# 1 EXECUTIVE SUMMARY AND CONTEXT

This is the June 17, 2021 overview of findings of modelling studies conducted and collated by the PHAC Modelling Group. Summaries below are hyperlinked to the related section of the report for full details.

## CURRENT SITUATIONAL AWARENESS

### Domestic

*The effective reproduction number (Rt)* for Canada on June 5, 2021, estimated using date of illness onset, was 0.76. There has been an increasing trend in *Rt* in most provinces from early February to early April. Nationally, *Rt* began to decrease in early April and on June 5, *Rt* was <1 in all provinces.

*The short-range statistical forecast* for Canada up to June 24, 2021 is for:

- 1,412,859 cumulative cases (range: 1,407,334 to 1,418,324); and
- 26,198 cumulative deaths (range 26,104 to 26,288) by that date.

Overall, case incidence is projected to decrease by 29% over the next week in Canada. Mean case incidence is projected to decrease throughout the projection period in all modelled provinces, except for Alberta, where case incidence remains steady. The incidence of new deaths is projected to remain constant in Canada.

*The Nowcast of the force of infection* suggests the epidemic is declining and it will remain at a low level in all provinces, except Manitoba, where the force of infection is forecast to plateau at a moderate level.

*The long-range dynamic modelling forecast (Simon Fraser University model)* for Canada and each province, suggests the trajectory is towards a decline in the epidemic over the coming two months, with approximately 500 daily cases by mid-July without further lifting of restrictions, or with further lifting that increases contact rates by 25%. These forecasts do not include increasing impacts of the B.1.617.2 (delta) variant of concern (VOC) on transmission.

*The long-range dynamic modelling forecast (PHAC-McMaster University model)* suggests that nationally and in each province, the trajectory is towards a decline in the epidemic over the coming 2 months with initial stages of re-opening, with approximately 500 daily cases by mid-July. These forecasts do include increasing impacts of the delta VOC on transmission.

### International

*Importation risk modelling* for the week of June 6 to June 12, 2021, suggests that an estimated 688 people with COVID-19 came to Canada (235 air travellers and 453 land travellers), primarily from the United States of America, Colombia, and the Philippines. From June 6 to June 12, 2021, the estimated percentages of cases that may be variants of concern or interest are 19.8% B.1.1.7 (alpha), 3.0% P.1 (gamma), 1.5% B.1.351 (beta), and 1.0% B.1.617.2 (delta).

*Assessment of the impact of interventions* on the COVID-19 epidemic in Canada and other countries using the Oxford University stringency index:

- Canada's stringency index was at 75 for almost two months, but recently fell to the current value of 74. During this time, the weekly rolling average of daily cases has dropped by 86% from a peak of >23/100,000 population in mid-April, 2021 to 3.3/100,000 at present.
- Re-opening plans in many Canadian provinces and territories have resulted in recent decreases in the stringency index. It is too early to assess if vaccination levels are sufficient to account for decreasing stringency.

# DYNAMIC MODELLING

*The PHAC agent-based model (ABM)* explored the impacts of spread of the delta VOC on reopening Canada during vaccine rollout, using a two-step approach for lifting public health measures: lifting restrictive closures and reopening the Canadian border in mid-July, followed by lifting of personal physical distancing in early September. Three strategies to control impacts of the delta VOC were explored; expediting the rollout of the second dose of vaccine, increasing vaccine acceptance and enhancing public health measures (case detection and isolation and contact tracing and quarantine). In simulations in which second dose rollout was expedited, there were fewer severe cases and deaths, but this strategy did not prevent the delta VOC-driven resurgence when Canada reopens. However, in simulations with increased vaccine acceptance rates and enhanced test-trace-isolate measures a delta VOC-driven resurgence was prevented, most markedly when both strategies were combined.