Update on COVID-19 in Canada: Epidemiology and Modelling
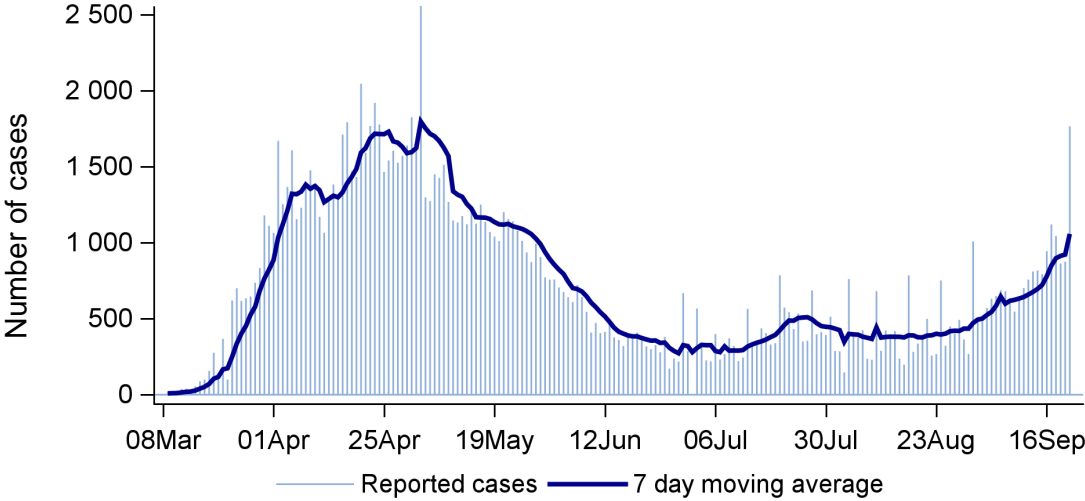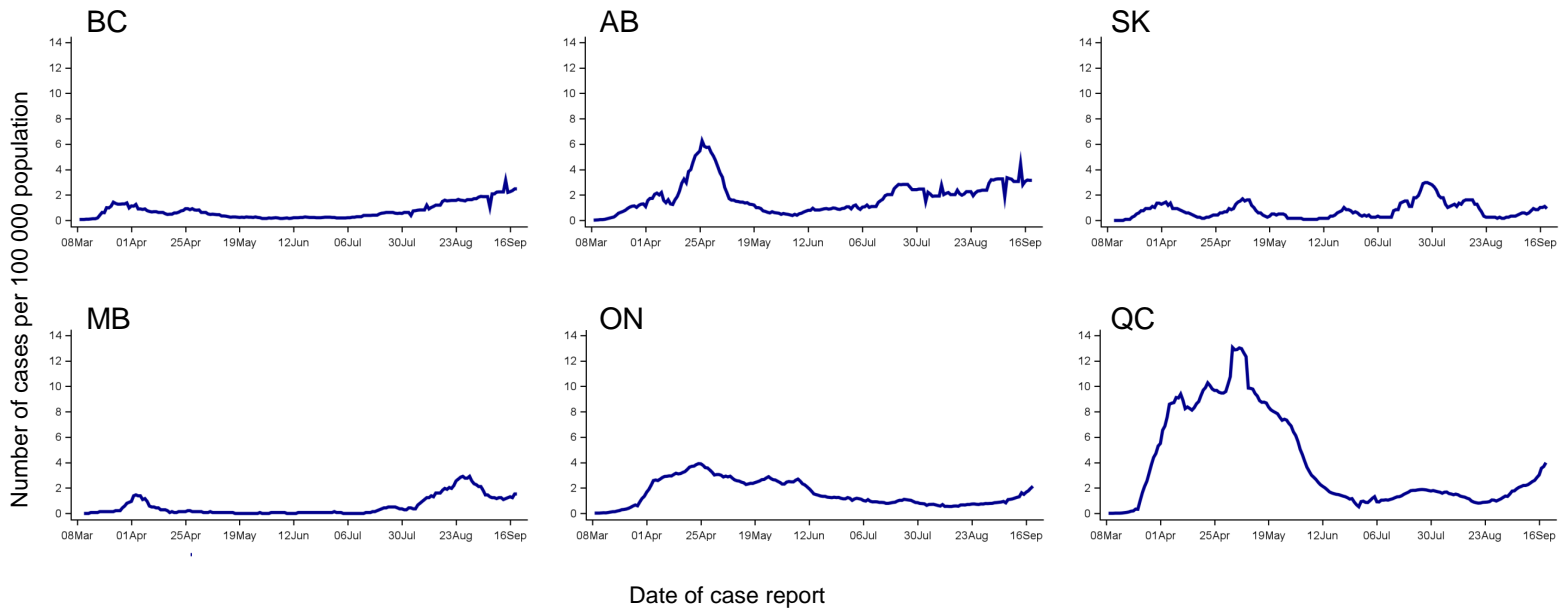
September 22, 2020

Epidemic growth is accelerating nationally

Daily COVID-19 cases by date of report, Canada

Data as of September 21, 2020

Incidence rates are increasing in provinces west of the Atlantic region

Number of cases per 100 000 population

Date of case report

Rt in Canada is trending above 1 nationally and in heavily impacted areas

Canada's Rt over time
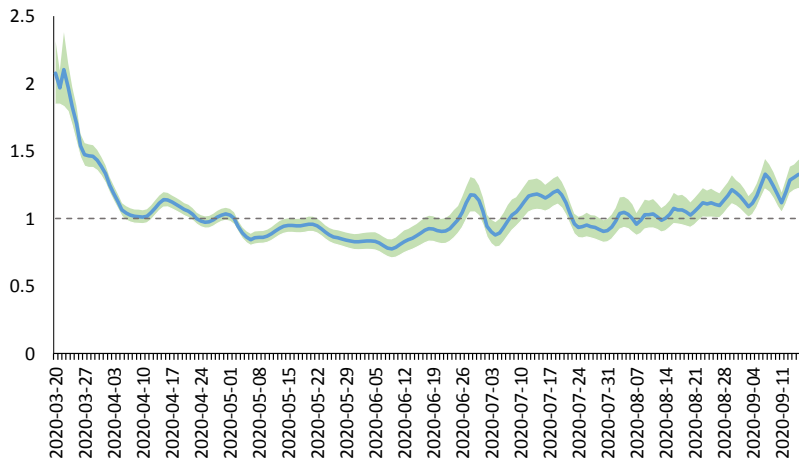
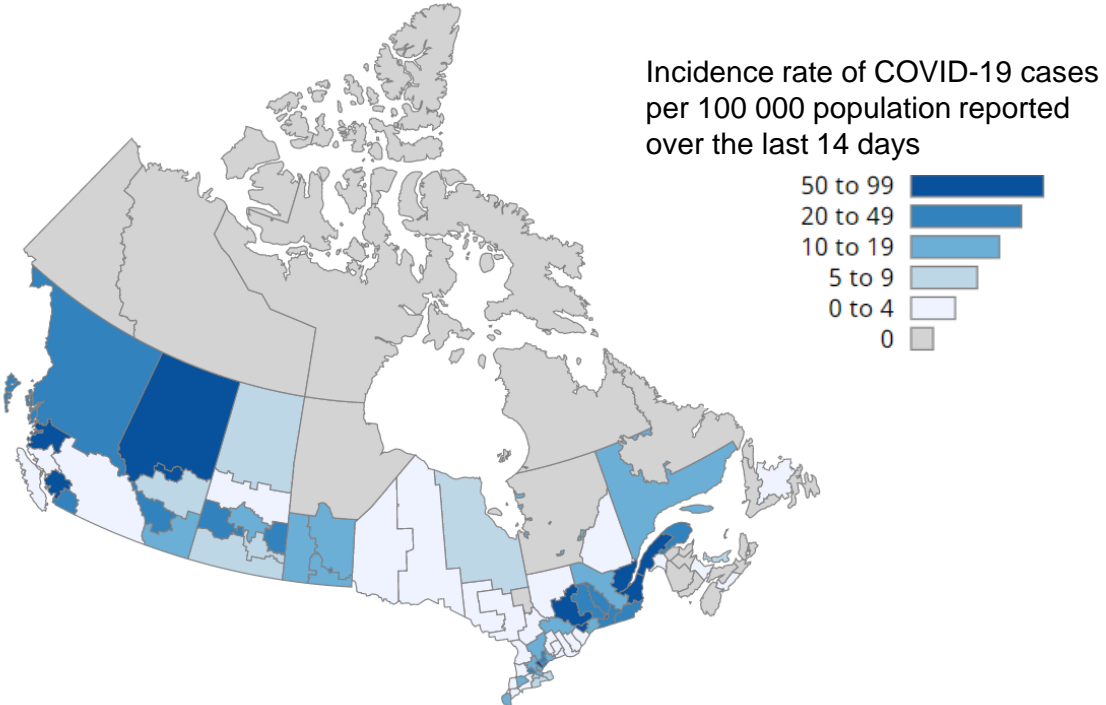*Rt,* or the time varying effective reproduction number, represents the average number of people infected by each case

When Rt is consistently >1, the epidemic is growing

Since mid-August, Canada's Rt has been increasing and has remained >1

Cases reported now reflect increasing transmission one to two weeks ago

Data as of September 16, 2020
Calculations are based on date of case report

COVID-19 activity continues to be uneven across the country

Incidence rate of COVID-19 cases per 100 000 population reported over the last 14 days

- 50 to 99
- 20 to 49
- 10 to 19
- 5 to 9
- 0 to 4
- 0

Data as of September 21, 2020
Note: Map only shows COVID-19 cases where health region had been attributed in source data
Data sources: COVID-19 Canada Open Data Working Group. Epidemiological Data from the COVID-19 Outbreak in Canada

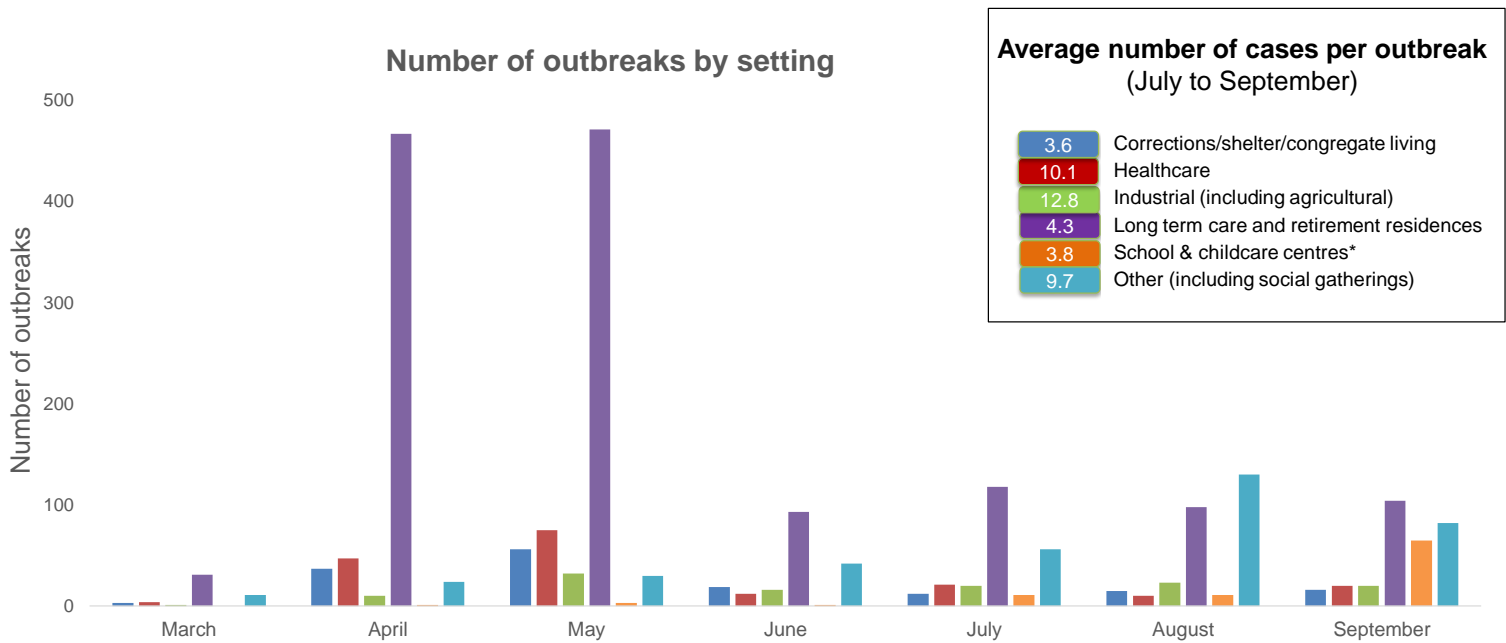# Incidence has remained highest among young adults since late June

Incidence of COVID-19 over time and by age group
(3-day moving average)
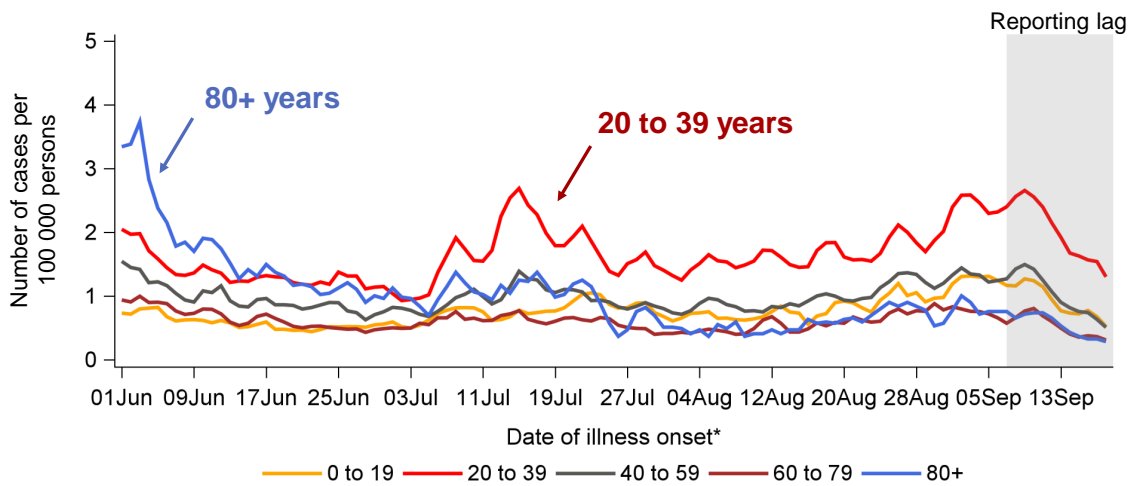
Data as of September 18, 2020
*First available of illness onset, specimen collection, laboratory test date; cases may not yet be reported in shaded area due to reporting lag

Rapid detection and response to outbreaks is key to controlling the rate and extent of COVID-19 spread

Number of outbreaks by setting

Average number of cases per outbreak
(July to September)

Value	Setting
3.6	Corrections/shelter/congregate living
10.1	Healthcare
12.8	Industrial (including agricultural)
4.3	Long term care and retirement residences
3.8	School & childcare centres*
9.7	Other (including social gatherings)

Data sources: Provincial/territorial websites and public information sources
*Note school outbreaks include only those with at least two cases.

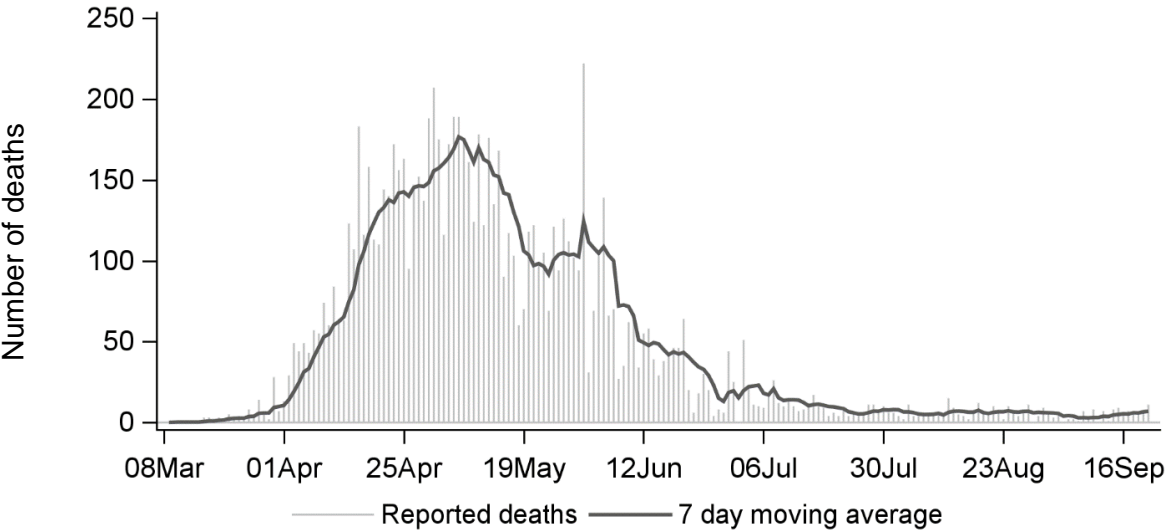# Hospitalizations lag behind increases in reported cases but show early signs of increase

Number of cases in hospital daily, per 100 000 population
1 July - 20 September 2020
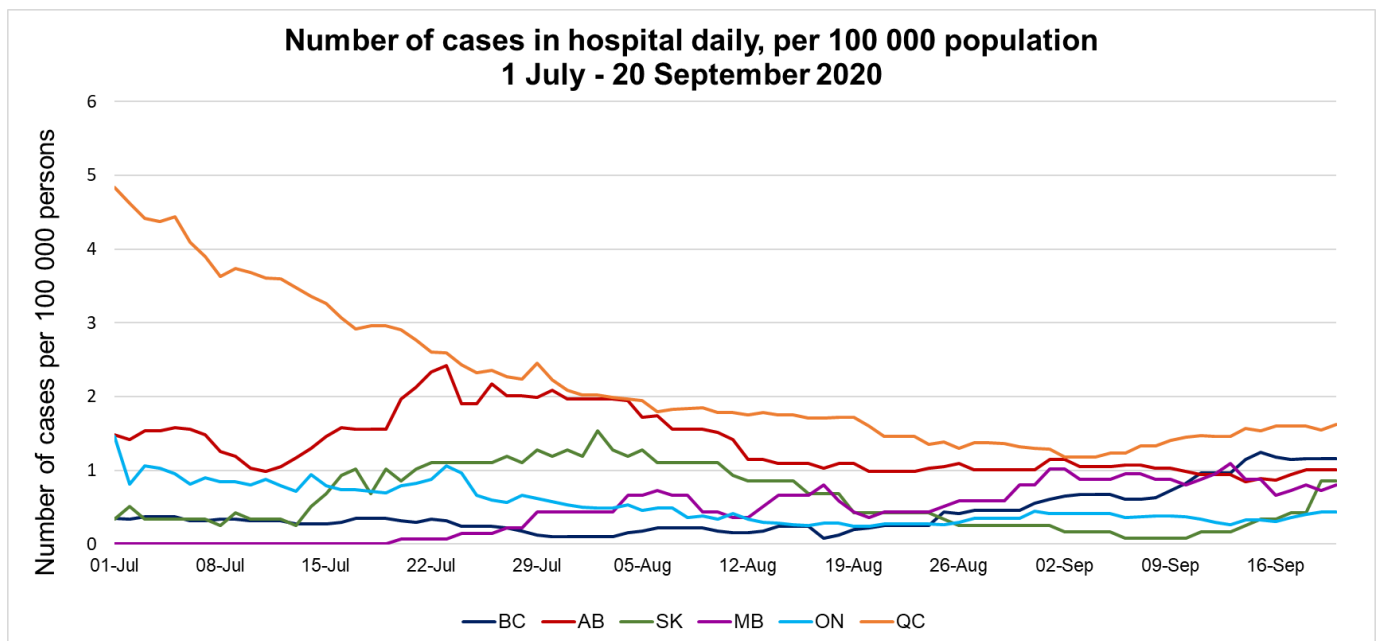
Data as of September 20, 2020
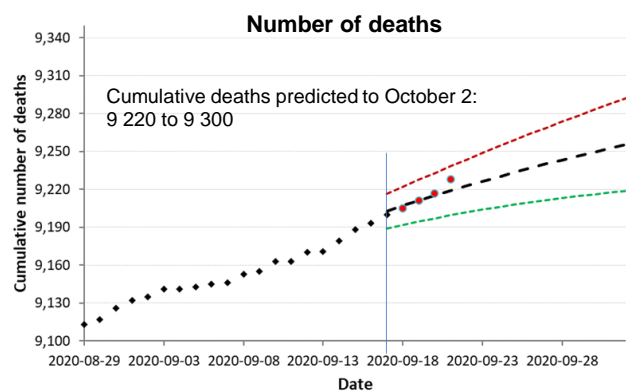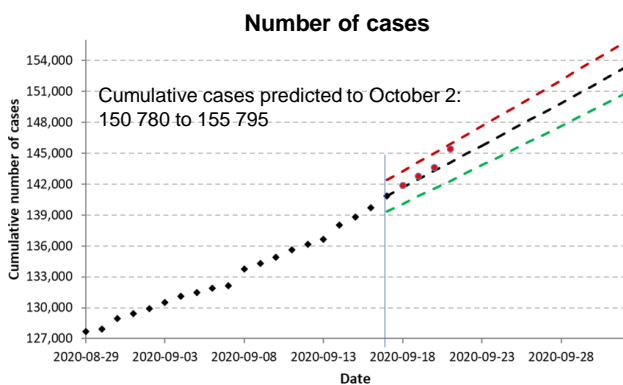Provinces with recent COVID-19 cases included

COVID-19-related deaths remain low

Daily COVID-19-related deaths by date of report, Canada

Data as of September 21, 2020

# Data driven models forecast short-term epidemic trajectory

Number of cases

Cumulative cases predicted to October 2:
150 780 to 155 795

(Y-axis: Cumulative number of cases — 127,000 to 154,000; X-axis: Date — 2020-08-29 to 2020-09-28)

Number of deaths

Cumulative deaths predicted to October 2:
9 220 to 9 300

(Y-axis: Cumulative number of deaths — 9,100 to 9,340; X-axis: Date — 2020-08-29 to 2020-09-28)

- ◆ Reported data by September 17
- – – Prediction to October 2
- – – Lower 95% confidence limit for the projected number for a given day
- – – Upper 95% confidence limit for the projected number for a given day
- ● Added data points since September 17 to validate the robustness of predictions

Extrapolation based on recent trends using a forecasting model (with ranges of uncertainty)
When the cases and deaths reported are between the red and green dotted lines, they are within the forecasted range of expected cases and deaths.
More importantly, if reported data points since September 17 fall outside these limits, the model detects unexpected signals that require further epidemiologic investigation.
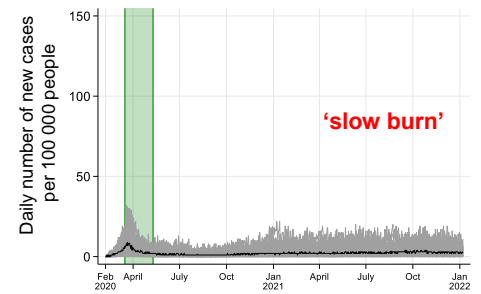
Public health authorities can't do this alone; the actions of individual Canadians are key to keeping COVID-19 to manageable levels
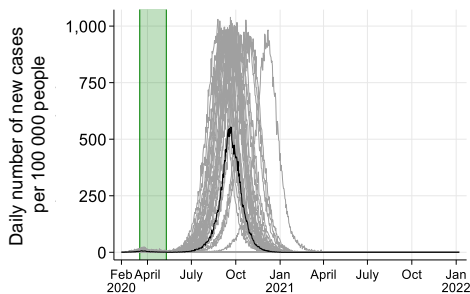
Minimal control
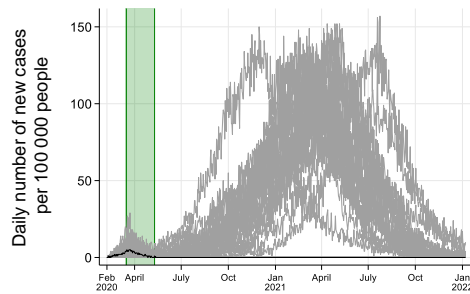
Enhanced case detection + contact tracing

'slow burn'

Case detection + contact tracing + individual actions

**To keep COVID-19 transmission at low levels or a 'slow burn' we need both:**

Public health authorities
- detect cases and trace contacts
- monitor case/contact isolation and quarantine
- manage risk of importation
- detect and respond to outbreaks

Individual Canadians
- wash hands frequently
- maintain physical distance
- wear a mask when distancing is difficult
- stay home if experiencing any symptoms, even if mild

Long range forecast - Canada is at a crossroads and individual action to reduce contact rates will decide our path
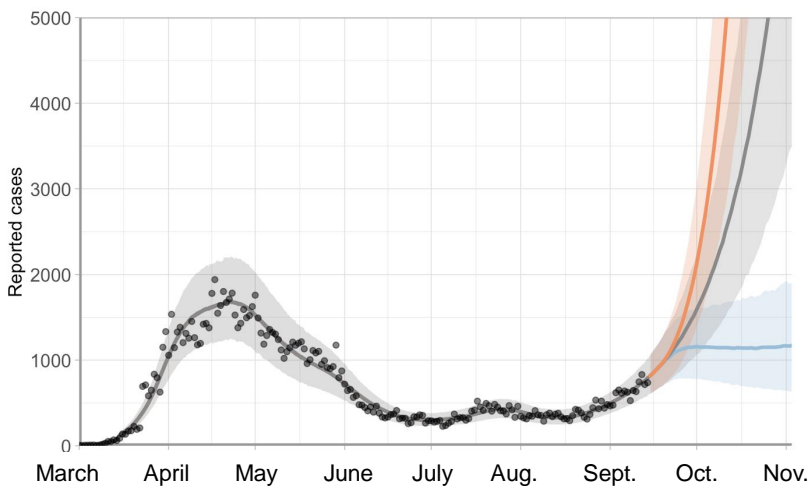
- If we **maintain** our current rate of contacts – the epidemic is forecast to resurge: **Grey line**

- If we **increase** our current rate of contacts – the epidemic is forecast to resurge faster and stronger: **Orange line**

- If we **decrease** our current rate of contacts – the epidemic is forecast to come under control in most locations: **Blue line**

Experience of other countries shows resurgence can exceed the initial wave

Daily COVID-19 cases per 100 000 population
(7-day moving average)
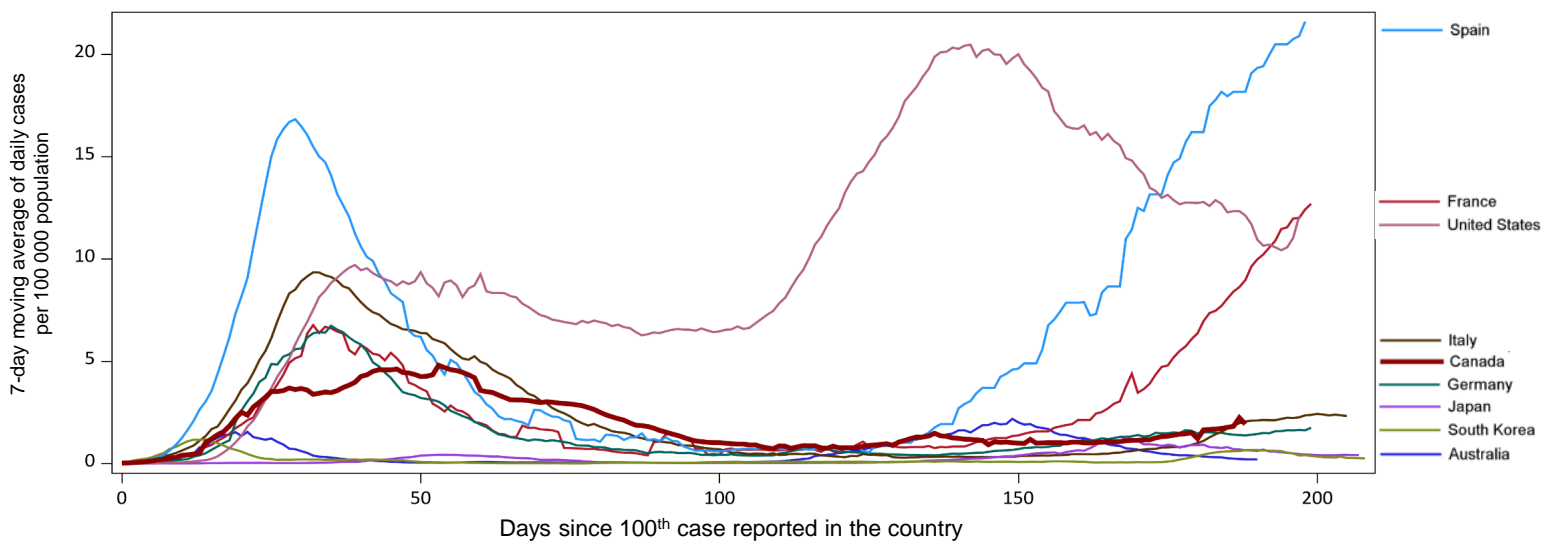
Data as of September 16, 2020

Fall/winter with COVID-19 means being more vigilant of risks and precautions

- **With rising case counts and activities shifting indoors, we need to be even more vigilant.**

- Keeping COVID-19 to manageable levels is **a shared responsibility** to protect our health, social and economic wellbeing

- We can all take individual action to slow the spread of COVID-19 by considering our risks and layering on precautions →

Download COVID Alert today

COVID Alert is Canada's free exposure notification app.

ABCs of COVID-19 control

Quick-Check the risks by considering:

A. your personal risks and household/close contacts risk factors

B. risks posed by the setting and/or activity

Take action to reduce the spread of COVID-19:

C. Layer on precautions:
- Stay home and get tested if you have symptoms
- Maintain public health practices: physical distancing, handwashing, wearing a non-medical mask/face covering as appropriate
- Limit time spent in settings/situations that have not implemented measures to reduce the risk of exposure

Read more in "COVID-19 information and resources: reducing your risks for infection and spreading the virus", available online at:
https://www.canada.ca/en/public-health/news/2020/07/information-and-resources-on-covid-19-epidemiology-and-reducing-your-risks-for-infection-and-spreading-the-virus.html

Slide Notes

Slide 6:

Slide 11: