

Update on COVID-19 Projections

Science Advisory and Modelling Consensus Tables

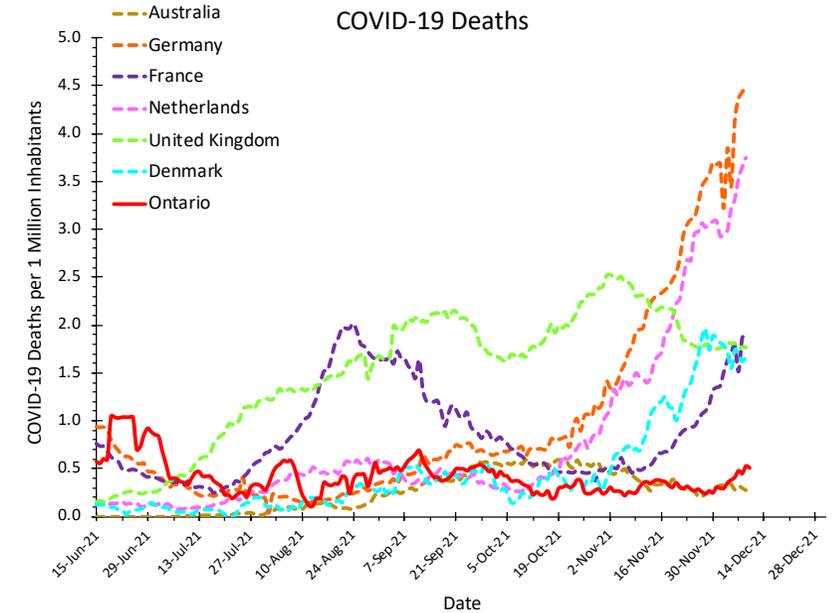
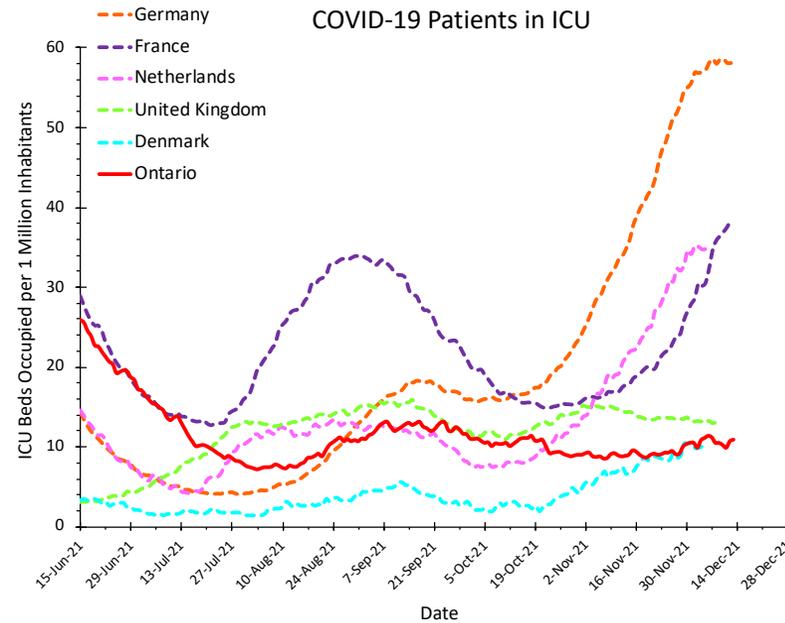
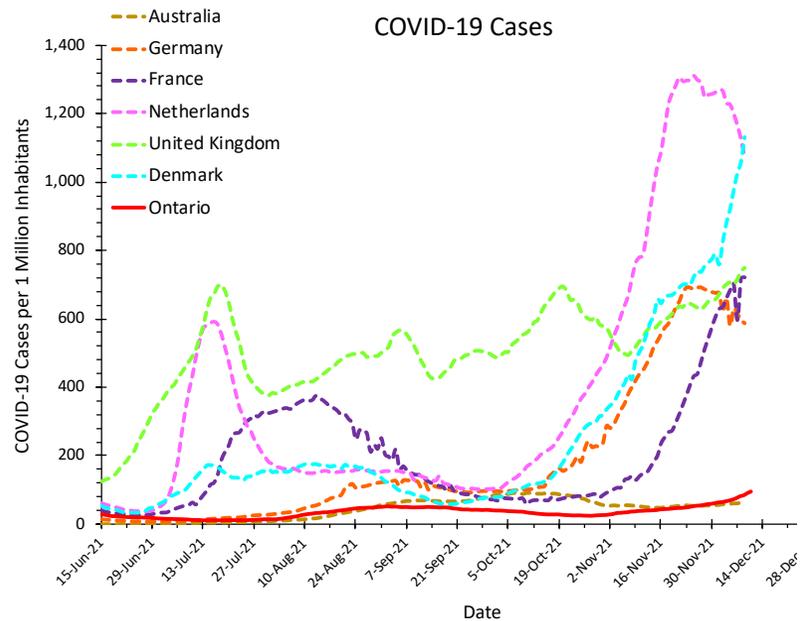
December 16, 2021



Key findings

- Cases are climbing across most public health units. The Omicron variant will shortly become the dominant variant.
- Omicron transmits very quickly. Early evidence suggests it can produce severe disease. Without prompt intervention, ICU occupancy could reach unsustainable levels in early January.
- Although vaccines are less effective against Omicron infection, boosters can substantially increase protection. Even 2 doses likely provide strong protection against severe illness. The risk of severe illness is dramatically higher in the unvaccinated.
- We can help protect the most vulnerable with vaccination (children and boosters). Rapid rollout of booster doses is essential, with strong focus on the most vulnerable (e.g., long-term care, shelters, high-risk communities) and healthcare workers.
- Increasing vaccination is not enough to slow this wave. Circuit breakers with strong additional public health measures (at least 50% fewer contacts) and strong booster campaigns (250,000 per day) could blunt the Omicron wave. High-quality masks, physical distancing indoors, improved ventilation, and increased access to rapid testing can help buy time for boosters to take effect and keep schools open.
- Although uncertainty persists, waiting for more information will eliminate the opportunity for action.

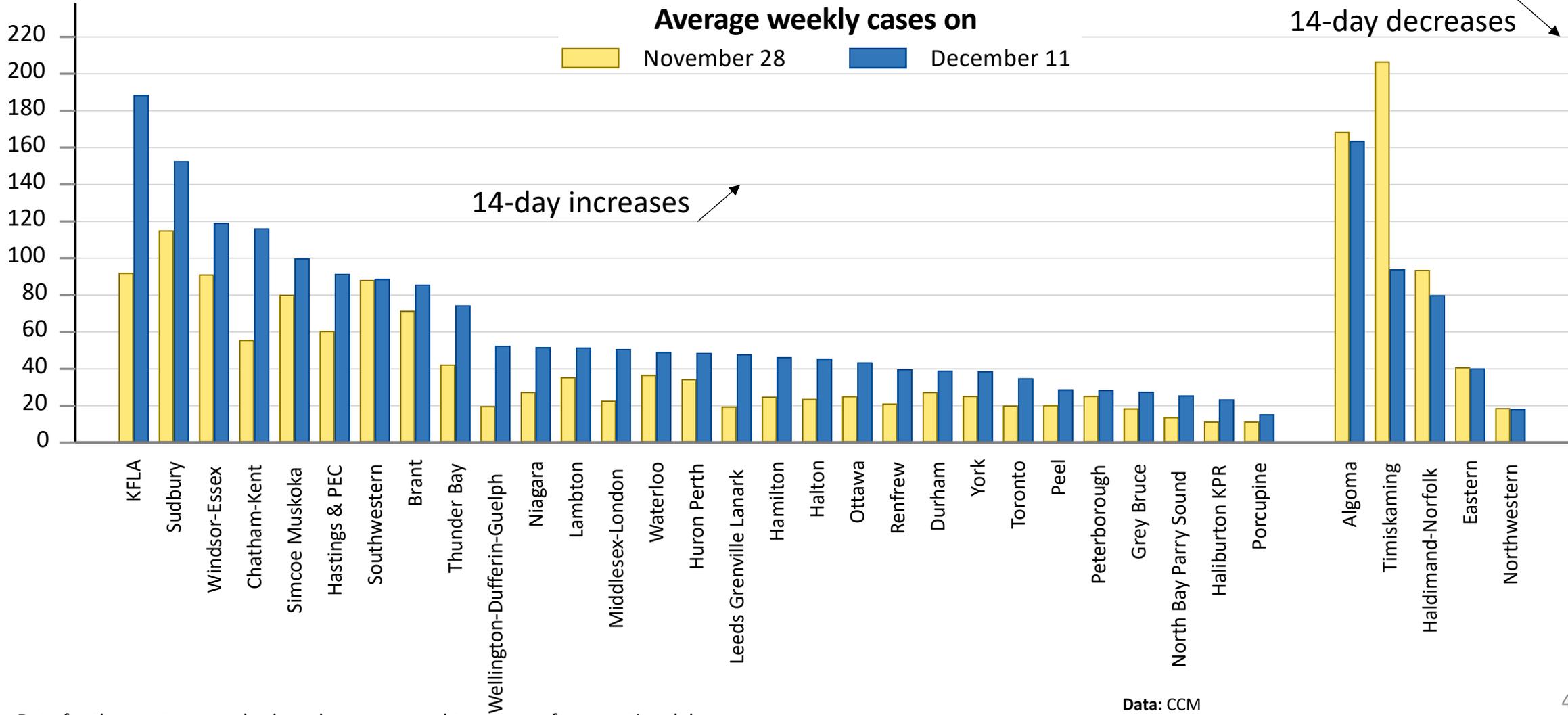
Rising cases, ICU occupancy, and deaths in European peer jurisdictions show potential risk



The Ontario Stringency Index (41) is similar to UK (47) and Denmark (44); the Netherlands are at 56, Australia, France and Germany are at ≥ 67 . Ontario vaccine coverage (77% of population fully vaccinated) similar to Netherlands and Australia (~75%) and Denmark (77%), and higher than remaining peer countries (~69%).

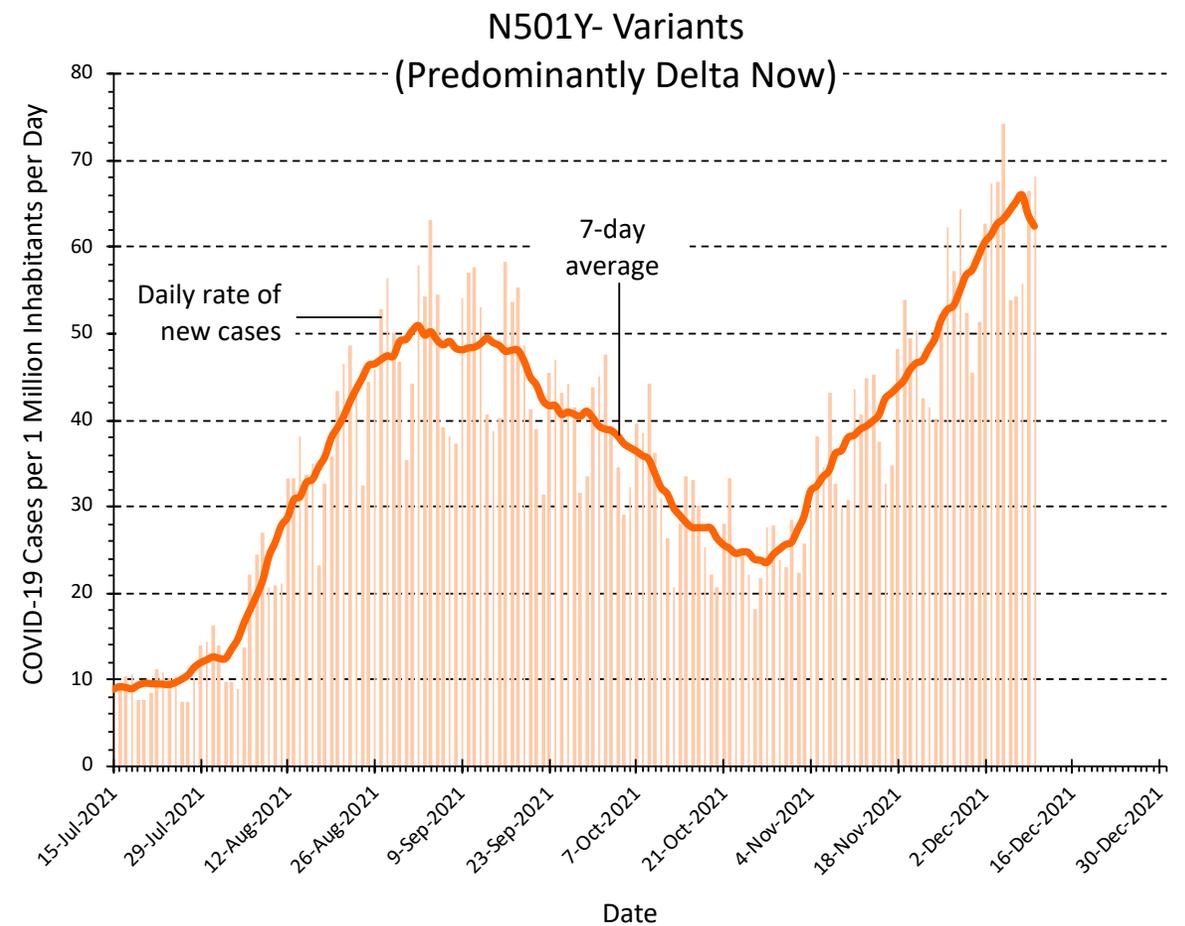
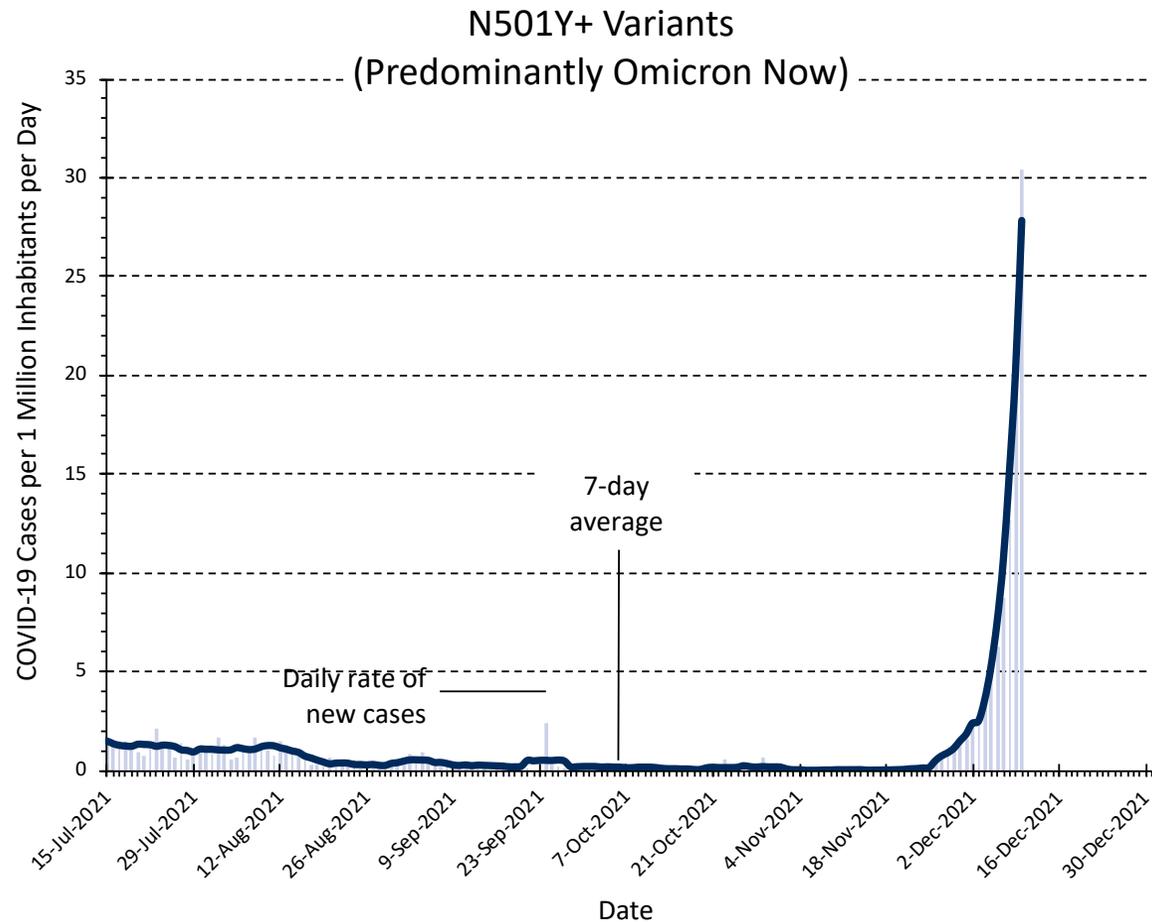
In Ontario, cases are increasing in most public health units

Weekly new cases per 100,000 residents



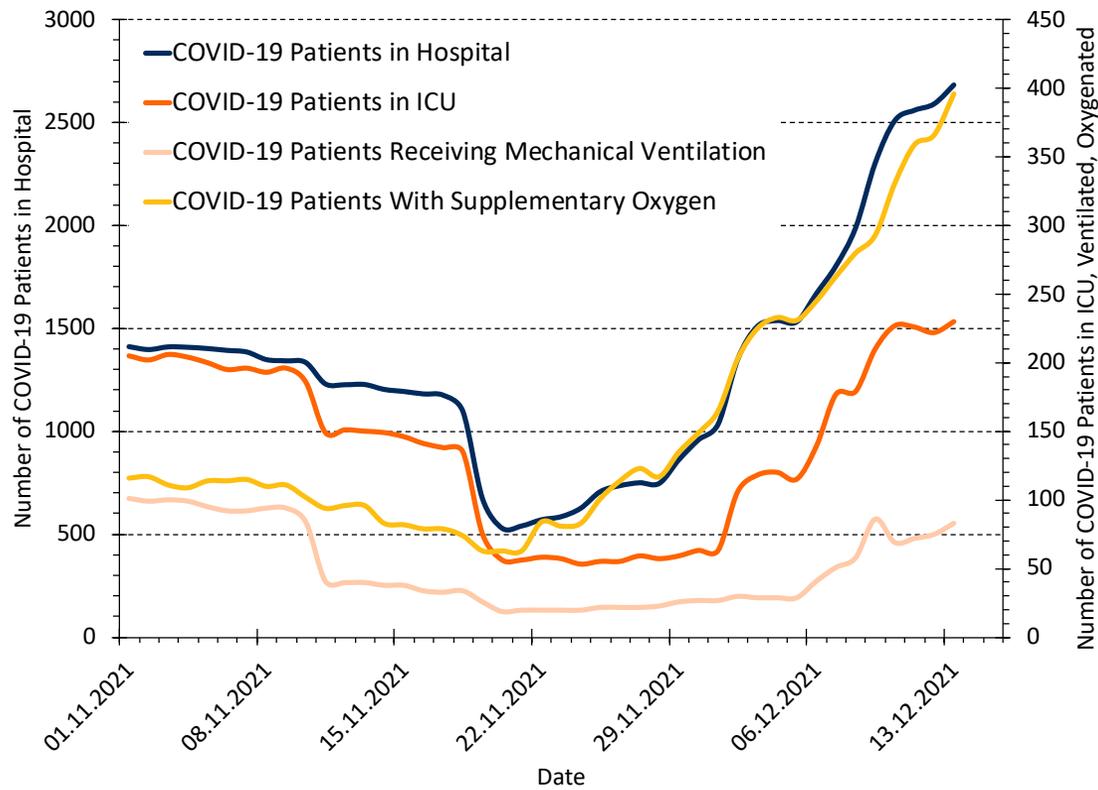
Data note: Data for the most recent day have been censored to account for reporting delays

Omicron cases are rising quickly in Ontario. Omicron will be the dominant variant this week.

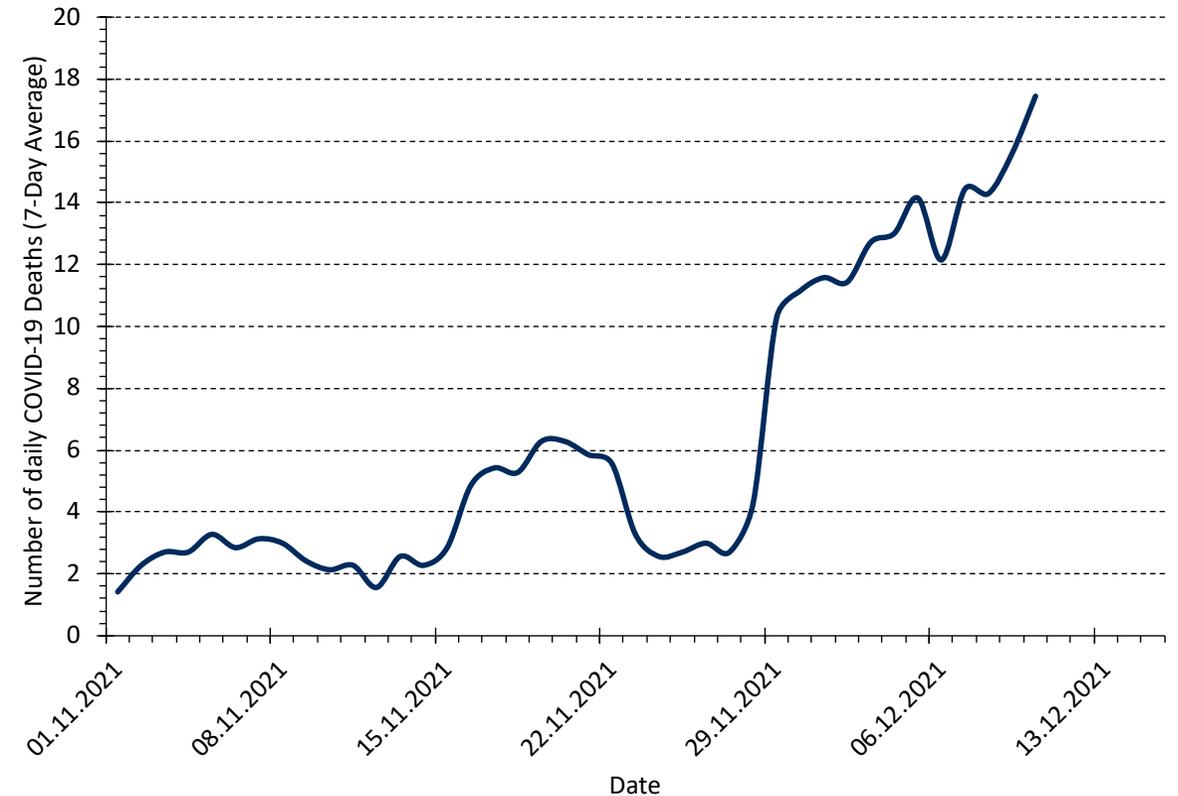


South Africa is cited as evidence of Omicron's lower severity, but hospitalizations, ICU occupancy, and in-hospital deaths are rising despite a younger population with some immunity

In-Hospital COVID-19 Patients in Gauteng, South Africa (15.8 Million Inhabitants)



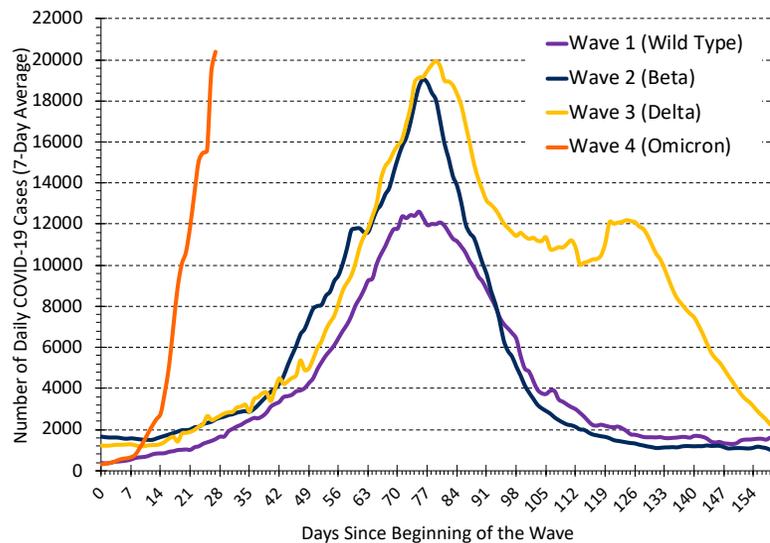
Number of Daily COVID-19 In-Hospital Deaths in Gauteng, South Africa (15.8 Million Inhabitants)



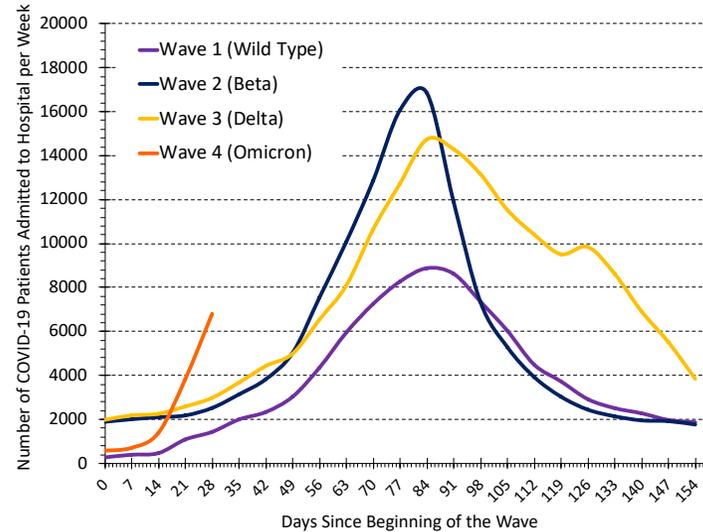
Median age in Gauteng 27 years (Ontario 41 years), estimated percentage infected ~90% (Ontario ~10%), estimated percentage highly immune among adults ~32% (Ontario ~15%)

A steep rise in cases in South Africa during the current Omicron wave is followed by a steep rise in hospitalizations, while the rise in deaths currently is less steep than in previous waves

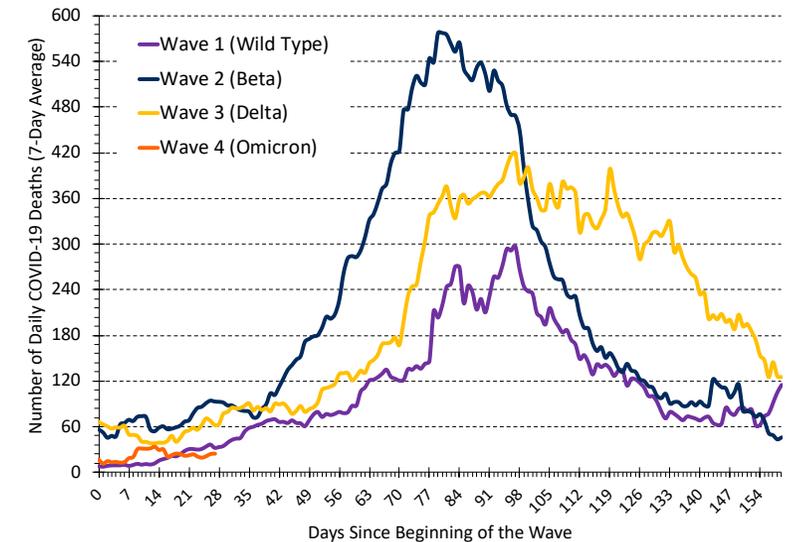
Daily COVID-19 Cases in South Africa



COVID-19 Patients Admitted to Hospital per Week in South Africa

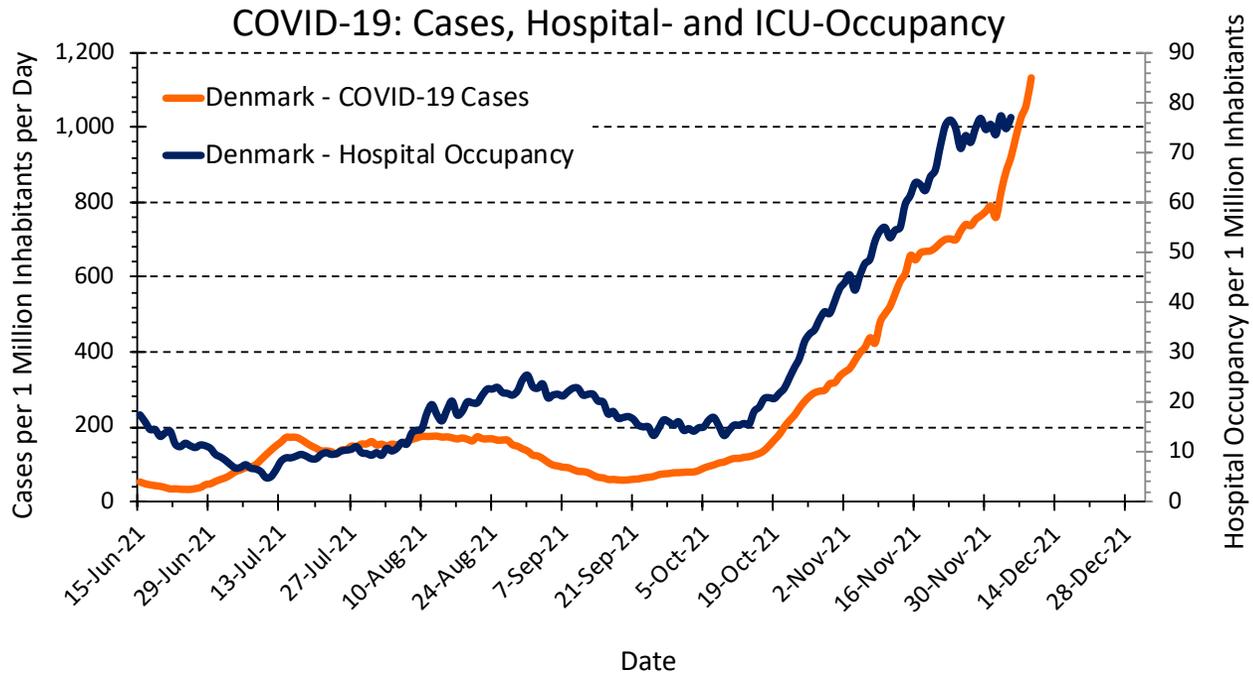


Daily In-Hospital COVID-19 Deaths in South Africa



Median age in South Africa 28 years (Ontario 41 years), estimated percentage infected ~90% (Ontario ~10%), estimated percentage highly immune among adults ~32% (Ontario ~15%)

Initial data from Denmark indicate that the percentage of cases requiring hospital admission is not lower with Omicron

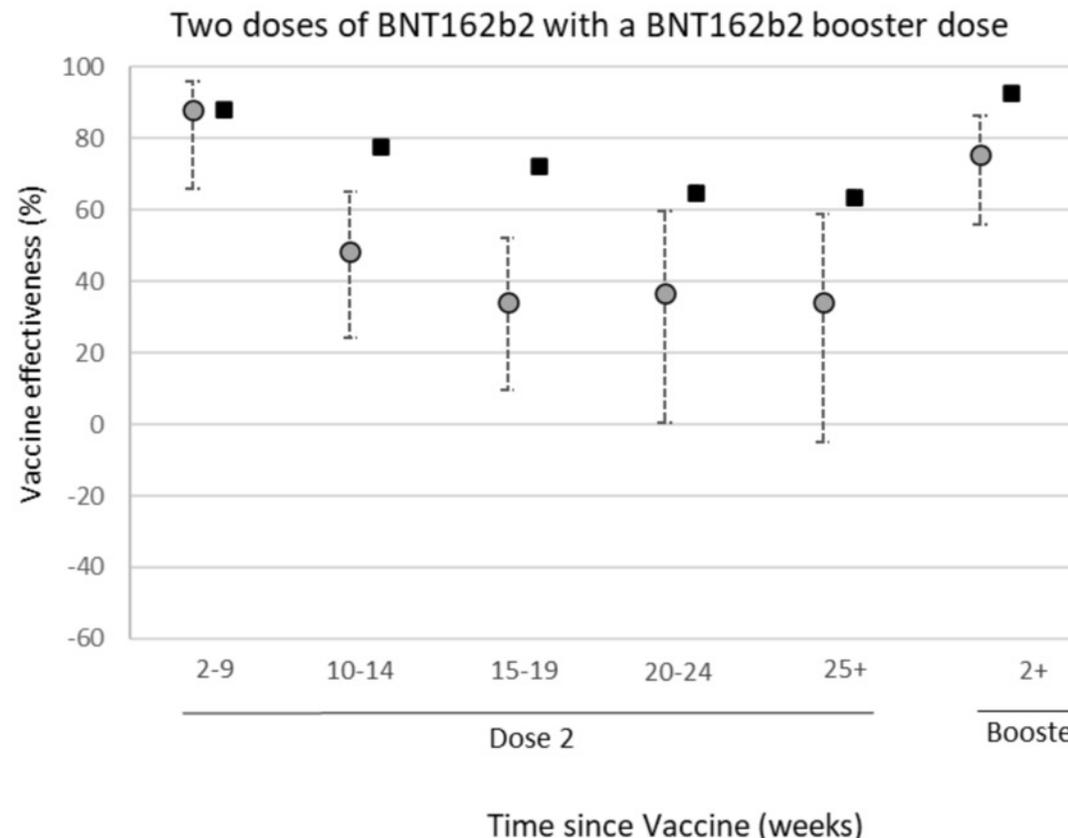


	Omicron	Other strains
Cases	3,437	88,940
Hospital admissions	28	665
Percentage hospitalized	0.81%	0.75%

Maintaining vaccine effectiveness against Omicron will require aggressive booster campaign

UK real-world surveillance data suggests a significant reduction in vaccine effectiveness (VE) against symptomatic infection for Omicron

- 2 doses of Pfizer vaccine: VE ~35% after 14 weeks
- 3rd dose of Pfizer vaccine: increase VE to ~75% in the 1st month



Vaccine effectiveness against symptomatic diseases by period after dose 2 and dose 3 (booster) of Pfizer vaccine for Delta (black squares) and Omicron (grey circles)

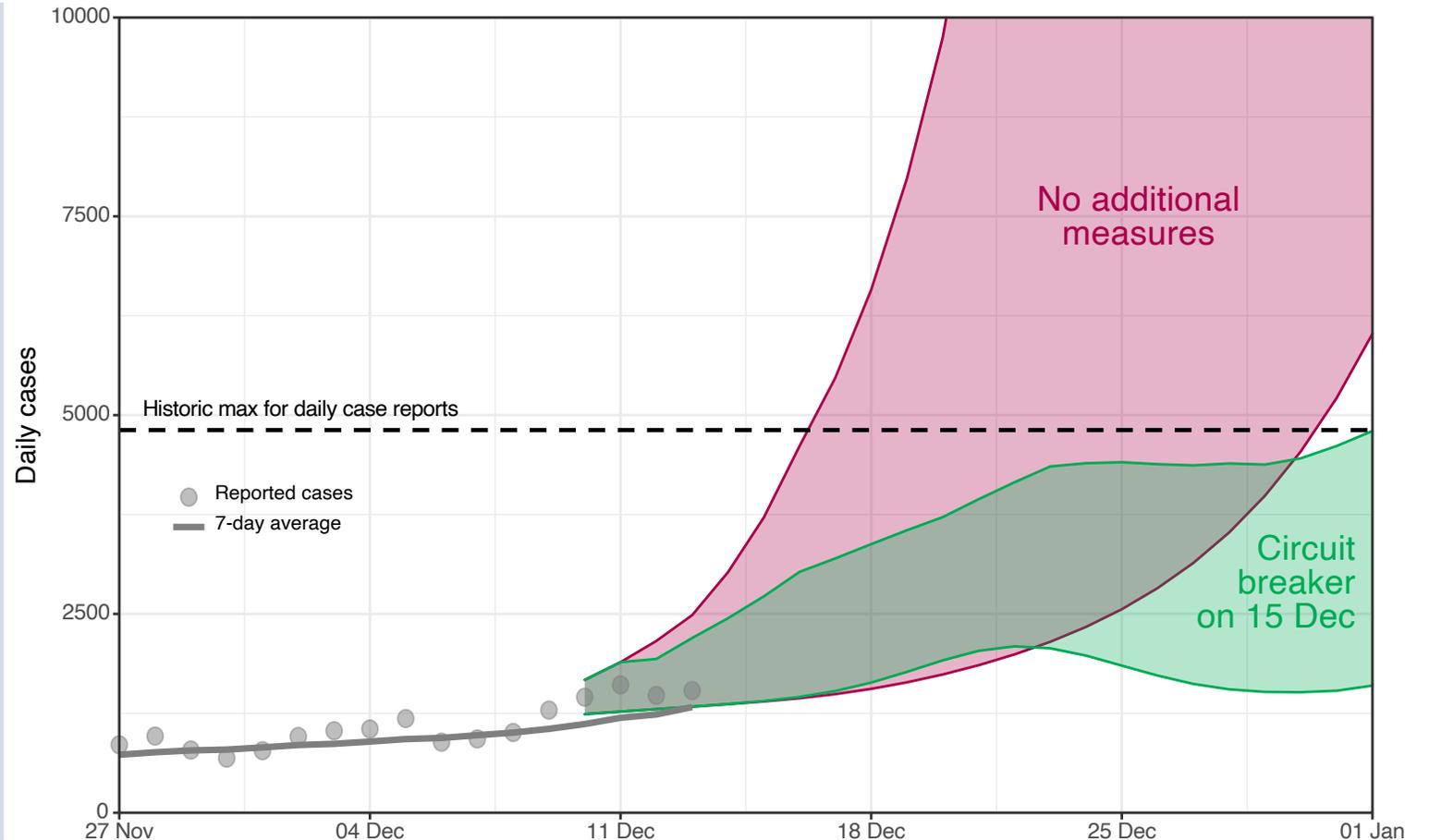
The Omicron variant requires new assumptions for modelling

	What we know
Infectiousness	<p>Omicron cases double every 2-4 days (UK, Scotland, Denmark ~2 days, South Africa ~3.5 days)</p> <p>We estimate that each case of Omicron is infecting 6.1 times more individuals than Delta</p> <p>There is a high risk for a close contact of a case becoming infected (UK: adjusted odds ratio of 2.09)</p> <p>Omicron will be the dominant strain very quickly (consistent with data from the UK and Denmark)</p> <p><i>We modeled infectiousness consistent with Ontario, UK and Danish data</i></p>
Severity	<p>The severity of Omicron is unclear</p> <ul style="list-style-type: none"> Recent data from South Africa suggesting about 25% less severity cannot be extrapolated to northern high-income countries due to differences in population age and degree of immunity/previous infection Early Danish data suggests the same severity as previous strains <p><i>We modelled two options: (i) the same as Delta and (ii) 25% less than Delta</i></p>
Vaccine Effectiveness	<p>Vaccine effectiveness against Omicron infection is lower than with Delta for 2 doses: 34% (Pfizer, UK); 33% (South Africa)</p> <p>Vaccine effectiveness against Omicron infection is stronger with 3 doses: 75% (Pfizer; UK)</p> <p>Vaccine effectiveness against hospitalization with 2 doses is lower than with Delta but still strong: 70% (South Africa)</p> <p>We modelled a full range of assumptions from 25% vaccine effectiveness with 2 doses against infection through to 100% effective against infection (extreme case)</p> <p><i>We modelled vaccine effectiveness against infection with 3 doses at 70%</i></p> <p><i>We modelled vaccine effectiveness against hospitalization given infection from Omicron at 90% (with 2 or 3 doses)</i></p>

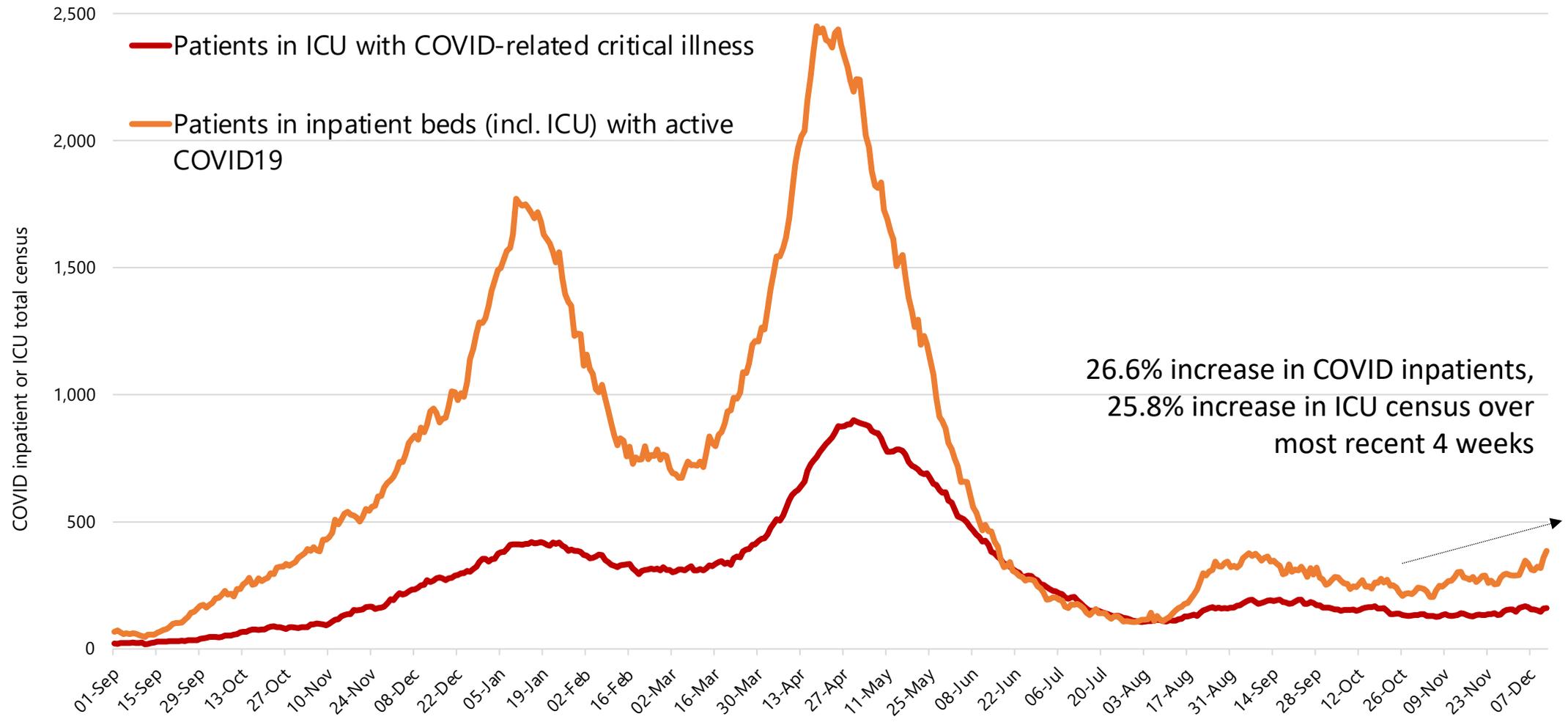
With Omicron, cases are predicted to increase at a rapid pace but an immediate circuit breaker can blunt impact.

Figure shows predictions based on a consensus across models from 5 scientific teams.

- Different models use different approaches and assumptions.
- All scenarios assume continuing current public health measures.
- Circuit breaker scenarios are assumed to start December 15 and include additional strong public health measures (reducing contacts by at least 50%) that substantially reduce contacts and rapid roll-out of booster doses.

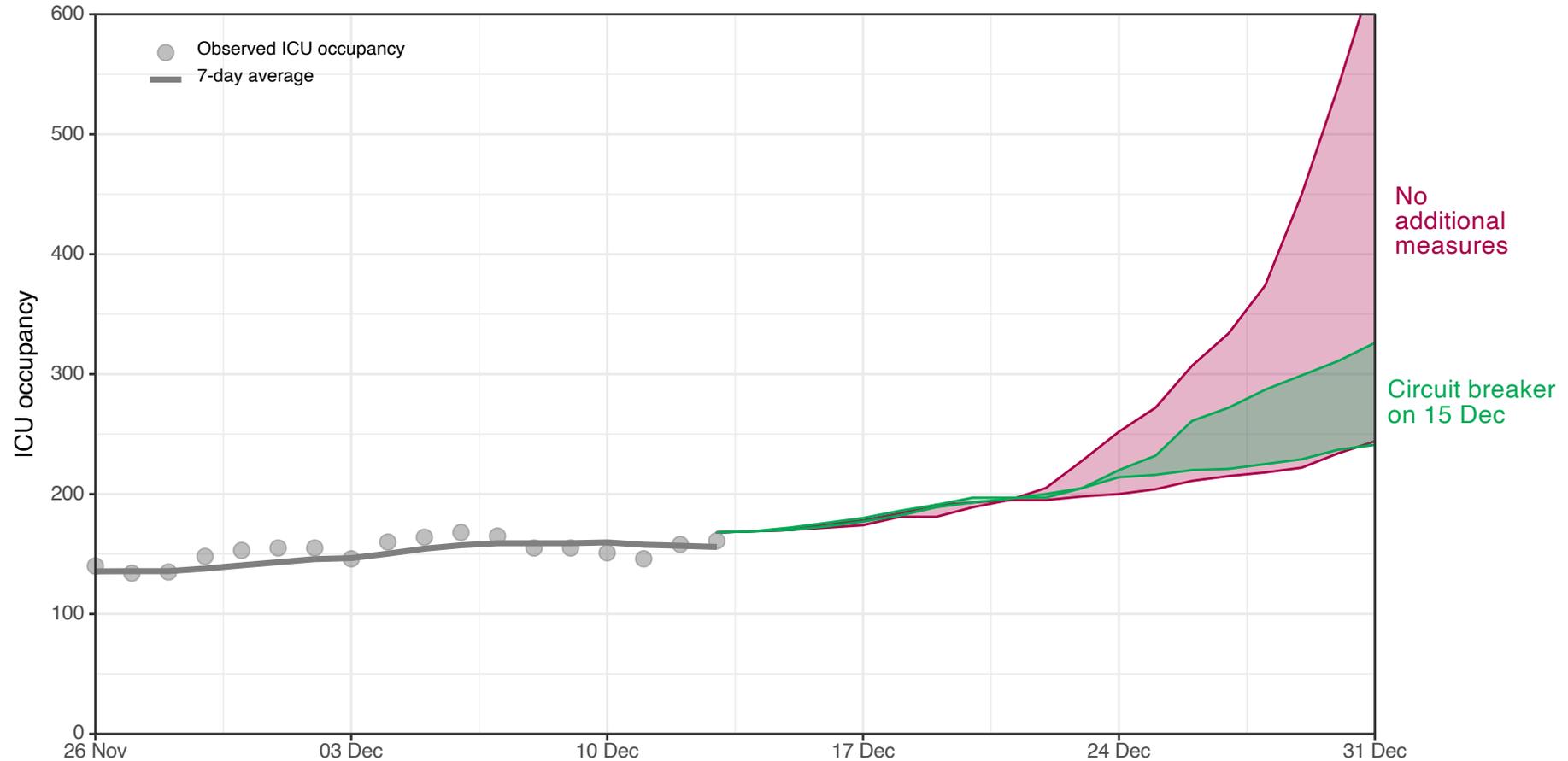


COVID-19 hospitalizations and ICU admissions are increasing

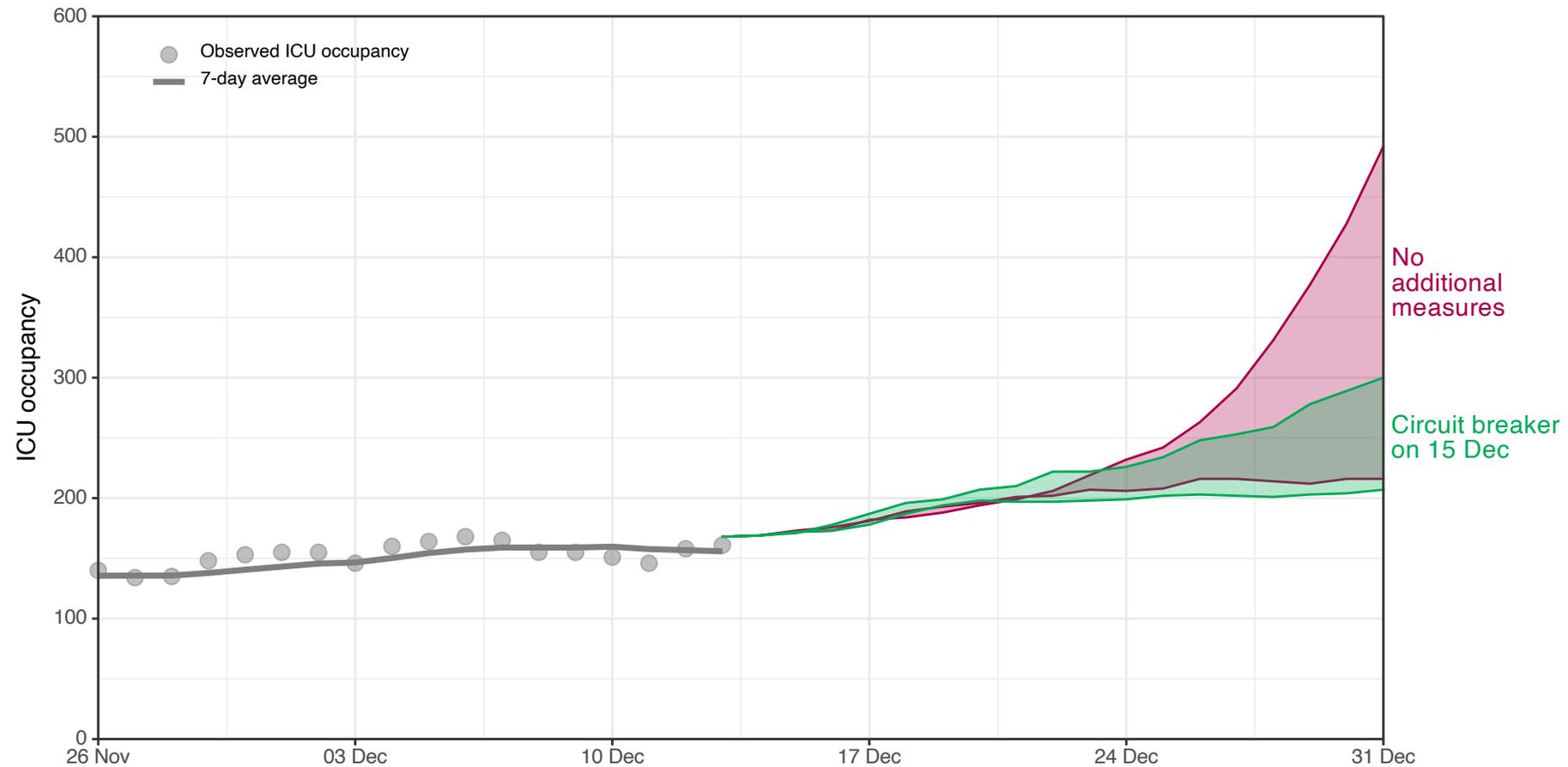


ICU occupancy is likely to rise substantially

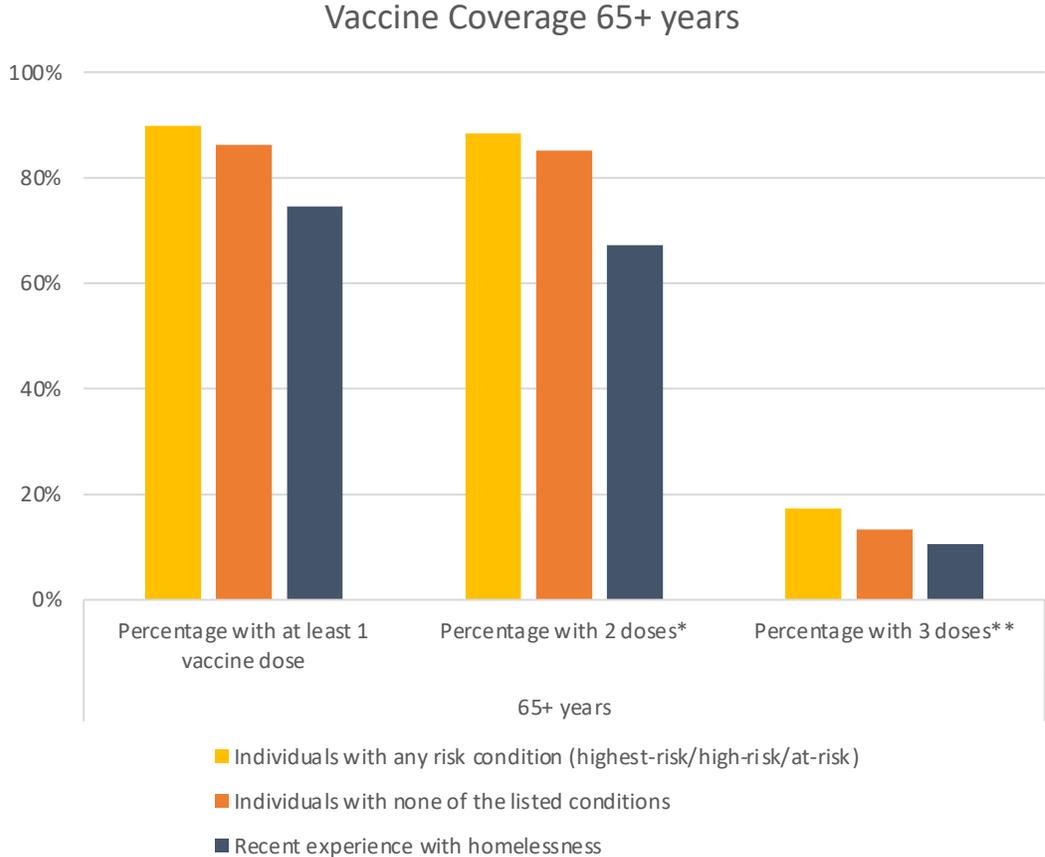
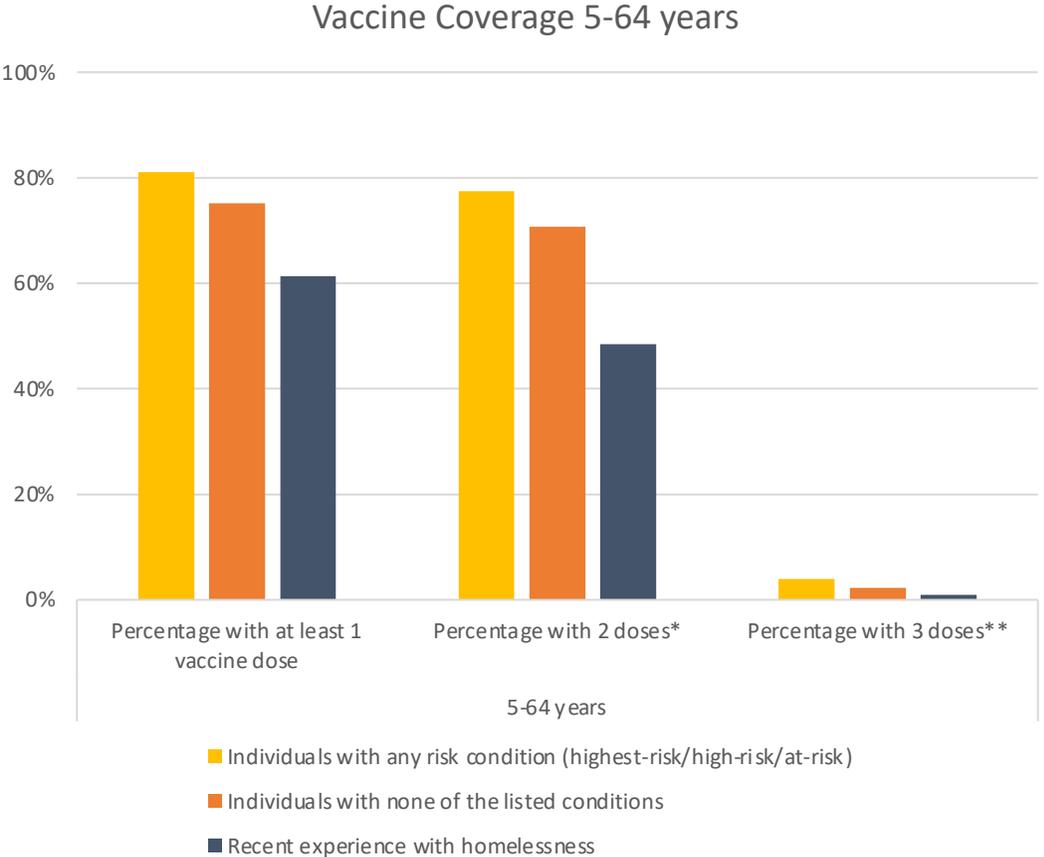
**Assumption:
Omicron has same
severity as Delta**



ICU occupancy is likely to rise even if Omicron is less severe (25%) than Delta



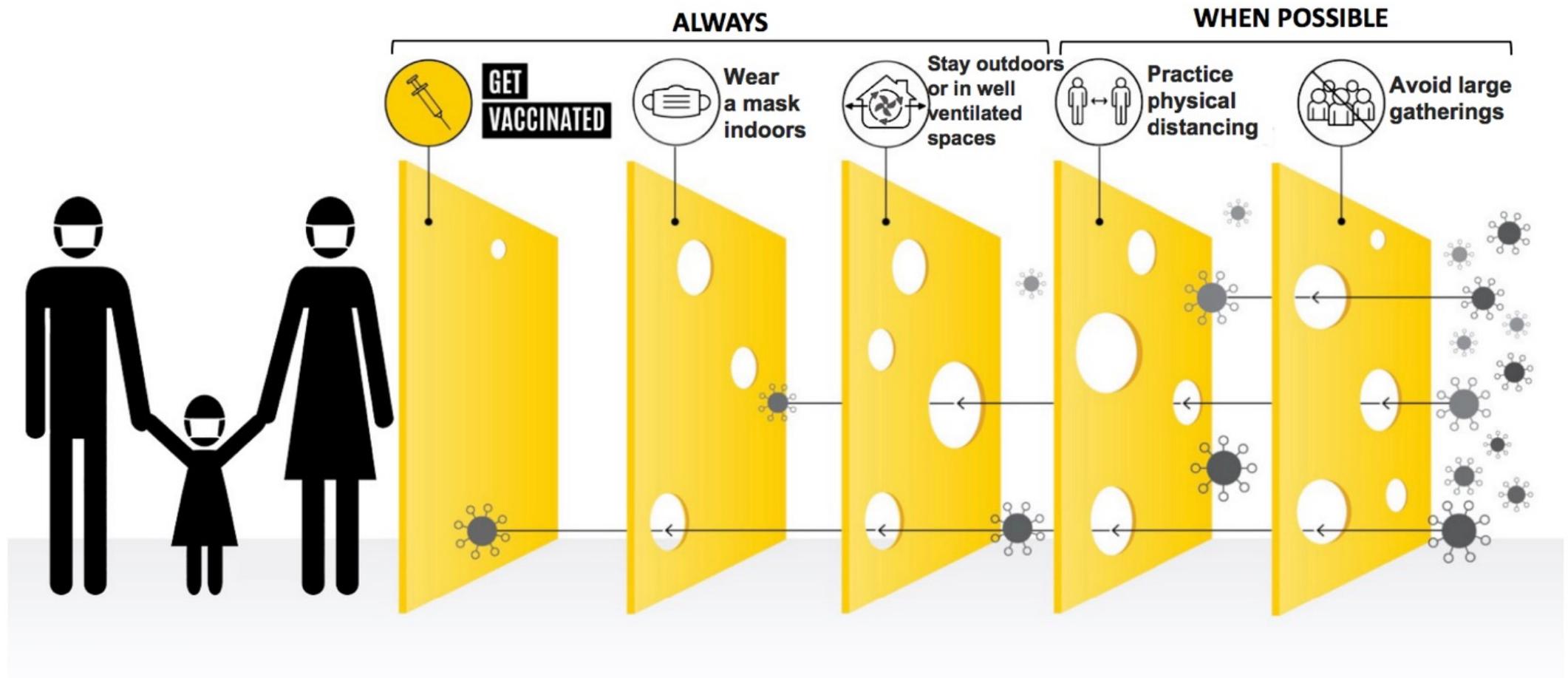
Third dose coverage will be important to protect the vulnerable. This should be accelerated.



With prompt action we can slow down and reduce some of the impact of the Omicron wave

- Circuit breakers with public health measures that cut contacts by 50% and rapid roll-out of booster doses could blunt the Omicron wave.
- Accelerated boosters for the most vulnerable and healthcare workers and their families, and caregivers will help reduce transmission to vulnerable people and help protect the health workforce.
- Help keep schools, workplaces and places where people gather indoors safe by reinforcing the importance of key behaviors & public health measures:
 - Wear a well-fitted high-quality mask
 - Physical distance and avoid indoor spaces where there is crowding
 - Increase ventilation in all indoor spaces
 - Increase access to rapid testing
- Match distribution of therapeutics to where they are needed most to mitigate the impact of potential shortages.
- Although uncertainty persists, waiting for more information will eliminate the opportunity for action.

Current public health measures are effective against Omicron



Key findings

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For table membership and profiles, please visit the [About](#) and [Partners](#) pages on the Science Advisory Table website.