

# Laboratory Outreach Communication System (LOCS) Call

Monday, October 21, 2024, at 3:00 P.M. ET

- **Welcome**
  - Sean Courtney, CDC Division of Laboratory Systems
- **Situational Update and Response to the Highly Pathogenic Avian Influenza A(H5N1) Outbreak in U.S. Dairy Cattle and Poultry**
  - Todd Davis, CDC Influenza Division
- **National Wastewater Surveillance System: Monitoring for H5 Influenza**
  - Rory Welsh, CDC Division of Infectious Disease Readiness and Innovation

**Thank you for joining, we'll begin the call momentarily.**

# About DLS

## Vision

Exemplary laboratory science and practice advance clinical care, public health, and health equity.

# Four Goal Areas



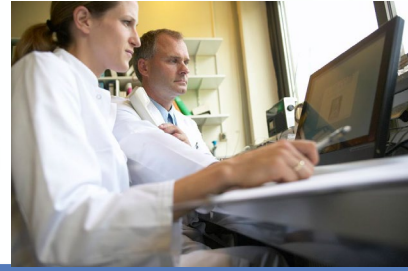
## Quality Laboratory Science

- Improve the quality and value of laboratory medicine for better health outcomes and public health surveillance



## Highly Competent Laboratory Workforce

- Strengthen the laboratory workforce to support clinical and public health laboratory practice



## Safe and Prepared Laboratories

- Enhance the safety and response capabilities of clinical and public health laboratories



## Accessible and Usable Laboratory Data

- Increase access and use of laboratory data to support response, surveillance, and patient care

# CLIAC 2024 Fall Meeting

November 6-7, Virtual Meeting



- Save the date on CDC's CLIAC website:  
<https://www.cdc.gov/cliac/php/meetings/upcoming.html>
- Contribute oral and written comments to [CLIAC@cdc.gov](mailto:CLIAC@cdc.gov) by Tuesday, October 29, 2023
- Topics include:
  - Reports from two CLIAC workgroups, the Biosafety Workgroup, and the Next Generation Sequencing Workgroup
  - Cybersecurity requirements in the clinical laboratory
  - Determination of clinically relevant range of values for proficiency testing samples
  - Utilization of remote technology for competency assessments



# DLS ECHO Biosafety Program

- **Date:** October 22, 12:00 PM ET
- **Topic:** Biosecurity Aspects of Biorisk Management
- **Speaker:** Cristine C. Lawson, Ph.D., RBP, CBSP
- For questions, contact [DLSbiosafety@cdc.gov](mailto:DLSbiosafety@cdc.gov)



Scan QR code to  
register

[www.cdc.gov/safelabs/resources-tools/echo-biosafety.html](http://www.cdc.gov/safelabs/resources-tools/echo-biosafety.html)

# We Want to Hear From You!

## Training and Workforce Development

Questions about education and training?

Contact [LabTrainingNeeds@cdc.gov](mailto:LabTrainingNeeds@cdc.gov)



# LOCS Calls

DLS Home > CDC's Laboratory Outreach Communication System (LOCS)

DLS Home

- About Us
- LIVD Mapping Tool for SARS-CoV-2 Tests
- Strengthening Clinical Laboratories
- CDC's Laboratory Outreach Communication System (LOCS)**
  - LOCS Messages Archive
  - LOCS Calls**
  - LOCS Calls Archive
  - CLCR Call Archive
  - LOCS Message Level Types
- Laboratory Communicators' Network
- Free Educational Materials for

**CLCR calls are now LOCS calls!**

Clinical Laboratory COVID-19 Response (CLCR) Calls are now Laboratory Outreach Communication System (LOCS) Calls. Find an archive of CLCR call audio files, transcripts, and slide presentations, [here](#).

CDC's Division of Laboratory Systems (DLS) convenes regular Laboratory Outreach Communication System (LOCS) calls with clinical laboratories and other audiences. The calls are an opportunity for CDC and other participants (such as federal partners and professional organizations) to provide updates and answer questions from the laboratory and testing community. These calls take place on the third Monday of each month at 3:00 PM Eastern time. DLS posts the audio, slides, and transcripts online after each call.

To submit questions for consideration, email [DLInquiries@cdc.gov](mailto:DLInquiries@cdc.gov) in advance or use the question and answer (Q&A) function in Zoom during the call. Because we anticipate a large number of participants on this call, and many questions, we may not be able to directly and immediately address every issue. However, we will note your questions and feedback and tailor the content of future calls accordingly.

On this page, you can find:

- LOCS Call information
- Transcripts
- Slides
- Audio Recordings

<https://www.cdc.gov/locs/calls>

# How to Ask a Question

- **Using the Zoom Webinar System**
  - Click the **Q&A button** in the Zoom webinar system
  - Type your question in the **Q&A box** and submit it
  - **Please do not submit a question using the chat button**

- For media questions, please contact CDC Media Relations at [media@cdc.gov](mailto:media@cdc.gov)
- If you are a patient, please direct any questions to your healthcare provider





## Division of Laboratory Systems

Slide decks may contain presentation material from panelists who are not affiliated with CDC. Presentation content from external panelists may not necessarily reflect CDC's official position on the topic(s) covered.



# Situational Update and Response to the Highly Pathogenic Avian Influenza A(H5N1) Outbreak in U.S. Dairy Cattle and Poultry

Todd Davis  
CDC Influenza Division



# Situational Update and Response to the Highly Pathogenic Avian Influenza A(H5N1) Outbreak in U.S. Dairy Cattle and Poultry

Todd Davis

Branch Chief (acting)

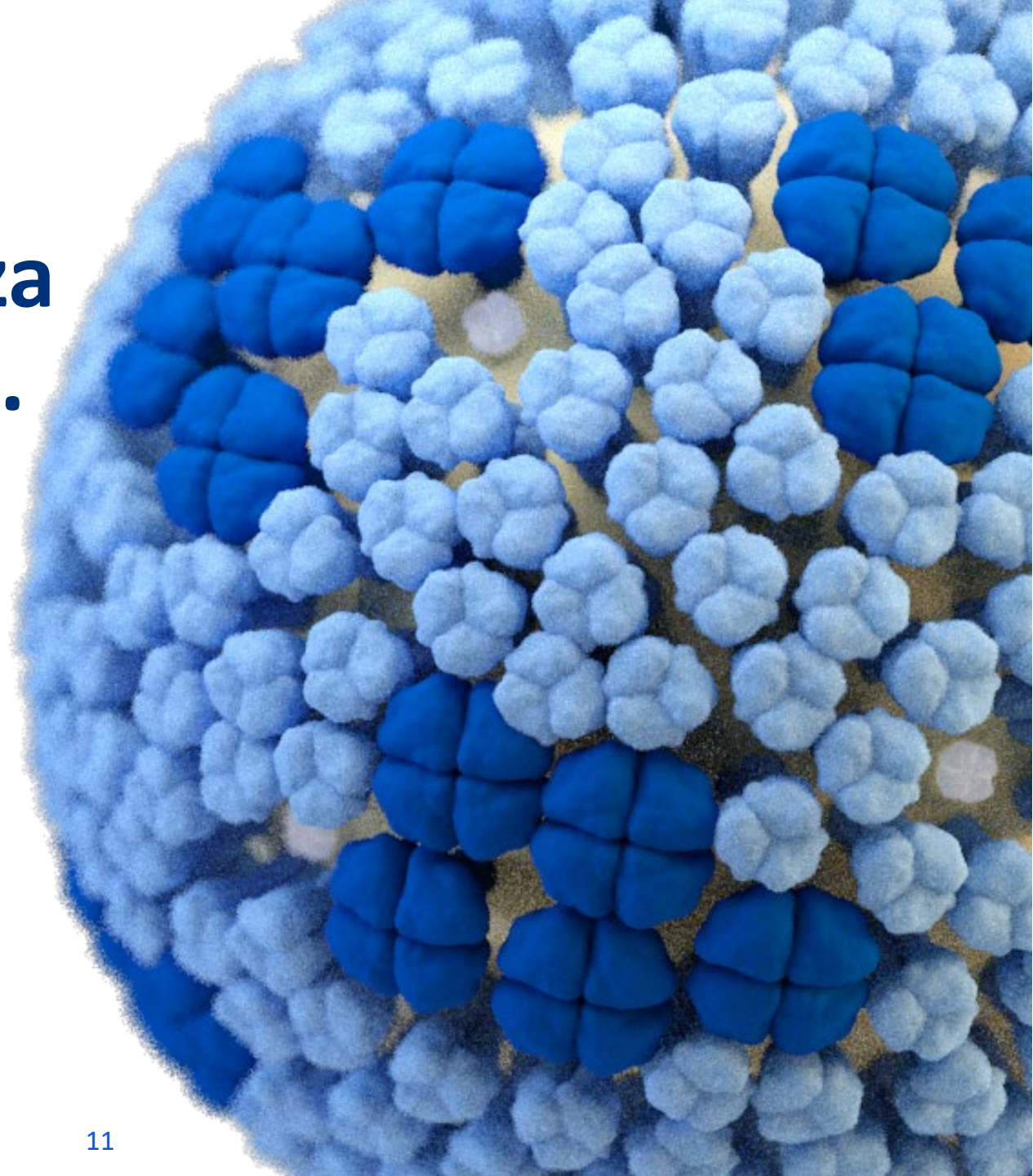
Virology, Surveillance and Diagnosis Branch

Influenza Division

National Center for Immunization and

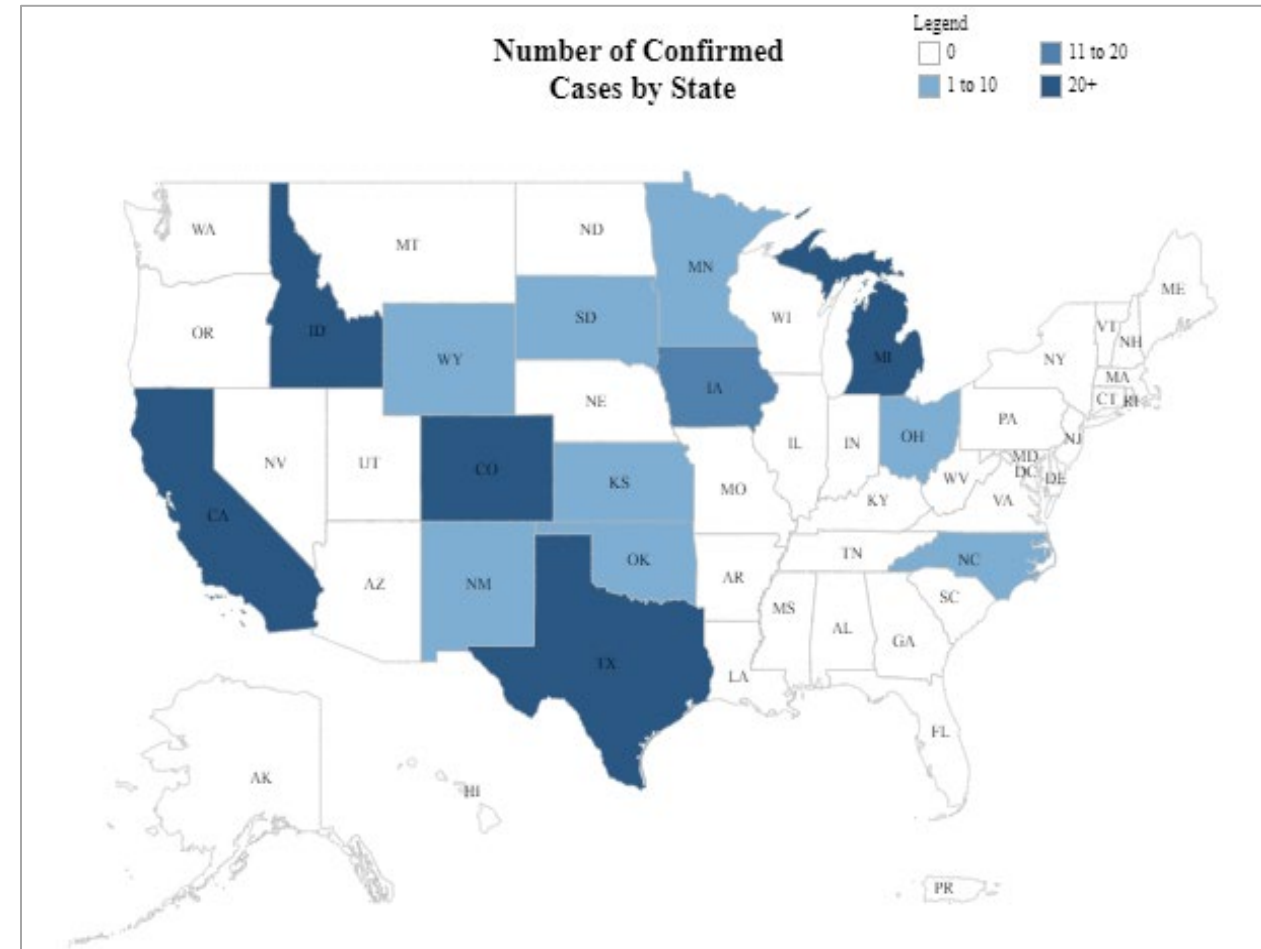
Respiratory Diseases

Centers for Disease Control and Prevention



# Cattle Outbreak Update

- As of October 17, 2024, USDA has confirmed HPAI in **319** dairy herds in farms across 14 states:
  - CA (105)**, CO (64), IA (13), ID (33), KS (4), MI (29), MN (9), NC (1), NM (9), OH (1), OK (2), SD (7), TX (26), WY (1)
- Since March 25, 2024, HPAI has been confirmed in **65** poultry flocks across 14 states:
  - CA (2), CO (5), FL (10), ID (9), IA (3), KS (1), MI (8), MN (19), NM (3), NC (1), SC (1), TX (1), **UT (1), WA (1)**



<https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections>

<https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/hpai-confirmed-cases-livestock>

# Monitoring of Exposed Persons

**National flu surveillance** (since February 25, 2024)

**54,000+** specimens tested that would have detected influenza A(H5) or other novel influenza viruses, **1 person tested positive** (MO)

**Targeted H5 surveillance** (since March 24, 2024)

CDC and state and local health departments also monitor people exposed to infected birds, poultry, dairy cattle and other animals for 10 days after exposure. There have been:

At least **5,100 people monitored**

- At least 2,590 with exposures to dairy cows
- At least 2,600 with exposures to birds, poultry, and other animals (non-cattle source)

At least **260 persons tested** for novel influenza A

- At least 97 with exposures to dairy cows
- At least 170 with exposures to birds, poultry, and other animals (non-cattle source)

**26 exposed workers tested positive** for A(H5); 17 with cattle exposure (TX-1, MI-2, CO-1, CA-13), 9 poultry (CO)

# Human case of A(H5N1) from Missouri

- **Sequencing of the Missouri clinical specimen (A/Missouri/121/2024) produced limited data for genetic analyses.**
  - Full length gene sequences were obtained for the matrix gene (M) and non-structural (NS) genes
  - Partial gene sequences were obtained for the hemagglutinin (HA) and neuraminidase (NA) genes
- **The available gene sequences are all closely related to U.S. dairy cattle viruses**
  - **HA gene sequence confirms the virus is clade 2.3.4.4b**
    - Two of the HA1 amino acid differences were not found in previous human cases but are not associated with changes to infectivity or transmissibility among humans.
      - P136S – Antigenic site with unknown impact on cross-reactivity to clade 2.3.4.4b CVVs
      - A156T – Antigenic site that has resulted in minor reductions in cross-reactivity to ferret antisera raised to available clade 2.3.4.4b CVVs
  - **NA gene sequence confirms the virus is H5N1**
    - No markers of reduced susceptibility to neuraminidase inhibitors were identified
  - **No markers of mammalian adaptation identified**
- **Virus isolation unsuccessful**

# Case Summary - California

- 13 confirmed human cases
  - All are adult dairy workers on different confirmed H5N1-positive dairies
    - reported exposures include close contact with cows including milking cows, working in milking pen, milk splash to eye
  - All reported mild illness including conjunctivitis, onset beginning 9/28;
    - None were hospitalized
  - Case and contact investigations are ongoing; no evidence of any person to person spread

*\*confirmed and reported through 10/18*

# Genetic analysis of human samples from California

- All cases confirmed as clade 2.3.4.4b closely related to dairy cattle viruses from California and N1 NA
  - Whole genome (case #1 and case #4) confirmed as B3.13 genotype
    - A/California/135/2024 (case #1) – complete genome
    - A/California/134/2024 (case #2) - HA, NA, and NS
    - A/California/146/2024 (case #3) – PB1, PA, HA, NP, NA, M, NS
    - A/California/147/2024 (case #4) – complete genome
    - A/California/148/2024 (case #5) – HA, NP, NA, M, NS
    - A/California/149/2024 (case #6) - HA, NA (partial)
- HAs had no changes associated with increased infectivity or transmissibility among humans
  - New amino acid changes in HA were identified compared to previous cases (some in known antigenic sites)
- Virus isolation was successful from specimens from 9 of 11 cases to date
  - Antigenic testing is underway
- No mutations associated with reduced susceptibility to neuraminidase inhibitors or PA inhibitors
- No mutations identified in other genes indicating additional mammalian adaptation



# Seroprevalence Studies

- CDC is collaborating with two state health departments on H5N1 seroprevalence studies
- Michigan
  - Negative results from first round of data collection last month
  - Additional results to be reported out soon
- Colorado has completed enrollment in their study, and CDC is testing specimens



# American Association of Bovine Practitioners (AABP) Conference: Columbus, OH, Sept 12-13

- CDC and Ohio Department of Health are conducting a **serosurvey of bovine practitioners**.
- Conducted an **online survey** and a **blood draw** at the conference.
- Samples currently being tested at CDC



AMERICAN  
ASSOCIATION  
of BOVINE  
PRACTITIONERS

## INFORMATION FOR FARM WORKERS

### Wear personal protective equipment (PPE)

You should wear personal protective equipment (PPE) when in contact with (or around) dairy cows, raw milk, other animals, or surfaces and other items that might be contaminated with the virus. Wash your hands with soap and water, then put on PPE in this order:

1. Fluid-resistant coveralls
2. Waterproof apron
3. NIOSH Approved Respirator (e.g., N95 filtering facepiece respirator or elastomeric half-mask respirator)
4. Properly fitted unvented or indirectly-vented safety goggles or face shield
5. Head or hair cover
6. Gloves
7. Boots



# Diagnostic testing – addition of conjunctival samples

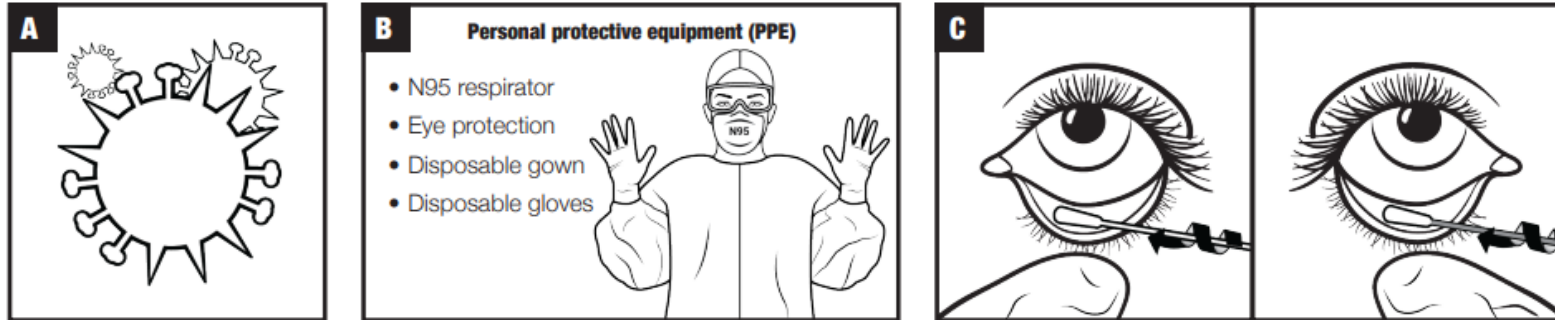
- **FDA granted enforcement discretion for the use of conjunctival swabs with the CDC Human Influenza Virus Real-Time RT-PCR Diagnostic Panel, Influenza A/H5 Subtyping Kit**
  - Public health laboratories may use of conjunctival swabs with this test
  - Must be paired testing of conjunctival specimens with testing of a nasopharyngeal swab
  - Using swabs and transport media currently included in the current CDC test's instructions for use
  - FDA currently intends to exercise this enforcement discretion through November 1, 2024, or as otherwise determined by FDA that an earlier or later time period is appropriate.
  - Currently working with FDA to add conjunctival swabs as a specimen type to the Influenza A/H5 Subtyping Kit.



*Uyeki et al., NEJM 2024*

# Diagnostic testing (continued)

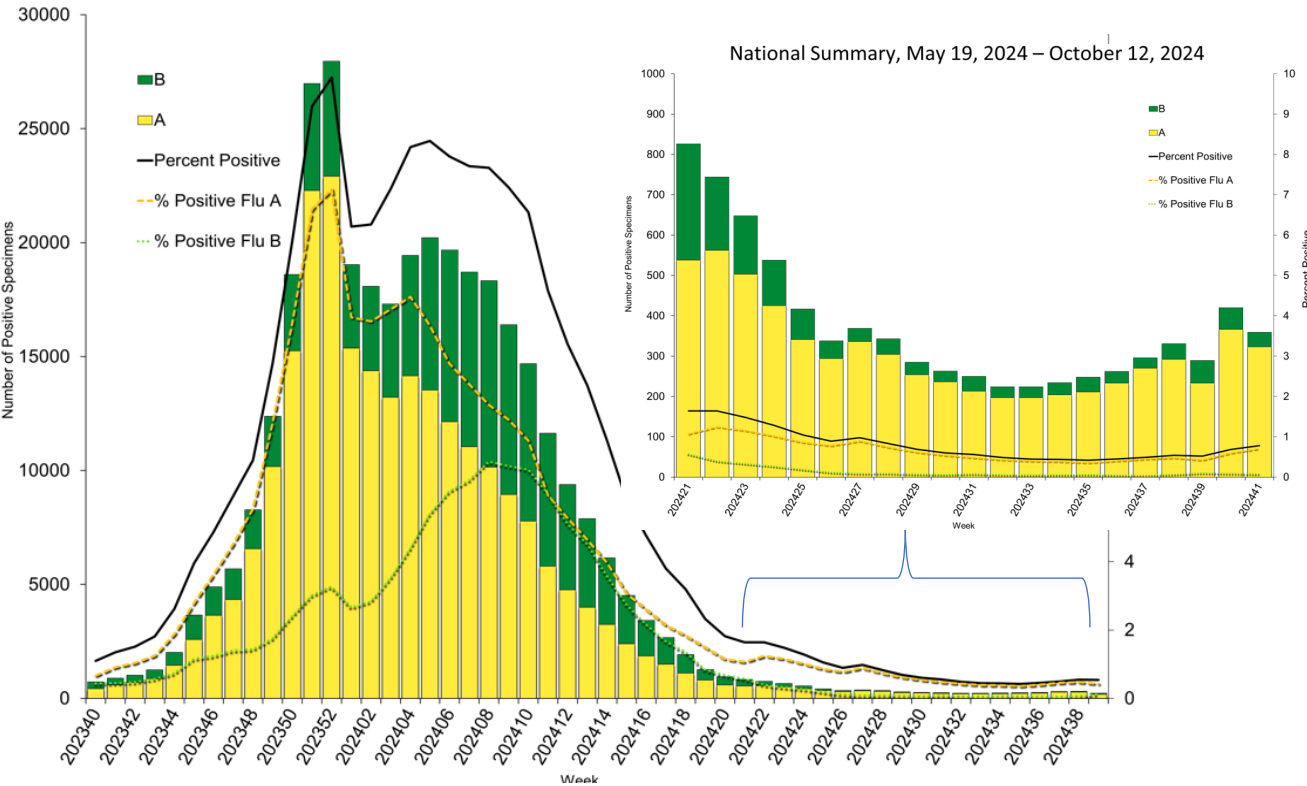
- **Completed recommendations/protocol for conjunctival sample collection methods for healthcare providers**
  - Produced a Desk Reference Graphic (i.e., Job-Aid) describing the procedure for collecting and transporting conjunctival specimens for H5N1 testing in a patient with conjunctivitis and suspected H5N1 infection.
  - [Conjunctival Swab Specimen Collection for Detection of Avian Influenza A\(H5\) Viruses \(cdc.gov\)](http://www.cdc.gov)
  - Detailed protocol distributed to partners via CDC and APHL
- **Universal Transport Media being added to the Instructions for Use of CDC's A/H5 and Flu/SC2 multiplex assay**
  - Allow samples in this collection media to be tested using the CDC's assays



# Seasonal influenza update

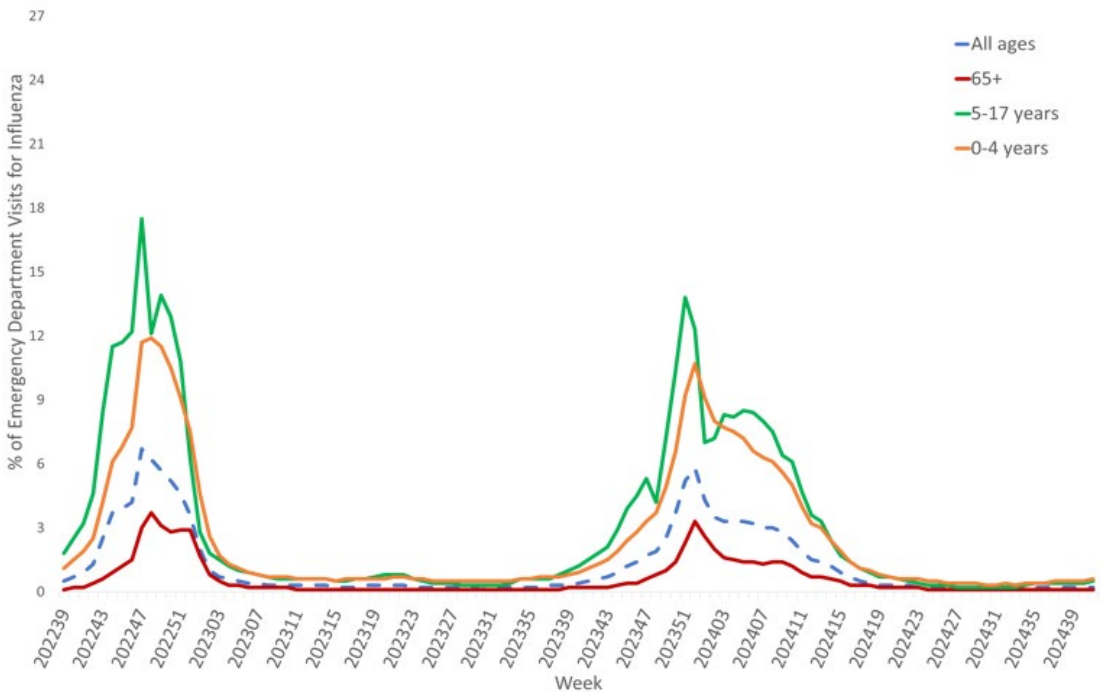
## Influenza Activity Remains Low

Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, 2023-2024 Season



➤ Percent of specimens testing positive for influenza is stable at low levels nationally.

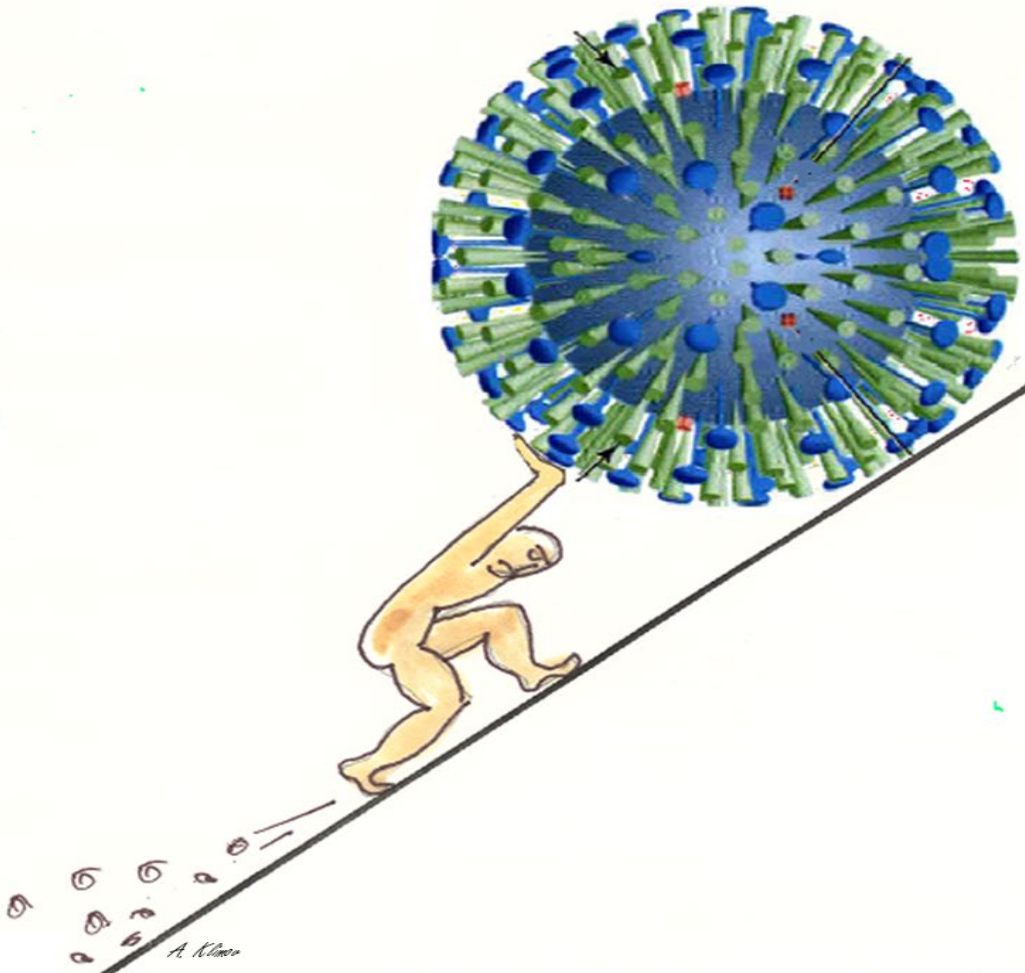
Percentage of Emergency Department Visits for Influenza, Overall and by Age Group, Reported by the National Syndromic Surveillance System (NSSP) Weekly National Summary, September 24, 2022 –October 12, 2024



➤ Percent of emergency department visits for influenza is stable at low levels nationally among all age groups.



# Thank you!



For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

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# National Wastewater Surveillance System: Monitoring for H5 Influenza

**Rory Welsh, PhD**

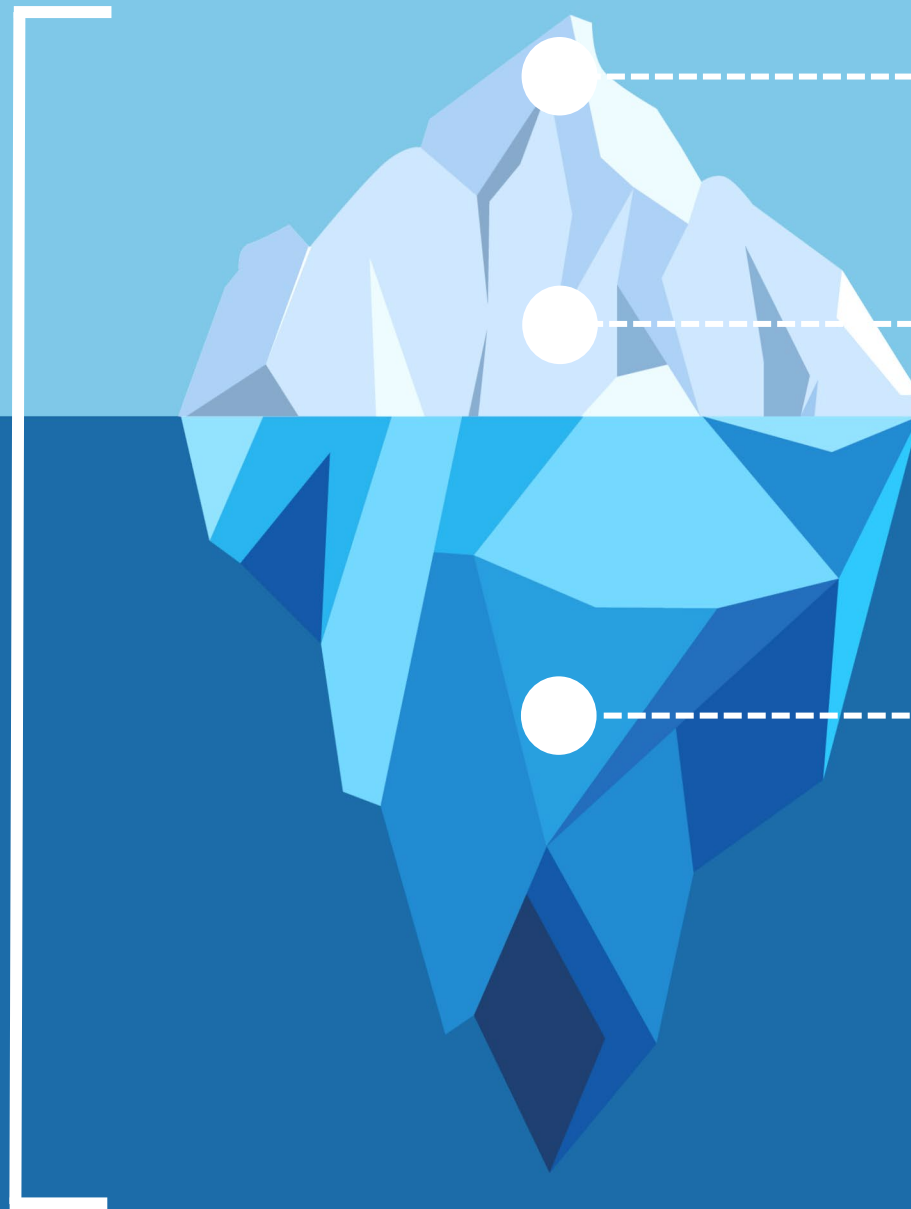
National Wastewater Surveillance System  
Rapid Response Research and Surveillance Branch

October 21, 2024

Laboratory Outreach Communication System (LOCS)

**Land Acknowledgement:** The Division of Infectious Disease Readiness and Innovation acknowledges the Muscogee (Creek) and Cherokee Nations and the Dena'ina people whose Indigenous lands house the CDC Atlanta and AIP Anchorage campuses.

All infected people



### Hospital Data

Deaths, intensive care occupancy, hospitalizations



### Clinical Test Data

Cases tested, cases reported (clinical PCR and antigen testing)



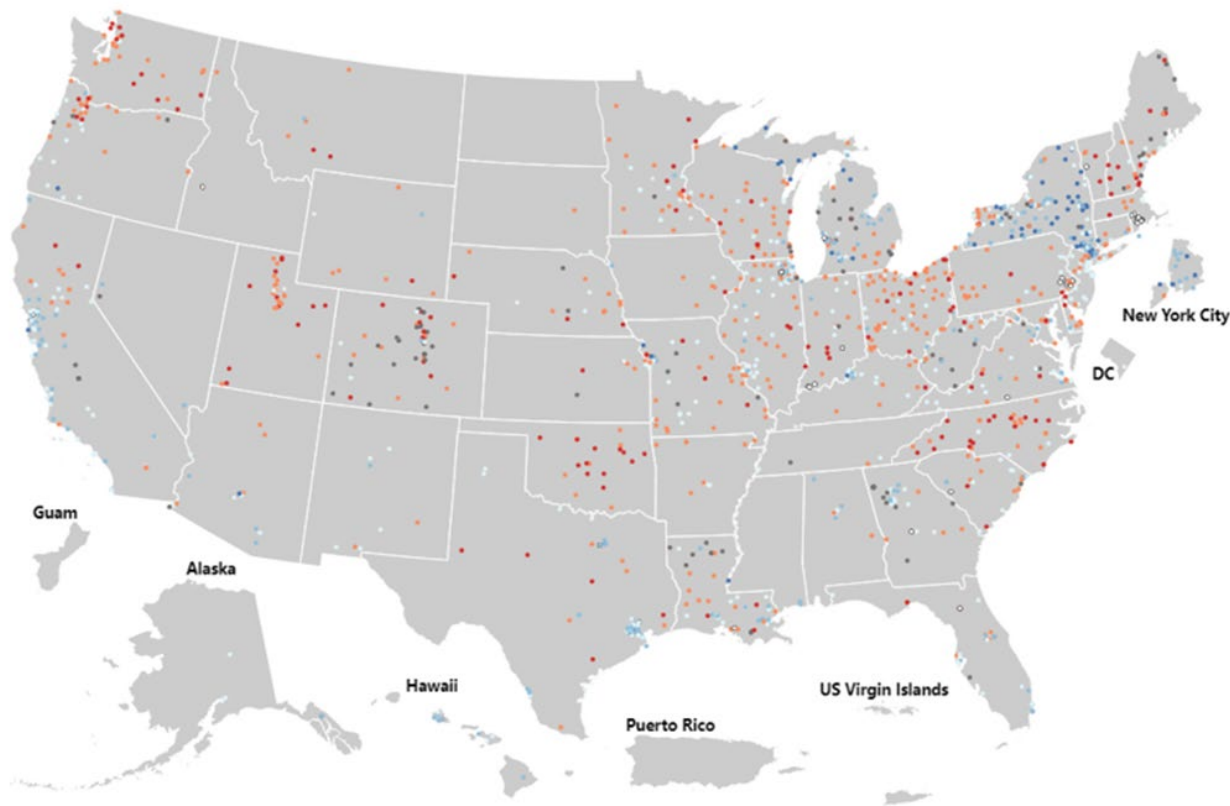
## Wastewater Surveillance Data

Captures infected people (regardless of symptoms) shedding virus into sewershed



# National Wastewater Surveillance System (NWSS) Implementation

Current SARS-CoV-2 Virus Levels in Wastewater by Site, United States  
Time Period: Sep 09, 2024 – Sep 23, 2024

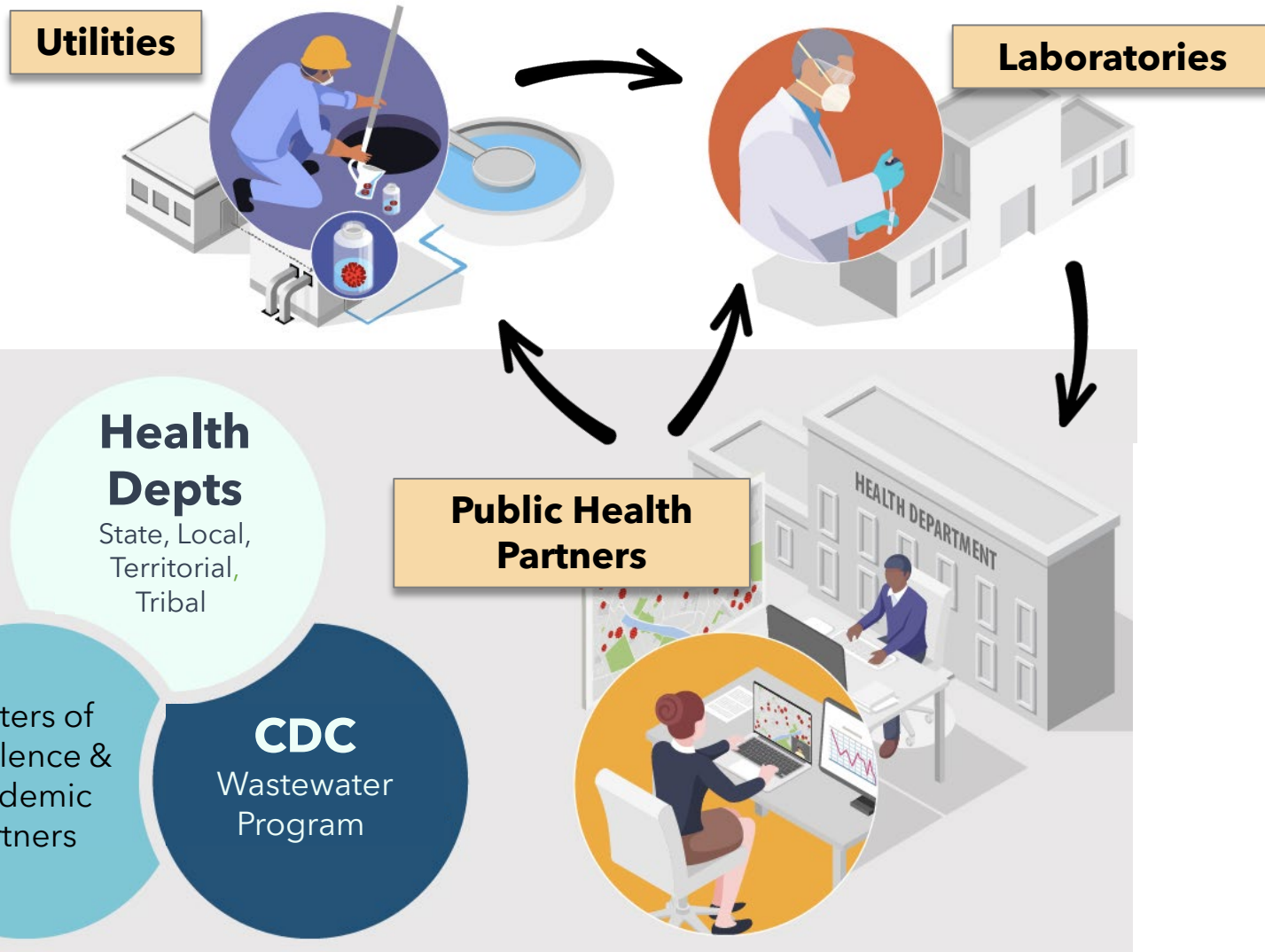


Select legend categories to filter points on the map.

○ New site ● 0% to 19% ● 20% to 39% ● 40% to 59% ● 60% to 79% ● 80% to 100% ● No recent data

- **>1,500 sites** in 50 states, 7 territories, and some Tribal communities
- **Representing ~150M people** (~45% of US population)
- **6 Centers of Excellence:** California, Colorado, Houston, Wisconsin, New York, and North Carolina

# Wastewater Partnerships for Public Health Action



## Importance of Partnerships:

- Foster innovation
- Advance workforce development
- Improve data sharing
- **Advance the science of wastewater surveillance for public health action**

# **Wastewater Surveillance for H5 Influenza: Assays and Data Flow**

# Influenza assay validation

- CDC validated wastewater assays for:
  - influenza A
  - influenza A(H1N1)pdm09
  - influenza A(H3)
  - influenza A(H3)H5
- Assay details shared with public health partners via a secure platform and instructions for use (IFU)
  - These protocols are not intended to be used for commercial development or for-profit testing
- Considerations for use of subtyping assays were shared with health departments and laboratory partners

# Influenza Select Agent & Biosafety Information



- Select Agents and Toxins Exemption: H5 Avian Influenza Virus
  - Select Agent regulations are temporarily exempt for H5 avian influenza viruses for a period of 3 years
  - [Select Agents and Toxins Exemption: H5 Avian Influenza Virus | USDA](#)
- Site-specific risk assessment
  - [Guidelines for Laboratory Biosafety: Handling and Processing Specimens Associated with Novel Influenza A Viruses, Including Potential A\(H5N1\) Virus | Bird Flu | CDC](#)
  - [Resources and Tools | Safe Labs Portal | CDC](#)
  - [Biosafety in Microbiological and Biomedical Laboratories \(BMBL\) 6th Edition](#)
- **Considerations:**
  - Standard precautions
  - Aerosol generating procedures
  - Use of a class II biosafety cabinet
  - Heating wastewater sample at 60°C for 30 minutes to reduce potential pathogen exposure risk

# Data Collation and Integration for Public Health Event Response (DCIPHER) Platform Provides Real Time Data

- **Wastewater data are stored in the DCIPHER platform**
  - Hosted cloud infrastructure for automated processing of data
  - Flexible data submission - CSV, API, and SFTP uploads
  - Automated data quality and governance checks at submission
- **Data ingestion and storage**
  - Metadata, assay results, concentration and sequence data, shapefiles
- **Data analysis**
  - Raw data -> normalized concentrations -> calculated metrics
  - Pipeline builds multiple times a day
- **Data visualizations**
  - Flexible visualizations for various types of data and interpretation
- **Data dashboard support**
  - Data from DCIPHER feeds into public facing dashboards

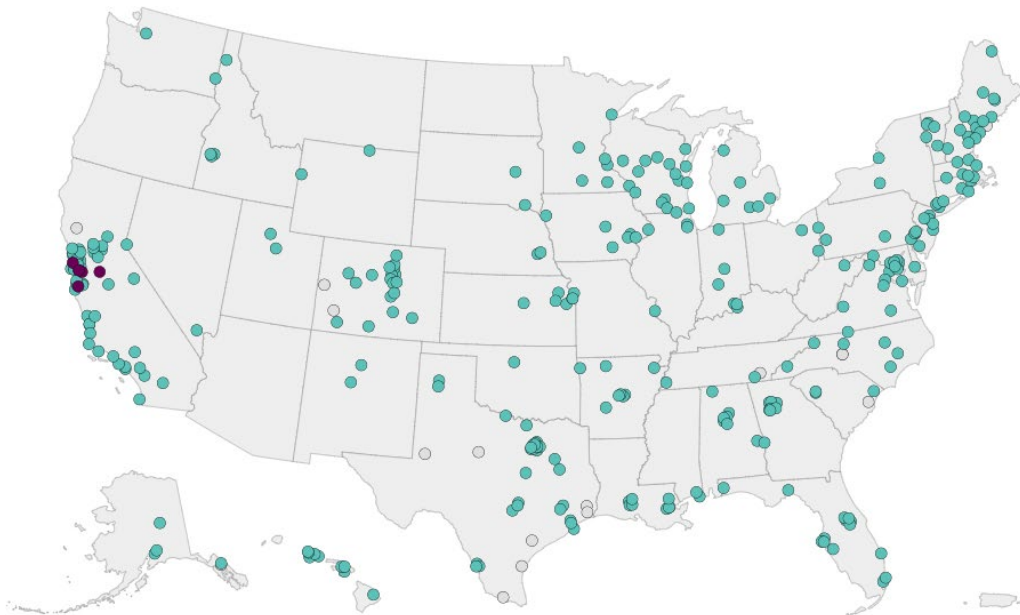
# Public Dashboards Share Data with Communities: H5 Detection Visualizations

## H5 detection in wastewater in the past week

**H5 Detection**  
5 sites (1.5%)

**No Detection**  
304 sites (92.7%)

**No samples in last week**  
19 sites (5.8%)



Select a detection type below to add or remove it from the map.

H5 Detection
  No Detection
  No Samples in Last Week

Sewershed	State/Territory	County	10/05/2024	09/28/2024	09/21/2024	09/14/2024	09/07/2024
ID:188	California	Stanislaus	+	+	-	+	+
ID:127	California	Monterey	+	-	-	-	-
ID:147	California	San Francisco, San Mateo	+	-	-	-	-
ID:173	California	Santa Clara	+	-	-	-	-
ID:175	California	Santa Clara	+	-	-	-	-
ID:2287	Idaho	Latah	-	-	+	-	No I
ID:373	Idaho	Ada	-	-	-	+	-
ID:145	California	San Diego	-	-	-	-	+
ID:215	Colorado	Douglas	-	-	No Data	-	-
ID:1003	Minnesota	Goodhue	-	-	-	-	-

# DCIPHER Platform: Influenza A(H5) Visualizations

Influenza A(H5) Site Level Detection Category Over Week Ending: Sat, Oct 5, 2024



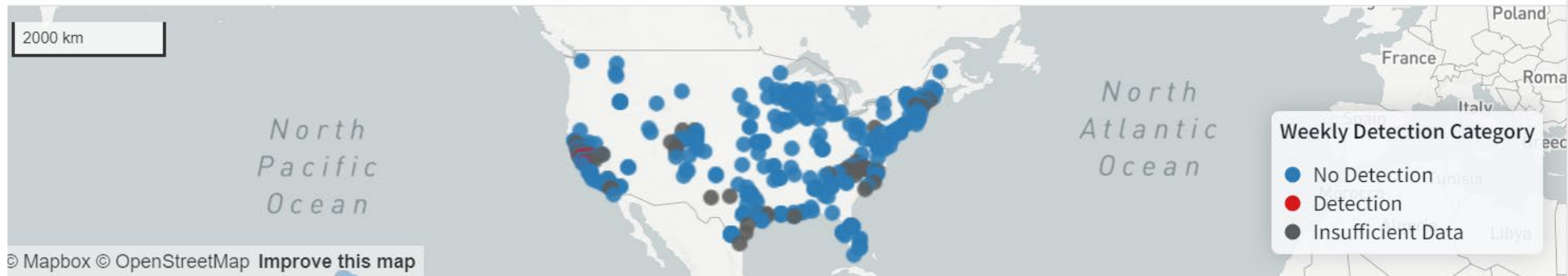
Analyze major lab methods separately?



Flu A Target S...

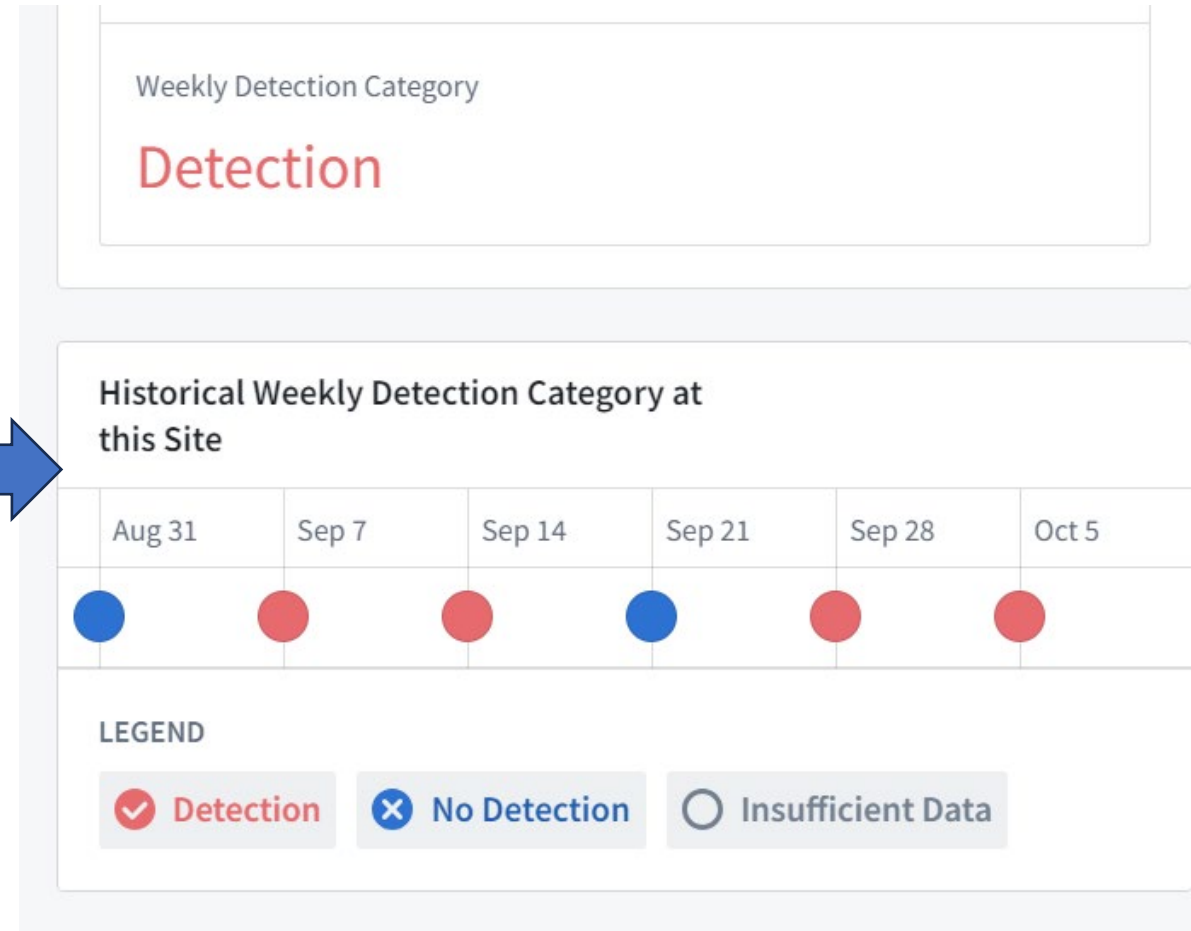
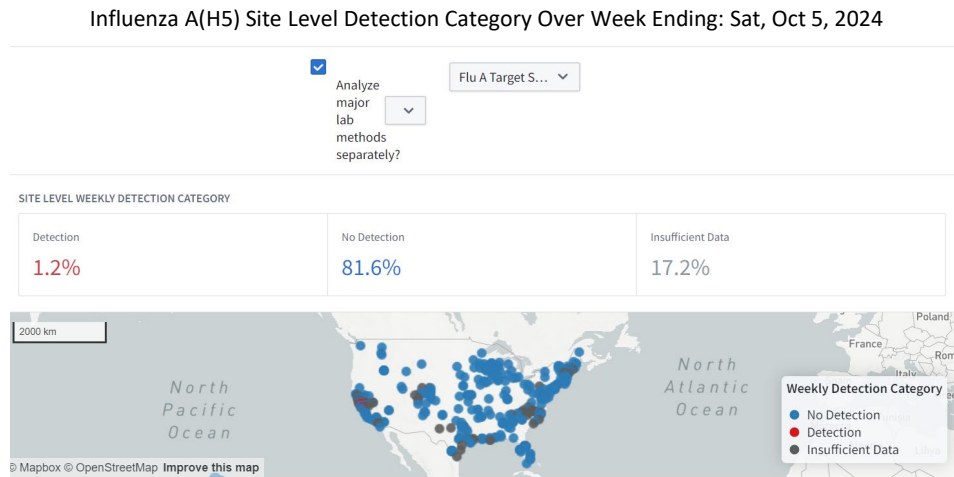
## SITE LEVEL WEEKLY DETECTION CATEGORY

Detection <b>1.2%</b>	No Detection <b>81.6%</b>	Insufficient Data <b>17.2%</b>
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# DCIPHER Platform: H5 Visualizations for Specific Sites



# Data Dissemination and Access

## NWSS H5 Data is:

- **Available in real time via DCIPHER to health departments**
  - Direct outreach to jurisdictions with detections
- **Updated weekly on public dashboards**
- **Available through public data displays**
- **Downloadable from [data.cdc.gov](https://data.cdc.gov)**
  - Data on webpages for easy downloads

# Discussion & Questions



# Helpful Links and Resources

- [Wastewater Data for Avian Influenza A\(H5\) | National Wastewater Surveillance System | CDC](#)
- [Wastewater Surveillance for Influenza A Virus and H5 Subtype Concurrent with the Highly Pathogenic Avian Influenza A\(H5N1\) Virus Outbreak in Cattle and Poultry and Associated Human Cases — United States, May 12–July 13, 2024 | MMWR \(cdc.gov\)](#)
- [Challenges and Opportunities for Wastewater Monitoring of Influenza Viruses During the Multistate Outbreak of Highly Pathogenic Avian Influenza A\(H5N1\) Virus in Dairy Cattle and Poultry | AJPH | Vol. Issue \(aphapublications.org\)](#)

# Thank you!

For any questions, please reach out to [NWSS@cdc.gov](mailto:NWSS@cdc.gov)

For more information, contact CDC

1-800-CDC-INFO (232-4636)

TTY: 1-888-232-6348 [cdc.gov](https://www.cdc.gov)

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# Next Scheduled Call

Monday, November 18  
3 PM - 4 PM ET



<https://www.cdc.gov/locs/calls>

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<https://www.facebook.com/CDC>



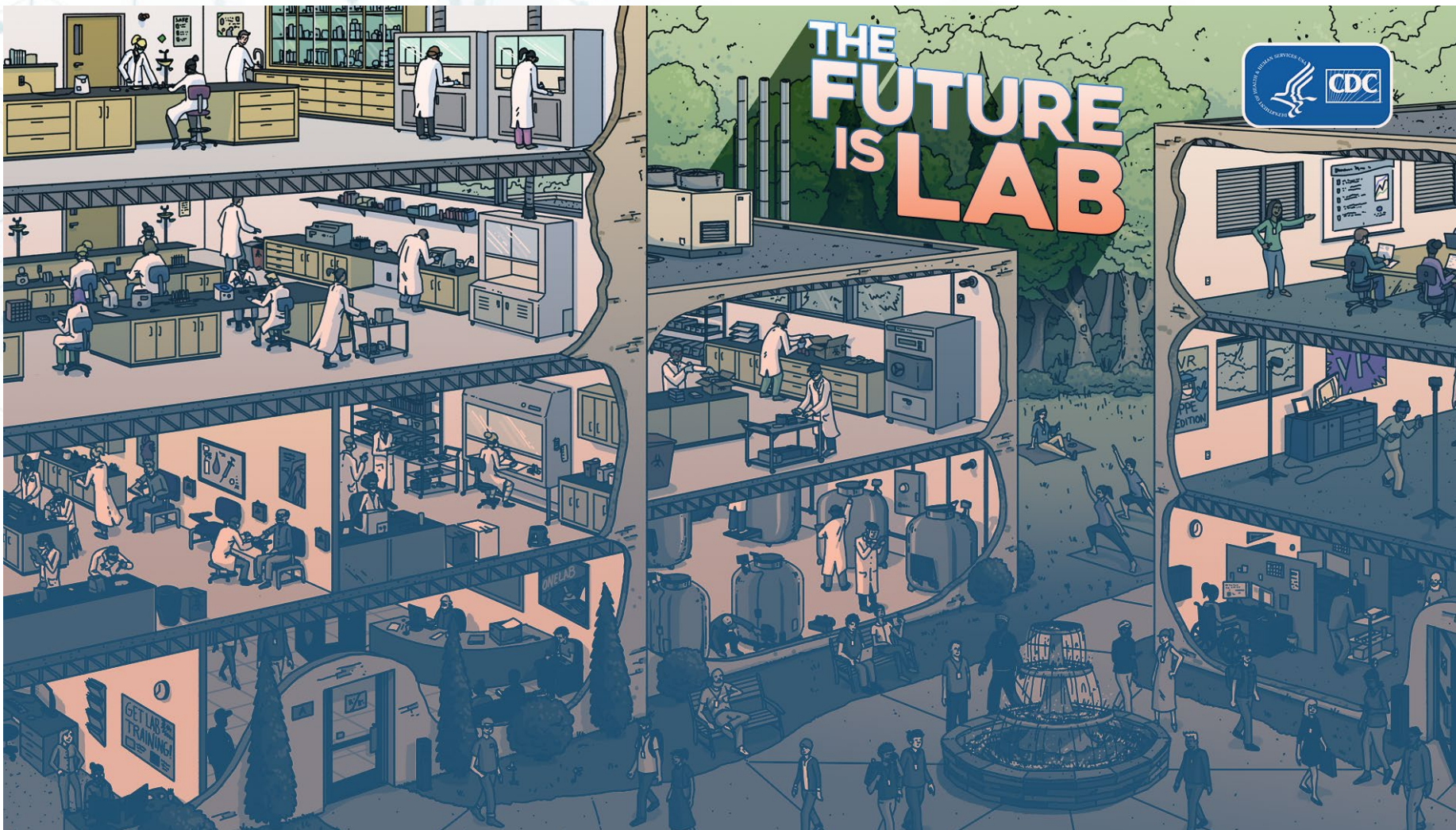
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<https://www.linkedin.com/company/cdc>

# Thank You For Your Time!







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