



Public Health
Agency of Canada

Agence de la santé
publique du Canada

Canada

Update on COVID-19 in Canada: Epidemiology and Modelling

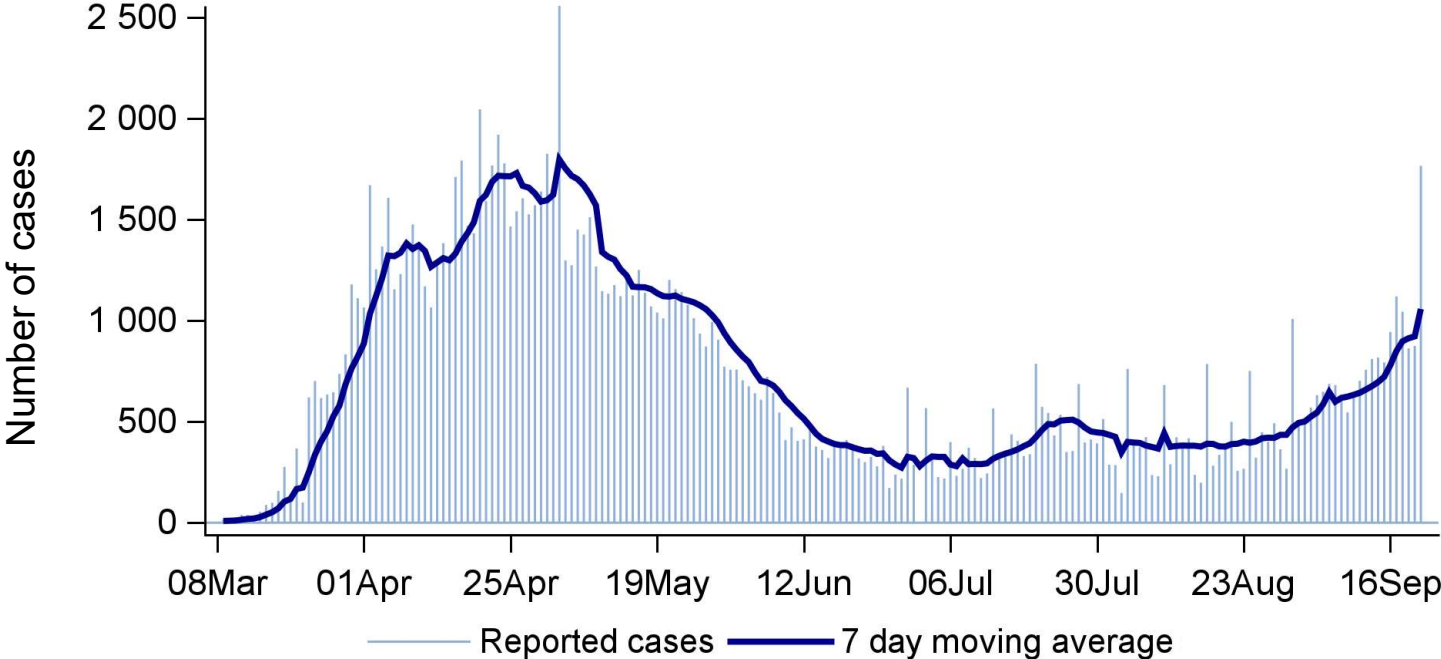
September 22, 2020

PROTECTING AND EMPOWERING CANADIANS
TO IMPROVE THEIR HEALTH



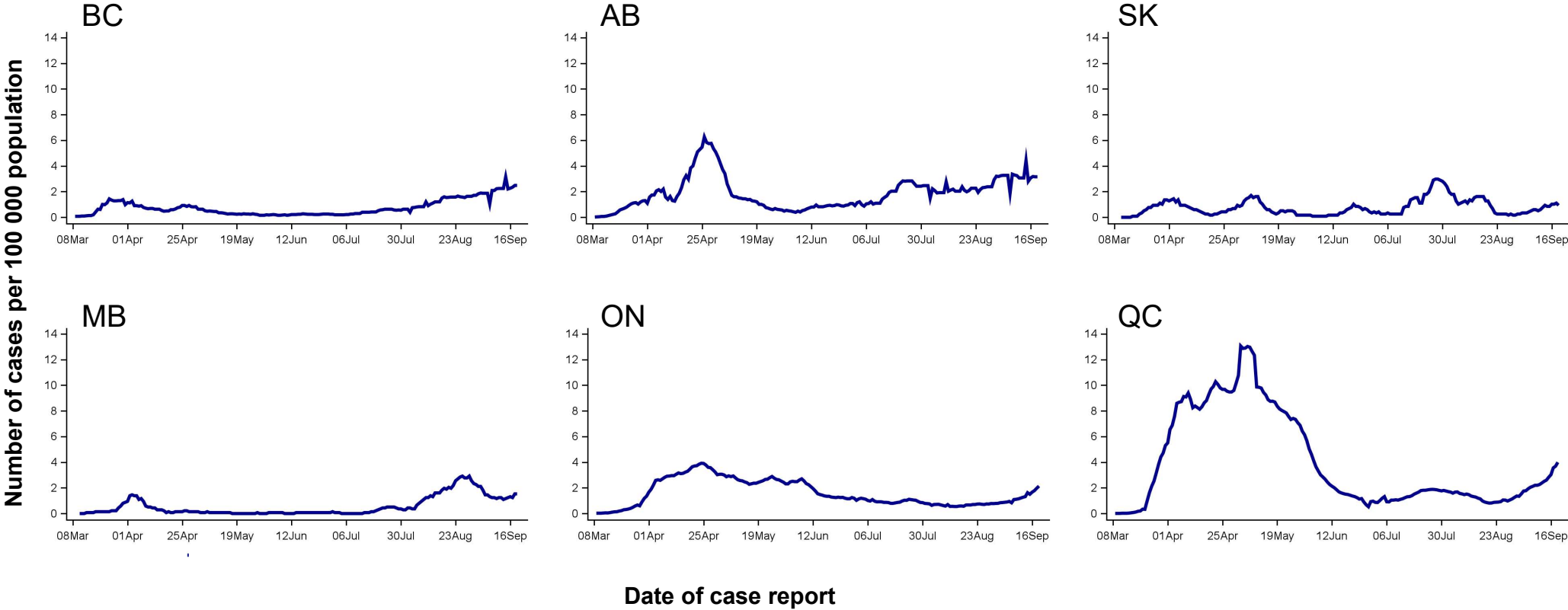
Epidemic growth is accelerating nationally

Daily COVID-19 cases by date of report, Canada



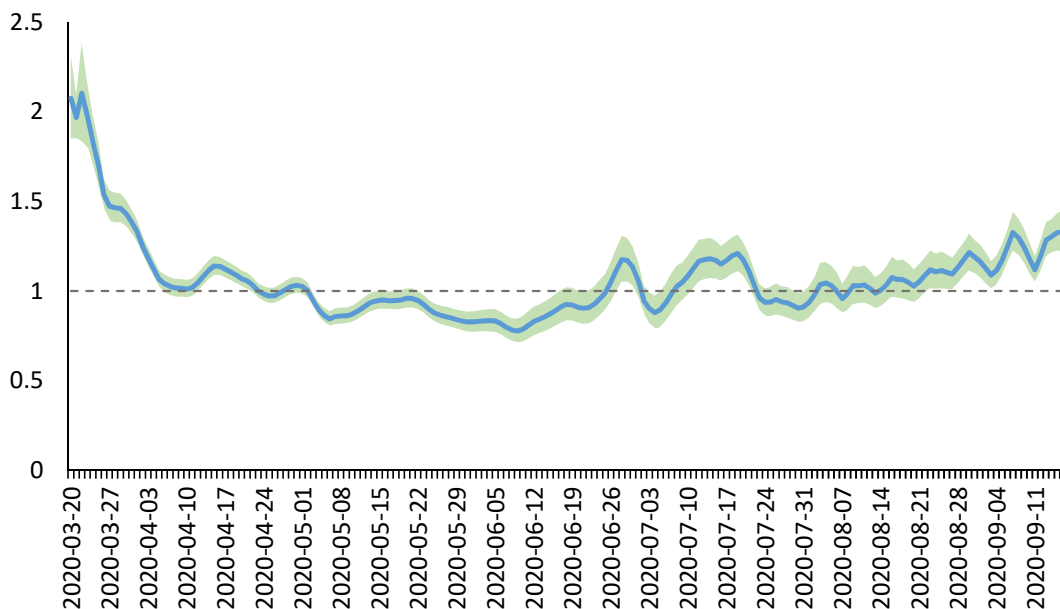
Data as of September 21, 2020

Incidence rates are increasing in provinces west of the Atlantic region



***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

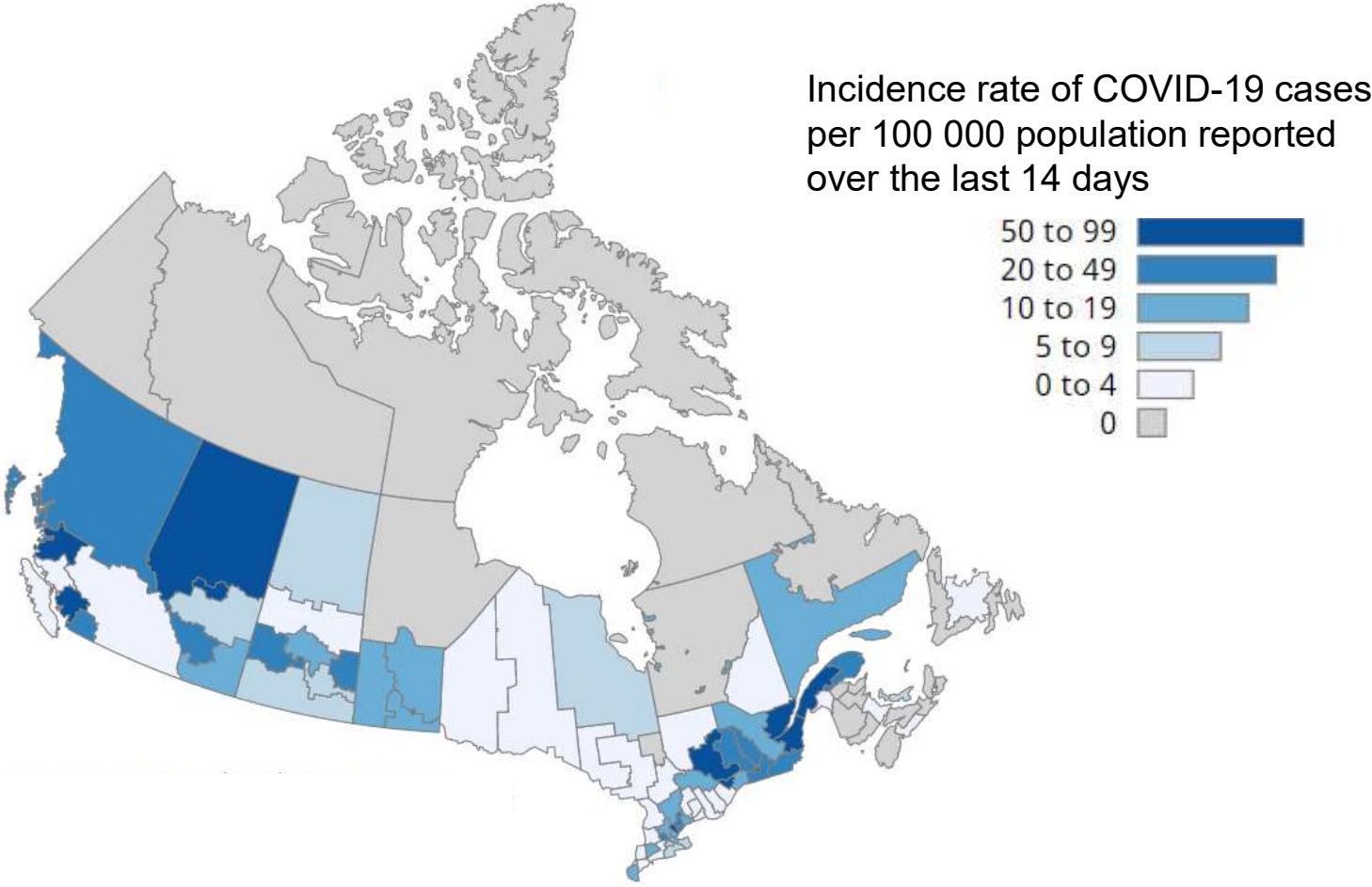
When *Rt* is consistently >1, the epidemic is growing

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

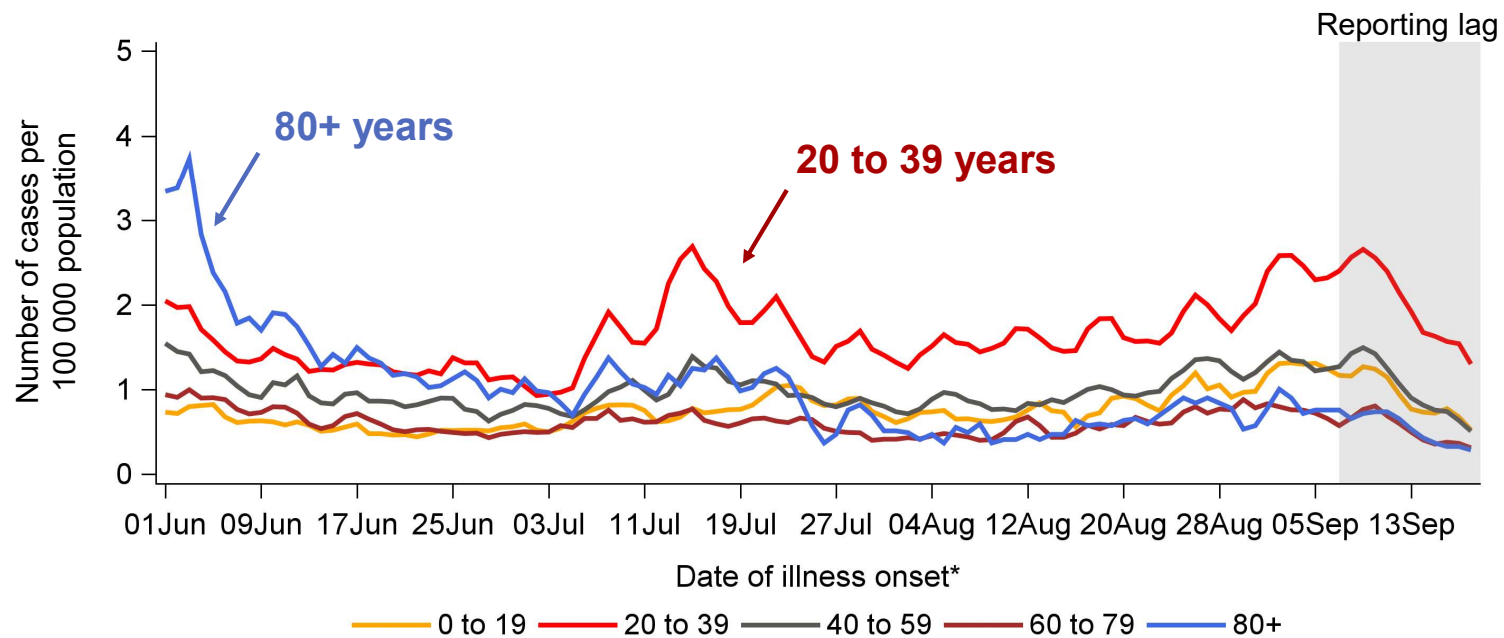
COVID-19 activity continues to be uneven across the country



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

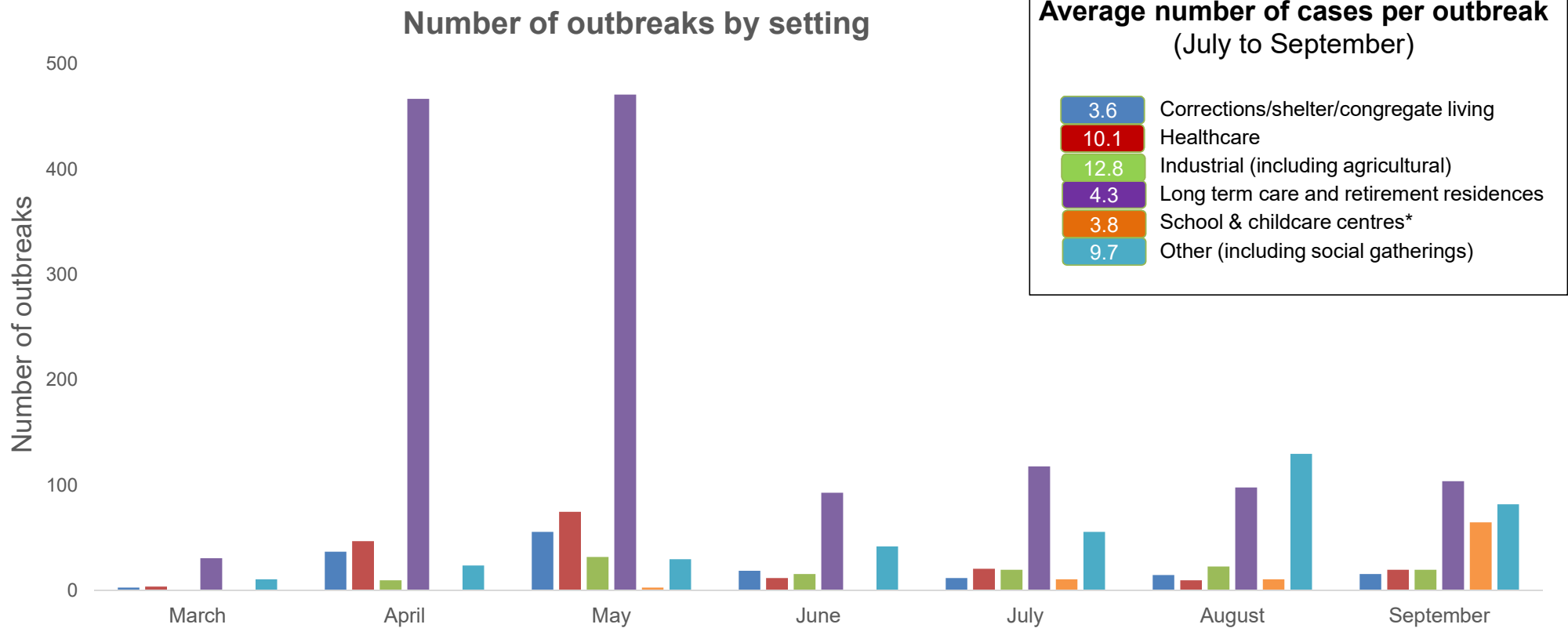
Incidence of COVID-19 over time and by age group (3-day moving average)



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

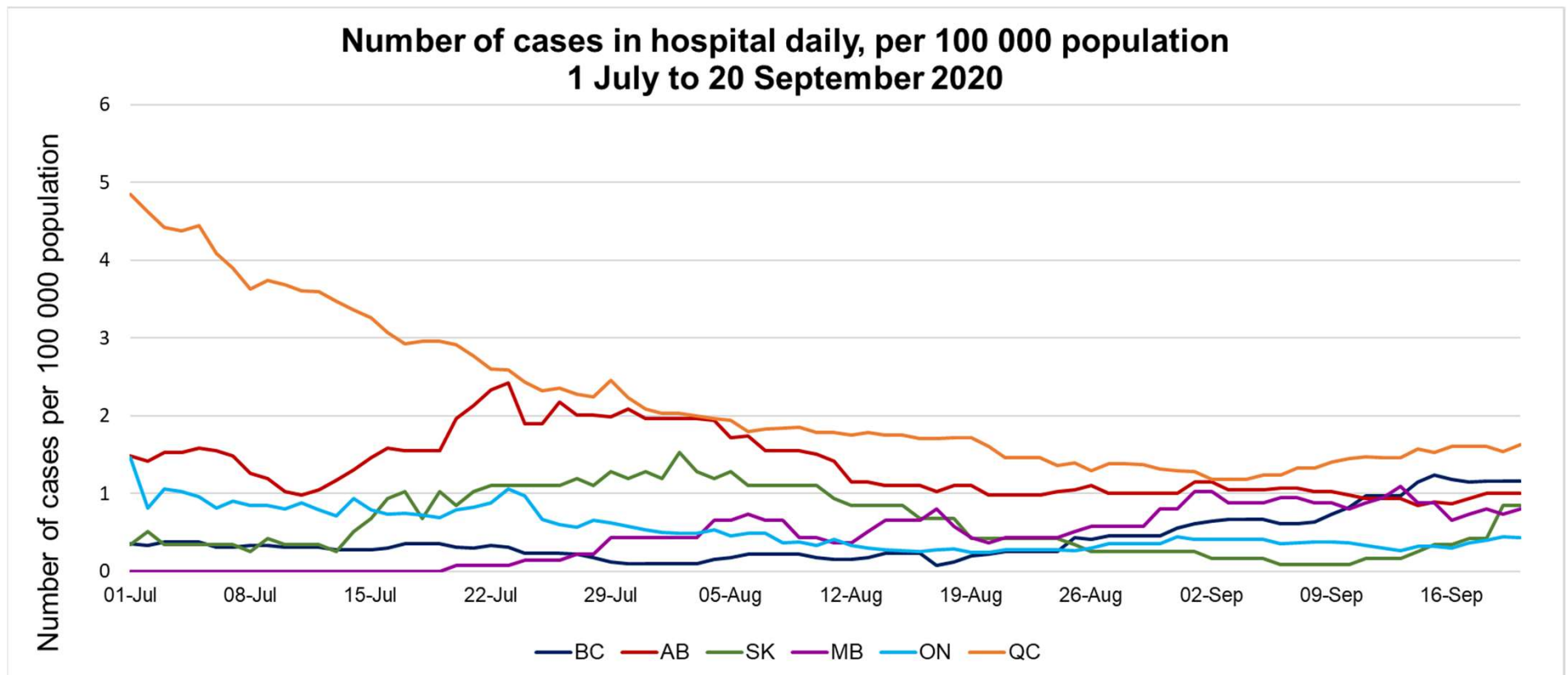
Rapid detection and response to outbreaks is key to controlling the rate and extent of COVID-19 spread



Data sources: Provincial/territorial websites and public information sources

*Note school outbreaks include only those with at least two cases.

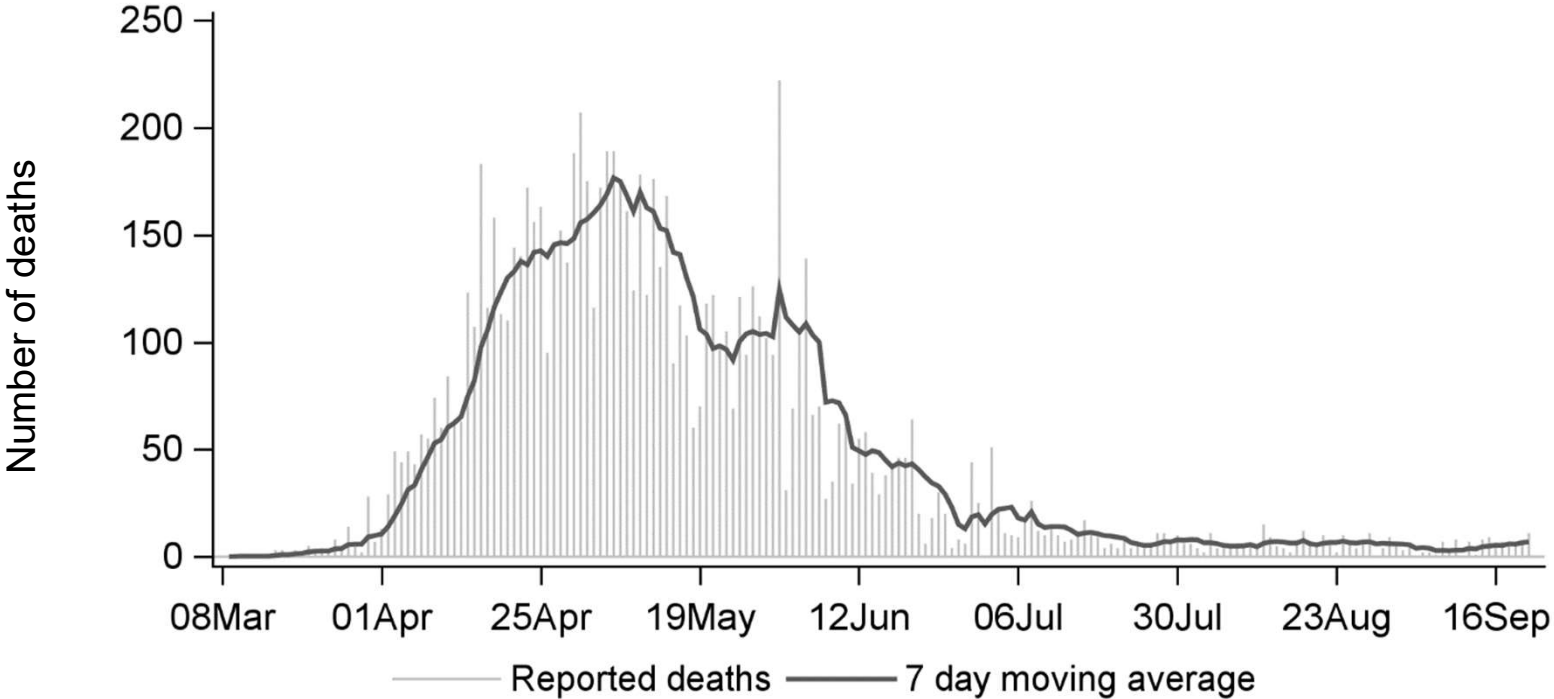
Hospitalizations lag behind increases in reported cases but show early signs of increase



Data as of September 20, 2020
Provinces with recent COVID-19 cases included

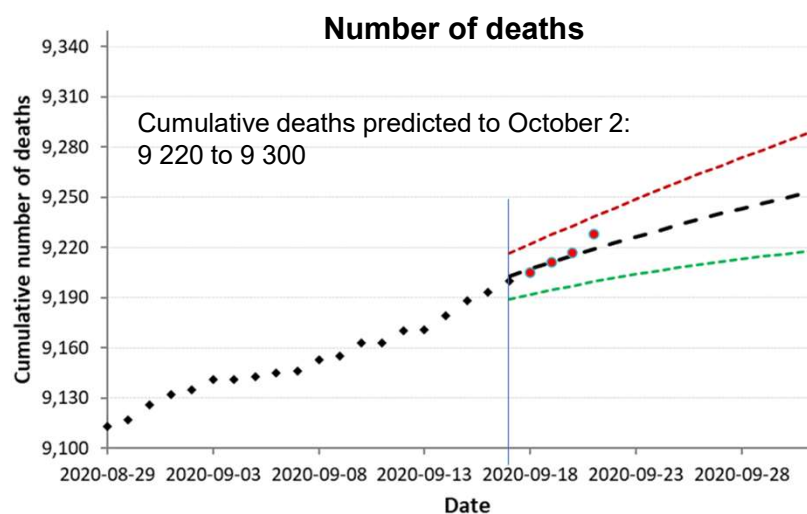
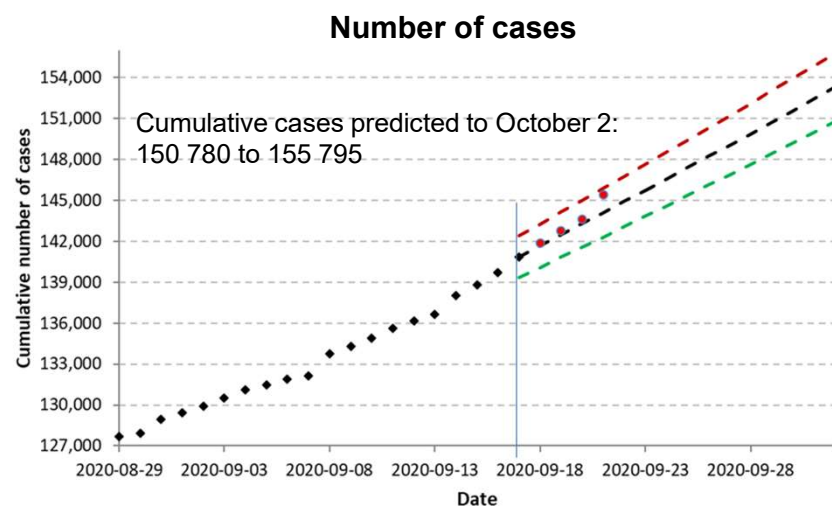
COVID-19-related deaths remain low

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



Data as of September 21, 2020

Data driven models forecast short-term epidemic trajectory



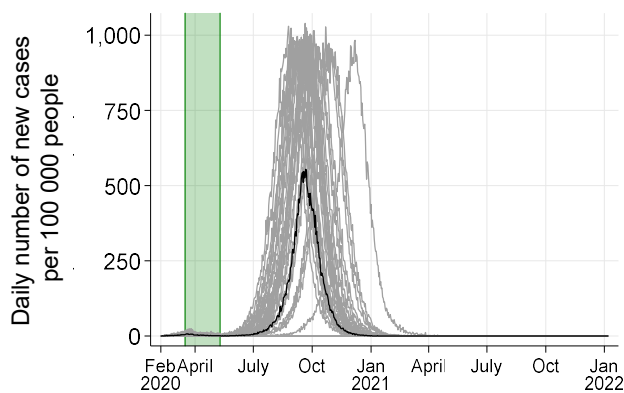
- ◆ Reported data by September 17
- - Prediction to October 2
- - Lower 95% confidence limit for the projected number for a given day
- - Upper 95% confidence limit for the projected number for a given day
- Added data points since September 17 to validate the robustness of predictions

Extrapolation based on recent trends using a forecasting model (with ranges of uncertainty)

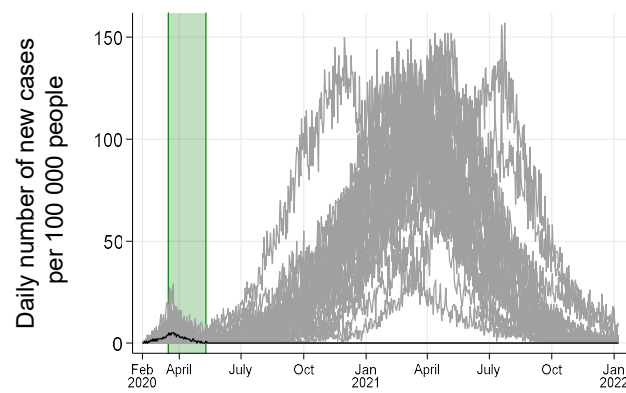
When the cases and deaths reported are between the red and green dotted lines, they are within the forecasted range of expected cases and deaths.

More importantly, if reported data points since September 17 fall outside these limits, the model detects unexpected signals that require further epidemiologic investigation.

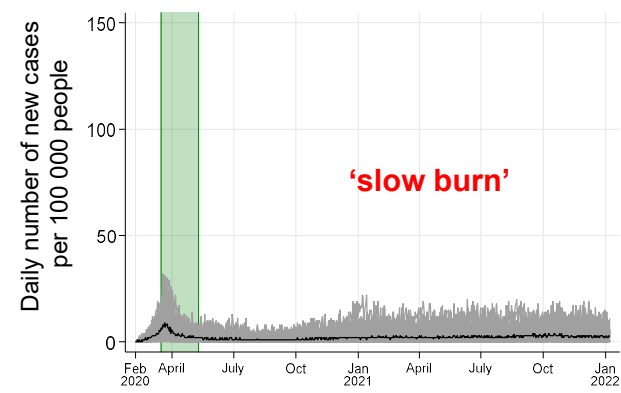
Public health authorities can't do this alone; the actions of individual Canadians are key to keeping COVID-19 to manageable levels



Minimal control



**Enhanced case detection
+ contact tracing**



**Case detection + contact tracing +
individual actions**

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

Public health authorities

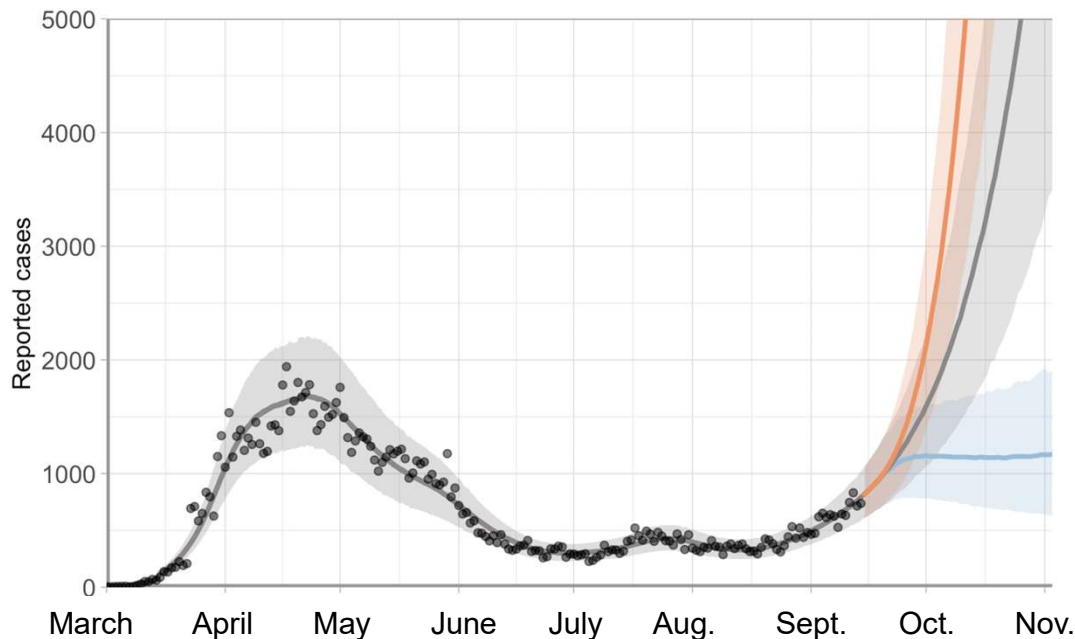
- detect cases and trace contacts
- monitor case/contact isolation and quarantine
- manage risk of importation
- detect and respond to outbreaks

Individual Canadians

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

Ng V, Fazil A, Waddell LA, Bancej C, Turgeon P, Otten A, Atchessi N, Ogden NH. 2020. Projected effects of nonpharmaceutical public health interventions to prevent resurgence of SARS-CoV-2 transmission in Canada. CMAJ. 192(37):E1053-E1064. <https://www.cmaj.ca/content/192/37/E1053.long>

Long range forecast - Canada is at a crossroads and individual action to reduce contact rates will decide our path

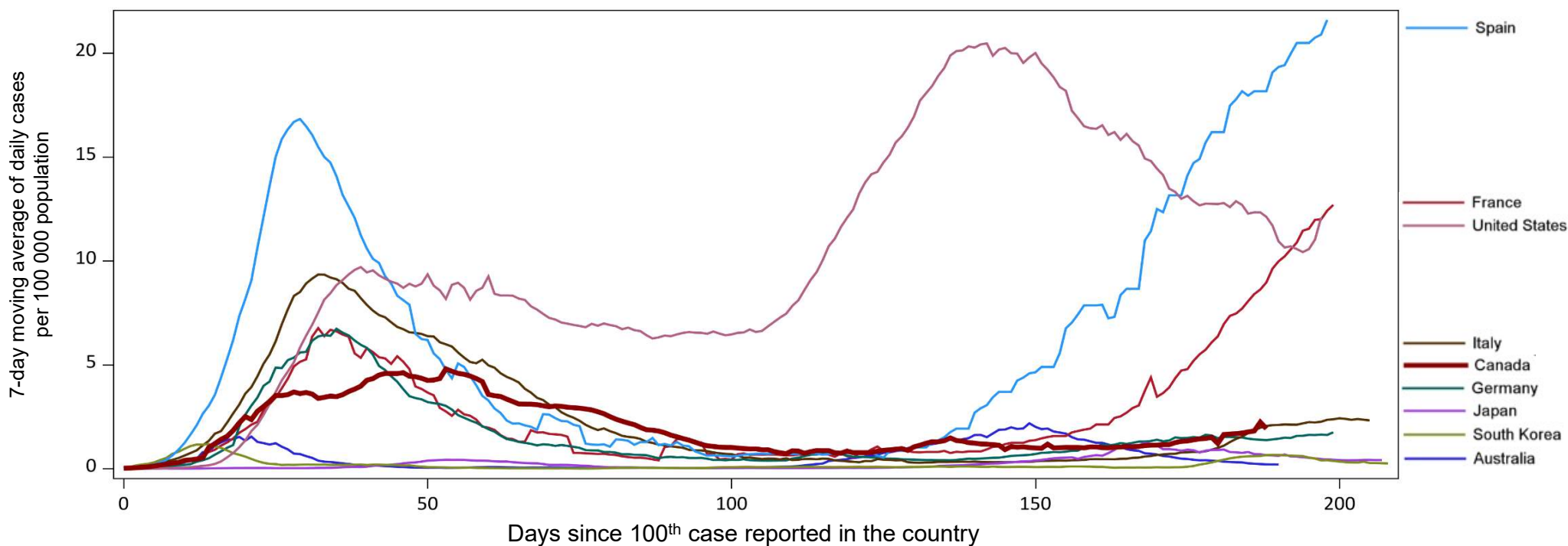


- If we **maintain** our current rate of contacts – the epidemic is forecast to resurge: **Grey line**
- If we **increase** our current rate of contacts – the epidemic is forecast to resurge faster and stronger: **Orange line**
- If we **decrease** our current rate of contacts – the epidemic is forecast to come under control in most locations: **Blue line**

Methods: Anderson SC, Edwards AM, Yerlanov M, Mulberry N, Stockdale J, Iyaniwura SA, Falcao RC, Otterstatter MC, Irvine MA, Janjua NZ, Coombs D, Colijn C. 2020. Estimating the impact of COVID-19 control measures using a Bayesian model of physical distancing. <https://www.medrxiv.org/content/10.1101/2020.04.17.20070086v1>

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.

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>

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