



# Open-Source Solutions for Public Health Innovation: Practical Tools and Lessons from the Field

**Aug. 19, 2025 | 2025 ARC Preconference**

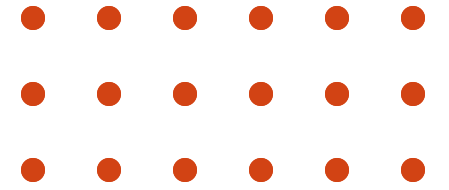
**SHAPING TOMORROW'S PUBLIC HEALTH TODAY.**

# Session Objectives

- Share and highlight how grantees are using open-source data tools to advance modernization efforts.
- Leave attendees with actionable tools.
- Attendees could provide input on which tools would be helpful to have as open source.

# Session Outline

- Welcome
- Lessons from the Field – Jurisdiction Spotlight
- Audience Q&A



# Meet the Speakers

Dan Pasetiner

Lead DIBBS Engineer,  
Skylight (CDC Contractor)

Melody Brown, MPH,  
MHSA, A-CSPO

Acting Branch Chief & DMI  
Co-Director, LA County  
Dept. of Public Health

Jennifer Rico, MA

Surveillance and  
Informatics Section  
Supervisor, Montana  
Dept. of Public Health  
and Human Services

# DIBBs Products

Data Integration Building Blocks (DIBBs)

**April 2025**



Data Integration Building Blocks

DIBBs are **modular, open-source** software that **empower jurisdictions to make the most of their data.**

Electronic Case Reporting (eCR) is the automated, real-time exchange of case report information between electronic health records and public health agencies



## eCR Viewer

Improve eCR access and readability for PHAs



## eCR Refiner

Tune the size and content of your eCRs



## Query Connector

Get data from HCOs with a single search



## Record Linker

Control how patient records are matched and merged



# eCR Refiner

Tune the size and content of your eCRs

Discovery

Build

## Problems

- eCRs often contain multiple reportable conditions and large amounts of patient data that may or may not be relevant to those reportable conditions, complicating case confirmation and eCR automation
- Inclusion of sensitive data poses legal/privacy issues
- Size of eCRs often causes processing and storage issues

## Solution

An application where users can define the desired content of their eCRs and refine accordingly

## Outcomes

- Increased number of reportable conditions utilizing eCRs
- Reduced time to identify cases
- Reduced incidence of legal/privacy issues
- Reduced performance and storage issues

# eCR Refiner Overview

## As it exists today:

- Jurisdiction-hosted
- Cloud-based, containerized API & command line tool
- Takes an eICR and section/condition codes & returns an eICR with only relevant content

## Where we're potentially headed:

- Intermediary-hosted (e.g. AIMS)
- Now: split and filter based on reportable conditions & APhL Terminology Exchange Service (TES)
- Next: split and filter based on optional templates or custom, user-defined filters

**We are looking for STLT partners to work with and get feedback from – please reach out to us at [dibbs@cdc.gov](mailto:dibbs@cdc.gov) if you are interested in the eCR Refiner!**



# Record Linker

Build

## Reduce duplicative patient data

### Problem

Public health agencies routinely grapple with fragmented, incomplete, and duplicate patient records

These discrepancies are compounded when records span multiple systems or providers.

Linking disparate patient records together can be a complex and time-consuming process that often relies on manual effort, leading to inefficiencies in disease tracking, inaccurate case counts, and delays in public health response.

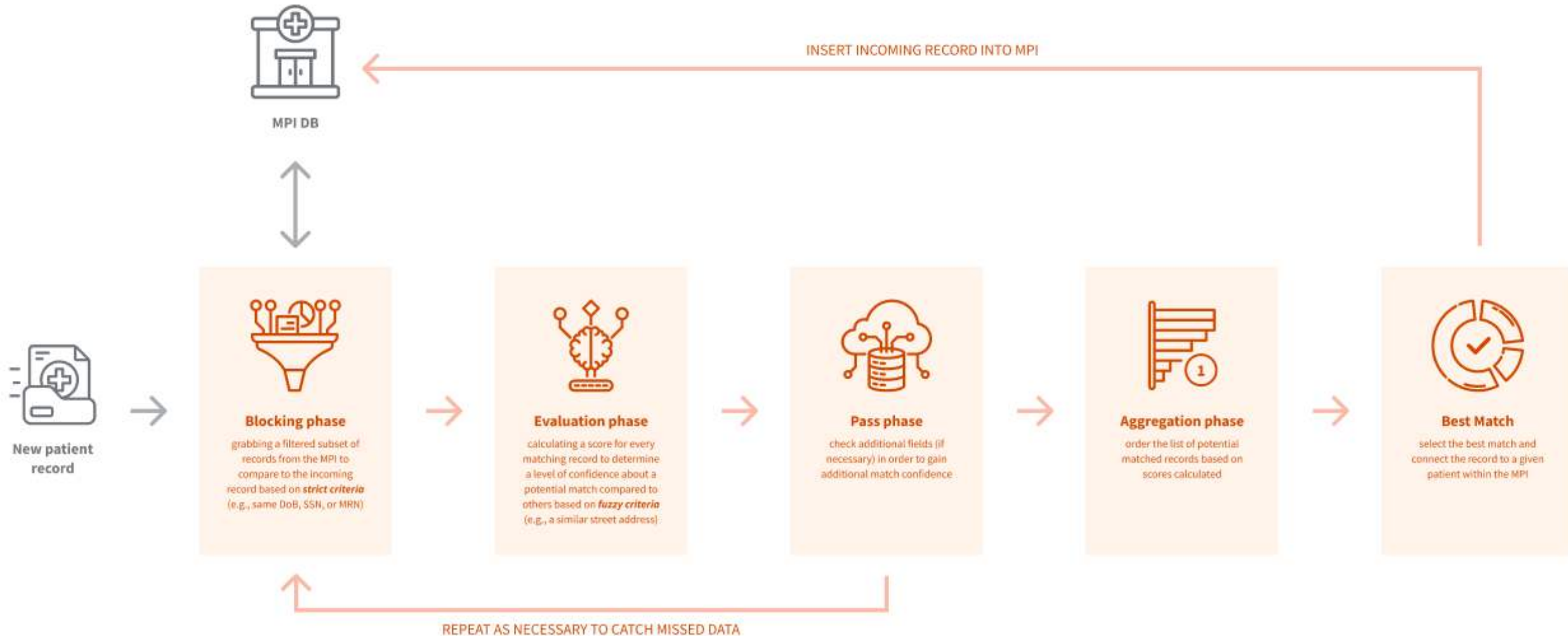
### Solution

A stand alone master patient index (MPI) that is compatible with many systems, is flexible, accurate, and provides transparency into the algorithm used to match patient records. This tool will deduplicate records, match incomplete patient records, and provide the ability to review "possible matches."


### Outcomes

- More complete and accurate records
- Greater efficiency in manual review
- Improved workload management

# Record Linker Algorithm – Process Diagram



# Record Linker Features: Highly Configurable Algorithm

 DIBBs Record Linker – Demo Site

Algorithm configuration settings

## Algorithm configuration

Fine-tune review thresholds to strike the right balance between automation and manual oversight

### Blocking criteria ⓘ

Exclude records that meet the following conditions:

select from the following fields... ▼


**Last name**  
The first 4 characters of the patient's last name.

Score: 5.0

**Date of birth**  
The patients birthdate in the format YYYY-MM-DD.

Score: 10.0

This is an outstanding combination of blocking Fields. This pass will have fast blocking that creates small candidate sets, making it easier for the algorithm to produce an answer quickly.

Good  15

### Matching criteria ⓘ

Include records that meet the following conditions:


select from the following fields... ▼

**First name**  
The first 4 characters of the patient's first name.

Score: 5.0

**Street address 1**  
The first line of an address field, which commonly has the number and street name

Score: 7.5

Okay  12.5

### Matching bounds score ⓘ

Adjust the thresholds (0-1) for what constitutes a possible match:

Minimum Threshold	Certain Threshold
<input type="text" value="0.8"/>	<input type="text" value="0.9"/>

Close window



# Query Connector

Pilot

## Get data from HCOs with a single search

### Problems

Access to public health data is currently based on a model in which jurisdictions are pushed data via eCRs and ELRs. Supplemental data is often required to take public health action. Jurisdictions are burdened with finding the additional relevant data to take action on. The legal and technical burden to get set up to receive data is high.

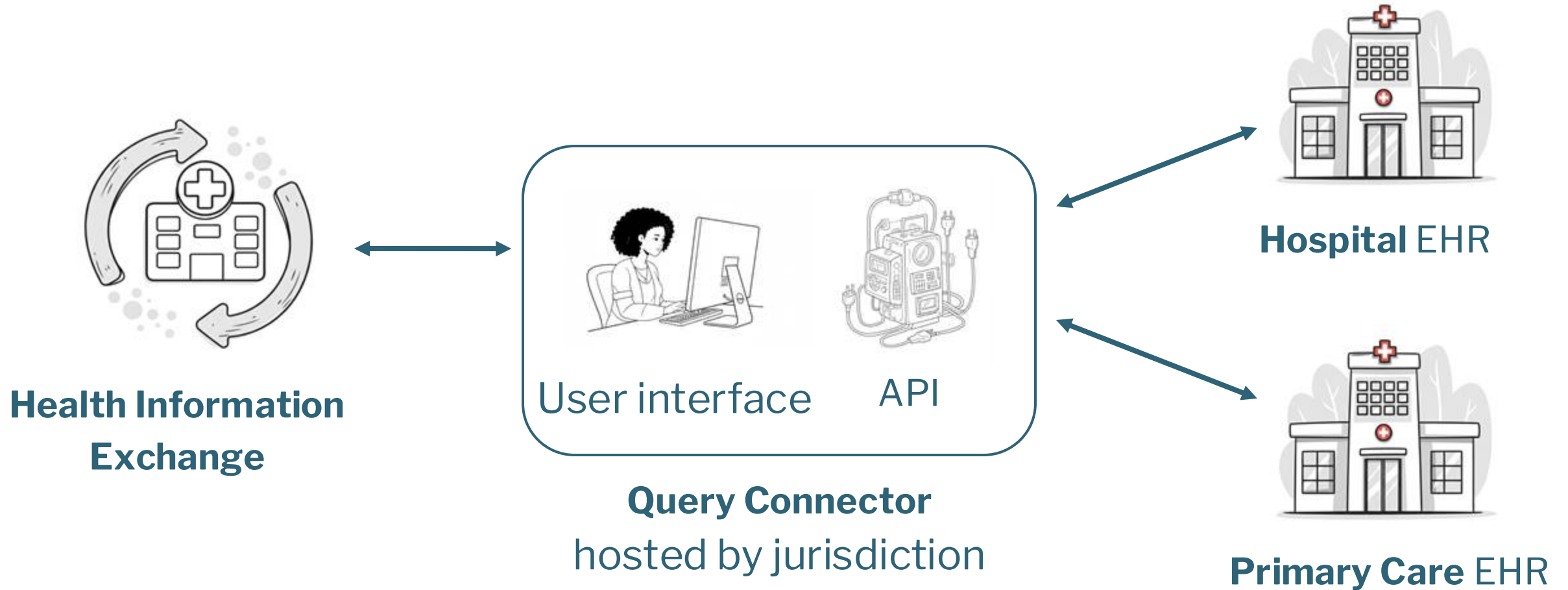
### Solution

A secure, robust FHIR client that can be accessed by UI or API to connect to Health Care Organizations and retrieve targeted patient data. The queries sent to HCO's are customizable to protect patient privacy and uphold the minimum necessary standard. Our connection to HCO's utilizes an HCO's exposed FHIR API. Query Connector can leverage existing Data Use agreements like DURSA and has first class support for TEFCA.

### Outcomes

Faster access to patient data  
More complete data for public health departments  
Limit access to minimum necessary data

# At a glance – HIE & Hospital connections



# Query Connector: Two Ways

The screenshot displays the 'Query Connector' web interface. At the top, a blue header bar contains the title 'Query Connector' and a settings gear icon. Below the header, a progress bar shows four steps: 'Enter patient info' (active), 'Select patient', 'Select query', and 'View patient record'. The main content area is titled '1 of 4 Enter patient information'. It includes a sub-header 'Enter patient information below to search for a patient. We will query the connected network to find matching records.' Below this is a yellow box with the text: 'The demo site uses synthetic data to provide examples of possible queries that you can make with the Query Connector. To proceed, click "fill fields" below.' Inside this box are two buttons: 'Fill fields' and 'Advanced'. Below the yellow box is a form with the following sections: 'Name' with 'First name' and 'Last name' input fields; 'Phone number' with a 'Phone number' input field; 'Date of Birth' with a 'Date of Birth' input field containing the value '04/17/2025'; and 'Address' with a 'Street address' input field.

## Web-based User Interface (UI)

- Conduct **individual** searches by inputting patient demographics
- Manage user access through **custom permissions**

## API

- Can be automated to connect with a jurisdiction's own data system
- Works from anywhere in a jurisdiction's workflow (most commonly via Rhapsody)

Check it out yourself @ <https://demo.queryconnector.dev/>



# eCR Viewer

Pilot

## Improve eCR access and readability for PHAs

### Problems

It's challenging for case investigators, epis, and others to **find the information they need** in an eCR.

Users need to **search through lengthy documents** for information relevant to a case.

### Solution

eCR Viewer provides...

- Unified view of eICR & Reportability Response (RR) documents
- Consistent format, regardless of provider
- Highlights important condition information up front

### Outcomes

- Less manual effort to review eCRs
- Faster time to decision
- An efficient, delightful eCR experience for case investigators & epis in your jurisdiction

[← Back to eCR Library](#)

eCR Summary

eCR Document

Patient Info

Demographics

Social History

Encounter Info

Encounter Details

Facility Details

Provider Details

Clinical Info

Symptoms and Problems

Treatment Details

Immunizations

Diagnostics and Vital Signs

Lab Info

Lab Results from Castle Lab

eCR Metadata

RR Details

eCR Summary

Provides key info upfront to help you understand the eCR at a glance

Patient Summary

**Patient Name** Bugs Bunny

**DOB** 12/07/1989

**Sex** Female

**Race** White

**Ethnicity** Not Hispanic or Latino

**Patient Address** 999 Single Lane  
Hudson County, NY  
07086, USA

**Patient Contact** Home: +1-999-999-9999  
Mobile: +1-999-999-9999  
bugs.bunny@gmail.com

Encounter Summary

**Encounter Date/Time** Start: 02/18/2022 9:01 AM  
End: 02/18/2022 10:47 AM

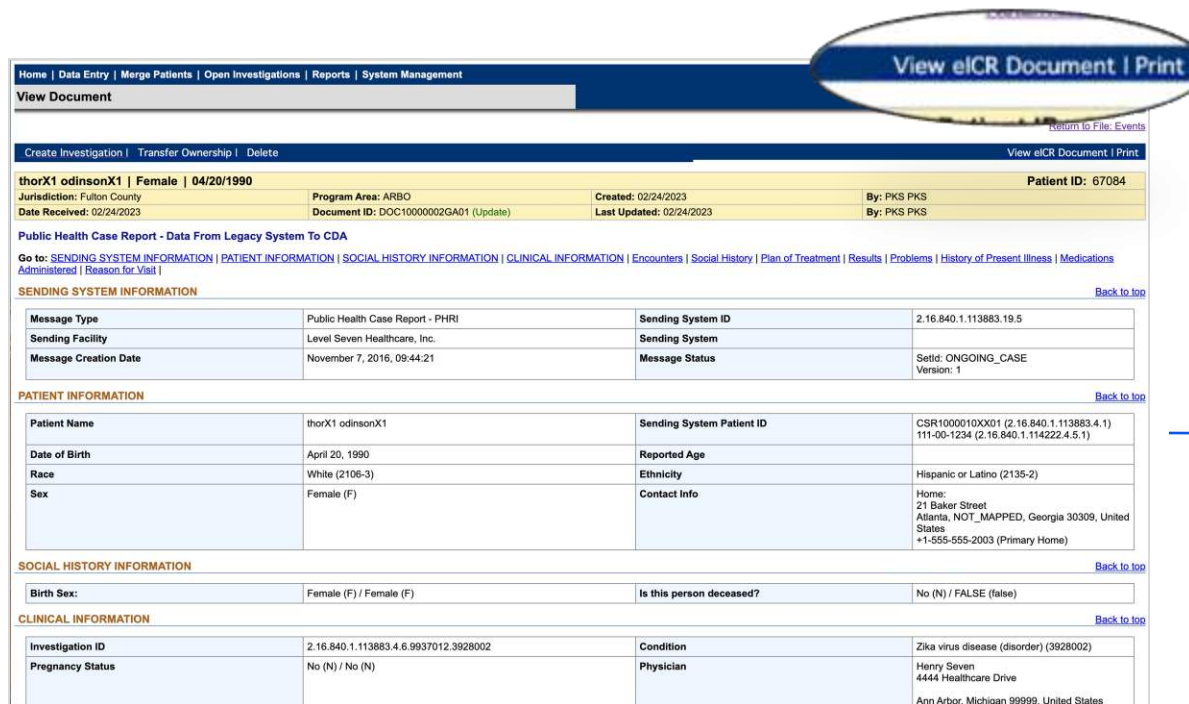
**Encounter Type** Ambulatory

# eCR Viewer Integrations

Two options offered:

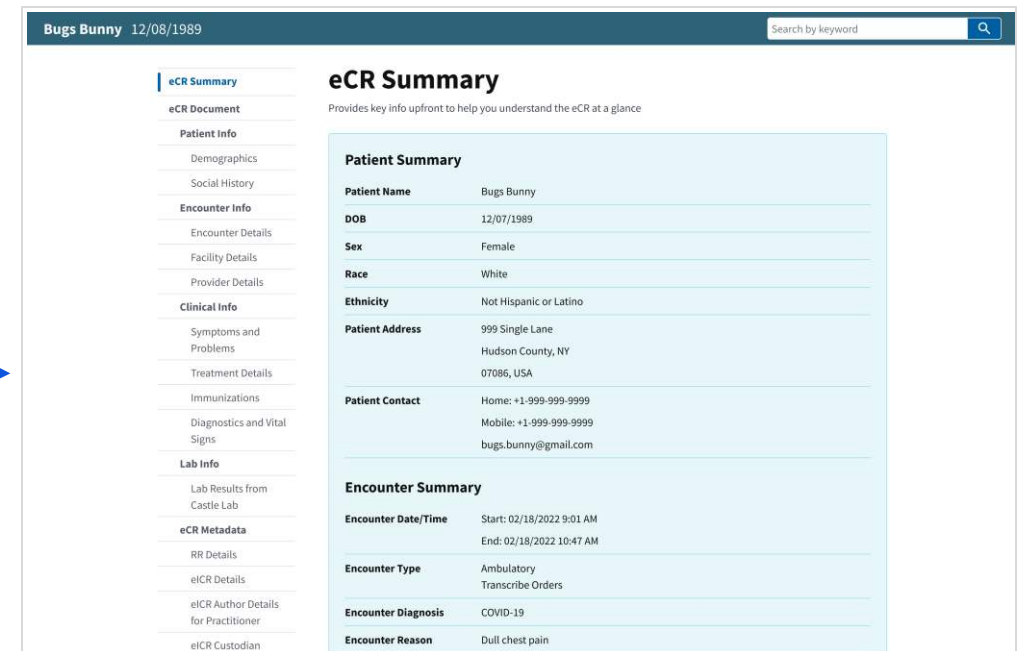
1. Direct integration of core Viewer page within a surveillance system

Currently available for NBS (6.0.16.2). EpiTrax integration coming later this year



The screenshot shows the NBS (National Burden of Surveillance) interface. At the top, there is a navigation bar with links: Home, Data Entry, Merge Patients, Open Investigations, Reports, and System Management. Below this is a 'View Document' section. A button labeled 'View eICR Document | Print' is highlighted with a red oval. Below the button, there is a table with patient information: Patient Name: thorX1 odinsonX1, Female, Date of Birth: 04/20/1990, Patient ID: 67084. The table also includes fields for Jurisdiction, Program Area, Created, By, Date Received, Document ID, Last Updated, and By. Below the table, there is a section for 'Public Health Case Report - Data From Legacy System To CDA' with links to various information sections. A 'SENDING SYSTEM INFORMATION' section is also visible, containing fields for Message Type, Sending Facility, Message Creation Date, Sending System ID, Sending System, Message Status, and SetId. Below this is a 'PATIENT INFORMATION' section with fields for Patient Name, Date of Birth, Race, Sex, Sending System Patient ID, Reported Age, Ethnicity, and Contact Info. A 'SOCIAL HISTORY INFORMATION' section follows, with fields for Birth Sex and Is this person deceased?. Finally, a 'CLINICAL INFORMATION' section is at the bottom, with fields for Investigation ID, Condition, Pregnancy Status, and Physician. A blue arrow points from the 'View eICR Document | Print' button to the right-hand screenshot.

NBS - "View eICR Document" Button



The screenshot shows the 'Individual eCR Summary' page. The header includes the patient name 'Bugs Bunny' and the date '12/08/1989'. A search bar is located at the top right. The page is divided into two main sections: 'eCR Summary' and 'Patient Summary'. The 'eCR Summary' section on the left contains a list of links for various information sections: eCR Document, Patient Info, Demographics, Social History, Encounter Info, Encounter Details, Facility Details, Provider Details, Clinical Info, Symptoms and Problems, Treatment Details, Immunizations, Diagnostics and Vital Signs, Lab Info, Lab Results from Castle Lab, eCR Metadata, RR Details, eICR Details, eICR Author Details for Practitioner, and eICR Custodian. The 'Patient Summary' section on the right provides key information about the patient: Patient Name: Bugs Bunny, DOB: 12/07/1989, Sex: Female, Race: White, Ethnicity: Not Hispanic or Latino, Patient Address: 999 Single Lane, Hudson County, NY 07086, USA, Patient Contact: Home: +1-999-999-9999, Mobile: +1-999-999-9999, bugs.bunny@gmail.com. Below this is an 'Encounter Summary' section with fields for Encounter Date/Time, Encounter Type, Encounter Diagnosis, and Encounter Reason.

Individual eCR

# eCR Viewer Integrations

Two options offered:

2. Standalone tool – the eCR Library

eCR Viewer				
eCR Library				
Search by patient or keyword				
FILTERS: Last 24 hours Reportable Condition				
Patient	Received Date	Encounter Date	Reportable Condition	RCKMS Rule Summary
> <b>Darth Maul</b> V3 DOB: 11/04/1989	12/23/2022 2:59 PM	12/23/2022 2:59 PM	Viral hepatitis type C (disorder)  Disease caused by severe acute respiratory syndrome coronavirus 2 (disorder)	Detection of Hepatitis C virus antibody in a clinical specimen by any method  Detection of SARS-CoV-2 nucleic acid in a clinical or post-mortem specimen by any method  COVID-19 (as a diagnosis or active problem)
> <b>General Grievous</b> V2 DOB: 2/17/1984	12/23/2022 2:59 PM	12/23/2022 2:59 PM	Overdose of opiate (disorder)	Detection of opioid substance or metabolite in a clinical specimen by any method  Vital status at end of encounter is alive or unknown
<b>Luke Skywalker</b> DOB: 12/12/2020	12/23/2022 1:43 PM	12/23/2022 1:43 PM	Malignant neoplastic disease (disorder)	Malignant or in situ neoplasm, or a benign or borderline primary intracranial or central nervous system tumor (as a diagnosis or active problem)
<b>Captain Rex</b> DOB: 4/3/2005	12/23/2022 10:57 AM	12/23/2022 10:57 AM	Salmonella infection (disorder)	Detection of Salmonella species and serovars nucleic acid (except S. typhi and S. paratyphi nucleic acid) in a clinical specimen by any method
<b>Death Vader</b> DOB: 1/14/1948	12/23/2022 9:00 AM	12/23/2022 9:00 AM	Malignant neoplastic disease (disorder)	Malignant or in situ neoplasm, or a benign or borderline primary intracranial or central nervous system tumor (as a diagnosis or active problem)
<b>Count Dooku</b> DOB: 7/22/1984	12/23/2022 8:05 AM	12/23/2022 8:05 AM	Disease caused by severe acute respiratory syndrome coronavirus 2 (disorder)	COVID-19 (as a diagnosis or active problem)
<b>Admiral Motti</b>	12/23/2022	12/23/2022	Disease caused by severe acute respiratory	COVID-19 (as a diagnosis or active problem)
Showing 1-25 of 757 eCRs				
1 2 3 4 ... 38 Next >				
eCRs per page 25				

eCR Library

eCR Viewer	
Bugs Bunny 12/07/1989	
<a href="#">Back to eCR Library</a>	
<b>eCR Summary</b>	<b>eCR Summary</b>
eCR Document	Provides key info upfront to help you understand the eCR at a glance.
Patient Info	
Demographics	
Social History	
Encounter Info	
Encounter Details	
Facility Details	
Provider Details	
Clinical Info	
Symptoms and Problems	
Treatment Details	
Immunizations	
Diagnostics and Vital Signs	
Lab Info	
Lab Results from Castle Lab	
eCR Metadata	
RR Details	
<b>Patient Summary</b>	
Patient Name	Bugs Bunny
DOB	12/07/1989
Sex	Female
Race	White
Ethnicity	Not Hispanic or Latino
Patient Address	999 Single Lane Hudson County, NY 07086, USA
Patient Contact	Home: +1-999-999-9999 Mobile: +1-999-999-9999 bugs.bunny@gmail.com
<b>Encounter Summary</b>	
Encounter Date/Time	Start: 02/18/2022 9:01 AM End: 02/18/2022 10:47 AM
Encounter Type	Ambulatory

Individual eCR

# Thank you!

For more information about all our products, see our  
Github repositories:

[CDCgov/dibbs-ecr-viewer](#)  
[CDCgov/dibbs-ecr-refiner](#)  
[CDCgov/dibbs-query-connector](#)  
[CDCgov/RecordLinker](#)

*August 18, 2025 | ARC Data Modernization in Motion Preconference*

# **SaTScan™ Utilization for Electronic Lab Report Monitoring in Los Angeles County**

Data Operations Unit  
Disease Control Informatics Branch  
Los Angeles County Dept of Public Health



# ELRs in Los Angeles County

- 1 Critical to disease surveillance

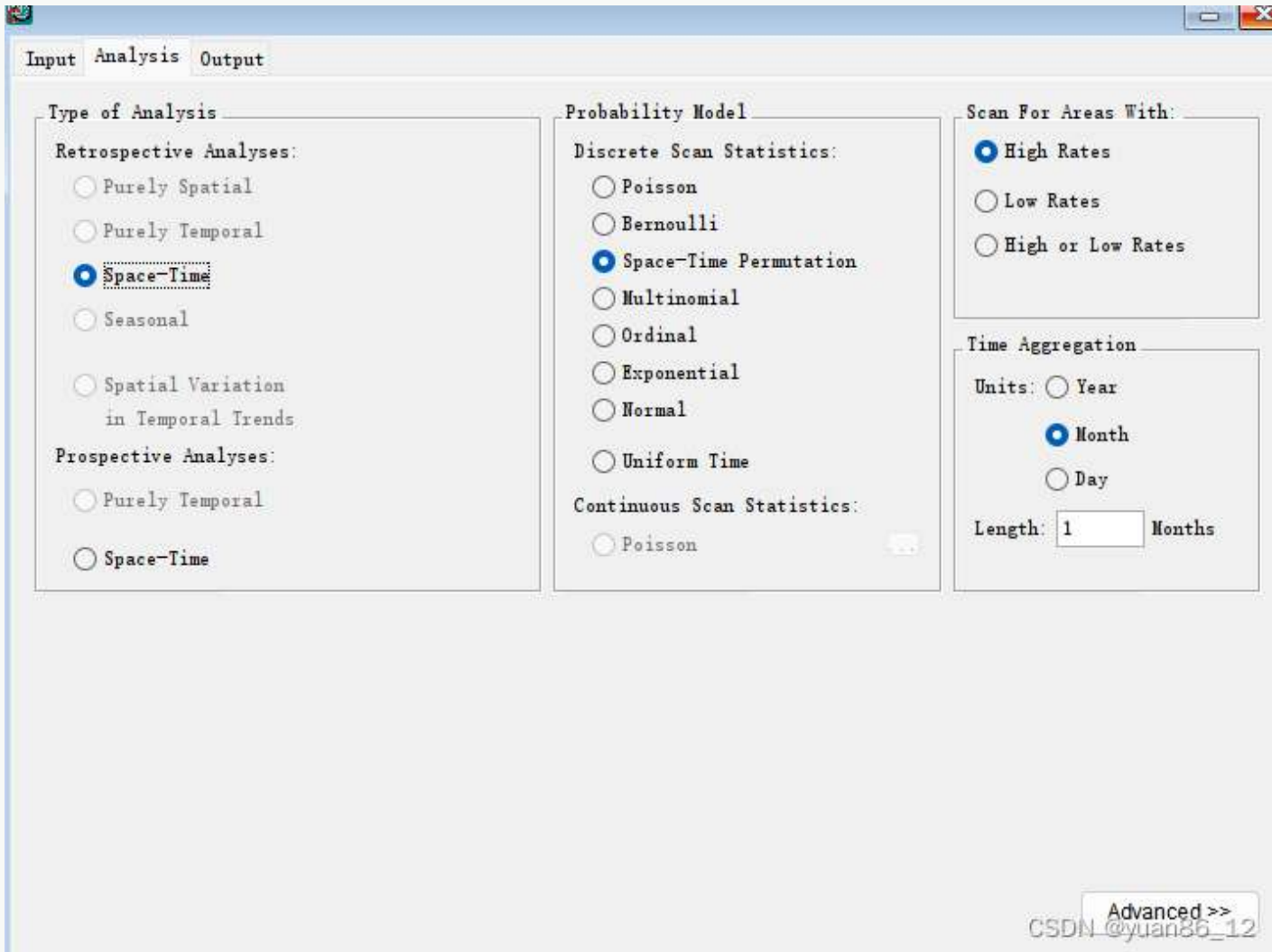
---
- 2 >1.6 million ELRs ingested into surveillance system so far in 2025

---
- 3 830 unique lab connections into surveillance system

---
- 4 >420K disease incidents created by ELRs in surveillance system so far in 2025 (excl. COVID)

---

# What is SaTScan?



The screenshot shows the SaTScan software interface with three tabs: Input, Analysis, and Output. The Analysis tab is active, displaying three main sections: Type of Analysis, Probability Model, and Scan For Areas With. In the Type of Analysis section, under Retrospective Analyses, the 'Space-Time' option is selected with a radio button. Under Prospective Analyses, the 'Space-Time' option is also visible. The Probability Model section has two sub-sections: Discrete Scan Statistics and Continuous Scan Statistics. In Discrete Scan Statistics, 'Space-Time Permutation' is selected. In Continuous Scan Statistics, 'Poisson' is selected. The Scan For Areas With section has three options: 'High Rates' (selected), 'Low Rates', and 'High or Low Rates'. Below this is the Time Aggregation section, which includes 'Units' (Year, Month, Day) and 'Length' (1 Months). At the bottom right, there is a button labeled 'Advanced >>' and a watermark 'CSDN @yuan86\_12'.

Open-source tool to analyze spatial, temporal, and space-time data

Designed for public health and epidemiologists

Identifies clusters of cases in space and time; determines if differences over time are statistically significant.

# How do we leverage SaTScan for ELR monitoring?

Laboratory facilities are reconceptualized as “spaces” for the prospective space-time permutation scan statistic.

To detect unusual drops in reporting ELR volume by facility and by disease.

Adapted methodology used by NYC’s team and expanded:

- Increased sensitivity for some diseases
- Checking by disease vs. all labs

# How is SaTScan set up for ELR volume monitoring?

- 1 Part of volume monitoring (with zero submissions and turnaround time reports)

---
- 2 Limited to higher volume diseases (22 total) among higher volume senders

---
- 3 Monitored every weekday

---

# How is SaTScan set up for ELR volume monitoring?

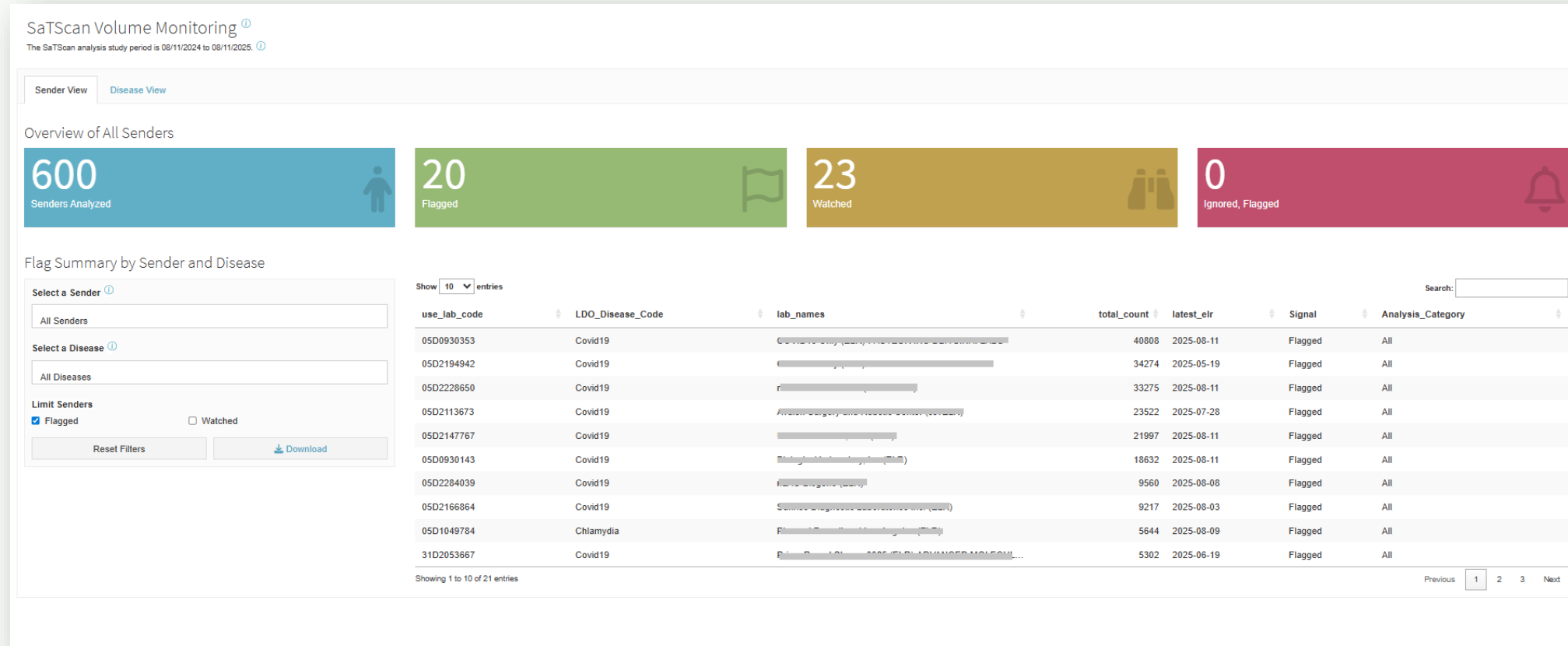
- 1 Diseases are parameterized (differentiated between higher vs. lower volume senders)

---
- 2 Run in R through an installed rsatscan package

---
- 3 Scheduled R scripts prepare input files and exports data into a dashboard

---

# ELR Monitoring Dashboard



# ELR Monitoring Dashboard

## SaTScan Volume Monitoring

The SaTScan analysis study period is 08/11/2024 to 08/11/2025.

Sender View Disease View

Select a Sender

All Senders

Select a Disease

Chlamydia

Select Time Period

☐ Daily ☒ Weekly

Select Date Type

☐ Received ☒ Collected

Select Date Range

2025-05-07 to 2025-08-11

Limit Senders

☒ Flagged

☐ Watched

Reset Filters

Download

### Overview of Senders for Chlamydia

116  
Senders Analyzed

1  
Flagged

0  
Watched

0  
Ignored, Flagged

### Weekly Deduplicated Counts by Status

Listing

Show 10 entries

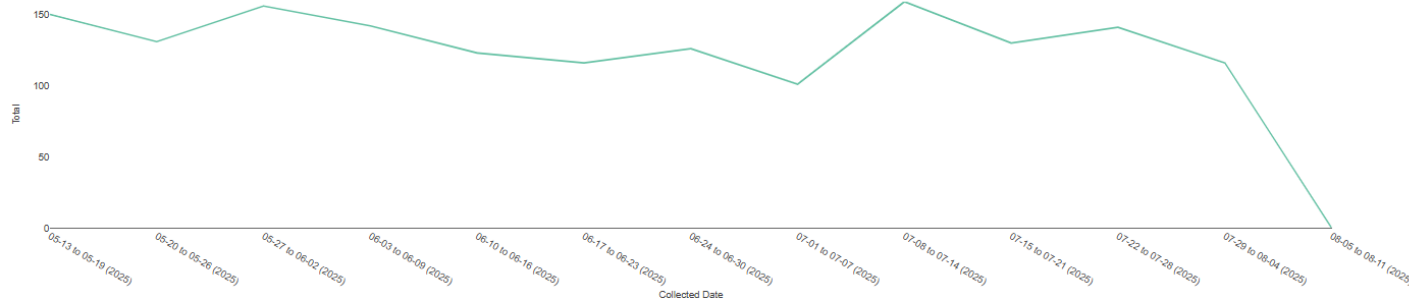
Search:

						08-05	07-29	07-22	07-15	07-08	07-01	06-24	06-17	06-10	06-03	05-27	05-20					
lab_names	use_lab_code	LDO_Disease_Code	Signal	Analysis_Category	total	to 08-11	to 08-04	to 07-28	to 07-21	to 07-14	to 07-07	to 06-30	to 06-23	to 06-16	to 06-09	to 06-02	to 05-26					
						(2025)	(2025)	(2025)	(2025)	(2025)	(2025)	(2025)	(2025)	(2025)	(2025)	(2025)	(2025)					
<div><div></div></div>						05D1049784	Chlamydia	Flagged	All	1591	0	116	141	130	159	101	126	116	123	142	156	131

Showing 1 to 1 of 1 entries

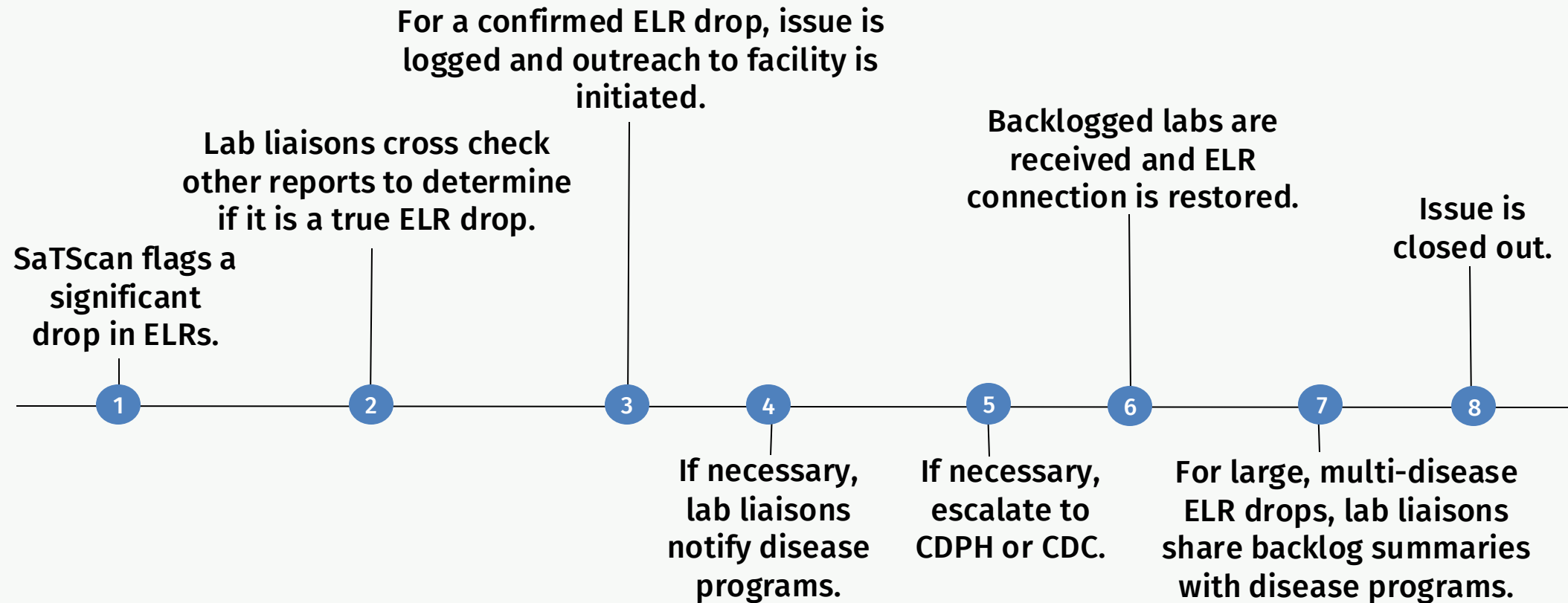
Previous 1 Next

### Volume Distribution for Flagged Senders



COUNTY OF LOS ANGELES  
Public Health

# ELR Monitoring Workflow



# Future Plans

- 1 Expand to lower volume facilities and lower volume diseases

---
- 2 Further automate monitoring for efficient decision making

---
- 3 Continue to align monitoring to program priorities

---

# Acknowledgements

SaTScan Methods adapted from the Bureau of Communicable Disease at the New York City Department of Health and Mental Hygiene:

- Greene, S. K., Andrews, E. M., Evans Lloyd, P., Baumgartner, J., & Peterson, E. R. (2020). Detecting drop-offs in electronic laboratory reporting for communicable diseases in New York City. *Journal of Public Health Management and Practice*, 26(6), 570–580. <https://doi.org/10.1097/PHH.0000000000000969>
- GitHub Repo: [https://github.com/CityOfNewYork/communicable-disease-surveillance-nycdohmh/blob/master/ELR\\_dropoffs/README\\_ELROPOFFS.md](https://github.com/CityOfNewYork/communicable-disease-surveillance-nycdohmh/blob/master/ELR_dropoffs/README_ELROPOFFS.md)

rsatscan package:

Kim, J., & Jung, I. (2020). *rsatscan: Tools, classes, and methods for interfacing with SaTScan stand-alone software* (R package version 0.3.9200) [Computer software]. Comprehensive R Archive Network (CRAN). <https://CRAN.R-project.org/package=rsatscan>

# Thank you!

If you have more questions, email:  
[LabDataMonitoring@ph.lacounty.gov](mailto:LabDataMonitoring@ph.lacounty.gov)





**PHIG  
PARTNERS**



**DEPARTMENT OF  
PUBLIC HEALTH &  
HUMAN SERVICES**

# **Git'er done Montana Style:**

**How GitLab Saves Our Code (and Our Sanity)**



**SHAPING TOMORROW'S PUBLIC HEALTH TODAY.**



# Pulse Check:

Quick show of hands, how many people are familiar with GitLab or GitHub?

**GitLab: when used to its full extent,  
it is a DevOps platform that  
enables:**

*Code  
repository +  
tracking*

*Group collaboration*

*Pipeline development*



# Challenge

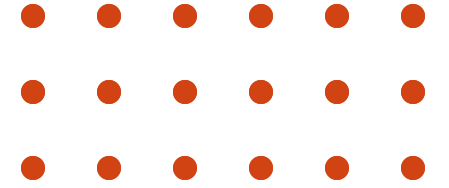


- Montana is a decentralized state (59 local and tribal public health departments)
- We have many core public health data to share: Behavioral Risk Factor Surveillance System (BRFSS); Vital Statistics; Communicable Disease data; Hospital Discharge; Syndromic Surveillance; Population Estimates
- Wanted to prevent the release of differential statistics while empowering public health professionals to perform independent data analysis

# Opportunity




- Enterprise GitLab is available within the State of Montana
- Enabled us to centrally store and utilize common analytic code
- Aligned with Data Modernization Efforts
  - ☒ Support for implementation
  - ☒ Able to leverage existing infrastructure/technology
  - ☒ Had an advanced GitLab user to act as the Champion








# How we started

- Drafted how we wanted the Group organized
    - Enterprise → Agency → Division → Surveillance & Informatics
  - Worked with our State IT
  - Defined the governance and administration
    - How would access be requested, reviewed, granted?
    - How would we ensure proper management and utilization?
  - Collated all that information into a handy Instruction manual
  - Socialized the GitLab Group!
-





Group

M mtdphhs-surveillance-informatics

Pinned

Issues 0

Merge requests 0

Epics 0

Manage

Plan

Code

Build

Secure

Deploy

Operate

Analyze



Settings

What's new 4

Help

Enterprise / DPHHS / PHSD / mtdphhs-surveillance-informatics

M mtdphhs-surveillance-informatics



Recent activity  
Last 30 days

Merge requests created  
4

Issues created  
0


Members added  
0

Subgroups and projects

Shared projects

Shared groups

Inactive

 Search (3 character minimum)

> B BRFSS

> E EMSTS Data  
This group is for datasets managed under EMSTS: EMS registry, Montana Trauma Registry, MT-VDRS and SUDORS

> E ESSENCE

> I Injury and Overdose Indicators  
R and SAS code for Injury and Overdose CDC/CSTE indicators: Death & MHDD Data

> M MHDD

> M MIDIS

> M Montana Population

> R R and SAS Coding Group

V Vital Stats Owner

E ELR Data Monitoring System 0

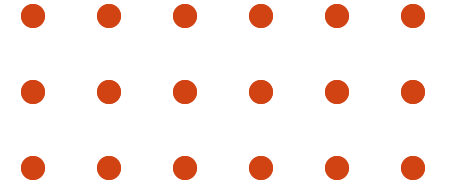
P Public Health Data Catalog 0

P Public Health Data for Montana Communities 0

**If you build it,**

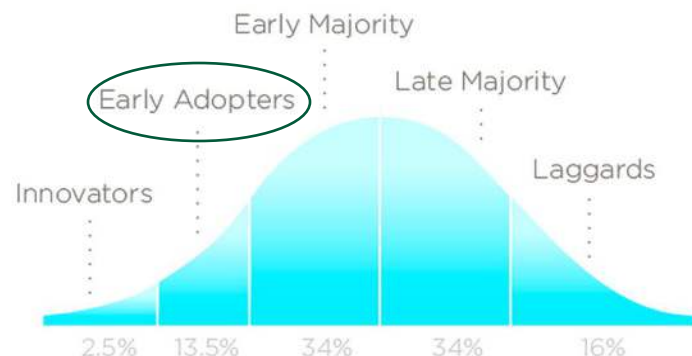


**will they come?**



# Yes, And, we are still trying

- Utilization hasn't been what we had hoped
  - Currently have the “early adopters”
- Positive feedback from users
- Change management is hard
- Data Modernization “overwhelm”



## Next Steps:

- Hands-on training
- More abbreviated instruction manual or short training tutorials
- GitLab is robust, so let's focus on the intended and immediate purpose
- Continue to socialize its use in our Montana Public Health Communities of Practice
- Consider the addition of more relevant code sets

# Thank You!

[jennifer.rico@mt.gov](mailto:jennifer.rico@mt.gov)

---

# Audience Q & A



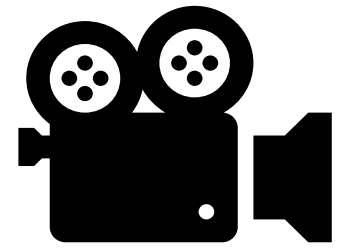
# Thank You!

Up Next | Break

**11am Central Time | Regency C** Join us for our  
preconference closing plenary session –

***Advancing Data Modernization Roadmaps with a  
Sustainability Lens***

# Share Your Story!



## IC Program Interviews: Wave 1 Participants

**We Want to Hear from  
You!**

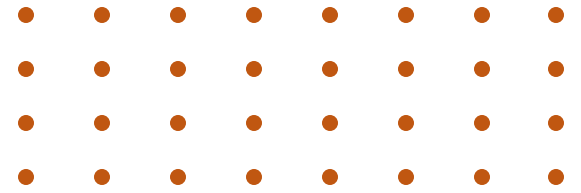
Short, 5–7 minute interviews with  
**Wave 1 PHAs & IC Program partners**

**When:** Mon 8/18 – Thurs 8/21

**Where:** Sterling 5 (2nd floor)

*Sign up by scanning the QR Code,  
or come find us during a break!*





# Get Social With Us!

Use **#ARC2025** **#PHIG** in your posts and stories.



# Sponsors

## Premier

 **inductivehealth**

 **ENVISION**  
TECHNOLOGY PARTNERS

 **Metopio**

**UNITED HEALTH FOUNDATION®**

## Silver

  
**RSM**

  
**STC**  
health

## Bronze

 **HLN**  
CONSULTING  
Innovators in  
Health Informatics

## WiFi

 **IBM®**

