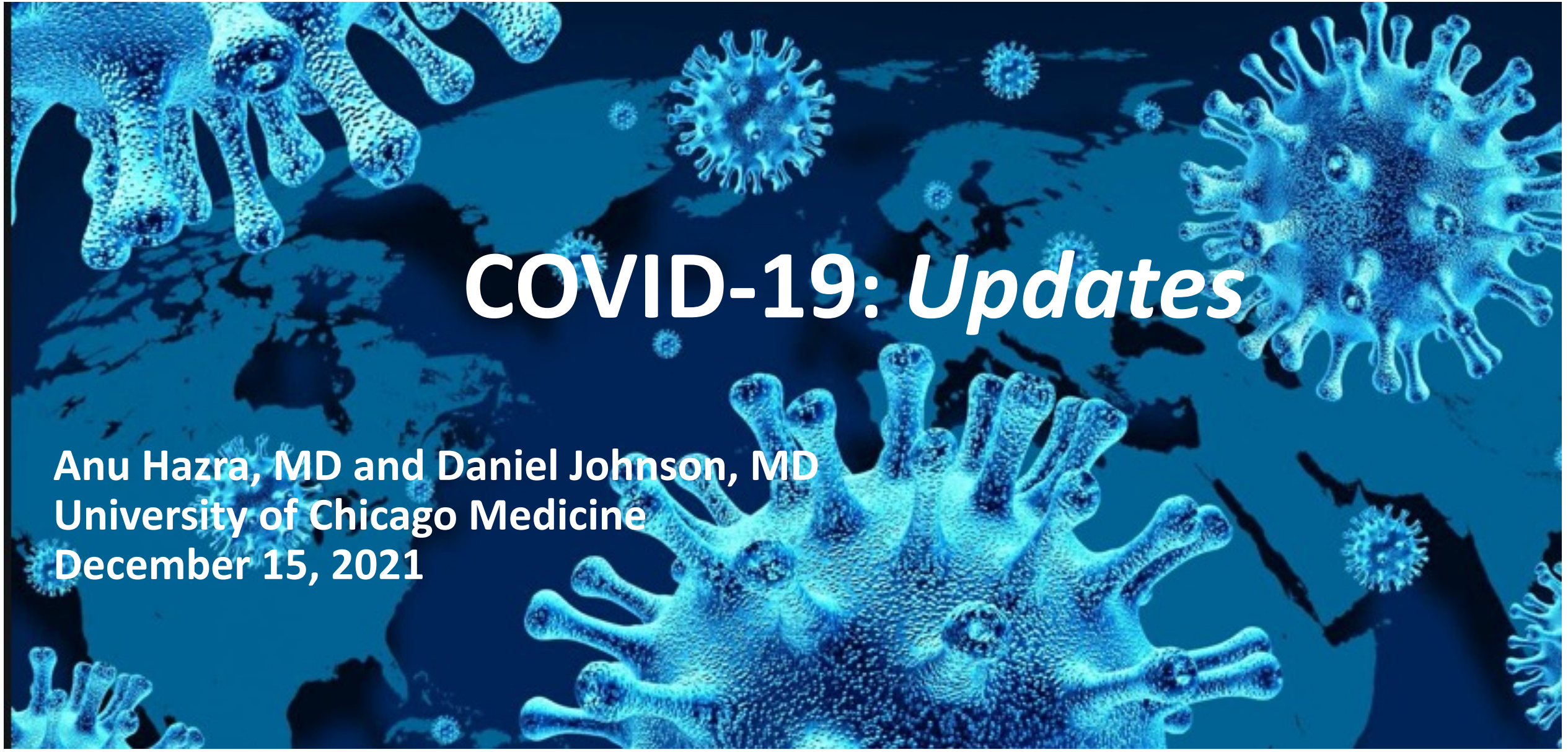

COVID-19: *Updates*

Anu Hazra, MD and Daniel Johnson, MD
University of Chicago Medicine
December 15, 2021

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UChicago Medicine

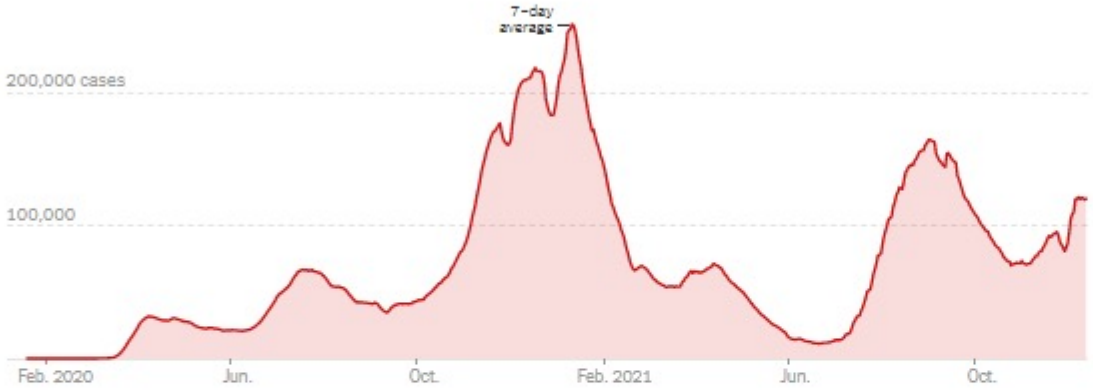
Disclosures

- We have no relevant financial interests to disclose.

Coronavirus in the U.S.: Latest Map and Case Count

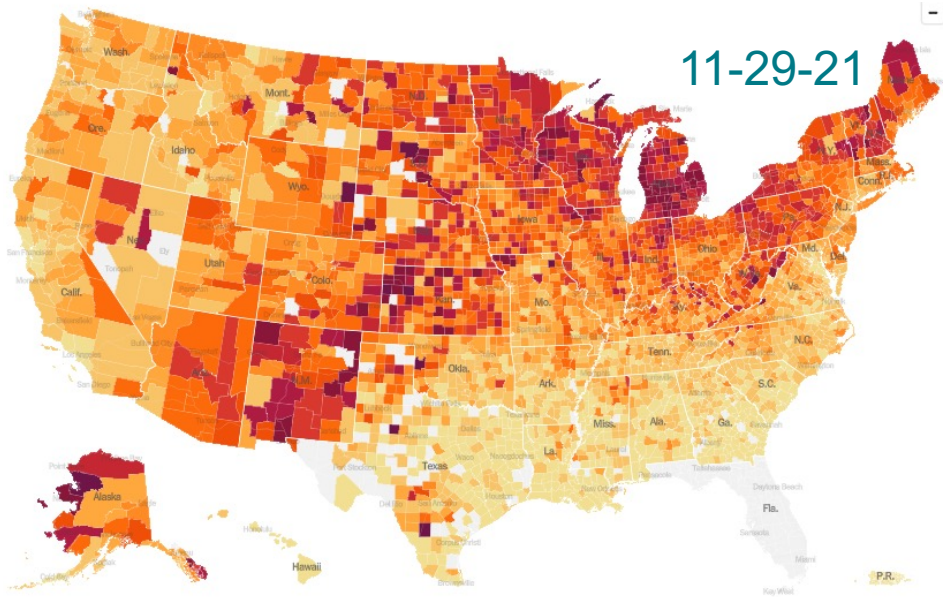
New reported cases

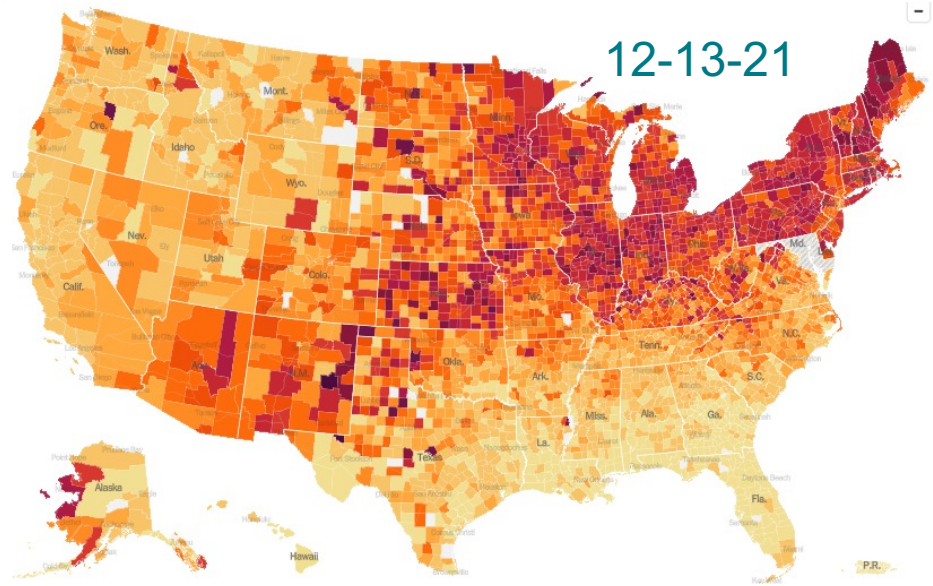
All time | Last 90 days



	DAILY AVG. ON DEC. 13	14-DAY CHANGE	TOTAL REPORTED
Cases	120,056	+49%	50,083,493
Tests	1,388,061	+2%	—
Hospitalized	66,395	+22%	—
Deaths	1,276	+40%	797,208

About this data





https://www.nytimes.com/interactive/2021/us/coronavirus-us-cases.html

COVID case rate climbing across state

Every region in Illinois is seeing an increase in the average number of new daily cases, per 100,000 residents. (Chicago's rate in red. Suburban regions' rates in blue. Downstate rates in gray. Statewide rate in black.)

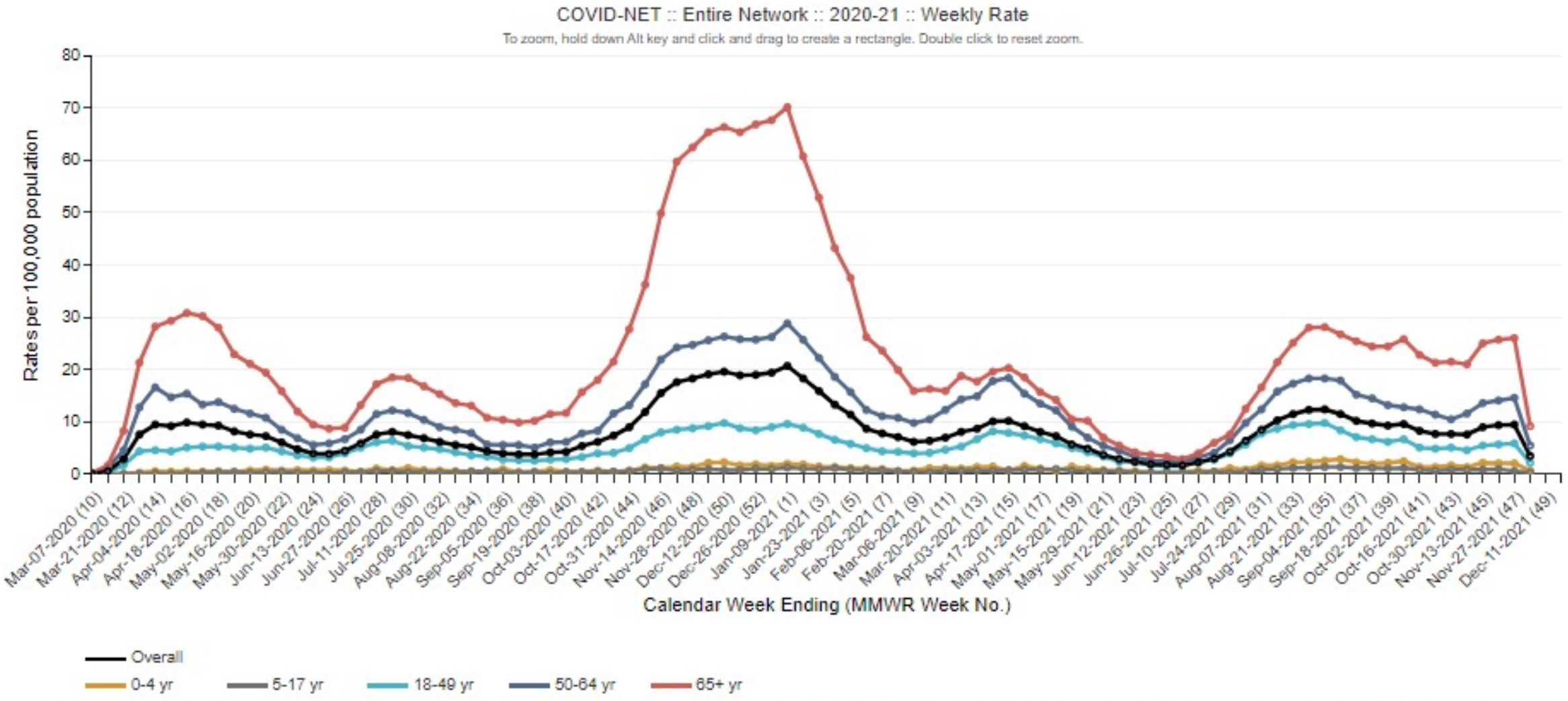
Chart: Joe Mahr • Source: Tribune analysis of IDPH data. • Created with Datawrapper

https://www.chicagotribune.com/news/breaking/ct-chicago-public-schools-covid-spike-20211210-ogq5qq6amfb5ngkuvfedyulp5i-story.html

Rates of COVID-19-Associated Hospitalization

Preliminary weekly rates as of Dec 04, 2021

Display by: Weekly Rate | View Rate by: Age Group | Choose Age Group



Total Vaccine Doses

Delivered	594,465,265
Administered	485,359,746

Learn more about the distribution of vaccines.

202.2M
People fully vaccinated

54.4M
People received a booster dose**

At Least One Dose | Fully Vaccinated | Booster Doses***

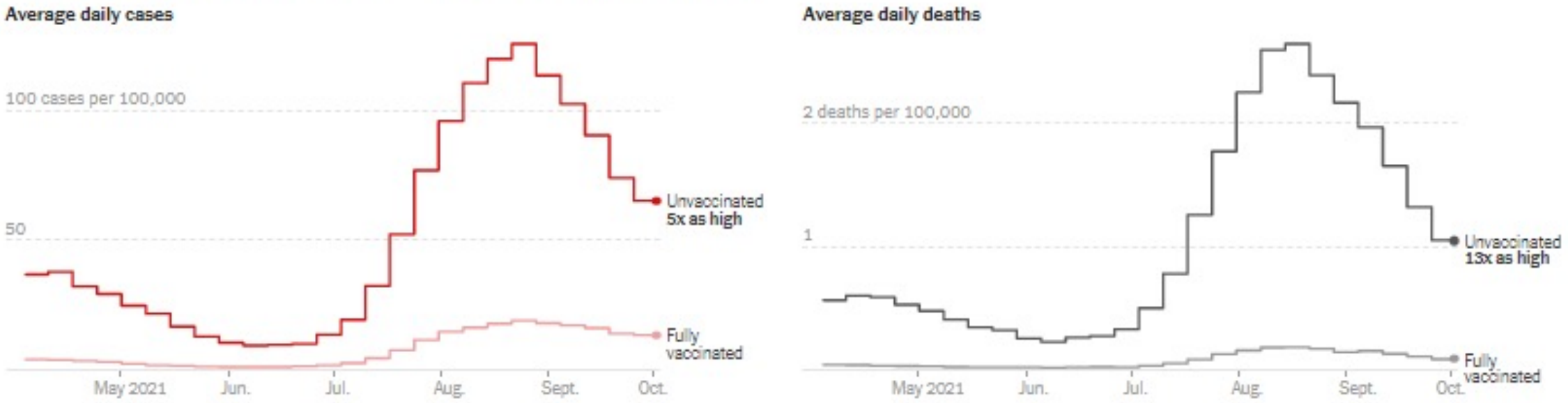
Vaccinated People	Count	Percent of US Population
Total	239,274,656	72.1%
Population ≥ 5 Years of Age	239,235,513	76.6%
Population ≥ 12 Years of Age	233,713,855	82.4%
Population ≥ 18 Years of Age	217,997,381	84.4%
Population ≥ 65 Years of Age	55,949,[illegible]	

At Least One Dose | Fully Vaccinated | Booster Doses***

Fully Vaccinated* People with a Booster Dose**	Count	Percent of Fully Vaccinated*
Total	54,439,667	26.9%
Population ≥ 18 Years of Age	54,366,153	29.2%
Population ≥ 50 Years of Age	39,577,647	40.7%
Population ≥ 65 Years of Age	24,671,012	51.6%

Rates for vaccinated and unvaccinated

Data from the Centers for Disease Control and Prevention shows that people who are unvaccinated are at a much greater risk than those who are fully vaccinated to test positive or die from Covid-19. These charts compare age-adjusted average daily case and death rates for vaccinated and unvaccinated people in the 22 states and two cities that provide this data.



About this data

https://www.nytimes.com/interactive/2021/us/coronavirus-us-cases.html

CHICAGO | COVID-19 Summary

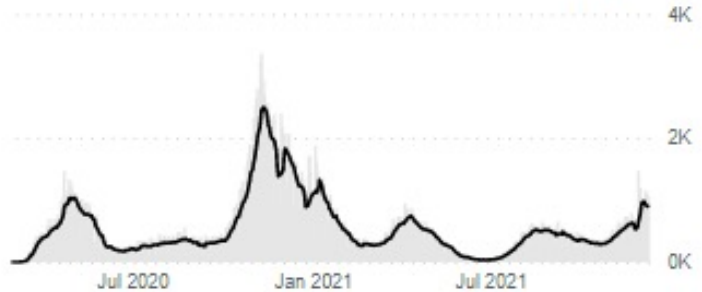
Data current as of Dec 13, 2021.
Data are updated M-F at 5:30 p.m., except for City holidays.
All data are provisional and subject to change.

SUMMARY | CASES | CASES BY ZIP | TESTS | VACCINES | VACCINES BY ZIP

Learn how to use this dashboard.

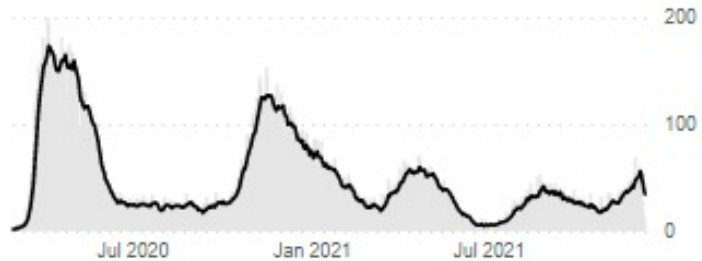
CASES

903 ▼	918 (-2%)	355,928	33.4
Current daily avg	Prior week	Cumulative	Daily rate per 100,000



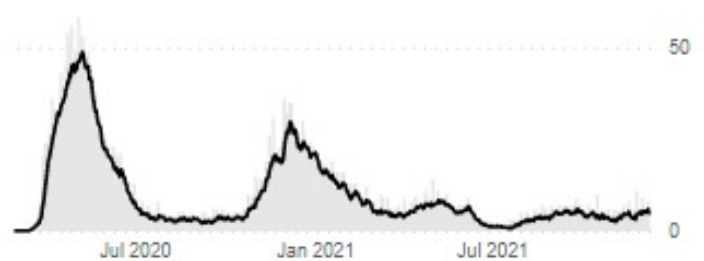
HOSPITALIZATIONS

35 ▼	51 (-32%)	32,188	1.3
Current daily avg	Prior week	Cumulative	Daily rate per 100,000



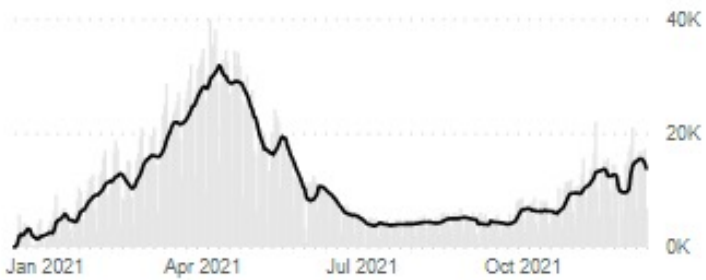
DEATHS

4.86 ▼	5.43 (-11%)	6,274	0.2
Current daily avg	Prior week	Cumulative	Daily rate per 100,000



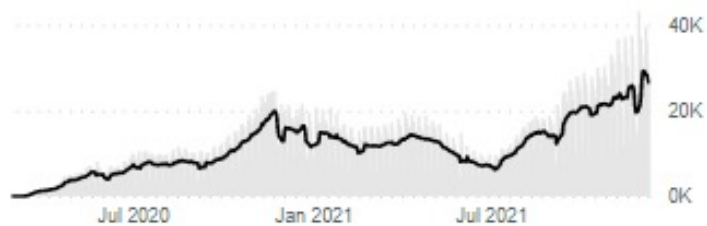
VACCINATIONS ADMINISTERED

13,807 ▼	3,926,900	63.0%	69.8%
Current daily avg	Cumulative	Completed series	At least one dose



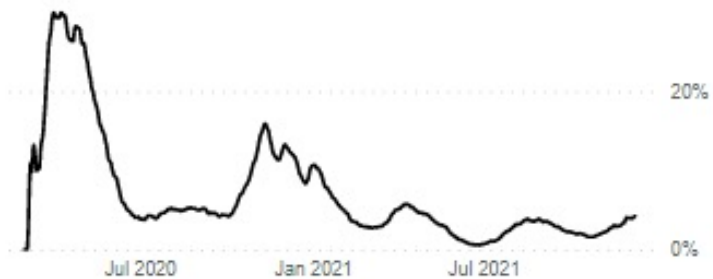
TESTS PERFORMED

26,620 ▼	27,209 (-2%)	7,431,293
Current daily avg	Prior week	Cumulative



POSITIVITY RATE

4.2% ▲	4.0%
Current daily avg	Prior week



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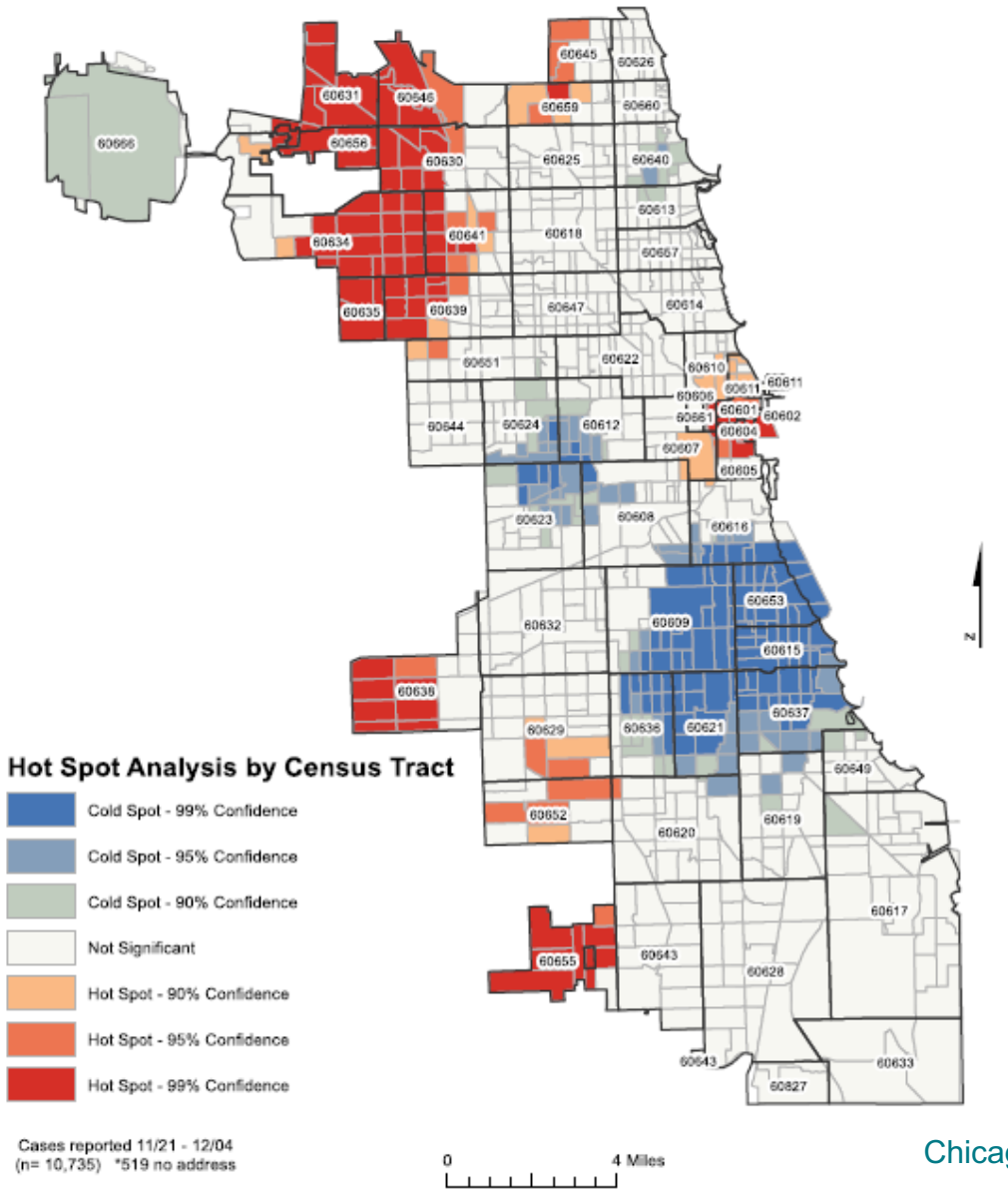
COVID-19 Cases - Hot Spot Analysis by Census Track



Chicago COVID-19 Hot Spot Report. December 14, 2021

CHICAGO | COVID-19 Vaccines

Data current as of Dec 13, 2021.
Data are updated M-F at 5:30 p.m., except for City holidays.
All data are provisional and subject to change.

SUMMARY | CASES | CASES BY ZIP | TESTS | **VACCINES** | VACCINES BY ZIP

Learn how to use this dashboard.

DAILY TRENDS | TOTALS BY PHASE

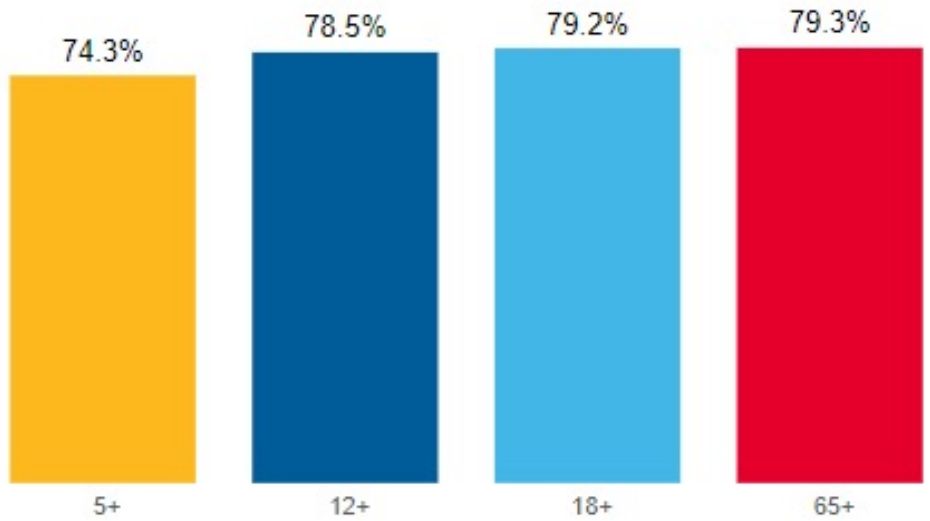
Cumulative totals are since 12/15/2020. Daily averages are a 7-day average as of 12/11/2021 to account for reporting lags.

Citywide | Age | Gender | Race-Ethnicity

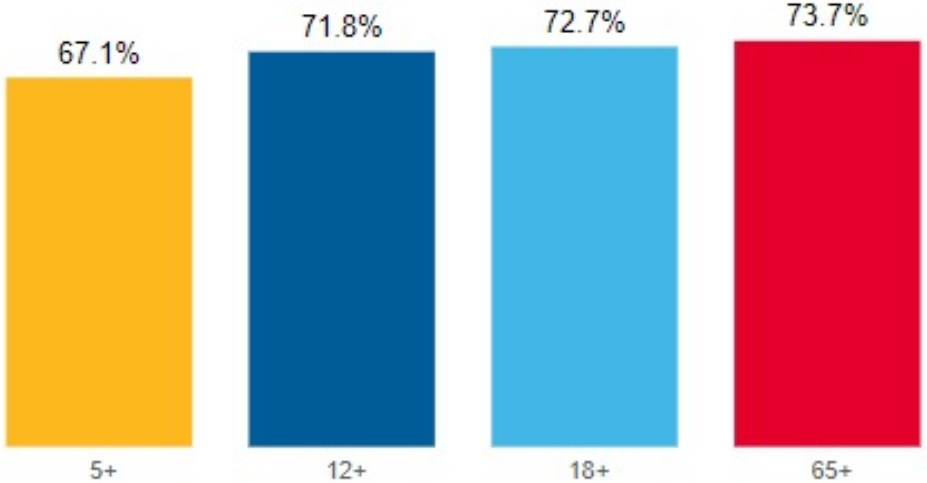
Select subgroup(s)
All

PERCENT VACCINATED | % VACCINATED OVER TIME | DAILY AVERAGE DOSES

At least one dose (% vaccinated as of 12/12/2021)



Completed vaccine series (% vaccinated as of 12/12/2021)



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CHICAGO | COVID-19 Vaccines

Data current as of Dec 13, 2021.
Data are updated M-F at 5:30 p.m., except for City holidays.
All data are provisional and subject to change.

SUMMARY | CASES | CASES BY ZIP | TESTS | **VACCINES** | VACCINES BY ZIP

Learn how to use this dashboard.

DAILY TRENDS | TOTALS BY PHASE

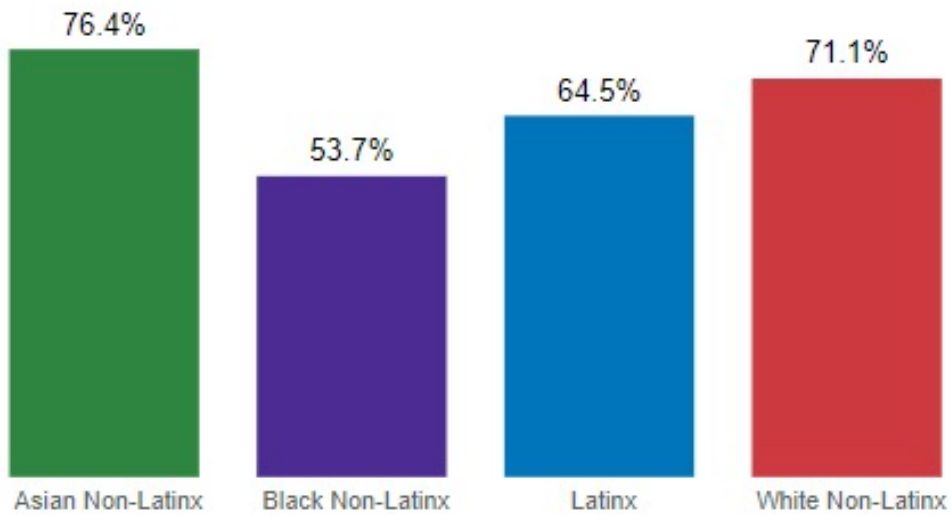
Cumulative totals are since 12/15/2020. Daily averages are a 7-day average as of 12/11/2021 to account for reporting lags.

Citywide | Age | Gender | **Race-Ethnicity**

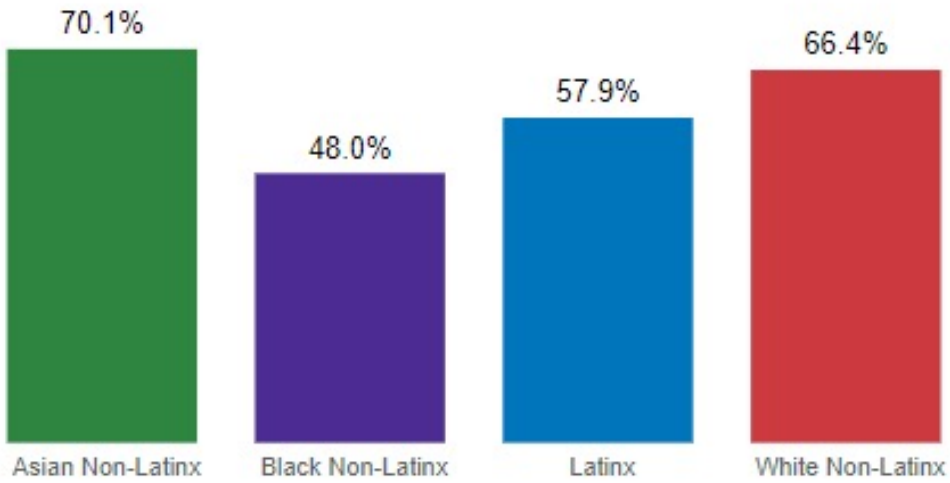
Select subgroup(s)
All

PERCENT VACCINATED | % VACCINATED OVER TIME | DAILY AVERAGE DOSES

At least one dose (% vaccinated as of 12/12/2021)



Completed vaccine series (% vaccinated as of 12/12/2021)



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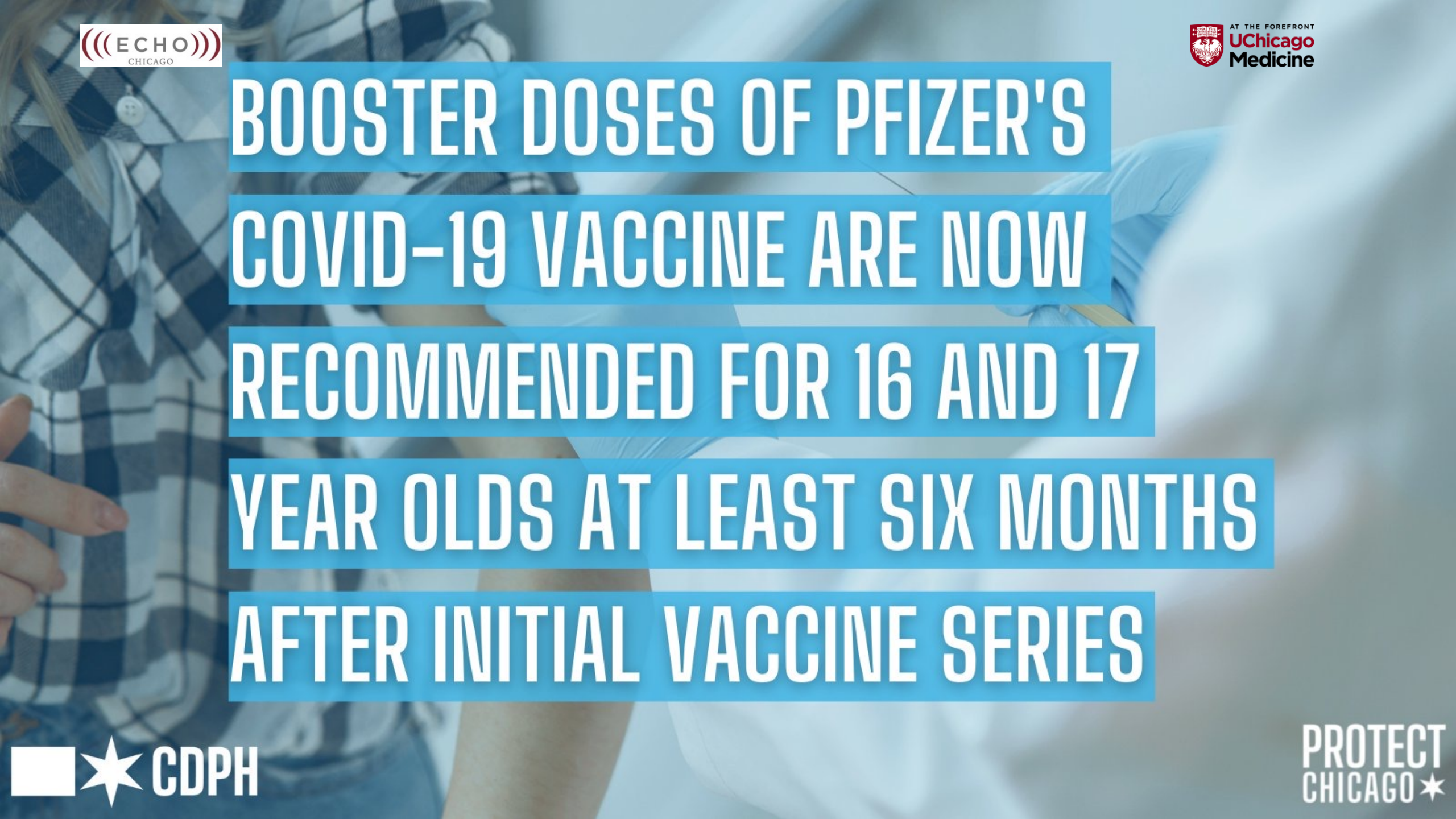
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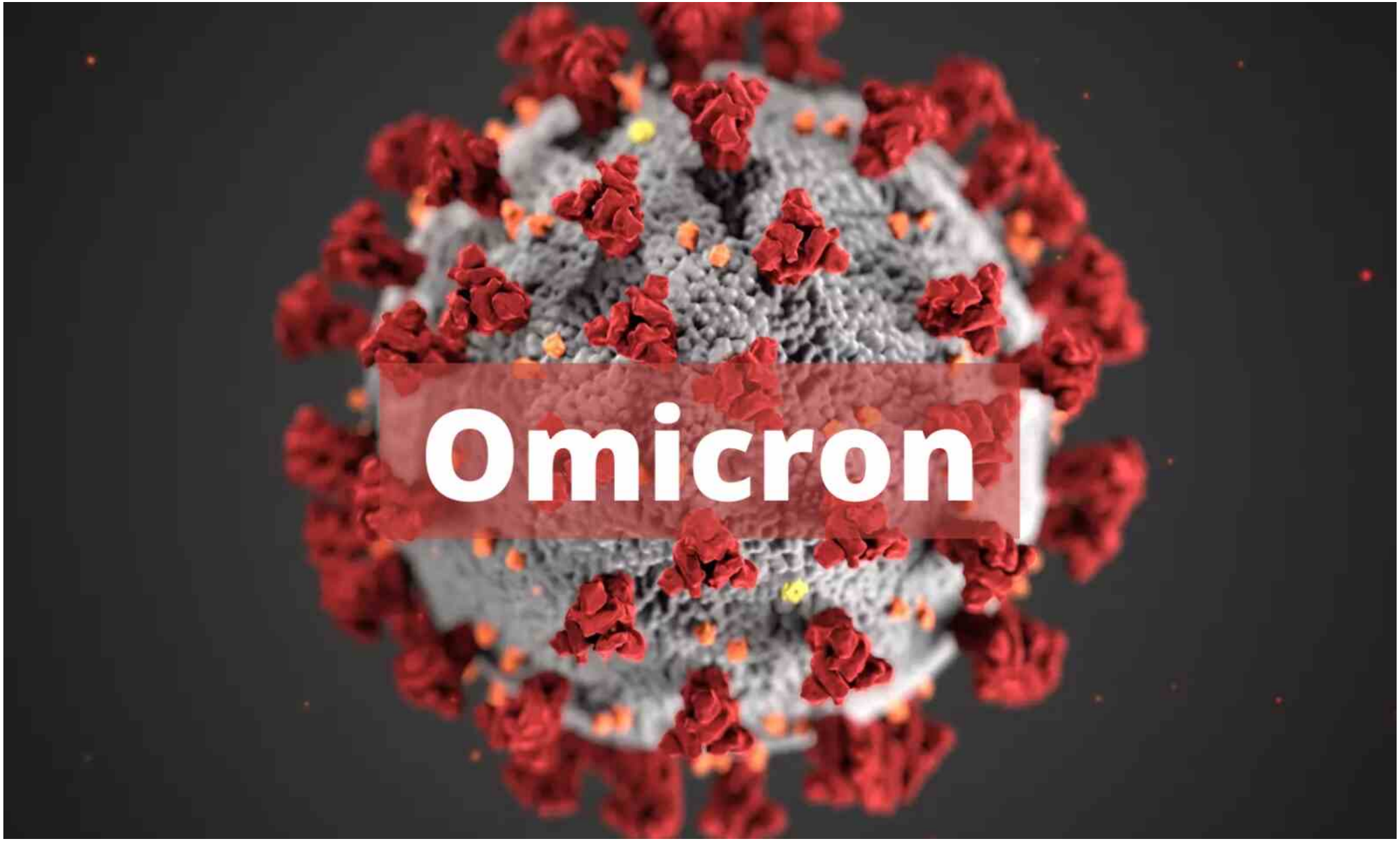
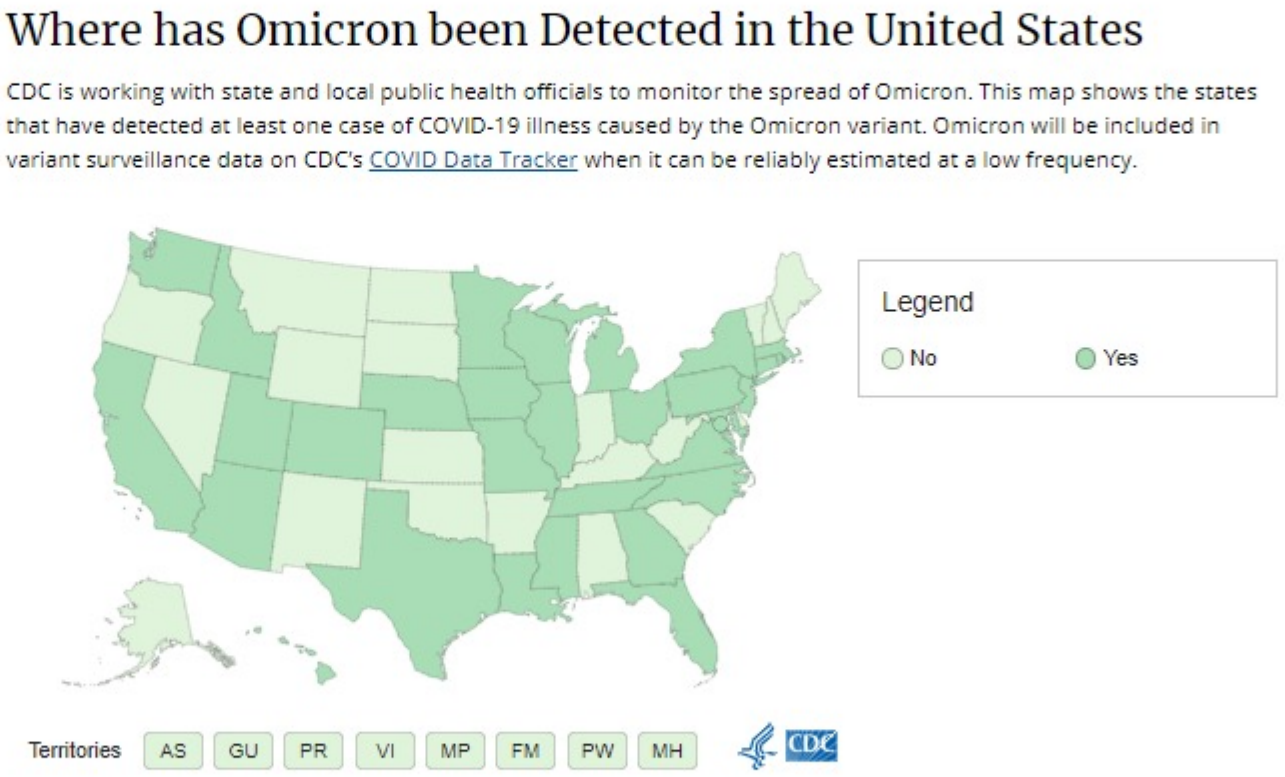
UChicago Medicine
BOOSTER DOSES OF PFIZER'S COVID-19 VACCINE ARE NOW RECOMMENDED FOR 16 AND 17 YEAR OLDS AT LEAST SIX MONTHS AFTER INITIAL VACCINE SERIES
CDPH
PROTECT CHICAGO


Omicron

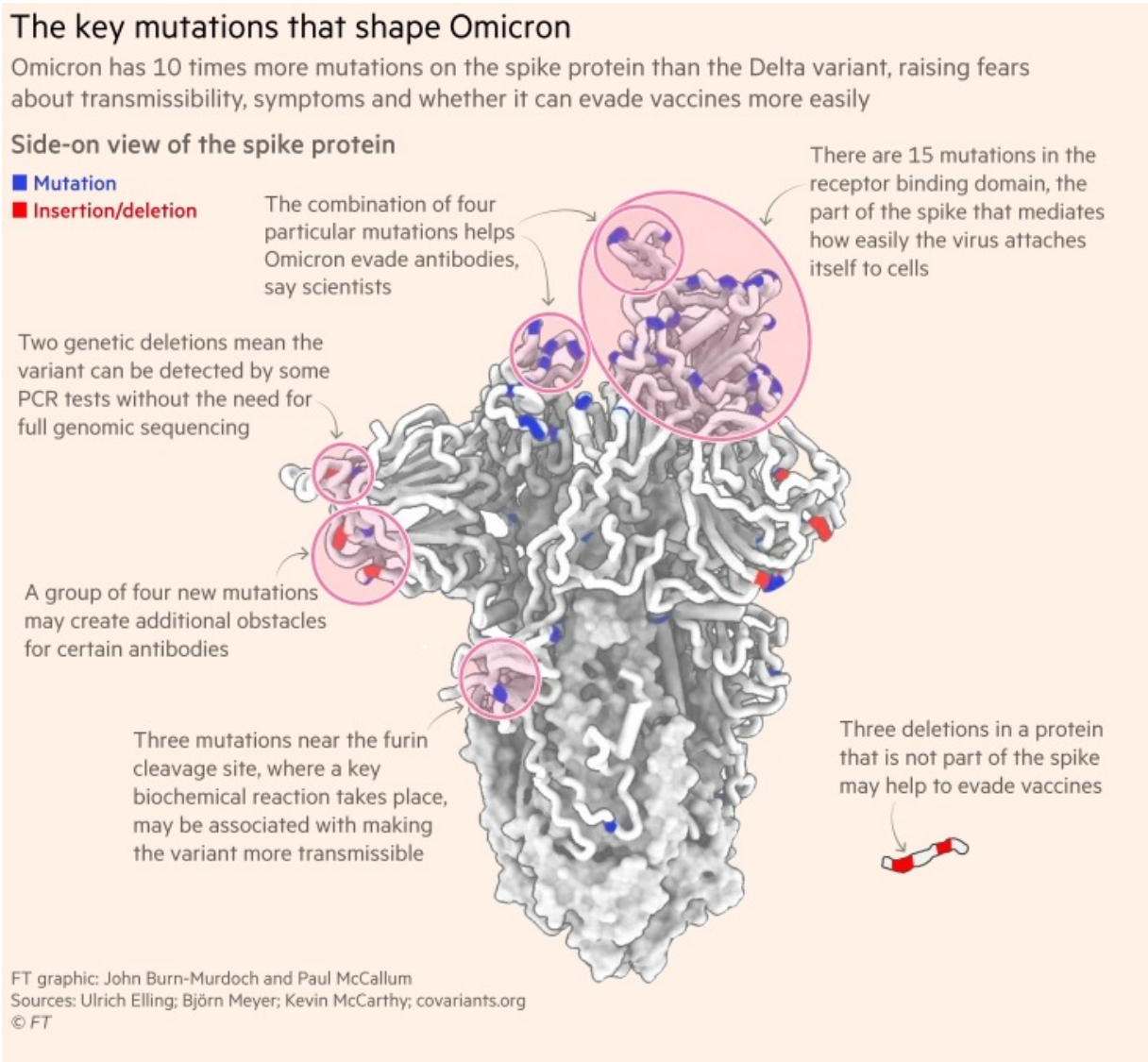
Omicron Variant (B.1.1.529)

- On 11/26/21, WHO named the B.1.1.529 Omicron and classified it as a Variant of Concern (VOC)
- On 12/1/21, first confirmed U.S. case of Omicron was identified
- Most cases have no contact to Africa, indicating community-level transmission
- **Despite the increased attention of Omicron, Delta continues to be the main variant circulating in the United States.**

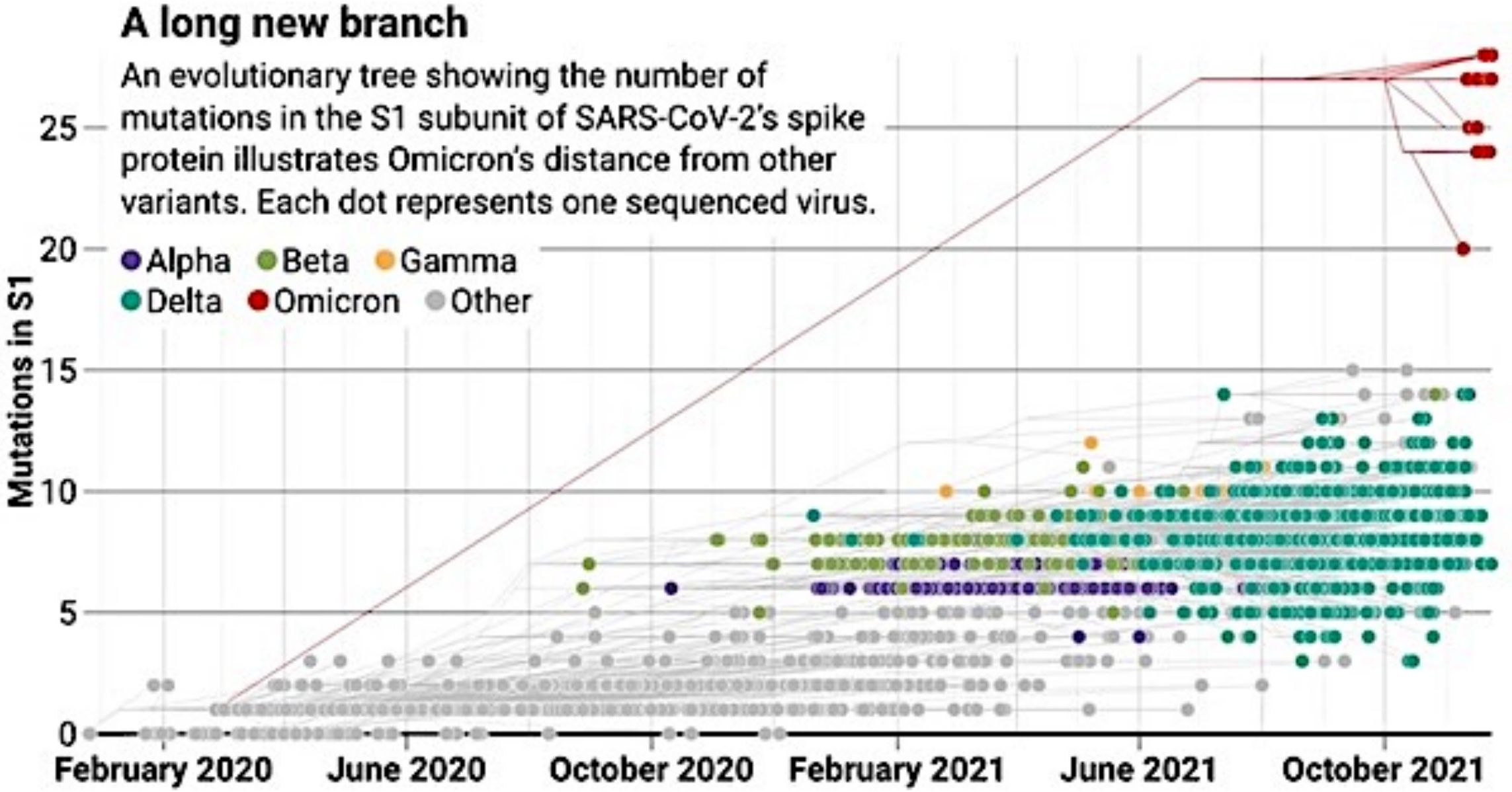


Omicron Variant (B.1.1.529)

- Spike protein of the Omicron variant is characterized by at least 30 amino acid substitutions
- 15 of the 30 amino acid substitutions are in the receptor binding domain (RBD)
- Mutations within the RBD are most relevant for monoclonal antibody therapeutics



https://www.ft.com/content/42c5ff3d-e676-4076-9b9f-7243a00cba5e



NEXTSTRAIN.ORG, ADAPTED BY N. DESAI/*SCIENCE*

Omicron Variant (B.1.1.529)

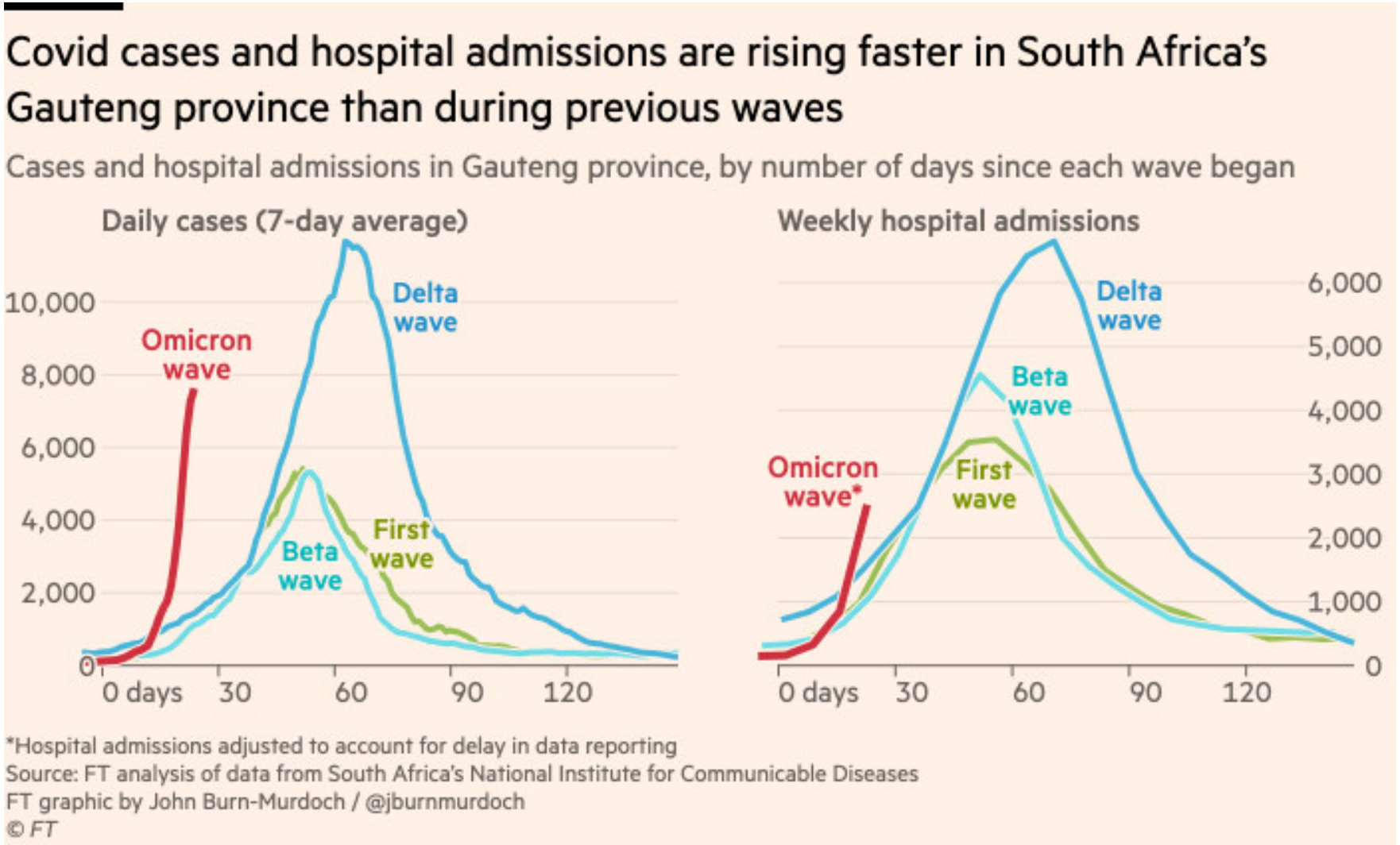
Three questions left to be answered:

- Is Omicron variant is more transmissible than the current Delta variant?
- Does the Omicron variant cause more severe disease?
- Does the Omicron variant escape our immune response (via prior infection or vaccination)?

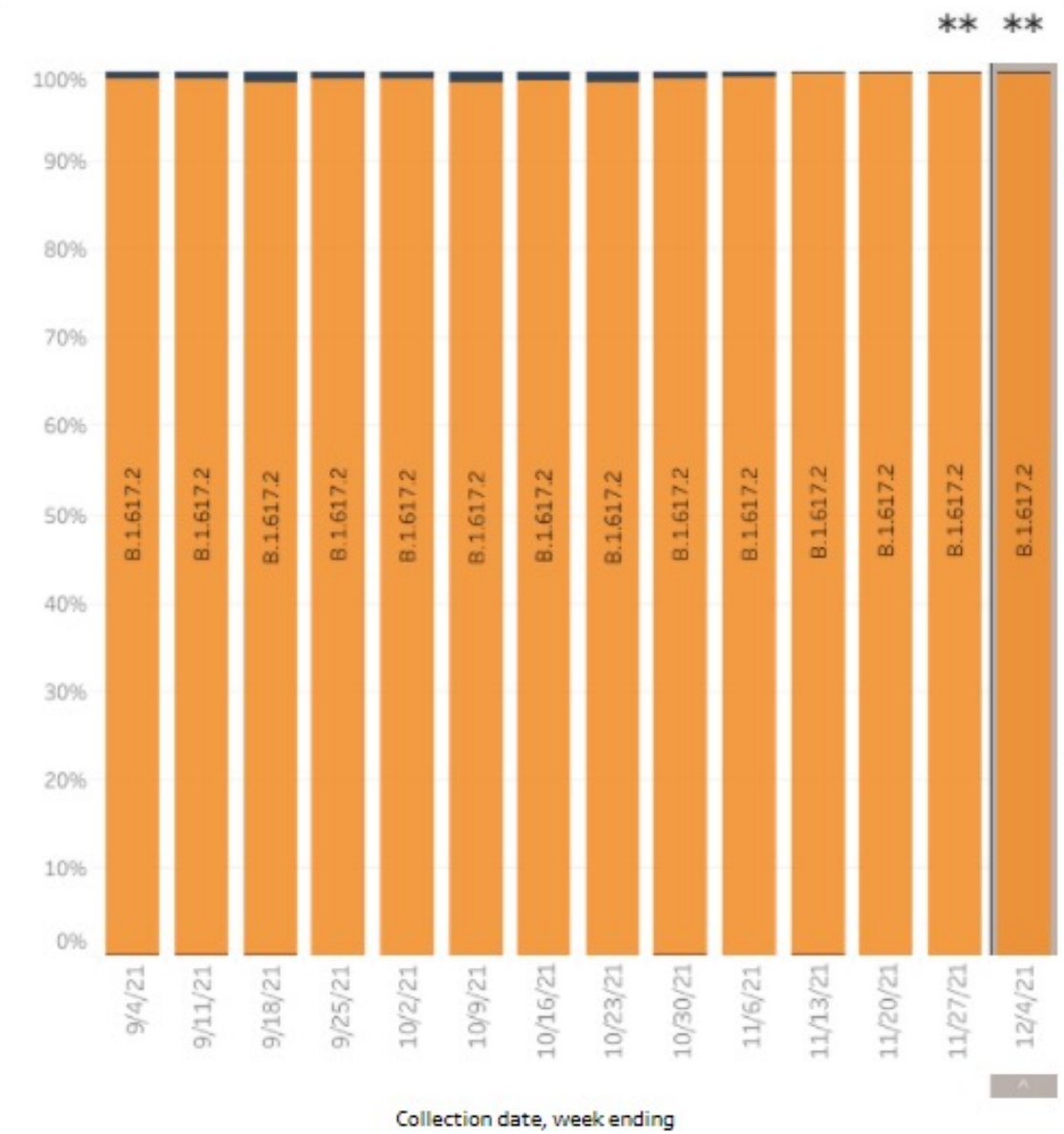
Omicron Variant (B.1.1.529) Transmissibility

- Omicron has become the dominant variant in SA in less than 4 weeks
- Omicron may be > 50% of new cases in Europe in 1-2 months
  - **The European Centre for Disease Prevention and Control** said this estimate was based on preliminary data from South Africa and the variant's characteristics still need further study before drawing any firm conclusions

Omicron Variant (B.1.1.529) Transmissibility



United States: 8/29/2021 – 12/4/2021



United States: 11/28/2021 – 12/4/2021 NOWCAST

USA

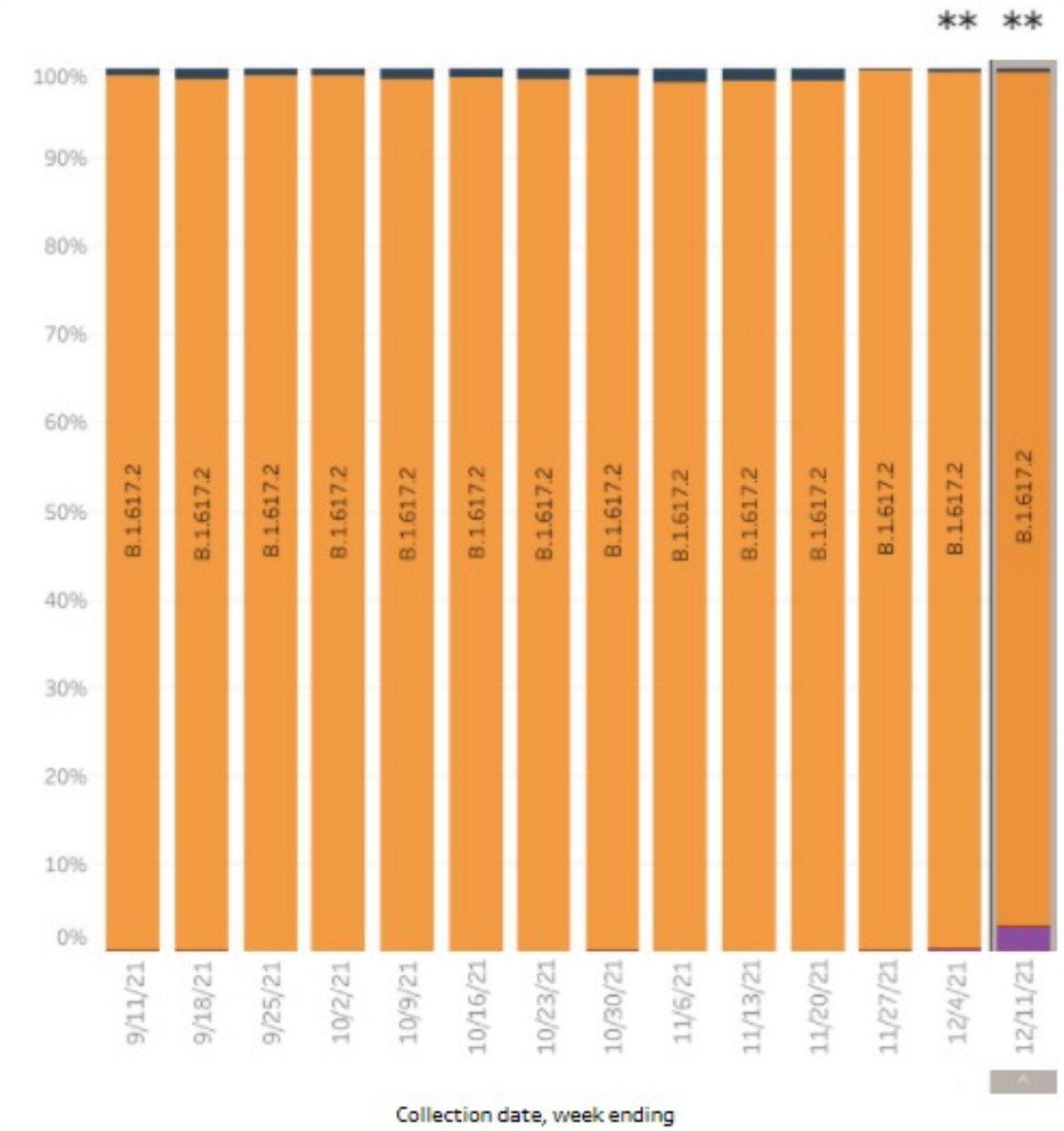
WHO label	Lineage #	US Class	%Total	95%PI
Delta	B.1.617.2	VOC	99.9%	99.8-99.9%
	AY.1	VOC	0.1%	0.0-0.1%
	AY.2	VOC	0.0%	0.0-0.0%
Omicron	B.1.1.529	VOC	0.0%	0.0-0.0%
Other	Other*		0.1%	0.0-0.1%

* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks displayed.

** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

\# AY.3-AY.125 and their sublineages are aggregated with B.1.617.2.

United States: 9/5/2021 – 12/11/2021



United States: 12/5/2021 – 12/11/2021 NOWCAST

USA

WHO label	Lineage #	US Class	%Total	95%PI
Delta	B.1.617.2	VOC	96.7%	85.9-99.6%
	AY.1	VOC	0.1%	0.0-0.1%
	AY.2	VOC	0.0%	0.0-0.0%
Omicron	B.1.1.529	VOC	2.9%	0.2-14.7%
Other	Other*		0.3%	0.2-0.6%

* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks displayed.

** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

AY.3-AY.125 and their sublineages are aggregated with B.1.617.2. BA.1 and BA.2 are aggregated with B.1.1.529.

Omicron Variant (B.1.1.529) and Severity of Disease

CDC Omicron MMWR 12/10/21

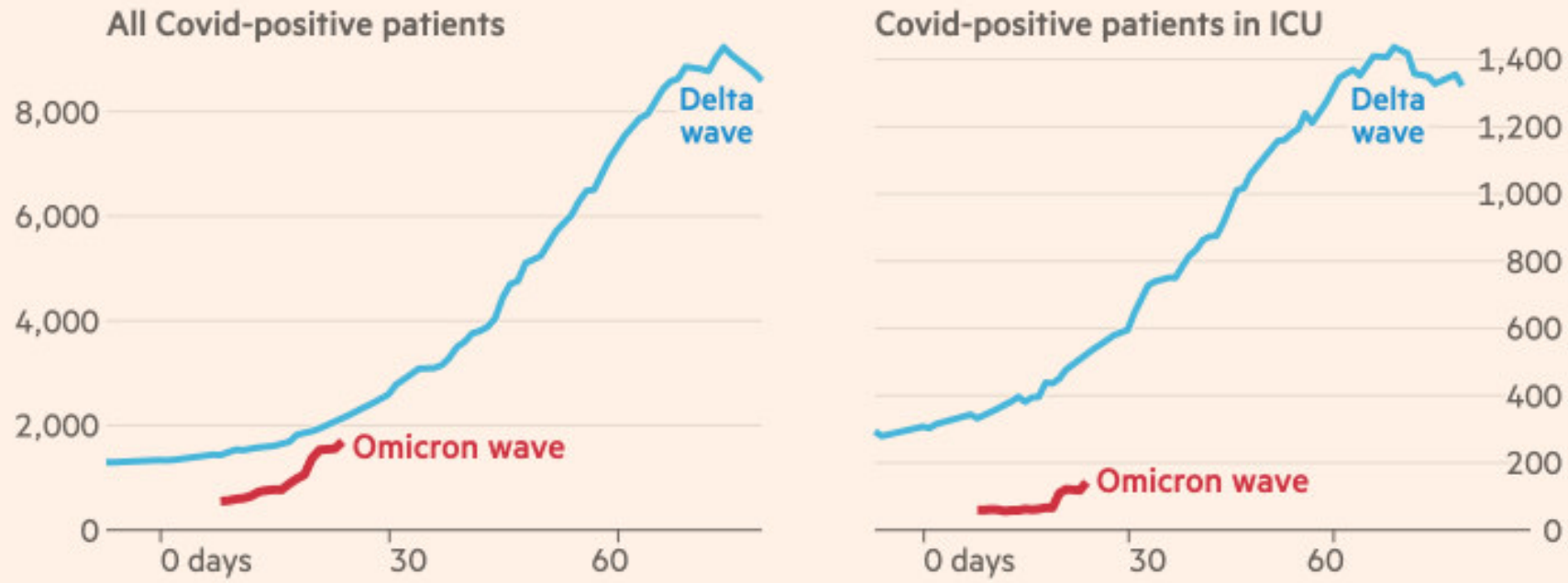
- Between 12/1/21-12/8/21, 43 cases seen in 22 states
- Most common symptoms were cough, fatigue, and congestion or runny nose
- One hospitalization, zero deaths reported
- 34 (79%) cases occurred in persons who completed the primary series of an FDA-authorized or approved COVID-19 vaccine

TABLE. Characteristics of reported confirmed B.1.1.529 (Omicron) variant SARS-CoV-2 cases (n = 43) — United States, December 1–8, 2021

Characteristic	No. (%)
Age group, yrs	
<18	4 (9)
18–39	25 (58)
40–64	10 (23)
≥65	4 (9)
Sex	
Male	17 (40)
Female	25 (58)
Unknown	1 (2)
International travel*	14 (33)
COVID-19 vaccination status†	
Unvaccinated	8 (19)
Partially vaccinated	0 (—)
Vaccinated	20 (47)
Vaccinated plus an additional dose§	14 (33)
Unknown	1 (2)
Previous SARS-CoV-2 infection	
Yes	6 (14)
No	21 (49)
Unknown	16 (37)
Symptom profile	
Symptomatic	40 (93)
Asymptomatic/Unknown	3 (7)
Initial signs or symptoms¶	
Cough	33 (89)
Fatigue	24 (65)
Congestion or runny nose	22 (59)
Fever	14 (38)
Nausea or vomiting	8 (22)
Shortness of breath or difficulty breathing	6 (16)
Diarrhea	4 (11)
Loss of taste or smell	3 (8)
Outcomes	
Hospitalization	1 (2)
Death	0 (—)

Although the number of Covid-positive patients in Gauteng is approaching the level from the Delta wave, the number in ICU is much lower

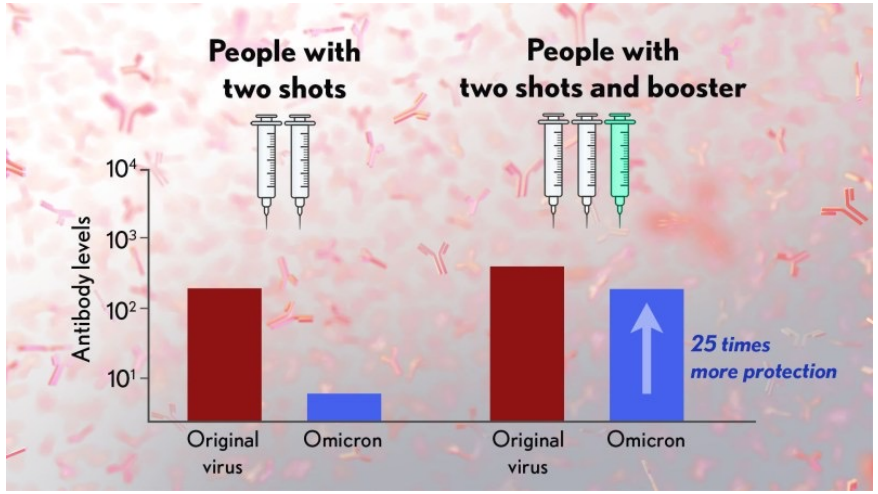
Number of Covid-positive patients requiring different levels of care, by days since each wave began



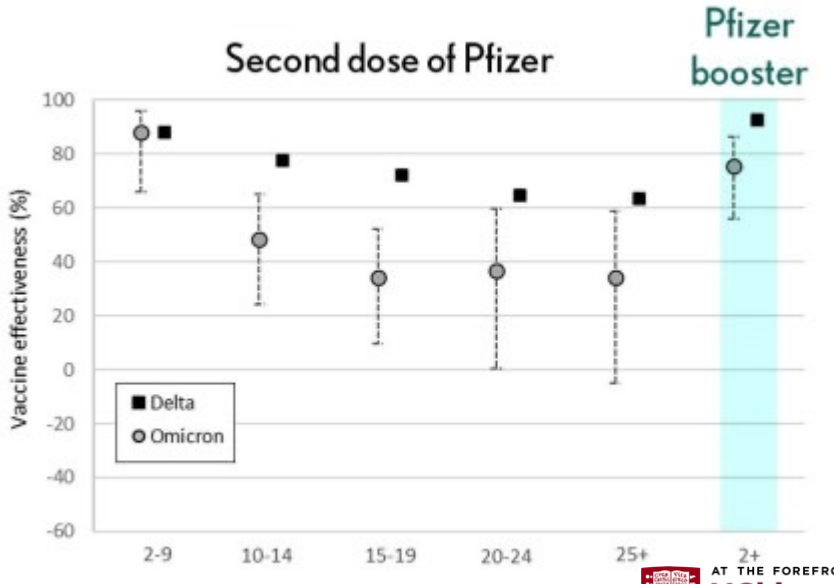
*Start of wave defined as when 7-day average of cases rose for 7 successive days
Source: FT analysis of data from South Africa's National Institute for Communicable Diseases
FT graphic by John Burn-Murdoch / @jburnmurdoch

Omicron Variant (B.1.1.529) and Immune Evasion

- >30 mutations of spike protein, some mirroring Beta (which exhibited immune escape)
- Still unclear how significantly Omicron can evade vaccine mediated immunity
- Impact on monoclonal therapeutics also unclear
- What about T-cells?
  - T-cell immunity less impacted by spike protein mutations
  - T cells can't prevent infection, but help protect against more severe illness and death.



Adapted from Pfizer, Dec. 8, 2021



Andrews N, et al., KHub.net 2021

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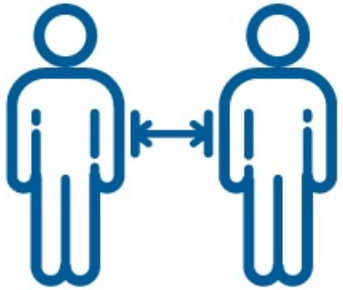
With the first case of the Omicron variant confirmed in Chicago, it's more important than ever to slow the spread of the virus.

VAX UP

MASK UP



BACK UP

WASH UP

TEST UP

CDPH

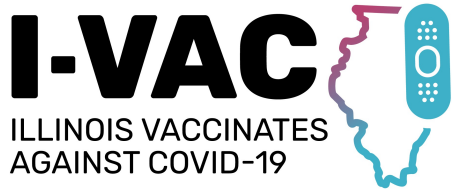
PROTECT CHICAGO


COVID - 19
TREATMENT

Paxlovid (nirmatrelvir [PF-07321332] and ritonavir)

- 3CL protease inhibitor
- In high-risk patients enrolled in EPIC-HR study (n= 2,246), compared to placebo:
  - 89% reduced risk of hospitalization or death if given within three days of symptom onset
  - 88% reduced risk of hospitalization or death if given within five days of symptom onset
  - No deaths compared to placebo in non-hospitalized, high-risk adults with COVID-19
- Ongoing second study in standard-risk adults (EPIC-SR)
  - 70% reduction in hospitalization and no deaths in the treated population
  - Sustained alleviation of all symptoms for four consecutive days not yet observed
- In vitro data confirm that nirmatrelvir is a potent inhibitor of the Omicron 3CL protease, Paxlovid will retain robust antiviral activity against current VoCs as well as other coronaviruses
- Pfizer submitted its application to the FDA; awaiting approval, likely by end of the month

Illinois Vaccinates Against COVID-19



- Adult Populations Learning Collaborative (additional focus on Pregnant women)
  - Anu Hazra, MD; Edward Linn, MD; Jennifer Burns, CPNP, APN

- Pediatric Populations Learning Collaborative
  - Daniel Johnson, MD; Jennifer Burns, CPNP, APN