Update on COVID-19 Projections

Science Advisory and Modelling Consensus Tables

April 1, 2021
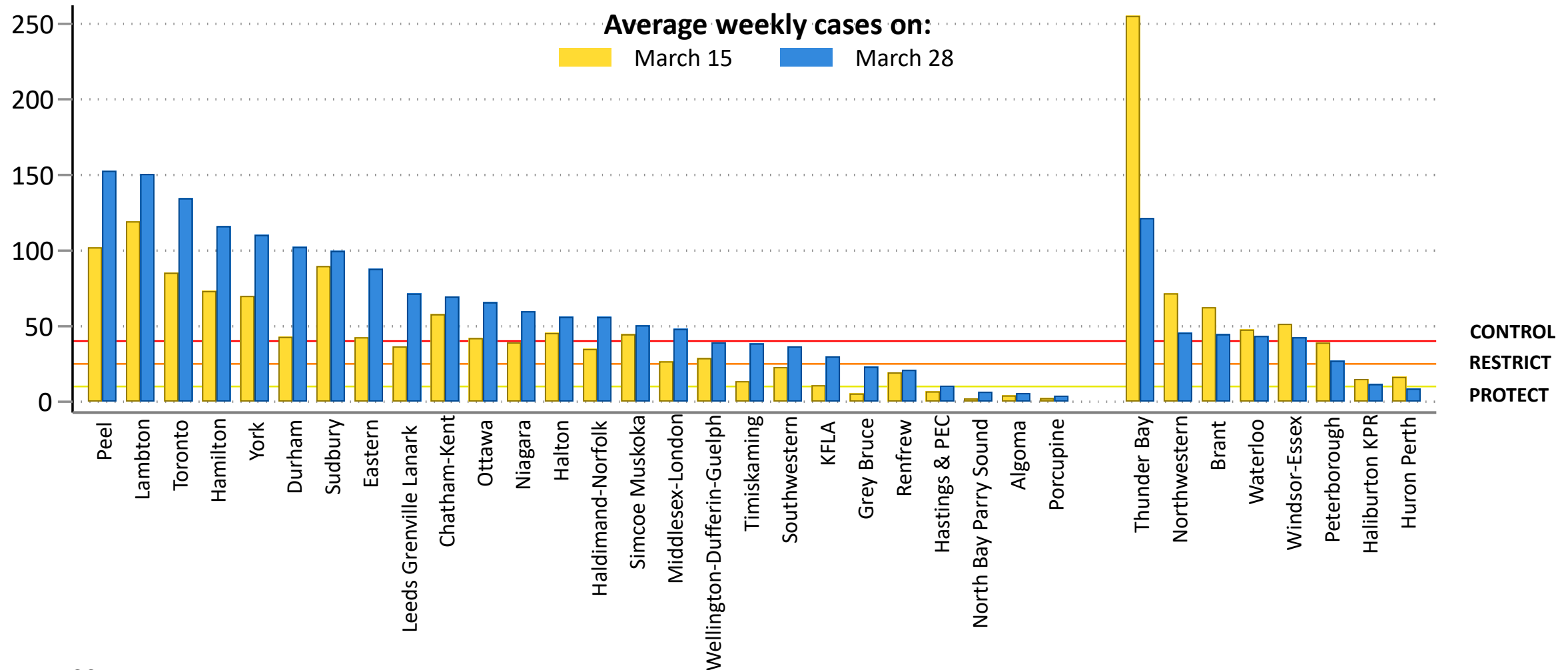
Key Findings

- The **third wave** is here and being **driven by variants of concern**.

- **Younger Ontarians are ending up in hospital.** Risk of ICU admission is **2 x higher** and risk of death is **1.5 x higher** for the B.1.1.7 variant.

- COVID-19 **threatens health system ability to deal with regular ICU admissions** and the ability to care for all patients.

- Vaccination is **not reaching the highest risk communities**, delaying its impact as an effective strategy.

- School disruptions have a significant and highly inequitable **impact** on students, parents and society. Further disruptions should be minimized.

- Stay-at-home orders will control the surge, protect access to care, and increase the chance of the summer Ontarians want.

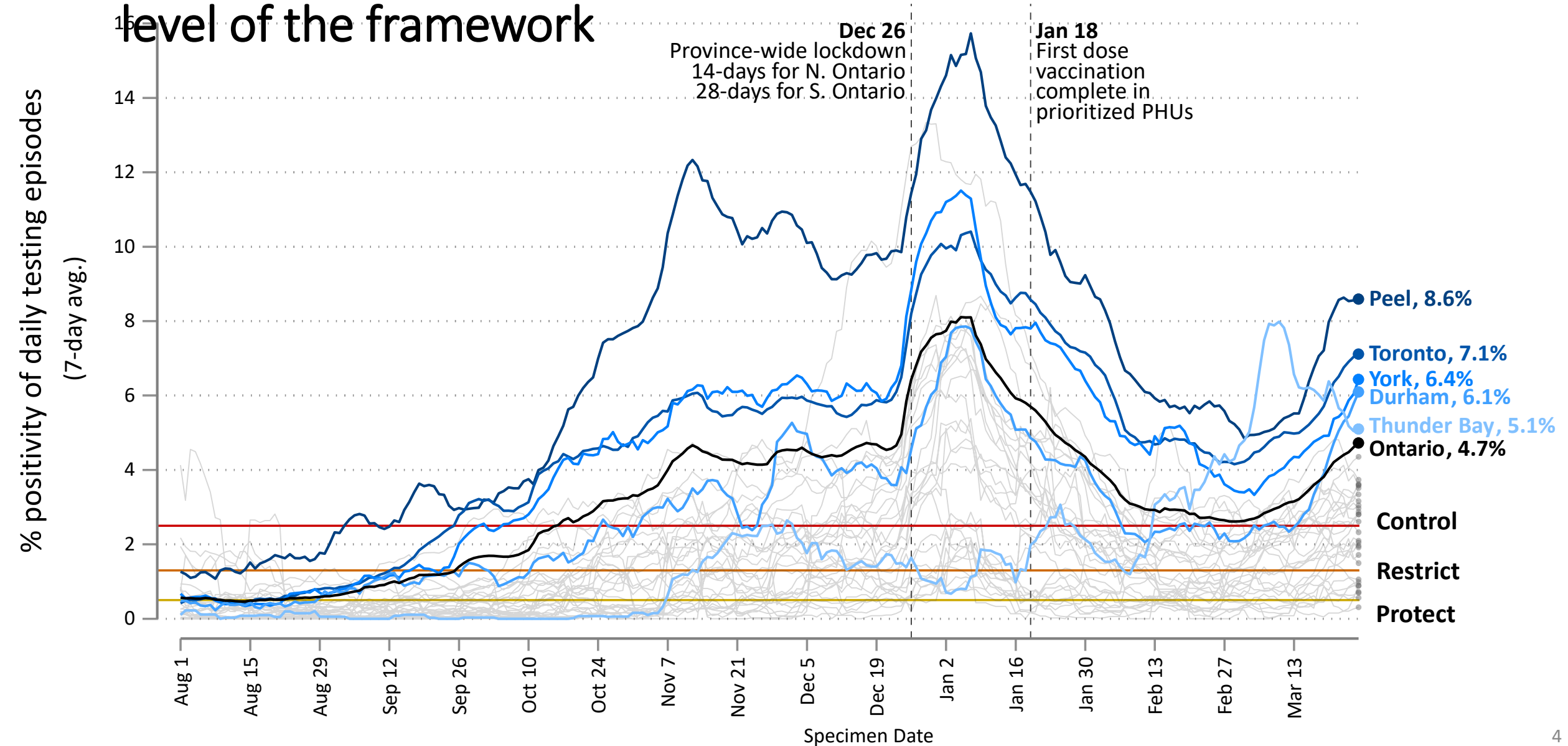# Cases have increased and are above the second highest level of the framework in most Public Health Units

Weekly new cases per 100,000 residents

Average weekly cases on:
- March 15 (yellow)
- March 28 (blue)

CONTROL
RESTRICT
PROTECT

Public Health Units (left to right): Peel, Lambton, Toronto, Hamilton, York, Durham, Sudbury, Eastern, Leeds Grenville Lanark, Chatham-Kent, Ottawa, Niagara, Halton, Haldimand-Norfolk, Simcoe Muskoka, Middlesex-London, Wellington-Dufferin-Guelph, Timiskaming, Southwestern, KFLA, Grey Bruce, Renfrew, Hastings & PEC, North Bay Parry Sound, Algoma, Porcupine, Thunder Bay, Northwestern, Brant, Waterloo, Windsor-Essex, Peterborough, Haliburton KPR, Huron Perth
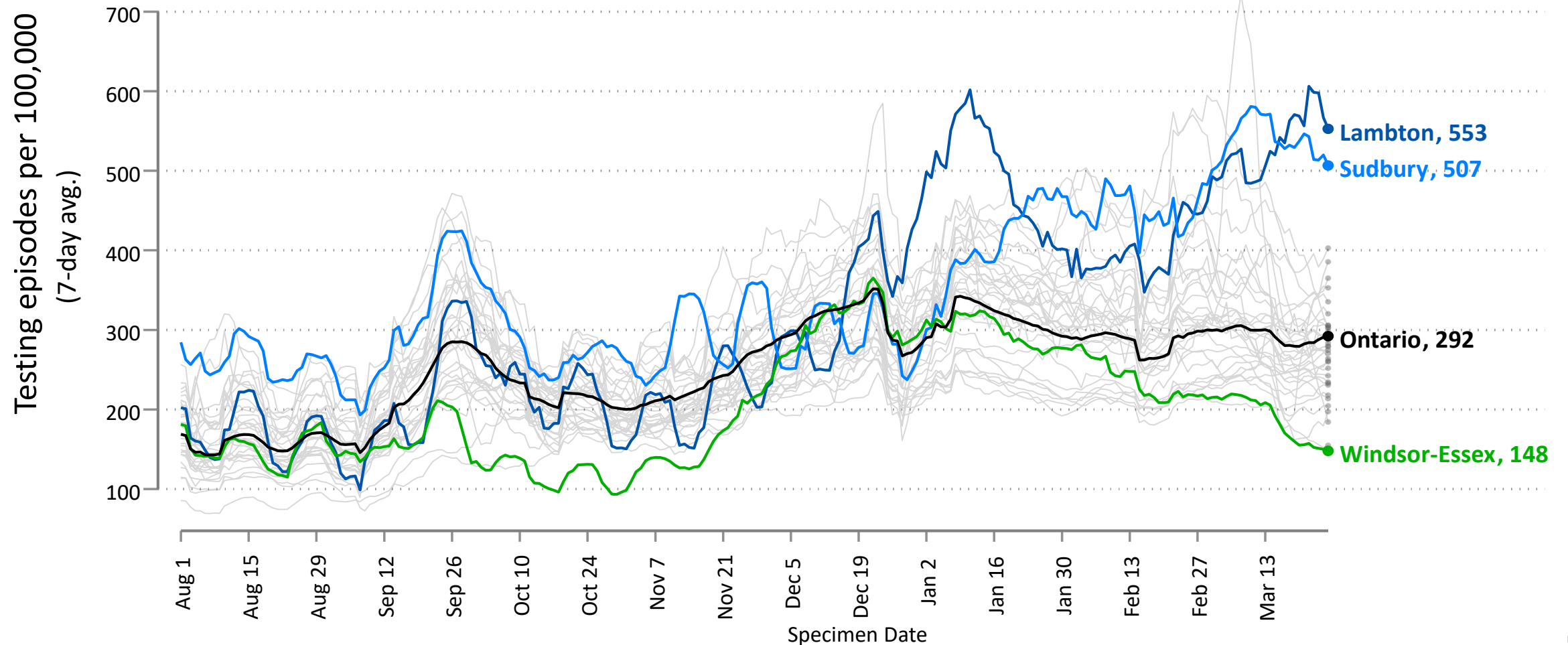
Data source: CCM
Data note: Data for the most recent day have been censored to account for reporting delays

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Testing % positivity has increased and is above the second highest level of the framework

Dec 26
Province-wide lockdown
14-days for N. Ontario
28-days for S. Ontario

Jan 18
First dose
vaccination
complete in
prioritized PHUs

% positivity of daily testing episodes
(7-day avg.)

- Peel, 8.6%
- Toronto, 7.1%
- York, 6.4%
- Durham, 6.1%
- Thunder Bay, 5.1%
- Ontario, 4.7%

Control

Restrict

Protect

Specimen Date

Aug 1 · Aug 15 · Aug 29 · Sep 12 · Sep 26 · Oct 10 · Oct 24 · Nov 7 · Nov 21 · Dec 5 · Dec 19 · Jan 2 · Jan 16 · Jan 30 · Feb 13 · Feb 27 · Mar 13

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Data source: Ontario Laboratory Information System (OLIS), data up to March 26

Testing rates are flat so case growth is not a result of more testing

Testing episodes per 100,000 (7-day avg.)

Lambton, 553
Sudbury, 507
Ontario, 292
Windsor-Essex, 148

Specimen Date

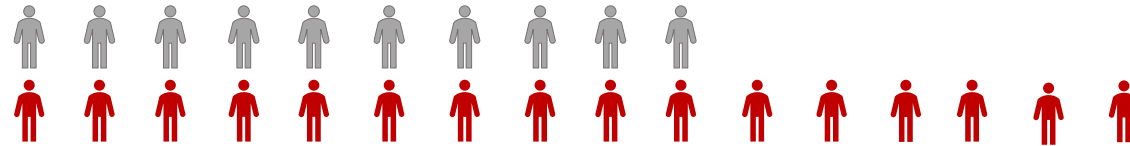**Data source:** Ontario Laboratory Information System (OLIS), data up to March 26

Cases are increasing. Most new cases are variants of concern.
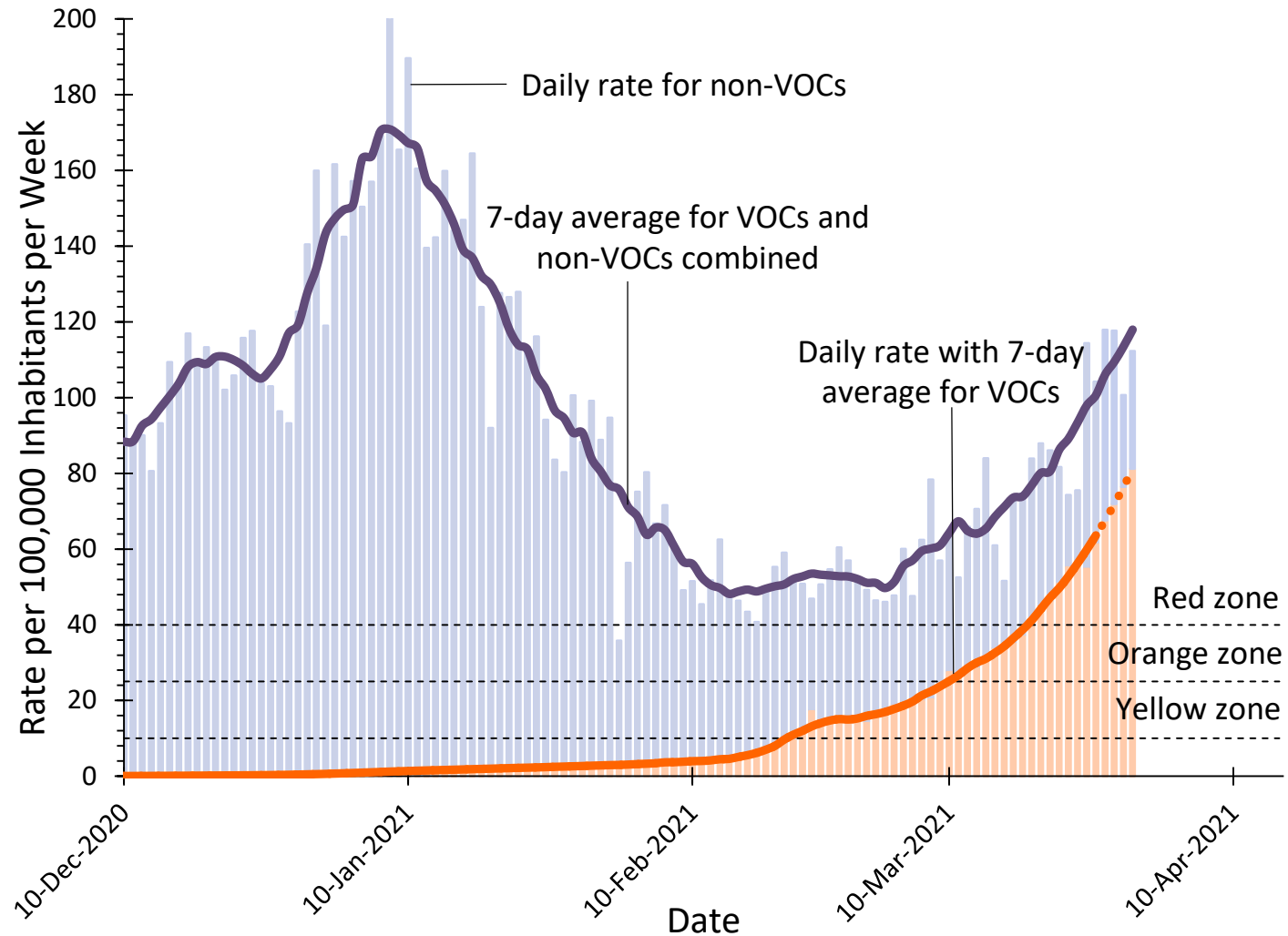
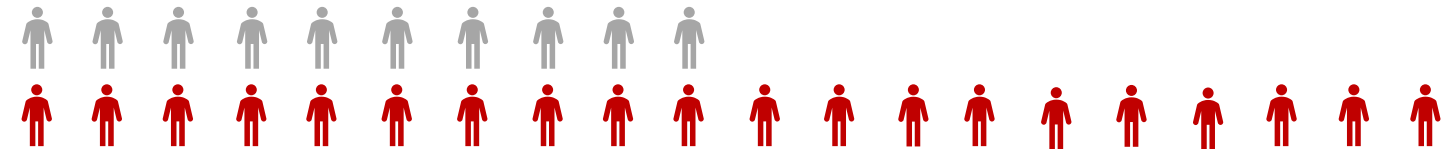# Variants of concern have more severe consequences and are more fatal

Hospitalization

Hospitalization with VOC

ICU Admission

ICU Admission with VOC

Death

Death with VOC

Compared to people infected with the earlier variants, more people with COVID-19 are hospitalized, admitted to ICU, and die if they are infected with the variants of concern.

Short-term case projections depend entirely on system-level public health measures and vaccination

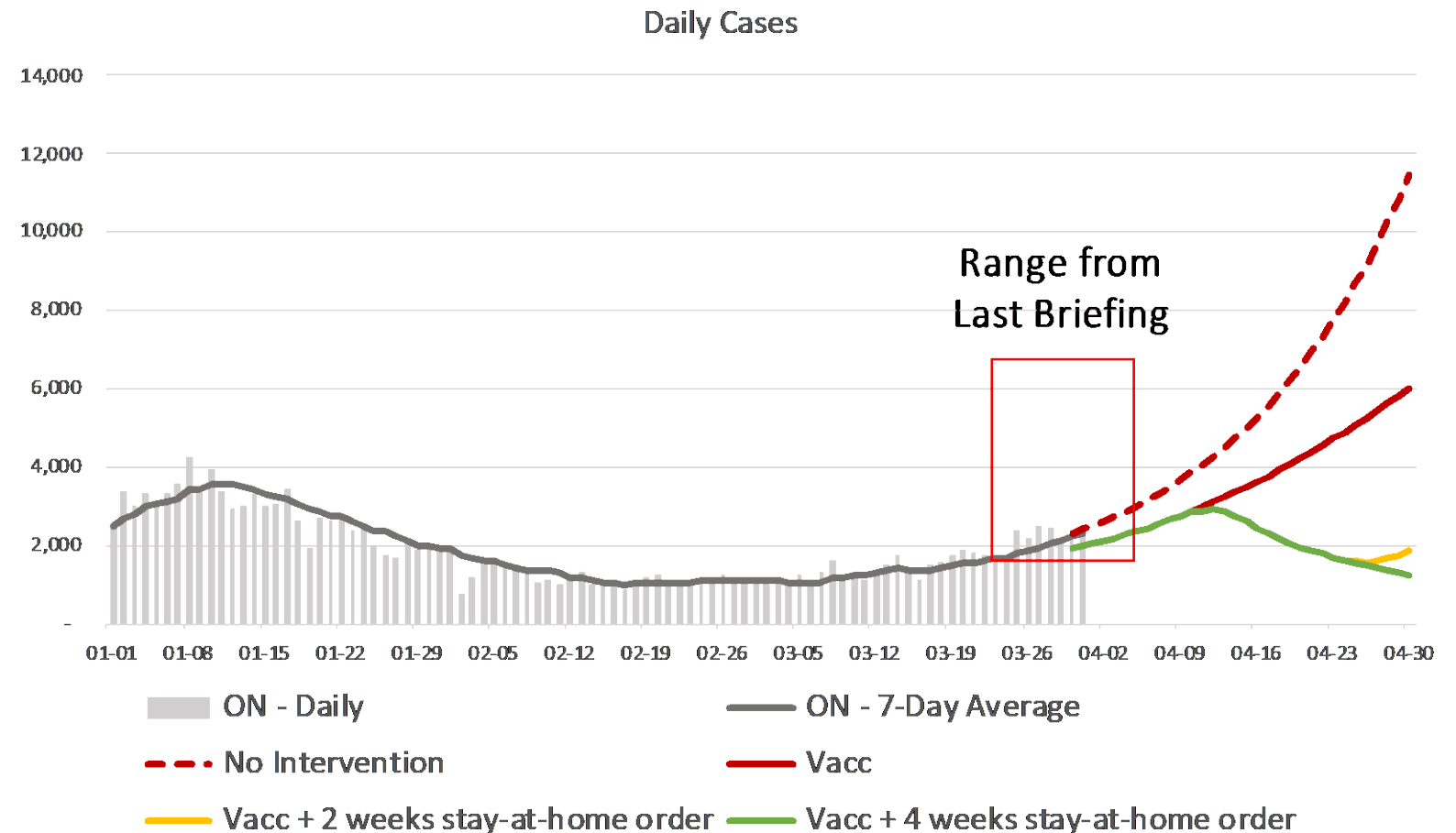**Figure shows example, representative of predictions across 4 models, 3-5 scenarios each.**

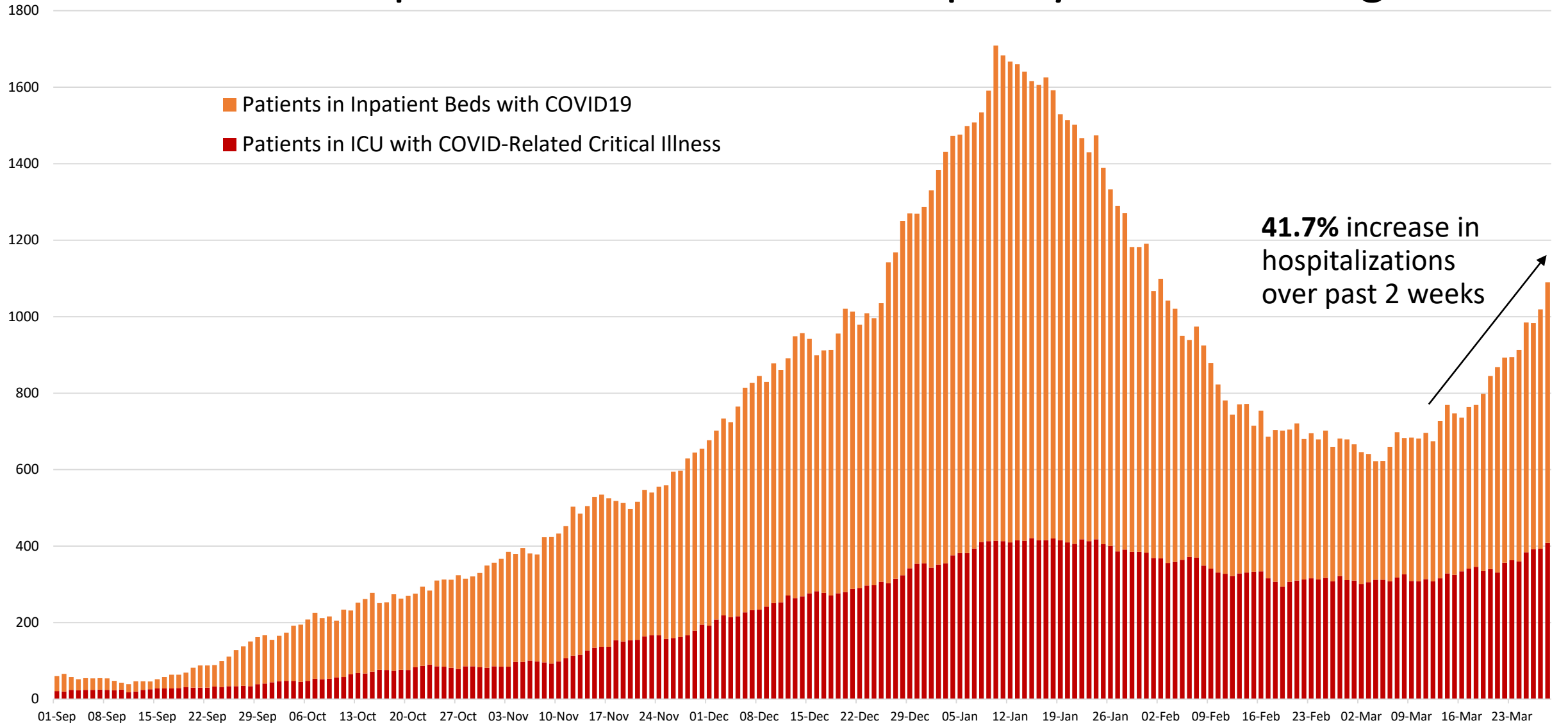**Scenarios:**
Stay-at-home order assumptions:
- No stay-at-home
- 2 weeks starting Apr 5
- 4 weeks starting Apr 5

Vaccine assumptions:
- 70% effective in preventing infection
- Administered at constant rate
- Administered randomly to population

Daily Cases

Range from Last Briefing

ON - Daily | ON - 7-Day Average
No Intervention | Vacc
Vacc + 2 weeks stay-at-home order | Vacc + 4 weeks stay-at-home order

Predictions informed by modeling from COVID-19 ModCollab, Fields Institute, McMasterU, PHO, YorkU
Data (Observed Cases): covid-19.ontario.ca

COVID-19 Hospitalizations and ICU occupancy are increasing

Legend:
- Patients in Inpatient Beds with COVID19
- Patients in ICU with COVID-Related Critical Illness

41.7% increase in hospitalizations over past 2 weeks

Data Sources: MOH COVID Census and Critical Care Information System

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# COVID-19 patients admitted to ICU continue to get younger
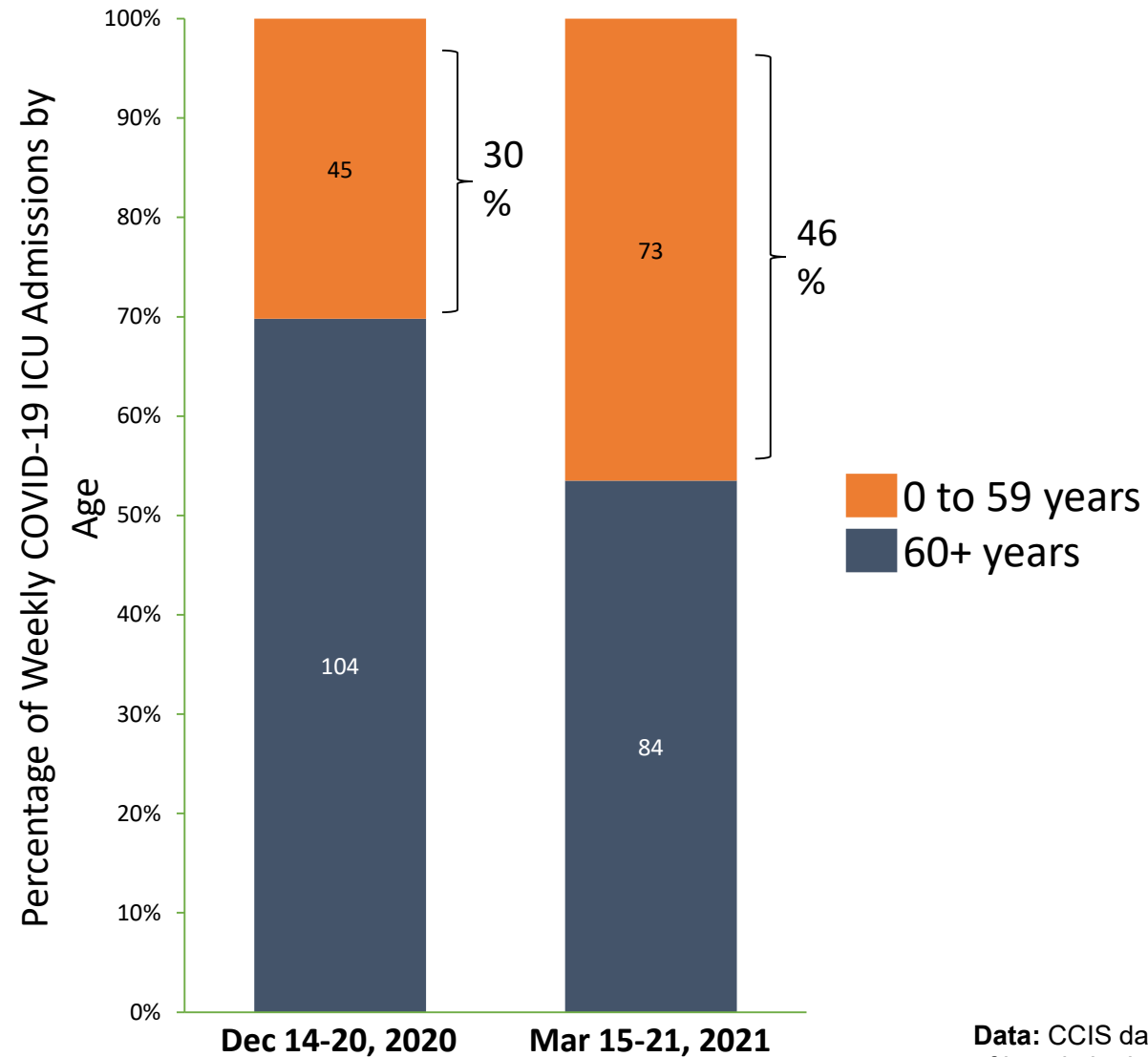
Data: CCIS data up to March 28. Based on date of hospital admission

As with cases, ICU projections depend entirely on system-level public health measures
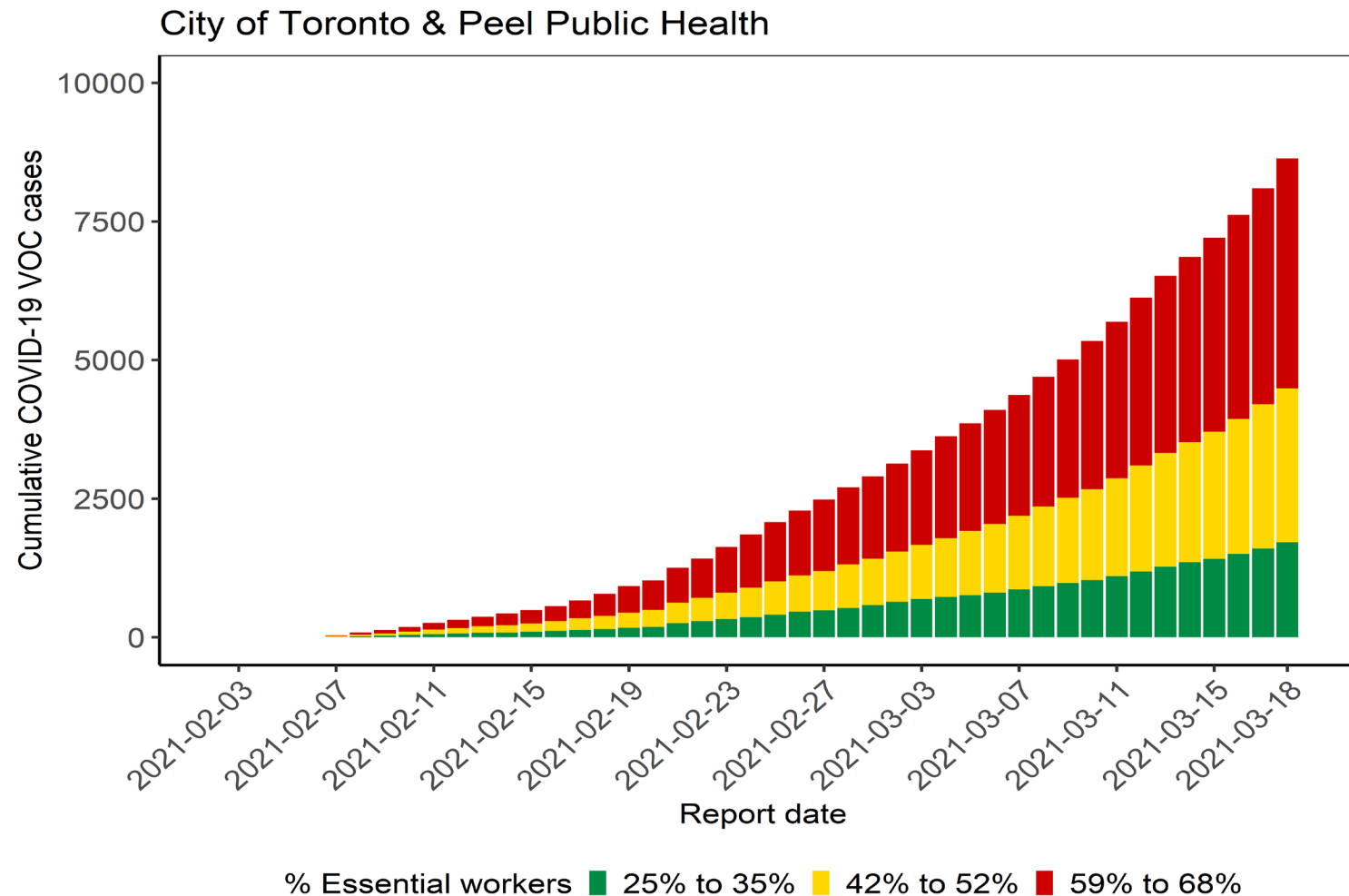

ICU Occupancy

Range from
Last Briefing

Legend:
- ON – Daily
- ON – 7-Day Average
- Predicted
- Vacc
- Vacc + 2 week stay-at-home
- Vacc + 4 week stay-at-home

Predictions: COVID-19 ModCollab.
Data (Observed ICU Occupancy): CCSO
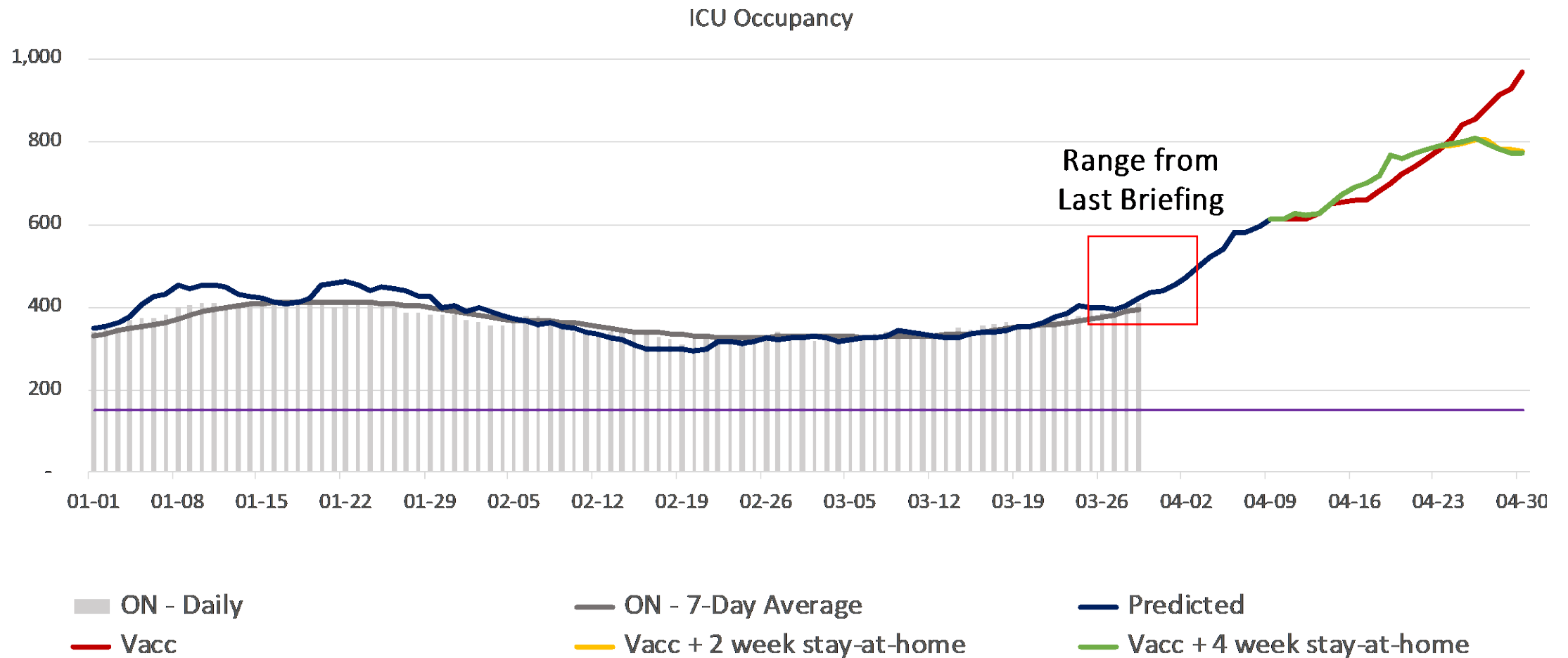
The access to care deficit continues to build

Cumulative pandemic-related surgical backlog:
245,367 cases
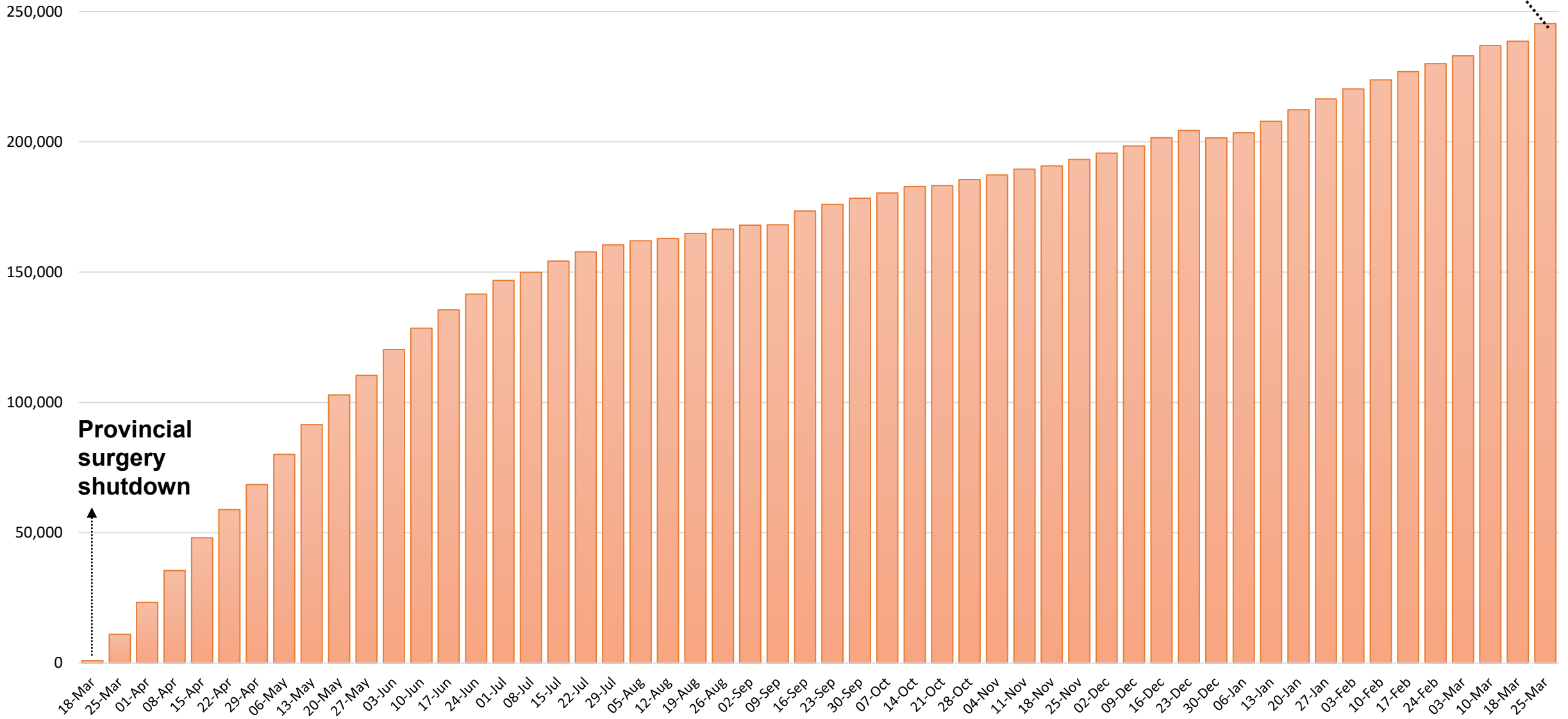
Provincial surgery shutdown

Essential workers are keeping things moving and bearing the brunt of the pandemic. Vaccination and control of workplace outbreaks will be critical.

City of Toronto & Peel Public Health

Source: Chagla Z, Ma H, Sander B, Baral S, Mishra S. (2021). Characterizing the disproportionate burden of SARS-CoV-2 variants of concern among essential workers in the Greater Toronto Area, Canada. https://www.medrxiv.org/content/10.1101/2021.03.22.21254127v1.full.pdf

First dose vaccine coverage expanding but remains incomplete

80 years and older - 17% incomplete;   75-79 years – 40% incomplete;   70-74 years – 72% incomplete
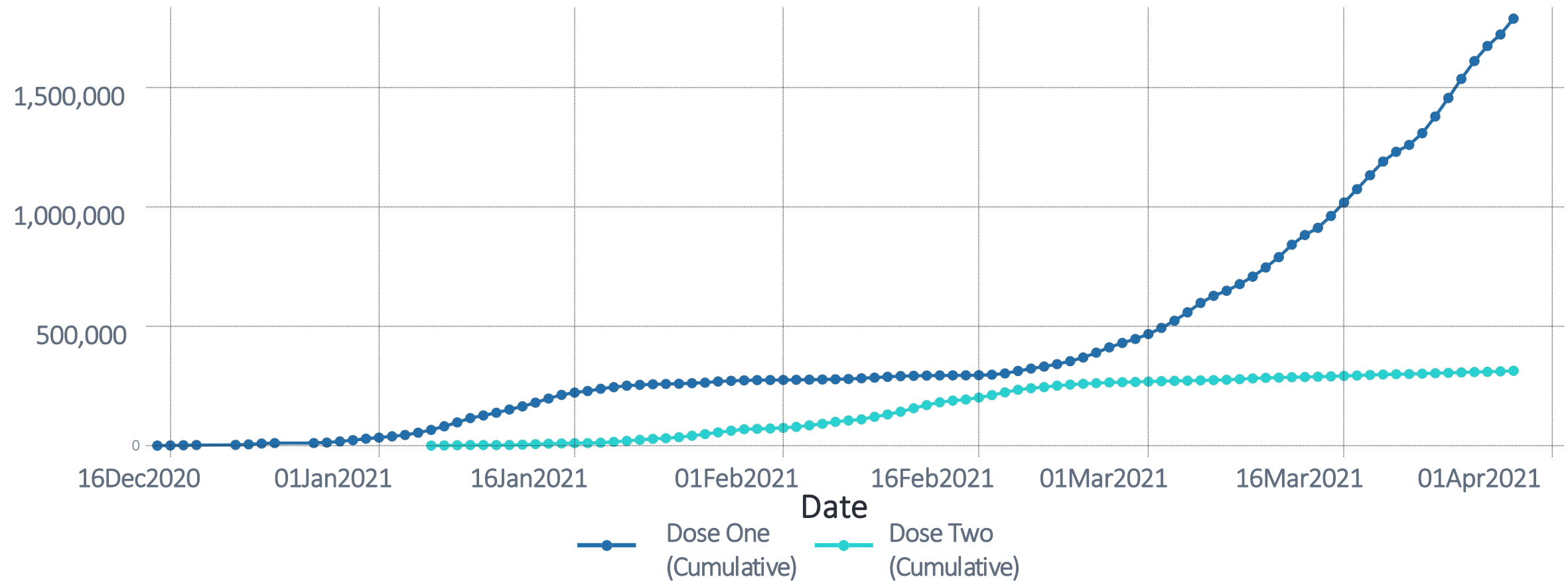

Dose 1 Administered was determined based on the first Time Given for each client.
Dose 2 Administered was determined based on the last Time Given for each client where there is more than 1 dose administered

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Vaccination is not reaching the highest risk populations

Figure excludes long-term care vaccination

Age group	Neighbourhood Risk‡ 1 = high incidence of COVID-19 infections									10 = low incidence of COVID-19 infections	Overall
	1	2	3	4	5	6	7	8	9	10	Overall
80+	50%	55%	59%	66%	66%	66%	65%	72%	69%	70%	64%
75-79	37%	43%	43%	46%	45%	46%	40%	40%	30%	29%	39%
70-74	13%	19%	19%	18%	19%	21%	17%	17%	10%	9%	16%
65-69	8%	10%	10%	11%	10%	11%	10%	10%	7%	8%	9%
60-64	18%	23%	22%	21%	21%	21%	19%	18%	14%	20%	20%
55-59	7%	9%	9%	10%	11%	11%	10%	11%	10%	12%	10%
50-54	6%	7%	7%	8%	9%	8%	9%	9%	10%	11%	8%
45-49	6%	7%	6%	8%	8%	8%	8%	9%	10%	11%	8%
40-44	5%	6%	6%	7%	8%	7%	8%	8%	9%	10%	7%
16-39	4%	5%	5%	6%	6%	6%	6%	6%	7%	8%	6%
Overall	8%	10%	10%	11%	11%	12%	11%	12%	11%	13%	13%

0%   30%   >70%

Vaccine coverage (per 100 population)
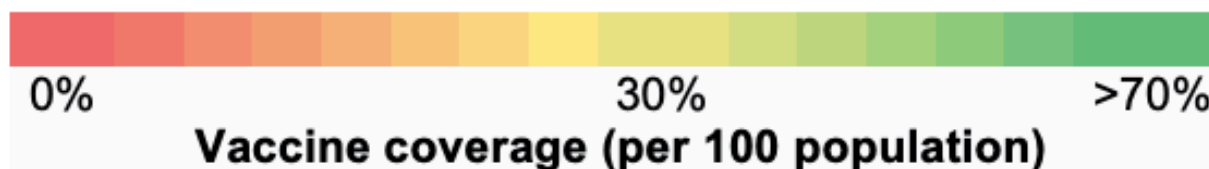
School interruptions will have significant impacts on students, families, and society

Economic modeling suggests schooling impacts will have long term economic effects:
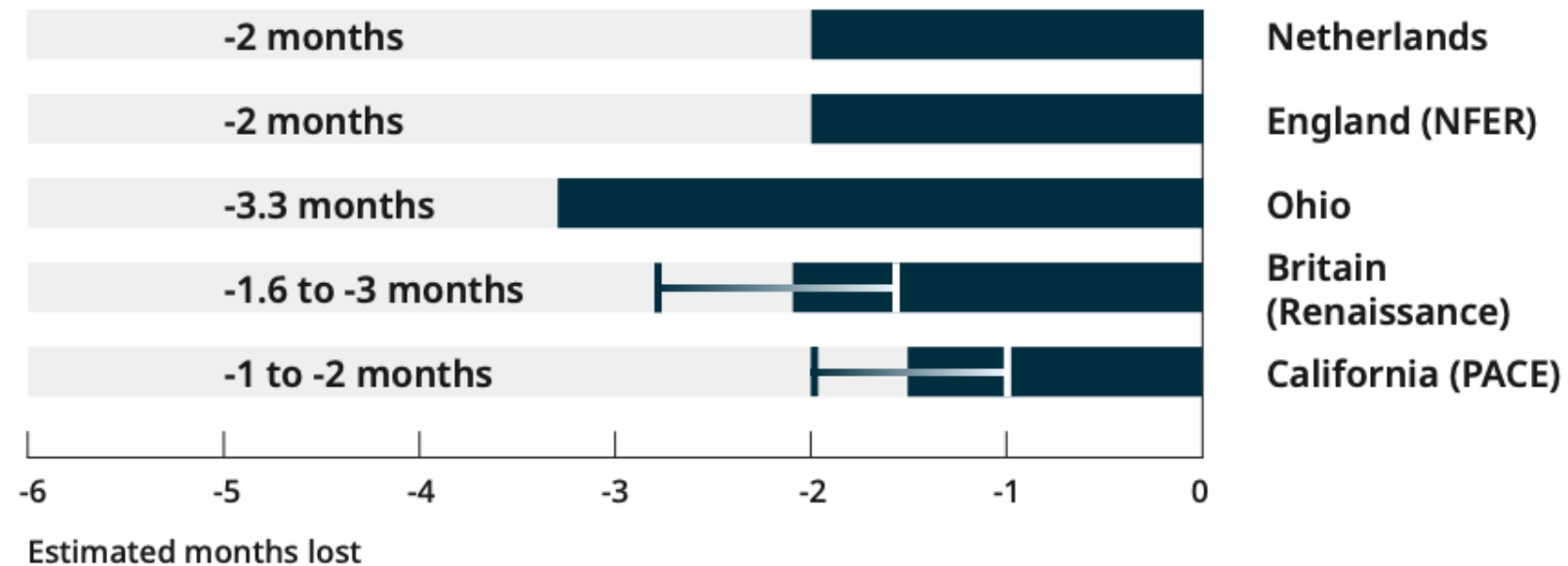
- A ~3% drop in lifetime earnings for these cohorts;

- Lost GDP for Canada estimated at 1.6 trillion dollars

Non-COVID health risks include:

- Loneliness & social isolation,

- Loss of structure affecting physical activity, sleep and mental health, and

- Decreased ability to detect neglect or abuse.

All negative impacts are highly inequitable with greater learning loss for students facing greater disadvantage

Figure 1:

Evidence from International Assessments Reporting Average Learning Loss in Months
Fall 2020

Learning Loss	Region
-2 months	Netherlands
-2 months	England (NFER)
-3.3 months	Ohio
-1.6 to -3 months	Britain (Renaissance)
-1 to -2 months	California (PACE)

Estimated months lost (axis: -6, -5, -4, -3, -2, -1, 0)

Key Findings

- The **third wave** is here and being **driven by variants of concern**.

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- Vaccination is **not reaching the highest risk communities**, delaying its impact as an effective strategy.

- School disruptions have a significant and highly inequitable **impact** on students, parents and society. Further disruptions should be minimized.

- Stay-at-home orders will control the surge, protect access to care, and increase the chance of the summer Ontarians want.

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