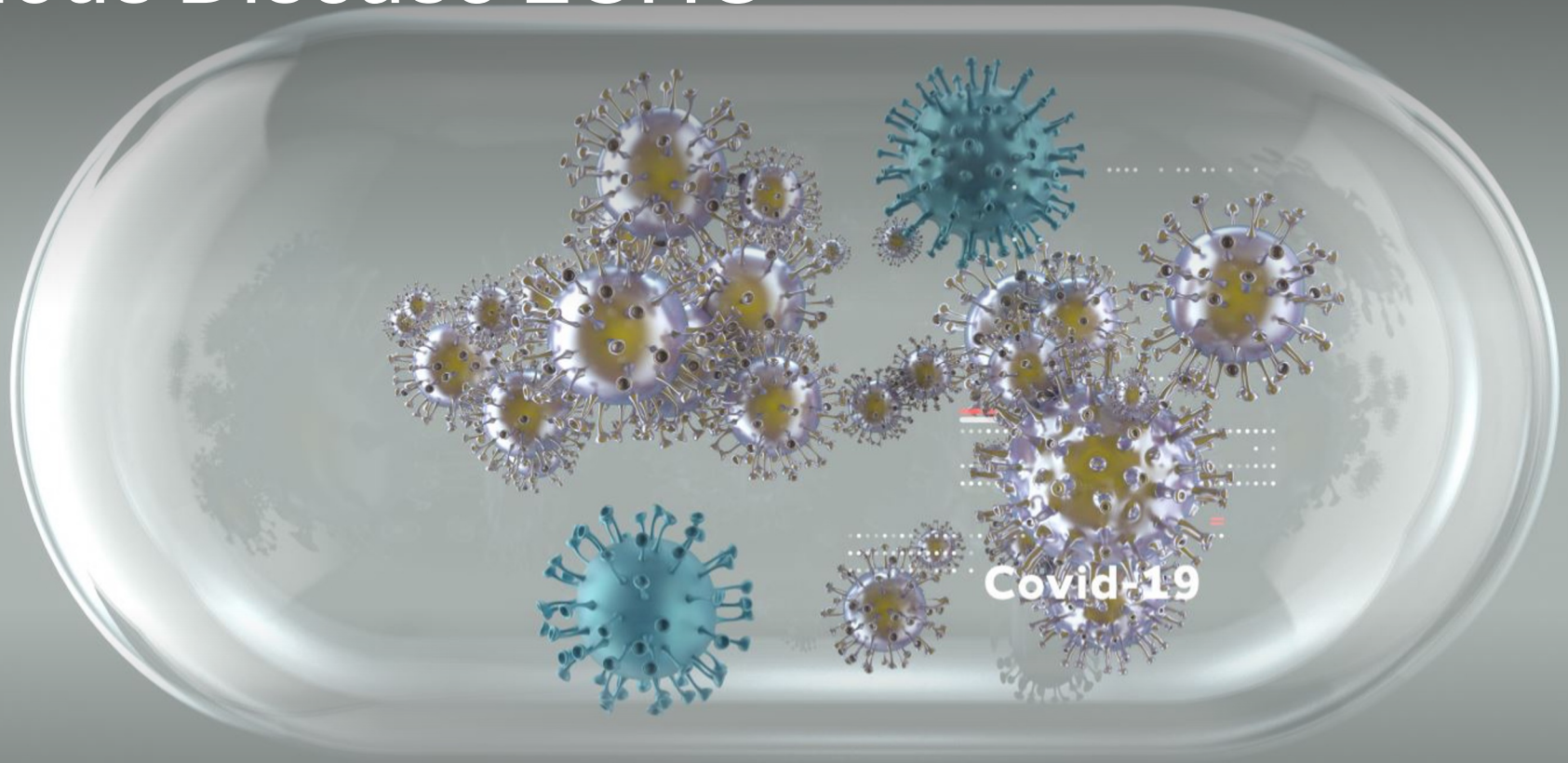
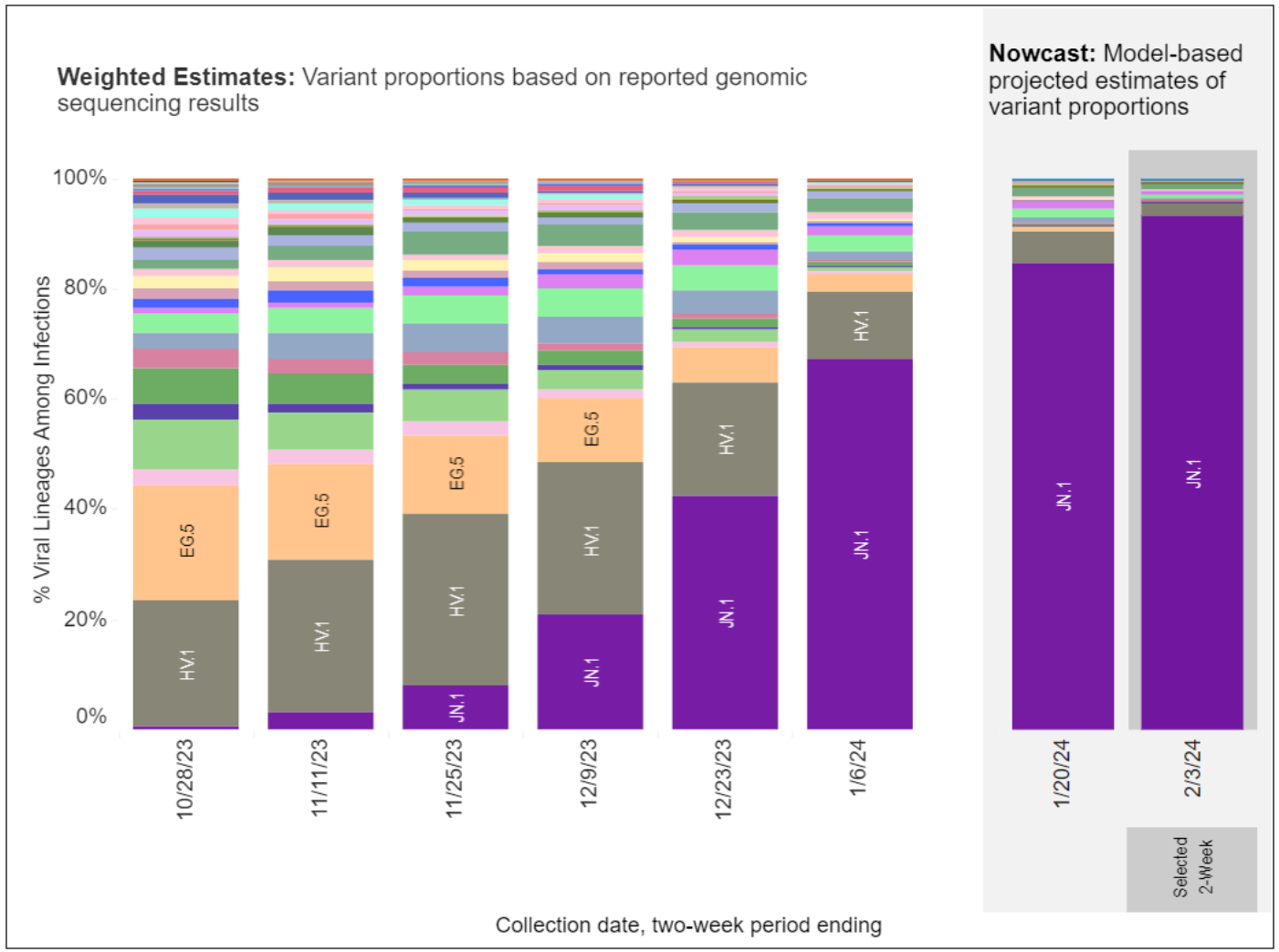
Infectious Disease ECHO



Jorge Mera, MD, FACP

Weighted and Nowcast Estimates in United States for 2-Week Periods in 10/15/2023 – 2/3/2024

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.



Nowcast Estimates in United States for 1/21/2024 – 2/3/2024

USA

WHO label	Lineage #	%Total	95%PI
Omicron	JN.1	93.1%	91.5-94.4%
	HV.1	2.3%	2.0-2.8%
	JG.3	1.1%	0.8-1.4%
	JD.1.1	0.8%	0.6-1.0%
	BA.2.86	0.7%	0.5-0.9%
	HK.3	0.4%	0.4-0.5%
	GE.1	0.4%	0.1-1.0%
	EG.5	0.3%	0.2-0.4%
	BA.2	0.3%	0.0-1.9%
	EG.5.1.8	0.1%	0.1-0.1%
	JF.1	0.1%	0.1-0.1%
	FL.1.5.1	0.1%	0.0-0.1%
	XBB.1.9.1	0.0%	0.0-0.1%
	XBB	0.0%	0.0-0.1%
	XBB.1.16.6	0.0%	0.0-0.1%
	XBB.1.16.11	0.0%	0.0-0.1%
	XBB.1.5.70	0.0%	0.0-0.1%
	GK.1.1	0.0%	0.0-0.0%
	XBB.1.16.15	0.0%	0.0-0.0%
	HF.1	0.0%	0.0-0.0%
	XBB.2.3	0.0%	0.0-0.0%
	XBB.1.16	0.0%	0.0-0.0%
	GK.2	0.0%	0.0-0.0%
	XBB.1.5	0.0%	0.0-0.0%
	CH.1.1	0.0%	0.0-0.0%
	EG.6.1	0.0%	0.0-0.0%
	XBB.1.16.1	0.0%	0.0-0.0%
	XBB.1.42.2	0.0%	0.0-0.0%
	XBB.1.9.2	0.0%	0.0-0.0%
	XBB.1.5.68	0.0%	0.0-0.0%
	XBB.1.16.17	0.0%	0.0-0.0%
	XBB.1.5.72	0.0%	0.0-0.0%
Other	Other*	0.1%	0.1-0.2%

* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one 2-week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all 2-week periods displayed.
\# While all lineages are tracked by CDC, those named lineages not enumerated in this graphic are aggregated with their parent lineages, based on Pango lineage definitions, described in more detail here: https://www.pango.network/the-pango-nomenclature-system/statement-of-nomenclature-rules/.

COVID-19 Snapshot

Early Indicators

Test Positivity

% Test Positivity

10.0%

(January 28 to February 3, 2024)

Trend in % Test Positivity

-0.6% in most recent week

Dec 16, 2023 Feb 3, 2024

Emergency Department Visits

% Diagnosed as COVID-19

1.8%

(January 28 to February 3, 2024)

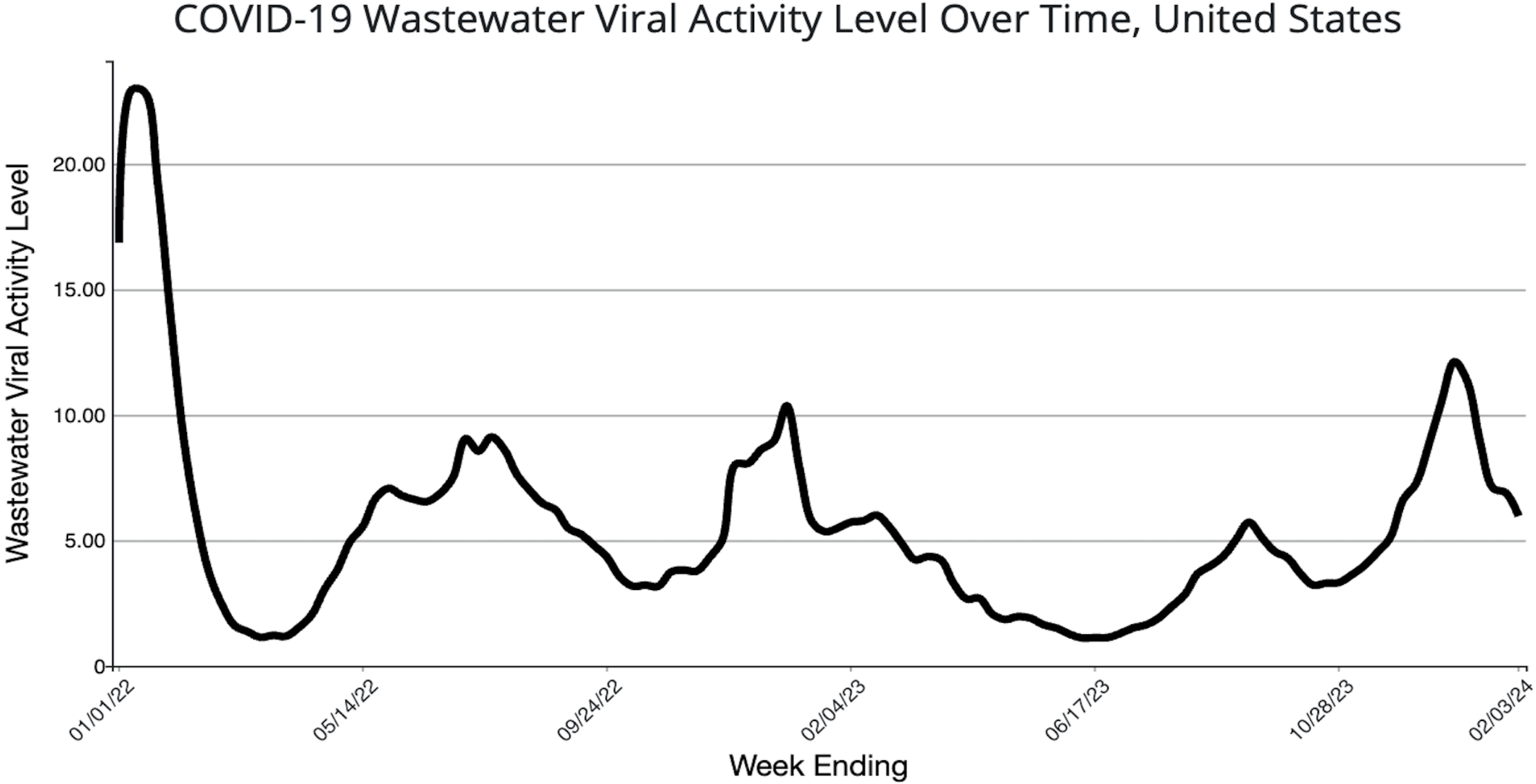
Trend in % Emergency Department Visits

-10.8% in most recent week

Dec 16, 2023 Feb 3, 2024

These early indicators represent a portion of national COVID-19 tests and emergency department visits. Wastewater information also provides early indicators of spread.

CDC | Test Positivity data through: February 3, 2024; Emergency Department Visit data through: February 3, 2024; Hospitalization data through: February 3, 2024; Death data through: February 3, 2024.
Posted: February 9, 2024 12:01 PM ET



Centers for Disease Control and Prevention. COVID Data Tracker. Atlanta, GA: U.S. Department of Health and Human Services, CDC; 2024, February 14. https://covid.cdc.gov/covid-data-tracker

COVID-19 Hospitalizations and Deaths

Severity Indicators

Hospitalizations

Hospital Admissions

20,772

(January 28 to February 3, 2024)

Trend in Hospital Admissions

-10% in most recent week

Dec 16, 2023 Feb 3, 2024

Deaths

% of All Deaths in U.S. Due to COVID-19

3.1%

(January 28 to February 3, 2024)

Trend in % COVID-19 Deaths

-6.1% in most recent week

Dec 16, 2023 Feb 3, 2024

Total Hospitalizations

6,793,622

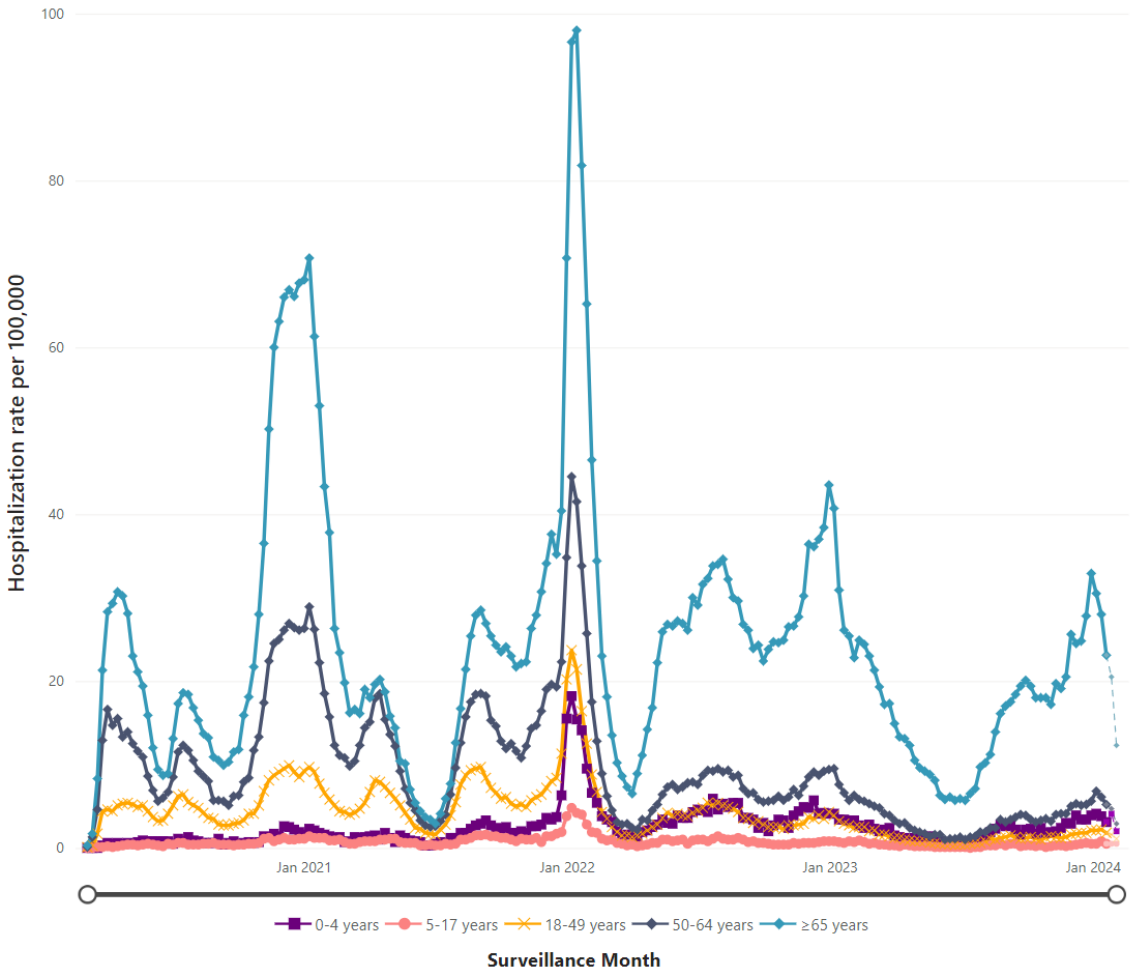
Total Deaths

1,176,639

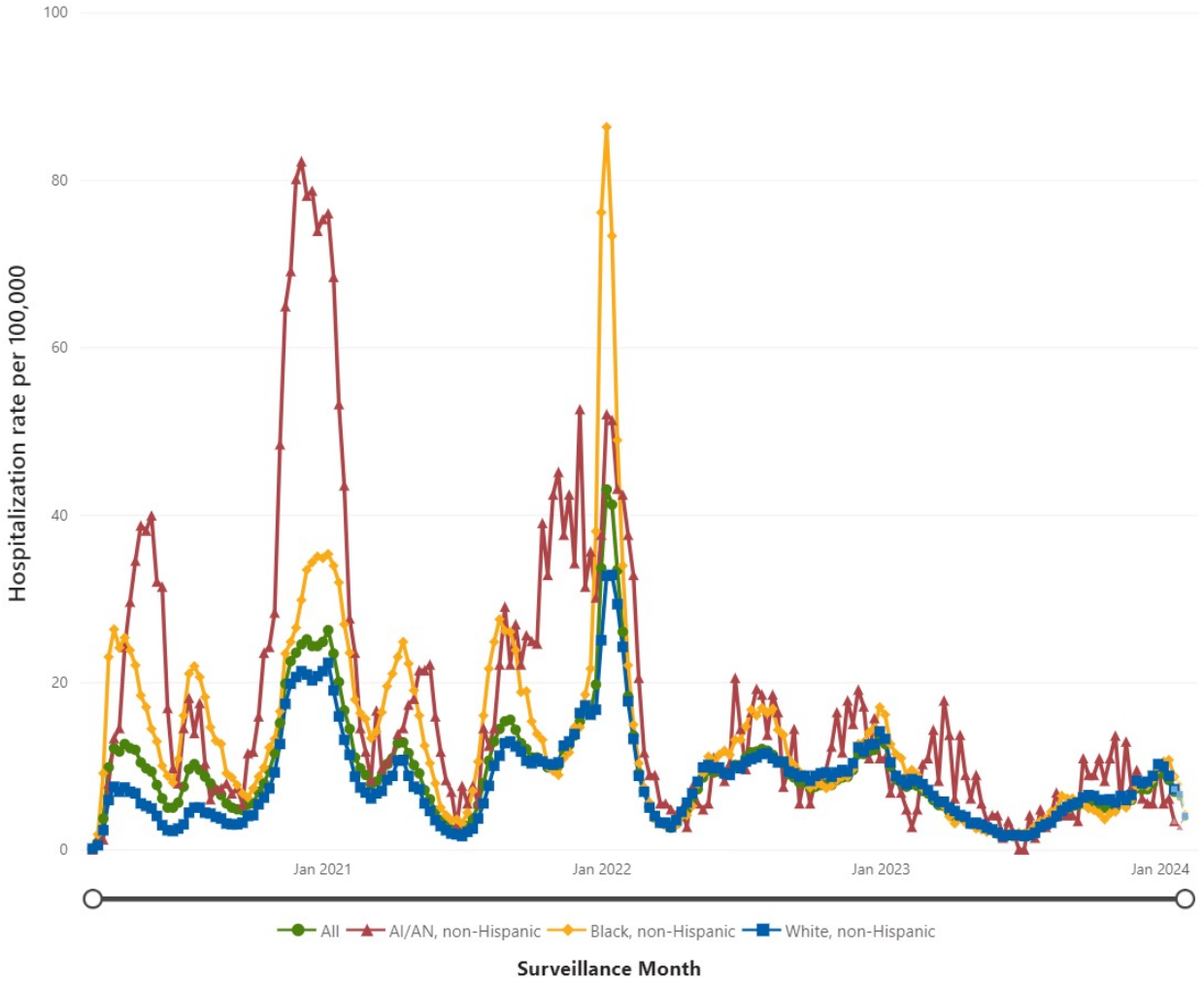
CDC | Test Positivity data through: February 3, 2024; Emergency Department Visit data through: February 3, 2024; Hospitalization data through: February 3, 2024; Death data through: February 3, 2024.
Posted: February 9, 2024 12:01 PM ET

Hospitalizations due to COVID-19

Stratified by Age

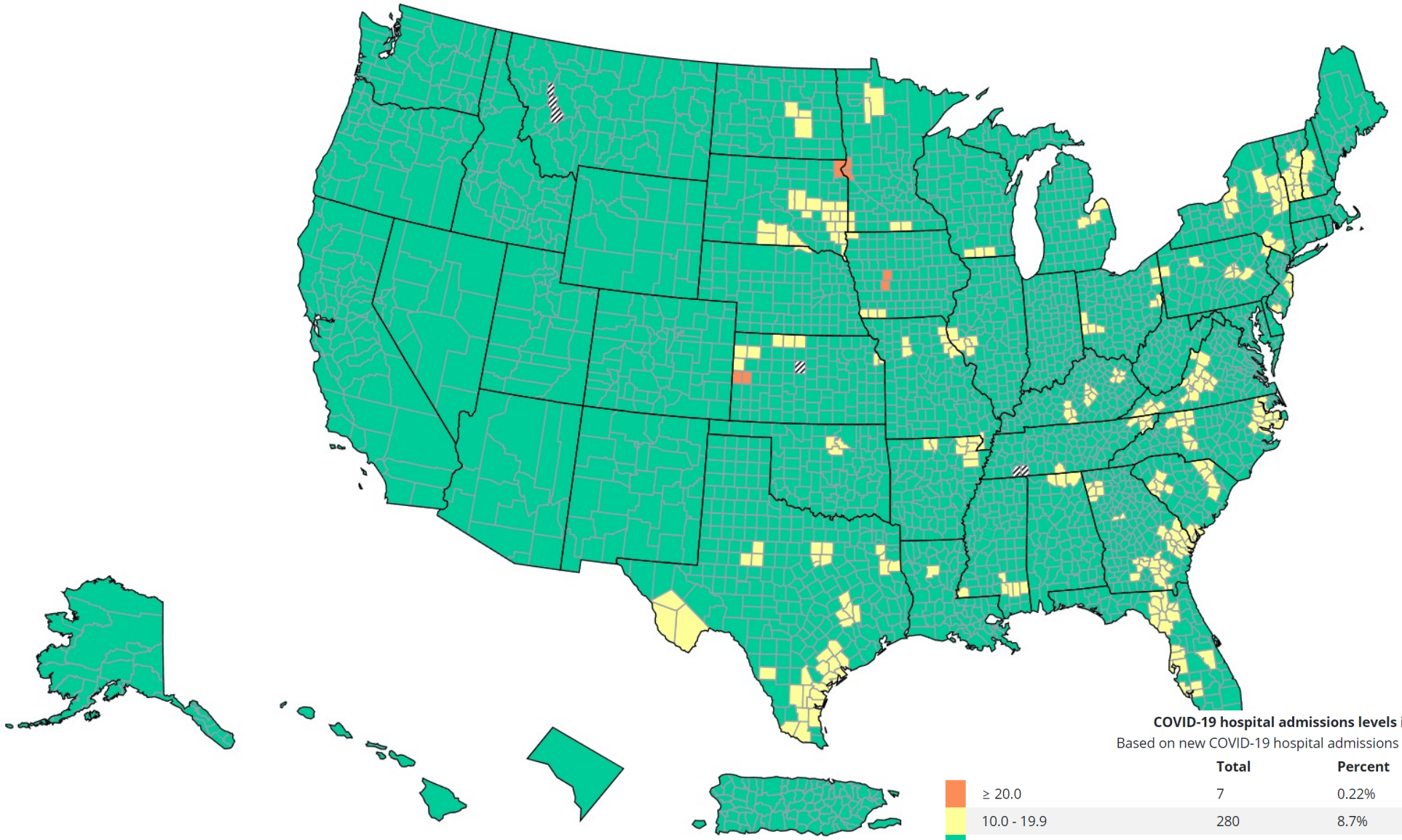


Stratified by Race



https://www.cdc.gov/coronavirus/2019-ncov/covidnetdashboard/de/powerbi/dashboard.html

Reported COVID-19 New Hospital Admissions Rate per 100,000 Population in the Past Week, by County – United States



COVID-19 hospital admissions levels in U.S. by county

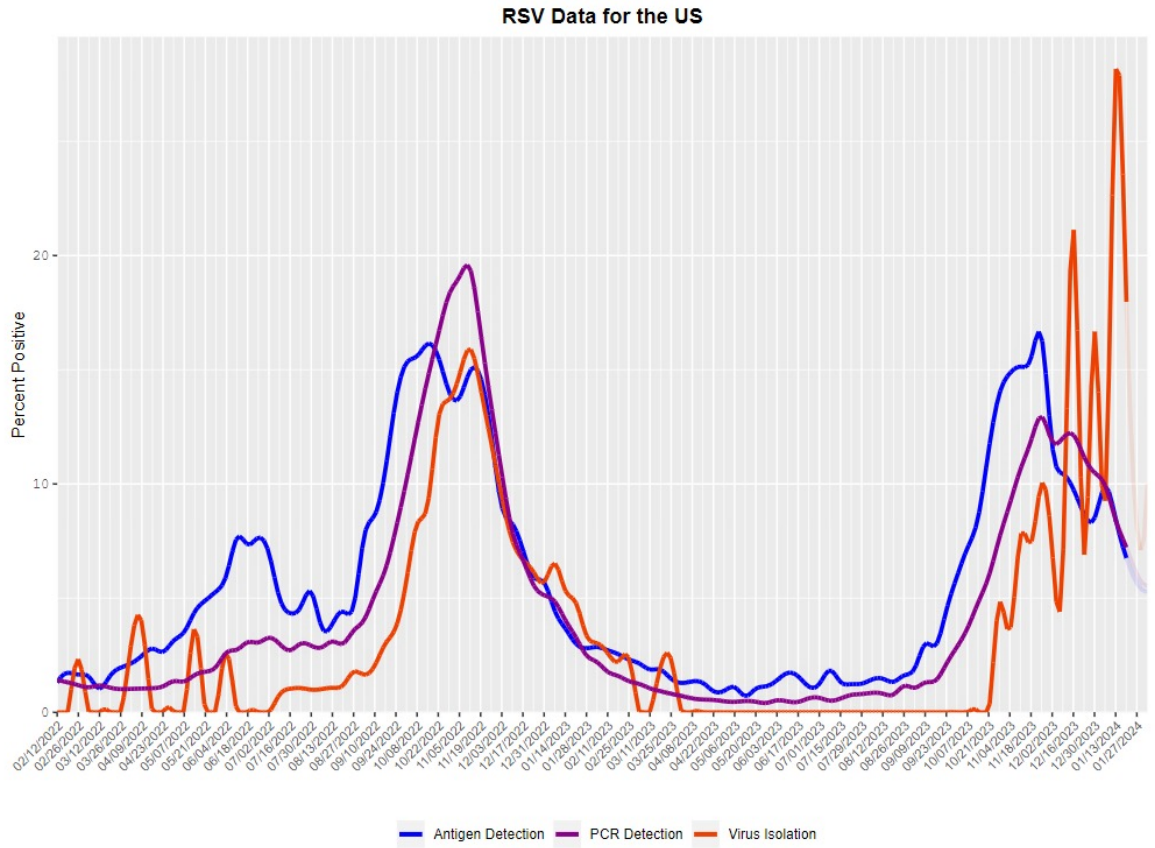
Based on new COVID-19 hospital admissions per 100,000 population

	Total	Percent	% Change
≥ 20.0	7	0.22%	-0.4%
10.0 - 19.9	280	8.7%	-2.98%
<10.0	2932	91.08%	3.39%

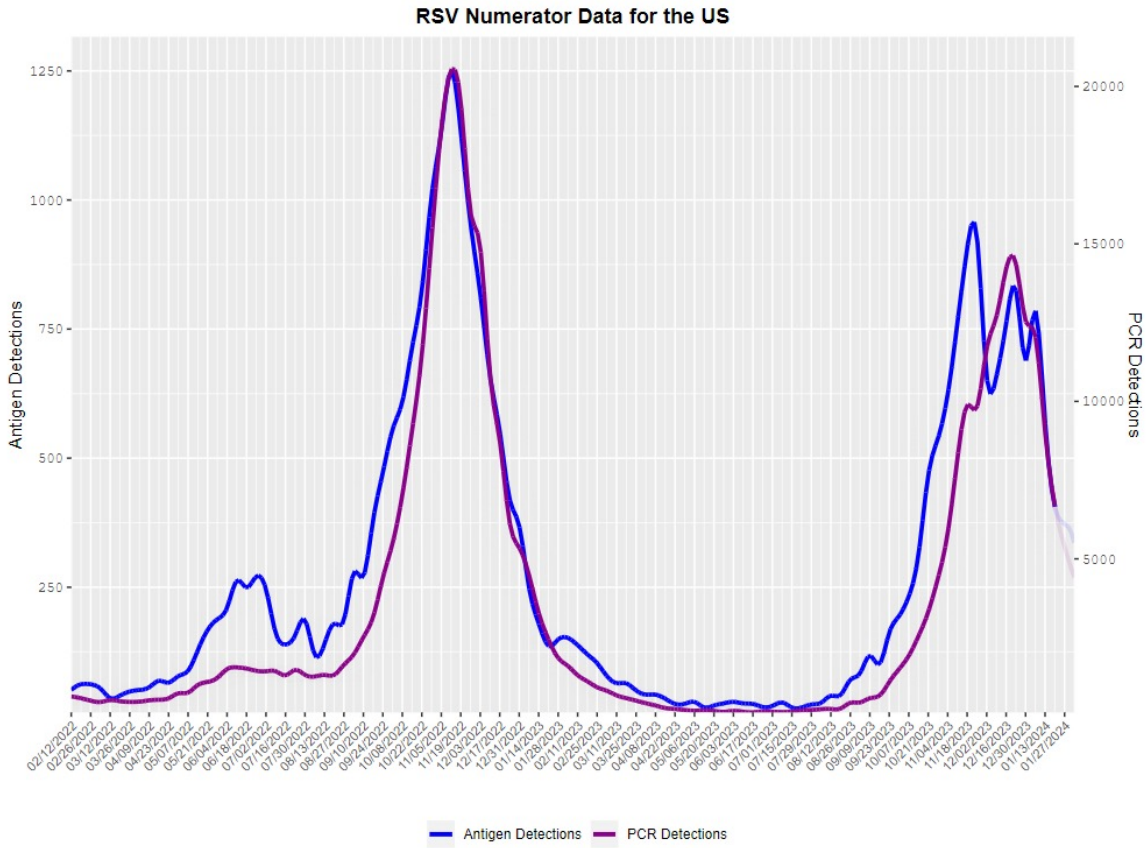
Time Period: New COVID-19 hospital admissions per 100,000 population (7-day total) are calculated using data from the MMWR week (Sun-Sat) ending February 3, 2024.

RSV Trends

Percent Positive



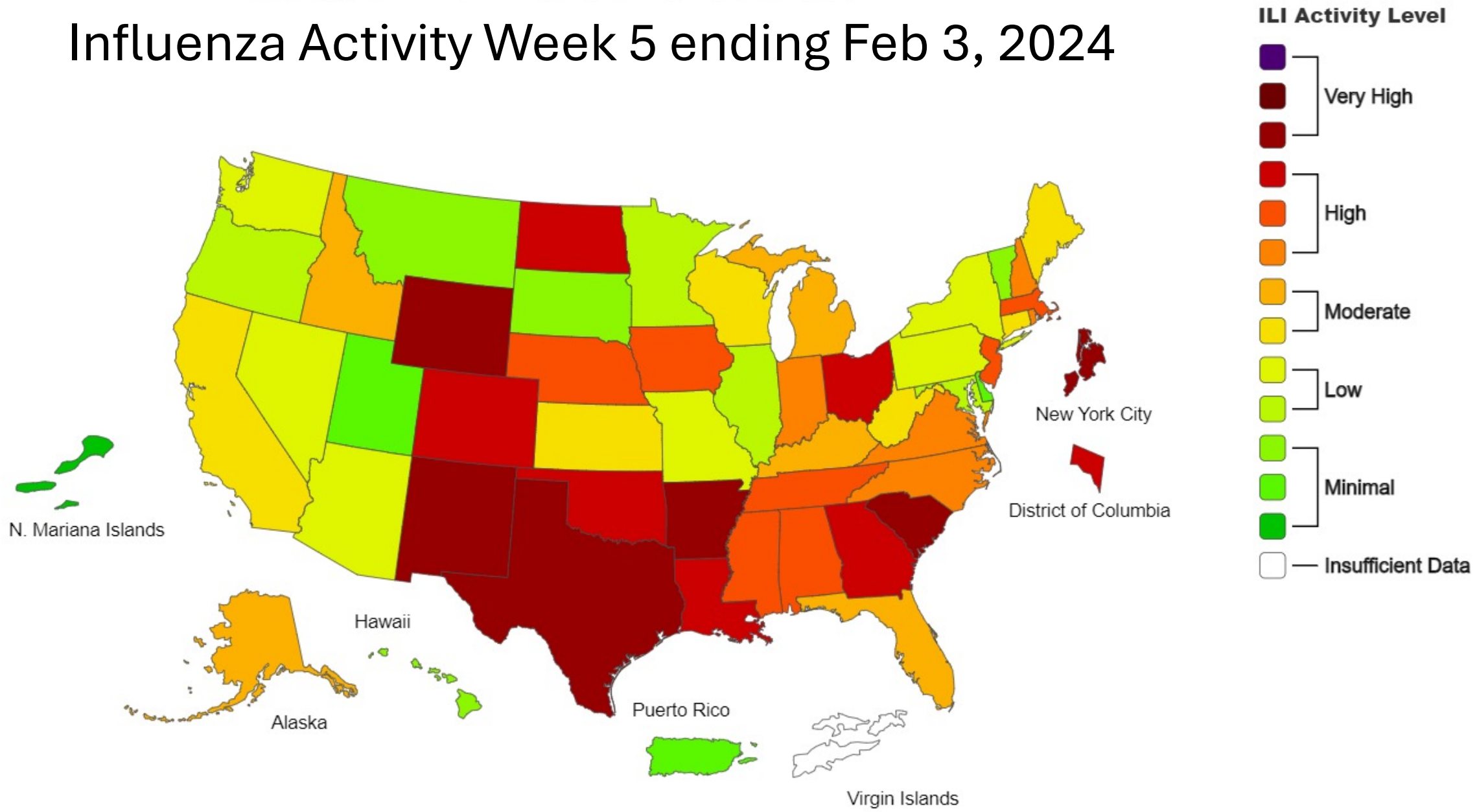
Detections



Last Reviewed: February 8, 2024

Source: National Center for Immunization and Respiratory Diseases (NCIRD), Coronavirus and Other Respiratory Viruses Division

Influenza Activity Week 5 ending Feb 3, 2024



https://www.cdc.gov/flu/weekly/index.htm#ClinicalLaboratories

Oral Simnotrelvir for Adult Patients with Mild-to-Moderate Covid-19

Phase 2–3, double-blind, randomized, placebo-controlled trial

- 35 sites in China; 1208 participants;
- 750 mg of simnotrelvir plus 100 mg of ritonavir or placebo twice daily for 5 days – given within 3 days of symptom onset

Efficacy end point was the time to sustained resolution of symptoms

- Defined as the absence of 11 Covid-19–related symptoms for 2 consecutive days
- Safety and changes in viral load were also assessed

N Engl J Med 2024;390:230-41. DOI: 10.1056/NEJMoa2301425

Oral Simnotrelvir Study: Results

Symptom outcomes:

- Time to sustained resolution of symptoms was significantly shorter in the simnotrelvir group than in the placebo group
- 180.1 hours vs 216.0 hours.
- Median differnece, −35.8 hours (P = 0.006)

Viral load outcomes:

- On day 5, the decrease in viral load from baseline was greater in the simnotrelvir group

Adverse effects:

- Incidence of adverse events during treatment was higher in the simnotrelvir group than in the placebo group (29.0% vs. 21.6%).
- Most adverse events were mild or moderate.

N Engl J Med 2024;390:230-41. DOI: 10.1056/NEJMoa2301425

Clinical Infectious Diseases
MAJOR ARTICLE

Symptoms, Viral Loads, and Rebound Among Coronavirus Disease 2019 (COVID-19) Outpatients Treated With Nirmatrelvir/Ritonavir Compared With Propensity Score–Matched Untreated Individuals

This study compared symptom and viral dynamics in individuals with COVID-19 who completed N/R treatment and similar untreated individuals.

- Participants identified from a COVID-19 household transmission study.

Index cases from ambulatory settings and their households contacts were enrolled.

- Daily symptoms, medication use, and respiratory specimens for quantitative polymerase chain reaction for 10 days during were collected from March 2022—May 2023.

Participants who completed N/R treatment were propensity score matched to untreated participants.

- They compared symptom rebound, viral load (VL) rebound, average daily symptoms, and average daily VL by treatment status measured after N/R treatment completion or 7 days after symptom onset if untreated.

Clinical Infectious Diseases
MAJOR ARTICLE

Symptoms, Viral Loads, and Rebound Among Coronavirus Disease 2019 (COVID-19) Outpatients Treated With Nirmatrelvir/Ritonavir Compared With Propensity Score–Matched Untreated Individuals

Results.

- Treated participants had greater occurrence of symptom rebound
- 32% vs 20%; P = .009 and
- VL rebound 27% vs 7%; P < .001.

Conclusions

- Individuals who completed N/R treatment experienced fewer symptoms and lower VL but rebound occurred more often compared with untreated individuals.
- Providers should prescribe N/R, when indicated, and communicate rebound risk to patients.

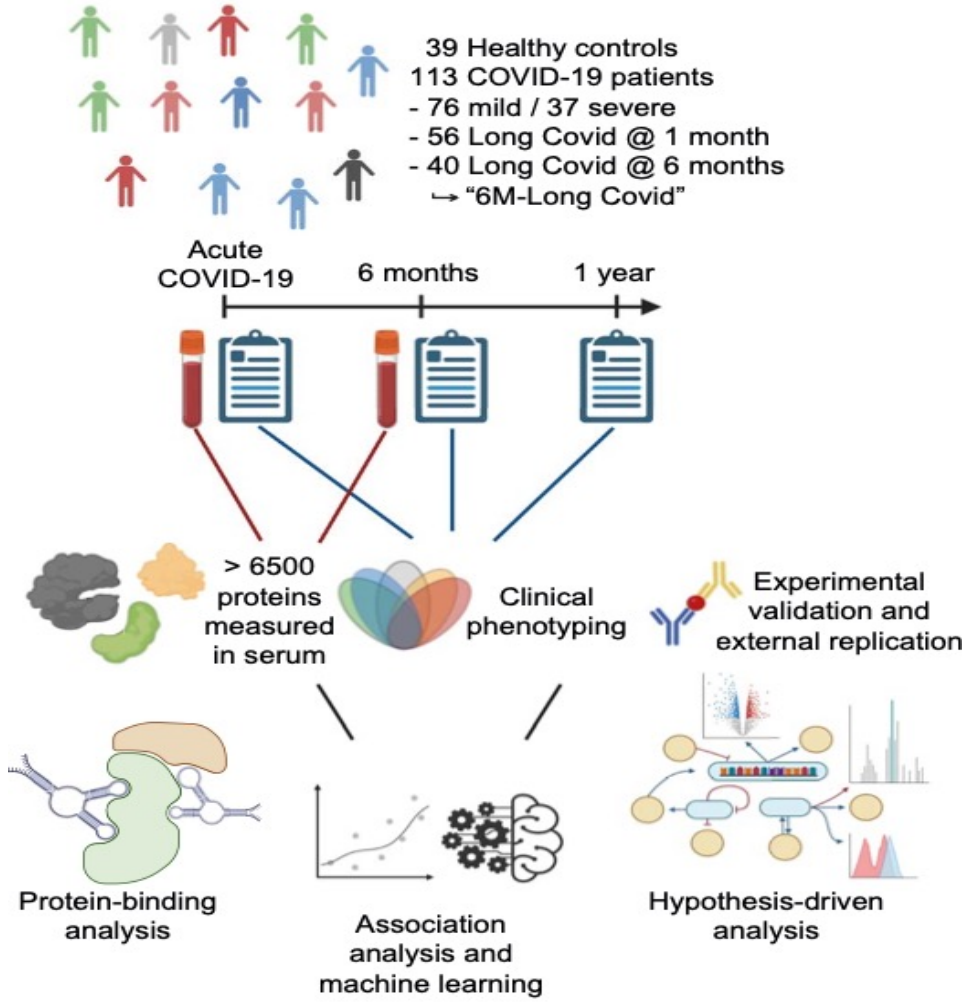
Persistent complement dysregulation with signs of thromboinflammation in active Long Covid:

Multimodal Proteomic Analysis

- Patients with acute mild/severe COVID-19 compared to a control group

> 6500 proteins analyzed

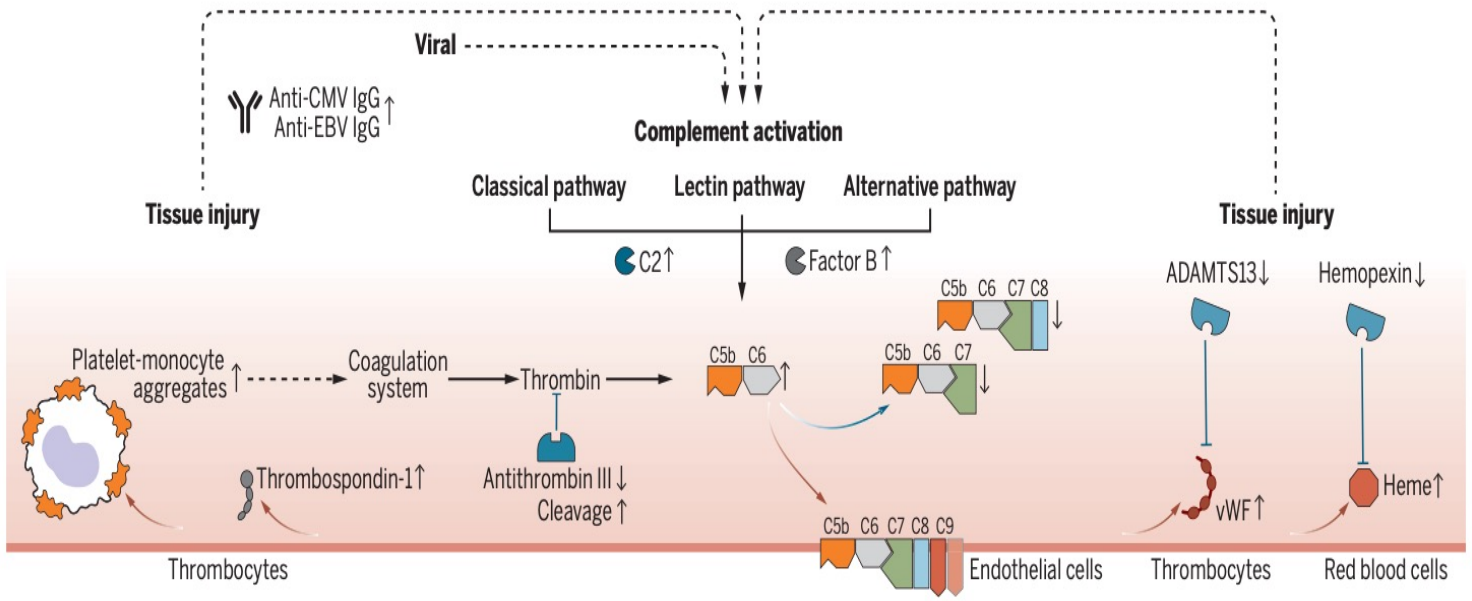
- Longitudinal sampling
- Followed for 12 months



Gervia-Hasler et al., Science 383, eadg7942 (2024) 19 January 2024

Persistent complement dysregulation with signs of thromboinflammation in active Long Covid

Gervia-Hasler et al., Science 383, eadg7942 (2024) 19 January 2024



Pathomechanistic model of Long Covid. Model of complement-mediated thromboinflammation, showing increased and decreased biomarkers (up arrows and down arrows, respectively) measured at 6-month follow-up in patients with persistent Long Covid symptoms compared with recovered COVID-19 patients and healthy controls. Measurements were done using proteomics, spectral flow cytometry, single-cell transcriptomics, high-throughput antibody measurements, and targeted assays. Red arrows mark activating protein interactions, and blue arrows mark inhibiting protein interactions. Dashed arrows connect changes in different biological pathways.

- Terminal complement system dysregulation and ongoing activation of the alternative and classical complement pathways
- The latter associated with increased antibody titers against several herpesviruses possibly stimulating this pathway
- Markers of hemolysis, tissue injury, platelet activation, and monocyte–platelet aggregates were increased in Long Covid.

Machine learning confirmed complement and thromboinflammatory proteins as top biomarkers, warranting diagnostic and therapeutic interrogation of these systems.