?la=en>
4. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Daily epidemiologic summary: COVID-19 in Ontario – January 15, 2020 to December 6, 2020 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 16]. Available from: <https://files.ontario.ca/moh-covid-19-report-en-2020-12-07-v2.pdf>
5. CBC News. Ontario reports record 1,924 new COVID-19 cases on Sunday. CBC [Internet], 2020 Dec 06 [cited 2020 Dec 08]; Toronto. Available from: <https://www.cbc.ca/news/canada/toronto/ontario-covid-19-update-december-6-1.5830417>
6. Government of Ontario. COVID-19 response framework: keeping Ontario safe and open [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 07]. Available from: <https://www.ontario.ca/page/covid-19-response-framework-keeping-ontario-safe-and-open>
7. McKenzie K. Toronto and Peel have reported race-based and socio-demographic data – now we need action [Internet]. Toronto, ON: Wellesley Institute; 2020 [cited 2020 Dec 09]. Available from: <https://www.wellesleyinstitute.com/healthy-communities/toronto-and-peel-have-reported-race-based-and-socio-demographic-data-now-we-need-action/>
8. Government of Ontario. COVID-19: epidemiologic summaries from Public Health Ontario [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 09]. Available from: <https://covid-19.ontario.ca/covid-19-epidemiologic-summaries-public-health-ontario>
9. Neptis. Context of the Greater Golden Horseshoe [Internet]. Toronto, ON: Neptis Foundation; 2014 [cited 2020 Dec 09]. Available from: <https://www.neptis.org/publications/introduction/chapters/context-greater-golden-horseshoe>
10. Ontario. Ministry of Municipal Affairs and Housing. The Greater Golden Horseshoe Region: an international economic, agricultural and cultural hub [Internet]. Toronto, ON: Queen's Printer for Ontario; 2005 [cited 2020 Dec 16]. Available from: <http://www.mah.gov.on.ca/AssetFactory.aspx?did=10852>

11. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Daily epidemiologic summary: COVID-19 in Ontario: January 15, 2020 to December 15, 2020 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2020 [cited 2020 Dec 16]. Available from: <https://www.publichealthontario.ca/-/media/documents/ncov/epi/2020/covid-19-daily-epi-summary-report.pdf?la=en>
12. Sharifi A, Khavarian-Garmsir AR. The COVID-19 pandemic: impacts on cities and major lessons for urban planning, design, and management. *Sci Total Environ.* 2020;749(2020):142391. Available from: <https://doi.org/10.1016/j.scitotenv.2020.142391>
13. City of Melbourne. Coronavirus (COVID-19) update [Internet]. Melbourne: City of Melbourne; 2020 [cited 2020 Dec 10]. Available from: <https://www.melbourne.vic.gov.au/Pages/home.aspx>
14. Etkin D. Disaster theory: an interdisciplinary approach to concepts and causes. 1st ed. Oxford: Butterworth-Heinemann; 2015.
15. Khan Y, O'Sullivan T, Brown A, Tracey S, Gibson J, Généreux M, et al. Public health emergency preparedness: a framework to promote resilience. *BMC Public Health.* 2018;18(1):1344. Available from: <https://doi.org/10.1186/s12889-018-6250-7>
16. UK. Department of Health & Social Care. COVID-19 contain framework: a guide for local decision-makers [Internet]. London: Crown Copyright; 2020 [modified 2020 Dec 01; cited 2020 Dec 01]. Available from: <https://www.gov.uk/government/publications/containing-and-managing-local-coronavirus-covid-19-outbreaks/covid-19-contain-framework-a-guide-for-local-decision-makers#local-outbreak>
17. National Health Service (NHS), Public Health England. Contain framework: local authority watchlist: 1 October 2020 [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 16]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/923905/Contain_Watchlist-v2.pdf
18. UK. Department of Health & Social Care. NHS Test and Trace (England) and coronavirus testing (UK) statistics: 8 October to 14 October [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 01]. Available from: <https://www.gov.uk/government/publications/nhs-test-and-trace-england-and-coronavirus-testing-uk-statistics-8-october-to-14-october/nhs-test-and-trace-england-and-coronavirus-testing-uk-statistics-8-october-to-14-october#table-1>
19. UK. Department of Health & Social Care. Local COVID-19 alert level update: 15 October 2020 [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 01]. Available from: <https://www.gov.uk/government/news/local-covid-19-alert-level-update-15-october-2020>
20. UK. Department of Health & Social Care. Local COVID alert level update: areas moving to 'high' [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 01]. Available from: <https://www.gov.uk/government/news/local-covid-alert-level-update-areas-moving-to-high>
21. UK. Cabinet Office; Department of Health & Social Care. Face coverings: when to wear one, exemptions, and how to make your own [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 01]. Available from: <https://www.gov.uk/government/publications/face-coverings-when-to-wear-one-and-how-to-make-your-own/face-coverings-when-to-wear-one-and-how-to-make-your-own>

22. UK. Cabinet Office. Guidance - new national restrictions from 5 November [Internet]. London: Crown Copyright; 2020 [modified 2020 Nov 03; cited 2020 Nov 05]. Available from: <https://www.gov.uk/guidance/new-national-restrictions-from-5-november>
23. UK Government. COVID-19 winter plan. London: Crown Copyright; 2020. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/937529/COVID-19_Winter_Plan.pdf
24. UK. Department of Health & Social Care. Local restriction tiers: what you need to know [Internet]. London: Crown Copyright; 2020 [modified 2020 Nov 30; cited 2020 Dec 01]. Available from: <https://www.gov.uk/guidance/local-restriction-tiers-what-you-need-to-know#what-tiers-mean>
25. Public Health England; NHSX. Healthcare in England: patients in hospital [Internet]. London: Crown Copyright; 2020 [modified 2020 Dec 01; cited 2020 Dec 01]. Available from: <https://coronavirus.data.gov.uk/details/healthcare?areaType=nation&areaName=England>
26. Public Health England; NHSX. Deaths in England: weekly deaths with COVID-19 on the death certificate by date registered [Internet]. London: Crown Copyright; 2020 [modified 2020 Oct 01; cited 2020 Dec 01]. Available from: <https://coronavirus.data.gov.uk/details/deaths?areaType=nation&areaName=England>
27. Public Health England; NHSX. Cases in England: recent 7-day cases by specimen date [Internet]. London: Crown Copyright; 2020 [modified 2020 Dec 01; cited 2020 Dec 01]. Available from: <https://coronavirus.data.gov.uk/details/cases?areaType=nation&areaName=England>
28. UK. Department of Health & Social Care. Weekly statistics for NHS Test and Trace (England) and coronavirus testing (UK): 29 October to 4 November [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 01]. Available from: <https://www.gov.uk/government/publications/nhs-test-and-trace-england-and-coronavirus-testing-uk-statistics-29-october-to-4-november/weekly-statistics-for-nhs-test-and-trace-england-and-coronavirus-testing-uk-29-october-to-4-november>
29. UK. Department of Health & Social Care. Weekly statistics for NHS Test and Trace (England) and coronavirus testing (UK): 12 November to 18 November [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 01]. Available from: <https://www.gov.uk/government/publications/nhs-test-and-trace-england-and-coronavirus-testing-uk-statistics-12-november-to-18-november/nhs-test-and-trace-england-and-coronavirus-testing-uk-statistics-12-november-to-18-november>
30. UK. Department of Health & Social Care. NHS Test and Trace (England) and coronavirus testing (UK) statistics: 5 November to 11 November [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 16]. Available from: <https://www.gov.uk/government/publications/nhs-test-and-trace-england-and-coronavirus-testing-uk-statistics-5-november-to-11-november>
31. BBC News. Covid in Wales: what do the latest lockdown rules say? BBC News [Internet], 2020 Sep 27 [cited 2020 Dec 03]; Coronavirus pandemic. Available from: <https://www.bbc.com/news/uk-wales-52416541>
32. Welsh Government, Drakeford M. Cabinet statement: written statement: coronavirus fire-break [Internet]. Cardiff: Crown Copyright; 2020 [modified 2020 Oct 19; cited 2020 Nov 17]. Available from: <https://gov.wales/written-statement-coronavirus-fire-break>

33. Welsh Government. Press release: firebreak lockdown in Wales ends [Internet]. Cardiff: Crown Copyright; 2020 [modified 2020 Nov 09; cited 2020 Nov 17]. Available from: <https://gov.wales/firebreak-lockdown-in-wales-ends>
34. Morris S. What are the rules of Wales's circuit breaker coronavirus lockdown? The Guardian [Internet], 2020 Oct 19 [cited 2020 Dec 03]. Available from: <https://www.theguardian.com/uk-news/2020/oct/19/rules-wales-circuit-breaker-coronavirus-lockdown>
35. Public Health England; NHSX. Healthcare in United Kingdom: patients admitted to hospital [Internet]. London: Crown Copyright; 2020 [modified 2020 Dec 01; cited 2020 Dec 02]. Available from: <https://coronavirus.data.gov.uk/details/healthcare>
36. Public Health England; NHSX. Deaths in United Kingdom: Deaths within 28 days of positive test by date of death [Internet]. London: Crown Copyright; 2020 [modified 2020 Dec 01; cited 2020 Nov 30]. Available from: <https://coronavirus.data.gov.uk/details/deaths?areaType=overview&areaName=United%20Kingdom>
37. Public Health England; NHSX. Cases in Wales: cases by specimen date [Internet]. London: Crown Copyright; 2020 [modified 2020 Dec 01; cited 2020 Dec 01]. Available from: <https://coronavirus.data.gov.uk/details/cases?areaType=nation&areaName=Wales>
38. Office for National Statistics. Coronavirus (COVID-19) infection survey, UK: 20 November 2020 [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 02]. Available from: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveyspilot/20november2020>
39. NI Direct Government Services. Coronavirus (COVID-19): face coverings [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov 23]. Available from: <https://www.nidirect.gov.uk/articles/coronavirus-covid-19-face-coverings>
40. BBC News. Coronavirus: return to schools 'good day for young people'. BBC News [Internet], 2020 Sep 01 [cited 2020 Dec 03]; Coronavirus pandemic. Available from: <https://www.bbc.com/news/uk-northern-ireland-53978999>
41. BBC News. Coronavirus restrictions are extended across NI [Internet]. BBC News [Internet], 2020 Sep 21 [cited 2020 Dec 03]; Coronavirus pandemic. Available from: <https://www.bbc.com/news/uk-northern-ireland-54228579>
42. McCormack J. Coronavirus: drink-only pubs set to reopen next week. BBC News [Internet], 2020 Sep 17 [cited 2020 Dec 03]; Coronavirus pandemic. Available from: <https://www.bbc.com/news/uk-northern-ireland-54182628>
43. McCormack J. Pubs and restaurants must shut in NI at 11pm. BBC News [Internet], 2020 Sep 29 [cited 2020 Dec 03]; Coronavirus pandemic. Available from: <https://www.bbc.com/news/uk-northern-ireland-54337905>
44. Blevins D. COVID-19: Northern Ireland 'circuit-breaker' extended after confusion over deadline. Sky News [Internet], 2020 Nov 13 [cited 2020 Nov 30]; UK. Available from: <https://news.sky.com/story/covid-19-northern-ireland-circuit-breaker-extended-after-confusion-over-deadline-12131304>

45. Executive Office. Executive tightens restrictions to curb Covid-19 [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov 30]. Available from: <https://www.executiveoffice-ni.gov.uk/news/executive-tightens-restrictions-curb-covid-19>
46. BBC News. Schools to close and tight new hospitality rules in Northern Ireland. BBC News [Internet], 2020 Oct 14 [cited 2020 Dec 03]; Coronavirus pandemic. Available from: <https://www.bbc.co.uk/news/uk-northern-ireland-54533643>
47. Sky News. COVID-19: Northern Ireland 'circuit-breaker' lockdown extended after confusion over deadline. Sky News [Internet], 2020 Nov 13 [cited 2020 Nov 30]; UK. Available from: <https://news.sky.com/story/covid-19-northern-ireland-government-working-to-wrong-circuit-breaker-deadline-12130784>
48. 2019 novel coronavirus outbreak in China - Global Public Health Intelligence Network (GPHIN). Public Health Measures Report (November 30); 2020.
49. Public Health England; NHSX. Healthcare in Northern Ireland: patients admitted to hospital [Internet]. London: Crown Copyright; 2020 [modified 2020 Dec 04; cited 2020 Dec 04]. Available from: <https://coronavirus.data.gov.uk/details/healthcare?areaType=nation&areaName=Northern%20Ireland>
50. Public Health England; NHSX. Deaths in Northern Ireland [Internet]. London: Crown Copyright; 2020 [modified 2020 Oct 30; cited 2020 Nov 30]. Available from: <https://coronavirus.data.gov.uk/details/deaths?areaType=nation&areaName=Northern%20Ireland>
51. Northern Ireland. Department of Health. 17/11/20: Modelling the COVID-19 epidemic; the reproduction number and other indicators [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov 30]. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/r-number-171120.pdf>
52. Northern Ireland. Department of Health. 10/11/20: Modelling the COVID-19 epidemic; the reproduction number and other indicators [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov 30]. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/r-number-101120.pdf>
53. Northern Ireland. Department of Health. 03/11/20: Modelling the COVID-19 epidemic; the reproduction number and other indicators [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov 30]. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/r-number-031120.pdf>
54. Northern Ireland. Department of Health. 27/10/20: Modelling the COVID-19 epidemic; the reproduction number and other indicators [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov 30]. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/r-number-271020.pdf>
55. Northern Ireland. Department of Health. 20/10/20: Modelling the COVID-19 epidemic; the reproduction number and other indicators [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov 30]. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/r-number-201020.pdf>
56. Northern Ireland. Department of Health. 13/10/20: Modelling the COVID-19 epidemic; the reproduction number and other indicators [Internet]. Belfast: Crown Copyright; 2020 [cited 2020 Nov

- 30]. Available from: <https://www.health-ni.gov.uk/sites/default/files/publications/health/r-number-131020.pdf>
57. Office for National Statistics. Coronavirus (COVID-19) infection survey, UK: 26 November 2020 [Internet]. London: Crown Copyright; 2020 [cited 2020 Dec 03]. Available from: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurveypilot/26november2020#number-of-people-in-northern-ireland-who-had-covid-19>
58. Sciensano. Belgium COVID-19 epidemiological situation [Internet]. Brussels: Sciensano; 2020 [cited 2020 Dec 01]. Available from: <https://epistat.wiv-isp.be/covid/covid-19.html>
59. Roser M, Ritchie H, Ortiz-Ospina E, Hasell J. Coronavirus pandemic (COVID-19) [Internet] Oxford: Our World in Data; 2020 [cited 2020 Dec 01]. Available from: <https://ourworldindata.org/coronavirus>
60. Gouvernement de la République française. COVID-19 - France [Internet]. Paris: Gouvernement de la République française; 2020 [cited 2020 Dec 03]. Available from: <https://www.gouvernement.fr/info-coronavirus/carte-et-donnees>
61. BBC News. Coronavirus: Spain tightens mask rules for all older than five. BBC News [Internet], 2020 May 20 [cited 2020 Dec 01]; Coronavirus pandemic. Available from: <https://www.bbc.com/news/world-europe-52735166>
62. GardaWorld. Spain: authorities expand COVID-19 restrictions on indoor gatherings September 4 /update 43. GardaWorld [Internet], 2020 Sep 04 [cited 2020 Dec 01]. Available from: <https://www.garda.com/crisis24/news-alerts/375846/spain-authorities-expand-covid-19-restrictions-on-indoor-gatherings-september-4-update-43>
63. Güell O. Spanish government, regions agree that children over age of six will have to wear masks in schools. El Pais [Internet], 2020 Aug 27 [cited 2020 Dec 7]; Education. Available from: <https://english.elpais.com/society/2020-08-27/spanish-government-regions-agree-that-children-over-age-of-six-will-have-to-wear-masks-in-schools.html>
64. GardaWorld. Spain: authorities announce lockdown in parts of Madrid from September 21 /update 46. GardaWorld [Internet]; 2020 Sep 20 [cited 2020 Dec 1]. Available from: <https://www.garda.com/crisis24/news-alerts/381146/spain-authorities-announce-lockdown-in-parts-of-madrid-from-september-21-update-46>
65. CBC News. Spain declares state of emergency to tamp down coronavirus spread in Madrid. CBC News [Internet], 2020 Oct 09 [cited 2020 Dec 01]; World. Available from: <https://www.cbc.ca/news/world/spain-madrid-coronavirus-1.5756597>
66. GardaWorld. Spain: authorities impose additional COVID-19 restrictions in Madrid October 2 /update 50. GardaWorld [Internet], 2020 Oct 03 [cited 2020 Dec 01]. Available from: <https://www.garda.com/crisis24/news-alerts/385816/spain-authorities-impose-additional-covid-19-restrictions-in-madrid-october-2-update-50>
67. GardaWorld. Spain: Catalonia government introduces new COVID-19 measures from October 15 /update 51. GardaWorld [Internet], 2020 Oct 14 [cited 2020 Dec 01]. Available from: <https://www.garda.com/crisis24/news-alerts/389096/spain-catalonia-government-introduces-new-covid-19-measures-from-october-15-update-51>

68. Gobierno de España. Government decrees state of emergency to provide full constitutional coverage to measures necessary to tackle pandemic in regions [Internet]. Madrid: Gobierno de España; 2020 [cited 2020 Nov 17]. Available from: <https://www.lamoncloa.gob.es/lang/en/presidente/news/paginas/2020/20201025state-emergency.aspx>
69. Reuters Staff. Rising COVID-19 cases push Spain's regions to call for tighter restrictions. Reuters [Internet], 2020 Nov 03 [cited 2020 Dec 01]. Available from: <https://www.reuters.com/article/us-health-coronavirus-spain/rising-covid-19-cases-push-spains-regions-to-call-for-tighter-restrictions-idINKBN27J1H6?edition-redirect=ca>
70. Faus J. Catalonia eases COVID restrictions but keeps curfew, including for Christmas. National Post [Internet], 2020 Nov 19 [cited 2020 Dec 01]. Available from: <https://nationalpost.com/pm/entertainment-pmn/catalonia-eases-covid-restrictions-but-keeps-curfew-including-for-christmas>
71. Our World in Data. Weekly new hospital admissions for COVID-19 per million [Internet]. Oxford: Our World in Data; 2020 [cited 2020 Dec 03]. Available from: <https://ourworldindata.org/grapher/weekly-hospital-admissions-covid-per-million?tab=chart&stackMode=absolute&time=2020-03-09..latest&country=~ESP>
72. Reuters Staff. Italy to extend COVID state of emergency to end of January: PM. Reuters [Internet], 2020 Oct 01 [cited 2020 Dec 01]. Available from: <https://www.reuters.com/article/us-health-coronavirus-italy-emergency-idUSKBN26M4ME>
73. GardaWorld. Italy: authorities extend COVID-19 state of emergency until October 15 /update 37. GardaWorld [Internet], 2020 Jul 29 [cited 2020 Dec 01]. Available from: <https://www.garda.com/crisis24/news-alerts/364516/italy-authorities-extend-covid-19-state-of-emergency-until-october-15-update-37>
74. Governo Italiano, Presidenza del Consiglio dei Ministri. Comunicato stampa del Consiglio dei Ministri n. 66 [Internet]. Rome: Governo Italiano; 2020 [cited 2020 Dec 01]. Available from: <http://www.governo.it/it/articolo/comunicato-stampa-del-consiglio-dei-ministri-n-66/15350>
75. Amante A. Italy makes face masks mandatory outdoors as coronavirus cases climb. Global News [Internet], 2020 Oct 07 [cited 2020 Dec 01]; Health. Available from: <https://globalnews.ca/news/7383094/coronavirus-italy-face-masks-outdoors/>
76. Paterlini M. COVID-19: Italy has wasted the sacrifices of the first wave, say experts. BMJ. 2020;371:m4279. Available from: <https://doi.org/10.1136/bmj.m4279>
77. GardaWorld. Italy: authorities announce new COVID-19 restrictions nationwide from October 26 /update 46. GardaWorld [Internet], 2020 Oct 25 [cited 2020 Dec 01]. Available from: <https://www.garda.com/crisis24/news-alerts/392941/italy-authorities-announce-new-covid-19-restrictions-nationwide-from-october-26-update-46>
78. Ellyatt H. Italy, the epicenter of Europe's first coronavirus outbreak, moves to stop second surge. CNBC [Internet], 2020 Oct 19 [cited 2020 Dec 01]. Available from: <https://www.cnbc.com/2020/10/19/italy-prime-minister-conte-announces-more-restrictions-as-cases-surge.html>

79. Esteves JA. Public masses continue in Italy despite new COVID-19 restrictions. Crux [Internet], 2020 Nov 06 [cited 2020 Dec 01]. Available from: <https://cruxnow.com/church-in-europe/2020/11/public-masses-continue-in-italy-despite-new-covid-19-restrictions/>
80. President of the Council of Ministers. Urgent measures to restrict the spread of infection throughout the national territory [Internet]. Rome: Ministero degli Affari Esteri e della Cooperazione Internazionale; 2020 [cited 2020 Dec 16]. Available from: https://www.esteri.it/mae/resource/doc/2020/11/decreto_3_nov_2020_plusannexes_23_24en-gb_1.pdf
81. Italy. Ministry of Health. FAQ - covid-19, questions and answers [Internet]. Rome: Ministry of Health [modified 2020 Nov 30; cited 2020 Dec 01]. Available from: <http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioFaqNuovoCoronavirus.jsp?lingua=english&id=230#11>
82. Heller J. Israel announces partial national lockdown after coronavirus surge. Reuters [Internet], 2020 Sep 03; cited 2020 Dec 01]. Available from: <https://www.reuters.com/article/us-health-coronavirus-israel/israel-announces-partial-national-lockdown-after-coronavirus-surge-idUSKBN25U2T1>
83. GardaWorld. Israel/Palestinian Terr.: officials announce lockdowns in 30 cities from September 7 /update 53. GardaWorld [Internet], 2020 Sep 3 [cited 2020 Dec 1]. Available from: <https://www.garda.com/crisis24/news-alerts/375666/israelpalestinian-terr-officials-announce-lockdowns-in-30-cities-from-september-7-update-53>
84. GardaWorld. Israel/Palestinian Terr.: Authorities introduce nightly curfews in COVID-19 hotspots from September 7 /update 54. GardaWorld [Internet], 2020 Sep 07 [cited 2020 Dec 01]. Available from: <https://www.garda.com/crisis24/news-alerts/376491/israelpalestinian-terr-authorities-introduce-nightly-curfews-in-covid-19-hotspots-from-september-7-update-54>
85. DW. Coronavirus digest: Israel to enter second nationwide lockdown. DW [Internet], 2020 Sep 13 [cited 2020 Dec 01]; World. Available from: <https://www.dw.com/en/coronavirus-digest-israel-to-enter-second-nationwide-lockdown/a-54910181>
86. GardaWorld. Israel/Palestinian Terr.: authorities to impose tighter lockdown measures from September 25 /update 57. GardaWorld [Internet], 2020 Sep 24 [cited 2020 Nov 05]. Available from: <https://www.garda.com/crisis24/news-alerts/382571/israelpalestinian-terr-authorities-to-impose-tighter-lockdown-measures-from-september-25-update-57>
87. Government of Israel. Joint PMO - Health Ministry - Finance Ministry statement [Internet]. Jerusalem: Government of Israel; 2020 [cited 2020 Nov 17]. Available from: <https://www.gov.il/BlobFolder/news/foreign-workers-lockdown/he/Regulations-eng-17-9.pdf>
88. Lieber D. Israel's second lockdown seems to be working better than its first. Wall Street Journal [Internet], 2020 Nov 01 [cited 2020 Dec 02]. Available from: <https://www.wsj.com/articles/israels-second-lockdown-seems-to-be-working-better-than-its-first-11604235601>
89. Federman J. Israel imposes overnight curfews as virus deaths pass 1,000. ABC News [Internet], 2020 Sep 06 [cited 2020 Dec 02]. Available from: <https://abcnews.go.com/Health/wireStory/virus-deaths-surpass-1000-israel-mulls-restrictions-72847009>

90. TOI Staff. Religious affairs minister officiates wedding in violation of lockdown. Times of Israel [Internet], 2020 Oct 13 [cited 2020 Dec 02]. Available from: <https://www.timesofisrael.com/religious-affairs-minister-officiates-wedding-in-violation-of-lockdown/>
91. Eichner I. Israel steps out of coronavirus lockdown and rolls back restrictions. YNet News [Internet], 2020 Oct 18 [cited 2020 Dec 01]. Available from: <https://www.ynetnews.com/article/BkpbqLKwv>
92. i24 News. Israel begins rolling back coronavirus lockdown measures as kindergartens reopen. i24 News [Internet], 2020 Oct 18 [cited 2020 Dec 01]. Available from: <https://www.i24news.tv/en/news/coronavirus/1602997124-israel-begins-rolling-back-coronavirus-lockdown-measures-as-kindergartens-temple-mount-reopen>
93. COVID LIVE. Vic positive test rate: daily positive test rate [Internet]. Melbourne: COVID LIVE; 2020 [cited 2020 Dec 03]. Available from: <https://covidlive.com.au/report/daily-positive-test-rate/vic>
94. Barry D, Goddard N, Klein D, O'Brien J. In focus: Victoria [Internet]. Melbourne: covid19data.com.au; 2020 [cited 2020 Dec 03]. Available from: <https://www.covid19data.com.au/victoria>
95. www.covid19data.com.au. Deaths [Internet]. Melbourne: www.covid19data.com.au; 2020 [updated 2020 Dec 3; cited 2020 Dec 3]. Available from: <https://www.covid19data.com.au/deaths>
96. Gouvernement de la République française. Exemption certificate during lockdown [Internet]. Paris: Gouvernement de la République française; 2020 [cited 2020 Dec 03]. Available from: https://www.gouvernement.fr/sites/default/files/locale/piece-jointe/2020/11/attestation_anglais.pdf
97. Dovrat-Meseritz A. Israeli nightlife venues, event halls collapsing under debt and coronavirus uncertainty. Haaretz [Internet], 2020 Oct 27 [cited 2020 Dec 02]; Business. Available from: <https://www.haaretz.com/israel-news/business/.premium-israeli-nightlife-venues-event-halls-collapsing-under-debt-and-covid-uncertainty-1.9267302>

Appendix A: Public Health Measures at Lockdown

The following tables summarize the restrictive public health measures implemented at the start of the COVID-19 resurgence lockdowns in England, Wales, Northern Ireland, Belgium, France, Spain, Italy, Israel, and Australia (Melbourne and Regional Victoria).

England, United Kingdom

Type of measure	England
Face coverings/masks	Face covering in all indoor/enclosed public spaces. ²¹
Curfew	None. ²²
Population mobility	Avoid all non-essential travel by private or public transport. Residents of England must stay at home and avoid travel in the UK or overseas, unless for work, education or other legally permitted reasons. ²²
Schools	Open. ²²
Work	Allowed where it cannot be done at home. ²²
Retail	Closed all retail except for essential business (e.g., food, gas, and banking). ²²
Bars/restaurants	Closed, open for click and collect/drive through/delivery. ²²
Social gatherings	Avoid meeting people you do not live with, outdoors and indoors, can only exercise outdoors with people you live with, 'support bubble', or with one other person. Residents cannot leave home for holidays or stays overnight away from your main home unless permitted by law. This includes staying in a second home or caravan, or staying with anyone outside of residents' household. ²²
Religious venues	Closed; Exceptions for independent prayer, funerals, to broadcast an act of worship, to provide essential voluntary services or urgent public support services, for registered childcare, and to host permitted gatherings. ²²
Event/banquet/entertainment venues	Closed entertainment venues; Community centres are an exception for access internet services for those who do not have it at home, and for the purposes of click-and-collect. ²²
Weddings, Funerals, Civil Ceremonies	Funerals limited to 30 people. Prohibition on weddings or civil ceremonies unless except where one of those getting married is seriously ill and not expected to recover, these weddings are limited to 6 people. ²²

Type of measure	England
Recreation	Closed leisure and sport facilities. ²²

Wales, United Kingdom

Type of measure	Wales
Face coverings/masks	Face covering were required in shops and other indoor spaces starting on September 14, 2020. However, masks were not required by workplaces or schools and children under age 11 were not required to wear one. ³¹ Unclear if this changed during lockdown.
Curfew	In September pubs, cafes and restaurants shutting at 10:00 p.m. every night. ³¹ Unclear if this changed during lockdown.
Population mobility	Not reported.
Schools	The fire break in Wales occurred during a break in school (half-term break or mid-term break). Primary and special schools re-opened after half-term break (4 to 11 year-olds). ³² Secondary schools re-opened after the half-term for children in years seven and eight (11 to 12 year-olds). Pupils were able to take exams but other pupils continued learning from home for an extra week. ³²
Work	Residents were ordered to work from home if possible. ³²
Retail	Non-essential businesses were closed (except food markets). ³²
Bars/restaurants	Bars, pubs, restaurants, must close. ³⁴
Social gatherings	Residents were ordered to stay home (except for exercise). Residents were ordered to avoid social gatherings indoors or outdoors with people outside of their household (except for support bubbles). ³²
Religious venues	Places of worship were closed. ³²
Event/banquet/entertainment venues	Not reported.
Weddings, Funerals, Civil Ceremonies	Places of worship were not be open to the public, other than for wedding or civil partnership ceremonies or funerals. ³⁴
Recreation	Libraries, golf and tennis clubs were closed. ³⁴

Northern Ireland, United Kingdom

Type of measure	Northern Ireland
Face coverings/masks	Face covering have been mandatory in all relevant places (e.g., shops) since August 2020. ³⁹
Curfew	Fast-food and takeaway premises to close at 11:00 p.m. and off-licences and supermarkets were not to sell alcohol after 8:00 p.m. ⁴⁶ Bars and pubs were required to close at 11:00 p.m. since September 30, 2020. ⁴⁶
Population mobility	Not reported.
Schools	Schools were closes for two weeks (including the half-term holiday) starting from October 19, 2020. ⁴⁶ Universities and further education delivered distance learning to the maximum extent possible. Essential face-to-face learning was permitted where was necessary and unavoidable. ⁴⁵
Work	Individuals were encouraged to work from home unless unable to do so, and no unnecessary travel was permitted. ⁴⁵
Retail	The retail sector was permitted to stay open at this time with the exception of close contact services such as hairdressers and beauticians. Off-licenses and supermarkets were not permitted to sell alcohol after 8:00 p.m. ⁴⁵
Bars/restaurants	Bars and restaurants were closed except for deliveries and takeaways for food, with the existing closing time of 11:00 p.m. remaining. ⁴⁵
Social gatherings	Restrictions included limiting social bubbles to a maximum of 10 people from two households and no overnight stays in a private home were permitted unless in a bubble. ⁴⁵
Religious venues	Places of worship remained open with a mandatory requirement to wear face coverings when entering and exiting. ⁴⁵
Event/banquet/entertainment venues	Not reported.
Weddings, Funerals, Civil Ceremonies	Funerals were limited to 25 people with no pre- or post-funeral gatherings and wedding ceremonies and civil partnerships to be limited to 25 people with no receptions (this was implemented on October 19). ⁴⁵
Recreation	No indoor sport of any kind or organised contact sport involving household mixing other than at the elite level was permitted. However, gyms remained open but for individual training. No mass events involving more

Type of measure	Northern Ireland
	than 15 people (except for allowed outdoor sporting events where the relevant number for that will continue to apply) were permitted. ⁴⁵

Belgium

Type of measure	Belgium (includes stricter measures applied in Brussels)
Face coverings/masks	Masks must be worn everywhere outside of one's household (may only apply to Brussels region, with variations in other regions). ⁴⁸
Curfew	10:00 p.m. to 6:00 a.m. in Wallonia and the Brussels capital region and midnight to 5:00 a.m. in Flanders. ⁴⁸
Population mobility	Only one person (and a minor) may perform errands. Travel within Belgium is not restricted. Hotels remain open. ⁴⁸
Schools	Schools closed except for vulnerable students. On November 15: return of kindergarten and primary; secondary schools providing distance learning for half of students, with other half attending on site. University courses remain online until December 1, except primary care trainees (e.g., nurses, physiotherapists). Childcare is provided for days that school is closed. ⁴⁸
Work	Work from home mandatory; if not possible, then masks worn at work and adequate ventilation must be available in the workspace. ⁴⁸
Retail	Closure of non-essential retail except for deliveries and curbside pickup. In the Brussels region all stores closed by 8:00 p.m. Flea markets and Christmas markets are prohibited. Essential stores must remove any items considered non-essential from sale to prevent unfair competition. ⁴⁸
Bars/restaurants	Bars and restaurants closed for in-person dining; take-out available until 10:00 p.m.; alcohol sales prohibited after 8:00 p.m. Nightclubs closed. ⁴⁸
Social gatherings	Absolutely no visits (family visits also restricted). However, each person in a household may select one individual from outside their household to be a close contact, whereas, individuals living alone may have up to two close contacts but cannot have both visit at the same time. Outdoor gatherings restricted to four people, but must be distanced. ⁴⁸
Religious venues	Open, but no worship; maximum of four people inside and must be distanced with masks. ⁴⁸

Type of measure	Belgium (includes stricter measures applied in Brussels)
Event/banquet/entertainment venues	All cultural venues are closed. All entertainment facilities are closed. Weddings may proceed only with witness and officiant. Funerals allowed up to 15 people, ceremonies following are prohibited. ⁴⁸
Recreation	Sports competition and training suspended for groups >12 both indoor and outdoor. Sports facilities are closed. Professional events can proceed without spectators. Closure of animal parks. Outdoor exercise permitted with a maximum of 4 people while physically distancing. ⁴⁸

France (Metropolitan France and Martinique)

Type of measure	Metropolitan France and Martinique
Face coverings/masks	Masks required in all open venues and on public transit. Masking is recommended wherever social distancing cannot be respected. Masking is required in all indoor public places. ⁴⁸
Curfew	9:00 p.m. to 6:00 a.m. ⁴⁸
Population mobility	Only permitted to leave household under specific circumstances and with an exemption certificate. ^{48,96} These circumstances generally are work commutes, school (for self or dependents) or training commutes; purchase of essential goods for business or residential purpose; essential medical appointments; support for vulnerable persons, children or family; support for persons with a disability; individual outdoor exercise within 1 km of residence for only 1 hour (includes walks with members of household or for pets); judicial or administrative summons and public service appointments; requests for administrative authority. Travel to an Overseas Territory requires a negative PCR test less than 72 hours old. Travel to different parts of France are prohibited.
Schools	All schools up to, but excluding universities are open with masks mandatory for children above the age of 6. ⁴⁸ Universities are videoconference-based; libraries accessible with an appointment. Daycares remain open.
Work	Work from home is mandatory, if possible. ⁴⁸ Staggered work patterns are encouraged to limit crowding in workplace and on public transit. Public services remain open.
Retail	Closure of non-essential retail except for deliveries and curbside pickup. ⁴⁸ Financial aid provided to closed businesses. Essential stores must remove any items considered non-essential from sale to prevent unfair competition.

Type of measure	Metropolitan France and Martinique
Bars/restaurants	Closed for in-person dining. Take-out available. Nightclubs closed. ⁴⁸
Social gatherings	All social gatherings are prohibited unless fitting definition of exemption (described in population mobility/travel section). ⁴⁸
Religious venues	Open for weddings (maximum six people) and funerals (maximum 30 people). ⁴⁸
Event/banquet/entertainment venues	All venues are closed with the exception of use during weddings (maximum six people) and funerals (maximum 30 people). ⁴⁸
Recreation	Sports clubs and facilities are closed; exception of professional sports. ⁴⁸ Parks, gardens, beaches and bodies of water remain open. Closures of campsites.

Spain

Type of measure	Spain
Face coverings/masks	Mandatory indoors and outdoors public places where two meter distancing is not possible. ⁶⁸
Curfew	11:00 p.m. to 6:00 a.m. (each regional government may modify the start from between 10:00 p.m. and midnight and the end from between 5:00 a.m. and 7:00 a.m.). ⁶⁸
Population mobility	Prohibition on non-essential travel and movement between regions, applies to entire country except Canary Islands. ⁶⁸
Schools	Open. ⁶³
Work	Not reported.
Retail	Not reported.
Bars/restaurants	Nationwide cannot serve after 10:00 p.m. local time. ⁶⁸
Social gatherings	Maximum six people. ⁶⁸
Religious venues	Not reported.
Event/banquet/entertainment venues	Not reported.

Type of measure	Spain
Recreation	Not reported.

Italy

Type of measure	Italy
Face coverings/masks	Mandatory in all public places, including the outdoors, for residents over the age of six. ^{74,75,77}
Curfew	10:00 p.m. to 5:00 a.m. ^{77,78}
Population mobility	Residents advised not to leave home except for essential reasons (e.g., work, health emergencies). ^{77,78}
Schools	Virtual for secondary school students. ^{77,78}
Work	Allowed where it cannot be done at home. ^{77,78}
Retail	Open. ^{77,78}
Bars/restaurants	Closed at 6:00 p.m. nationally. ^{77,78}
Social gatherings	Maximum six people limited to 6. ^{77,78}
Religious venues	Open (with social distancing in place). ^{77,79}
Event/banquet/entertainment venues	Closed. ^{77,79}
Recreation	Closed (e.g., gyms and swimming pools). ^{77,79}

Israel

Type of measure	Israel
Face coverings/masks	Masks required whenever outside of homes, except during exercise. ⁸⁸
Curfew	Curfews went into effect on Sept 7. Curfew were between 7:00 p.m. and 5:00 a.m. ⁸⁹
Population mobility	The restrictive measures in place from September 18, 2020 to October 11 2020 ordered residents to stay within 500 meters of their home with

Type of measure	Israel
	exceptions (e.g., work, buying medications, medical treatment, funeral, prayer). ⁸⁷
Schools	Schools were ordered to close during this period. ⁸⁷
Work	Initially, workplaces were allowed to stay open but were subsequently ordered to close on September 24, 2020. ⁸⁶
Retail	Businesses open to the public were closed (e.g., including commerce), with the exception of essential stores (e.g., food stores, pharmacies). ⁸⁷
Bars/restaurants	Businesses open to the public were closed (e.g., restaurants). ⁸⁷
Social gatherings	It was prohibited to be in another person's residence, and social gatherings were limited to 10 inside, 20 outside). ⁸⁷ Social gatherings were restricted to an individual's household. ⁸⁷
Religious venues	Places of worship were closed with exceptions for Rosh Hashanah and Yom Kippur. Exceptions included permission to attend prayer within 500 meters of an individual's home, with the restriction that the number of worshippers present shall not exceed 1 person per 4 square meters of space in places designated for prayer. ⁸⁷
Event/banquet/entertainment venues	Closed. ⁹⁷
Weddings, Funerals, Civil Ceremonies	While weddings were not explicitly prohibited under the lockdown regulations, they are not exempt from the limit on travel, (unlike funerals and circumcisions). ⁹⁰
Recreation	Recreation facilities were closed. ⁸⁷

Australia (Metropolitan Melbourne and Regional Victoria)

Type of measure	Metropolitan Melbourne, Victoria, Australia
Face coverings/masks	Everyone must wear a fitted face mask that covers the mouth and nose as soon as they leave their home. ⁴⁸
Curfew	8:00 p.m. to 5:00 a.m. (except for work, health care or caregiving). ⁴⁸
Population mobility	Maximum 5 km distance from home for shopping. ⁴⁸

Type of measure	Metropolitan Melbourne, Victoria, Australia
Schools	Closed; online learning only. ⁴⁸
Work	Work from home mandatory wherever possible. ⁴⁸
Retail	Closed, except for essential services. ⁴⁸
Bars/restaurants	Closed. ⁴⁸
Social gatherings	Banning of all gatherings, 2 people maximum. ⁴⁸
Religious venues	Closed. ⁴⁸
Event/banquet/ entertainment venues	Closed. ⁴⁸
Recreation	Indoor banned; outdoor exercise of 1 hour only per day, within 5 km of home; all other sport or recreation areas outdoors closed. ⁴⁸

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