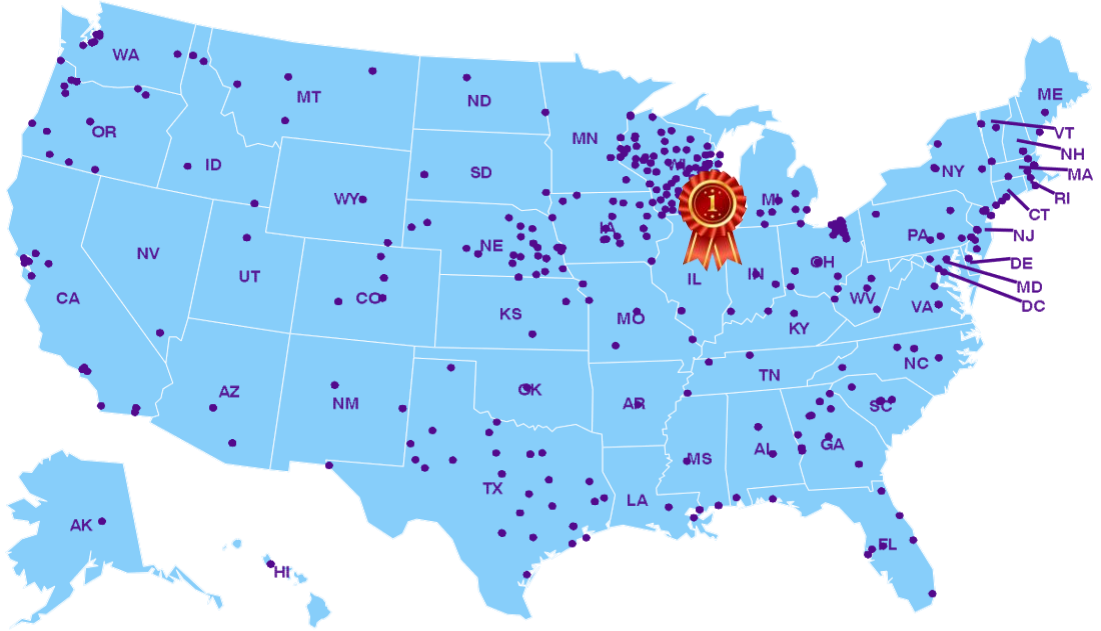
YEAR IN REVIEW: 2023-24

ERIKA HANSON

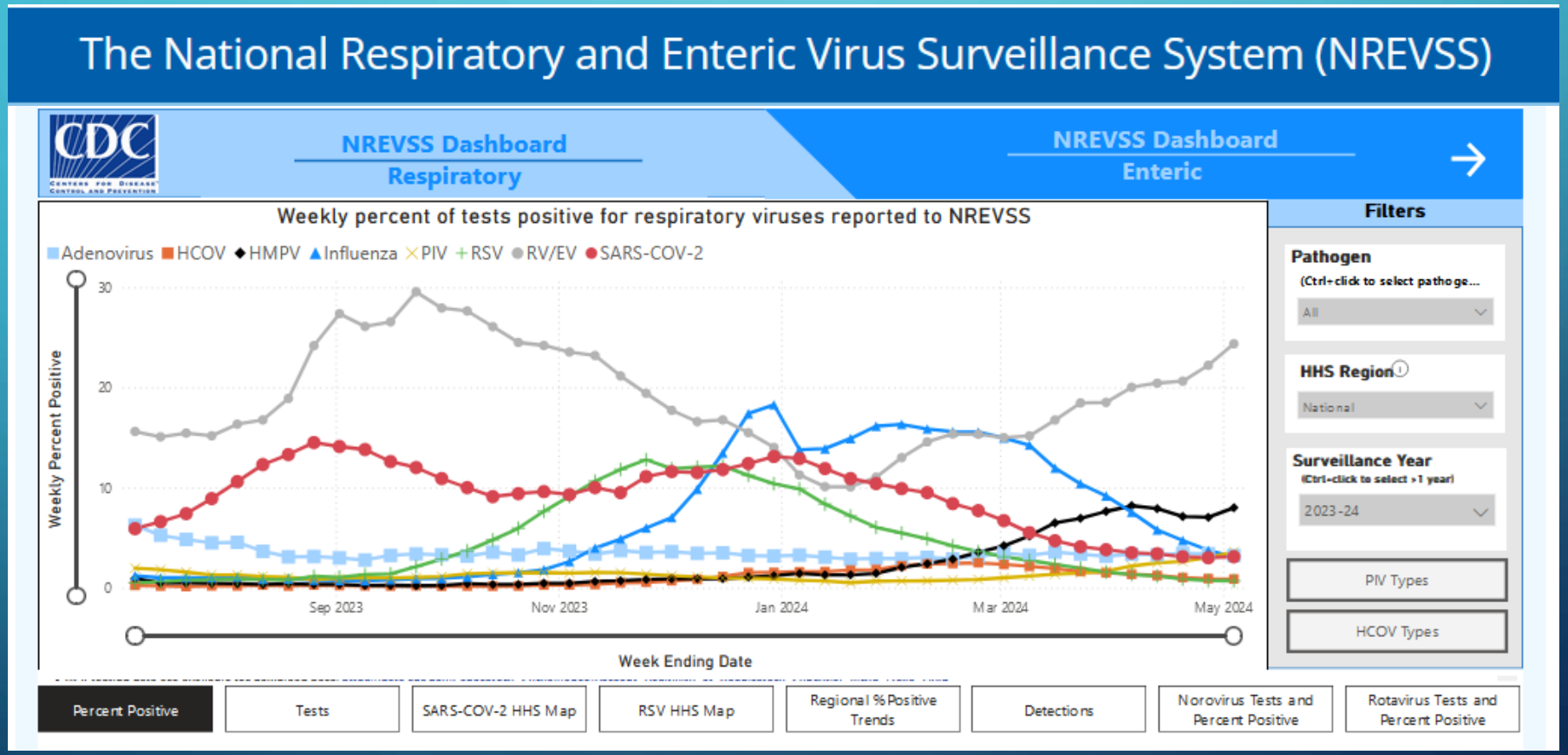
WISCONSIN STATE LABORATORY OF HYGIENE

VIROLOGY TEAM LEAD

THE NATIONAL RESPIRATORY AND ENTERIC VIRUS SURVEILLANCE SYSTEM (NREVSS)



THANK YOU FOR YOUR PARTICIPATION!!!



https://www.cdc.gov/surveillance/nrevss/index.html

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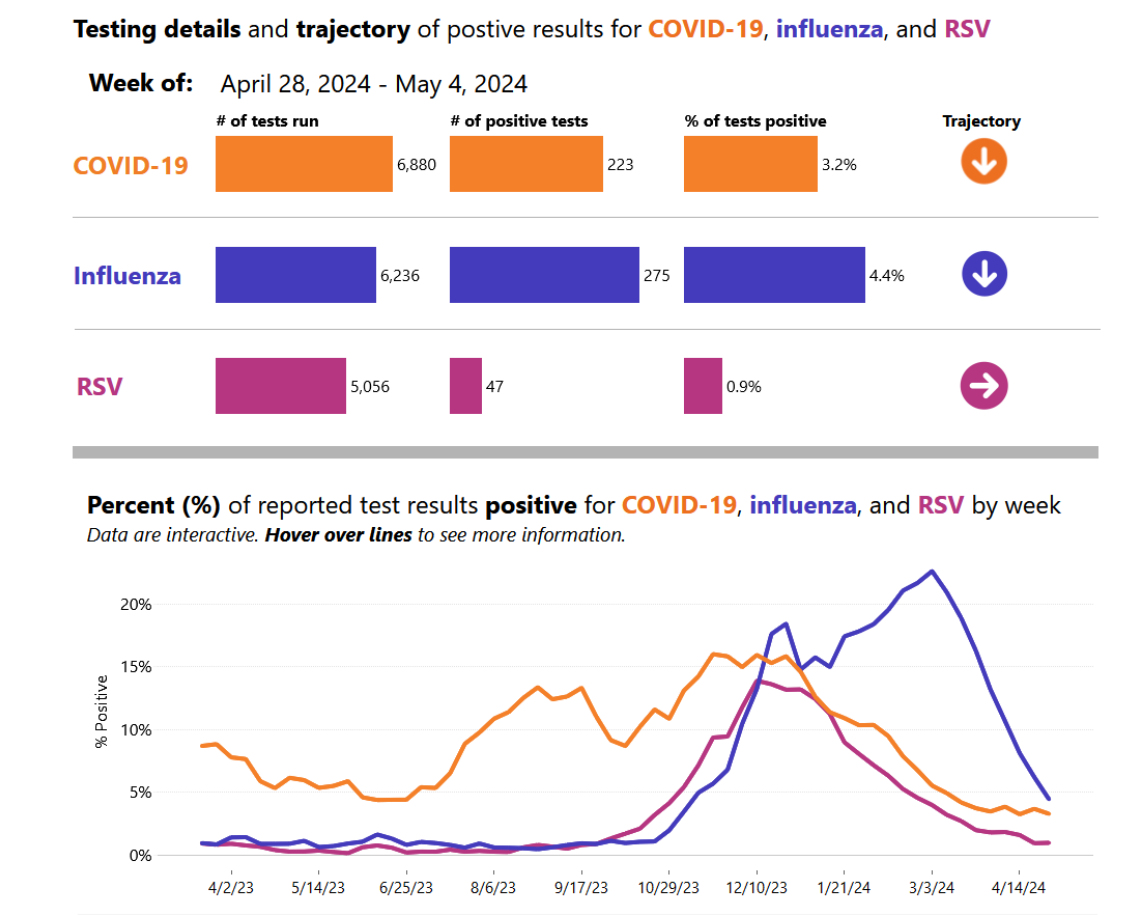
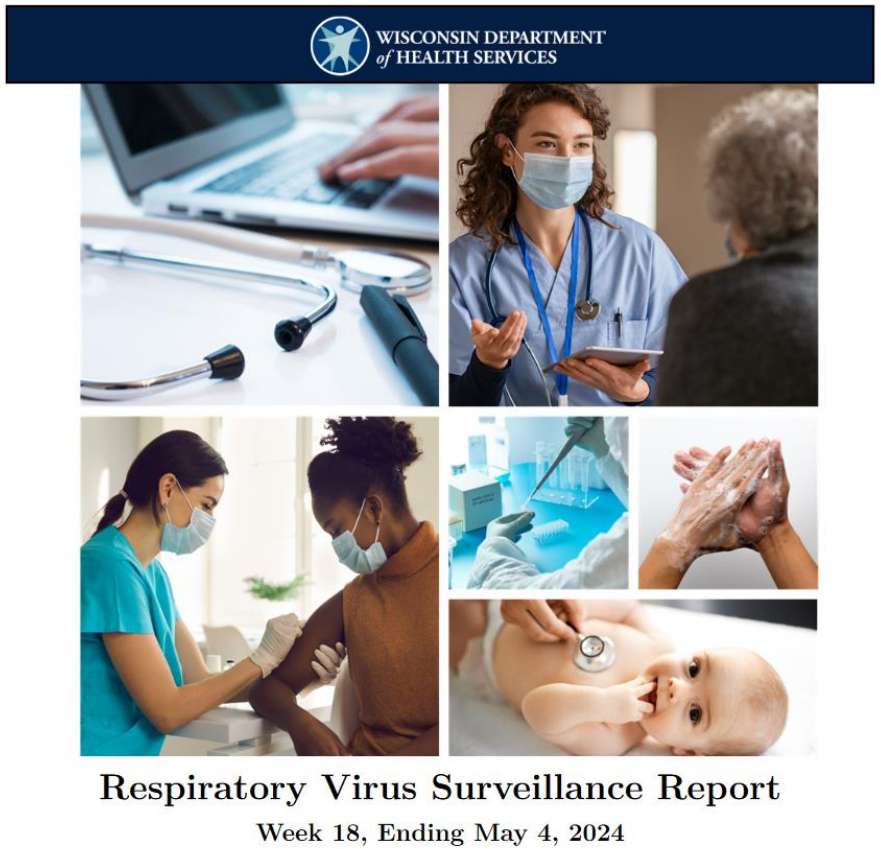




https://www.dhs.wisconsin.gov/disease/laboratory-based-data.htm

THANK YOU FOR YOUR PARTICIPATION!!!

Wisconsin State Laboratory of Hygiene
UNIVERSITY OF WISCONSIN-MADISON

May 13, 2024

Laboratory Surveillance Report

*** For a selection of pathogens, participating Wisconsin clinical laboratories voluntarily report to WSLH on a weekly basis the total number of tests performed, and the number of those tests with positive results.*

To enhance surveillance activities, and monitor for avian influenza, each week please send:

- **PCR/Molecular Testing sites:** NEW
  - ◊ All influenza positive specimens
  - ◊ Especially, Influenza A specimens:
    - That fail to subtype (Ct <35)
    - **With swine, bovine or avian exposure**
    - With international travel history
- **All Testing Sites:**
  - ◊ Up to 5 SARS-CoV-2 positive specimens

Respiratory Snapshot:

- Influenza activity is **decreasing** in Wisconsin (4.5%) and nationally (3.1%).
  - **Influenza A** is the dominant strain circulating (70.6%)
  - **H3** is the dominant Influenza A subtype circulating (53.7%).
- Rhino/Enterovirus (16.2%), Parainfluenza (9.2%) and hMPV (8.4%) activities are **high** in Wisconsin.

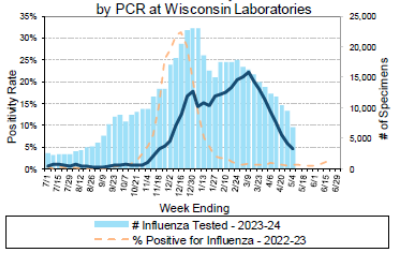
Enteric Snapshot:

- Norovirus activity is **decreasing** (7.9%) in Wisconsin.

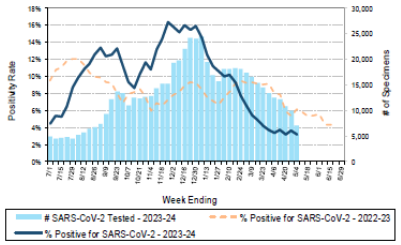
Other:

- Group A Streptococcus activity in Wisconsin is **high** (23.9%).

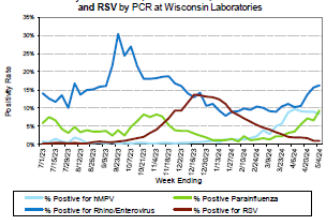
Number Tested and Positivity Rate for **Influenza** by PCR at Wisconsin Laboratories



Number Tested and Positivity Rate for **SARS-CoV-2** by PCR at Wisconsin Laboratories



Positivity Rate of **hMPV, Parainfluenza, Rhino/Enterovirus and RSV** by PCR at Wisconsin Laboratories



Next Page

Laboratory Surveillance Report

Enteric Pathogens
Week Ending 5/4/24

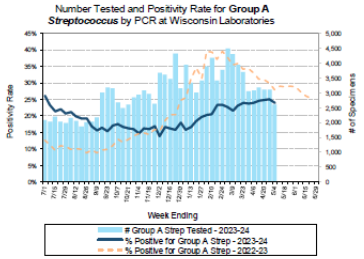
	# Tested	% Positive
Norovirus***	517	7.9%
Rotavirus	515	7.0%
Sapovirus	426	3.3%
Astrovirus	426	2.6%
Salmonella	631	2.4%
Campylobacter	651	1.8%
Adenovirus 40/41	426	1.2%
STEC	631	1.1%
Cryptosporidium	499	0.6%
Plesiomonas shigelloides	464	0.4%
Yersinia enterocolitica	534	0.4%
E. coli 0157	289	0.3%
Shigella/EIEC	619	0.3%
Entamoeba histolytica	499	0.2%
Giardia	499	0.2%
Aeromonas	83	0.0%
Vibrio	534	0.0%
Cyclospora	426	0.0%

***BioMerieux has announced an increased risk of false positive norovirus results with the BioFire FilmArray GI panel, which may increase the statewide norovirus percent positivity ***

Respiratory Pathogens
Week Ending 5/4/24

	# Tested	% Positive
Rhinovirus/Enterovirus	1063	16.2%
Parainfluenza	772	9.2%
Human metapneumovirus	772	8.4%
Influenza	6728	4.5%
SARS-CoV-2	7119	3.2%
Seasonal coronaviruses	559	2.7%
Adenovirus	756	2.0%
RSV	5406	0.9%
Bordetella pertussis	528	0.2%

Number Tested and Positivity Rate for **Group A *Streptococcus*** by PCR at Wisconsin Laboratories



Additional Information

- Additional information on respiratory pathogens can be found on the DHS website: https://www.dhs.wisconsin.gov/disease/respiratory.htm
- The WSLH SARS-CoV-2 genomic dashboard is available here: https://dataportal.slh.wisc.edu/sc2dashboard
- The influenza, RSV and respiratory virus activity graphs can be viewed here: http://www.slh.wisc.edu/wcln-surveillance/surveillance/virology-surveillance/
- The bacterial, viral and parasitic activity graphs can be viewed here: http://www.slh.wisc.edu/wcln-surveillance/surveillance/gastropathogen-surveillance/

To subscribe to this report, email WCLN@slh.wisc.edu

2023-24 TIMELINE

Uneventful Summ

- No influenz 3-24 season
- No mpox
  - In the

Uneventful Summer

2023

Jun Jul Aug Sep Apr May Jun

2024

MPOX UPDATE - GLOBAL

- The Democratic Republic of the Congo (DRC) is having its largest surge of mpox cases ever recorded.
  - Clade 1 mpox is circulating

- Two types of *Monkeypox virus*:
  - **Clade I** causes more severe illness and deaths and is endemic to Central Africa.
  - **Clade II** is the type that caused the global outbreak that began in 2022 and is endemic to West Africa. Infections from clade II are typically less severe.

DENGUE UPDATE - GLOBAL

- Record number of cases in 2023 in the Americas, with a total of 4.5 Million cases
- 2024 looks like it will be even worse!
  - 260% increase in cases in early 2024 as compared with the same time period in 2023
  - Total of 3.6 Million cases already reported by week 12!!

Figure 1. Total number of suspected cases of dengue 2023 - 2024 (as of EW 12). Region of the Americas.

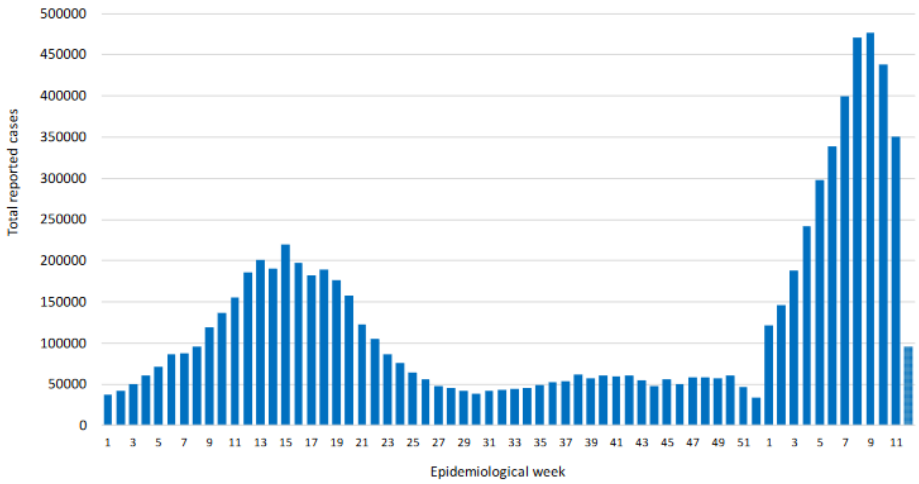
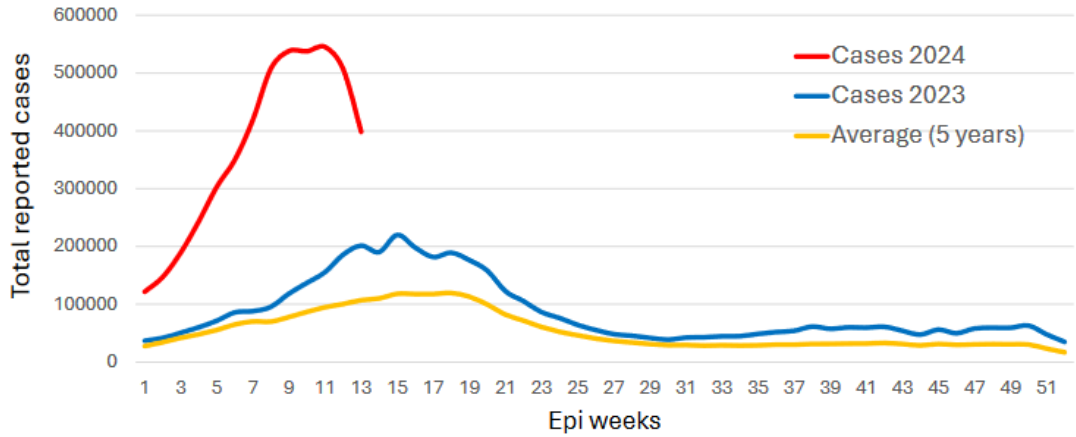
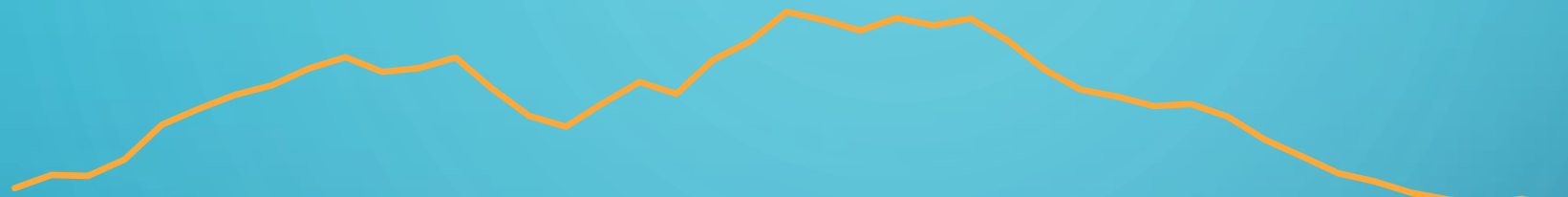


Figure 1. Total number of suspected dengue cases as of EW 13 in 2024, 2023 and average of the last 5 years.Region of the Americas



https://www.paho.org/

2023-24 TIMELINE OF EVENTS



Uneventful Summer

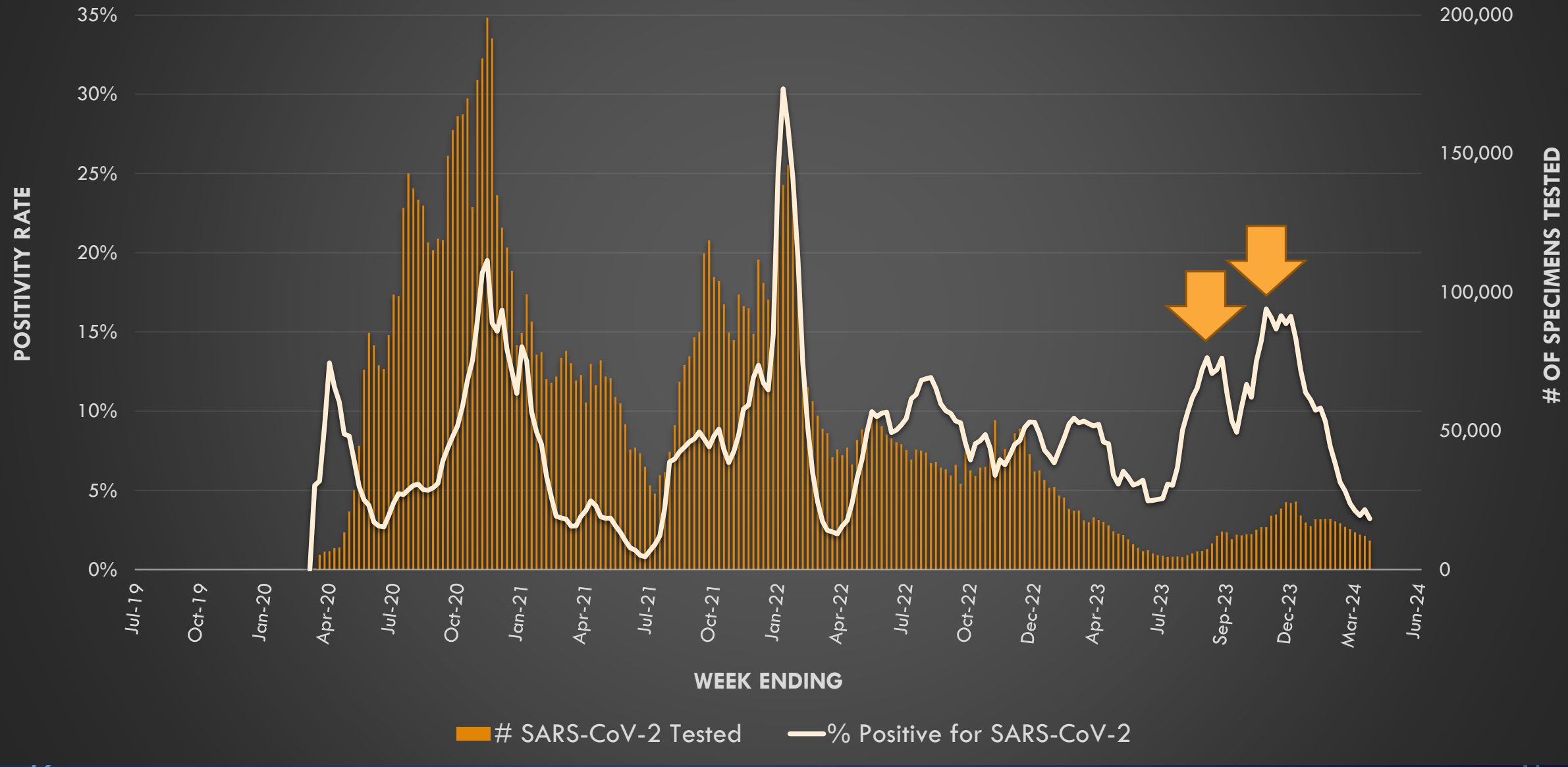
SARS-CoV-2 peak

2023

Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar Apr May Jun

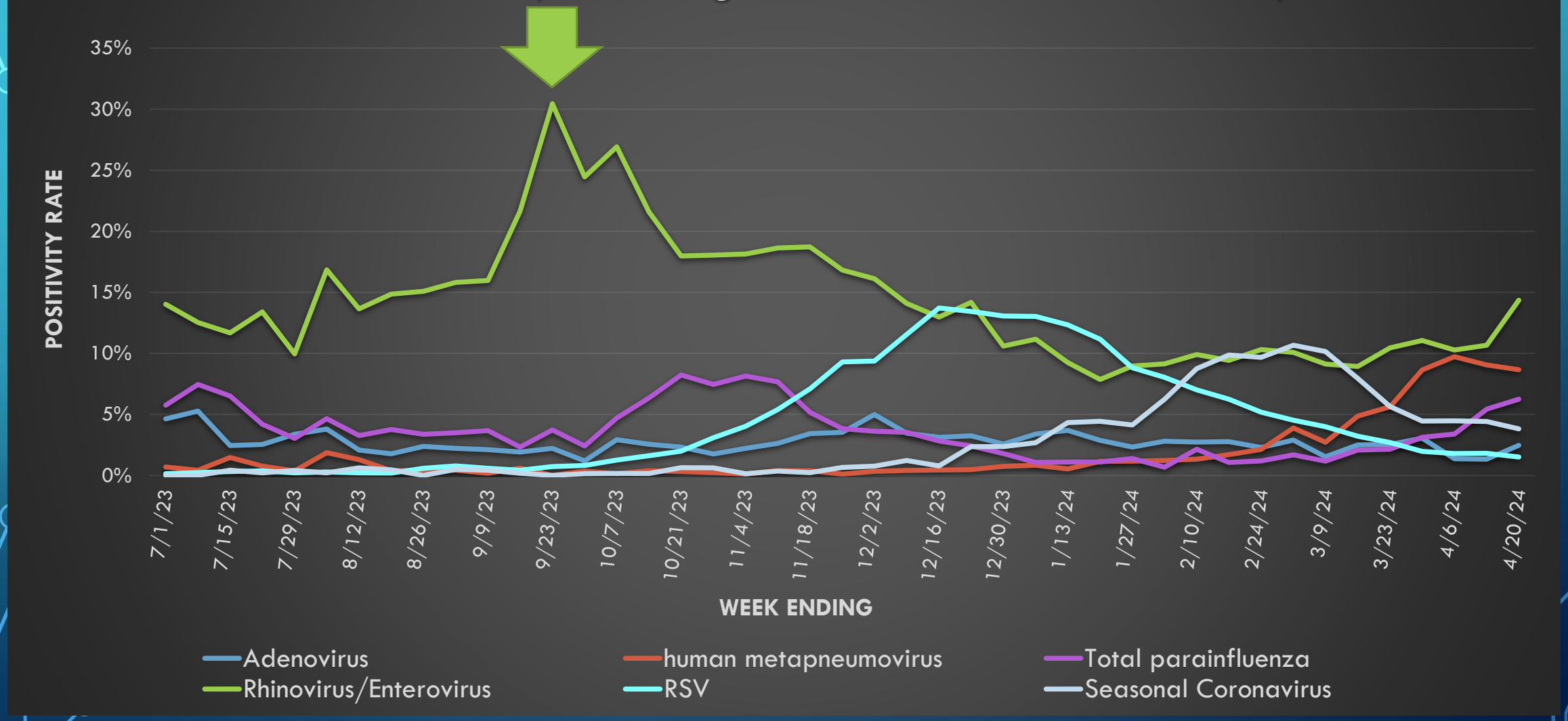
2024

Positivity Rate and Number of Specimens Tested for SARS-CoV-2 by PCR at Wisconsin Laboratories from 2019-24



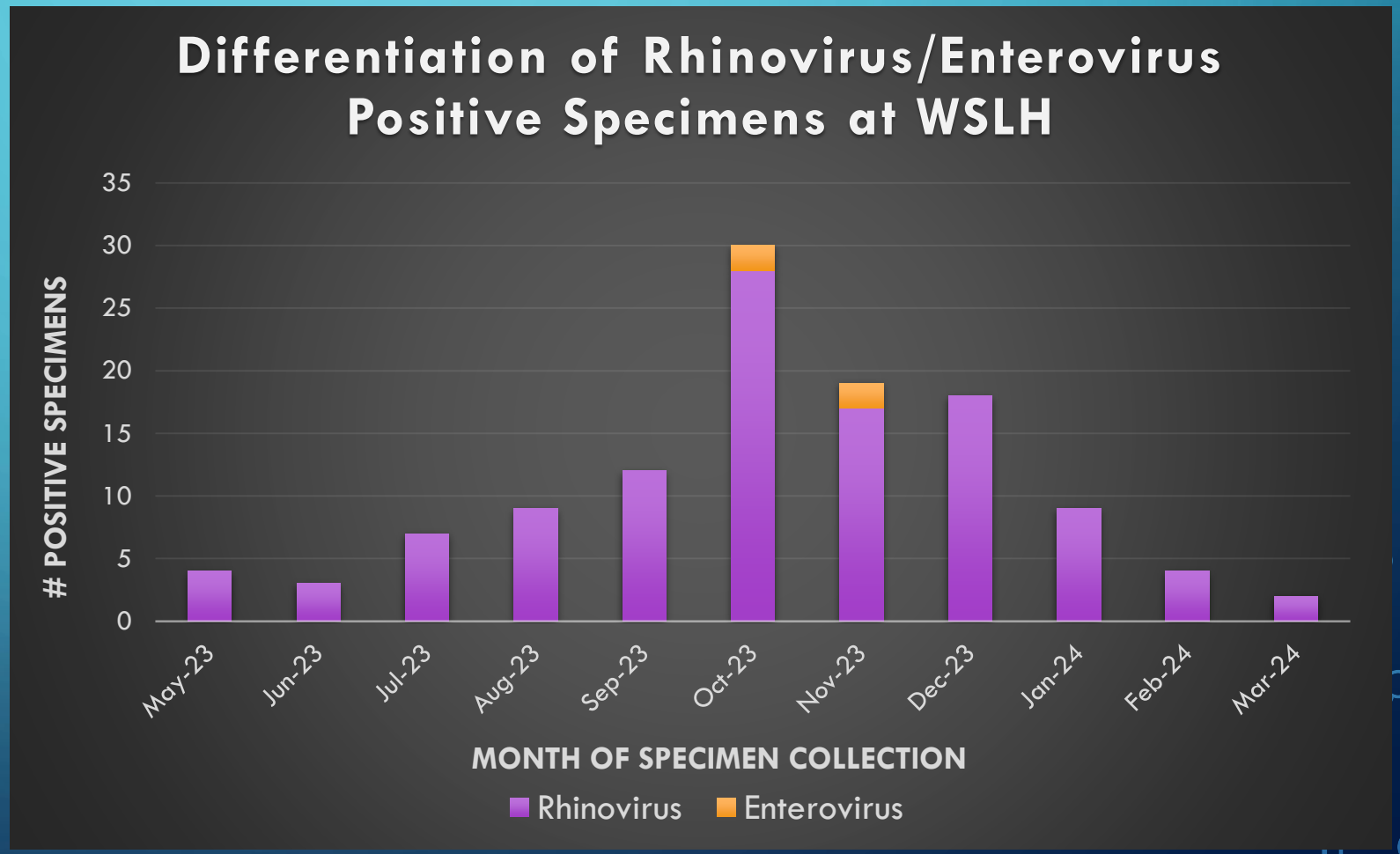
2023-24 TIMELINE OF EVENTS

Positivity of Respiratory Specimens by PCR at Wisconsin Laboratories (Excluding Influenza and SARS-CoV-2)



DIFFERENTIATION AND TYPING OF RHINOVIRUS/ENTEROVIRUS POSITIVE SPECIMENS IN WI

- Enterovirus types:
  - October:
    - CV-A5
    - CV-A6
  - November
    - Both were CV-B4

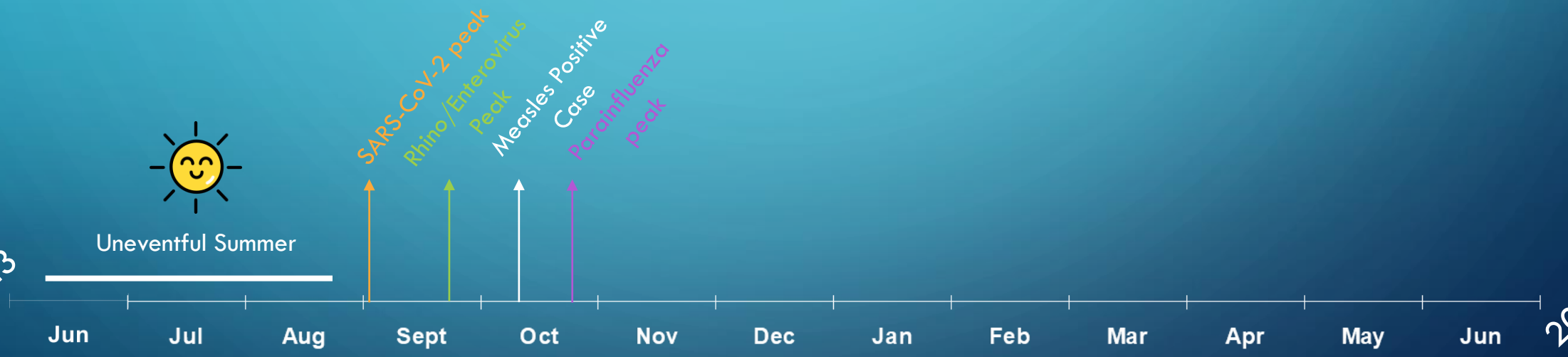


2023-24 TIMELINE OF EVENTS

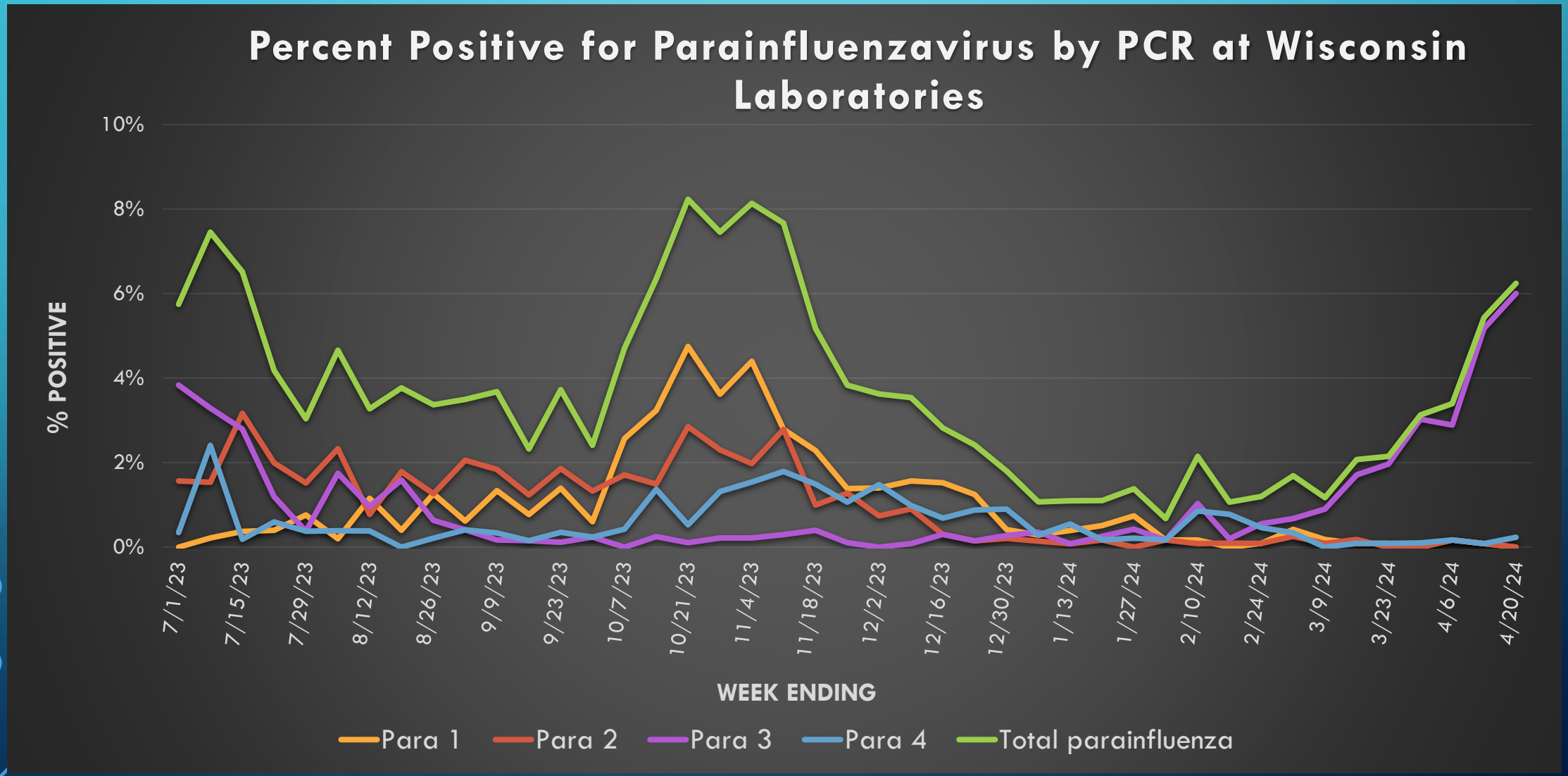
MEASLES CASE – OCTOBER 2023

- Measles case was confirmed on October 10th
  - Individual was infectious in the community from October 1-4th before developing symptoms.
  - Specimen was sent to a reference lab,
    - Lead to a delay in PCR Results
    - WSLH was unable to confirm the positive result, or obtain a measles genotype from this specimen
- No additional measles cases detected!!

2023-24 TIMELINE OF EVENTS



PARAINFLUENZA POSITIVITY BY TYPE



2023-24 TIMELINE OF EVENTS

Uneventful Summer

SARS-CoV-2 peak

Rhino/Enterovirus Peak

Measles Positive Case

Parainfluenza peak

SARS-CoV-2 peak #2

RSV peak

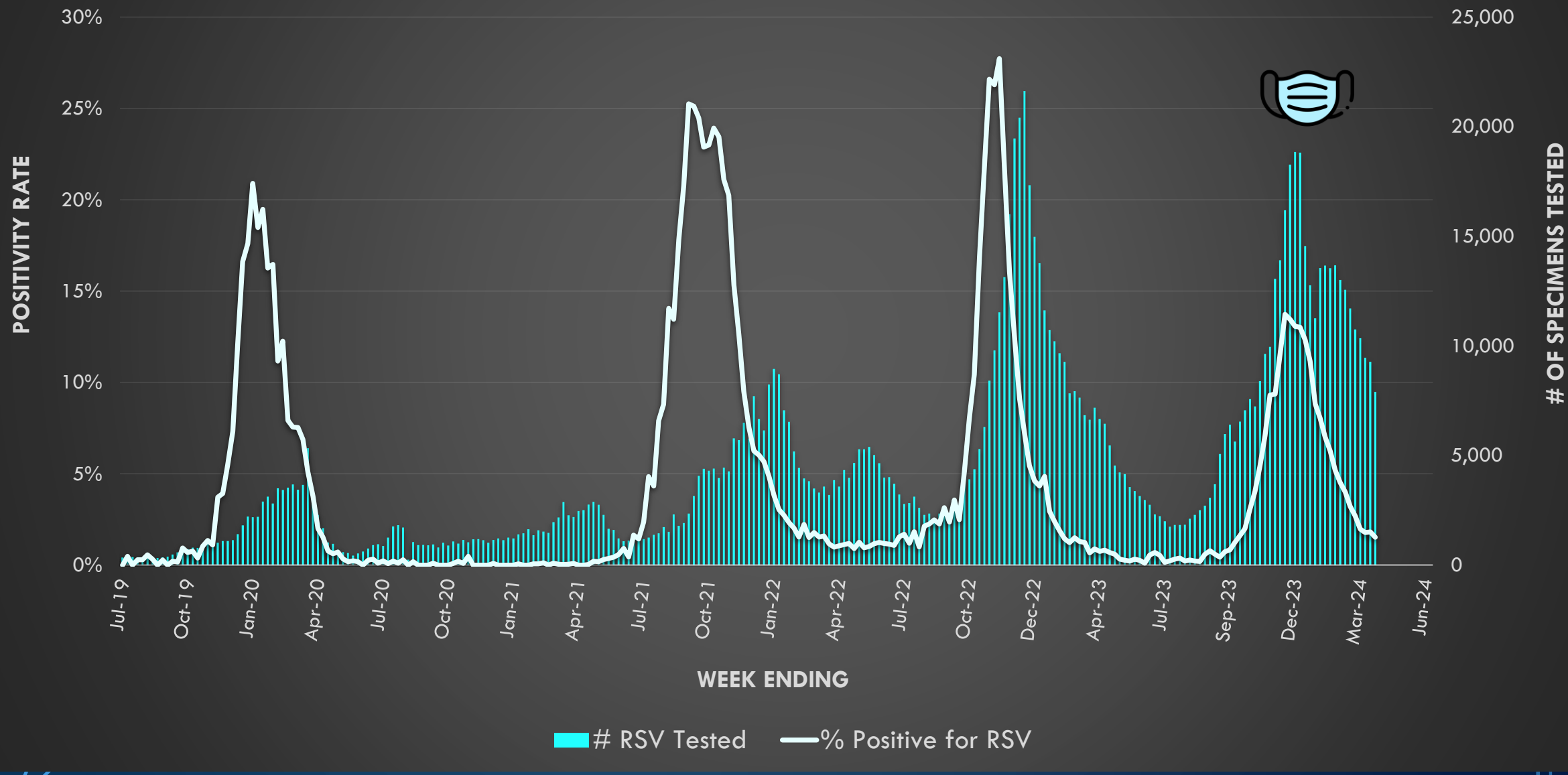
2023

Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar Apr May Jun

2024

Some healthcare institutions re-instate masking requirements

Positivity Rate and Number of Specimens Tested for RSV by PCR at Wisconsin Laboratories from 2019-24



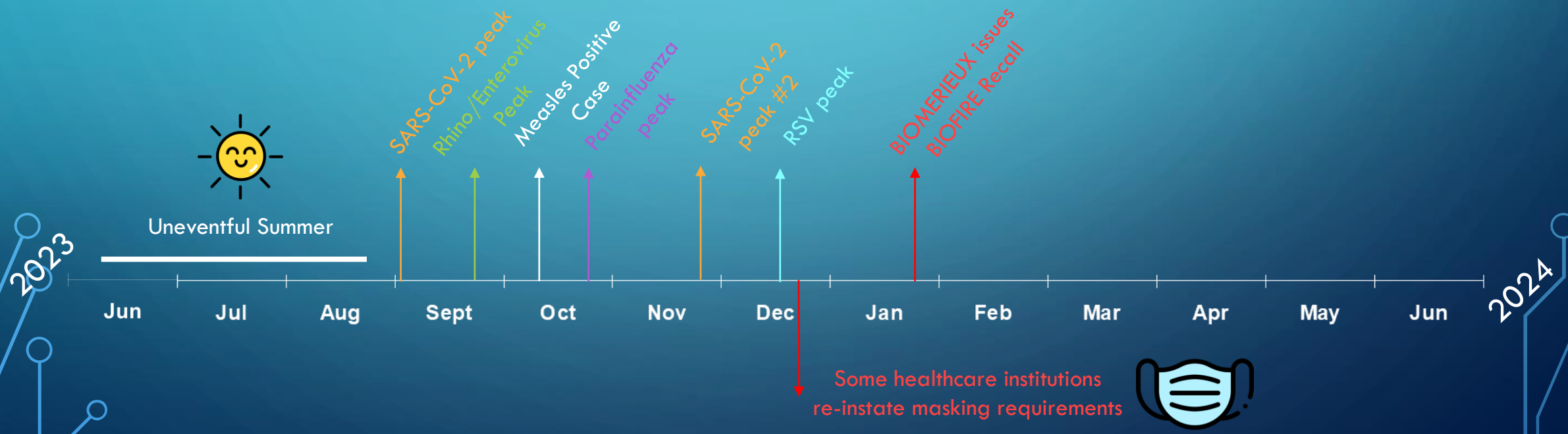
2023-24 TIMELINE OF EVENTS

IMPORTANT:

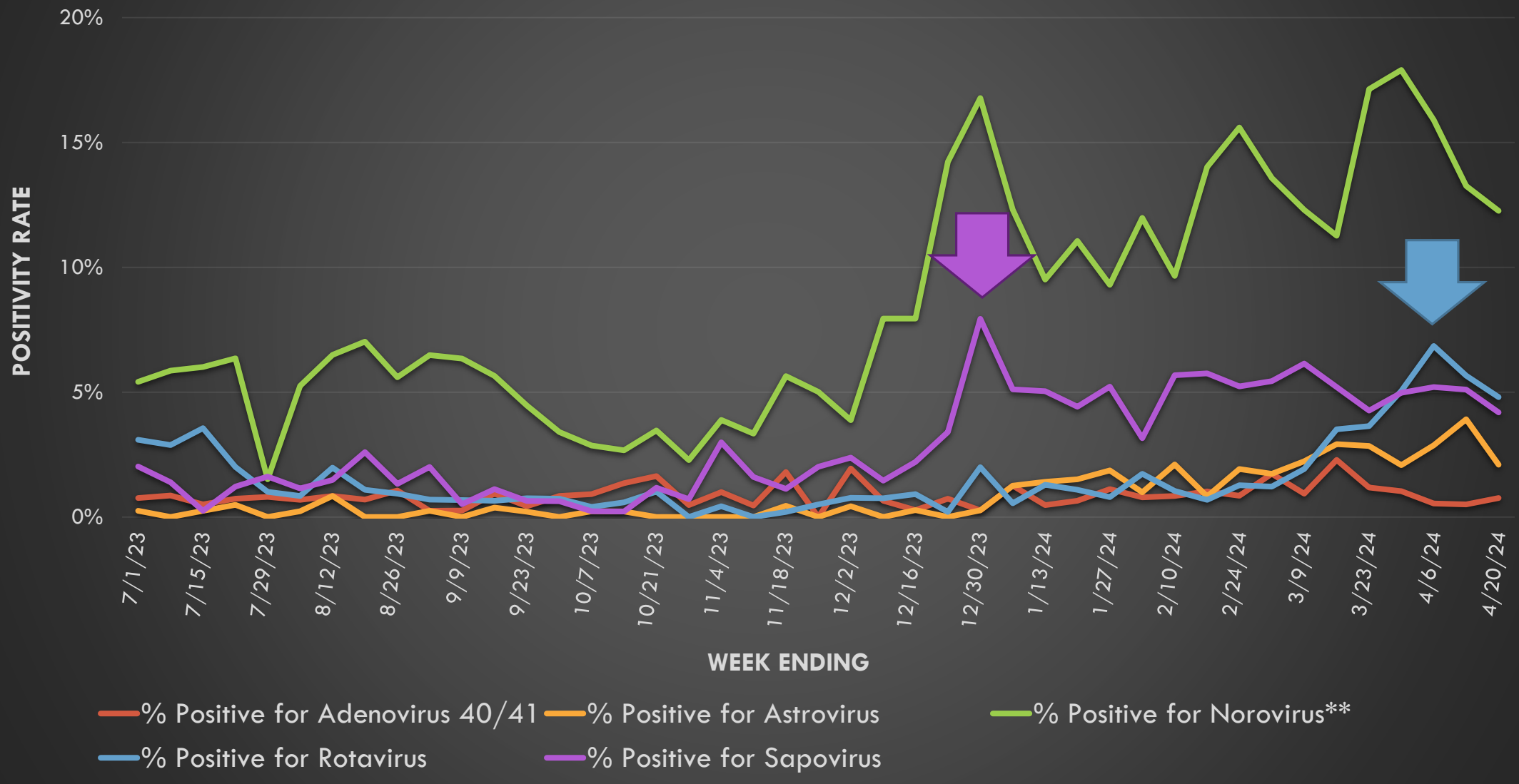
URGENT: MEDICAL DEVICE RECALL

BIOFIRE® FILMARRAY® Gastrointestinal (GI) Panel – Ref. Number: RFIT-ASY-0116 & RFIT-ASY-0104

FSCA 5812 – Increased Risk of False Positive Norovirus Results with the BIOFIRE® FILMARRAY® Gastrointestinal (GI) Panel



Positivity Rate of Viral Enteric Pathogens by PCR at Wisconsin Laboratories



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BIOMERIEUX issues BIOFIRE Recall

Seasonal CoV peak

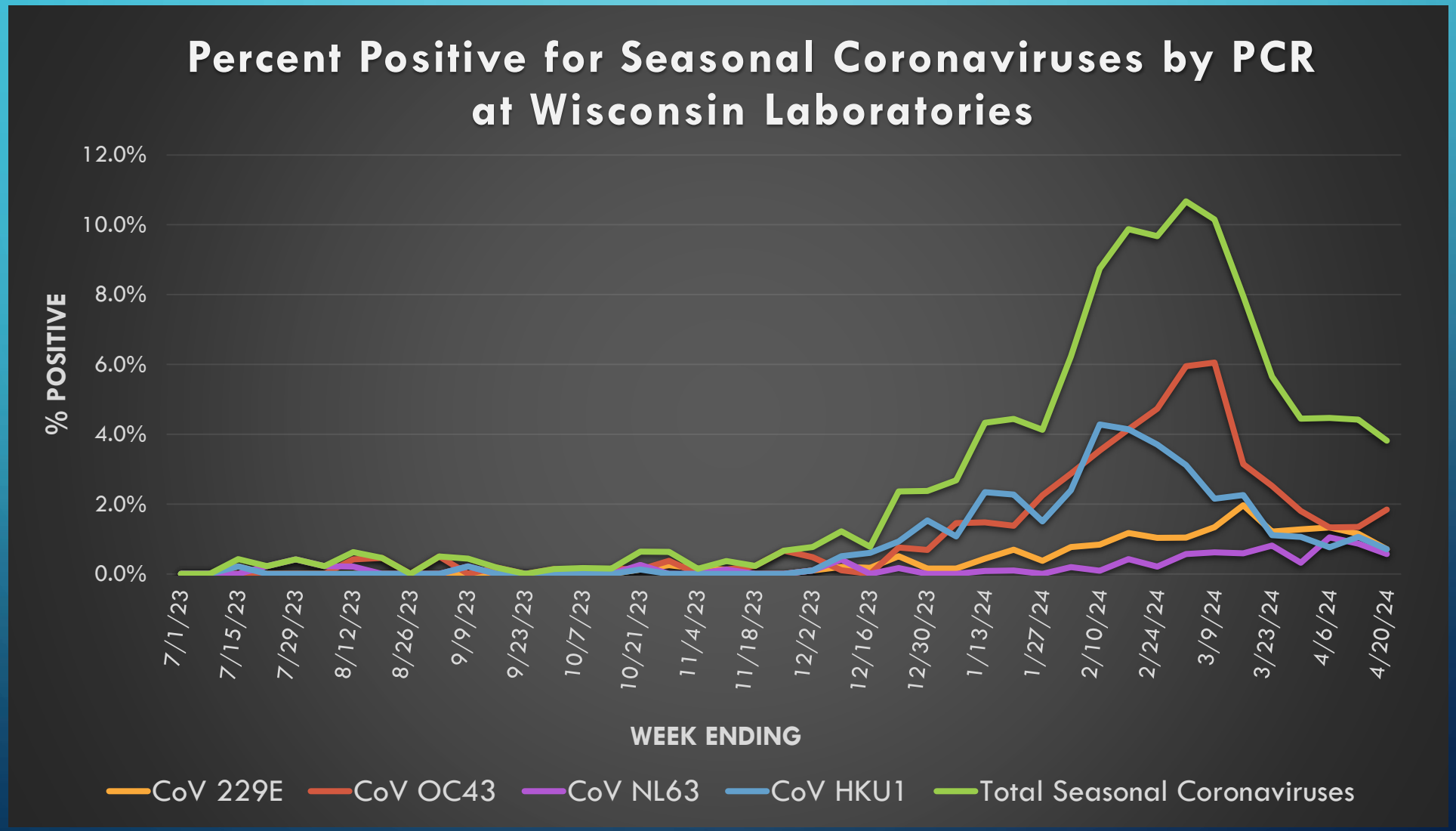
2023

Jun | Jul | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun

2024

Some healthcare institutions re-instate masking requirements

POSITIVITY OF SEASONAL CORONAVIRUS BY TYPE



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Influenza Peak

2023

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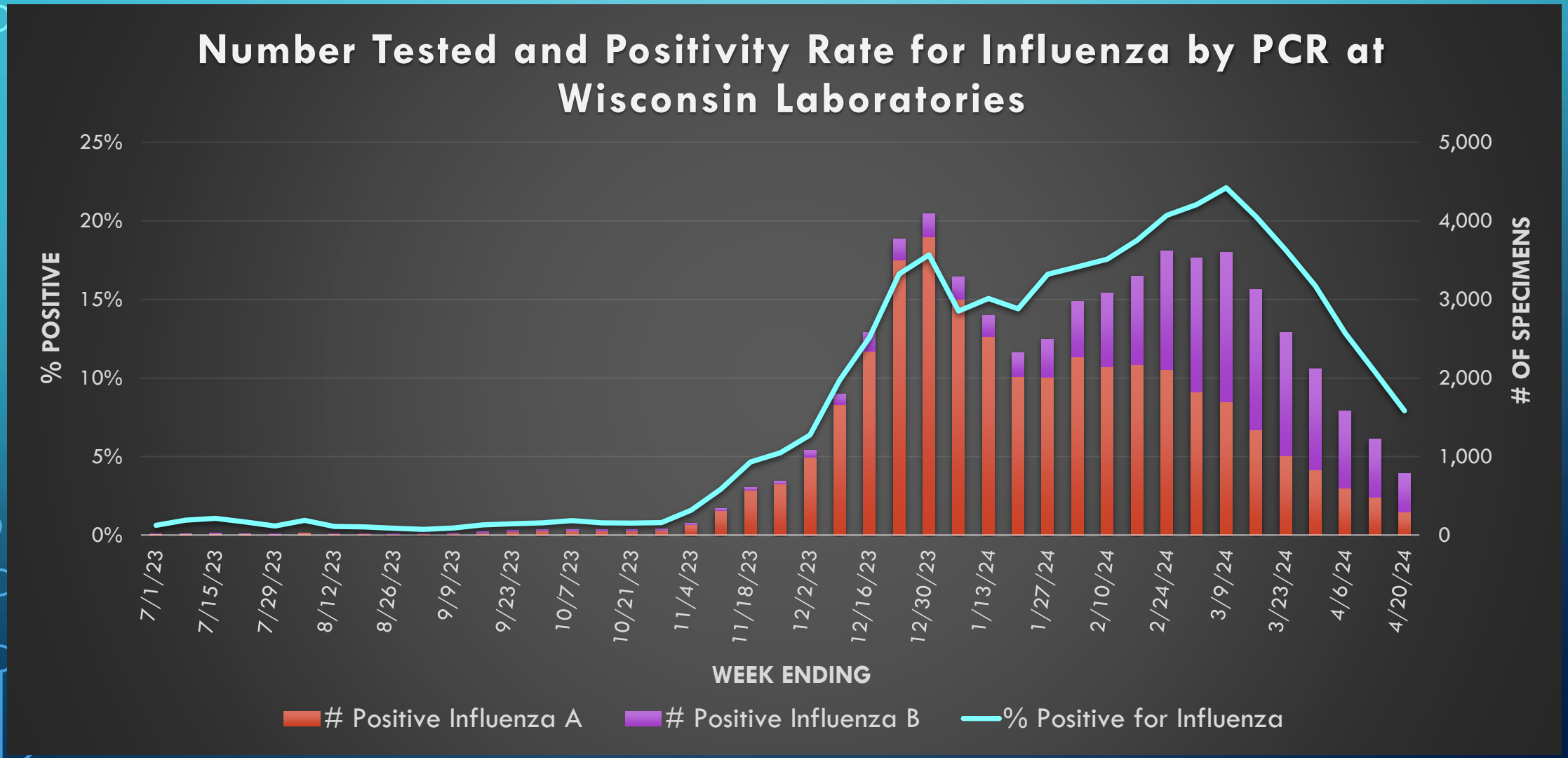
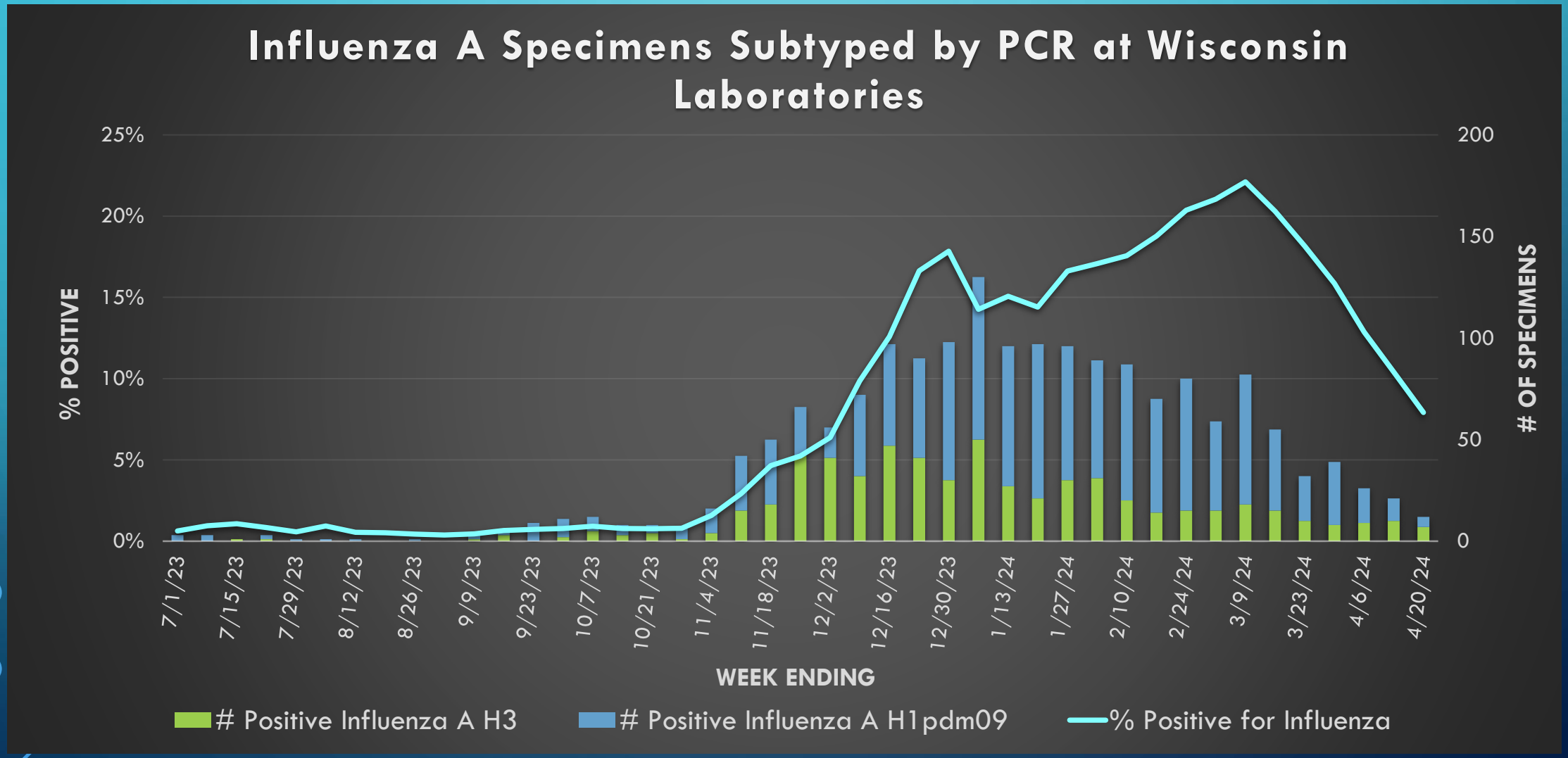
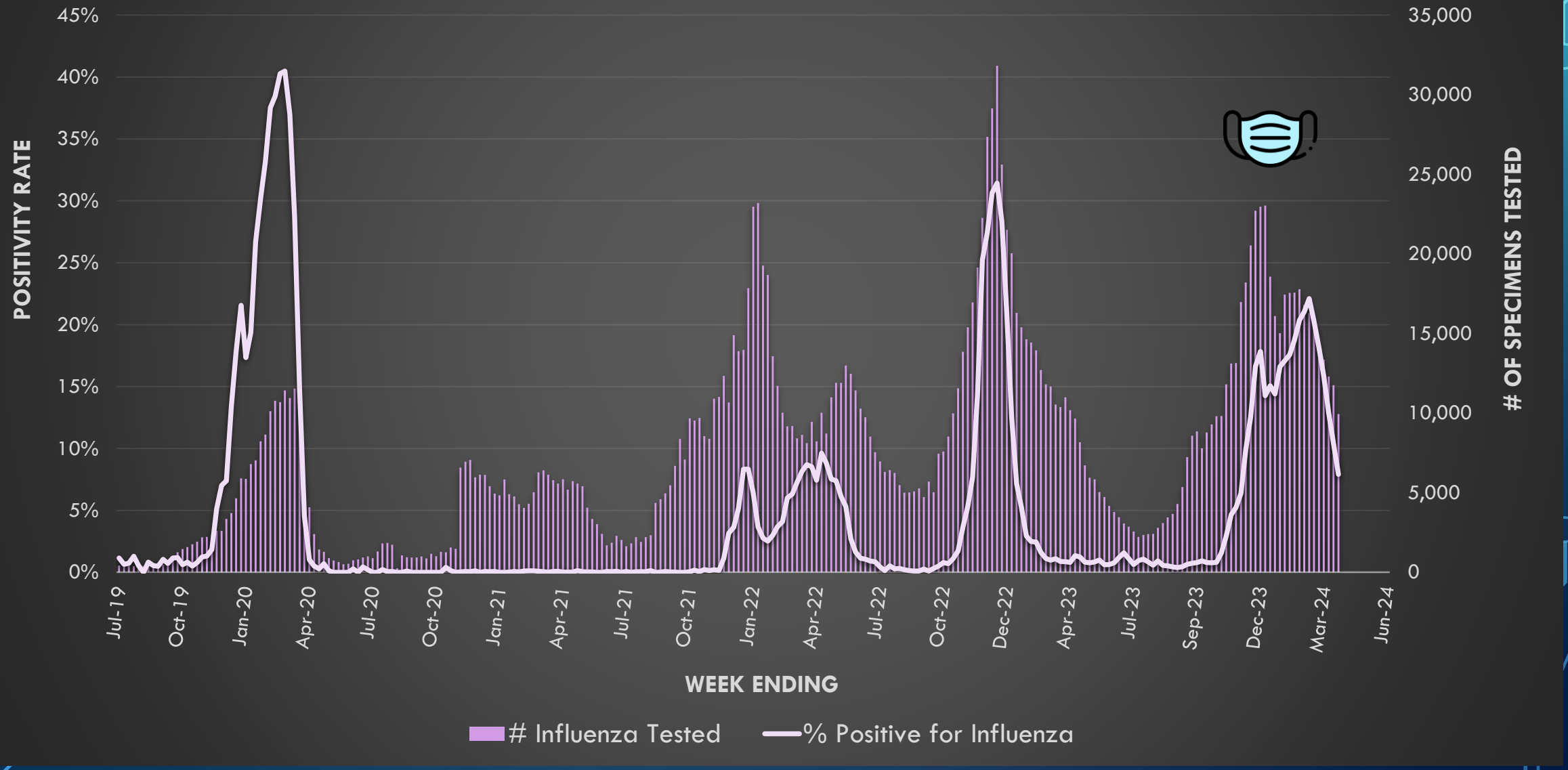
INFLUENZA VIRUS POSITIVITY BY TYPE



INFLUENZA A VIRUS POSITIVITY BY SUBTYPE



Positivity Rate and Number of Specimens Tested for Influenza by PCR at Wisconsin Laboratories from 2019-24



INFLUENZA STRAIN CHARACTERIZATION WISCONSIN 2023-24

	Antigenic Characterization	HA Genetic Group	
H1N1pdm09	A/Wisconsin/67/2022-LIKE (H1N1)pdm09 	6B.1A	100%
H3N2	A/Darwin/6/2021-LIKE (H3N2) 	3C.2A.1b	100%
B-Victoria	B/AUSTRIA/1359417/2021-LIKE 	VIA.3	100%
B-Yamagata	No confirmed cases in the 2022-23 or 2023-24 seasons		

 *Included in the 2023-24 influenza vaccine*

FLU VACCINE SELECTION 2024-25

- **The WHO vaccine committee has recommended transitioning to a trivalent influenza vaccine for the 2024-25 season**
  - **Egg-based vaccines**
    - A/Victoria/4897/2022 (H1N1)pdm09-like virus
    - A/Thailand/8/2022 (H3N2)-like virus*
    - B/Austria/1359417/2021 (B/Victoria lineage)-like virus
  - **Cell culture- or recombinant-based vaccines**
    - A/Wisconsin/67/2022 (H1N1)pdm09-like virus
    - A/Massachusetts/18/2022 (H3N2)-like virus*
    - B/Austria/1359417/2021 (B/Victoria lineage)-like virus

B/Phuket/3073/2013 (B/Yamagata lineage)-like virus Present in Quadrivalent vaccine only

* - Updated Vaccine strains for 2024-25 season

2023-24 TIMELINE OF EVENTS

Uneventful Summer

SARS-CoV-2 peak

Rhino/Enterovirus Peak

Measles Positive Case

Parainfluenza peak

SARS-CoV-2 peak #2

RSV peak

BIOMERIEUX issues BIOFIRE Recall

Seasonal CoV peak

Influenza Peak

HPAI in Dairy Cattle

2023

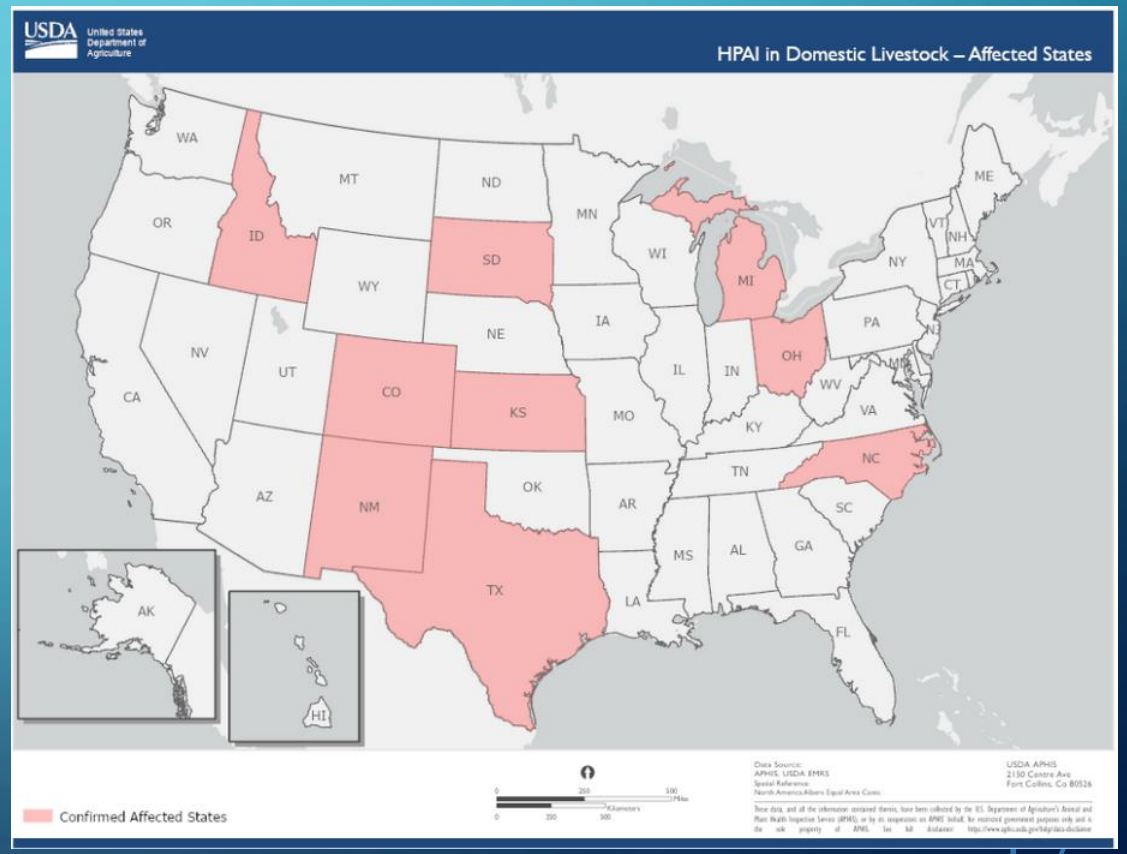
Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar Apr May Jun

2024

Some healthcare institutions re-instate masking requirements

AVIAN INFLUENZA – 2024 DAIRY CATTLE OUTBREAK

- First detected in dairy cattle on 3/25/2024
  - As of May 9th, 36 herds have been found to be infected in 9 states
  - Main symptom is dramatic decrease in milk production
  - Probably has been circulating in dairy cattle since 12/2023
- On 4/1/24 one case of H5N1 was detected in a human
  - Adult on dairy farm
  - Only symptom was conjunctivitis
  - Believed to be cow-to-human transmission



AVIAN INFLUENZA (H5N1)

- Risk To general population is LOW
  - H5N1 Detection:
    - Commercially available molecular and antigen influenza tests expected to detect H5 strains
    - H5-specific subtyping assay available at WSLH
    - **Contact Wisconsin Department of Health if you suspect avian influenza!**
  - Candidate Vaccine Viruses are available and appear to be a good match for the circulating H5N1 strain
  - Antiviral treatments are effective against the circulating strain of H5N1

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HPAI in Dairy Cattle

hMPV Peak

Measles Positive Case

2023

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MEASLES CASE - 2024

- Measles case was confirmed on April 26th
- Individual living in Dane Co., with travel and employment in Rock Co.
  - Individual was infectious in the community from April 21-22
- Specimen was positive for Measles genotype D8
- No additional cases have been identified!

THANK YOU FOR YOUR DATA AND SPECIMEN SUBMISSIONS!

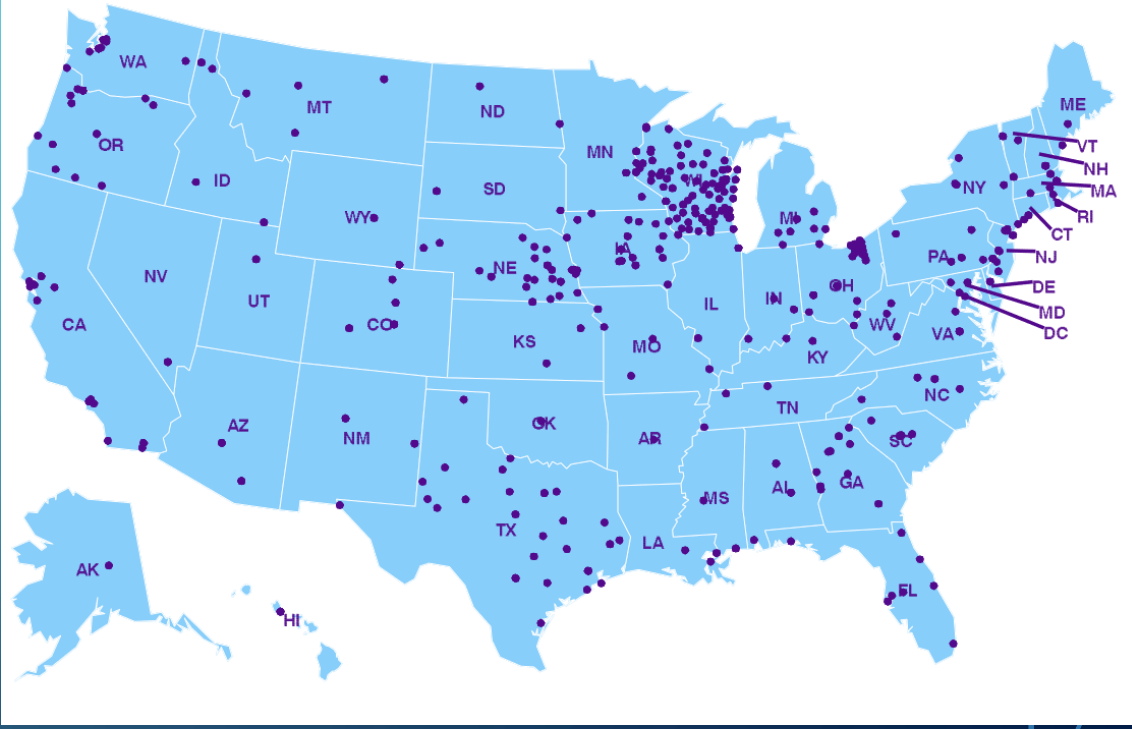
For more information about Virology Surveillance in Wisconsin including:

- Laboratory-based surveillance plan
- Link to report testing data
- Specimen submission instructions
- Surveillance graphs for a variety of pathogens

VISIT

www.slh.wisc.edu/wcln-surveillance/surveillance

THE NATIONAL RESPIRATORY AND ENTERIC VIRUS SURVEILLANCE SYSTEM (NREVSS)



https://www.cdc.gov/surveillance/nrevss/labs/map-H.pdf

AVIAN INFLUENZA - WI RESPONSE

- Avian influenza Suspects:
  - Specimen Collection and Submission:
  - Collect a nasopharyngeal (NP) swab
  - For patients with conjunctivitis, a conjunctival swab should be collected along with a an NP specimen.
- An “Enhanced Surveillance” requisition form should be requested from the WSLH, and filled out for each submitted specimen.
  - Please check “Avian Influenza Suspect” under reason for submission.
- Arrange transport so that specimens arrive at the WSLH within 24 hours of collection.
- Testing is usually completed within 24 hour after receipt.

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