

Updates on COVID-19 and RSV Surveillance in the United States

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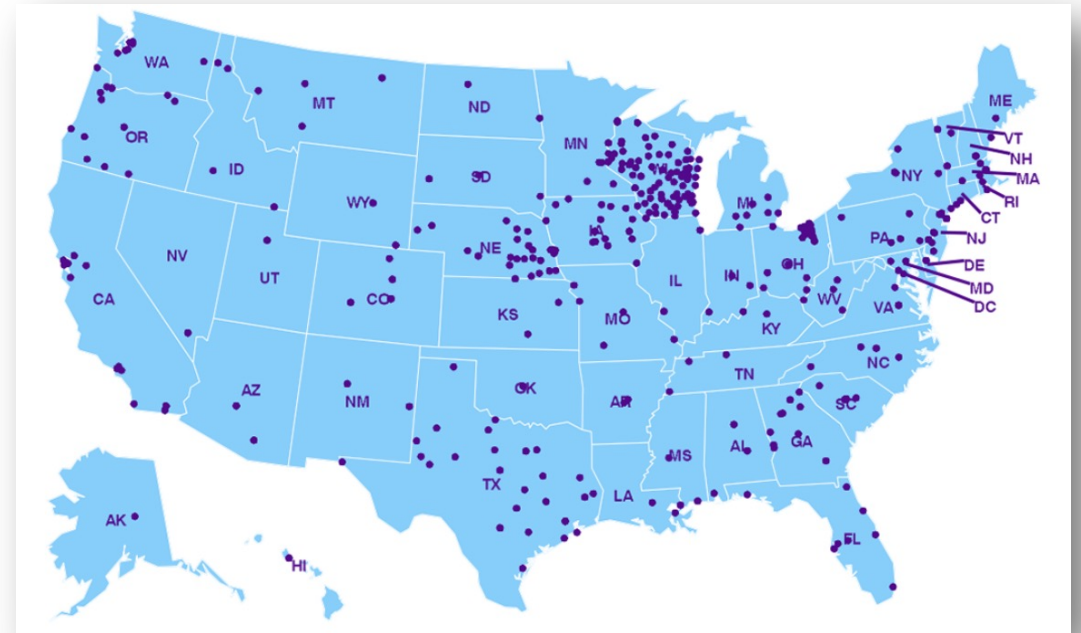
Respiratory Virus Activity Reported to the National Respiratory and Enteric Virus Surveillance System (NREVSS)

Laboratory Surveillance

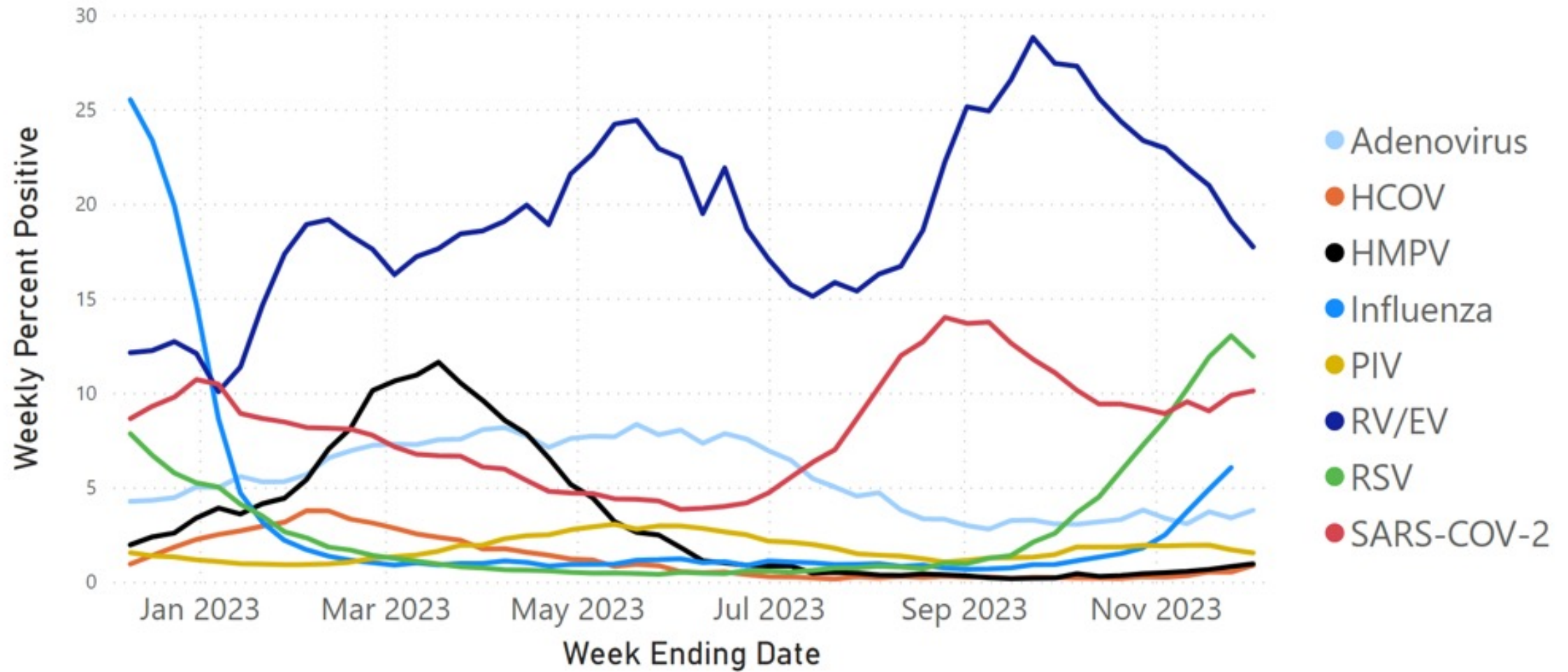
National Respiratory and Enteric Virus Surveillance System

- Passive, laboratory-based surveillance system developed in the early 1980s
- ~600 participating laboratories report tests
- Monitors real-time circulation and trends in seasonality of respiratory and enteric viruses
- Data sources:
 - State and local public health laboratories
 - Commercial labs, hospitals, universities
- Diagnostic Method Categories:
 - Antigen
 - Virus isolation
 - PCR
- Weekly reporting of total tested and # positive

$$\text{Circulation} = \frac{\# \text{ positive detections}}{\# \text{ tests performed}}$$

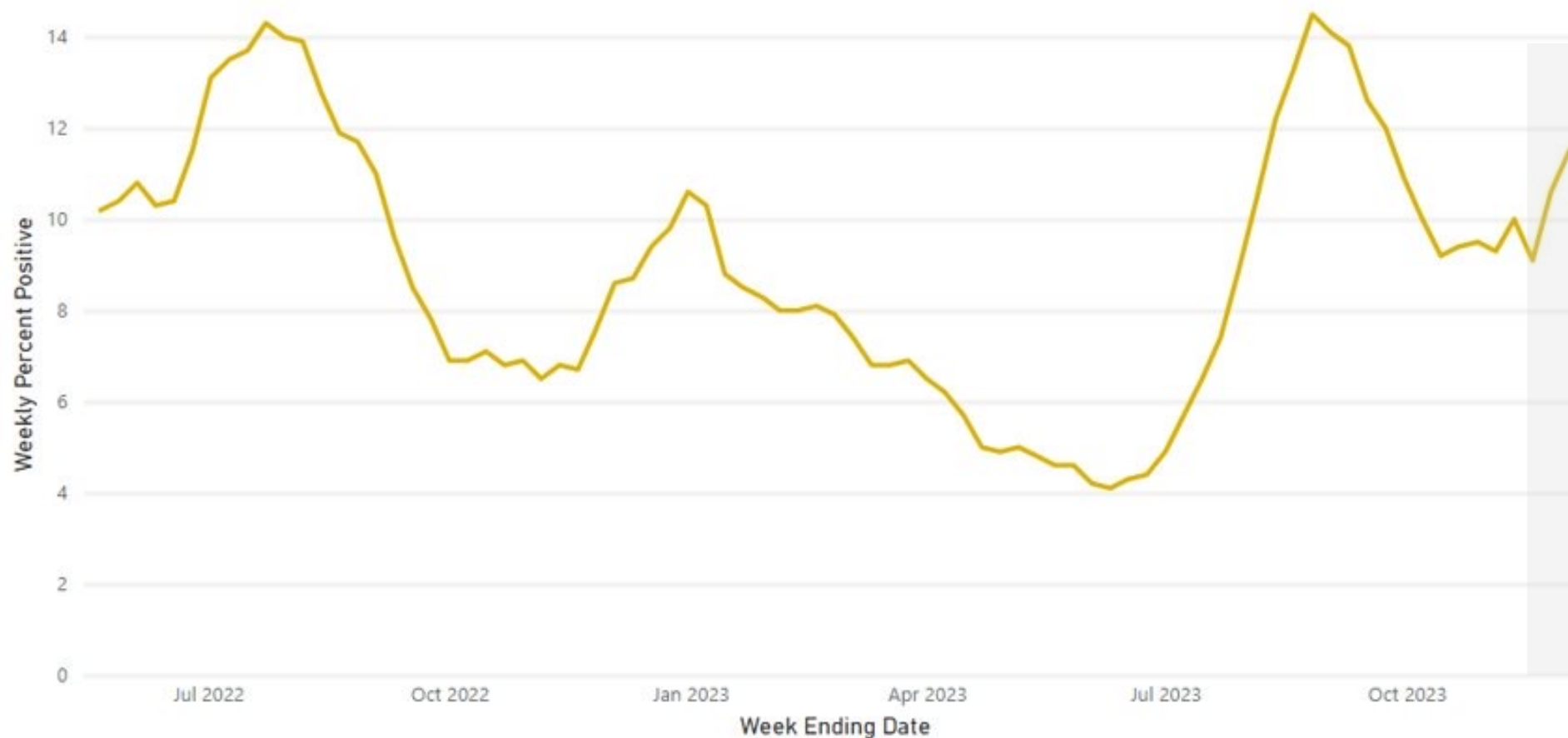


National weekly respiratory virus percent positive reported to NREVSS, December 10, 2022 through December 2, 2023



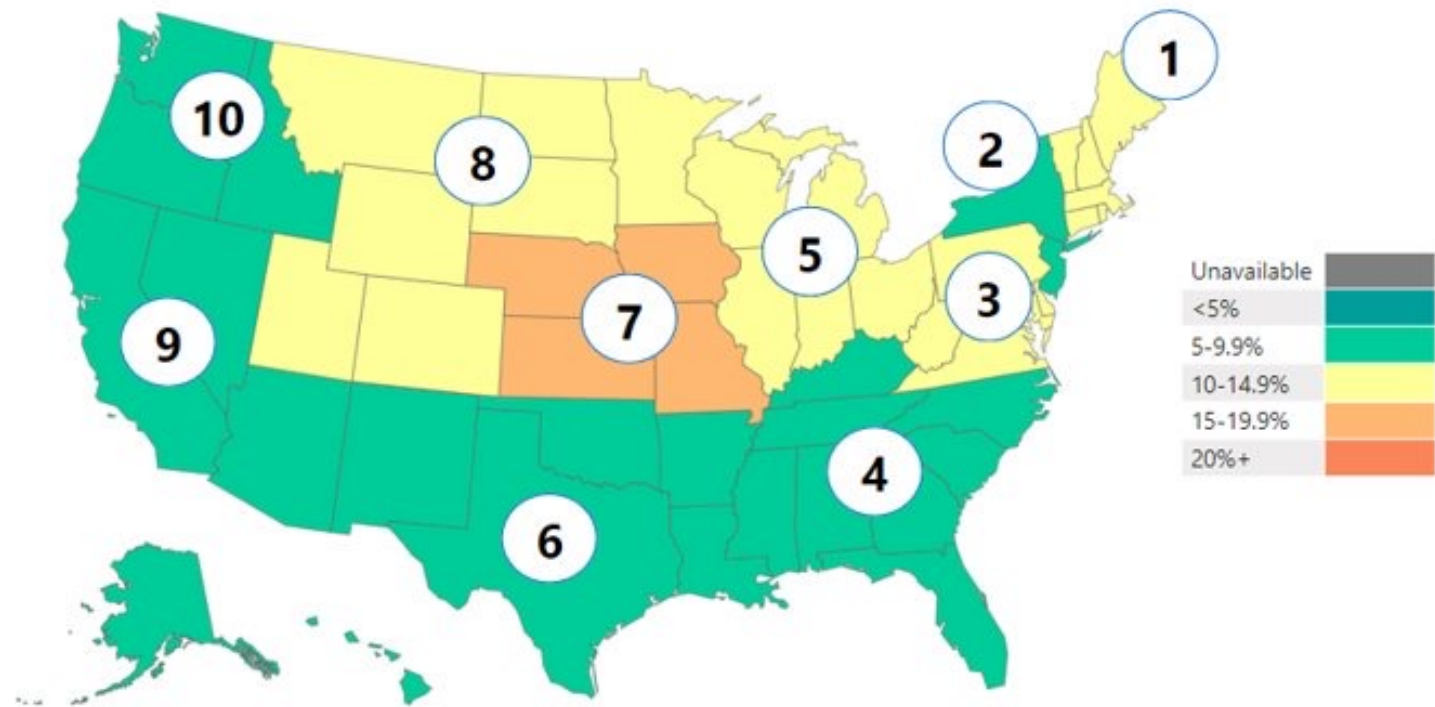
Report was last updated on: 11/29/2023. All results presented are from nucleic acid amplification tests which represent >90% of the diagnostic tests reported to NREVSS. The last three weeks of data may be less complete. NREVSS is an abbreviation for the National Respiratory and Enteric Virus Surveillance System. For more information on NREVSS, please visit [National Respiratory and Enteric Virus Surveillance System | CDC](https://www.cdc.gov/nrevss/). SARS-CoV-2: Severe acute respiratory syndrome coronavirus type 2. Flu: Influenza virus types are combined but reported by type and subtype depending on the testing capabilities of each contributing laboratory. Reports only updated to week ending 10/7/2023. RSV: Respiratory syncytial virus. Types A and B are not shown separately in this report. RV/EV: Rhinovirus or enterovirus. These results are generally clinically indistinguishable and reported in a combined category via NREVSS. PIV: Parainfluenza virus types 1 through 4 are combined for this visual. However, laboratories report these data individually. HCoV: Human coronavirus types HKU1, OC43, 229E and NL63 are combined for this visual. However, laboratories report these data individually. Adenovirus: All adenovirus detections reported to NREVSS from respiratory specimen results (for example, nasal pharyngeal swabs). There are over 100 adenovirus types. Most commercial laboratory tests do not distinguish type without further identification. HMPV: Human metapneumovirus types A and B are not reported separately from NREVSS.

National trends in PCR test percent positivity for SARS-CoV-2 reported to NREVSS, May 21, 2022 – December 2, 2023



National Respiratory and Enteric Virus Surveillance System (NREVSS). The data represent SARS-CoV-2 Nucleic Acid Amplification Test (NAAT) results, which include reverse transcriptase-polymerase chain reaction (RT-PCR) tests from a sentinel network of NREVSS-reporting laboratories in the United States, including clinical, public health and commercial laboratories (<https://www.cdc.gov/surveillance/nrevss/labs/index.html>). These data exclude antigen, antibody, and at-home test results. Test positivity data are displayed at the HHS Region level. All data are provisional and subject to change. Reporting is less complete for the past 1 week, and more complete for data reported for the period 2 weeks earlier (>90%). Because the data are from a sentinel network of laboratories, results may vary geographically. The data do not include all test results within a jurisdiction and therefore may not reflect all, COVID-19 NAATs in the United States. There are data from all 50 states, including the District of Columbia, Puerto Rico and the U.S. Virgin Islands, across the 10 HHS regions. Test results from Puerto Rico and the U.S. Virgin Islands are reported as part of HHS Region 2. Data from other U.S. territories are not reported to NREVSS. Percent positivity is one of the metrics used to monitor COVID-19 transmission over time and by area. Percent positivity is calculated by dividing the number of positive NAATs by the total number of NAATs administered, then multiplying by 100 [(# of positive NAAT tests / total NAAT tests) x 100]. The data represent laboratory tests performed, not individual people. In the table and upon hovering on the map, the total test counts in the data reflect the latest reported data from NREVSS laboratories and may not match the data presented by various jurisdictions. On May 11, 2023 CDC discontinued utilizing the COVID electronic laboratory reporting (CELR) platform as the primary laboratory source of COVID-19 results. These data are archived at health.data.gov. For more information about NREVSS, please see: <https://www.cdc.gov/surveillance/nrevss/index.html>. For downloading the NREVSS COVID-19 testing data displayed here: <https://data.cdc.gov/laboratory-surveillance/Percent-Positivity-of-COVID-19-Nucleic-Acid-Amplif/gv5b-yw6g>.

Regional trends in PCR test percent positivity for SARS-CoV-2 reported to NREVSS, December 2, 2023

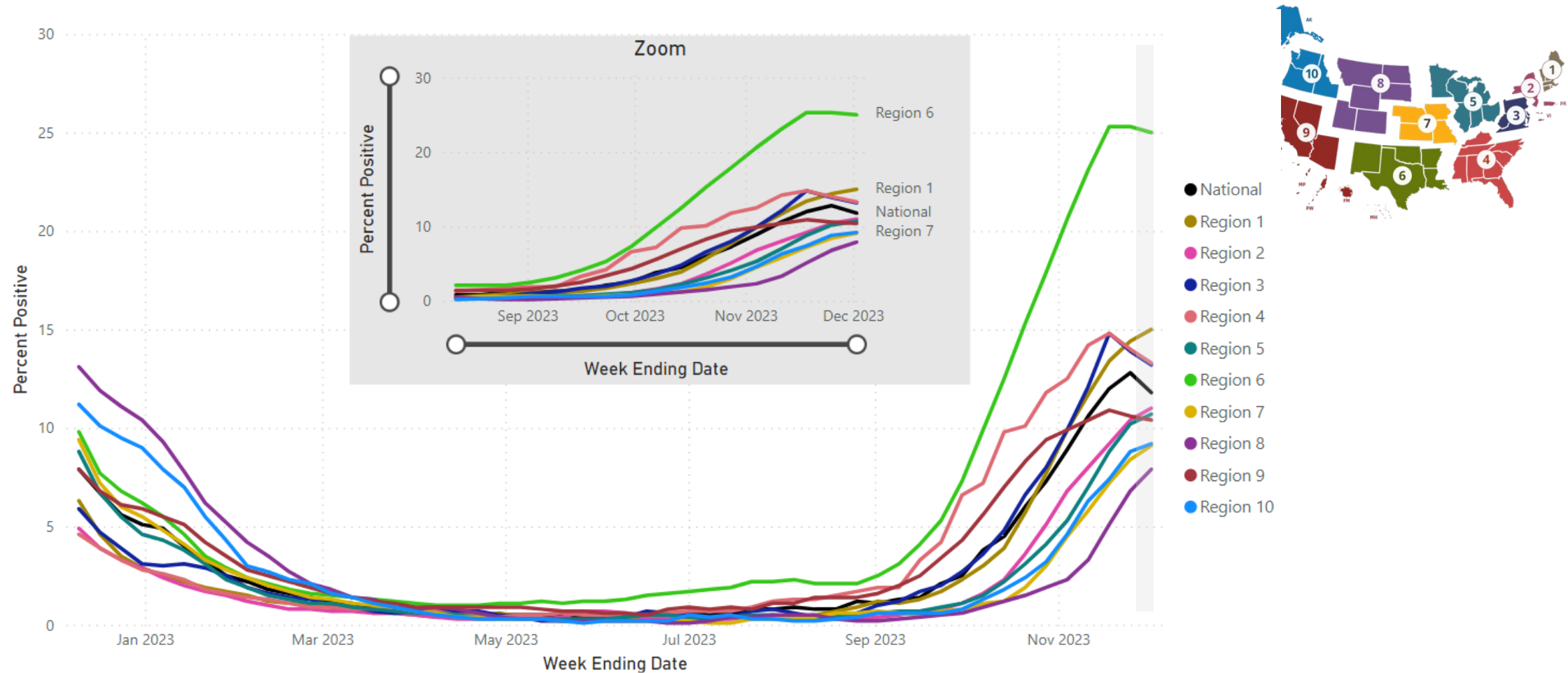


HHS Region	Difference in weekly percent positivity (Week 46 to Week 47)**
1	↔
2	↑
3	↔
4	↓
5	↔
6	↑
7	↔
8	↓
9	↓
10	↔

National Respiratory and Enteric Virus Surveillance System (NREVSS). The data represent SARS-CoV-2 Nucleic Acid Amplification Test (NAAT) results, which include reverse transcriptase-polymerase chain reaction (RT-PCR) tests from a sentinel network of NREVSS-reporting laboratories in the United States, including clinical, public health and commercial laboratories (<https://www.cdc.gov/surveillance/nrevss/labs/index.html>). These data exclude antigen, antibody, and at-home test results. Test positivity data are displayed at the HHS Region level. All data are provisional and subject to change. Reporting is less complete for the past 1 week, and more complete for data reported for the period 2 weeks earlier (>90%). Because the data are from a sentinel network of laboratories, results may vary geographically. The data do not include all test results within a jurisdiction and therefore may not reflect all, COVID-19 NAATs in the United States. There are data from all 50 states, including the District of Columbia, Puerto Rico and the U.S. Virgin Islands, across the 10 HHS regions. Test results from Puerto Rico and the U.S. Virgin Islands are reported as part of HHS Region 2. Data from other U.S. territories are not reported to NREVSS. Percent positivity is one of the metrics used to monitor COVID-19 transmission over time and by area. Percent positivity is calculated by dividing the number of positive NAATs by the total number of NAATs administered, then multiplying by 100 [(# of positive NAAT tests / total NAAT tests) x 100]. The data represent laboratory tests performed, not individual people. In the table and upon hovering on the map, the total test counts in the data reflect the latest reported data from NREVSS laboratories and may not match the data presented by various jurisdictions. On May 11, 2023 CDC discontinued utilizing the COVID electronic laboratory reporting (CELR) platform as the primary laboratory source of COVID-19 results. These data are archived at [health.data.gov](https://www.cdc.gov/surveillance/nrevss/index.html). For more information about NREVSS, please see: <https://www.cdc.gov/surveillance/nrevss/index.html>. For downloading the NREVSS COVID-19 testing data displayed here: <https://data.cdc.gov/Laboratory-Surveillance/Percent-Positivity-of-COVID-19-Nucleic-Acid-Amplif/gvsh-yw6g>.

** An increase or decrease defined as +/- 1.0% difference between the previous and current weeks.

National weekly smoothed* RSV percent positive reported to NREVSS, December 10, 2022 through December 2, 2023, by HHS Region



*The trend graphs displays the average number of RSV tests that were performed, and the average percent of those that were positive from three adjacent weeks: the specified week, and the weeks preceding and following it. This is also known as a centered, moving average. All results presented are from nucleic acid amplification tests. Less than 5% of most respiratory virus tests reported to NREVSS are from antigen diagnostic methods. The last three weeks of data may be less complete.

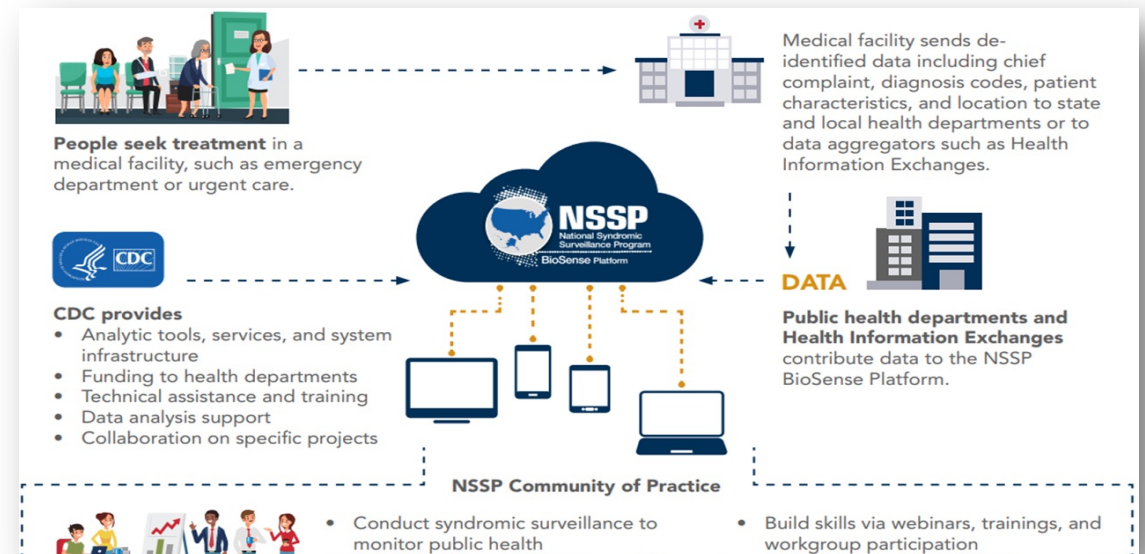
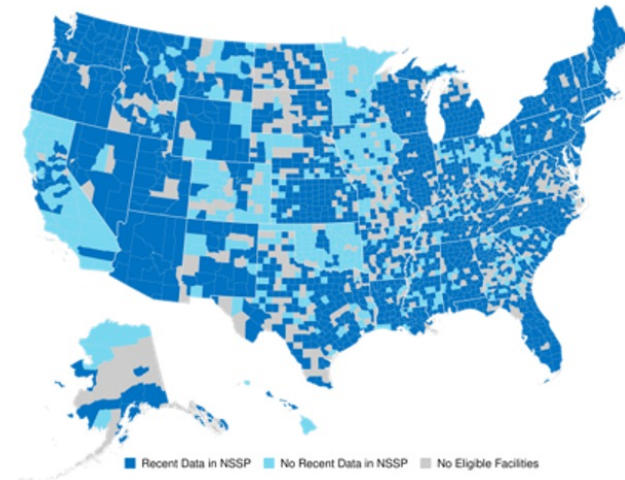


National Syndromic Surveillance Program (NSSP)

Emergency Department Visits

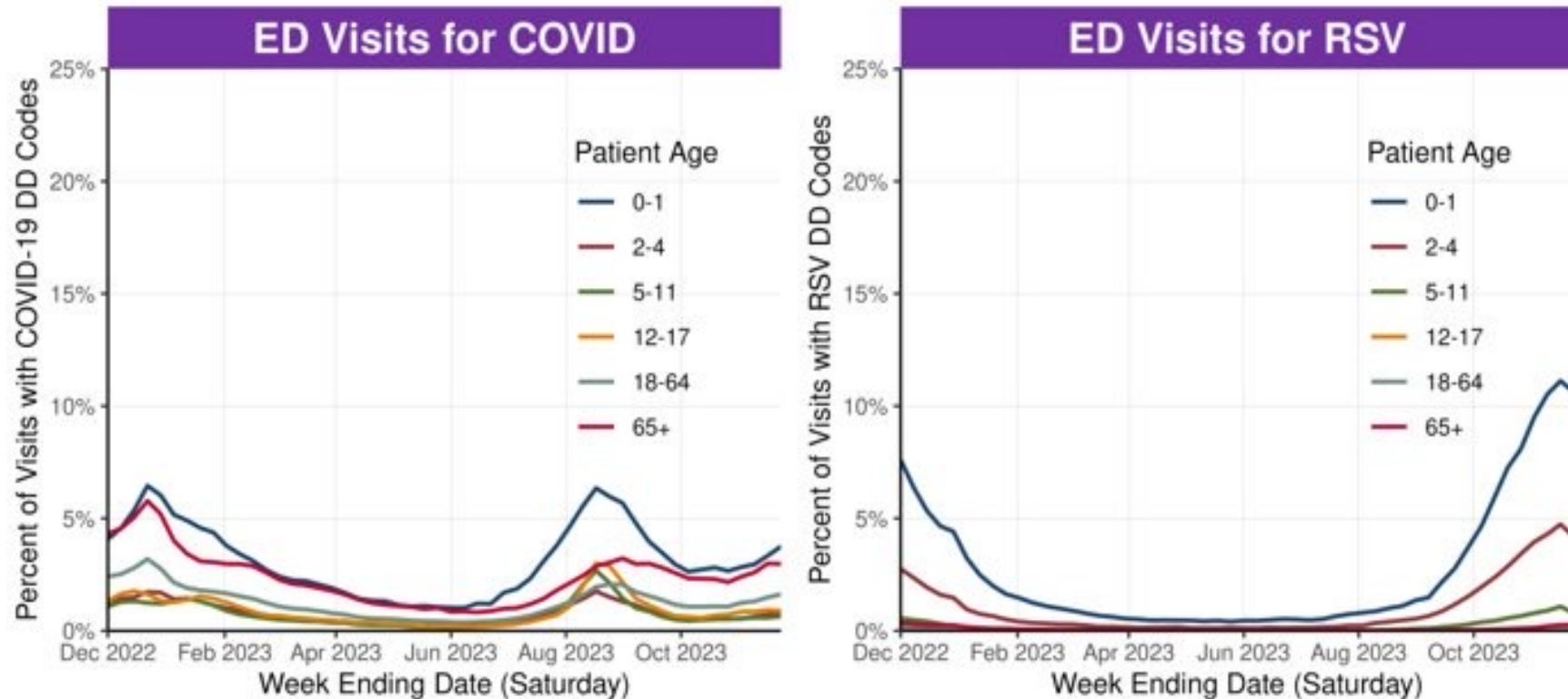
National Syndromic Surveillance Program (NSSP)

- >6,000 healthcare facilities covering 49 states and DC
 - >90% of ED in US participating
- Objective:
 - Near-real time influenza-like illness, COVID-19-like illness and inpatient status
- Data Source:
 - 6 million EHR messages, including chief complaint, diagnosis codes, patient demographics



*Image courtesy of NSSP How We Conduct Syndromic Surveillance | CDC

National Weekly Percentage of U.S. Emergency Department (ED) Visits with Respiratory Illness Discharge Diagnosis Codes by Age Group, November 27, 2022 – December 2, 2023



Report was last updated on: 12/6/2023. Data Source: Discharge diagnosis (DD) codes from ED visits, National Syndromic Surveillance Program (NSSP). Fewer than 50% of facilities in CA, HI, IA, MN, OK, and OH report to NSSP. Limited to facilities that have consistently reported high-quality visit data over the entire period as emergency departments that consistently reported ≤ 40 in visit counts and discharge diagnoses averaging $\geq 75\%$ completed per week over the past year. Additional details on inclusion criterion and specific diagnostic codes included for the definitions are listed in the Companion Guide for NSSP here: <https://www.cdc.gov/ncird/surveillance/respiratory-illnesses/index.html#companion-guide>

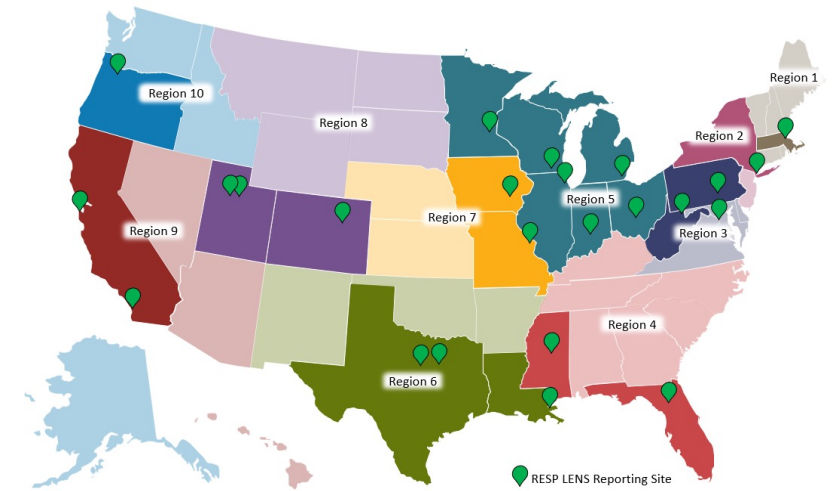


Respiratory Virus Laboratory Emergency Department Network Surveillance (RESP-LENS)

Emergency Department Visits

Respiratory Virus Laboratory Emergency Department Network Surveillance (RESP-LENS)

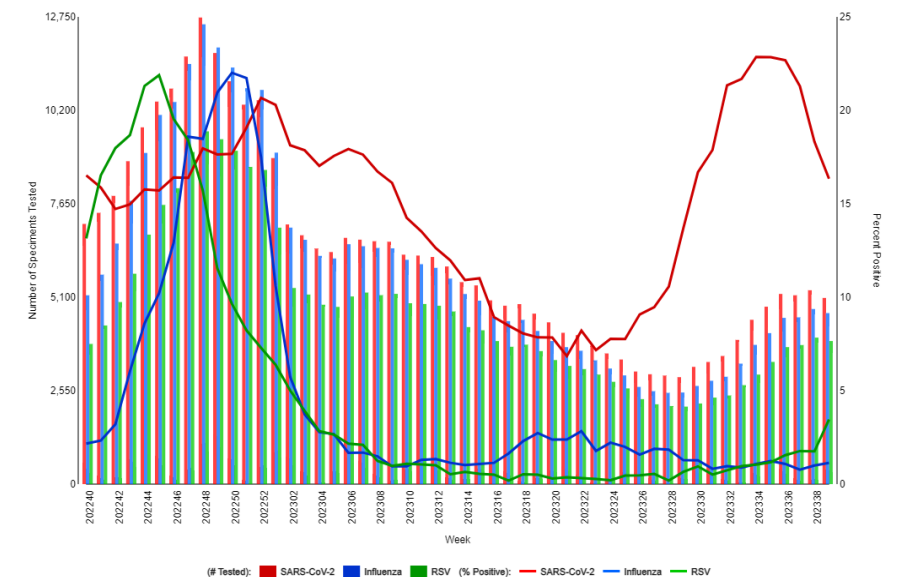
- 24 health systems totaling >100 emergency departments across 20 states and DC
- Objective
 - Provide timely data on the primary viruses causing ARI and monitor trends in seasonality
 - Link demographics, virologic testing, and clinical info (symptoms at presentation, illness severity, past medical history), disposition (hospital admission, 30-day follow-up)
- Data Sources
 - Electronic medical record data from patients who visit a participating ED with ARI
 - ~11,000 ARI-associated ED visits per week, including ~4,000 visits associated with children <18 years



Respiratory Virus Laboratory Emergency Department Network Surveillance (RESP-LENS)
Number of Specimens Tested and Percent Positive by Week



National Level

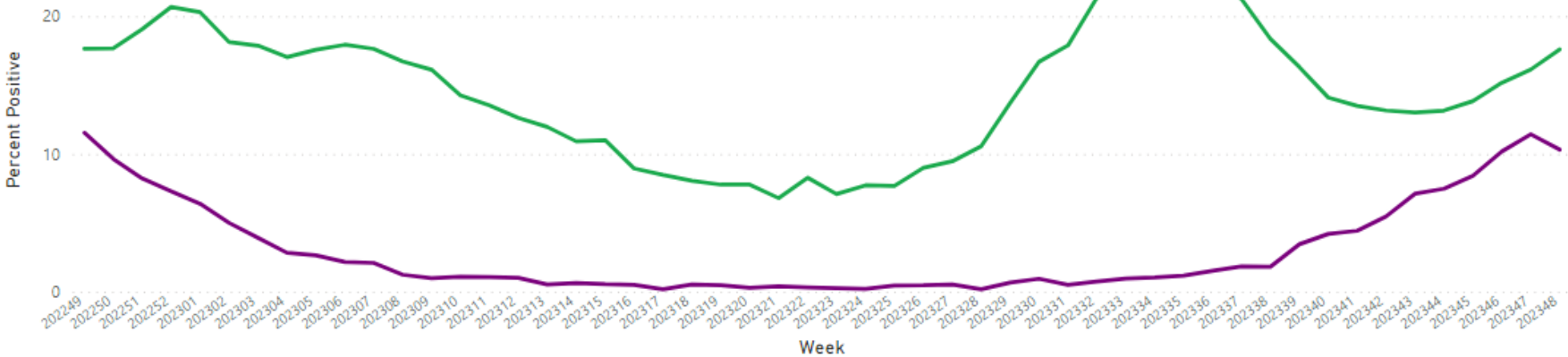


National weekly percent positive and number of tests by pathogen reported to RESP-LENS, week ending December 3, 2022 – December 2, 2023



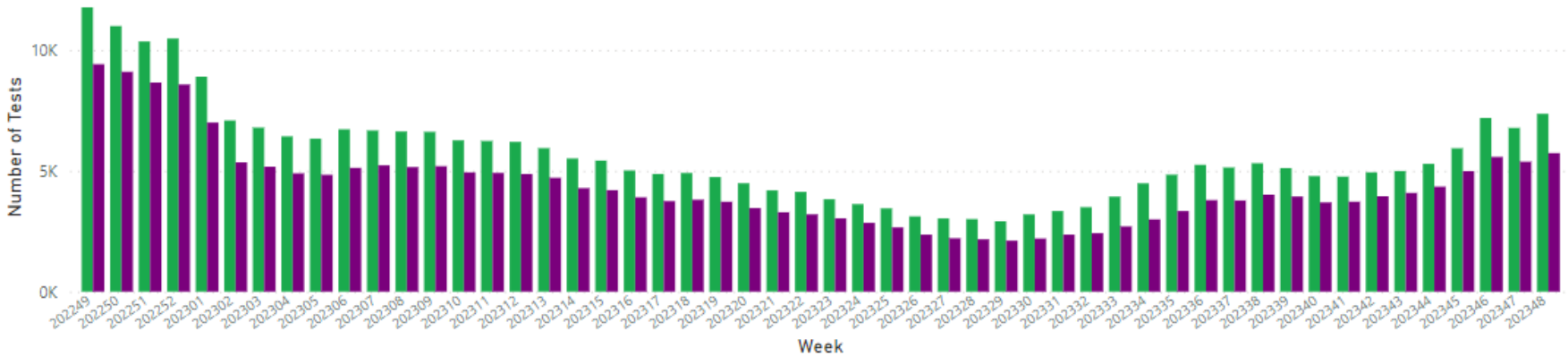
Weekly Percent Positivity by Virus

● SARS-COV-2 ● RSV



Weekly Laboratory Tests by Virus

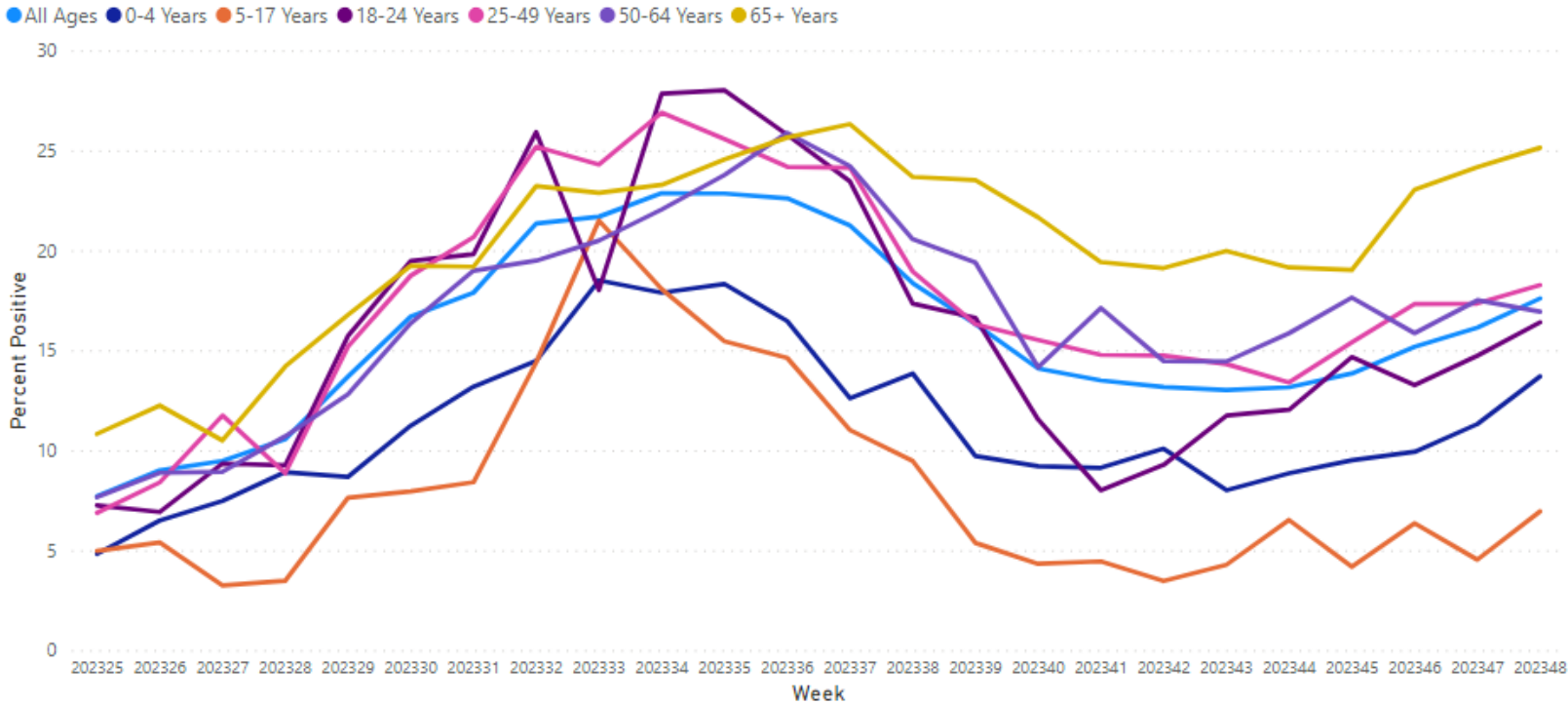
● SARS-COV-2 ● RSV



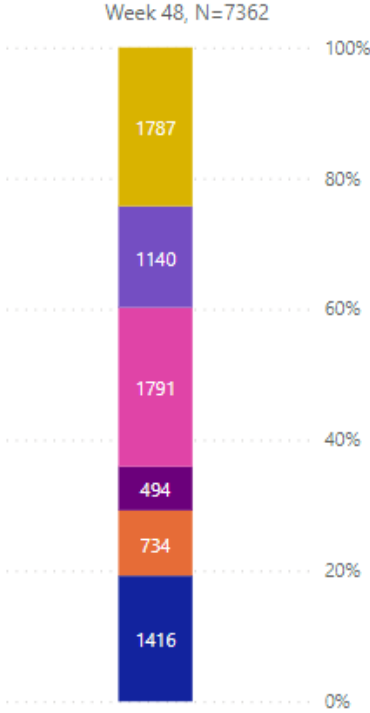


Weekly SARS-CoV-2 percent positivity and number of tests by age group, reported to RESP-LENS, week ending June 17, 2023 – December 2, 2023

Weekly SARS-COV-2 Percent Positivity by Age Group



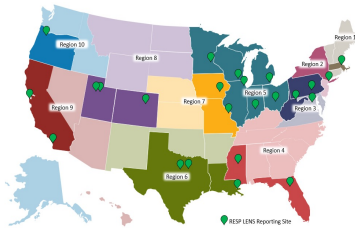
SARS-COV-2 Tests by Age Group



Note: RESP-LENS sites are in California, Colorado, Florida, Illinois, Indiana, Iowa, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New York, Ohio, Oregon, Pennsylvania, Texas, Utah, West Virginia, Wisconsin and the District of Columbia.

The number of sites vary by region, which may affect representativeness. The distribution of ED visits among age groups varies by site and could impact the percent of specimens testing positive for a particular virus.

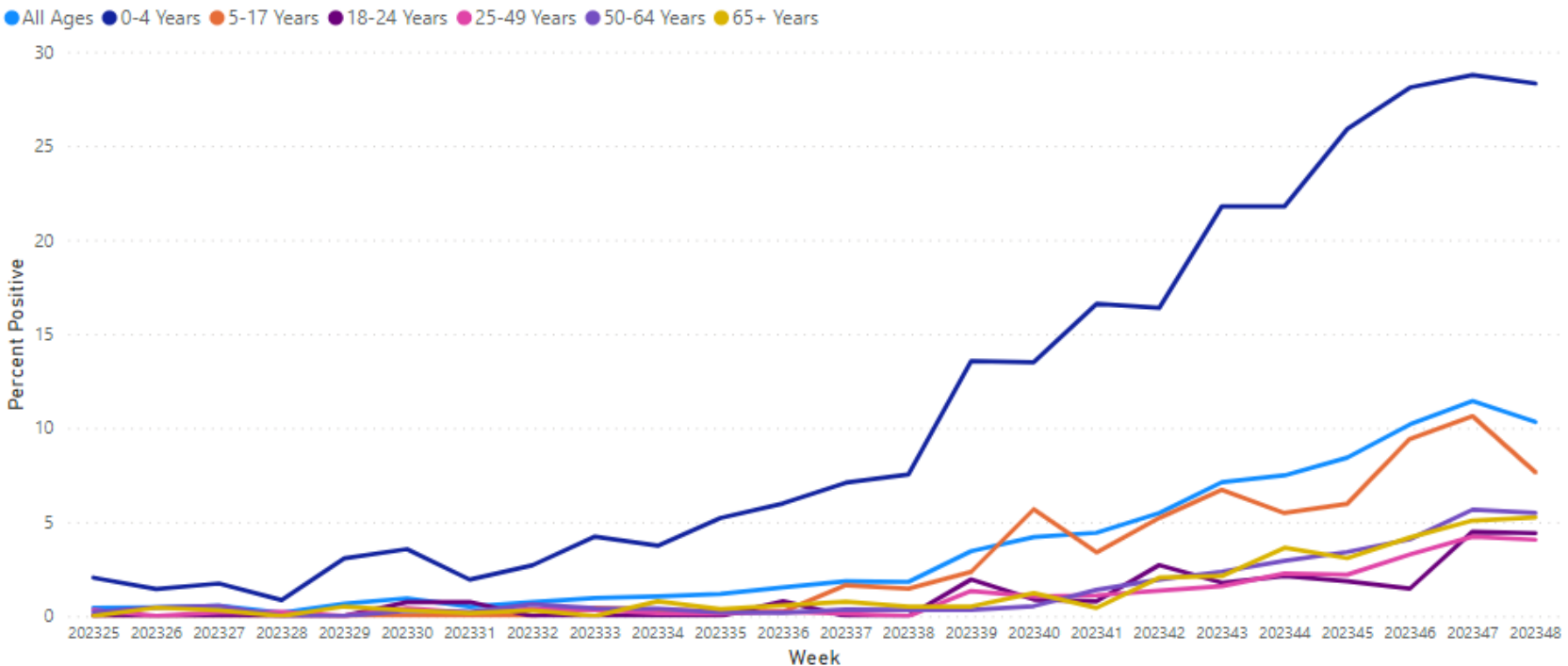
Sites in regions 4, 7 and 9 report more than 50% of their reported ED visits for ARI occur among children less than 18 years, therefore the data from those regions are likely to be more heavily influenced by respiratory viruses circulating in pediatric populations.



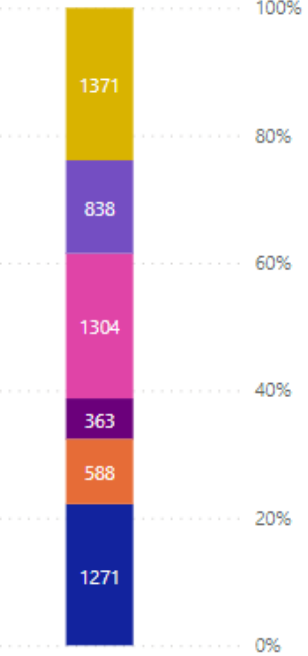


Weekly RSV percent positivity and number of tests by age group, reported to RESP-LENS, week ending June 17, 2023 – December 2, 2023

Weekly RSV Percent Positivity by Age Group



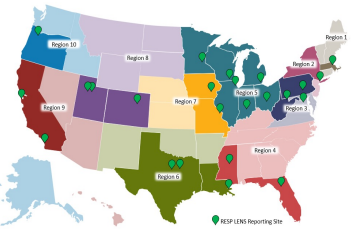
RSV Tests by Age Group
Week 48, N=5735



Note: RESP-LENS sites are in California, Colorado, Florida, Illinois, Indiana, Iowa, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New York, Ohio, Oregon, Pennsylvania, Texas, Utah, West Virginia, Wisconsin and the District of Columbia.

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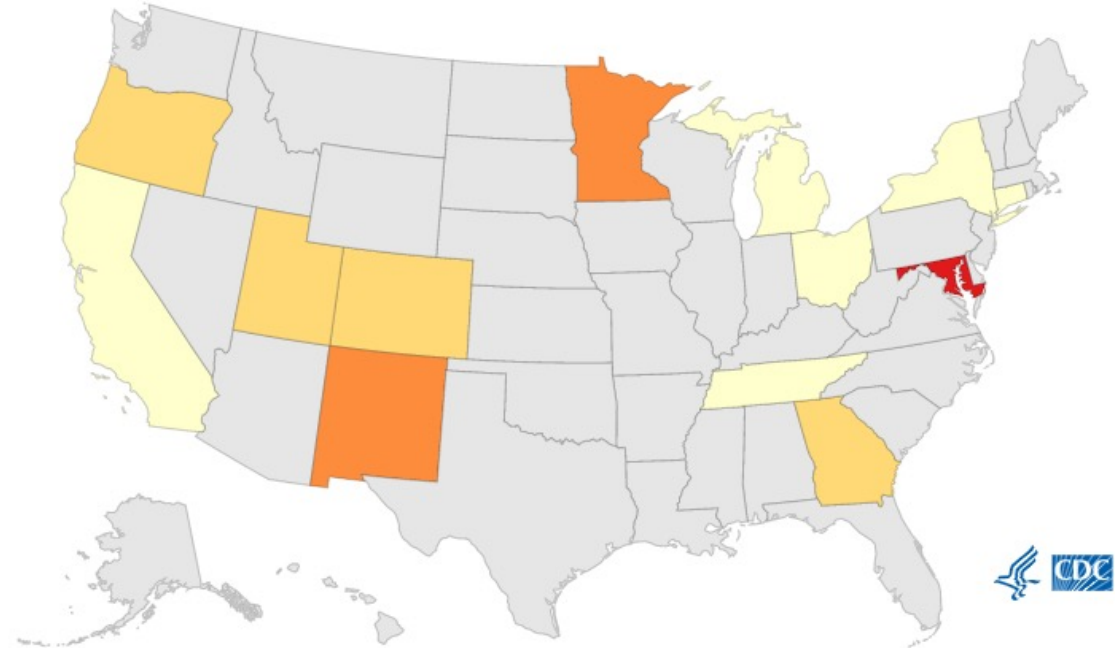


Respiratory Virus Hospitalization Surveillance Network (RESP-NET)

Hospitalizations

COVID-NET: A RESP-NET population-based hospitalization surveillance platform

- RESP-NET: COVID-NET, RSV-NET, FluSurv-NET
- Population-based rates of COVID-19-associated hospitalizations
- Positive SARS-CoV-2 test within 14 days of or during hospitalization
- Screening or clinician-driven testing
- >300 acute-care hospitals
- 98 counties in 13 states
- In 9 of 10 HHS regions
- ~10% of U.S. population
- Clinical data: representative sample of COVID-NET patients

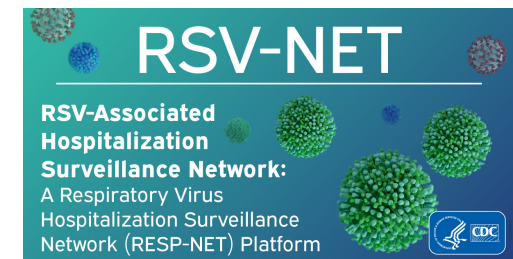
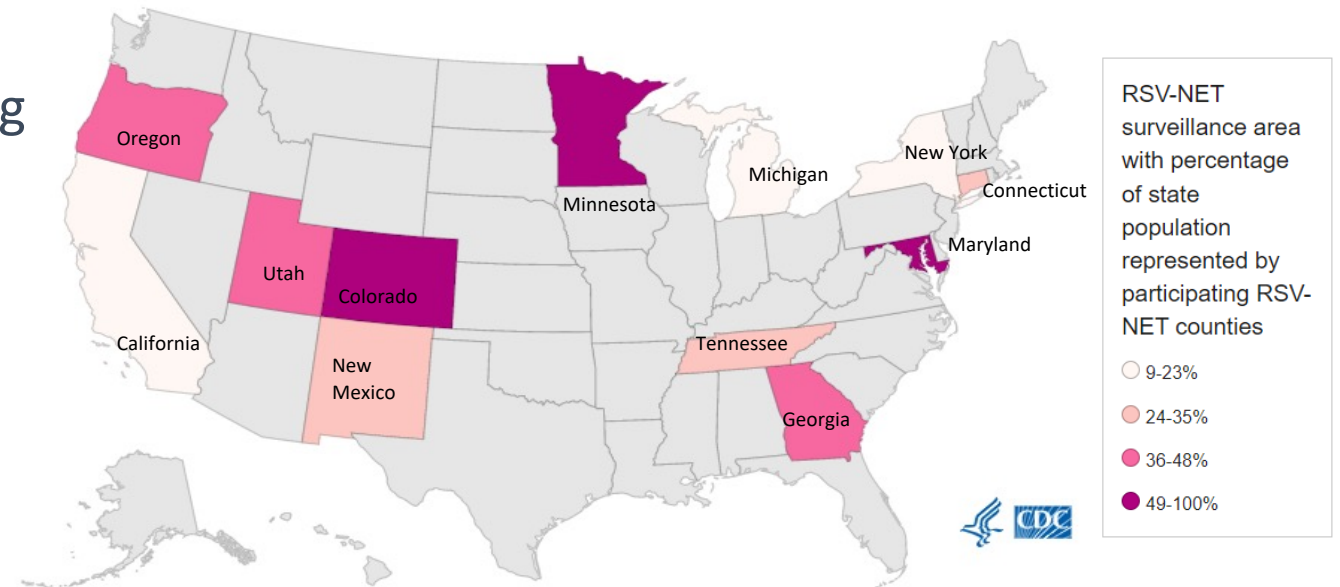


Percentage of state population represented by participating COVID-NET counties

- 9% - < 31.75%
- 31.75% - < 54.5%
- 54.5% - < 77.25%
- 77.25% - 100%

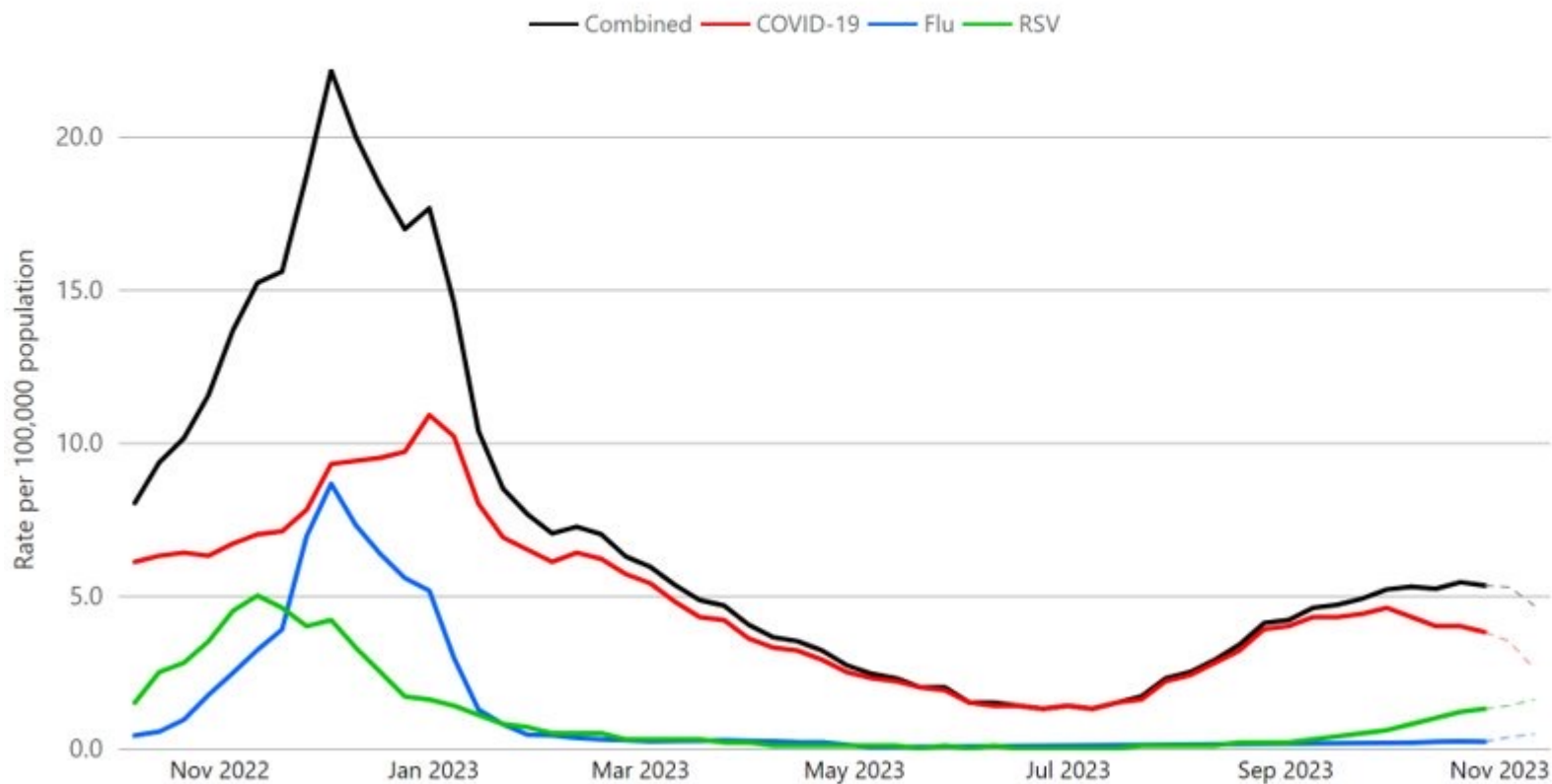
RSV-NET: A RESP-NET population-based hospitalization surveillance platform

- Population-based rates of RSV-associated hospitalizations
- Positive RSV test within 14 days of or during hospitalization
- Screening or clinician-driven testing
- 58 counties in 12 states
- In 9 of 10 HHS regions
- ~10% of U.S. population
- Clinical data: representative sample of RSV-NET patients



Overall Rates of Hospitalizations associated with COVID-19, Influenza, and RSV — RESP-NET, October 2022–December 2, 2023

Weekly Rates by Pathogen



- Overall COVID-19 hospitalization rates remain elevated and stable
 - Driven largely by adults aged ≥ 65 years
- RSV hospitalization rates continue to increase
- Flu hospitalization rates are low but are increasing in most surveillance sites



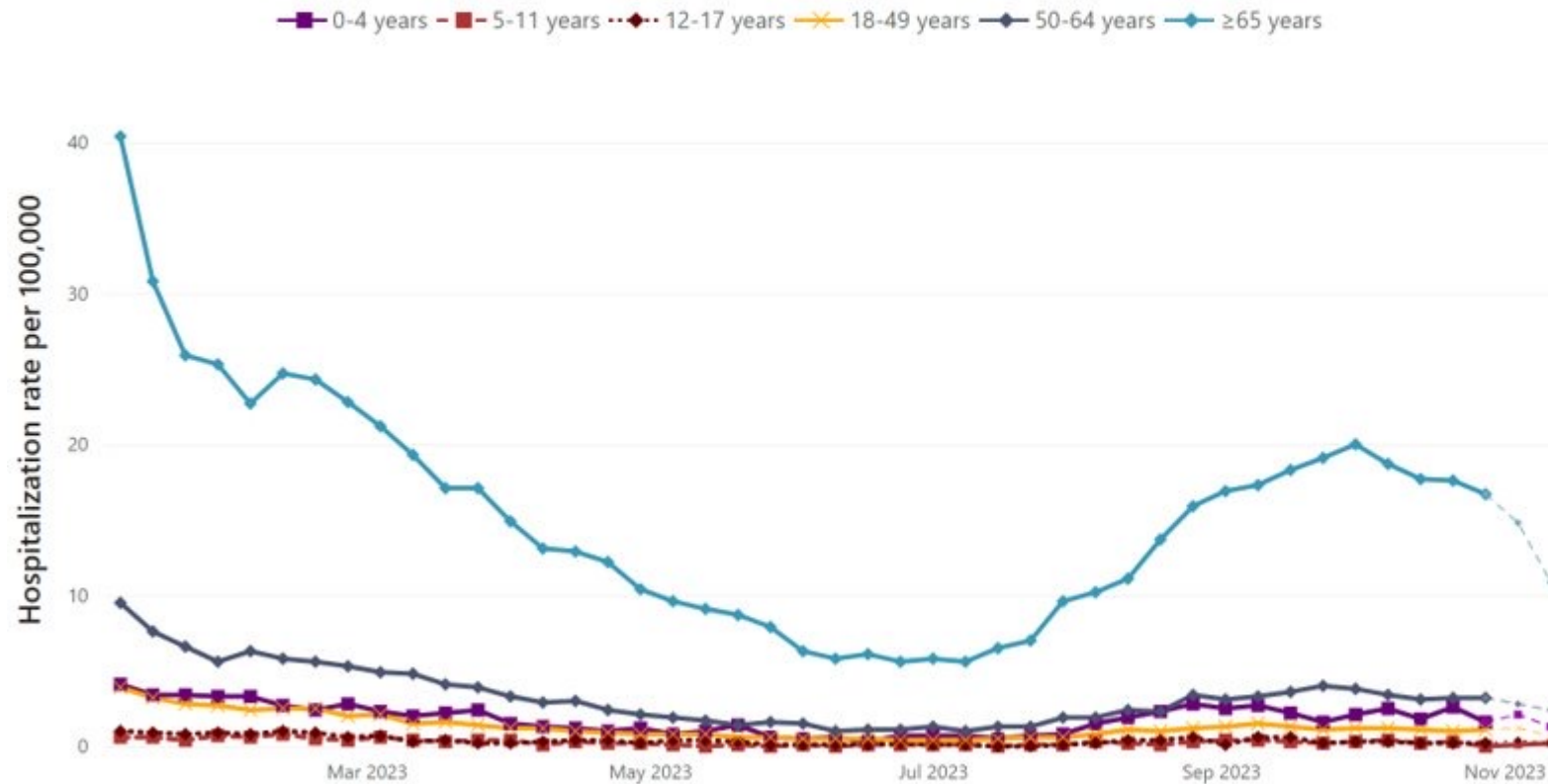
COVID-NET

COVID-19-Associated Hospitalizations

COVID-19-Associated Hospitalization Rates by Age Group – COVID-NET, January 1, 2023–December 2, 2023



Weekly Rates by Age Category



- Hospitalization rates remain highest in adults aged ≥ 65 years.

Thin dashed lines for the most recent weeks of the current season indicate potential reporting delays and interpretation of trends should exclude data from recent weeks.



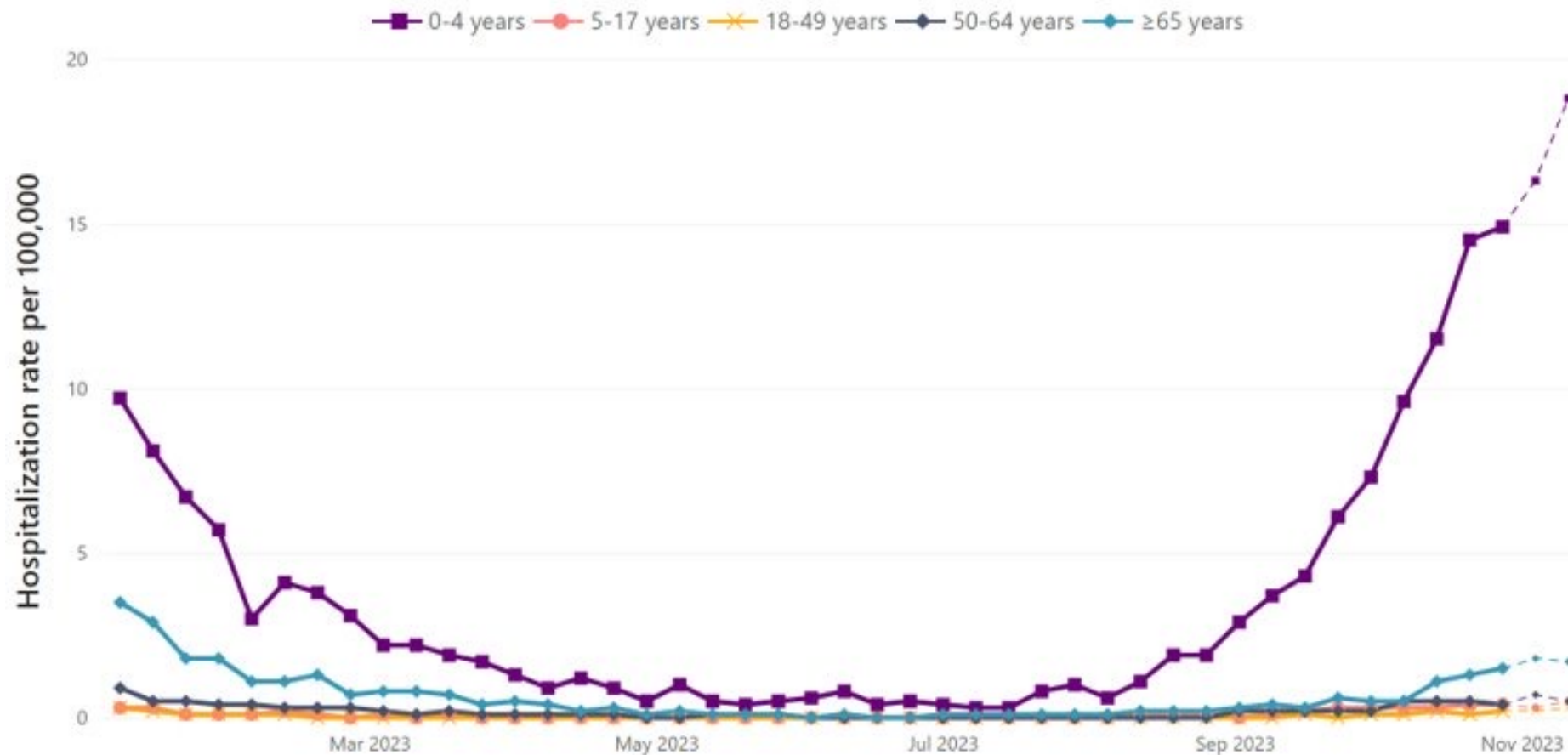
RSV-NET

RSV-Associated Hospitalizations

RSV-Associated Hospitalization Rates by Age Group – RSV-NET, January 1–December 2, 2023



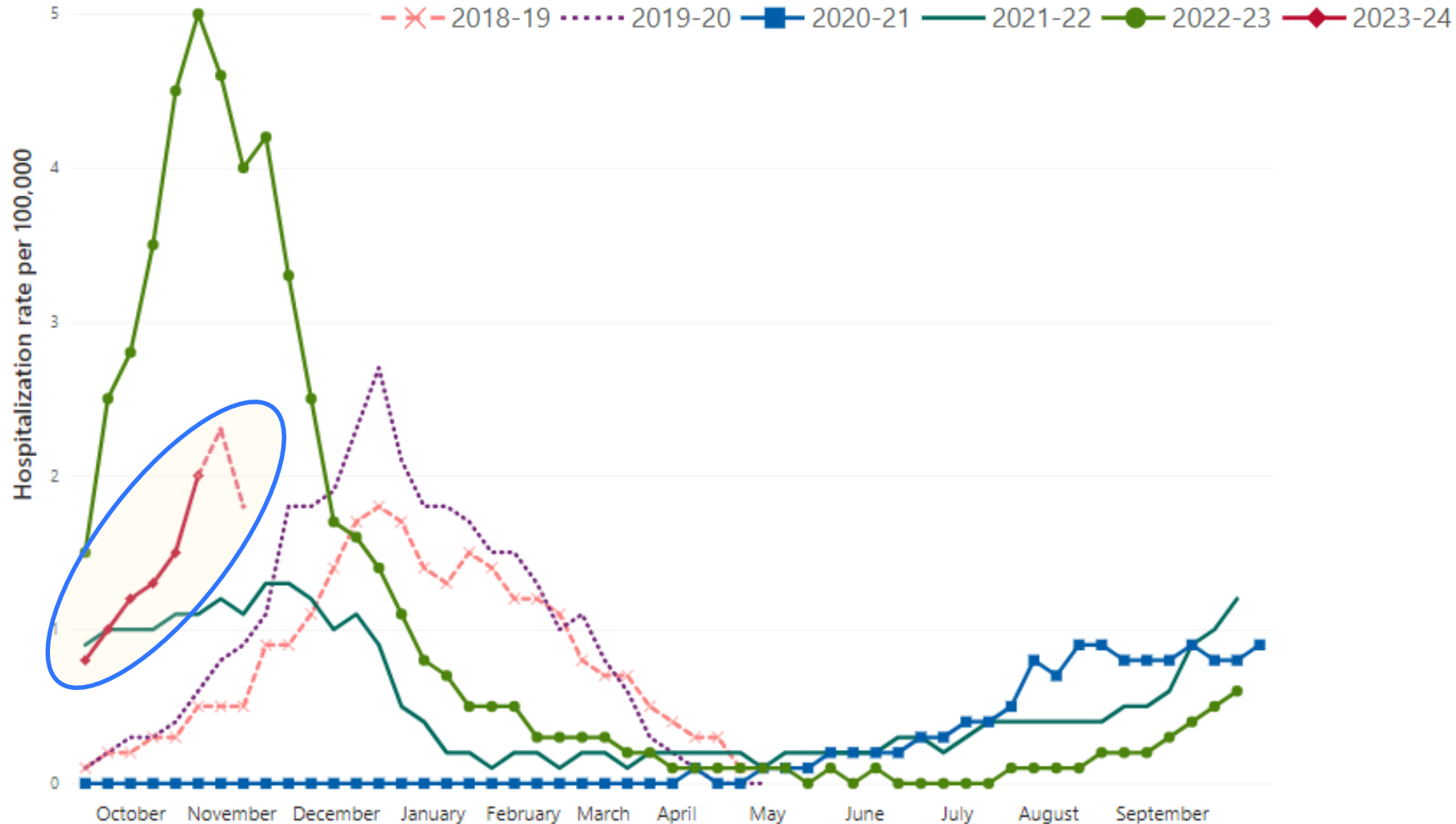
Weekly Rates by Age Category



- RSV hospitalization rates continue to increase
 - Remain highest and increasing among children 0–4 years
 - Rates increasing among adults ≥65 years

Thin dashed lines for the most recent weeks of the current season indicate potential reporting delays and interpretation of trends should exclude data from recent weeks.

Overall RSV-Associated Hospitalization Rates – RSV-NET, 2018–2019 through 2023–2024



- RSV hospitalization rates at this time in 2023–2024 season:

- Lower than same time point during **2022–2023** season
- Now higher compared to same time point during **2021–2022** season
- Earlier increases compared to **2018–2019** and **2019–2020** seasons

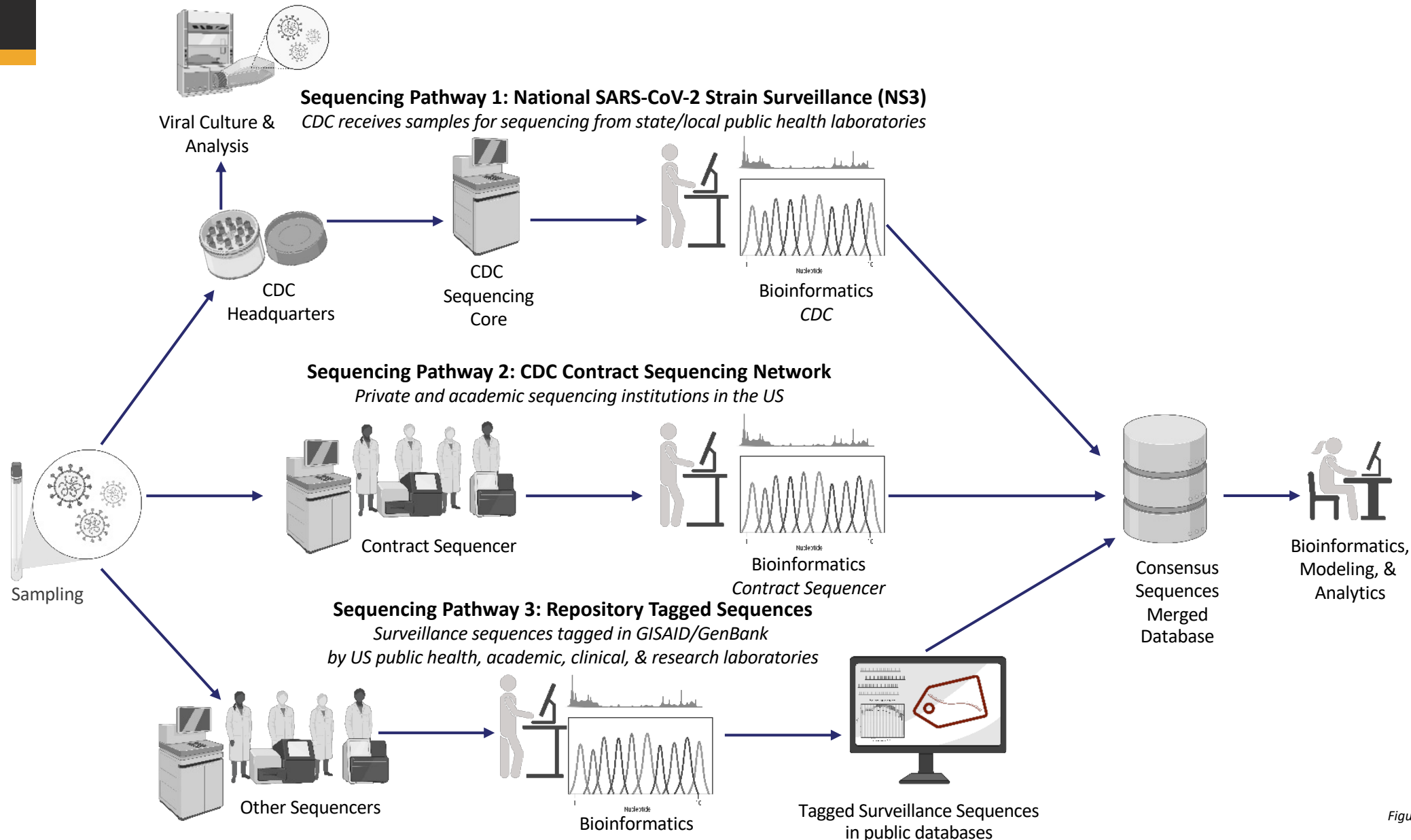
Dotted lines for the 2023–2024 season indicates weeks of data with likely backfill. Rates for the most recent two weeks should be interpreted with caution.



Nowcast

Genomic Surveillance

National SARS-CoV-2 genomic surveillance system: data workflow

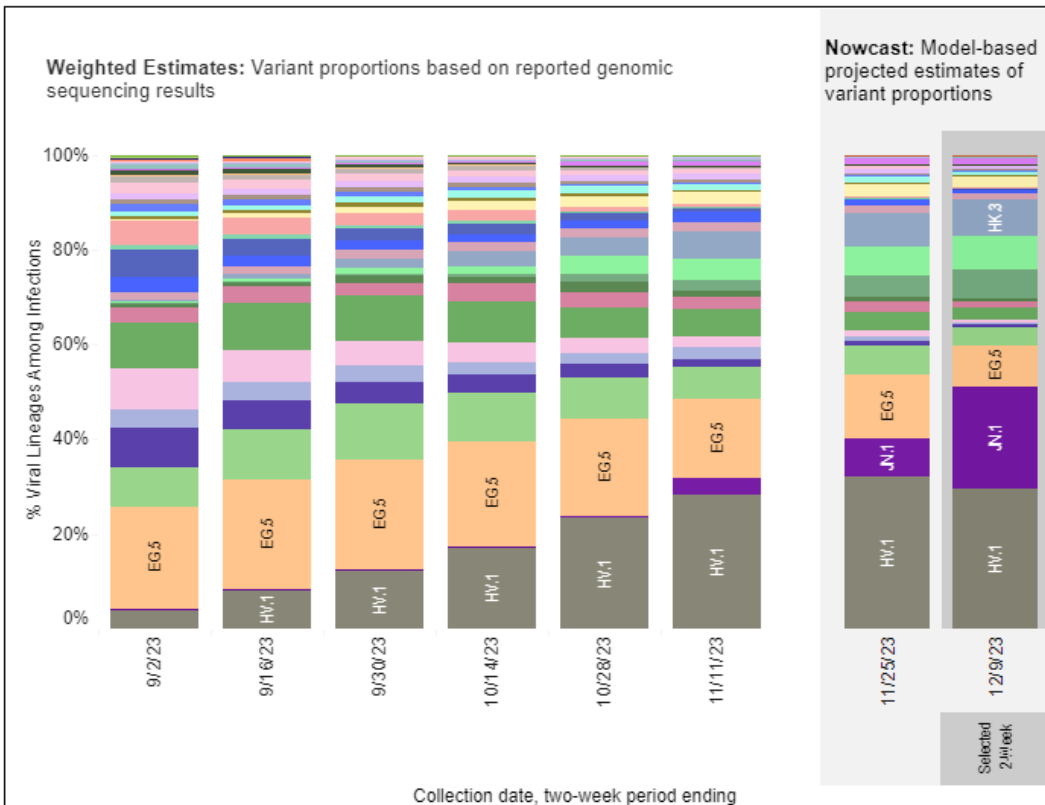


Nowcast Estimates in the United States through December 9th, 2023



Weighted and Nowcast Estimates in United States for 2-Week Periods in 8/20/2023 – 12/9/2023

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 11/26/2023 – 12/9/2023

USA			
WHO label	Lineage #	%Total	95%PI
Omicron	HV.1	29.6%	26.6-32.7%
	JN.1	21.4%	15.1-29.4%
	EG.5	8.8%	7.6-10.1%
	HK.3	7.7%	6.3-9.2%
	JD.1.1	7.2%	5.8-8.8%
	JG.3	6.2%	4.6-8.2%
	FL.1.5.1	3.8%	3.4-4.4%
	XBB.1.16.6	2.3%	1.8-3.0%
	JF.1	2.3%	1.7-3.1%
	BA.2.86	1.6%	1.0-2.5%
	XBB.1.16.11	1.3%	0.9-1.8%
	XBB.1.9.1	1.1%	0.6-2.1%
	HF.1	1.1%	0.7-1.6%
	GK.1.1	0.9%	0.7-1.2%
	XBB.1.5.70	0.7%	0.5-1.0%
	XBB.1.16.15	0.7%	0.4-1.0%
	XBB.2.3	0.6%	0.5-0.8%
	XBB.1.16	0.5%	0.3-0.8%
	XBB	0.5%	0.4-0.6%
	GE.1	0.3%	0.2-0.5%
	GK.2	0.3%	0.2-0.4%
	XBB.1.16.1	0.2%	0.1-0.3%
	EG.6.1	0.1%	0.1-0.2%
	XBB.1.5	0.1%	0.1-0.2%
	CH.1.1	0.1%	0.1-0.2%
	XBB.1.42.2	0.1%	0.0-0.1%
	XBB.1.5.68	0.1%	0.0-0.1%
	XBB.2.3.8	0.1%	0.0-0.2%
	XBB.1.9.2	0.0%	0.0-0.1%
	XBB.1.5.72	0.0%	0.0-0.0%
	XBB.1.5.59	0.0%	0.0-0.0%
	XBB.1.5.10	0.0%	0.0-0.0%
	FD.1.1	0.0%	0.0-0.0%
	XBB.1.5.1	0.0%	0.0-0.0%
Other	Other*	0.1%	0.0-0.2%

* 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/>.

For more information, contact CDC Emergency Operations Center
770-488-7100
www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

