

Update on COVID-19 Projections

Science Advisory and Modelling Consensus Tables

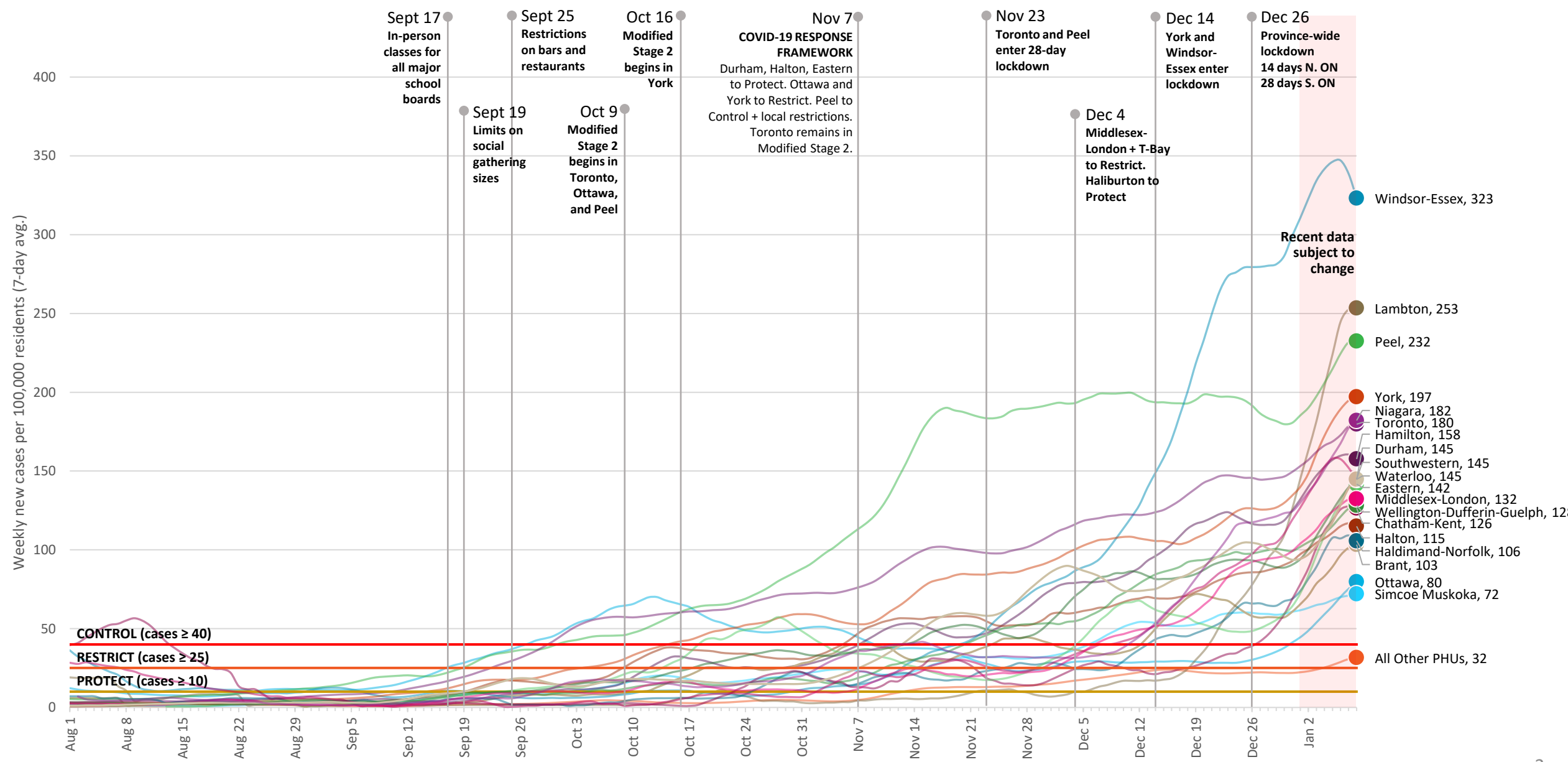
January 12, 2021



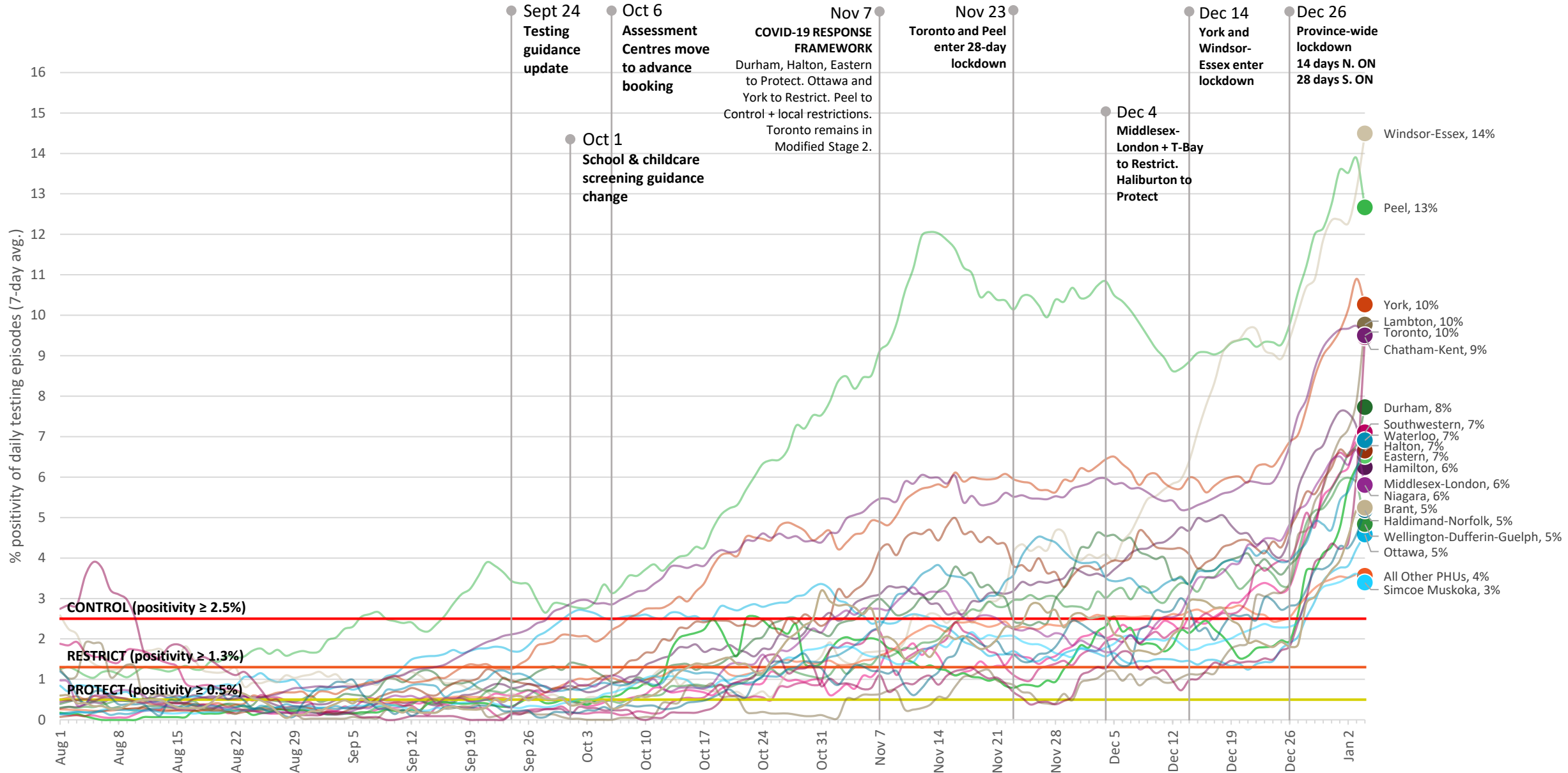
Key Findings

- Growth in cases has accelerated and is over 7% on the worst days.
- Almost 40% of long-term care homes have active COVID-19 outbreaks. Since January 1st 198 LTC residents and 2 LTC staff have died of COVID-19. Forecasts suggest more deaths in wave 2 in long-term care than in wave 1.
- COVID-19 ICU occupancy is now over 400 beds. Surgeries are being cancelled and the access to care deficit will continue to increase with real consequences for health.
- Mobility, and contacts between people have not decreased with the current restrictions. Survey data show that the majority of Ontarians are helping limit spread by following them. However, case numbers will not decline until more of the population follows their example.
- A new variant of concern of SARS-CoV-2 (B117) could drive much higher case counts, ICU occupancy and mortality if community transmission occurs. The doubling time for cases could drop by more than 2/3. This new variant is now in Ontario.
- Without significant reductions in contacts, the health system will be overwhelmed and mortality will exceed the first wave totals before a vaccine has time to take effect.

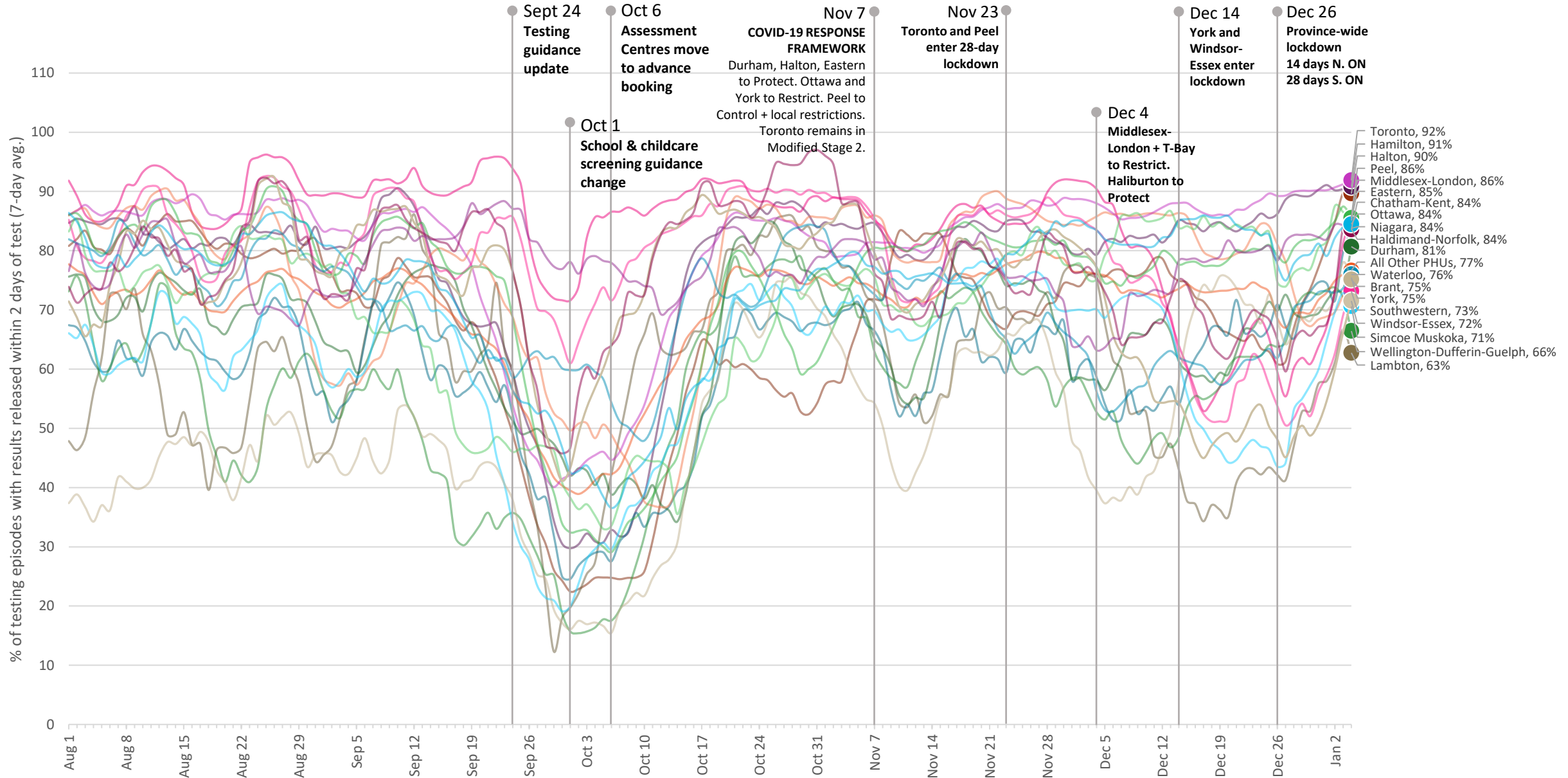
Total new cases per 100,000 residents per week across PHUs



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 ▲	Aug2020					Sep2020				Oct2020					Nov2020				Dec2020				Jan2021
Week No ▲	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Age Group ▼																							
75+	0.3	0.2	0.2	0.3	0.4	0.3	0.5	0.5	1.1	1.3	1.4	1.8	2.3	2.8	3.6	3.3	3.1	3.3	3.2	3.7	4.3	4.7	5.3
65to74	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	3.5	4.4	5.3
55to64	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	3.3	4.1	5.2
45to54	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	4.3	5.0	6.4
35to44	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	4.3	5.0	7.0
25to34	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	4.8	4.5	4.7	4.8	4.6	4.9	5.2	7.9
18to24	0.8	0.7	0.5	0.7	0.9	0.8	1.6	2.3	2.8	3.5	2.6	3.5	3.9	4.3	4.7	5.6	5.2	5.0	5.3	5.4	5.4	6.5	9.1
14to17	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	6.7	8.6	14.4
9to13	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	6.2	9.5	19.2
4to8	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	4.8	6.6	14.2
0to3	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	3.3	3.8	4.8	3.7	5.1	6.5	8.7
Total	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	4.4	5.1	6.9

Data Source: Ontario Laboratory Information System (OLIS), MOH – extracted from SAS VA Jan 10

Note: Includes all data submitted to OLIS up to January 7th 2021. The last six days are considered interim data (week 52) and subject to change

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

Cases and cumulative mortality LTC increasing (198 resident and 2 staff deaths since January 1st)

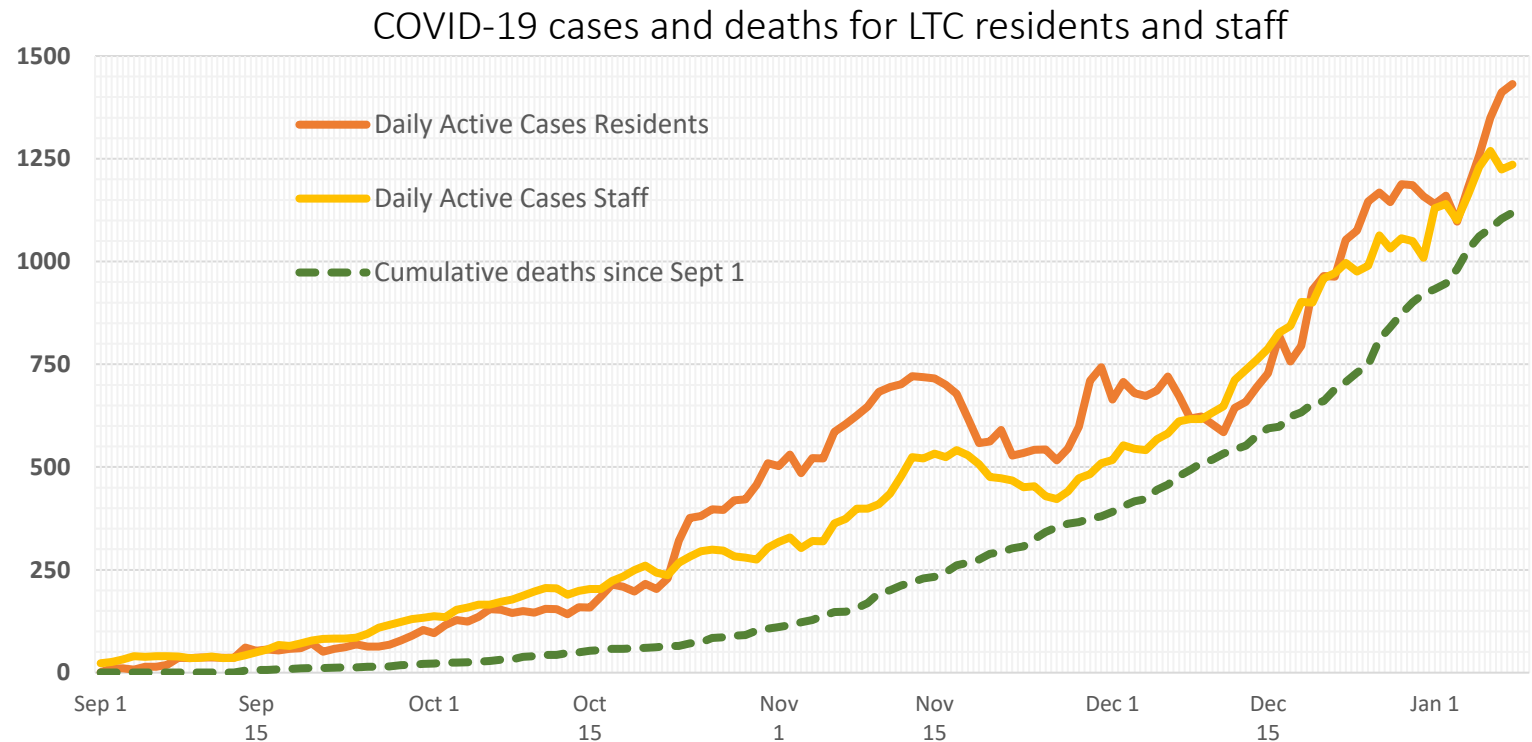
Current status

252 LTC homes have COVID-19 outbreaks (40% of all homes) with 105 outbreaks involving resident cases

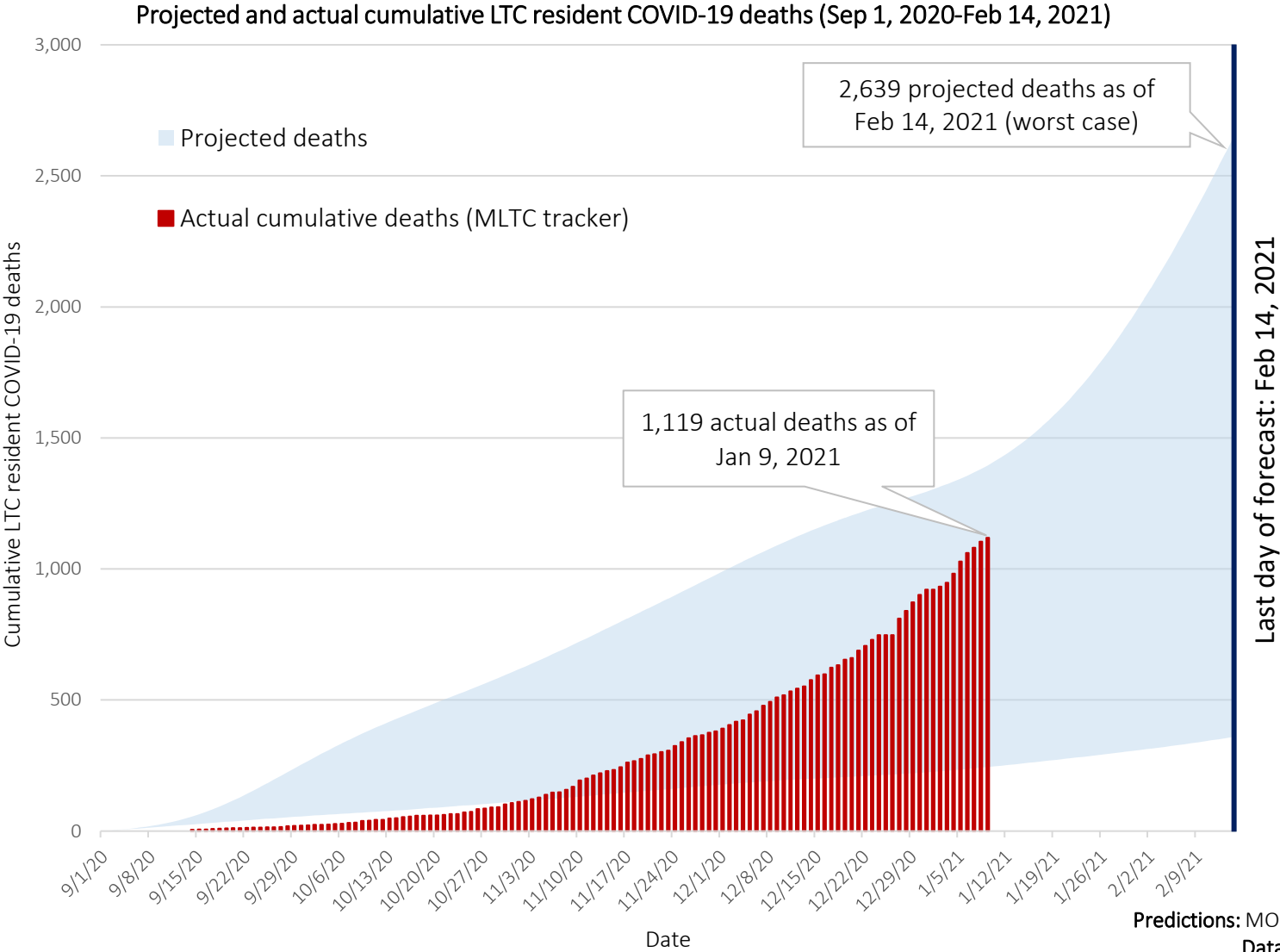
Outbreaks are occurring across almost all public health units, with 91 outbreaks (37%) occurring in priority vaccination areas of Toronto, Peel, York and Windsor-Essex

Since January 1st, 198 LTC residents have died of COVID-19 and 2 staff deaths have been reported

Forecasts suggest there will be more LTC residents deaths in wave 2 than in wave 1 (1,815 total deaths)



Projections: second wave cumulative LTC resident COVID-19 deaths >2,600 by Feb 14 in worst case scenario

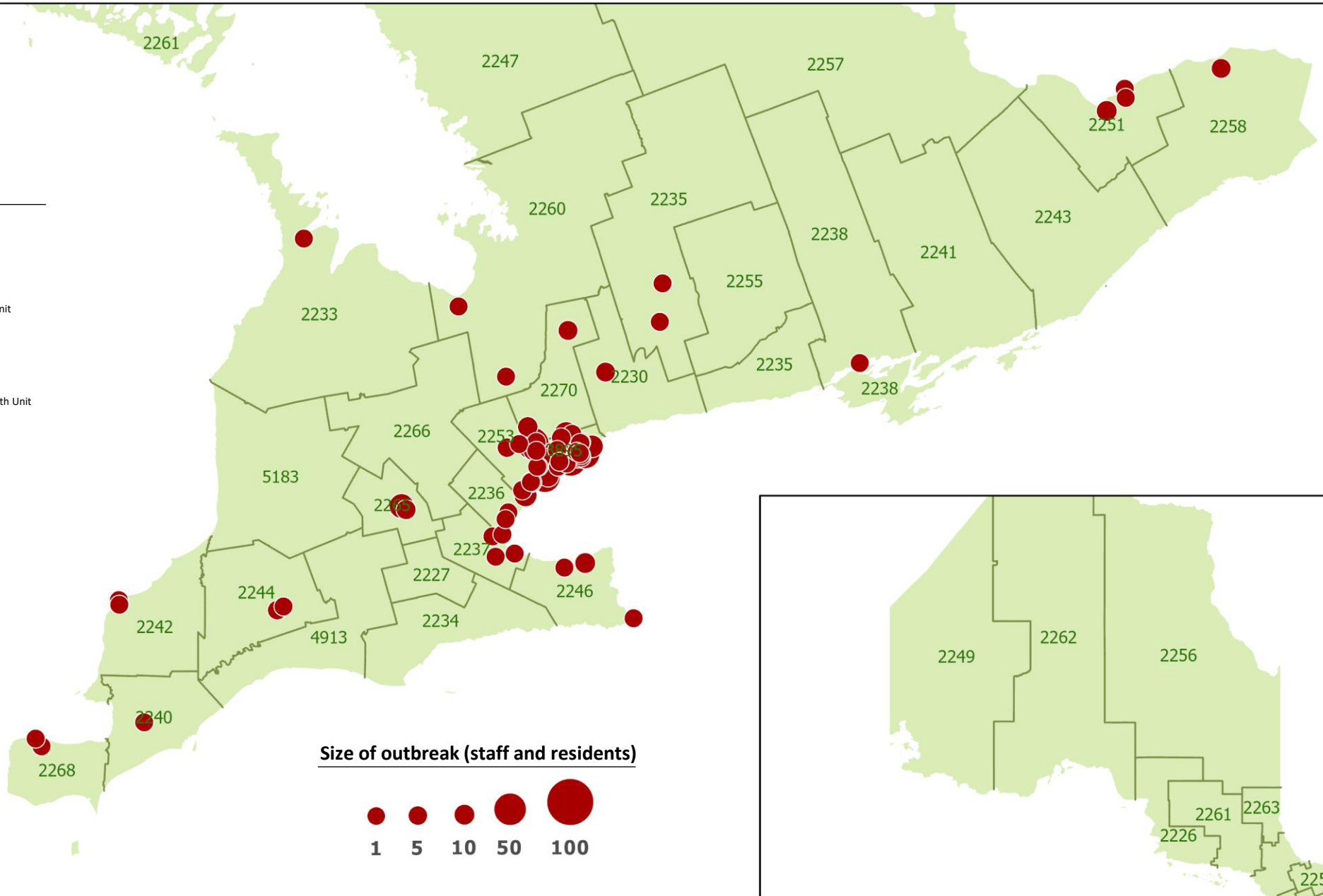


Long-term Care Outbreaks

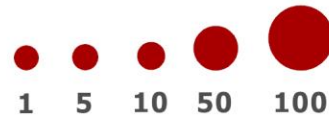
July 1, 2020

Public Health Unit

- 2226 Algoma Public Health Unit
- 2227 Brant County Health Unit
- 2230 Durham Region Health Department
- 2233 Grey Bruce Health Unit
- 2234 Haldimand-Norfolk Health Unit
- 2235 Haliburton, Kawartha, Pine Ridge District Health Unit
- 2236 Halton Region Health Department
- 2237 Hamilton Public Health Services
- 2238 Hastings & Prince Edward Counties Health Unit
- 2240 Chatham-Kent Health Unit
- 2241 Kingston, Frontenac and Lennox & Addington Health Unit
- 2242 Lambton Health Unit
- 2243 Leeds, Grenville & Lanark District Health Unit
- 2244 Middlesex-London Health Unit
- 2246 Niagara Region Public Health Department
- 2247 North Bay Parry Sound District Health Unit
- 2249 Northwestern Health Unit
- 2251 Ottawa Public Health
- 2253 Peel Public Health
- 2255 Peterborough Public Health
- 2256 Porcupine Health Unit
- 2257 Renfrew County & District Health Unit
- 2258 Eastern Ontario Health Unit
- 2260 Simcoe Muskoka District Health Unit
- 2261 Sudbury and District Health Unit
- 2262 Thunder Bay District Health Unit
- 2263 Timiskaming Health Unit
- 2265 Region of Waterloo, Public Health
- 2266 Wellington-Dufferin-Guelph Health Unit
- 2268 Windsor-Essex County Health Unit
- 2270 York Region Public Health
- 3895 Toronto Public Health
- 4913 Southwestern Public Health
- 5183 Huron Perth Health Unit



Size of outbreak (staff and residents)

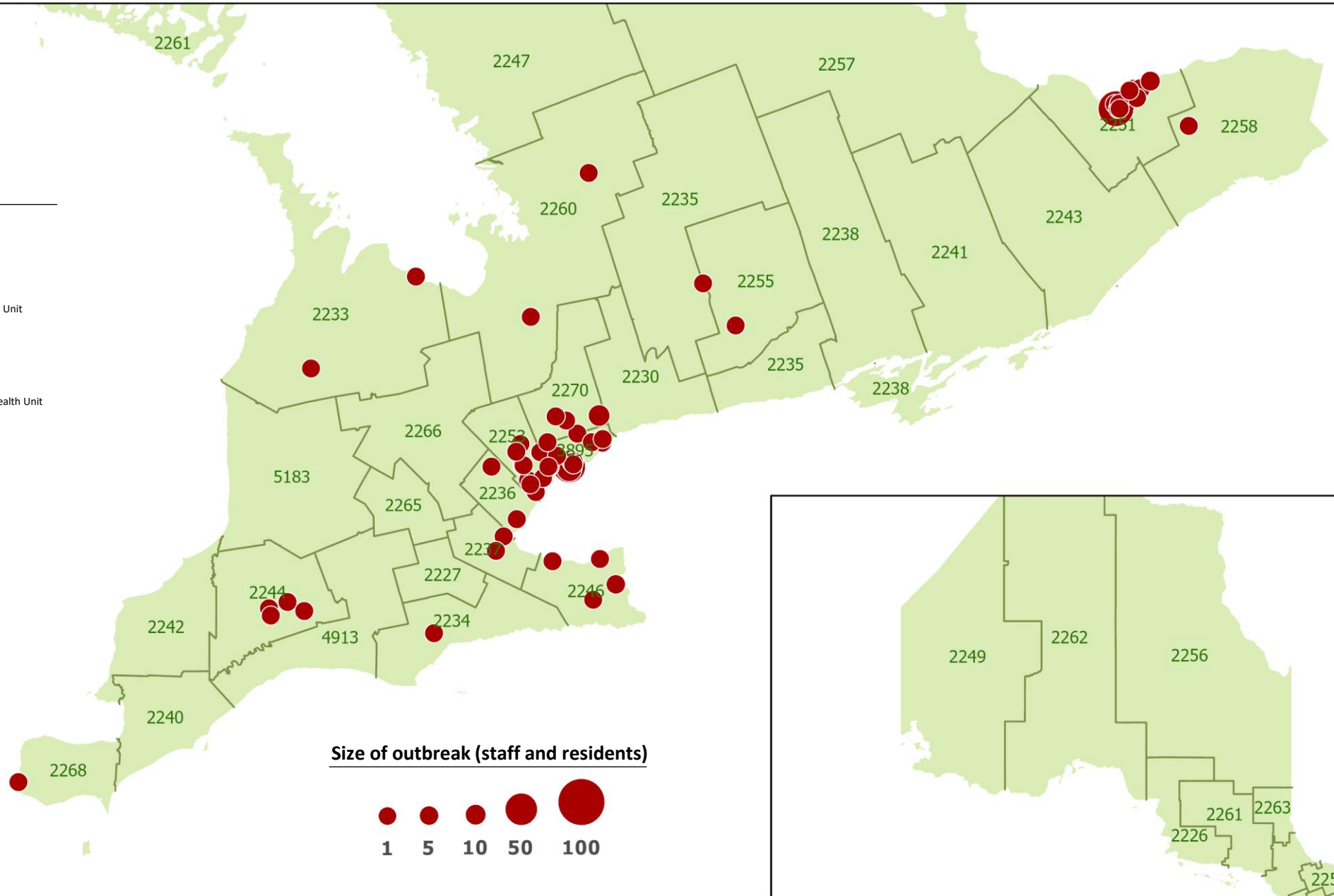


Long-term Care Outbreaks

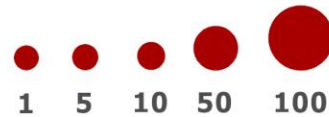
October 1, 2020

Public Health Unit

- 2226 Algoma Public Health Unit
- 2227 Brant County Health Unit
- 2230 Durham Region Health Department
- 2233 Grey Bruce Health Unit
- 2234 Haldimand-Norfolk Health Unit
- 2235 Haliburton, Kawartha, Pine Ridge District Health Unit
- 2236 Halton Region Health Department
- 2237 Hamilton Public Health Services
- 2238 Hastings & Prince Edward Counties Health Unit
- 2240 Chatham-Kent Health Unit
- 2241 Kingston, Frontenac and Lennox & Addington Health Unit
- 2242 Lambton Health Unit
- 2243 Leeds, Grenville & Lanark District Health Unit
- 2244 Middlesex-London Health Unit
- 2246 Niagara Region Public Health Department
- 2247 North Bay Parry Sound District Health Unit
- 2249 Northwestern Health Unit
- 2251 Ottawa Public Health
- 2253 Peel Public Health
- 2255 Peterborough Public Health
- 2256 Porcupine Health Unit
- 2257 Renfrew County & District Health Unit
- 2258 Eastern Ontario Health Unit
- 2260 Simcoe Muskoka District Health Unit
- 2261 Sudbury and District Health Unit
- 2262 Thunder Bay District Health Unit
- 2263 Timiskaming Health Unit
- 2265 Region of Waterloo, Public Health
- 2266 Wellington-Dufferin-Guelph Health Unit
- 2268 Windsor-Essex County Health Unit
- 2270 York Region Public Health
- 3895 Toronto Public Health
- 4913 Southwestern Public Health
- 5183 Huron Perth Health Unit



Size of outbreak (staff and residents)

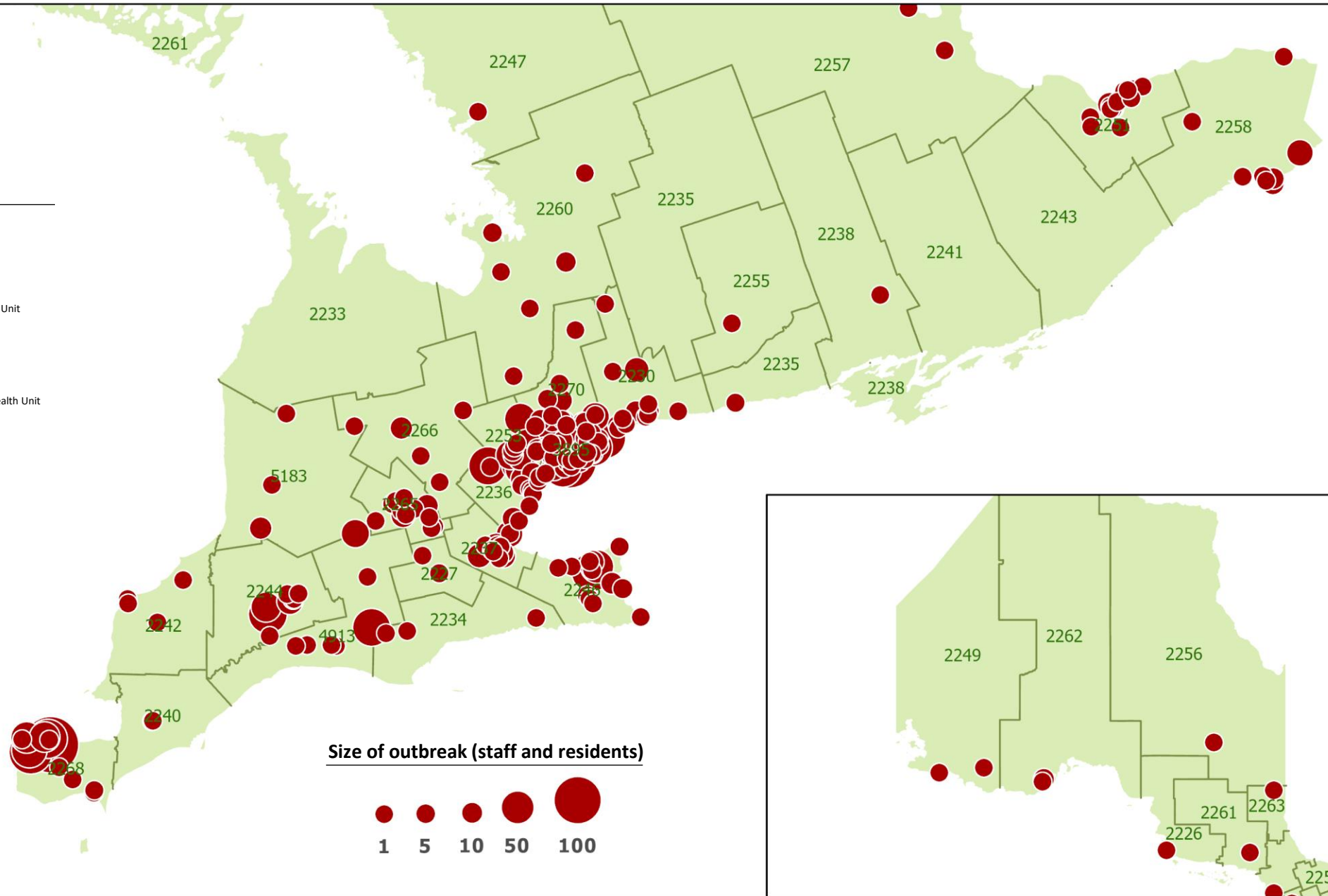


Long-term Care Outbreaks

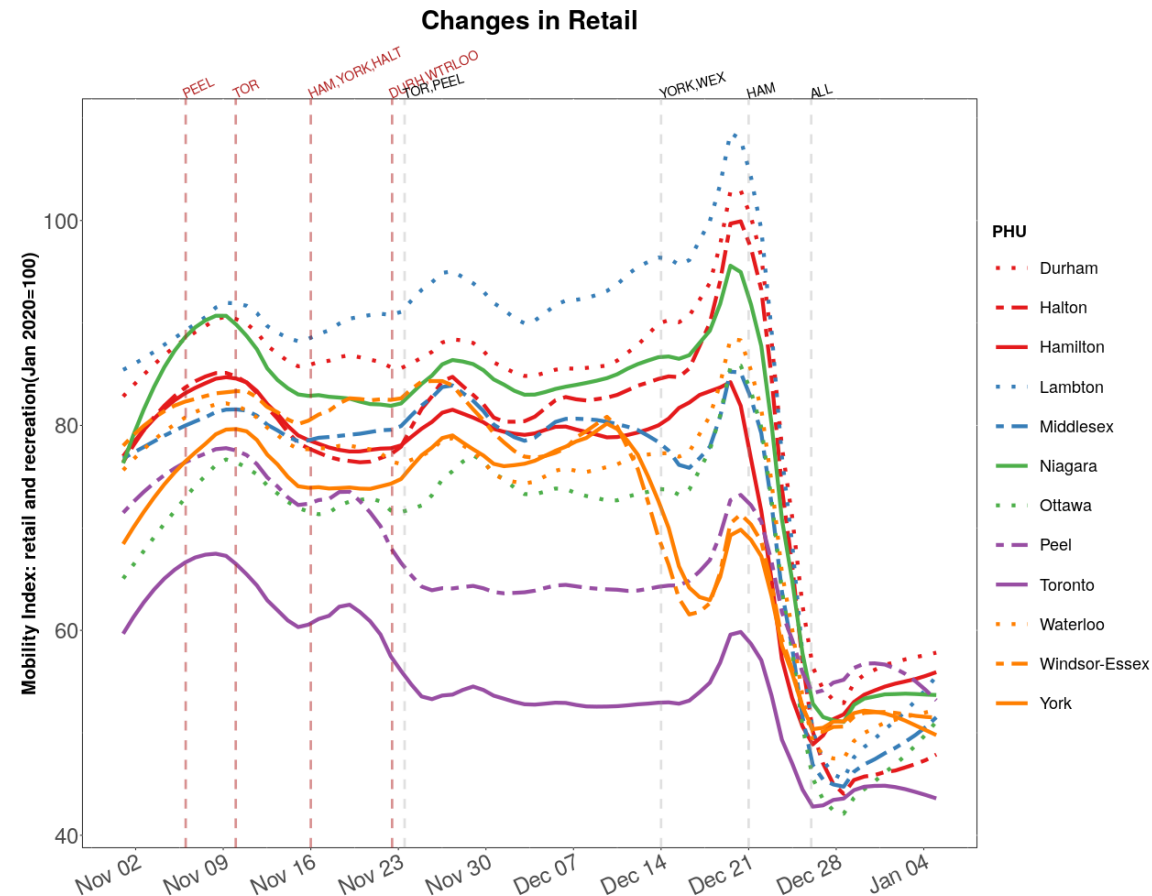
January 7, 2021

Public Health Unit

- 2226 Algoma Public Health Unit
- 2227 Brant County Health Unit
- 2230 Durham Region Health Department
- 2233 Grey Bruce Health Unit
- 2234 Haldimand-Norfolk Health Unit
- 2235 Haliburton, Kawartha, Pine Ridge District Health Unit
- 2236 Halton Region Health Department
- 2237 Hamilton Public Health Services
- 2238 Hastings & Prince Edward Counties Health Unit
- 2240 Chatham-Kent Health Unit
- 2241 Kingston, Frontenac and Lennox & Addington Health Unit
- 2242 Lambton Health Unit
- 2243 Leeds, Grenville & Lanark District Health Unit
- 2244 Middlesex-London Health Unit
- 2246 Niagara Region Public Health Department
- 2247 North Bay Parry Sound District Health Unit
- 2249 Northwestern Health Unit
- 2251 Ottawa Public Health
- 2253 Peel Public Health
- 2255 Peterborough Public Health
- 2256 Porcupine Health Unit
- 2257 Renfrew County & District Health Unit
- 2258 Eastern Ontario Health Unit
- 2260 Simcoe Muskoka District Health Unit
- 2261 Sudbury and District Health Unit
- 2262 Thunder Bay District Health Unit
- 2263 Timiskaming Health Unit
- 2265 Region of Waterloo, Public Health
- 2266 Wellington-Dufferin-Guelph Health Unit
- 2268 Windsor-Essex County Health Unit
- 2270 York Region Public Health
- 3895 Toronto Public Health
- 4913 Southwestern Public Health
- 5183 Huron Perth Health Unit



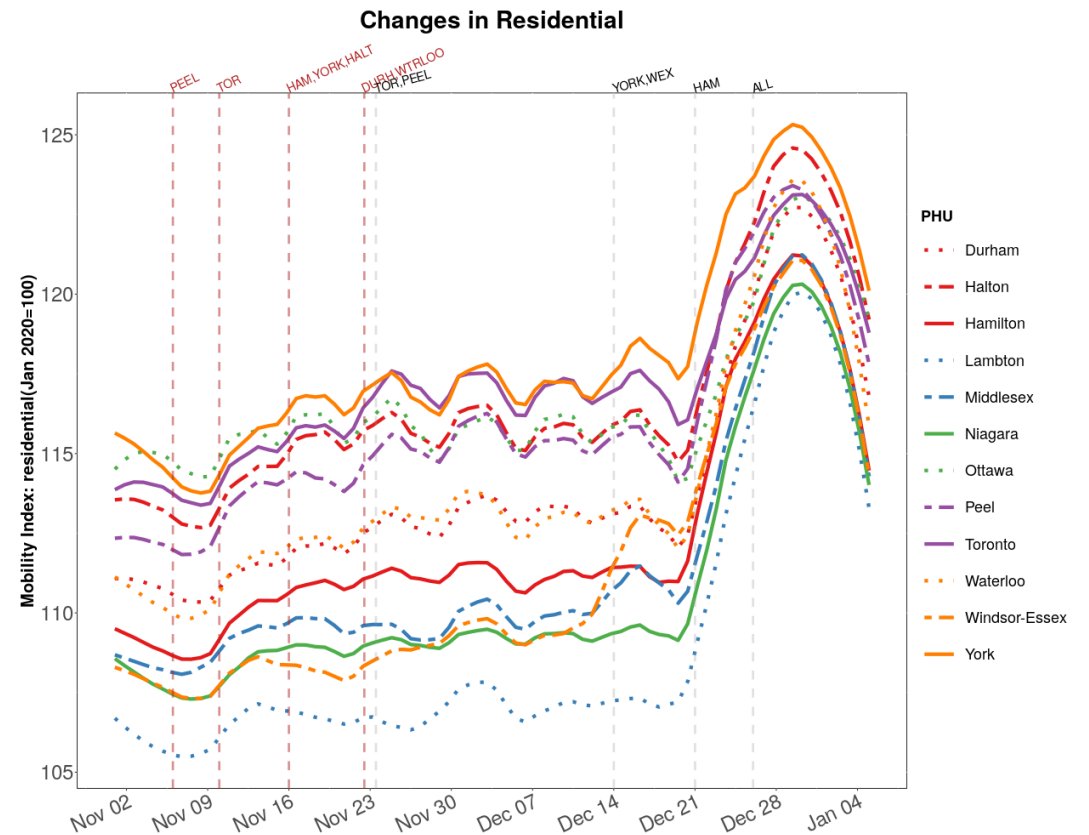
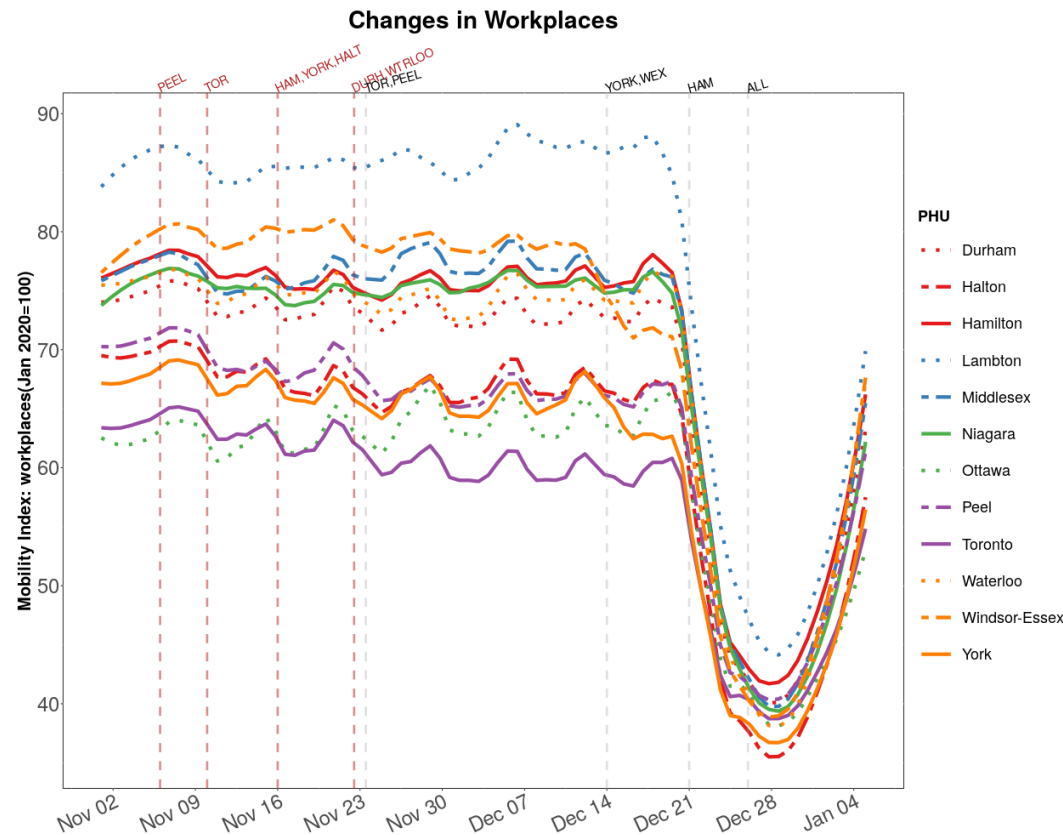
Despite some reduced mobility from “Grey Zone” restrictions, there was a pre-holiday spike



% change relative to January 2020

Analysis: UofT, St. Michael's Hospital, ICES
Data: Google

“Grey Zone” restrictions did not affect the proportion of people working from home; holiday decreases are not likely to persist

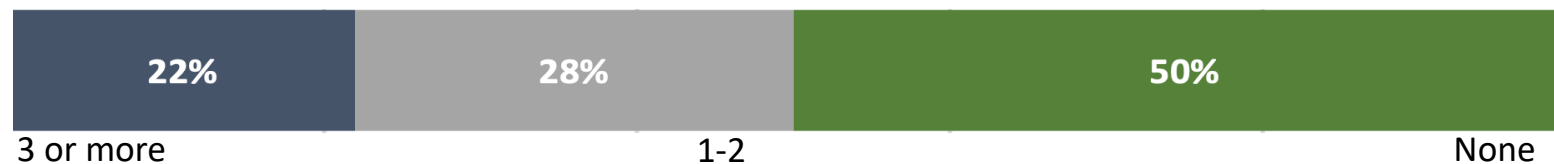


With current restrictions, almost 2/3 of the population are acting in a way that will decrease COVID-19 spread

- Are people in your neighbourhood physically distancing?



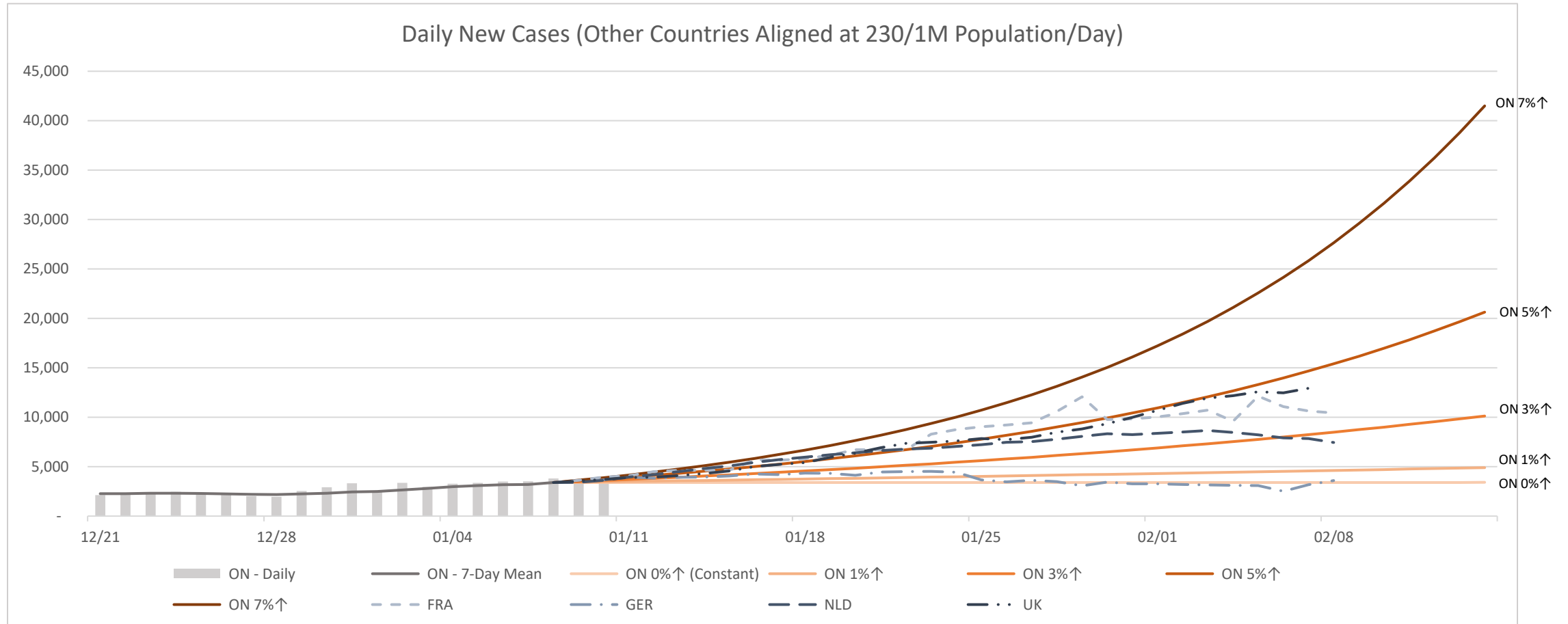
- In the last 4 weeks, how many people outside your household visited your house (meal, celebration, stay over)?



- And if so, did you observe restrictions?



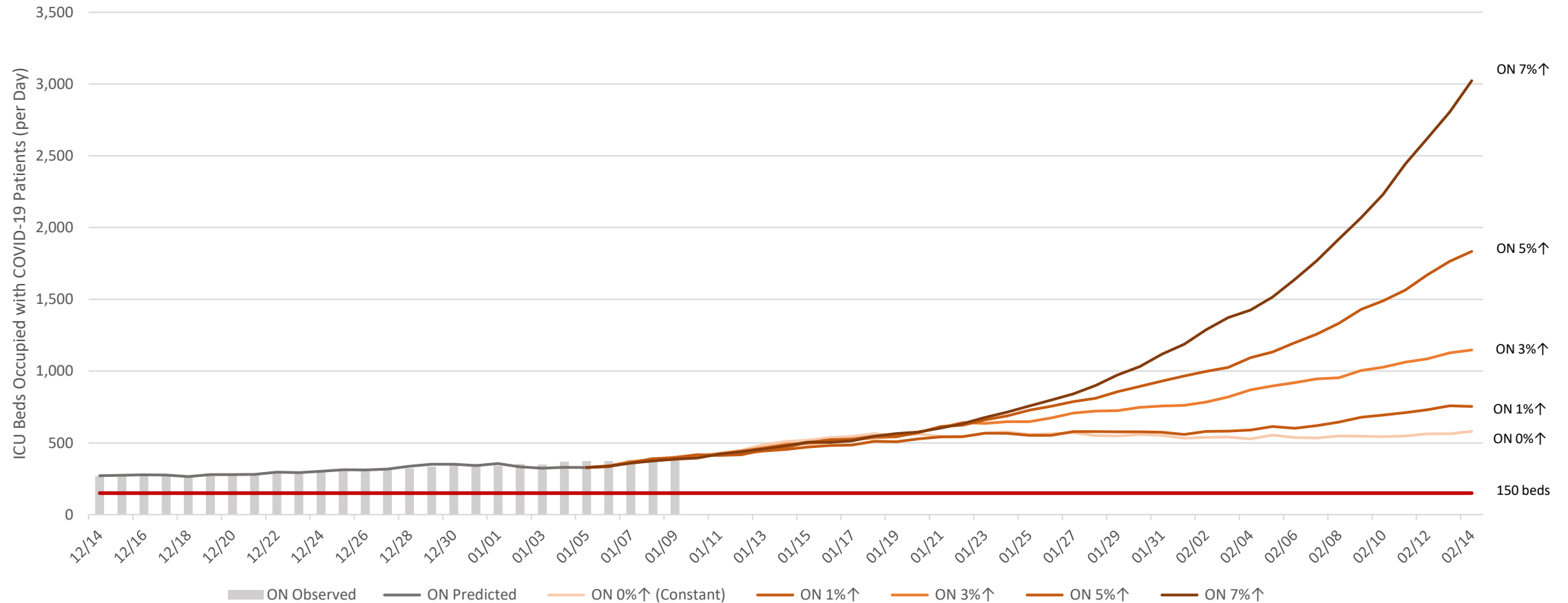
As happened in other jurisdictions, case growth continues under current levels of restrictions



Note: Ontario reached 23/100,000 cases between 1.5 and 3 months after these countries

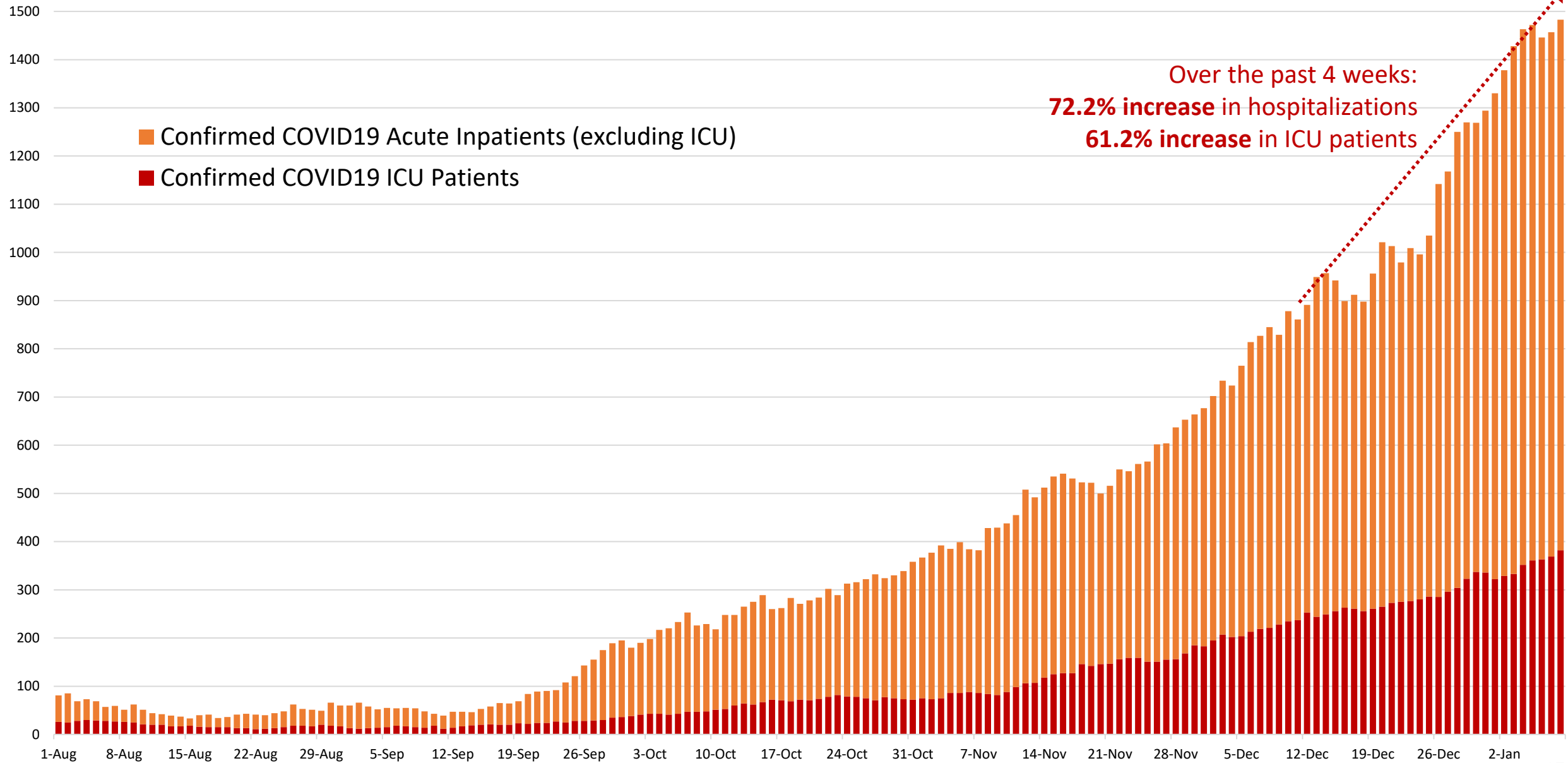
Predictions informed by modeling from McMasterU, Fields Institute, COVID-19 ModCollab, PHO; recent growth in new daily cases; reported cases in peer jurisdictions
 Data (Observed Cases): covid-19.ontario.ca; <https://ourworldindata.org>

Projections: COVID-19 ICU occupancy around 500 beds in mid-January, potentially over 1,000 beds in February in more severe, but realistic scenarios

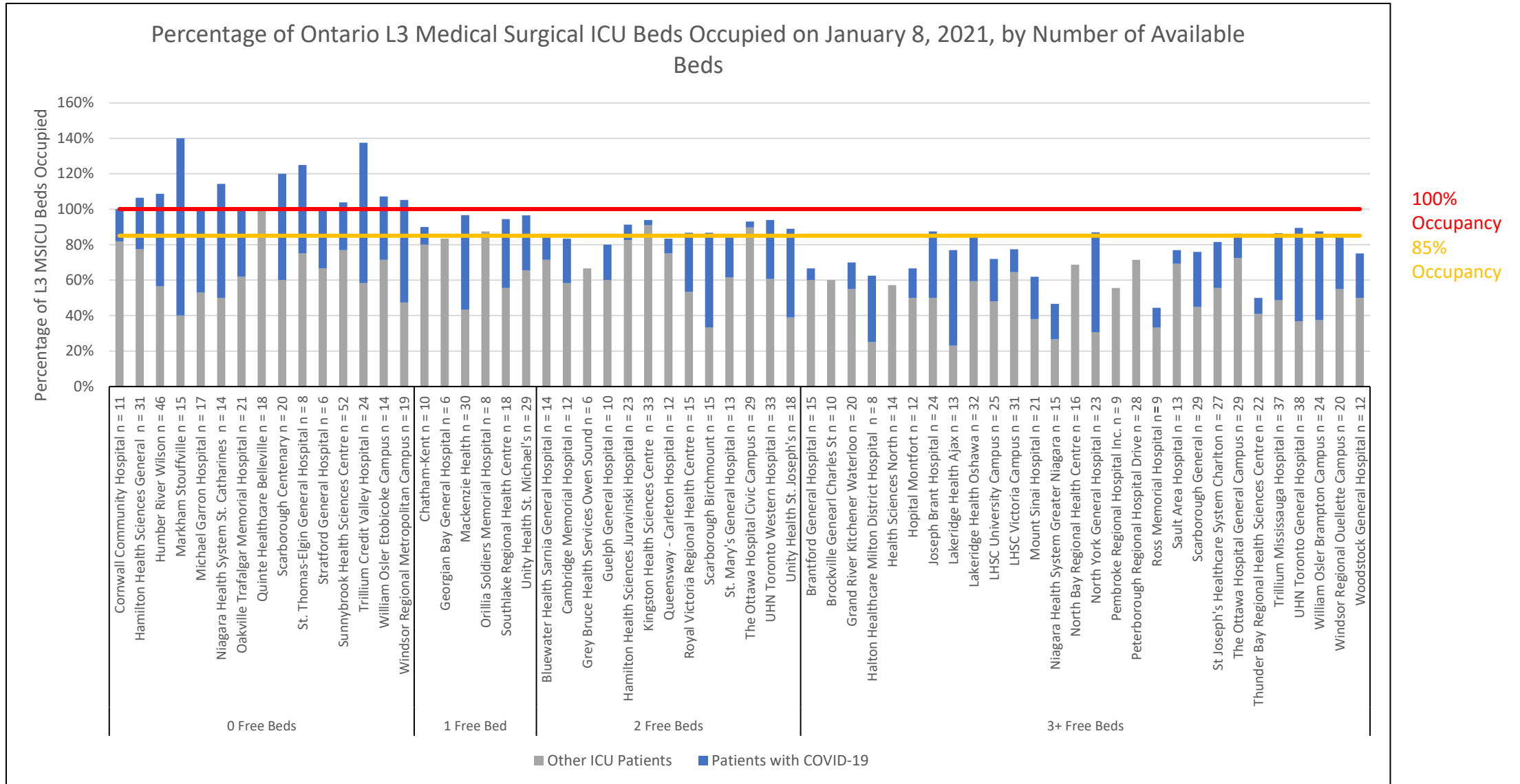


At 9% growth rate (not shown): >2,000 occupancy Feb 5

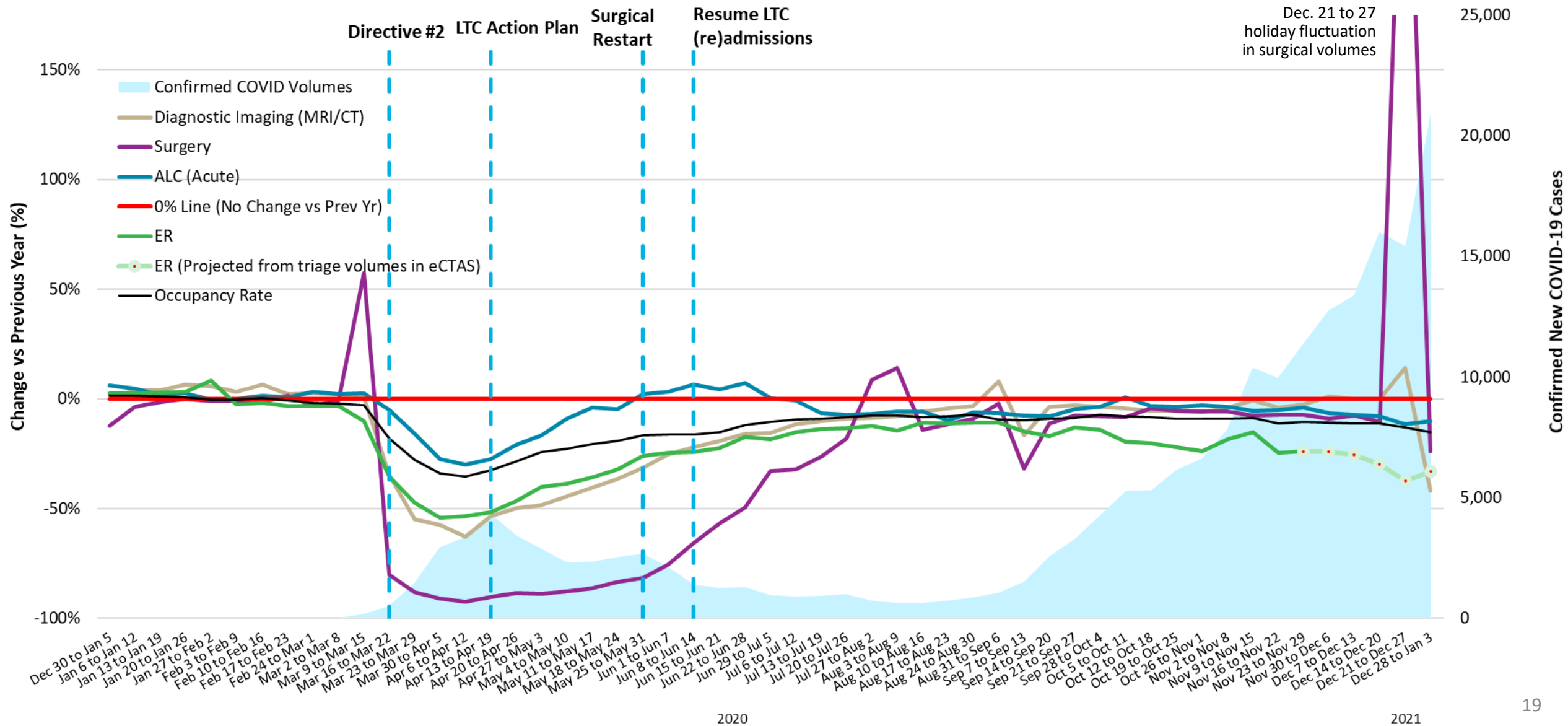
COVID-19 hospitalizations and ICU admissions continue to climb



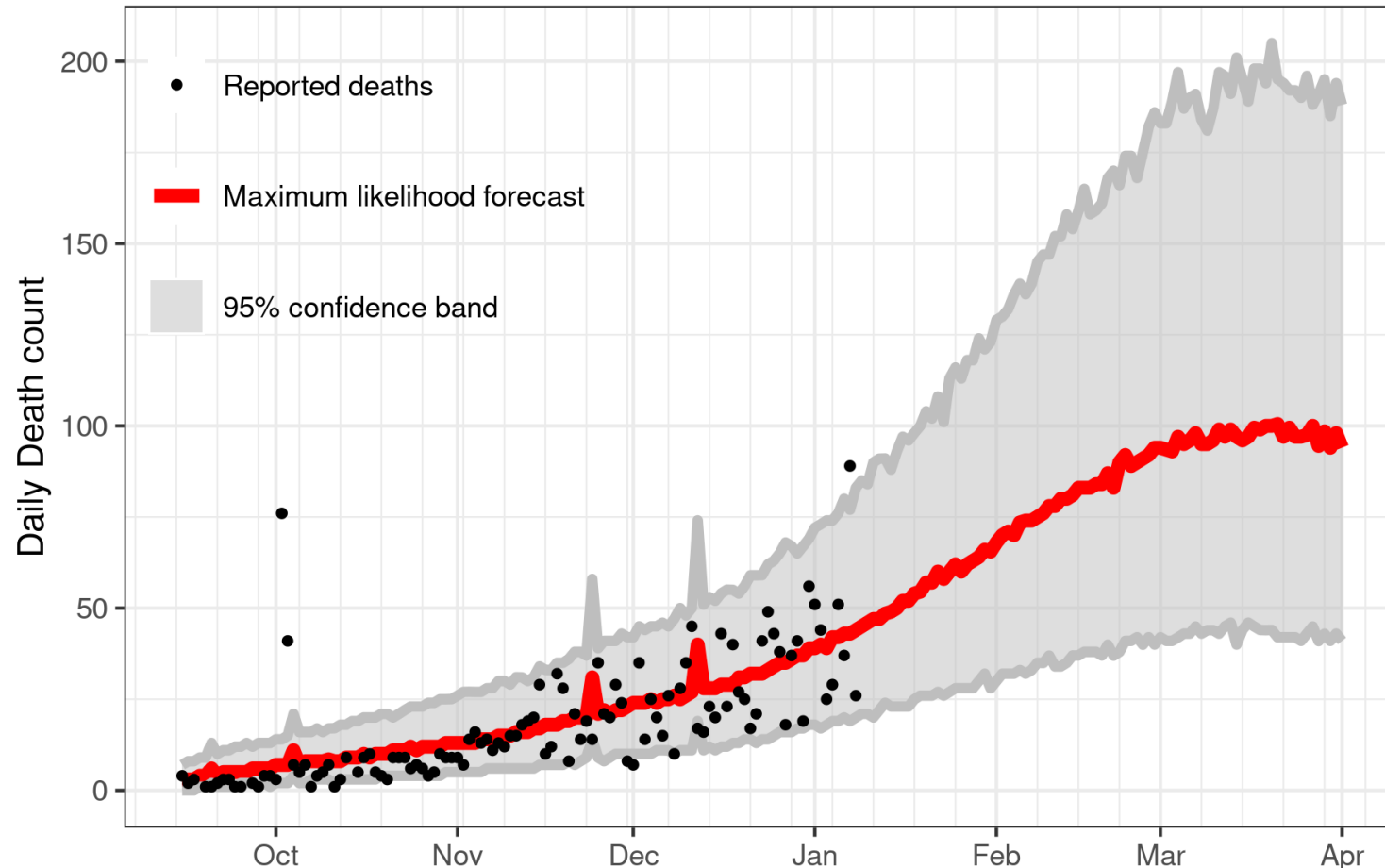
One quarter of hospitals have no ICU beds free, another quarter have only 1 or 2 beds free



Access to care continues to decline below 2019 levels



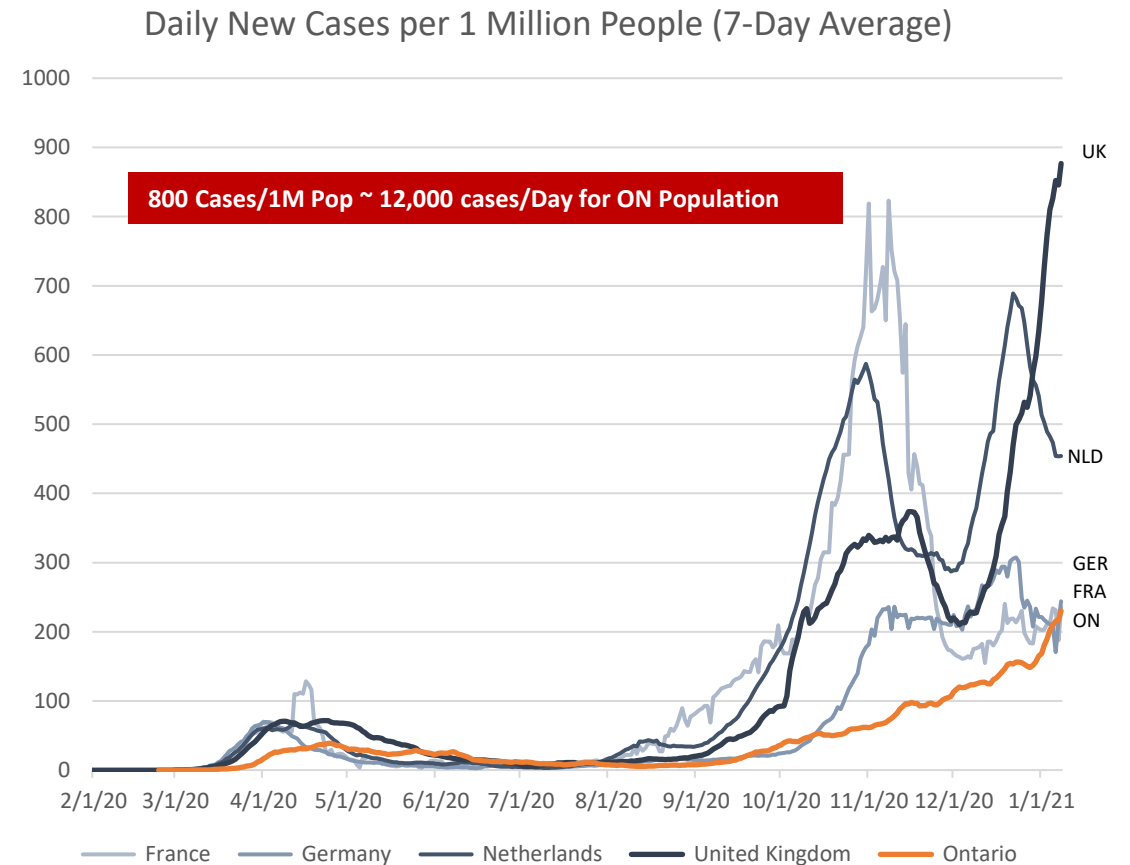
Daily mortality is increasing under current restrictions, doubling from 50 to 100 deaths per day between now and end of February



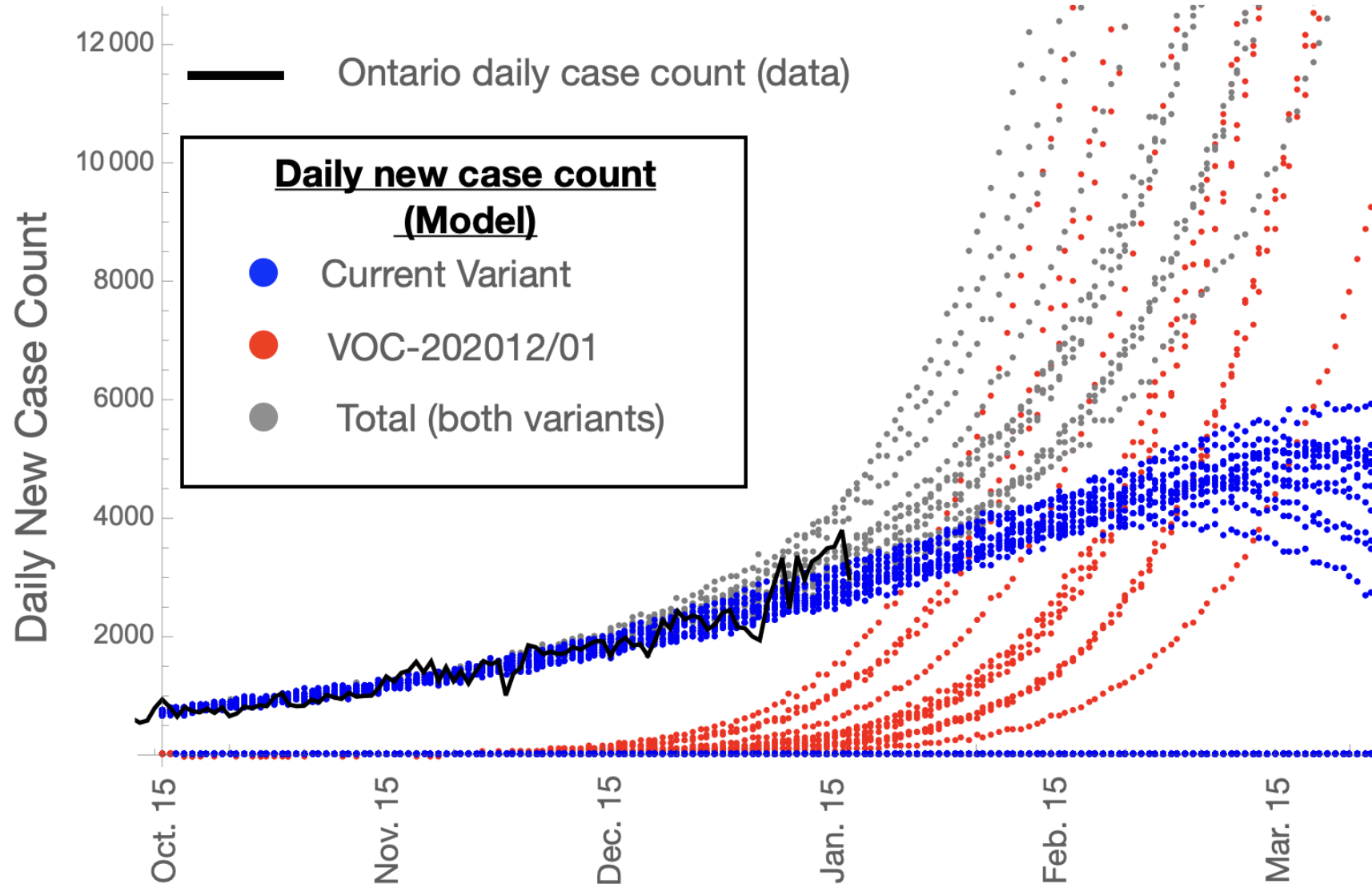
Assumption: continue current restrictions.

The Novel SARS-CoV-2 variant: B.1.1.7 appears to be much more easily transmitted

- Novel SARS-CoV-2 variant, B.1.1.7, emerged in southeast England in November
- Transmissibility: 56% ↑ (95% credible interval 50-74%)
- No increase in disease severity, vaccines likely still effective



If the SARS-CoV-2 variant B.1.1.7 spreads in the community, doubling time for cases could drop to 10 days in March



Assumptions: 1 case infected with B.1.1.7. from the UK entering Ontario mid-Oct, transmissibility of variant 56% ↑ than other circulating variants (based on UK data), continue current restrictions.

Key components of hard lockdowns in peer jurisdictions

	Victoria, Australia	France (Fall)	UK*	Germany*	Netherlands*
Strict stay-at-home order / movement restrictions	✓	✓	✓	✓	✓
Non-essential retail closed	✓	✓	✓	✓	✓
Bars, restaurants , gyms etc. closed	✓	✓	✓	✓	✓
Most workplaces closed	✓	✓	✓	✓	✓
Schools closed	✓	✗	✓	✓	✓
Mandatory masking outdoors	✓	✓	✗	✗	✗
Testing blitz in high risk areas	✓	✗	✗	✗	✗
Curfew	✓	✓	✗	✓	✗
Enforcement	✓	✓	✓	✓	✓

✓ = fully imposed, ✓ = partially imposed, ✗ = not imposed, *Currently in lockdown

Key Findings

- Growth in cases has accelerated and is over 7% on the worst days.
- Almost 40% of long-term care homes have active COVID-19 outbreaks. Since January 1st 198 LTC residents and 2 LTC staff have died of COVID-19. Forecasts suggest more deaths in wave 2 in long-term care than in wave 1.
- COVID-19 ICU occupancy is now over 400 beds. Surgeries are being cancelled and the access to care deficit will continue to increase with real consequences for health.
- Mobility, and contacts between people have not decreased with the current restrictions. Survey data show that the majority of Ontarians are helping limit spread by following them. However, case numbers will not decline until more of the population follows their example.
- A new variant of concern of SARS-CoV-2 (B117) could drive much higher case counts, ICU occupancy and mortality if community transmission occurs. The doubling time for cases could drop by more than 2/3. This new variant is now in Ontario.
- Without significant reductions in contacts, the health system will be overwhelmed and mortality will exceed the first wave totals before a vaccine has time to take effect.

Content provided by Modelling Consensus and Scientific Advisory Table members and secretariat

Beate Sander,* Peter Juni, Brian Schwartz,* Kumar Murty,* Upton Allen, Vanessa Allen, Nicholas Bodmer, Isaac Bogoch, Kevin Brown, Sarah Buchan, Yoojin Choi, Troy Day, David Earn, Gerald Evans, David Fisman, Jennifer Gibson, Anna Greenberg, Anne Hayes, Michael Hillmer, Jessica Hopkins, Jeff Kwong, Audrey Laporte, John Lavis, Gerald Lebovic, Brian Lewis, Linda Mah, Kamil Malikov, Antonina Maltsev, Doug Manuel, Allison McGeer, David McKeown, John McLaughlin, Sharmistha Mishra, Justin Morgenstern, Samira Mubareka, Laveena Munshi, Christopher Mushquash, Ayodele Odutayo, Shahla Oskoei, Samir Patel, Bill Praamsma, Justin Presseau, Fahad Razak, Paula Rochon, Laura Rosella, Arjumand Siddiqi, Chris Simpson, Arthur Slutsky, Janet Smylie, Nathan Stall, Ashleigh Tuite, Jennifer Walker, Tania Watts, Ashini Weerasinghe, Scott Weese, Xiaolin Wei, Jianhong Wu, Diana Yan, Emre Yurga

* Chairs of Scientific Advisory or Modelling Consensus Tables