

Update on COVID-19 Projections

Science Advisory and Modelling Consensus Tables

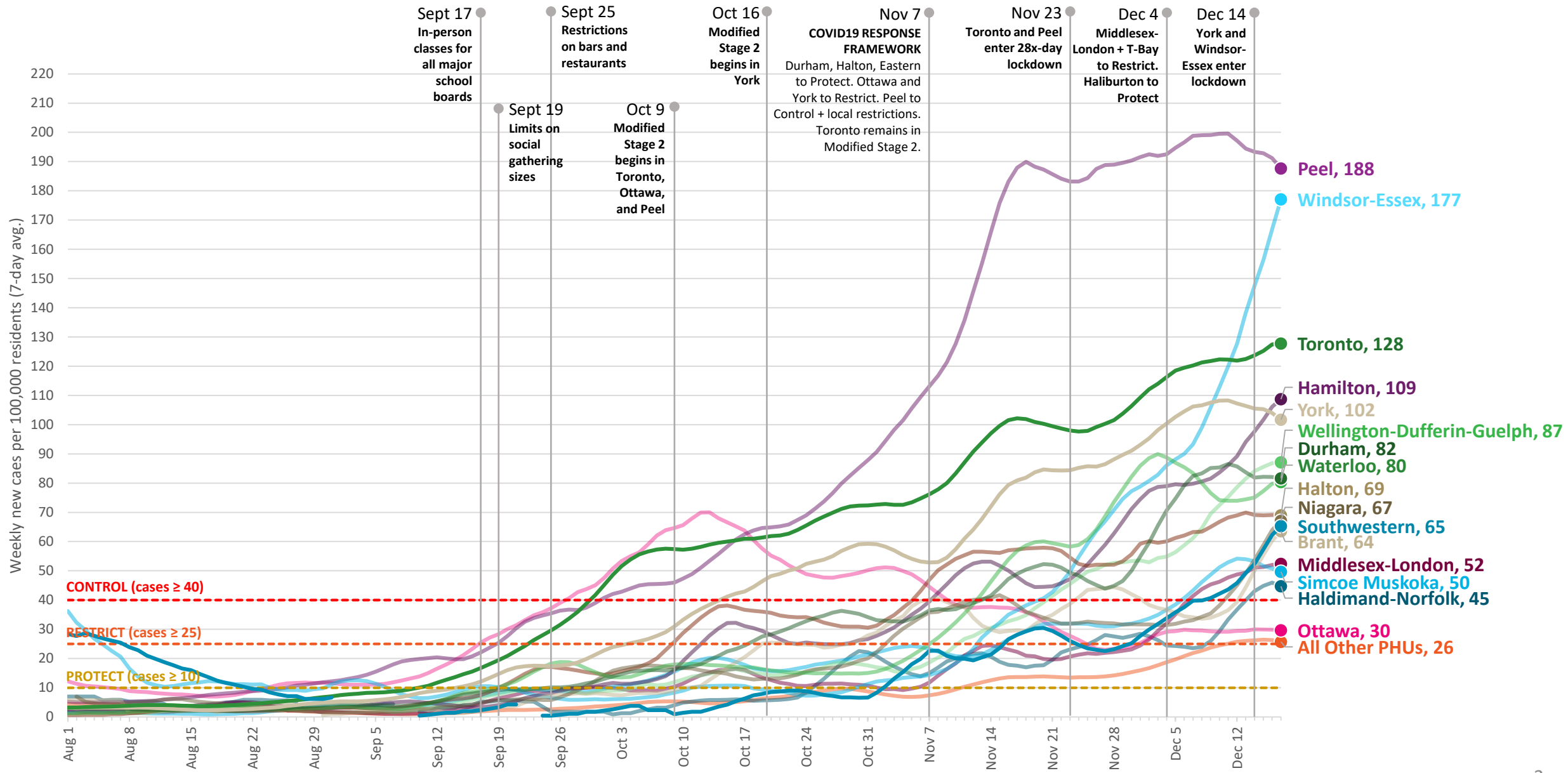
December 21, 2020



Key Findings

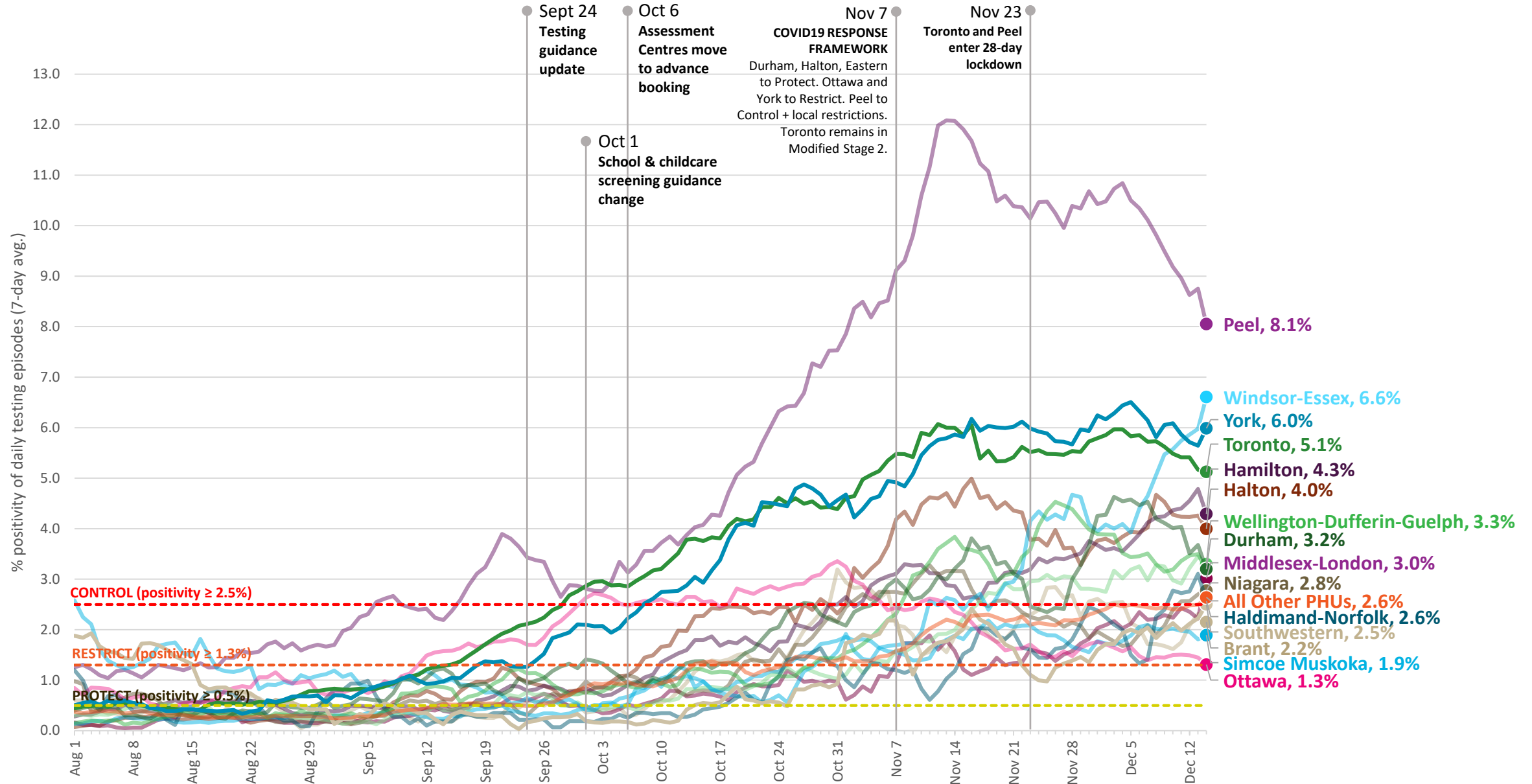
- Cases continue to grow and overall case levels are twice the “red” level. Percent positivity is flattening. Our ability to control case growth is still precarious.
- Continuing case growth will increase outbreaks in long-term care homes and other congregate settings.
- Under all scenarios, ICU occupancy will be above 300 beds within 10 days. Worst case scenarios show occupancy above 1,500 beds by mid-January.
- Based on experience in France and Australia, “hard lock-downs” of 4–6 weeks can reduce case numbers in Ontario to less than 1,000 per day and possibly much lower with increased testing and support.
- With lower case numbers we can maintain safe ICU care for COVID-19 and non-COVID-19 patients who require it.
- As noted in previous briefings, public health restrictions will require more resources (e.g. testing, isolation/quarantine support) in communities and essential service workplaces where exposure is higher.

Total new cases per 100,000 residents per week across PHUs

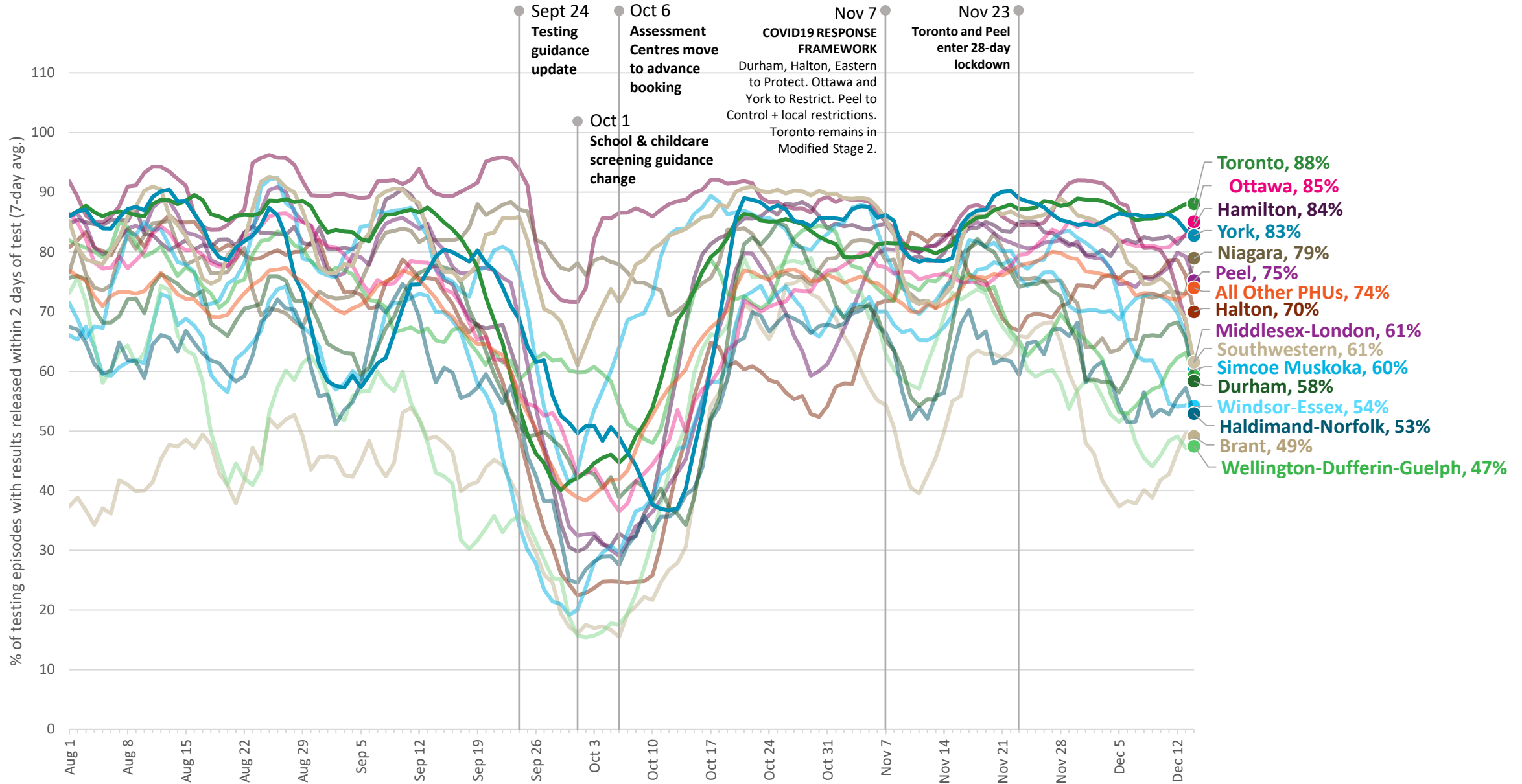


Data source: Case and Contact Management System, data up to December 17

COVID-19 testing % positivity across PHUs



Percent of COVID test results returned within 2 days across PHUs



Weekly % positivity by age group

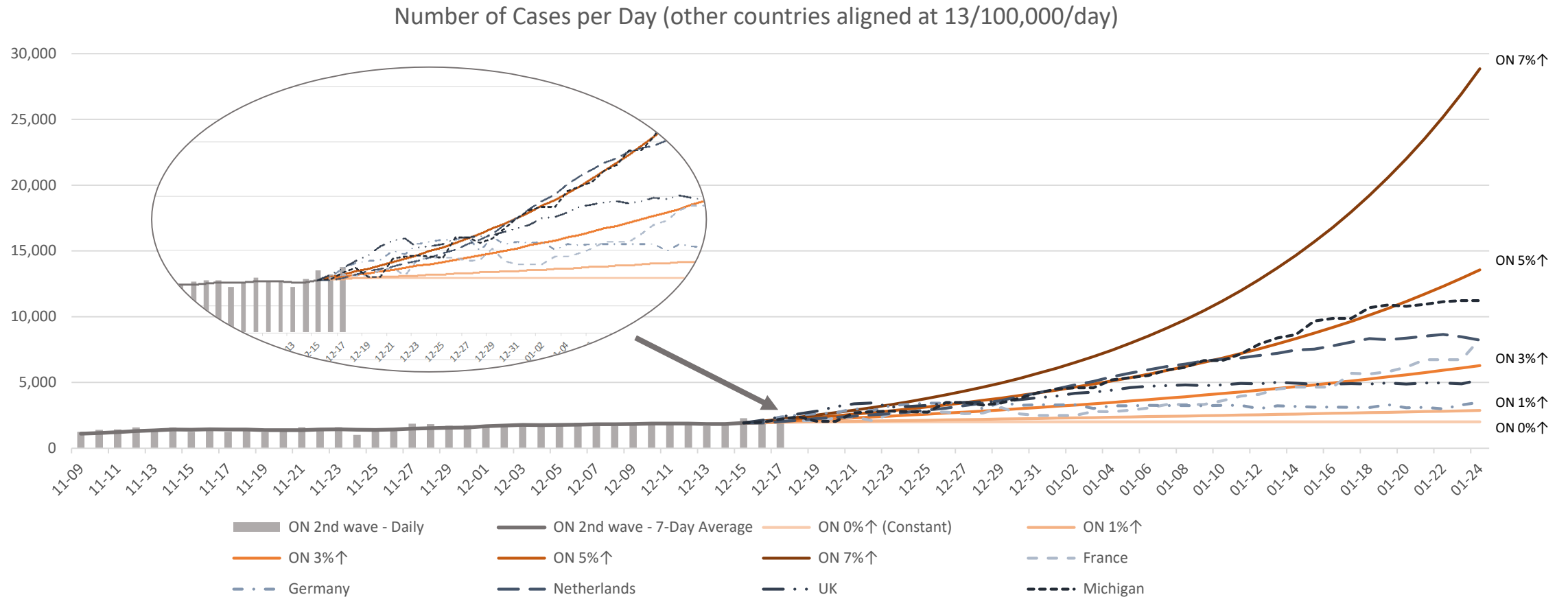
Weekly % positivity by age group																																									
Month	Apr2020				May2020					Jun2020					Jul2020					Aug2020					Sep2020					Oct2020					Nov2020					Dec2020	
Week No	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49					
Age Group																																									
75+	16.4	11.0	5.0	4.3	3.4	4.7	5.3	3.2	2.9	1.8	1.0	0.9	0.6	0.6	0.4	0.4	0.3	0.2	0.2	0.3	0.4	0.3	0.5	0.5	1.0	1.3	1.4	1.8	2.3	2.8	3.6	3.3	3.1	3.3	3.2	3.7					
65to74	11.4	7.2	5.5	4.4	3.6	4.1	3.8	1.9	1.3	0.9	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.2	0.3	0.3	0.4	0.5	0.5	0.7	1.0	1.2	1.3	1.7	1.9	2.2	2.6	3.3	3.3	3.0	3.3	3.4					
55to64	11.4	8.6	6.2	4.8	3.7	4.9	5.7	2.8	2.0	1.0	0.9	0.6	0.6	0.4	0.6	0.5	0.4	0.4	0.3	0.4	0.3	0.5	0.6	0.8	1.2	1.4	1.6	2.2	2.4	2.4	2.9	3.4	3.2	3.1	3.2	3.1					
45to54	10.9	8.1	6.2	5.3	4.2	4.6	6.6	3.3	2.2	1.2	1.1	0.7	0.8	0.7	0.7	0.7	0.5	0.5	0.4	0.5	0.5	0.6	0.8	1.0	1.4	1.9	1.9	2.7	2.8	3.0	3.7	4.4	3.9	3.9	4.0	3.8					
35to44	8.3	7.1	5.7	4.3	3.3	3.9	5.7	3.4	2.3	1.3	1.4	1.0	0.9	0.8	0.7	0.7	0.5	0.5	0.5	0.4	0.5	0.7	0.7	1.0	1.2	1.5	1.6	2.3	2.7	2.9	3.7	4.4	3.8	4.1	4.2	4.2					
25to34	8.7	7.4	6.1	5.2	4.0	4.8	6.3	3.7	2.4	1.4	1.5	1.2	1.0	0.9	1.0	0.9	0.6	0.5	0.6	0.6	0.6	0.9	1.3	1.7	2.1	2.5	2.2	2.9	3.2	3.4	4.1	4.7	4.5	4.7	4.8	4.5					
18to24	9.2	7.8	6.5	4.1	3.7	4.3	6.3	3.7	2.5	1.4	1.4	1.2	0.9	0.8	0.9	1.1	0.8	0.7	0.5	0.7	0.9	0.8	1.4	2.3	2.8	3.5	2.6	3.5	3.9	4.3	4.7	5.5	5.2	5.0	5.3	5.4					
14to17	5.9	7.1	4.8	3.7	3.4	5.0	6.6	2.2	2.9	1.5	1.6	1.4	1.3	1.1	1.4	1.3	1.4	1.2	1.1	0.8	1.3	1.7	1.8	1.7	1.5	1.9	2.1	2.9	4.1	4.1	5.4	6.6	5.6	6.4	6.8	6.2					
9to13	5.7	6.2	4.9	5.8	5.0	5.5	6.5	4.3	3.7	3.4	2.4	1.9	1.0	1.5	1.2	1.7	1.3	0.8	1.4	1.0	1.5	1.4	1.4	0.9	0.8	0.8	1.2	1.8	2.8	3.7	4.9	4.7	5.7	5.9	5.9	5.2					
4to8	1.9	4.0	2.3	4.1	2.2	3.0	3.4	3.5	3.4	2.1	2.7	1.7	1.2	0.9	1.1	1.2	1.0	1.0	0.7	0.8	0.5	0.9	0.6	0.5	0.3	0.4	1.0	1.5	2.8	2.7	3.6	3.9	4.3	4.5	4.7	3.8					
0to3	1.5	1.6	1.5	1.7	1.6	2.2	2.2	1.4	1.1	1.9	1.4	1.3	0.7	1.0	0.8	1.3	0.4	0.5	0.6	0.3	0.6	0.6	0.3	0.4	0.6	0.7	1.3	2.2	2.5	2.2	3.0	4.2	3.2	3.8	4.7	3.6					
Total	11.3	8.5	5.7	4.6	3.6	4.5	5.6	3.1	2.3	1.3	1.1	0.9	0.7	0.7	0.7	0.7	0.5	0.5	0.4	0.5	0.5	0.7	0.9	1.1	1.3	1.6	1.7	2.4	2.8	3.0	3.7	4.2	3.9	4.0	4.2	4.0					

Data Source: Ontario Laboratory Information System (OLIS), MOH – extracted from SAS VA December 19.

Note: Includes all data submitted to OLIS up to December 16, 2020. The last six days are considered interim data (week 49) and subject to change

Weekly % positivity = total number of positive tests within the week (based on reported date)/COVID tests within the week

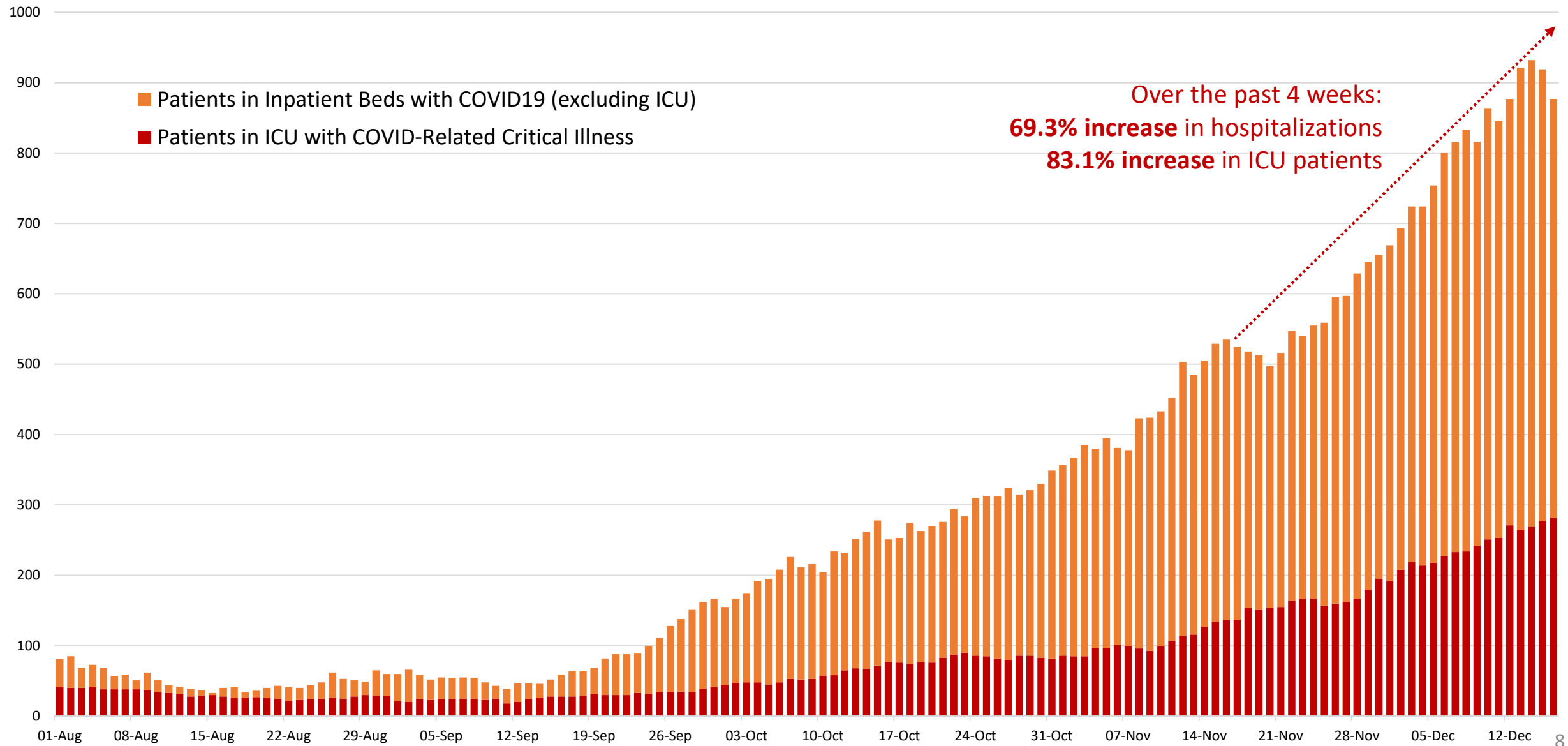
As in other jurisdictions, case growth continues despite soft restrictions



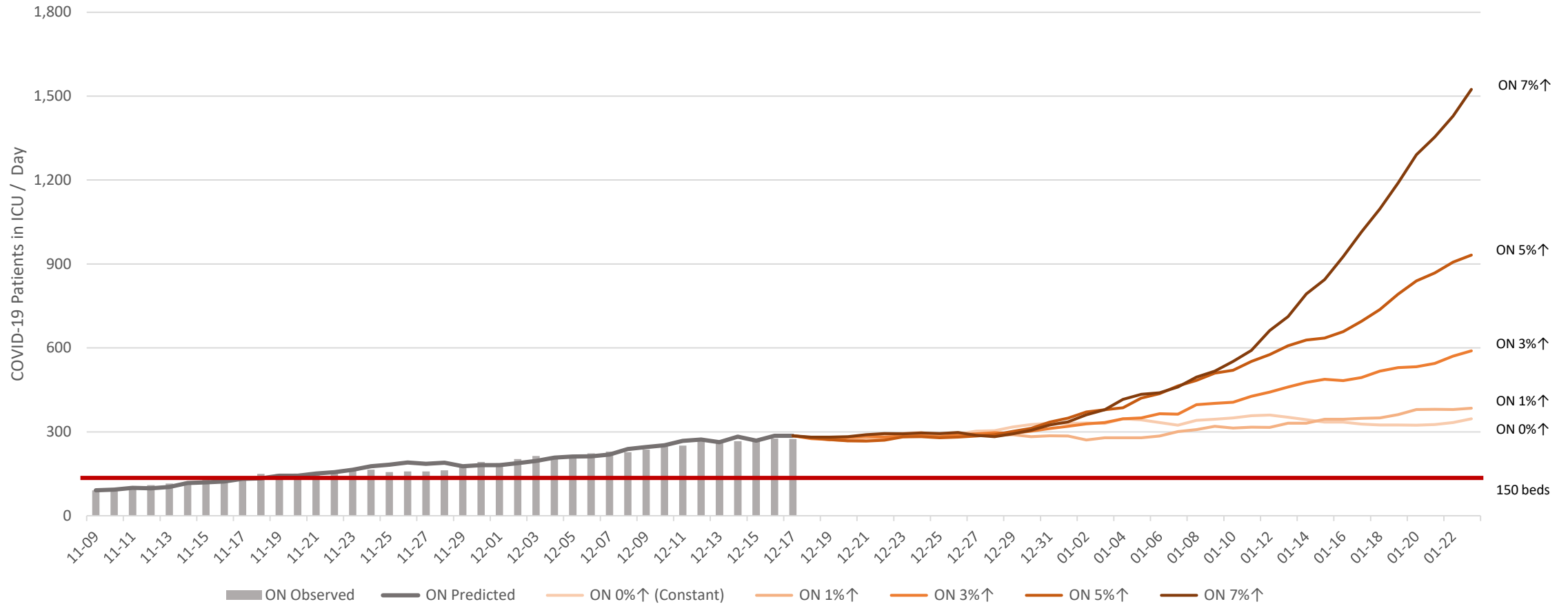
Note: Ontario reached 13/100,000 cases between 1.5 and 3 months after these countries

Predictions informed by modeling from McMasterU, COVID-19 ModCollab, PHO; recent growth in new daily cases; reported cases in peer jurisdictions
 Data (Observed Cases): covid-19.ontario.ca; <https://ourworldindata.org>; covidtracking.com

COVID-19 hospitalizations and ICU admissions continue to climb

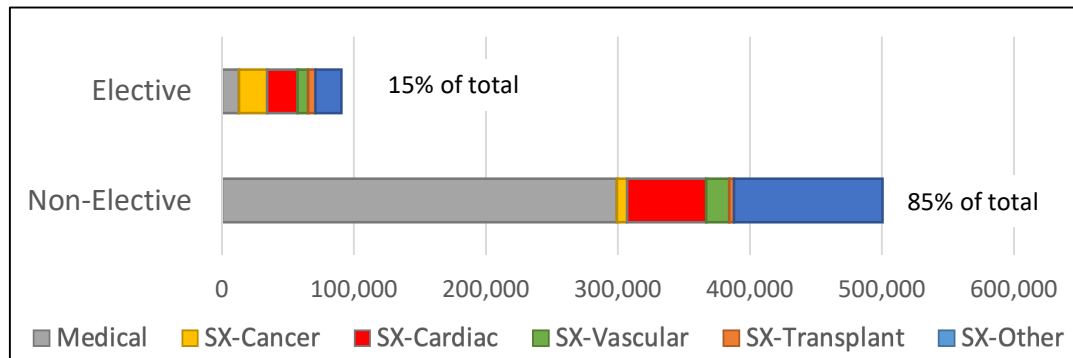


Projections: ICU occupancy > 300 beds end of Dec, > 1,500 mid Jan in more severe scenarios

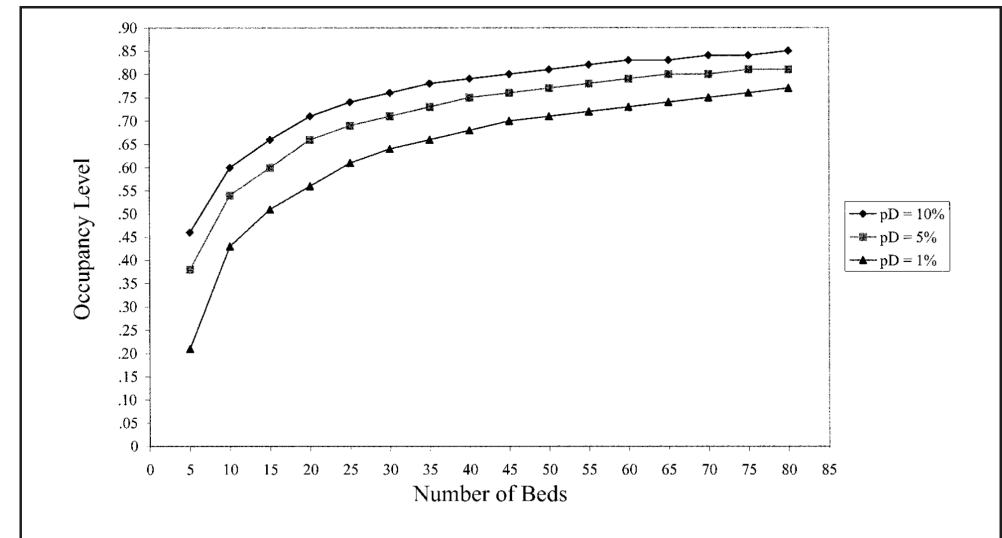


High ICU occupancy threatens quality of care

- High occupancy
 - Threatens timely access for all patients needing admission
 - Delayed access ↑ mortality (Gabler 2013, Harris 2018)
- Acceptable occupancy threshold varies by ICU size (Green 2002)
 - 30 bed ICU: < 75% occupancy level
 - 15 bed ICU: < 65% occupancy level

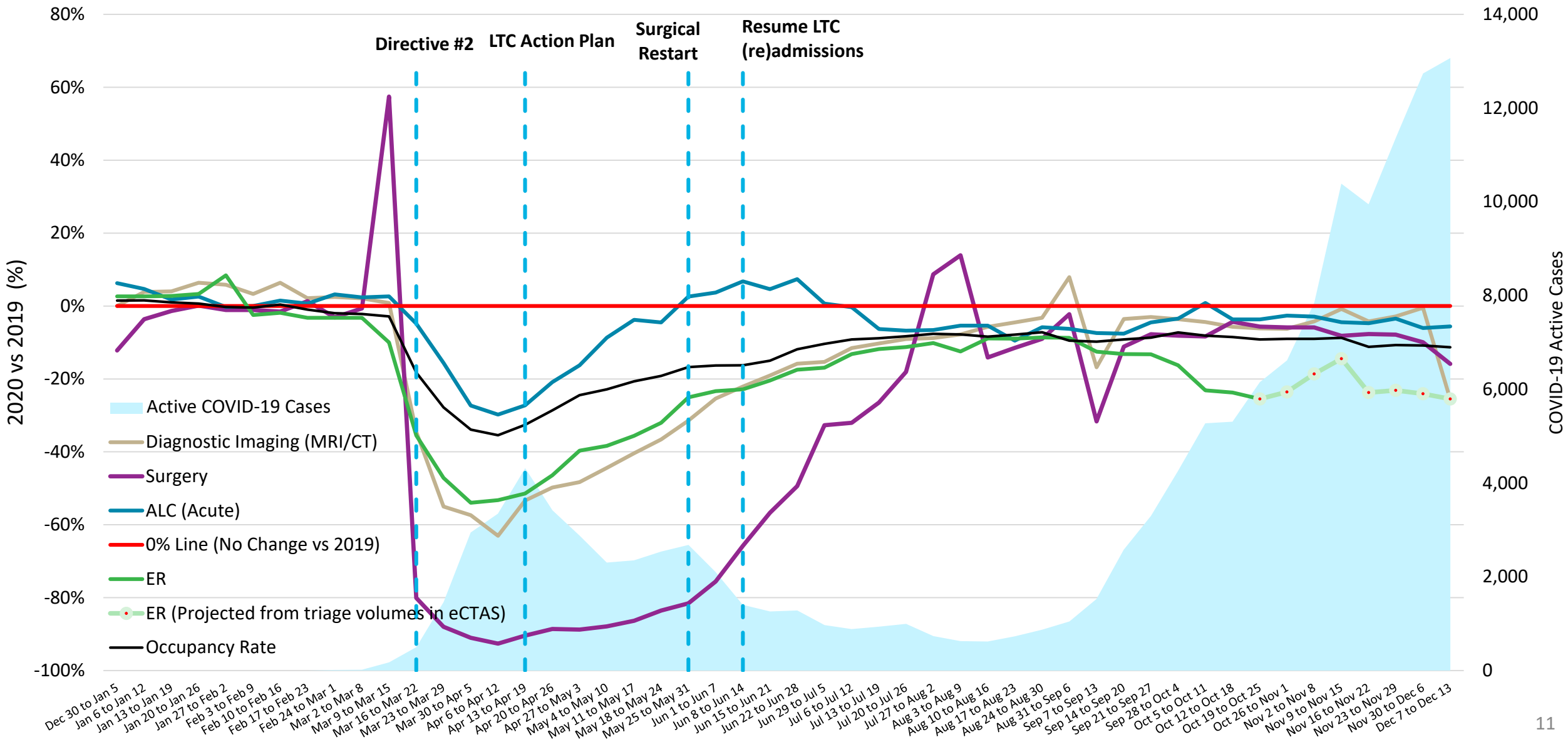


ICU Bed Days Distribution, Ontario, FY 2018/19



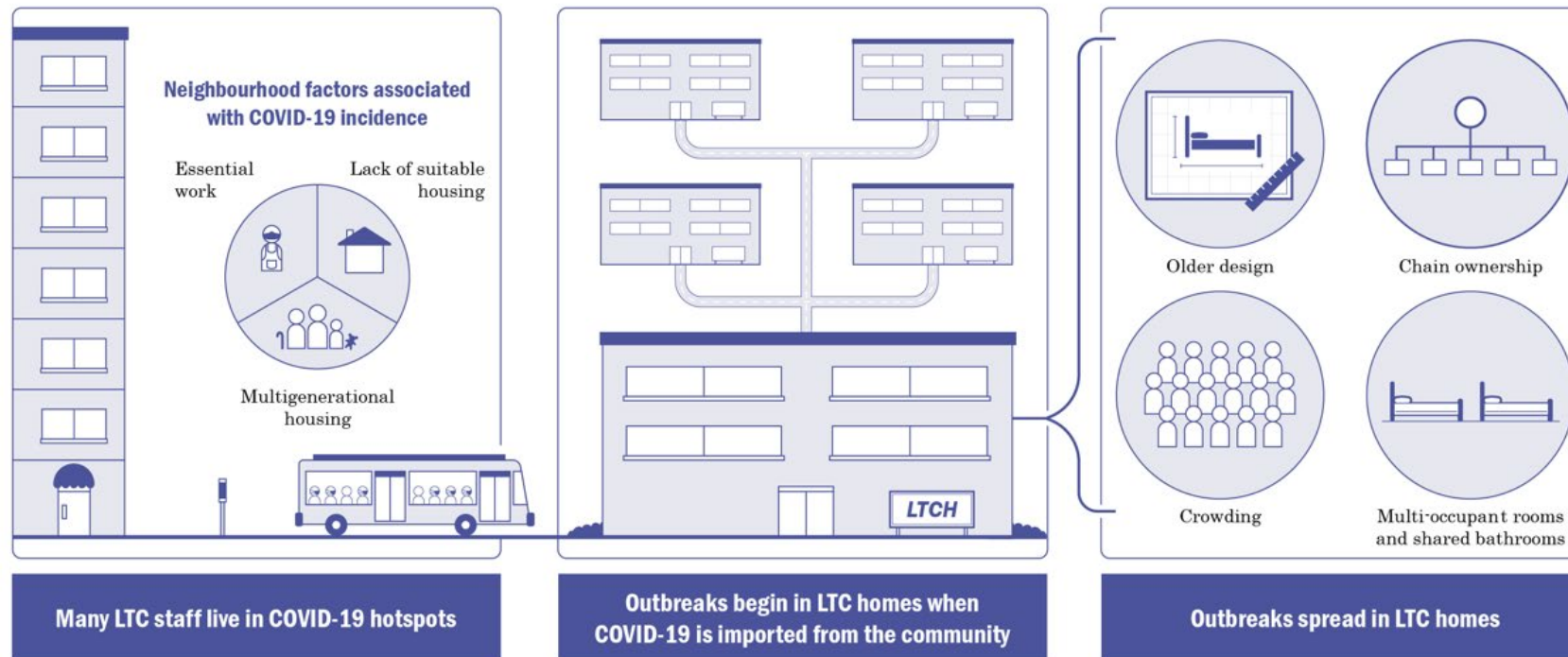
pD = probability of delayed admission to hospital bed

Access to care continues to decline below 2019 levels



Community spread drives outbreaks in LTC homes

Anatomy of COVID-19 outbreaks and spread in Ontario LTC homes



- Undetected asymptomatic and pre-symptomatic staff
- 💰 Absence of universal paid sick-leave
- 🕒 Employment of part-time staff who work multiple jobs
- ✚ Temporary staff work in multiple healthcare settings

- 👤 Staffing shortages
- 👁️ Availability of personal protective equipment
- ✖️ Insufficient infection prevention and control

Cases and cumulative mortality LTC increasing (100 deaths in the past 7 days)

LTC Home cases and outbreaks

Current status

145 Long term care (LTC) homes currently in outbreak, with 1,639 active confirmed cases in these homes

795 resident, 902 staff active cases in total

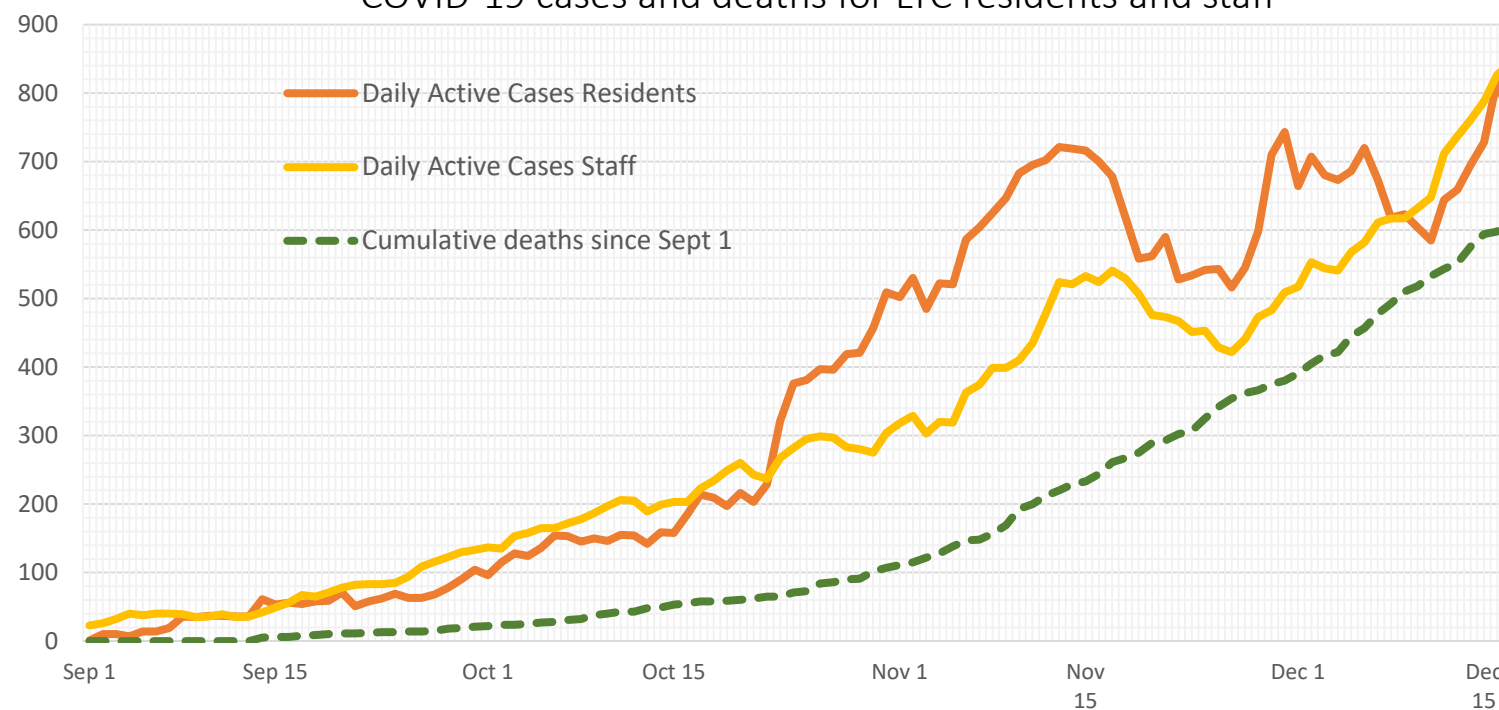
2,481 cumulative resident deaths, 8 cumulative staff deaths as of Dec 18th

83% of resident deaths in wave 2 have occurred since Nov 1

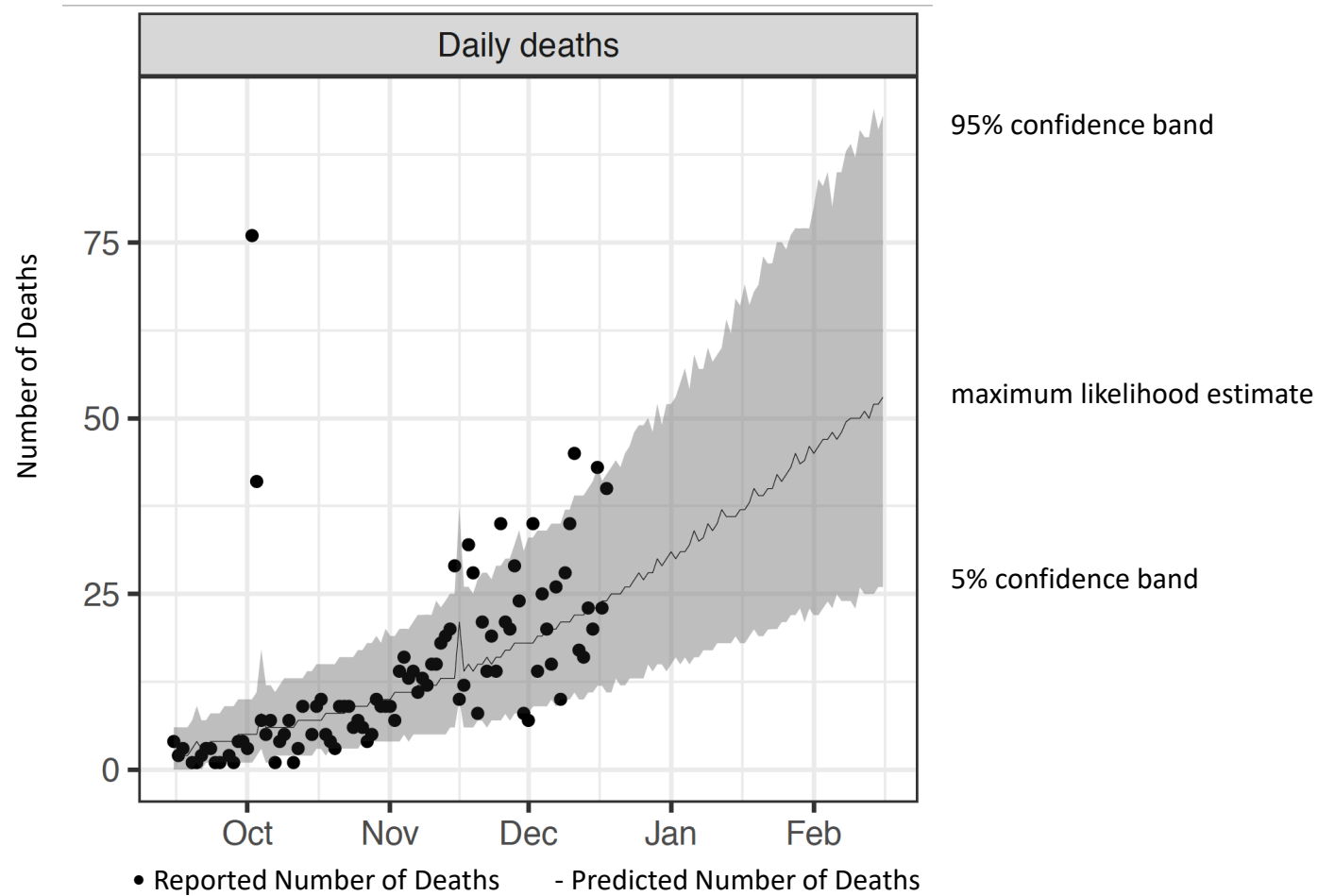
49 of the 145 homes in outbreak are based on 1 staff case

There have been 633 resident deaths since Sept 1st, 100 of which have been in the past 7 days

COVID-19 cases and deaths for LTC residents and staff

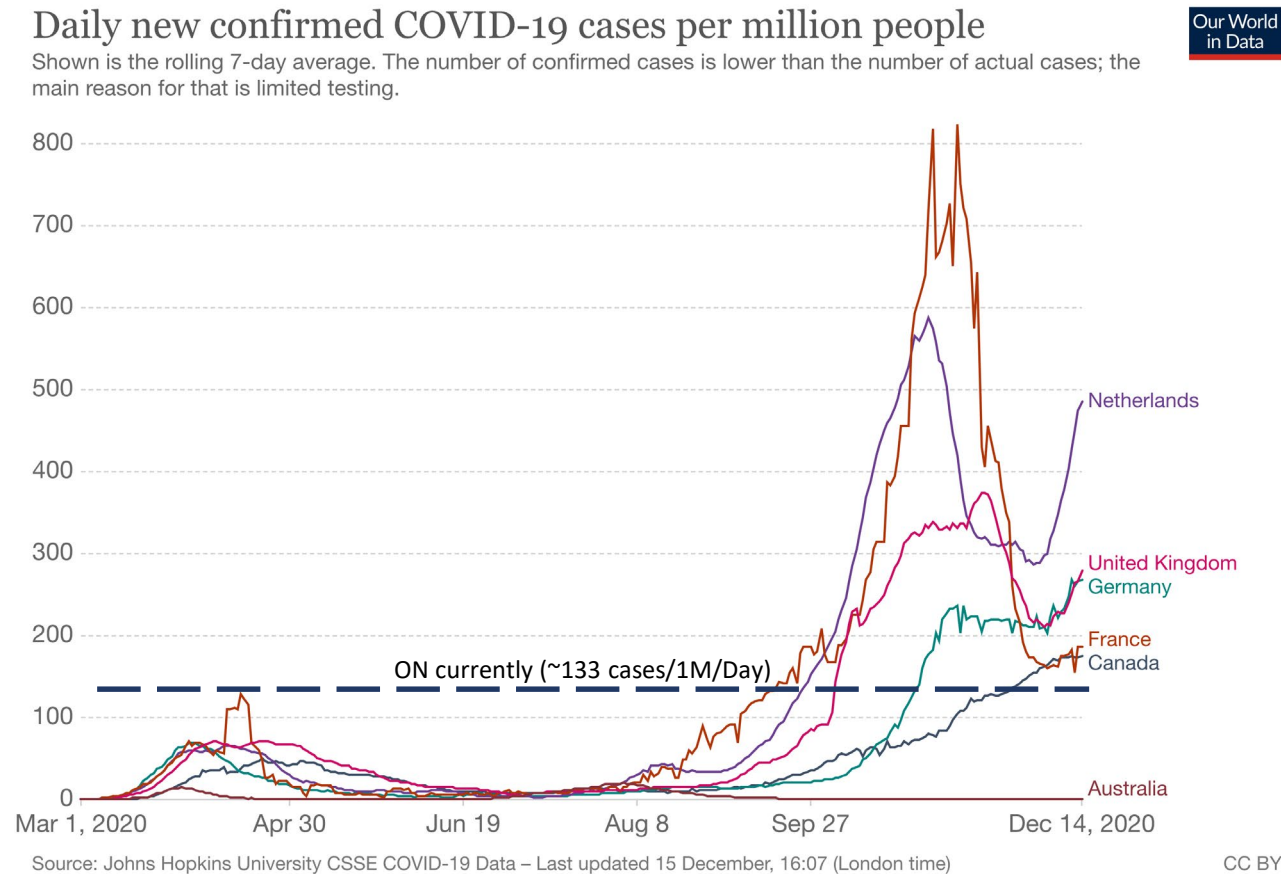


Daily mortality is increasing and based on forecasting will continue to increase



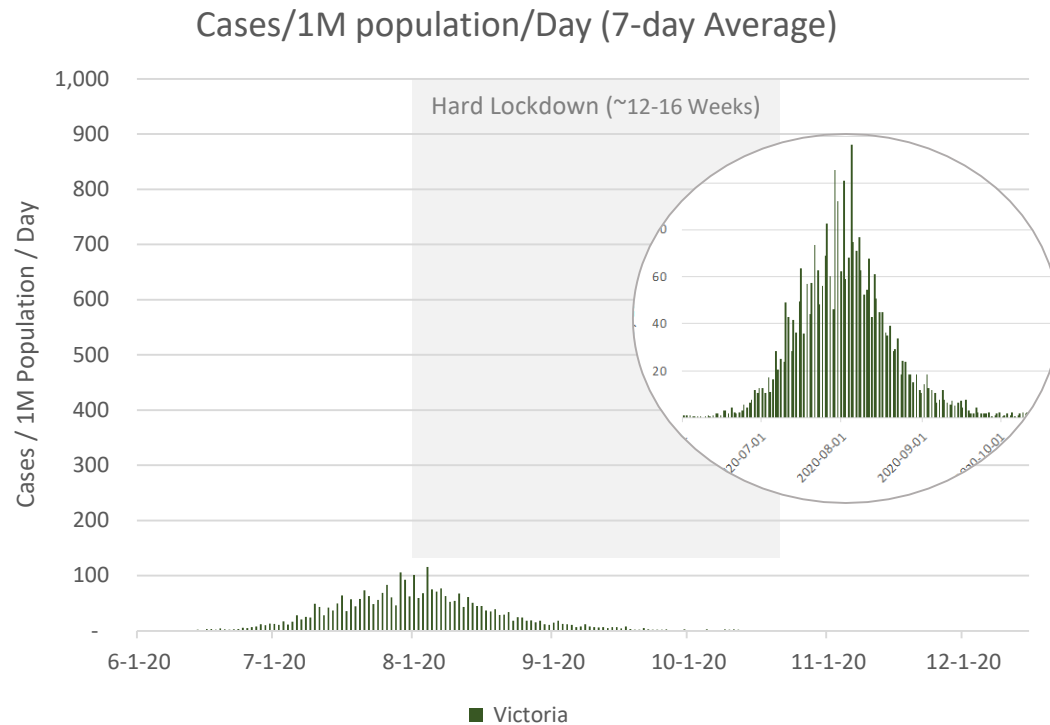
Other jurisdictions are 1 ½ - 3 months ahead of us

Most have used some form of hard lockdown

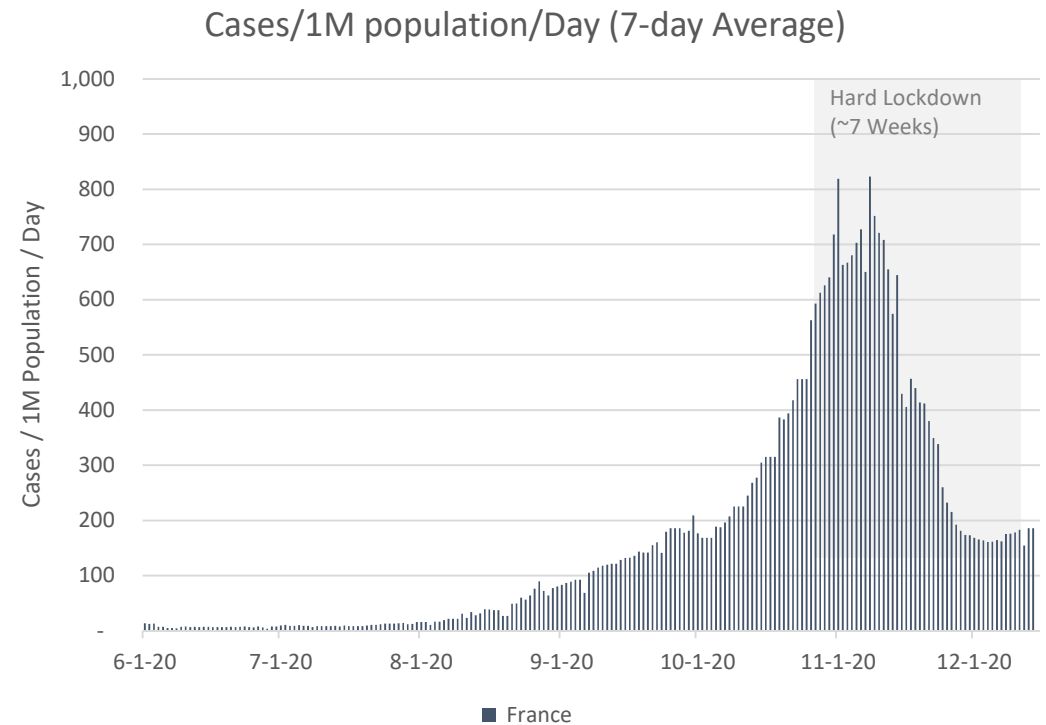


Peer Jurisdictions with “Hard Lockdowns” see dramatic reductions in case numbers

Victoria, Australia



France

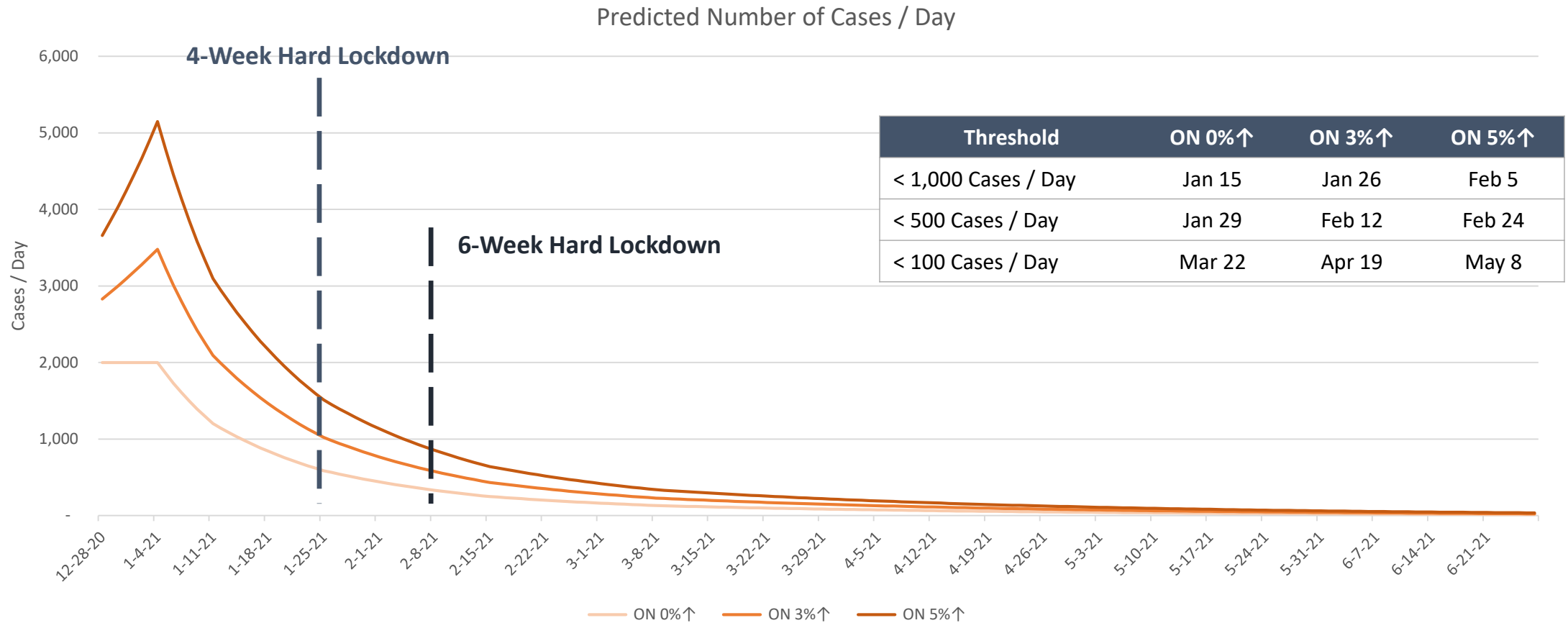


50% ↓ Cases : ~ 3 Weeks

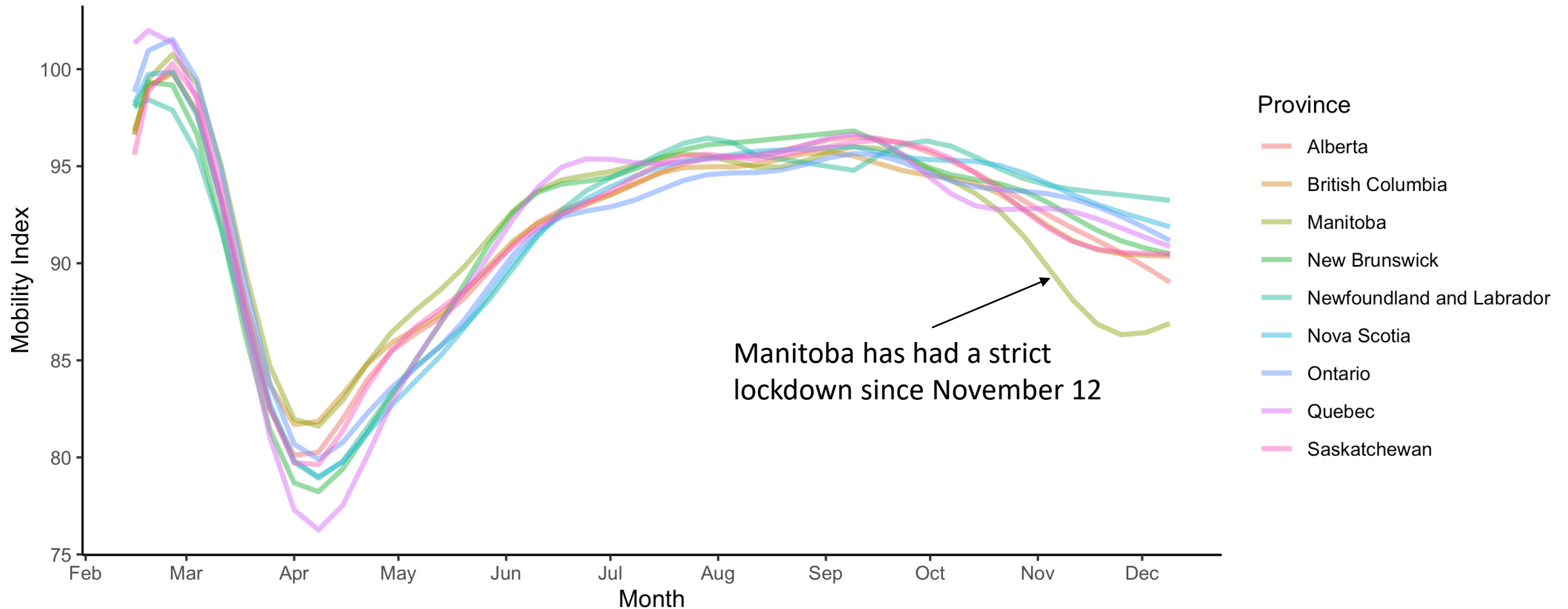
75% ↓ Cases: ~ 4.5-6 Weeks

90% ↓ Cases: ~ 7 Weeks (Victoria)

ON Predictions: The effect of lockdowns varies with the starting case numbers and length of lockdown



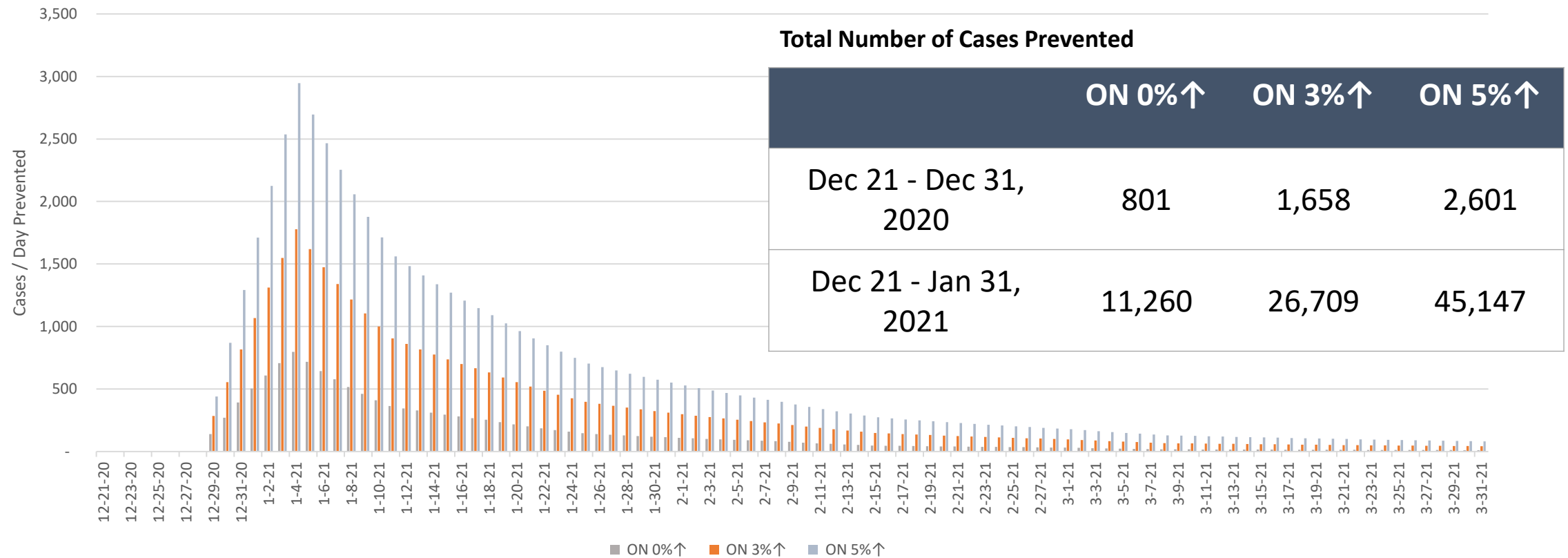
Manitoba's lockdown was the most stringent and had the biggest impact on mobility



- The ***mobility index*** is the estimated proportion of time spent outside of home – 100 represents January 2020 levels.

Earlier lockdowns will reduce cases

Daily Number of Cases Prevented by Starting Hard Lockdown Dec 21 vs. Dec 28



Key Findings

- Cases continue to grow and overall case levels are twice the “red” level. Percent positivity is flattening. Our ability to control case growth is still precarious.
- Continuing case growth will increase outbreaks in long-term care homes and other congregate settings.
- Under all scenarios, ICU occupancy will be above 300 beds within 10 days. Worst case scenarios show occupancy above 1,500 beds by mid-January.
- Based on experience in France and Australia, “hard lock-downs” of 4–6 weeks can reduce case numbers in Ontario to less than 1,000 per day and possibly much lower with increased testing and support.
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