

# Ask Dr. Arwady

**March 17, 2022**

**Guest: Dr. Isaac Ghinai**



# TWO YEARS. ONE CHICAGO.

We are committed to fighting the pandemic  
and protecting all Chicagoans through vaccination.



# Chicago COVID-19 Community Transmission and Risk Matrix



	VERY HIGH TRANSMISSION	HIGH TRANSMISSION	SUBSTANTIAL TRANSMISSION	LOWER TRANSMISSION	LOW TRANSMISSION
<b>COVID-19 CASES DIAGNOSED PER DAY</b> Chicago residents - 7-day rolling daily average	800+	400 – 799	200 – 399	20 – 199 <b>Current: 134</b> Decreasing	≤20
<b>COVID-19 TEST POSITIVITY</b> Chicago residents - 7-day rolling daily average	10%+	6.6 – 9.9%	5.0 – 6.5%	2 – 4.9%	≤2% <b>Current: 0.7%</b> Decreasing
<b>HOSPITAL BEDS (NON-ICU) OCCUPIED BY COVID PATIENTS</b> Chicago hospitals - 7-day rolling daily average	1250+	750 – 1249	250 – 749	100 – 249 <b>Current: 142</b> Decreasing	≤100
<b>ICU BEDS OCCUPIED BY COVID PATIENTS</b> Chicago hospitals - 7-day rolling daily average	400+	300 – 399	100 – 299	20 – 99 <b>Current: 26</b> Decreasing	≤20



# WHAT'S A COVID-19 COMMUNITY LEVEL?

- It's a new tool to help communities decide what prevention measures to take based on the latest data
- Every community in the United States is classified as:

## Low

Limited impact on healthcare system, low levels of severe illness

## Medium

Some impact on healthcare system, more people with severe illness

## High

High potential for healthcare system strain; high level of severe illness



[cdc.gov/coronavirus](https://cdc.gov/coronavirus)

CS329821-B 02/25/2022

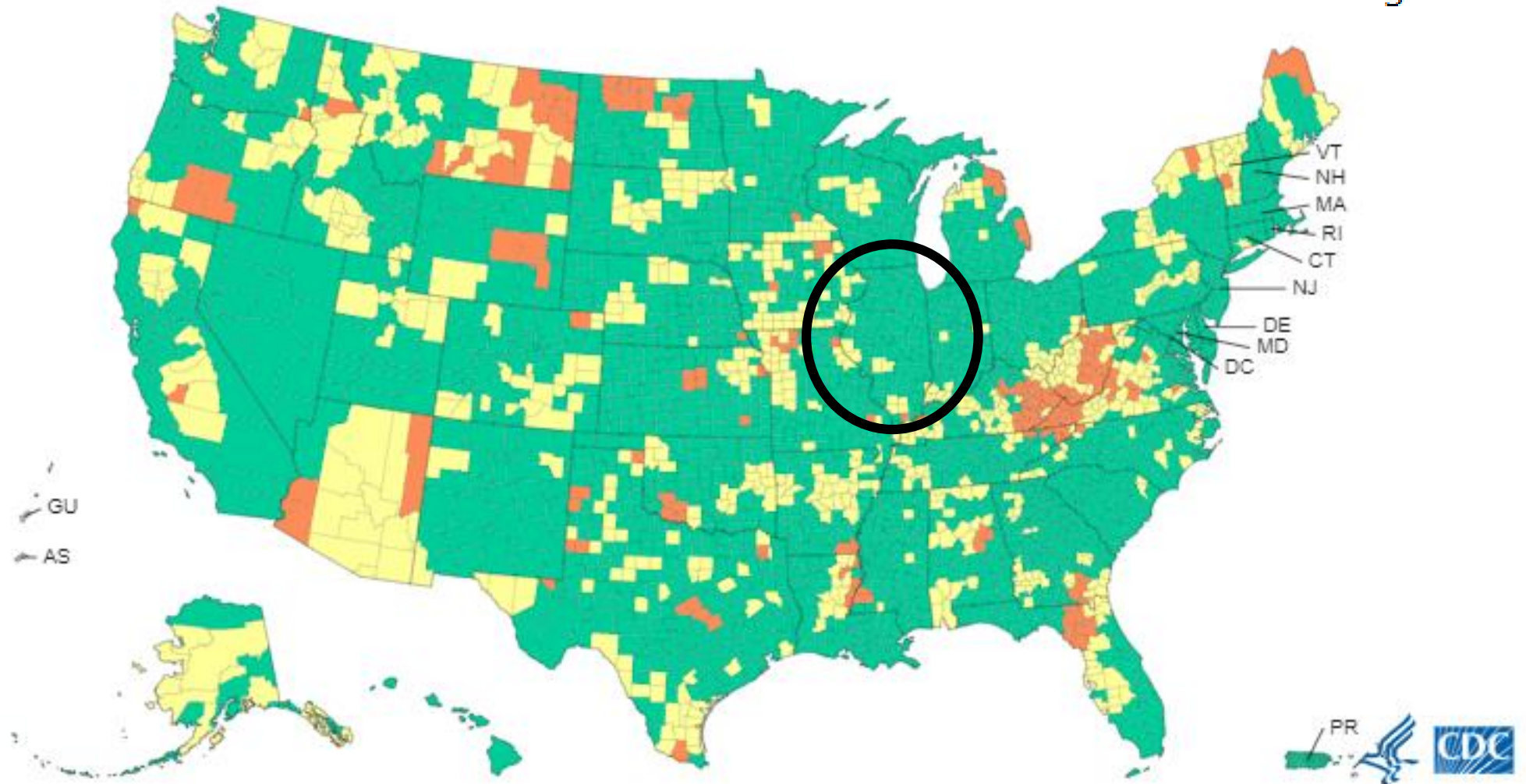


# U.S. COVID-19 Community Levels by County Map



As of March 10, 2022

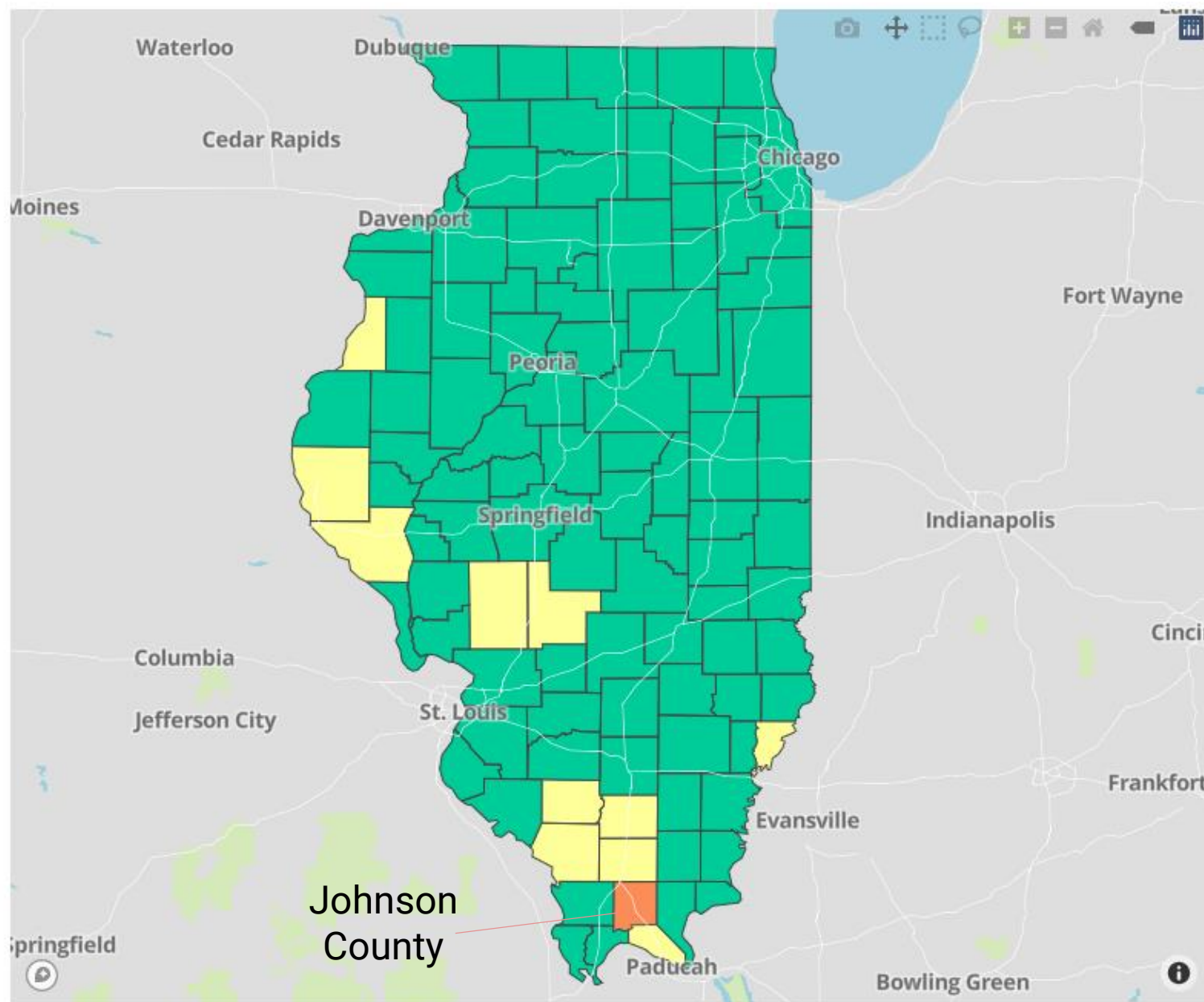
Low Medium High N/A





Low Medium High N/A

# Illinois COVID-19 Community Levels by County Map As of March 10, 2022



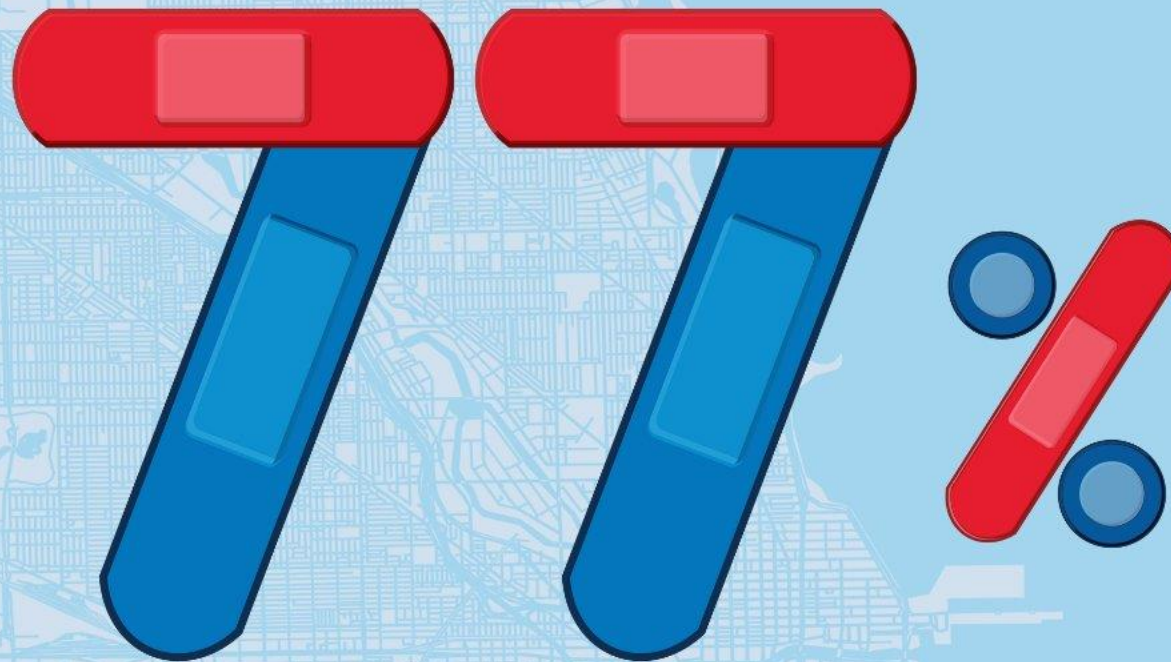


# What prevention steps should you take based on your COVID-19 Community Level?

Low	<ul style="list-style-type: none"><li>• Stay up to date* with <b>COVID-19 vaccines</b></li><li>• Get <b>tested</b> if you have symptoms</li></ul>
Medium	<ul style="list-style-type: none"><li>• If you have at high risk for severe illness, talk to your healthcare provider about whether you need to wear a mask and take other precautions</li><li>• Stay up to date* with <b>COVID-19 vaccines</b></li><li>• Get <b>tested</b> if you have symptoms</li></ul>
High	<ul style="list-style-type: none"><li>• Wear a mask indoors in public</li><li>• Stay up to date* with <b>COVID-19 vaccines</b></li><li>• Get <b>tested</b> if you have symptoms</li><li>• Additional precautions may be needed for people at high risk for severe disease</li></ul>

\*Up to date means a person has received all recommended COVID-19 vaccines, including any booster dose(s) when eligible.





**OF ALL CHICAGOANS  
HAVE RECEIVED AT LEAST ONE  
DOSE OF THE COVID-19 VACCINE!**

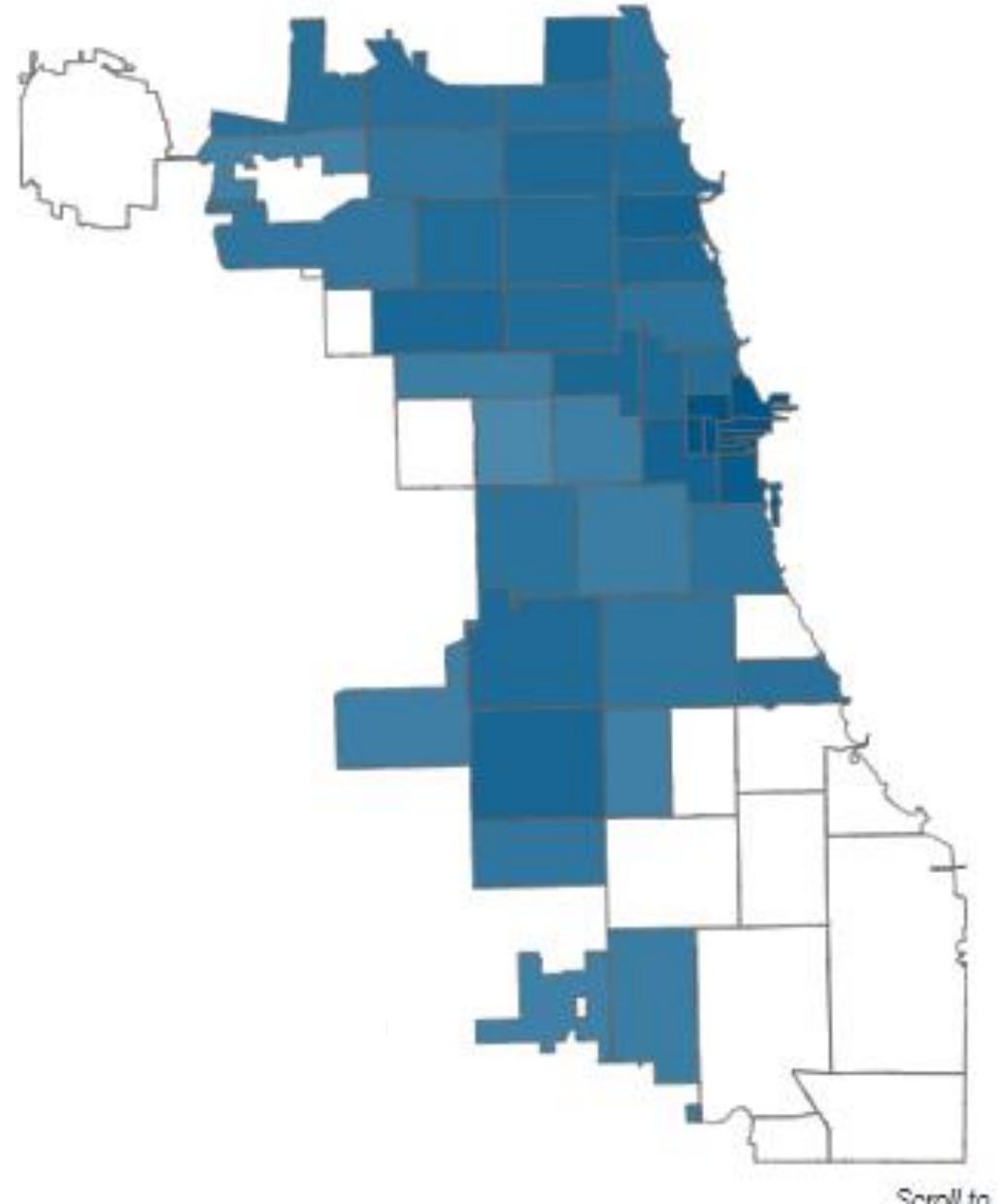
**82%** of age-  
*eligible*  
Chicagoans  
(5 years+)  
have had a  
first dose





# Chicago Vaccination Milestones by Zip Code

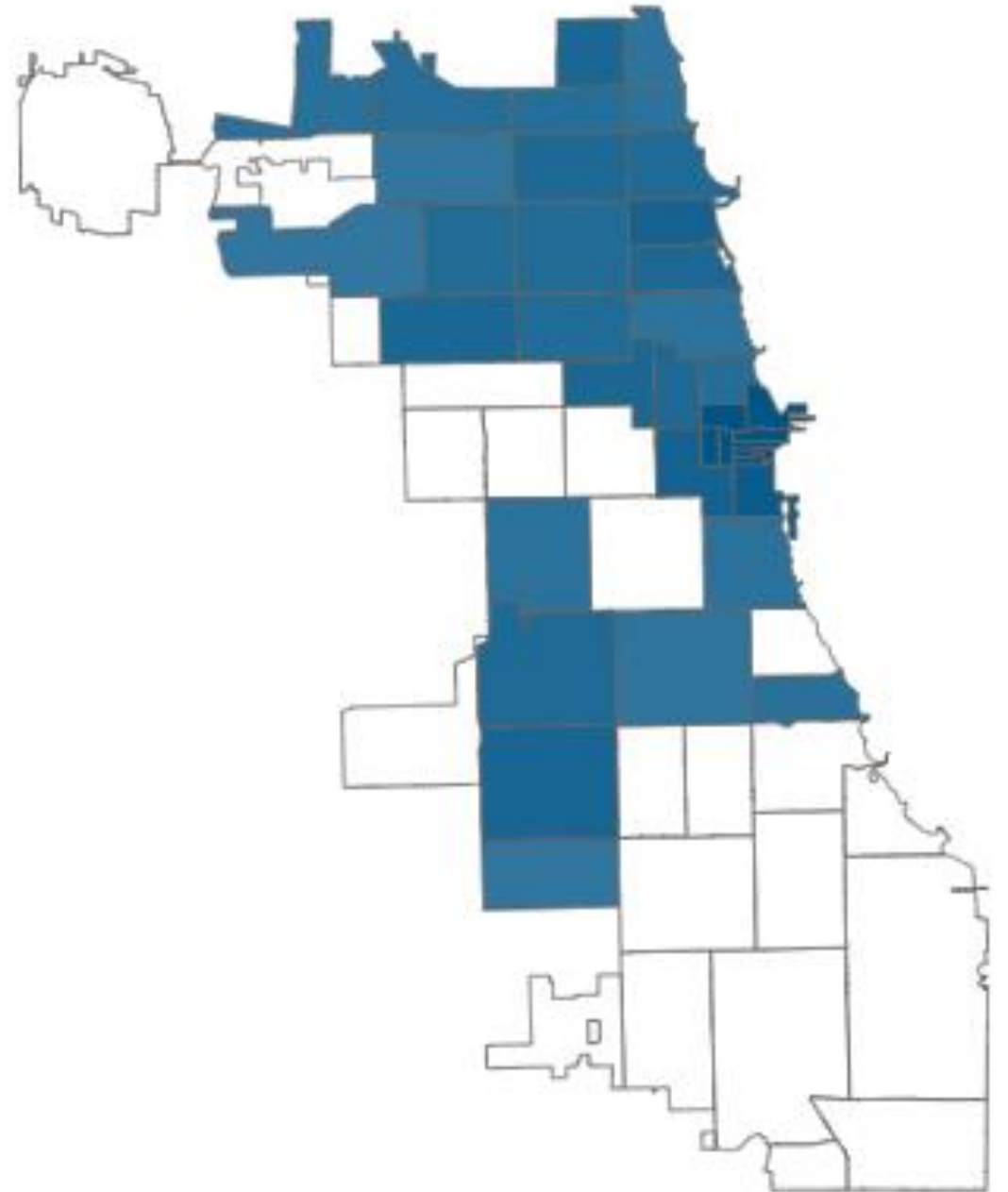
- There are 46 Chicago zip codes with at least **70%** of their 5+ population with at least one dose of the COVID-19 vaccine





# Chicago Vaccination Milestones by Zip Code

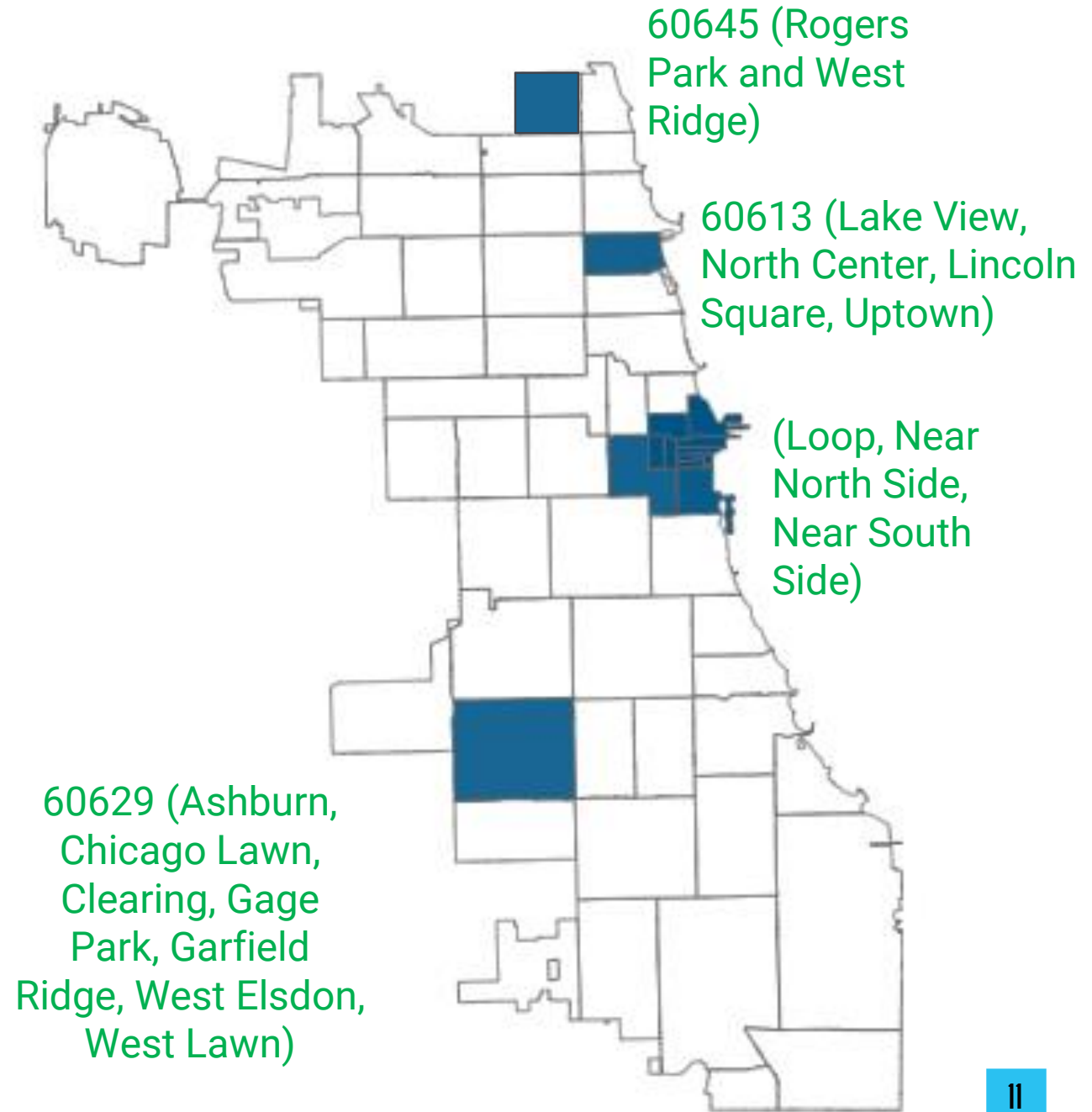
- There are 37 Chicago zip codes with at least **80%** of their 5+ population with at least one dose of the COVID-19 vaccine





# Chicago Vaccination Milestones by Zip Code

- There are 13 Chicago zip codes will at least **90%** of their 5+ population with at least one dose of the COVID-19 vaccine







Every home in the U.S. is eligible to order 2 sets of 4 free at-home tests.

**If you already ordered your first set, order a second today.**

# How to get your **FREE** at-home COVID-19 tests



**VISIT [COVIDtests.gov](https://COVIDtests.gov)**

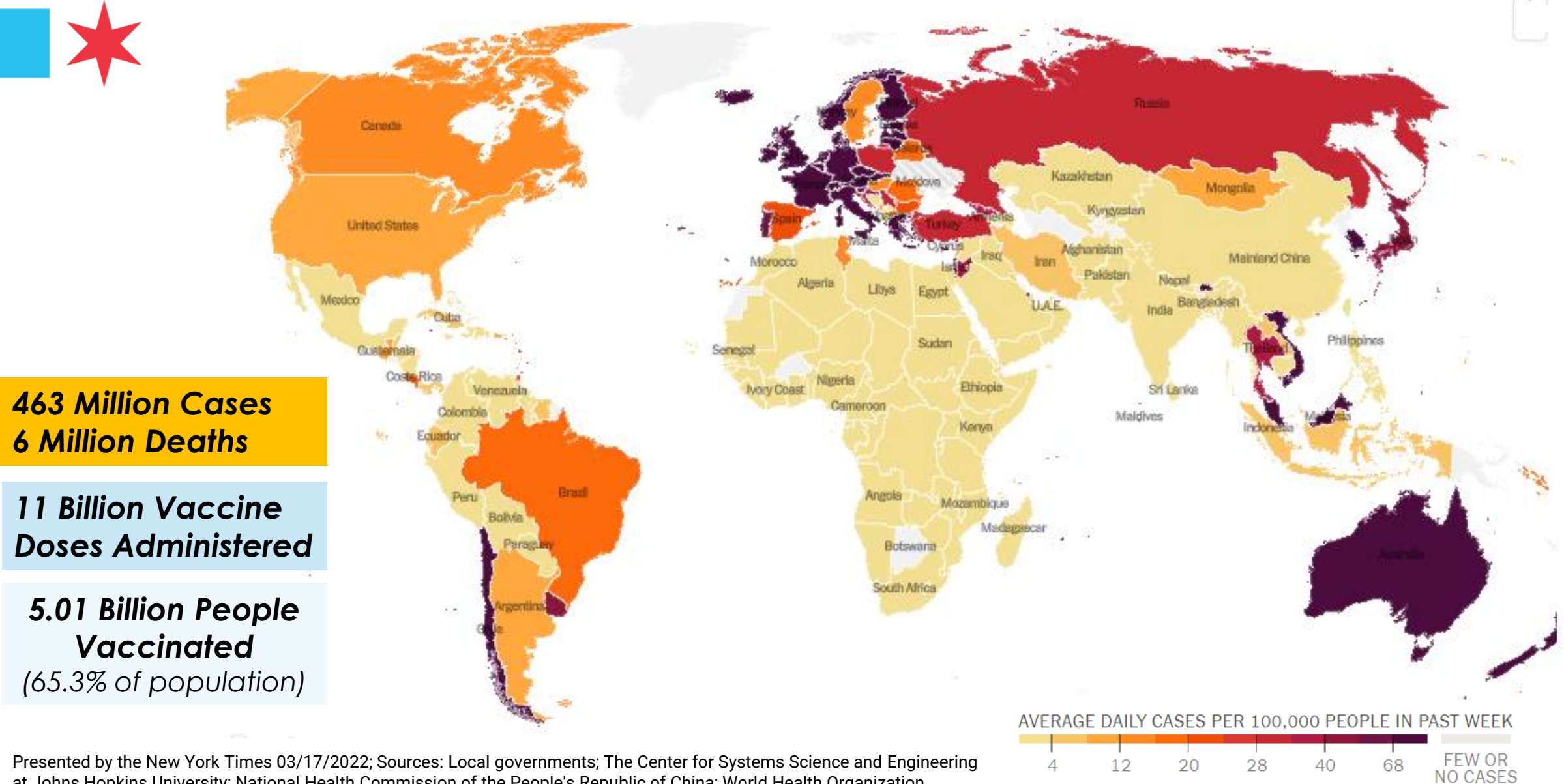


**Enter contact and shipping info**



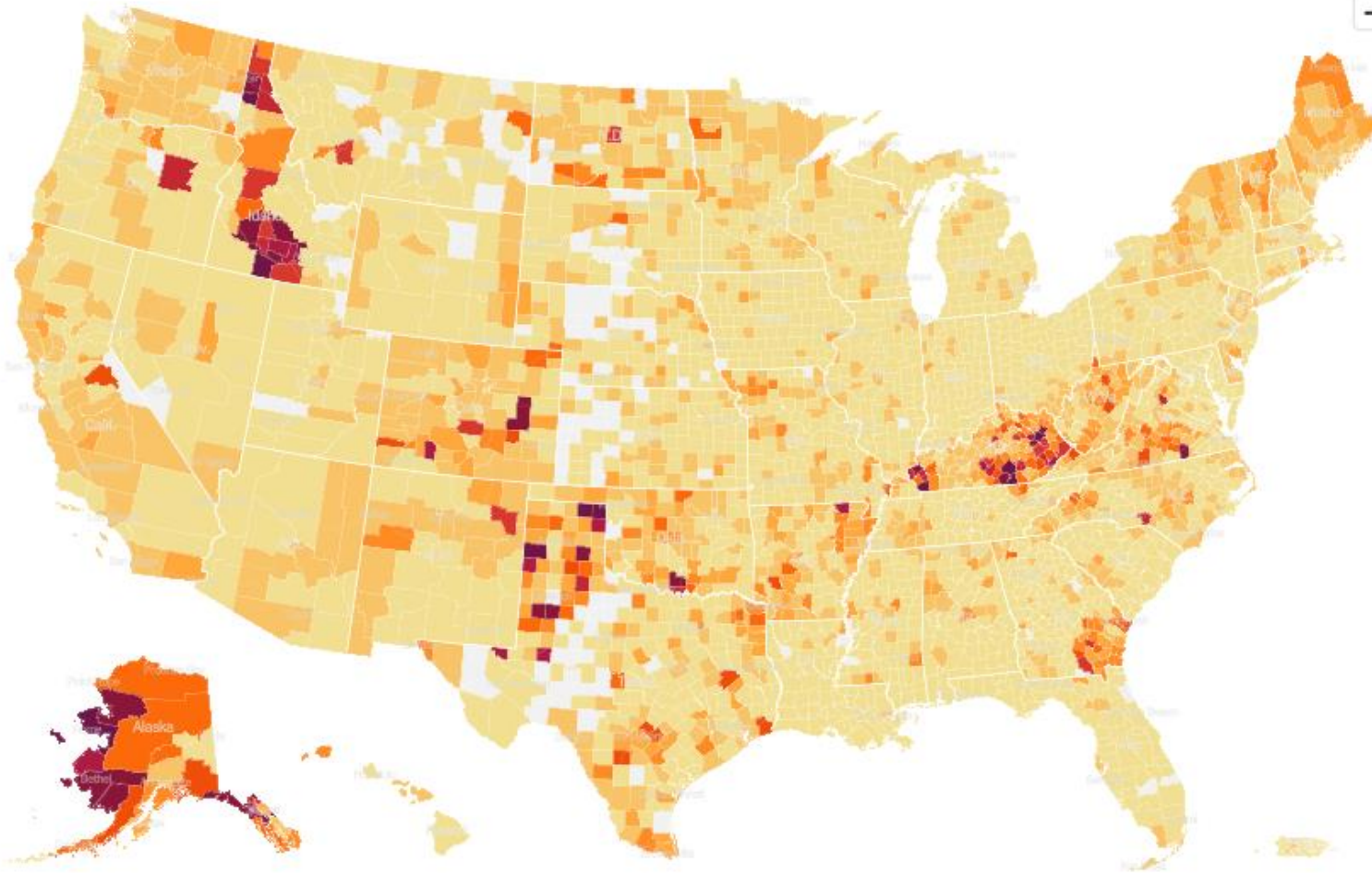
**Review and place your order**

# Average daily COVID-19 cases per 100,000 population





# Average daily COVID-19 cases per 100,000 population

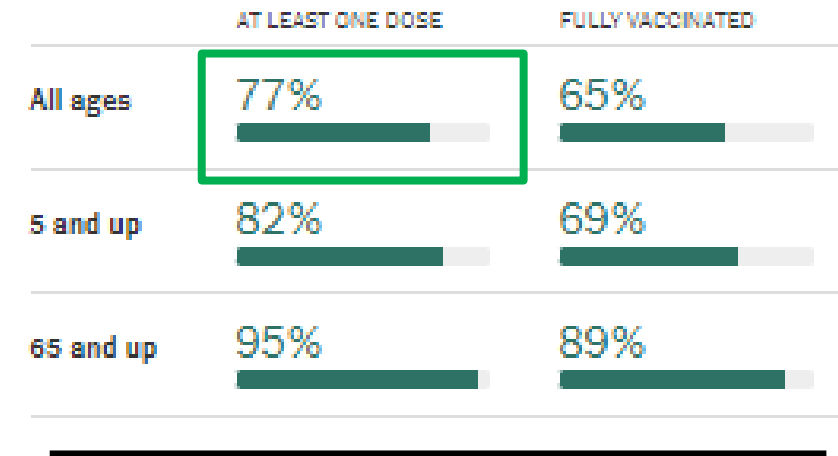


**79.5 Million Cumulative Cases**  
**967,450 Cumulative Deaths**

AVERAGE DAILY CASES PER 100,000 PEOPLE IN PAST WEEK

10	30	50	70	100	250	FEW OR NO CASES
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## Vaccinations



## National currently:

**9** diagnosed daily cases per 100,000 people

## Illinois currently:

**9** diagnosed daily cases per 100,000 people

## Chicago currently:

**5** diagnosed daily cases per 100,000 people



# Laboratory-based surveillance:

Monitoring SARS-CoV-2 in wastewater and looking for variants

Dr. Isaac Ghinai

Medical Director, Laboratory-Based Surveillance

Data as of March 16, 2022



# Contents

- Background
- Variants of SARS-CoV-2
- Monitoring wastewater for SARS-CoV-2



# Contents

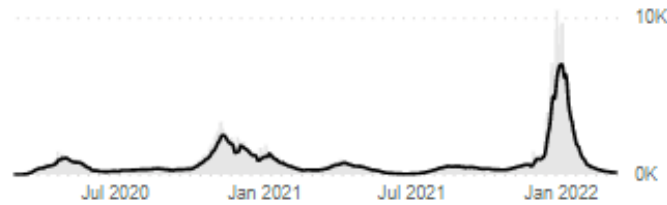
- **Background**
- Variants of SARS-CoV-2
- Monitoring wastewater for SARS-CoV-2



# ★ Chicago has low levels of COVID-19 transmission

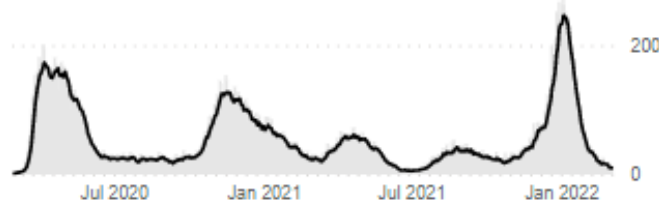
## CASES

135 ▼ 144 (-6%) 560,454 5.0  
Current daily avg Prior week Cumulative Daily rate per 100,000



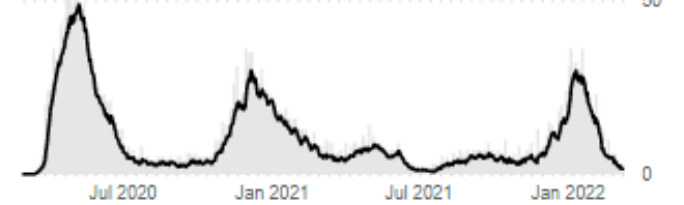
## HOSPITALIZATIONS

10 ▼ 16 (-36%) 41,434 0.4  
Current daily avg Prior week Cumulative Daily rate per 100,000



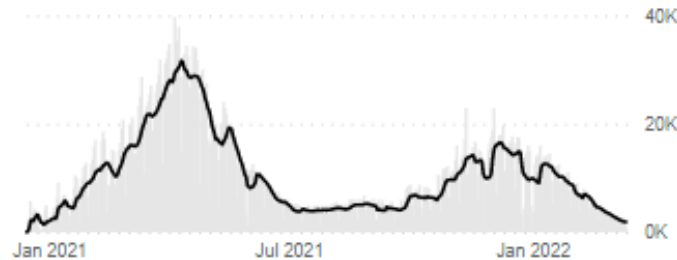
## DEATHS

1.57 ▼ 2.57 (-39%) 7,598 0.1  
Current daily avg Prior week Cumulative Daily rate per 100,000



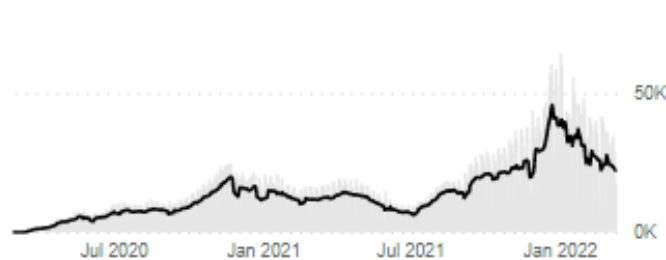
## VACCINATIONS ADMINISTERED

1,910 ▼ 4,694,933 69.7% 77.0%  
Current daily avg Cumulative Completed series At least one dose



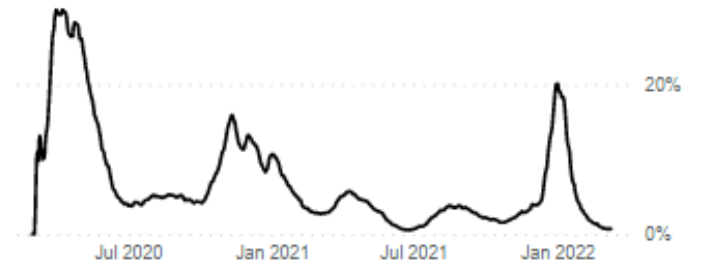
## TESTS PERFORMED

22,228 ▼ 24,149 (-8%) 10,335,739  
Current daily avg Prior week Cumulative

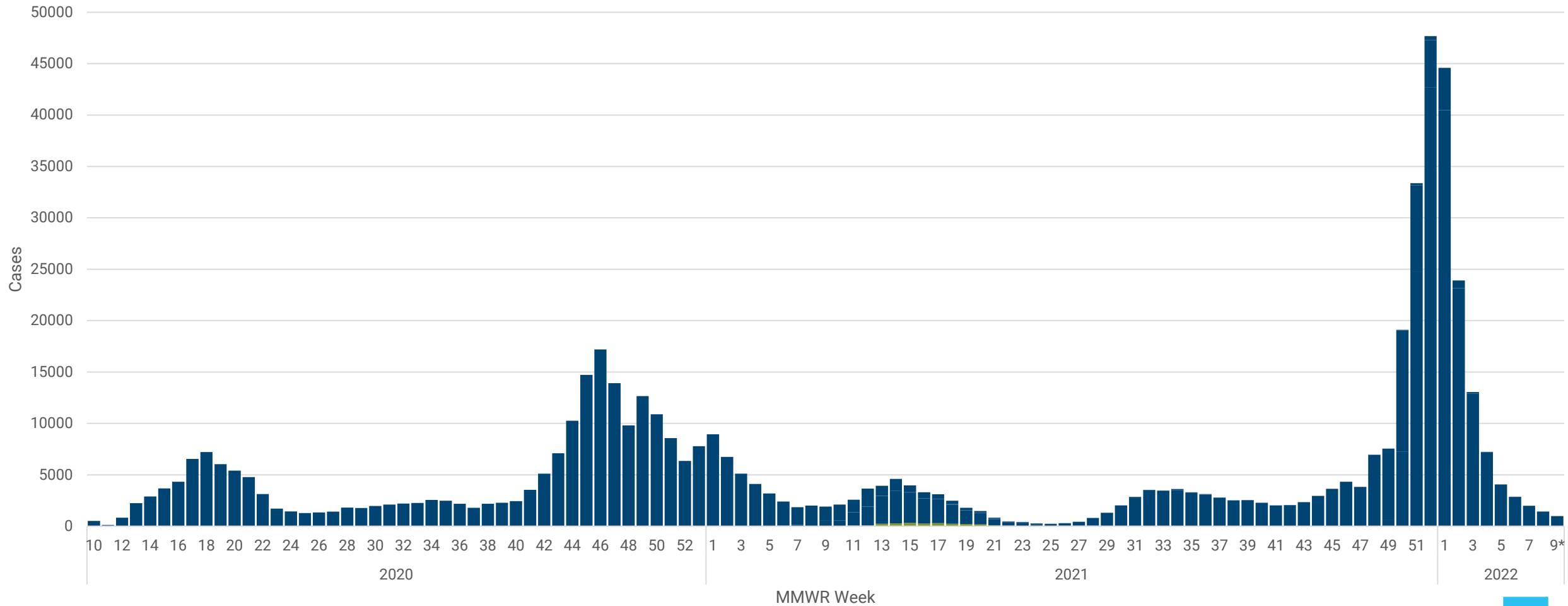


## POSITIVITY RATE

0.7% ▼ 0.8%  
Current daily avg Prior week



# ★ But we may have more surges in the future



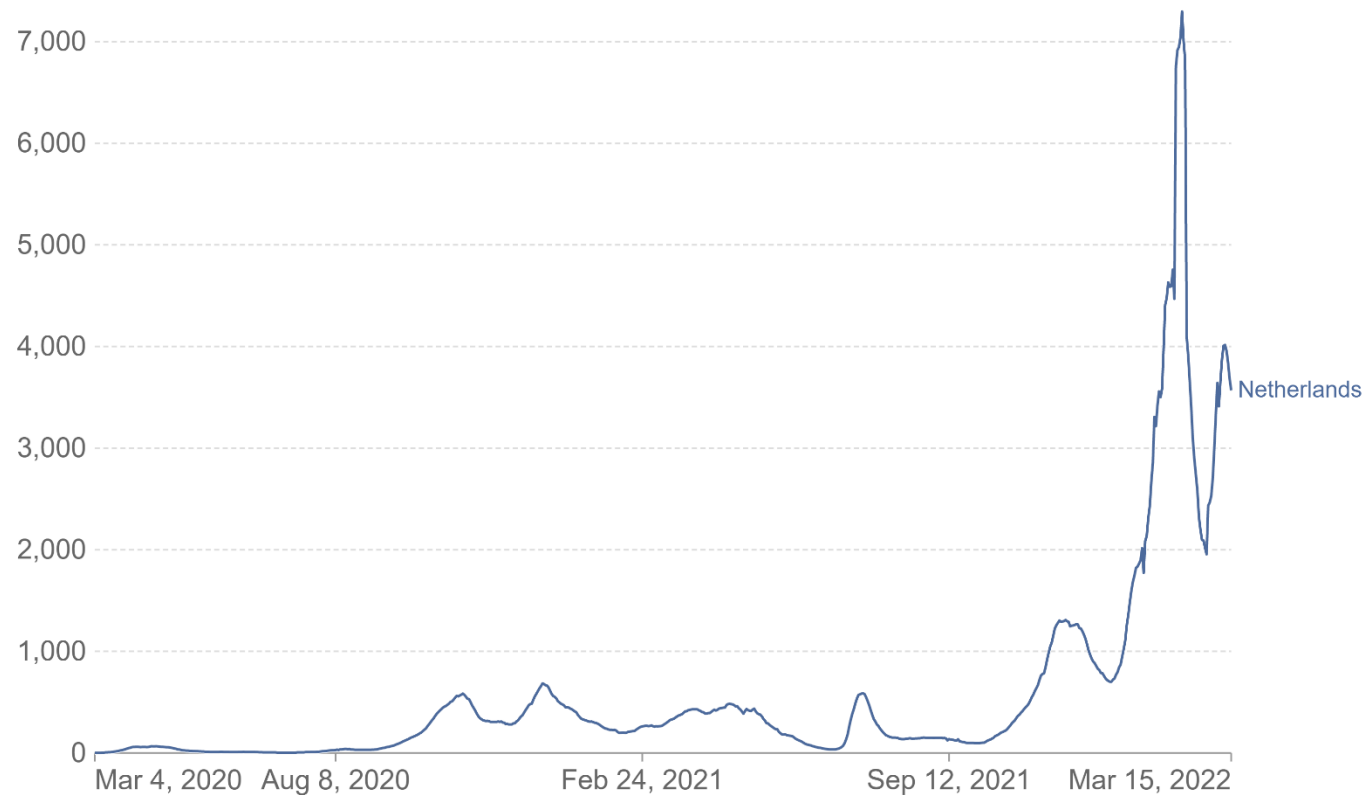
# ★ Other places are currently seeing a surge

**Europe:**  
**Netherlands**

## Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World  
in Data



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

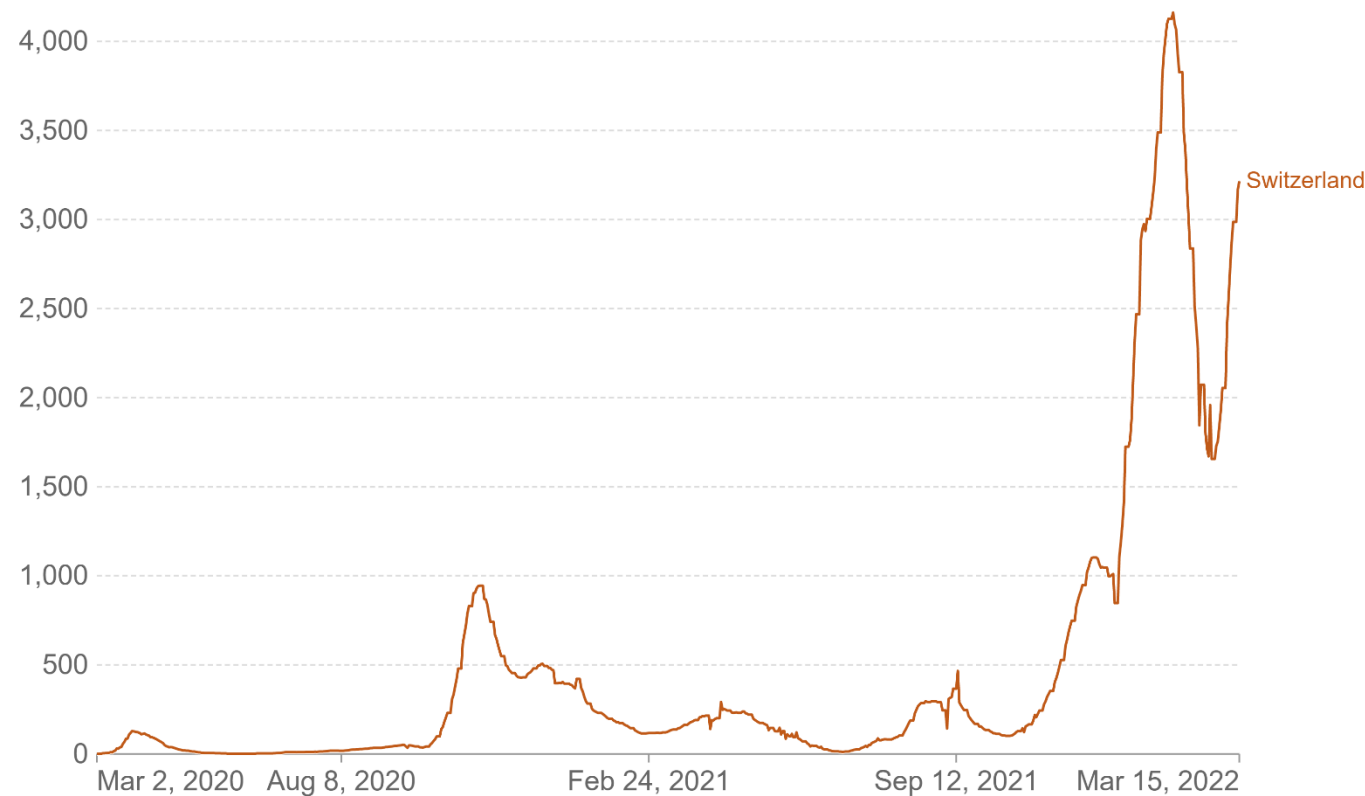
# ★ Other places are currently seeing a surge

**Europe:**  
**Switzerland**

## Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World  
in Data



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY



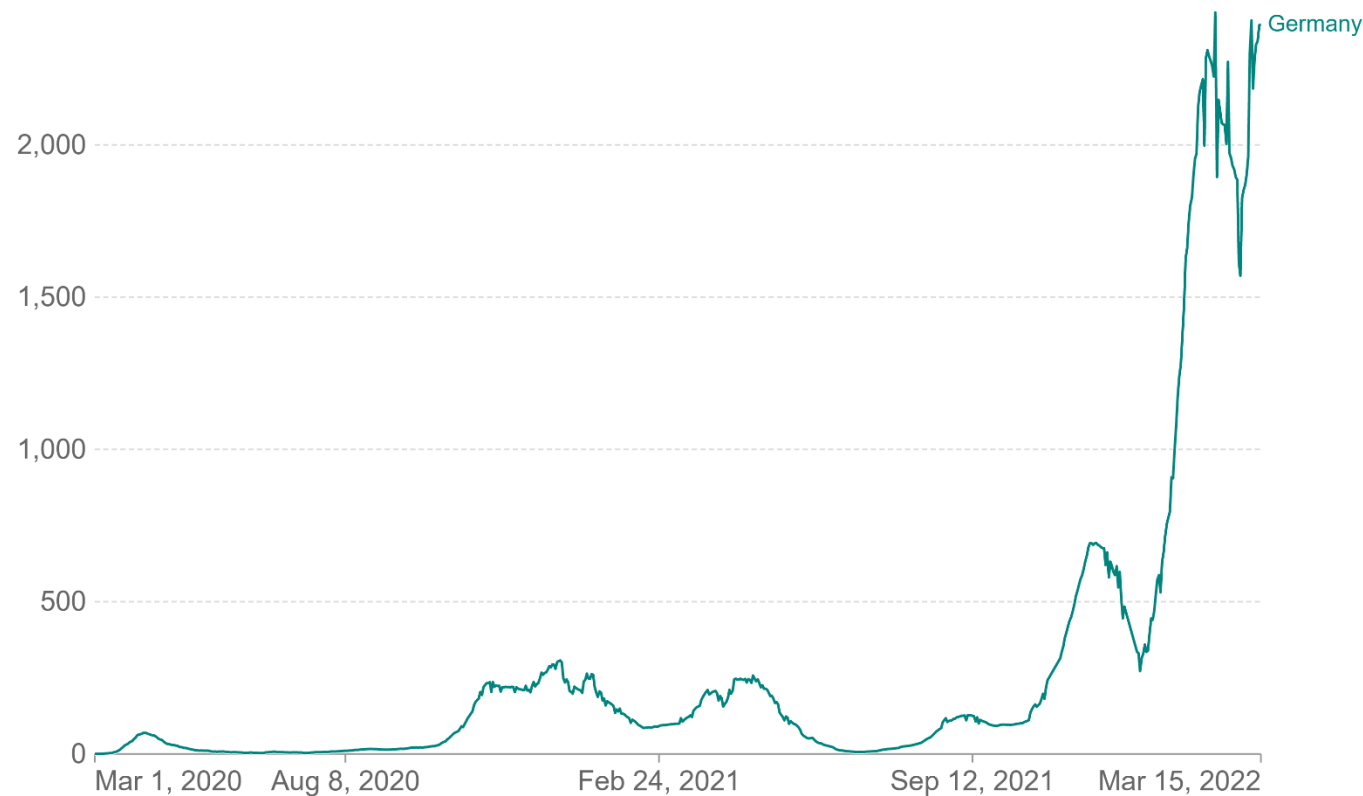
# ★ Other places are currently seeing a surge

## Europe: Germany

### Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World  
in Data



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

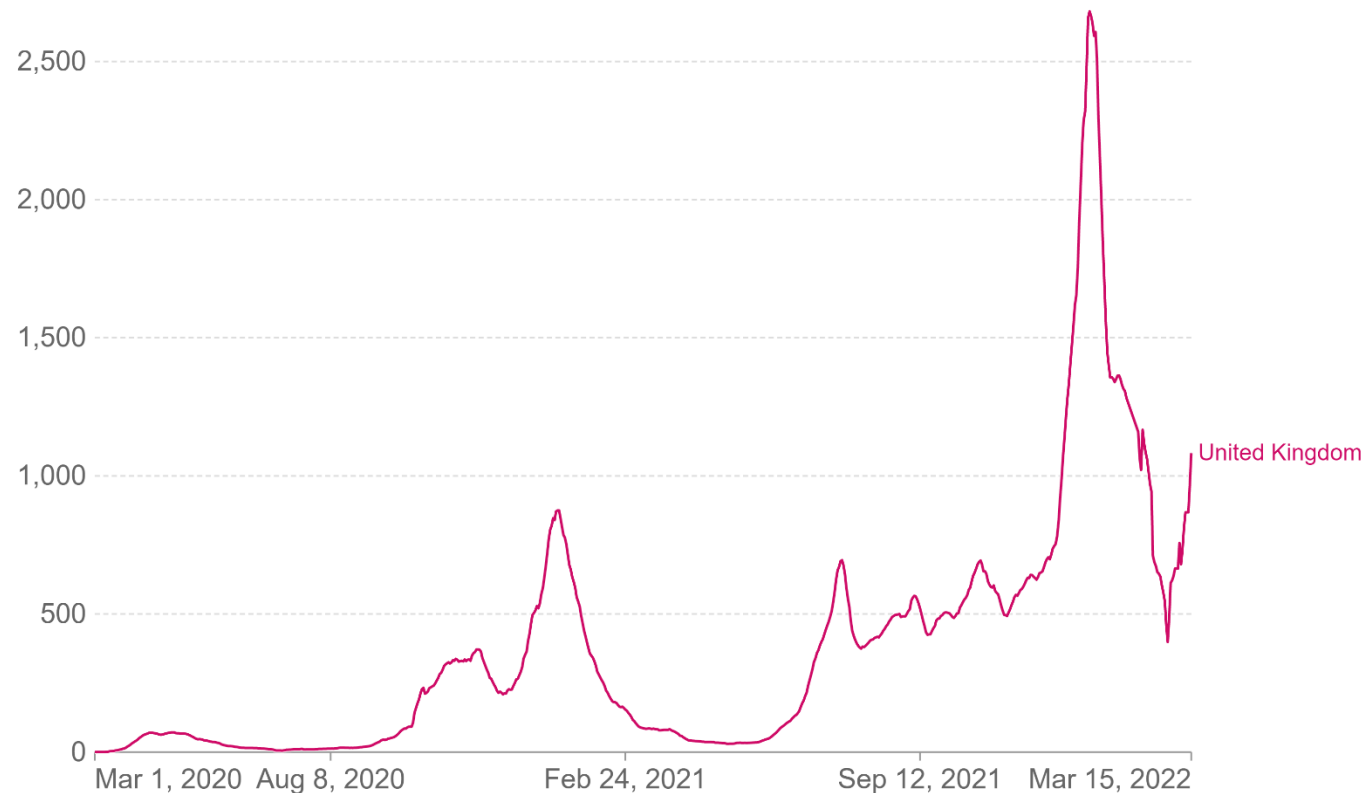
# ★ Other places are currently seeing a surge

Europe:  
UK

## Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World  
in Data



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

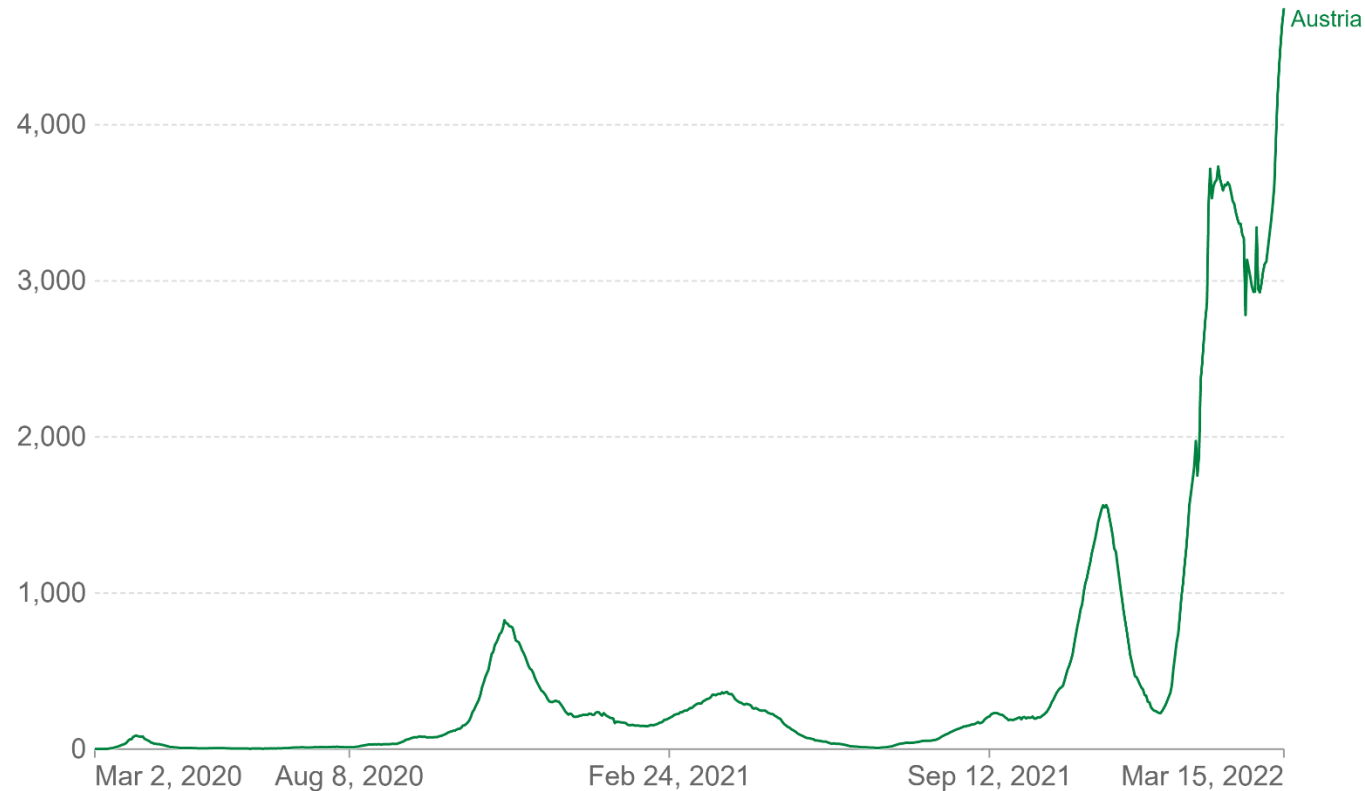
# ★ Other places are currently seeing a surge

## Europe: Austria

### Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World  
in Data



Source: Johns Hopkins University CSSE COVID-19 Data

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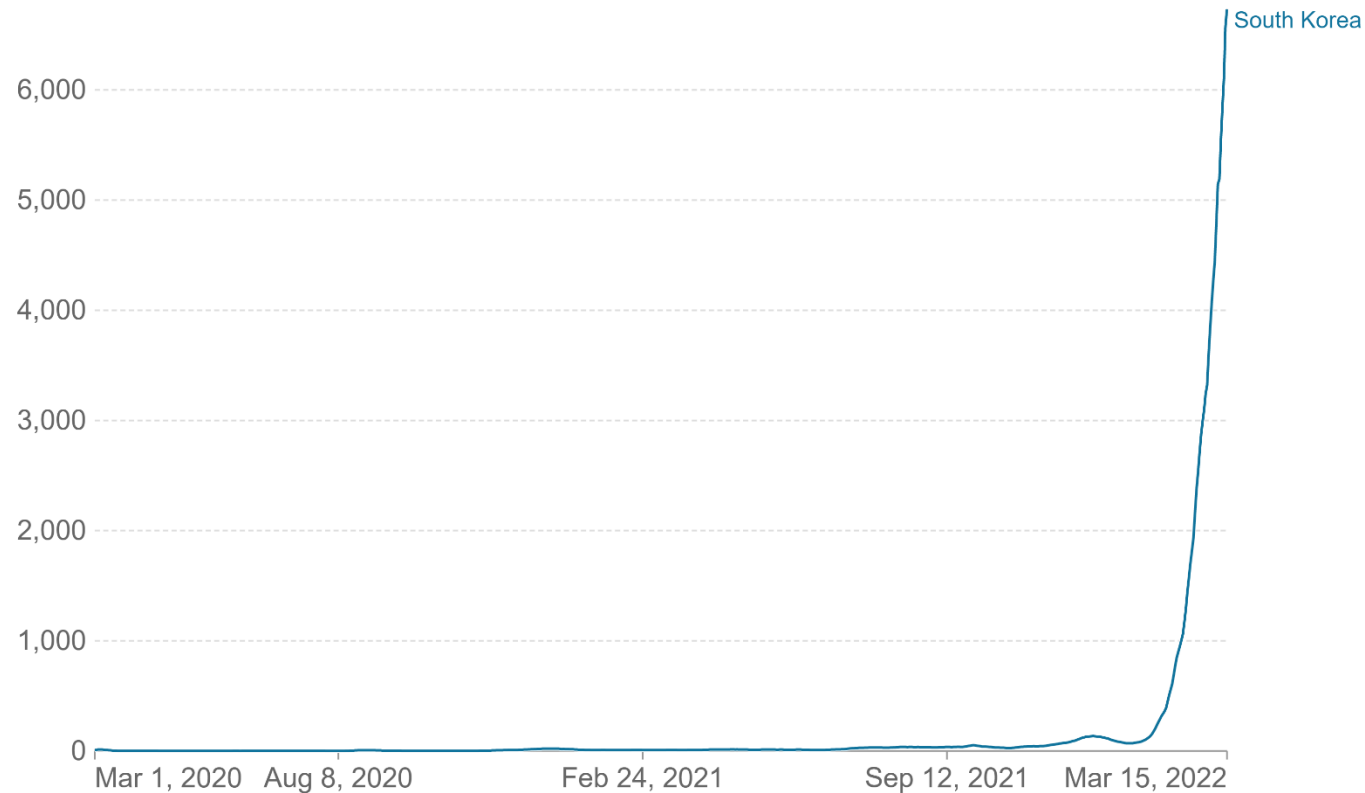
# ★ Other places are currently seeing a surge

## Asia: South Korea

### Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World  
in Data



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY



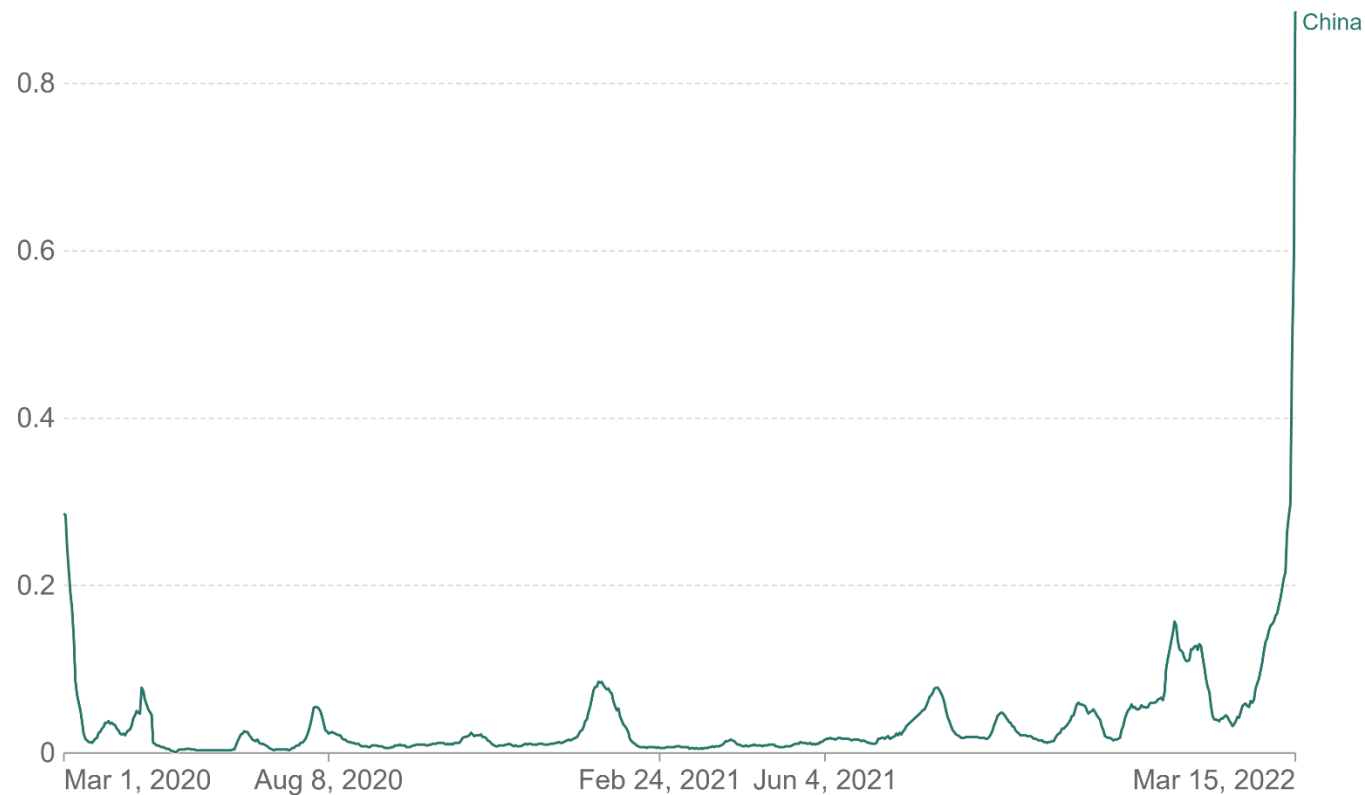
# ★ Other places are currently seeing a surge

**Asia:**  
**China**

## Daily new confirmed COVID-19 cases per million people

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World  
in Data



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

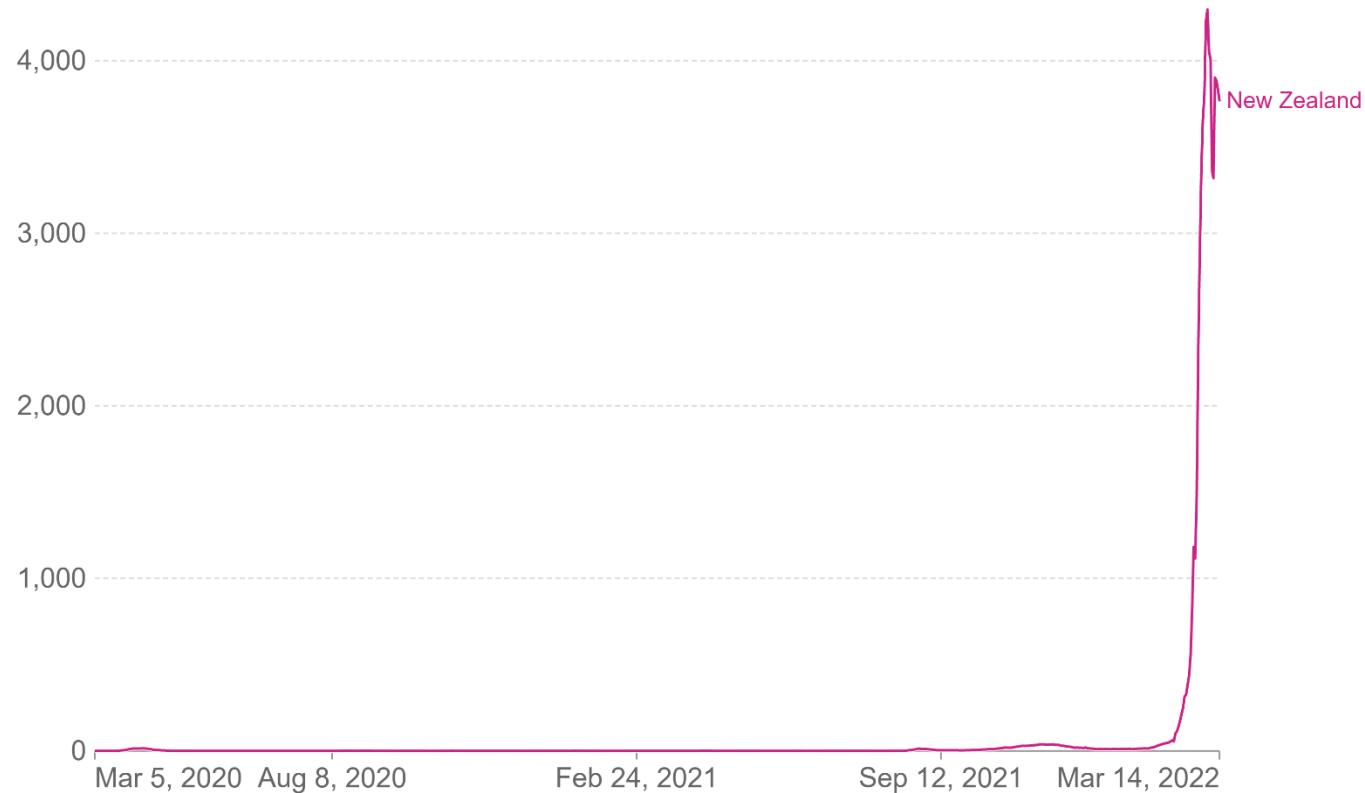
# ★ Other places are currently seeing a surge

## Daily new confirmed COVID-19 cases per million people

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Our World  
in Data

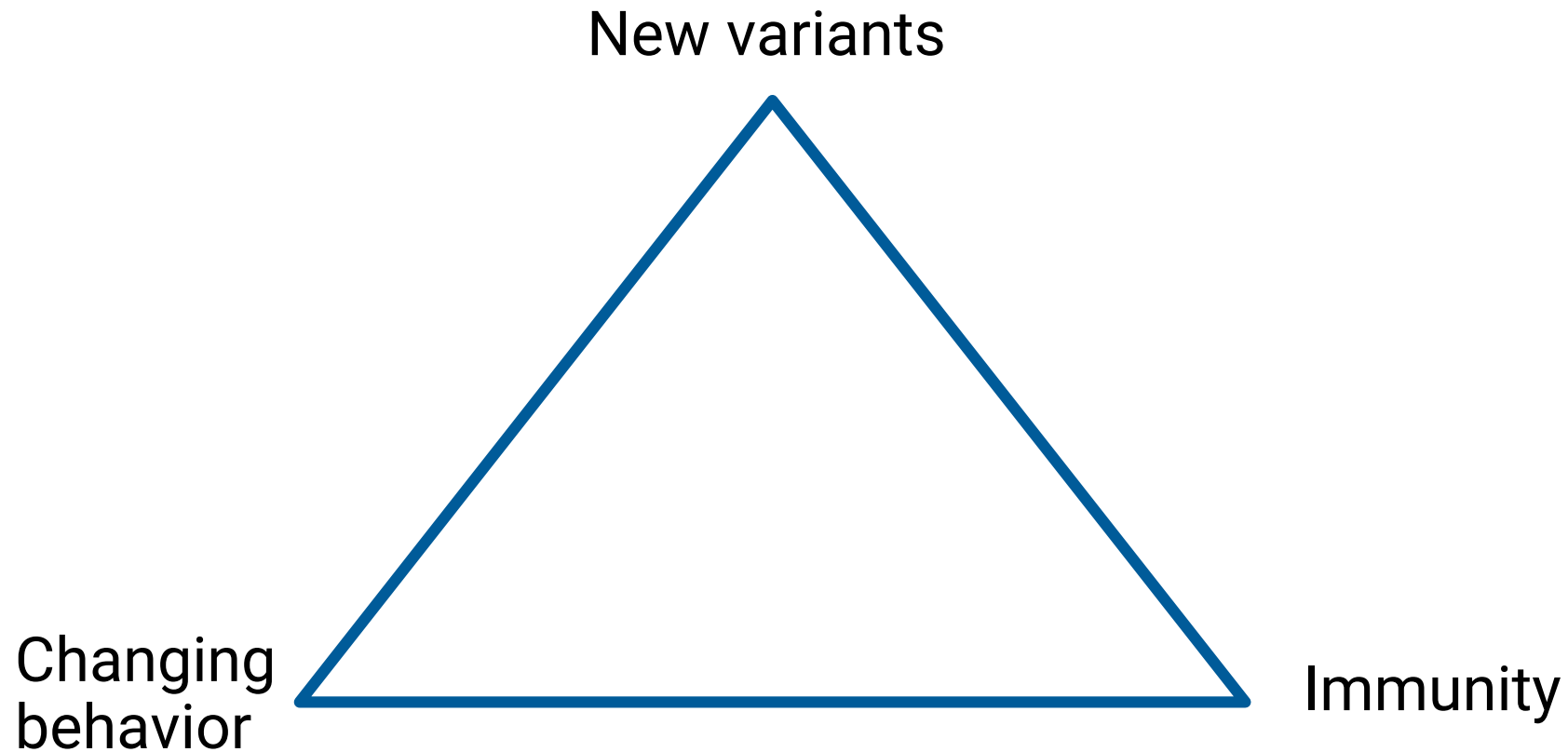
New Zealand



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

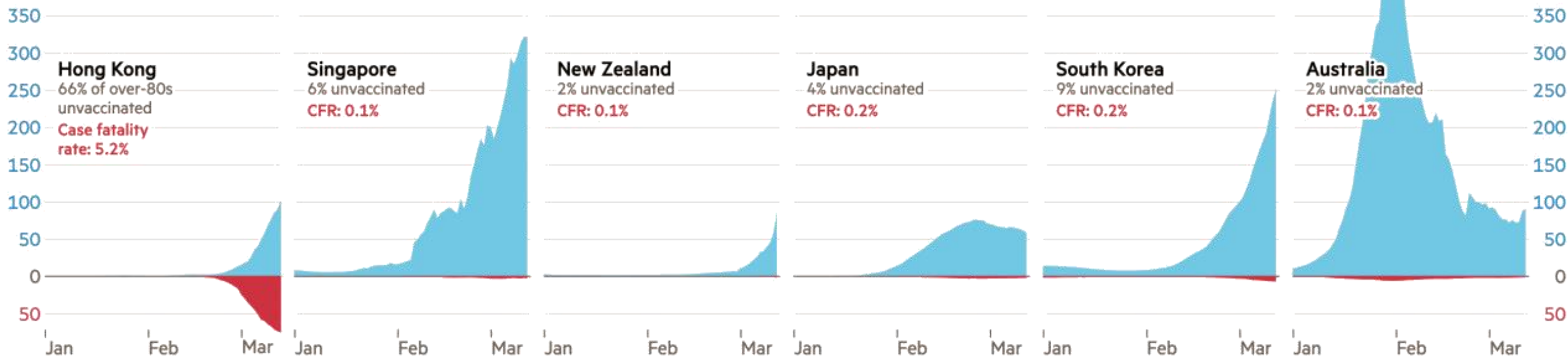
# ★ Surges are usually driven by several factors



# ★ Where vaccination is high, deaths are low

Cases are translating into deaths at much higher rates in Hong Kong than in peer countries with strong elderly vaccination coverage

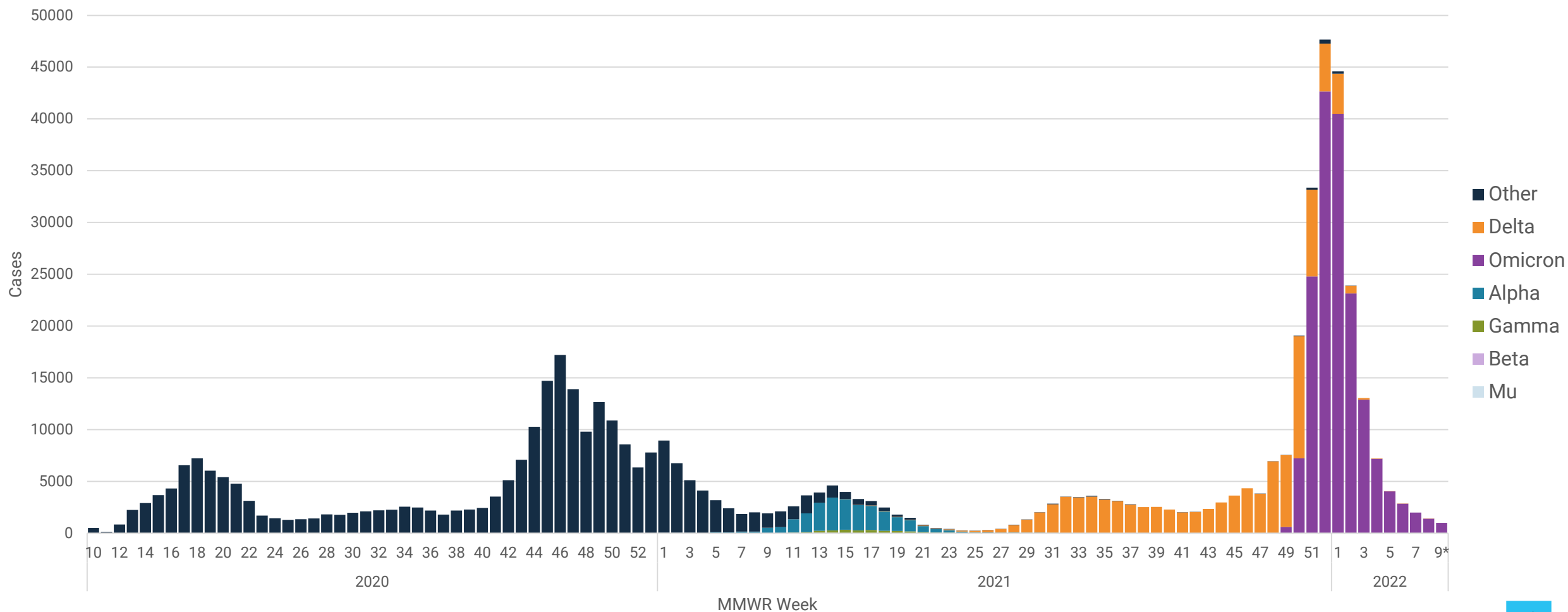
Daily **cases** per 100,000 people, and daily **deaths** per 2 million



Source: FT analysis of data from Johns Hopkins CSSE. Cases shifted forward to account for lag between infection and death  
© FT



# SARS-CoV-2 variants have also driven surges



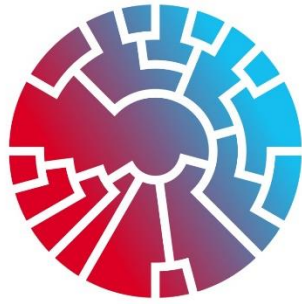
Data from the CDC's National SARS-CoV-2 Strain Surveillance System (NS3) projected onto Chicago cases.



# Contents

- Background
- **Variants of SARS-CoV-2**
- Monitoring wastewater for SARS-CoV-2

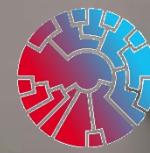
# Genomic surveillance in Chicago



**RIPHL**

REGIONAL  
INNOVATIVE  
PUBLIC HEALTH  
LABORATORY

  **CDPH**  **RUSH**



**RIPHL**

REGIONAL  
INNOVATIVE  
PUBLIC HEALTH  
LABORATORY







**RIPHL**

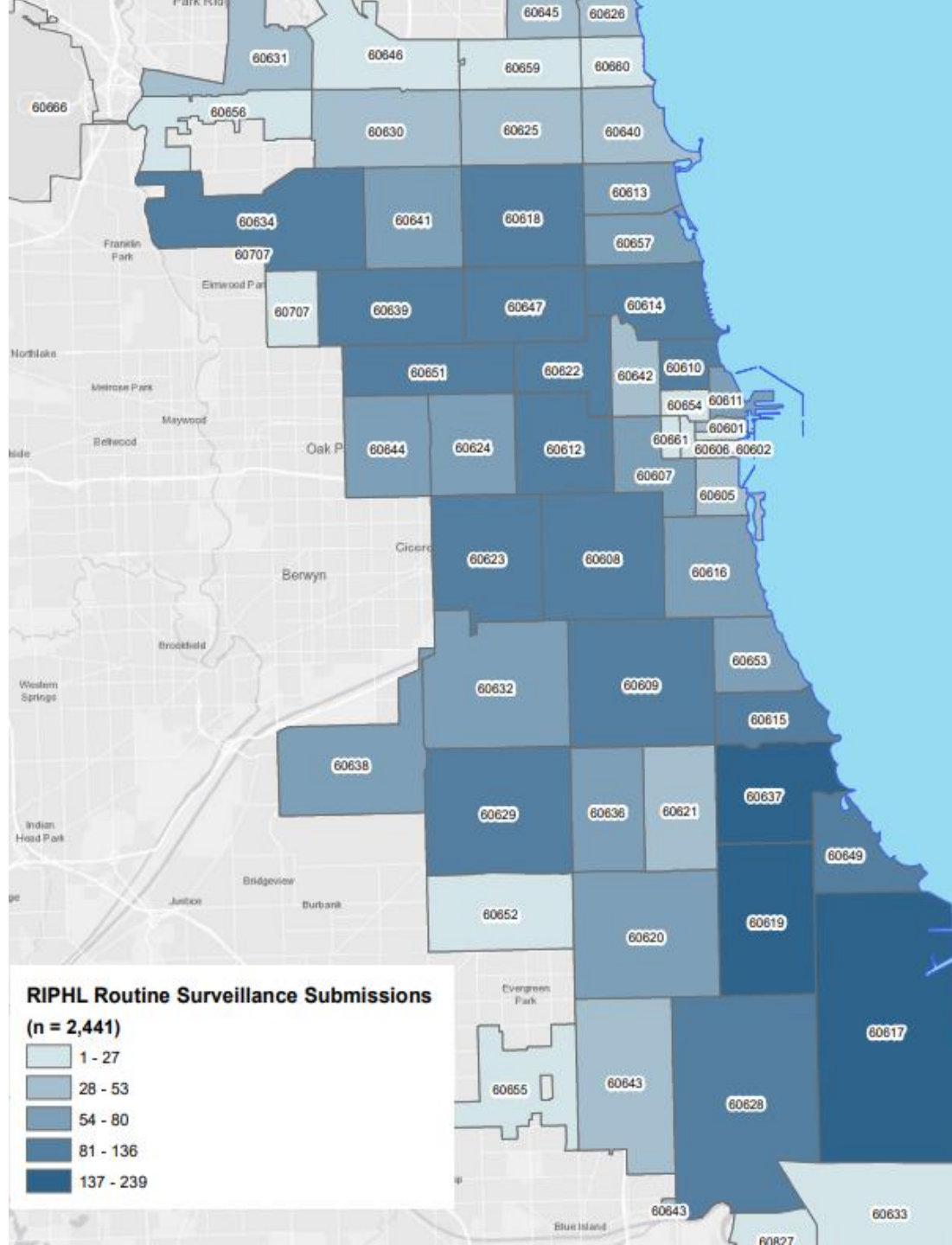
REGIONAL  
INNOVATIVE  
PUBLIC HEALTH  
LABORATORY

# ★ Many hospitals submit specimens to RIPHL





Most of  
Chicago  
is well-  
represented



**RIPHL**

REGIONAL  
INNOVATIVE  
PUBLIC HEALTH  
LABORATORY



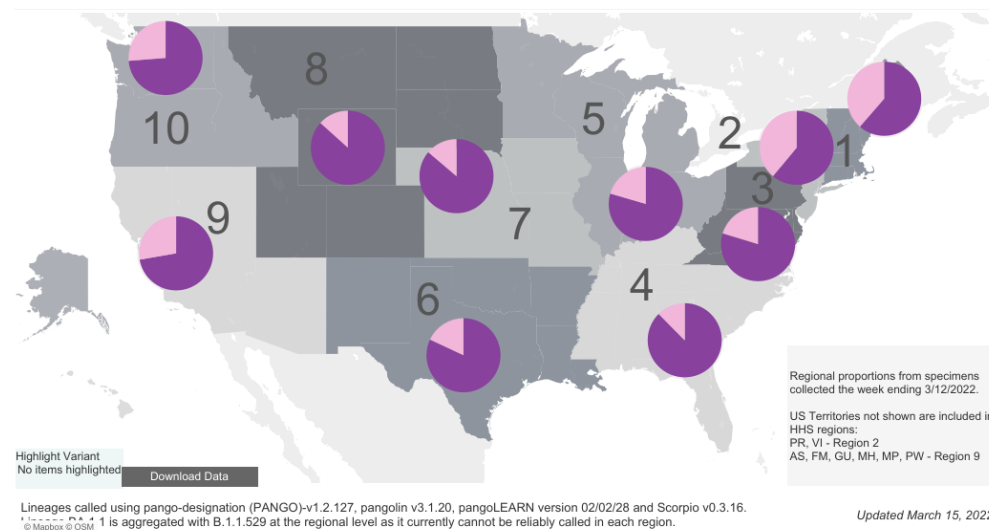
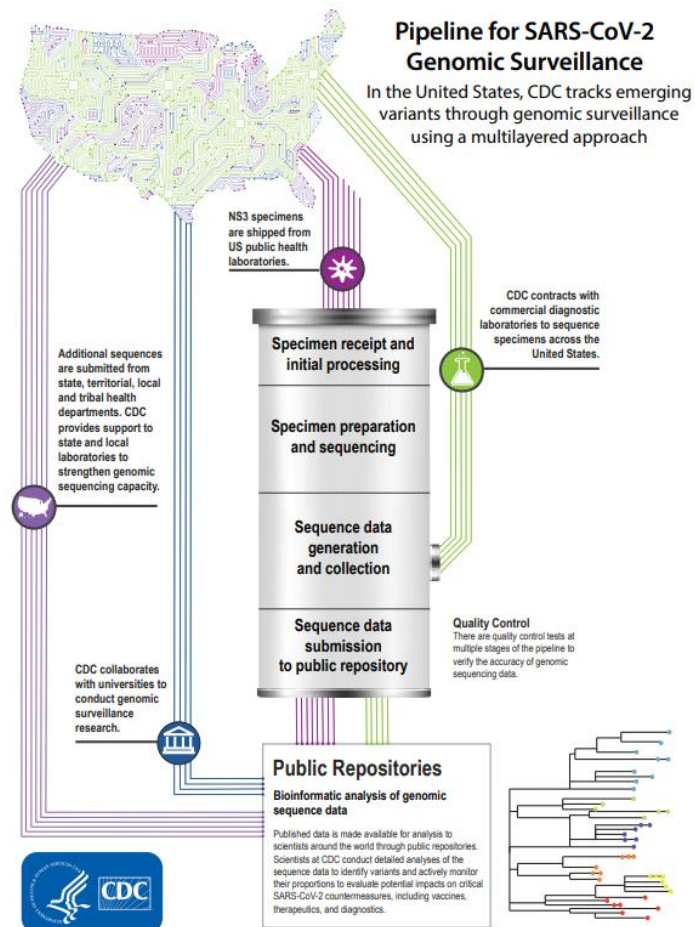
# ★ RIPHL is not the only specialized laboratory



**M Northwestern Medicine®**  
Feinberg School of Medicine

# Chicago is part of national surveillance efforts

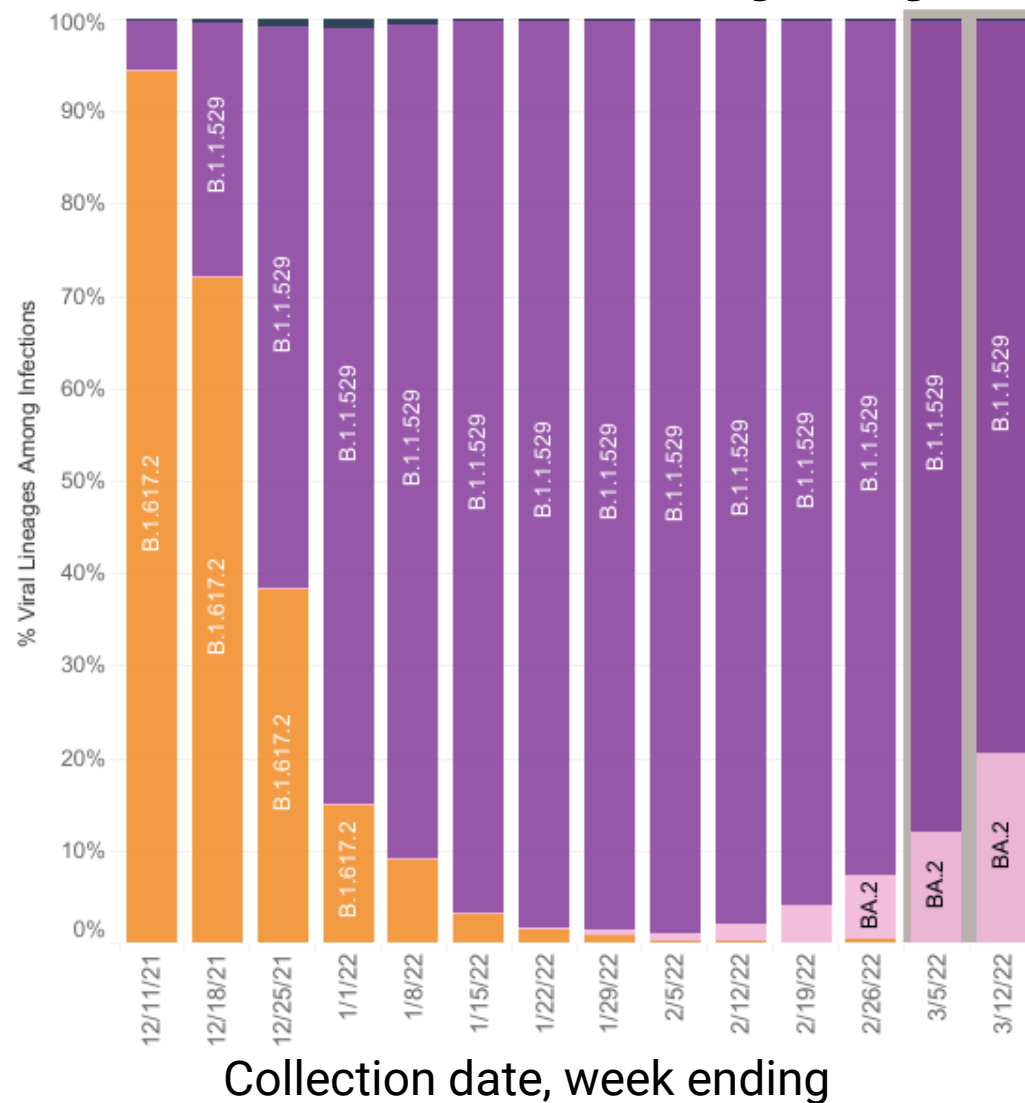
Such as the  
National SARS-  
CoV-2 Strain  
Surveillance  
System (NS3)





# SARS-CoV-2 Variant Surveillance, Midwest Region.

Omicron BA.2 doubling about every 7 days; may see predominance by late March



Omicron B.1.1 (79.5%)

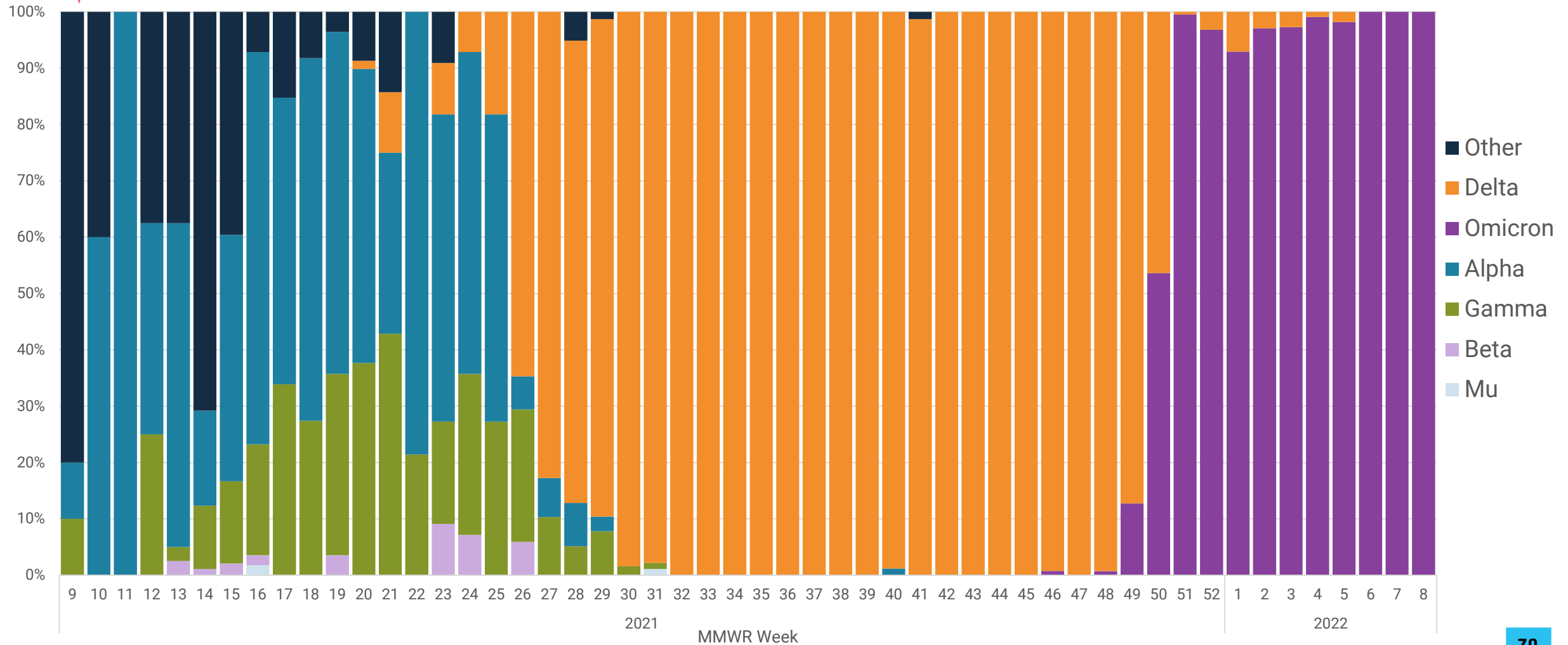
Omicron BA.2 (20.5%)

Delta (0.0%)

Other (0.0%)



# ★ Variants in Chicago sequenced at RIPHL



Ending dates for 2022 MMWR weeks 1 = 1/8; 2 = 1/15; 3 = 1/22; 4 = 1/29; 5 = 2/5; 6 = 2/12; 7 = 2/19; 8 = 2/26



# Omicron sublineage BA.2



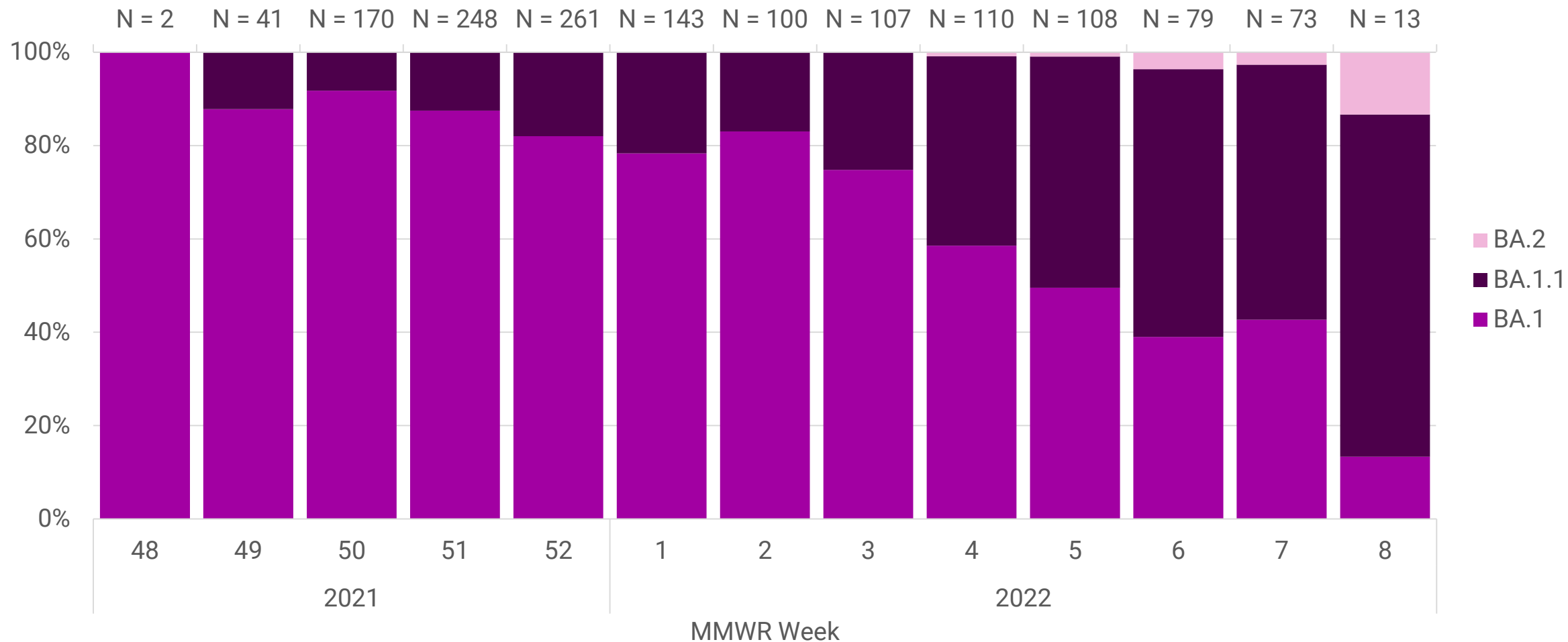
“

Studies have shown that **BA.2 has a growth advantage over BA.1**...

This difference in transmissibility appears to be much smaller than, for example, the difference between BA.1 and Delta.

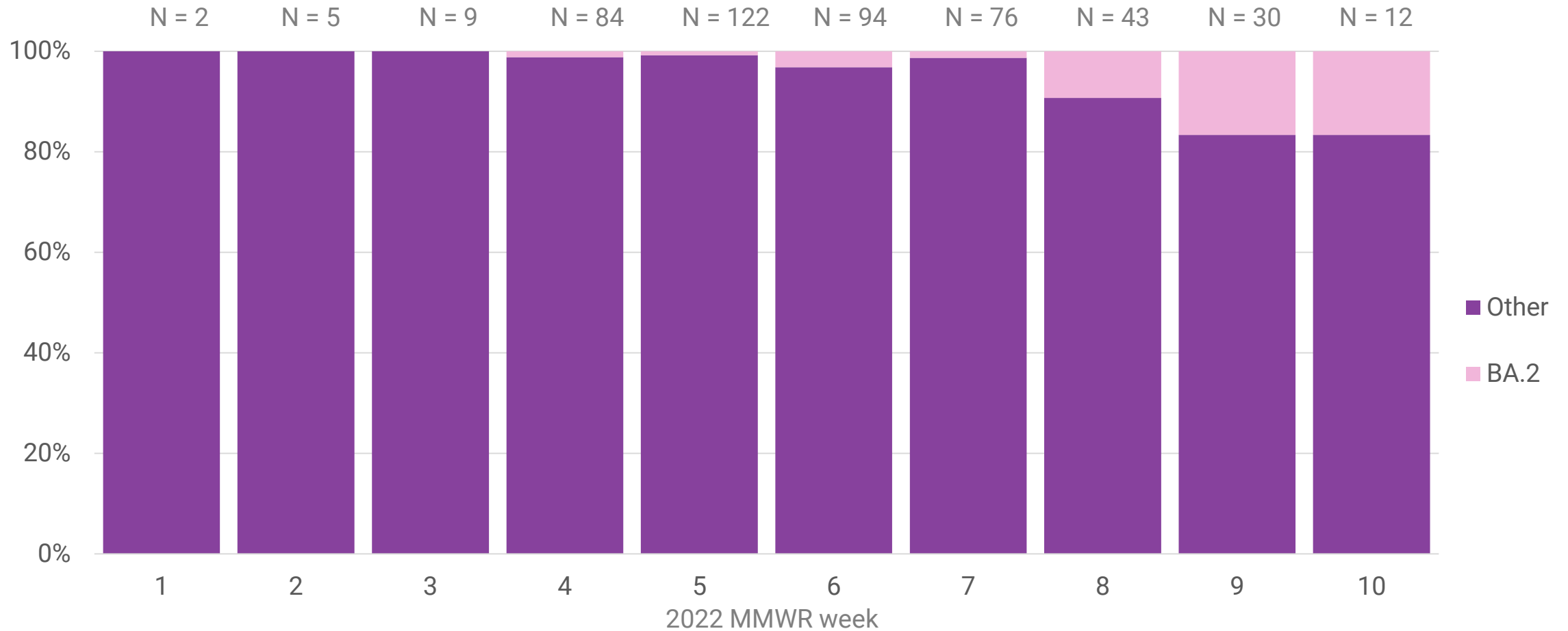
...Initial data from population-level reinfection studies suggest that **infection with BA.1 provides strong protection against reinfection with BA.2**, at least for the limited period for which data are available. ”

# Omicron sub-lineages sequenced at RIPHL



Ending dates for 2022 MMWR weeks 1 = 1/8; 2 = 1/15; 3 = 1/22; 4 = 1/29; 5 = 2/5; 6 = 2/12, 7 = 2/19; 8 = 2/26

# Omicron sub-lineages identified at RPHL through PCR



Ending dates for 2022 MMWR weeks 1 = 1/8; 2 = 1/15; 3 = 1/22; 4 = 1/29; 5 = 2/5; 6 = 2/12, 7 = 2/19; 8 = 2/26; 9 = 3/5; 10 = 3/12



# Contents

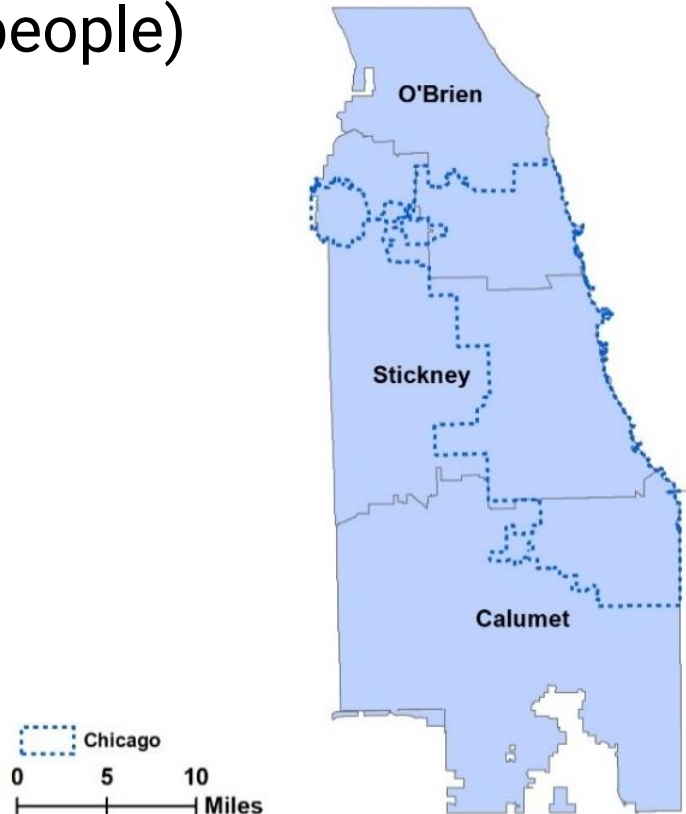
- Background
- Variants of SARS-CoV-2
- **Monitoring wastewater for SARS-CoV-2**

# Wastewater monitoring system

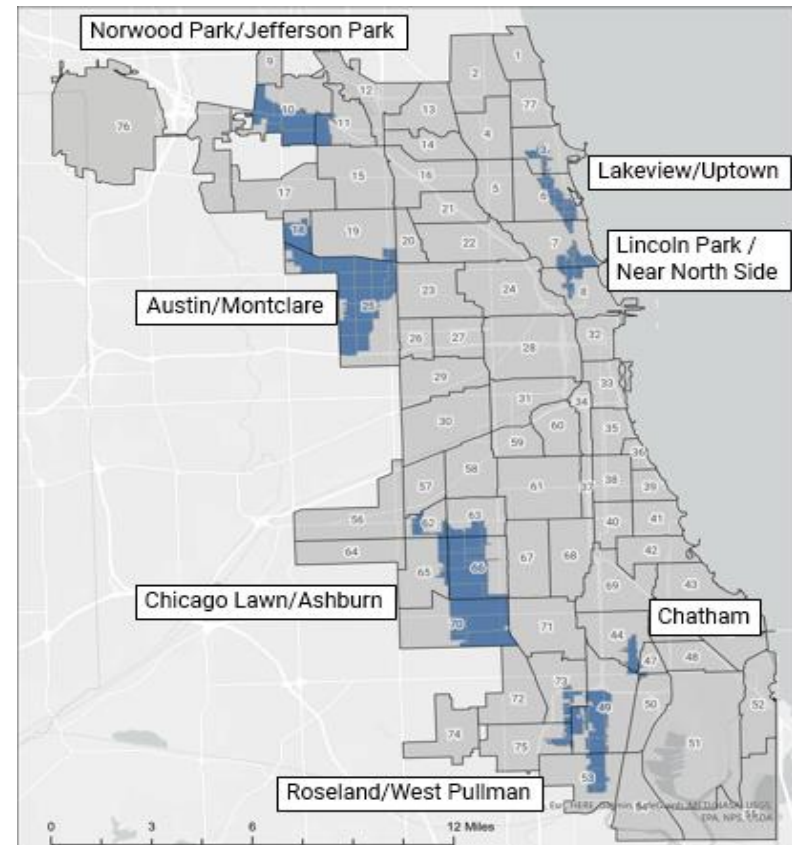


# ★ We monitor Chicago at three different scales

**Wastewater treatment plants**  
(~1 million people)

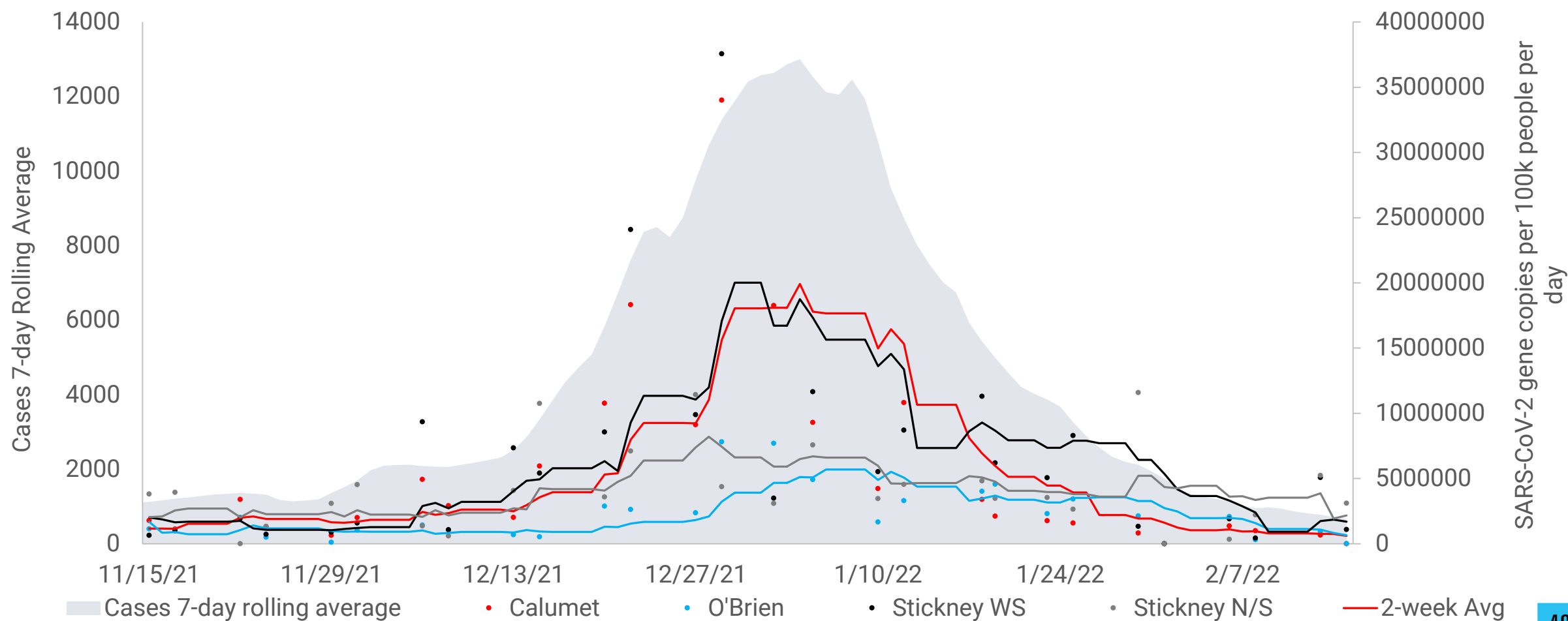


**Neighborhood sewers**  
(~3,000-300,000 people)



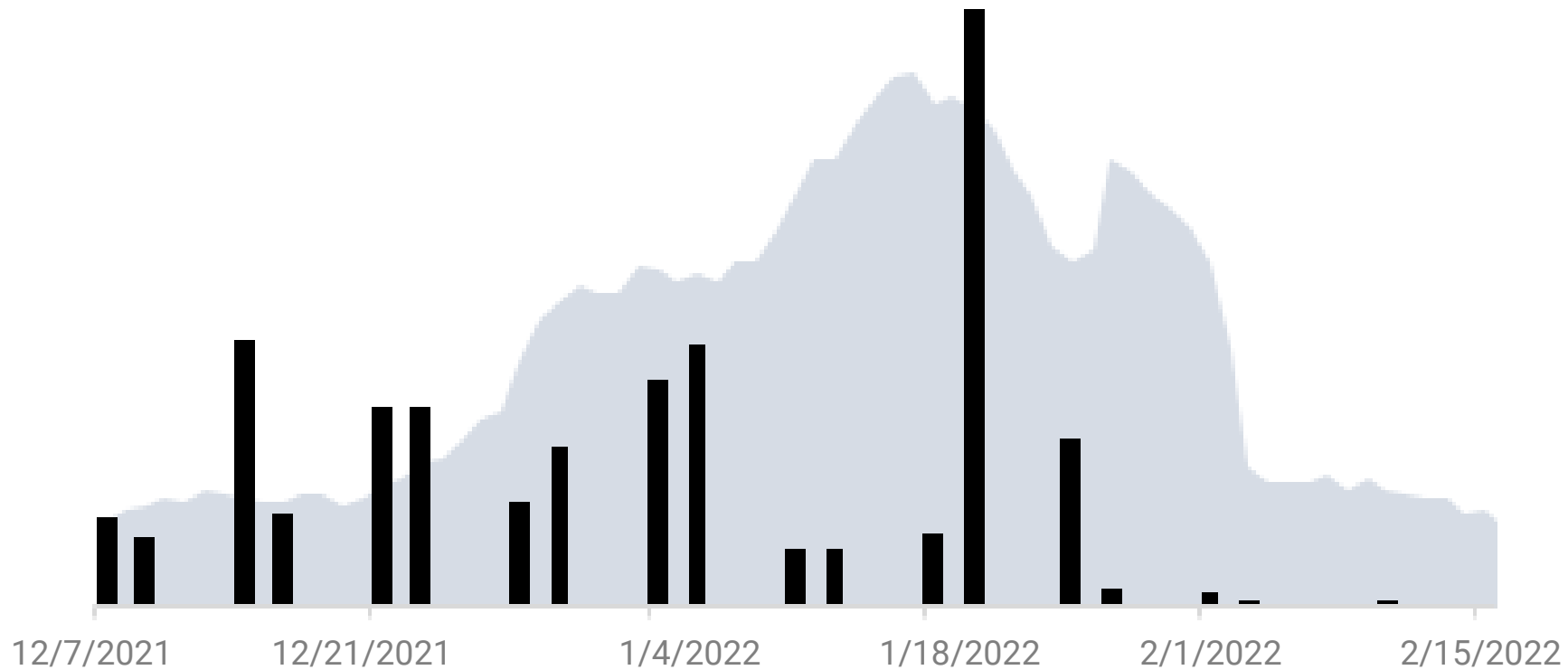


# ★ SARS-CoV-2 in wastewater tracks case counts

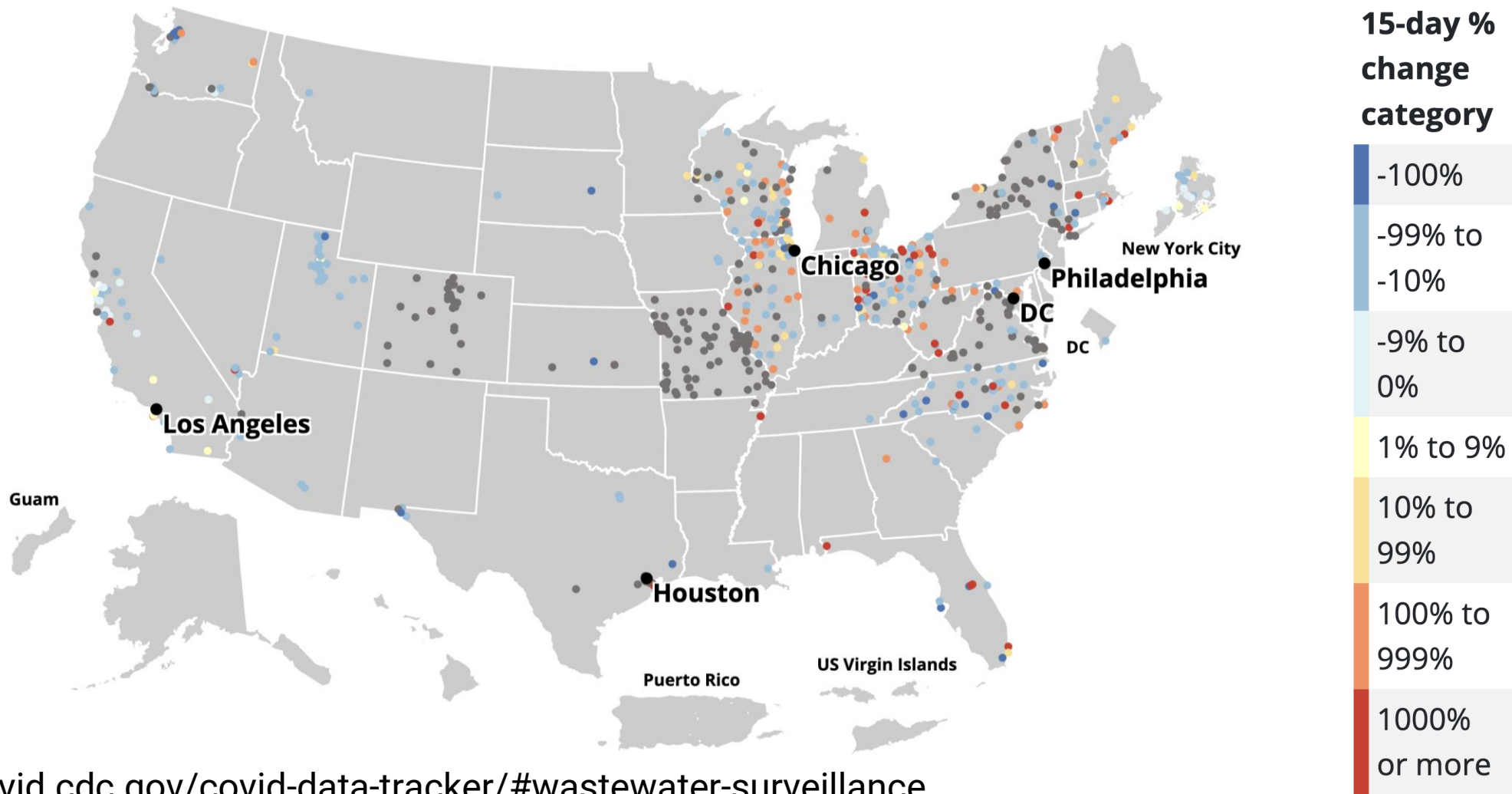


# ★ Trends become 'noisier' at small scales

Norwood Park & Jefferson Park (population: 52,306)

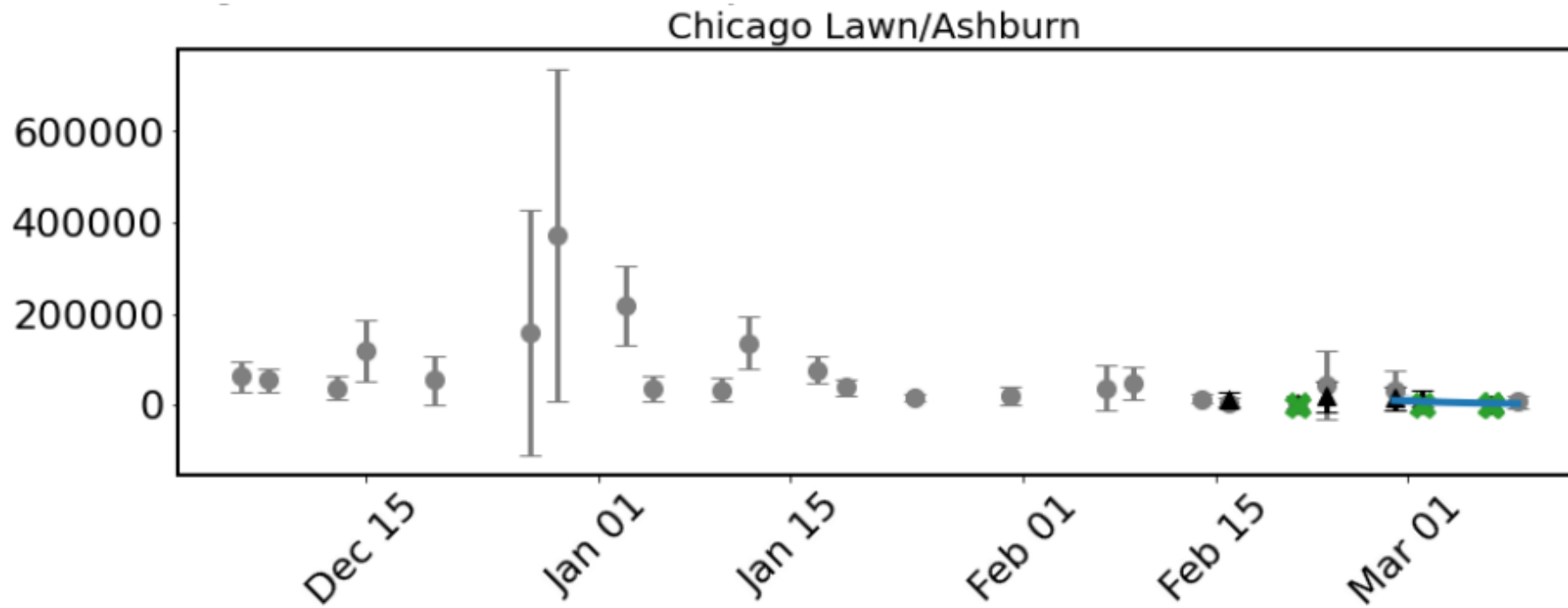


# ★ The CDC is displaying Chicago wastewater

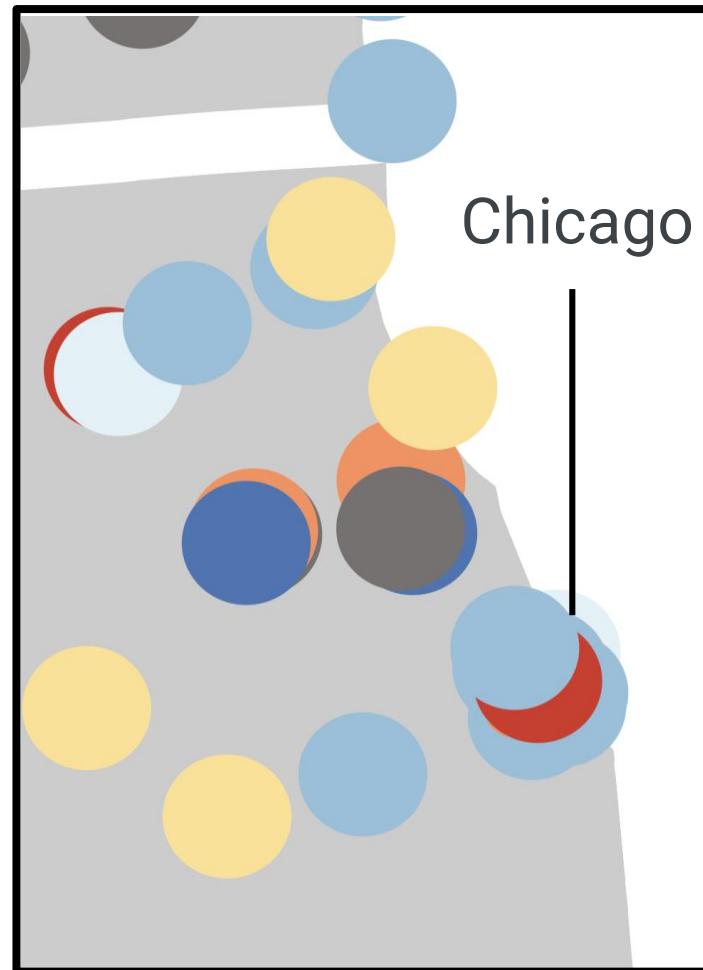
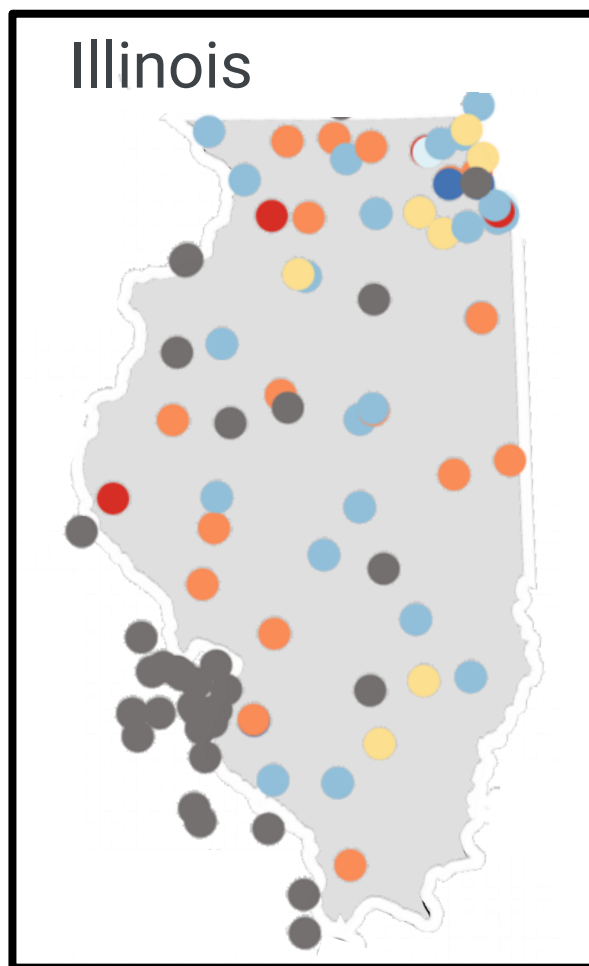


<https://covid.cdc.gov/covid-data-tracker/#wastewater-surveillance>

# ★ Sometimes, no virus at all can be detected



# ★ The CDC is displaying local wastewater



15-day %  
change  
category

-100%

-99% to  
-10%

-9% to  
0%

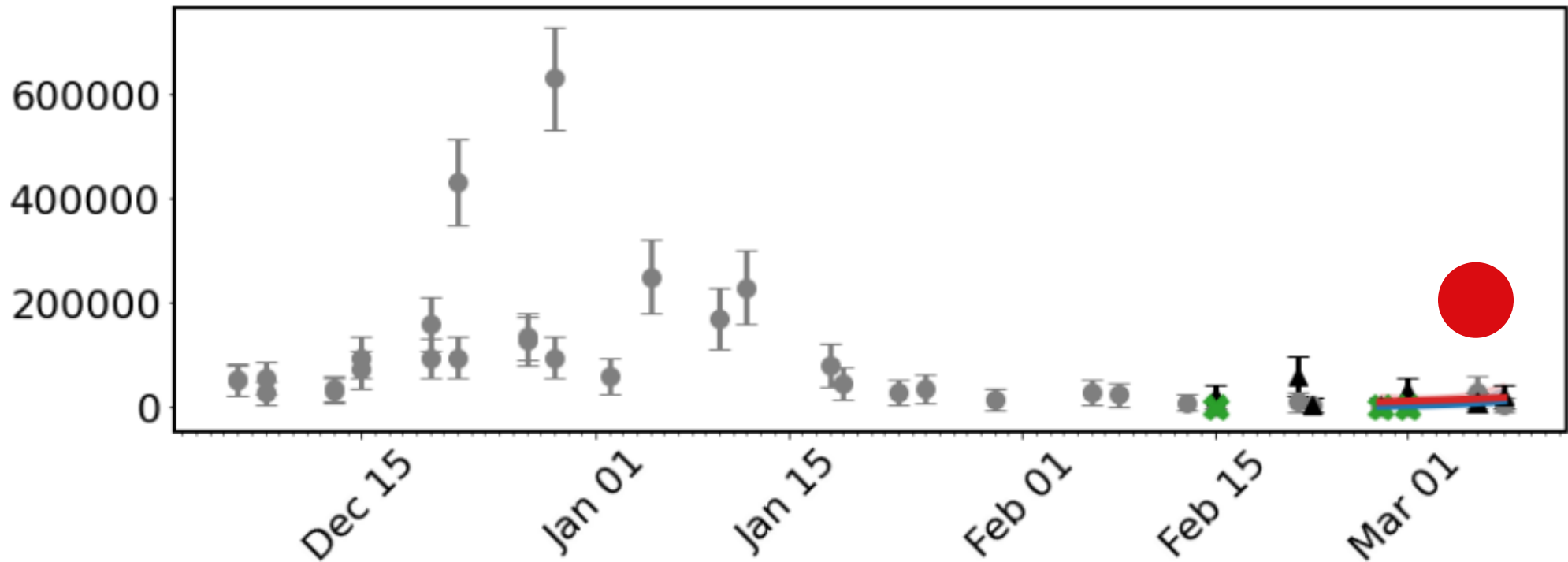
1% to 9%

10% to  
99%

100% to  
999%

1000%  
or more

# ★ Increasing can be from a very low baseline



At this wastewater treatment plant, the red dot (large % increase) is because of detecting small amounts of SARS-CoV-2 after several samples with no detectable virus – it doesn't necessarily mean a concerning increase right now.

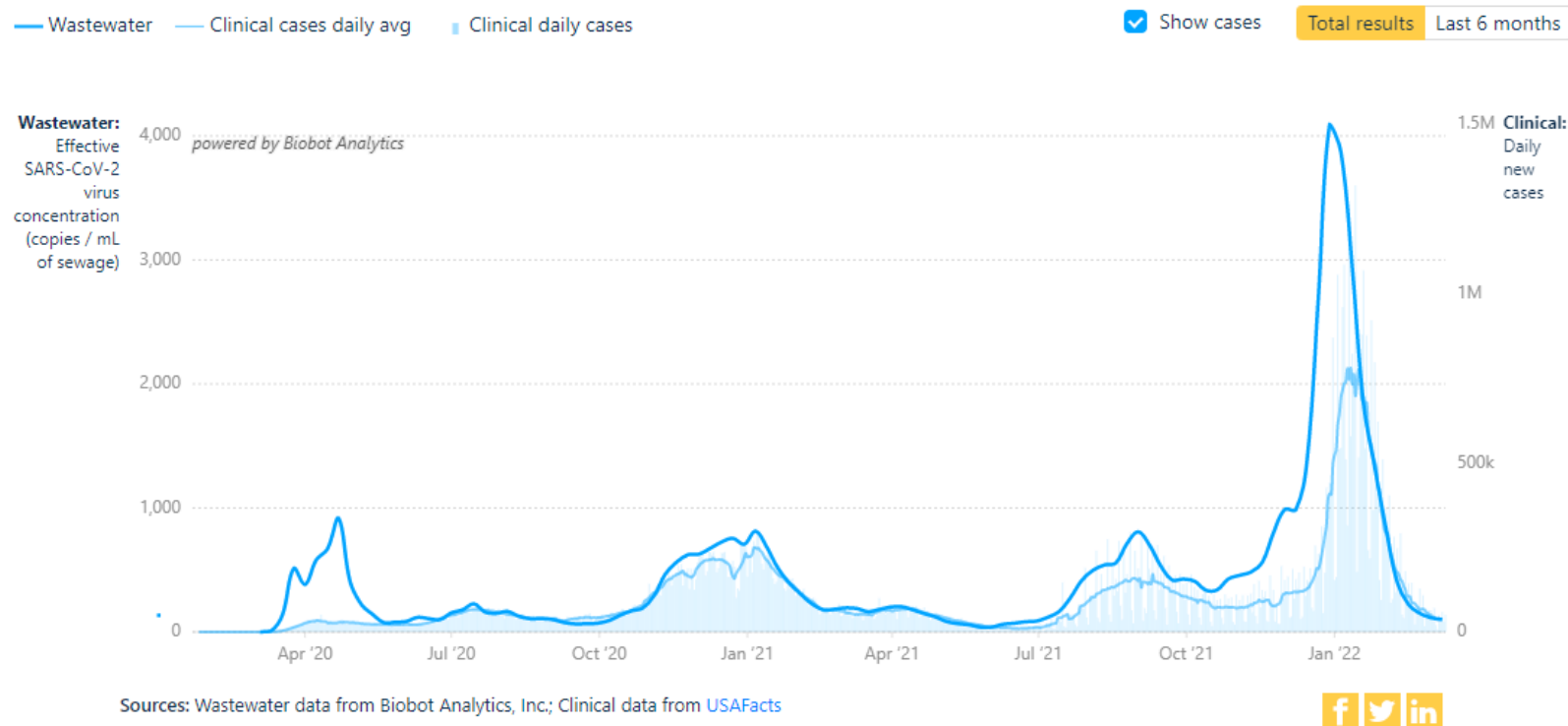


# ★ There are other nice national dashboards

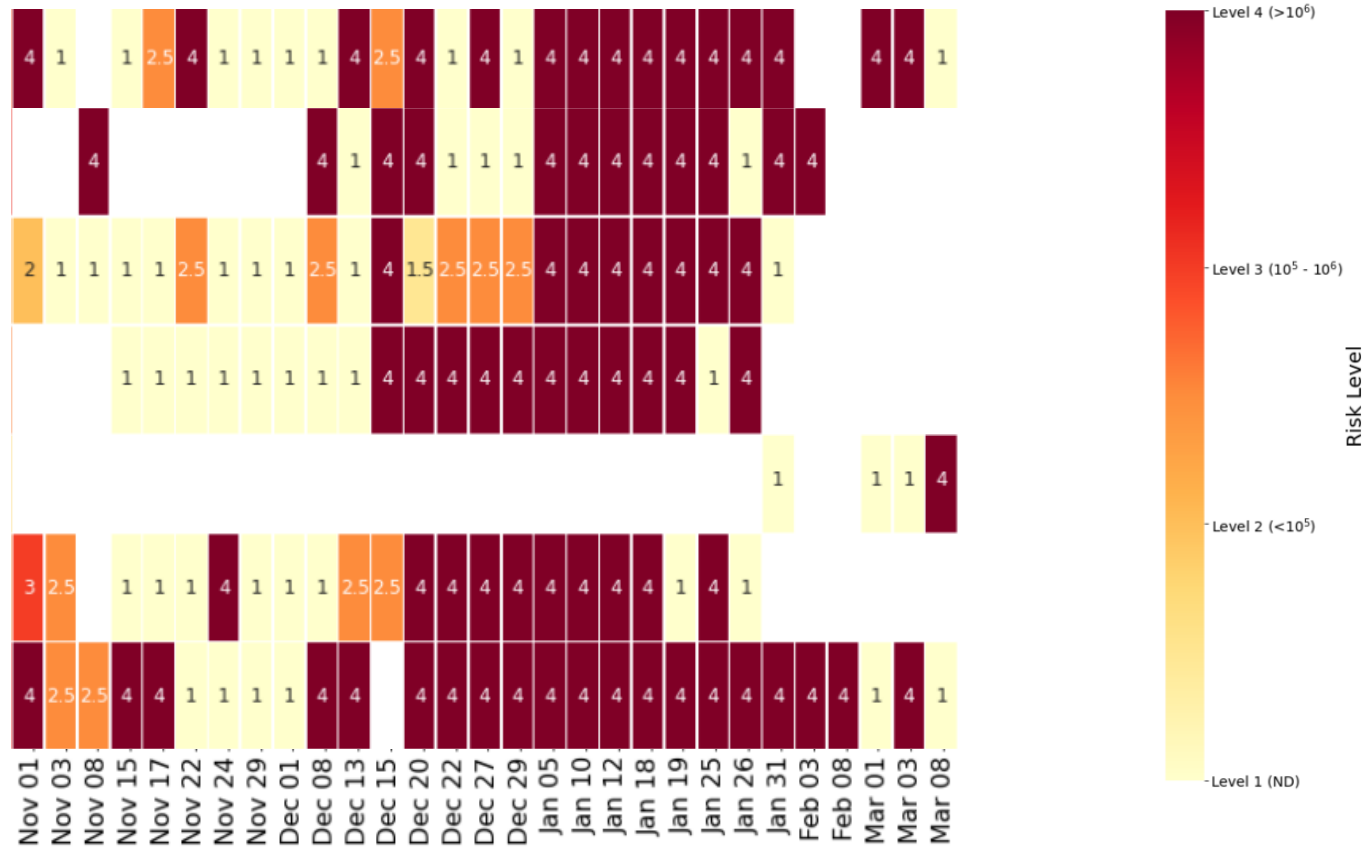
## Covid-19 Wastewater Monitoring in the U.S.

This chart shows the SARS-CoV-2 virus concentration present in samples of wastewater taken from across the United States. The level of virus in wastewater is a leading indicator, meaning it precedes the change in clinical case counts or hospitalizations.

*Most recent data: March 09, 2022*



# ★ We also monitor wastewater in some facilities

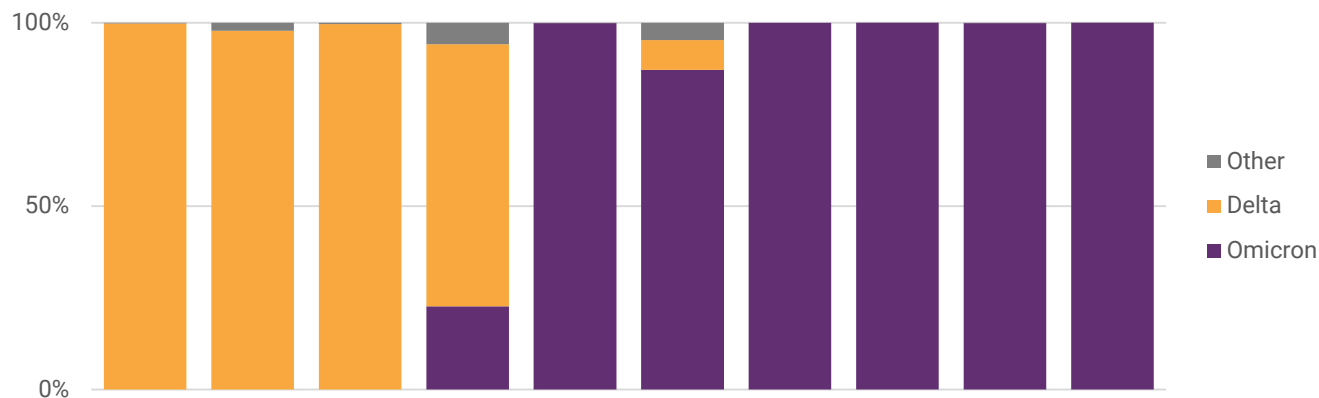


And are even planning to monitor for other pathogens

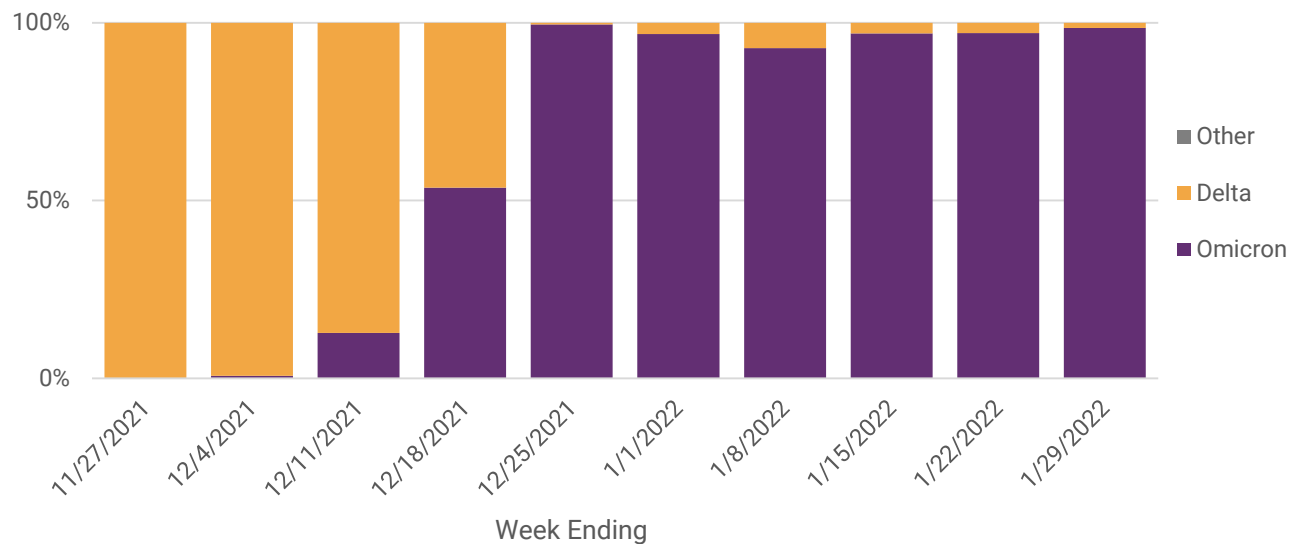


# ★ And we can identify variants

O'Hare Airport  
International Terminal  
(wastewater)



RIPHL (clinical  
samples from  
hospitals)



# ★ Using wastewater for public health is new(ish)

In Chicago, we are working to refine:

**Where** to sample



**How** to sample

**How** to test

# ★ Using wastewater for public health is new(ish)

In Chicago, we are working to refine:

**Where** to sample



**How** to sample



**How** to test

# ★ Using wastewater for public health is new(ish)

In Chicago, we are working to refine:

**Where** to sample



**How** to sample



**How** to test

The SARS-CoV-2 Genome

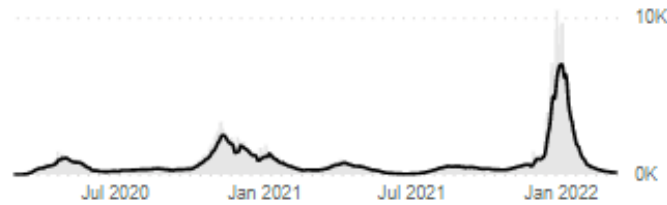




# ★ We never look at wastewater in isolation

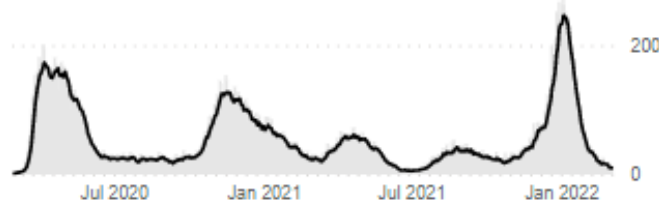
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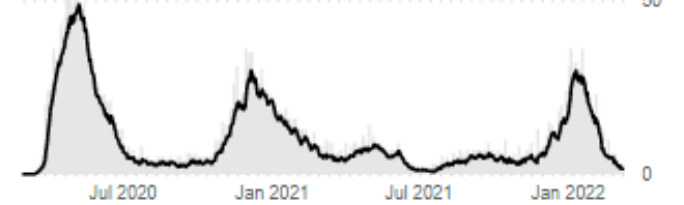
## HOSPITALIZATIONS

10 ▼ 16 (-36%) 41,434 0.4  
Current daily avg Prior week Cumulative Daily rate per 100,000



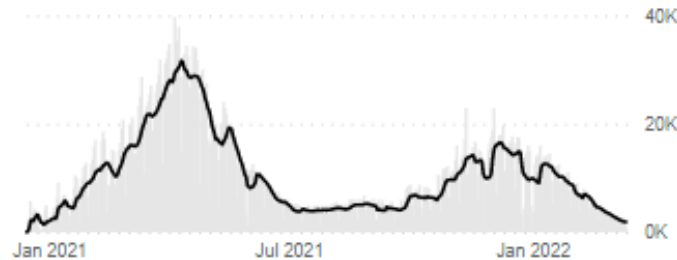
## DEATHS

1.57 ▼ 2.57 (-39%) 7,598 0.1  
Current daily avg Prior week Cumulative Daily rate per 100,000



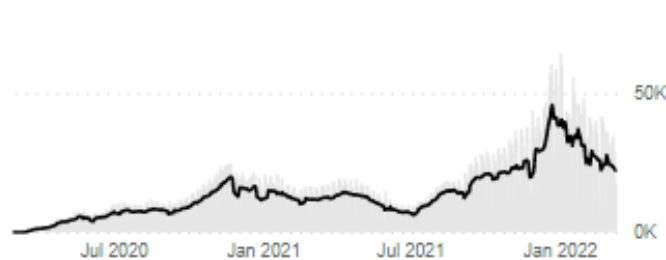
## VACCINATIONS ADMINISTERED

1,910 ▼ 4,694,933 69.7% 77.0%  
Current daily avg Cumulative Completed series At least one dose



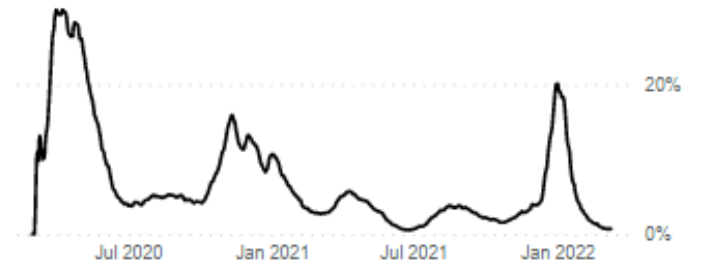
## TESTS PERFORMED

22,228 ▼ 24,149 (-8%) 10,335,739  
Current daily avg Prior week Cumulative



## POSITIVITY RATE

0.7% ▼ 0.8%  
Current daily avg Prior week



# Summary

- Chicago currently has low levels of COVID-19 transmission
- Changing behavior, variants and immunity may cause changes in transmission levels at some point
- Our laboratory-based surveillance systems can help to detect changes in transmission levels

Need a vaccine or a booster? Have questions?

visit **CHI.GOV/COVIDVAX**

or call **312-746-4835**



**PROTECT**  
CHICAGO ★