What's Working Right Now: Low-Cost Tools from Local Health Departments

June 25,2026

Agenda

- Welcome
- Presentation
    - Implementing a Public Health Data Inventory Process using Microsoft Forms & Power Automate
    - From Hours to Minutes: Automating Daily Hazard Surveillance in Washington County, OR
- Q&A
- Closing

NACCHO
National Association of County & City Health Officials

General Information

Recording: This webinar is being recorded. A link to the recording will be shared with participants.

Audio: All participant are muted to minimize background noise. Please remain muted and raise your hands to ask questions.

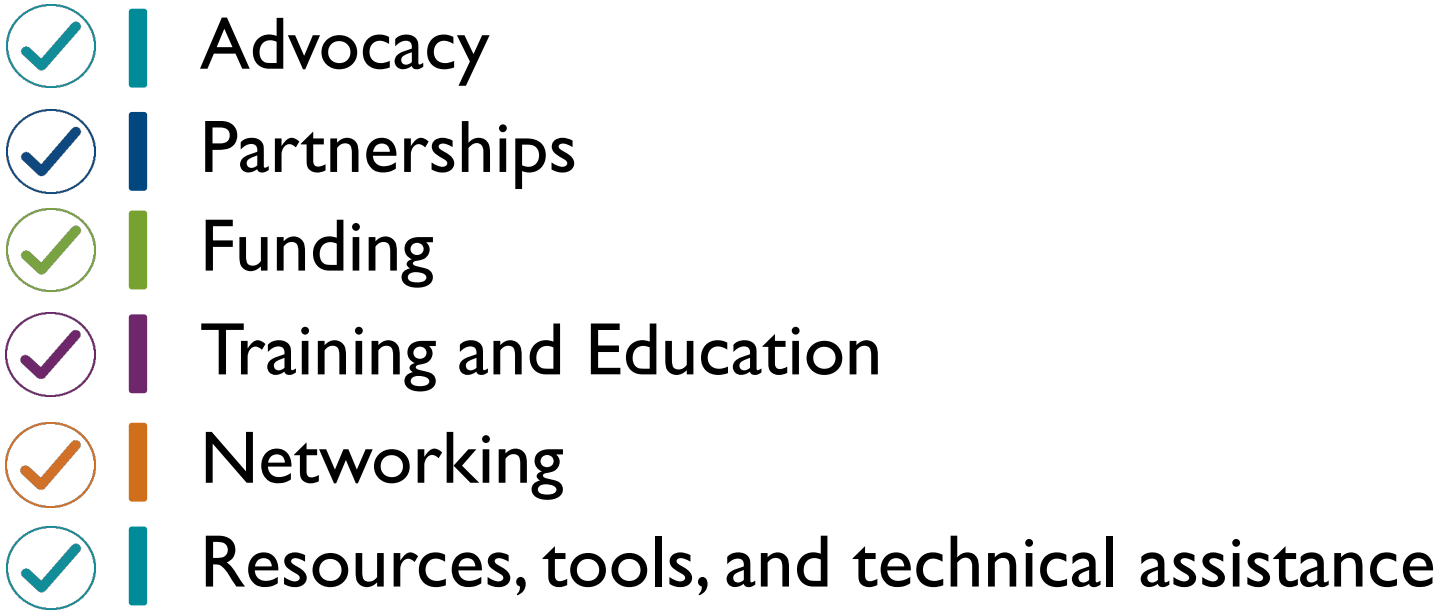
Questions: We encourage your questions! Use the Q&A feature to drop your questions or raise your hand to come off mute. Questions will be addressed during the designated Q&A portion.

Technical Issues: If you experience any technical difficulties, try refreshing your browser or exiting and rejoining the session. You can also reach out in the chat for assistance.

NACCHO
National Association of County & City Health Officials

About NACCHO

- NACCHO is comprised of nearly **3,300 local health departments (LHDs)** across the United States. Our mission is to serve as a **leader**, **partner**, **catalyst**, and **voice** with local health departments.



NACCHO
National Association of County & City Health Officials

Implementing a Public Health Data Inventory Process using Microsoft Forms & Power Automate

- Tyler Bonnell
- Austin Otunomo

NACCHO
National Association of County & City Health Officials

SNOHOMISH COUNTY HEALTH DEPARTMENT

Building a Sustainable Data Inventory Program Using Low-Cost Microsoft Tools

PRESENTED BY

Tyler Bonnell & Austin Otunomo

Agenda

1. **Snohomish County**
   Tyler
2. **Defining the Problem**
   Tyler
3. **Low-Cost Technologies**
   Austin
4. **Public Health Data Inventory**
   (Designed Solution & Approach)
   Austin
5. **Outcomes**
   Austin
6. **Lessons Learned**
   Austin & Tyler
7. **Best Practices & Tips**
   Tyler
8. **Resources & Contact**
   Tyler

Snohomish County

- 2025 Population: **870,656 (3rd most populous county in WA)**
- Merged with the Snohomish County government in 2023 (previous was the Snohomish Health District)
- **~200 agency staff**
  - Office of the Director
  - Prevention Services
  - Environmental Health

Snohomish County had the first identified case of 2019 Novel Coronavirus in the United States [1]

Snohomish County

- (2020) 3 to (2026) 8 Epidemiologists
- 1st Informatics hire in July 2024
- Leadership interest in building up departmental data governance & data modernization practices.
- **CDC Foundation Workforce Acceleration Initiative - Cohort 2 Recipient**
  - January 2025 – June 2026
  - Projects
    - **Public Health Data Inventory**
    - Legacy EMR Migration

Snohomish County had the first identified case of 2019 Novel Coronavirus in the United States [1]

Defining the Problem

The Challenge

Our department had data assets spread across multiple divisions, programs, and systems — with no centralized way to answer fundamental questions:

- What data assets do we have?
- Where are they located?
- Who owns them?
- What privacy considerations apply?
- What if a critical dataset was lost?

Risks & Constraints

Operational Risk

Staff relied on institutional knowledge — when employees left, critical information left with them.

Staffing & Budget

Limited capacity and no dedicated budget; solution needed to use existing tools.

Varying Data Maturity

Programs ranged from highly organized systems to informal spreadsheet-based processes.

Low-Cost Microsoft Technologies

Microsoft Forms	SharePoint Online	Power Automate	Power BI	R & Quarto	Word / PDF
Standardized metadata collection; staff submit new assets.	Central repository for metadata, ownership, classifications & governance docs.	Automates submission workflow and annual POC review notifications.	Interactive dashboards, search, enterprise visibility & leadership reporting.	R (flextable) & Quarto to automatically generate and compile Data Book from the SharePoint into a Word or PDF.	Generates a static Data Book for onboarding, quick lookups & education.
$0 additional cost	$0 additional cost	$0 additional cost	$0 additional cost	$0 additional cost	$0 additional cost

All tools included within existing Microsoft 365 / county licensing agreements

Public Health Data Inventory

(Designed Solution & Approach)

Phase 1

Stakeholder Engagement

Met with leaders across divisions to understand pain points, desired functionality & governance expectations.

Phase 2

Data Inventory Design

Developed standardized metadata: admin, technical, governance & business continuity fields.

Phase 3

Data Collection

Microsoft Forms survey fed directly into SharePoint via Power Automate — reducing manual entry.

Phase 4

Validation & Feedback

Multiple leadership groups reviewed drafts; refined terminology, fields & accessibility.

Phase 5

Reporting & Dissemination

Created Data Book (static PDF) + Power BI dashboard for interactive search & leadership insight.

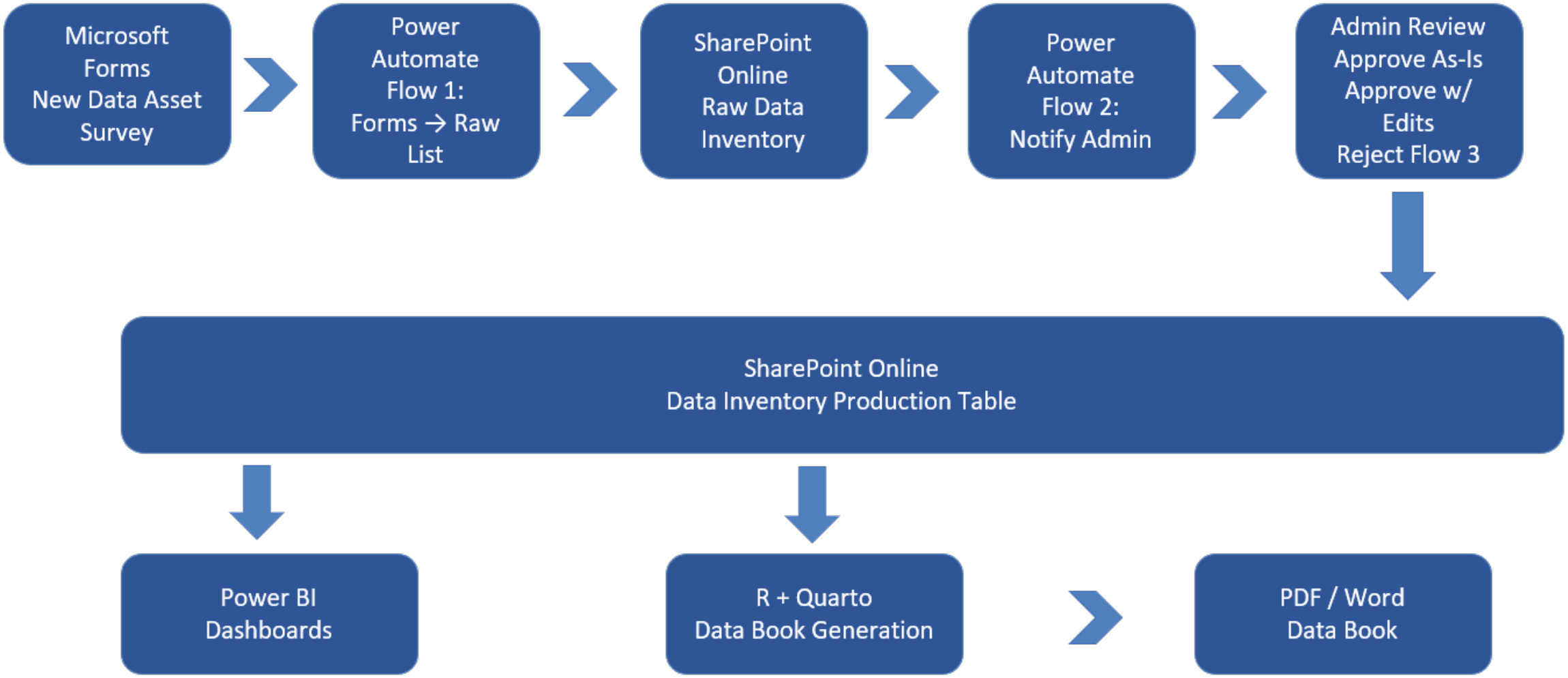
Phase 6

Sustainability Planning

Automated annual review: POCs receive reminders to verify/update their assigned data assets.

Public Health Data Inventory

Data Inventory End-to-End Workflow



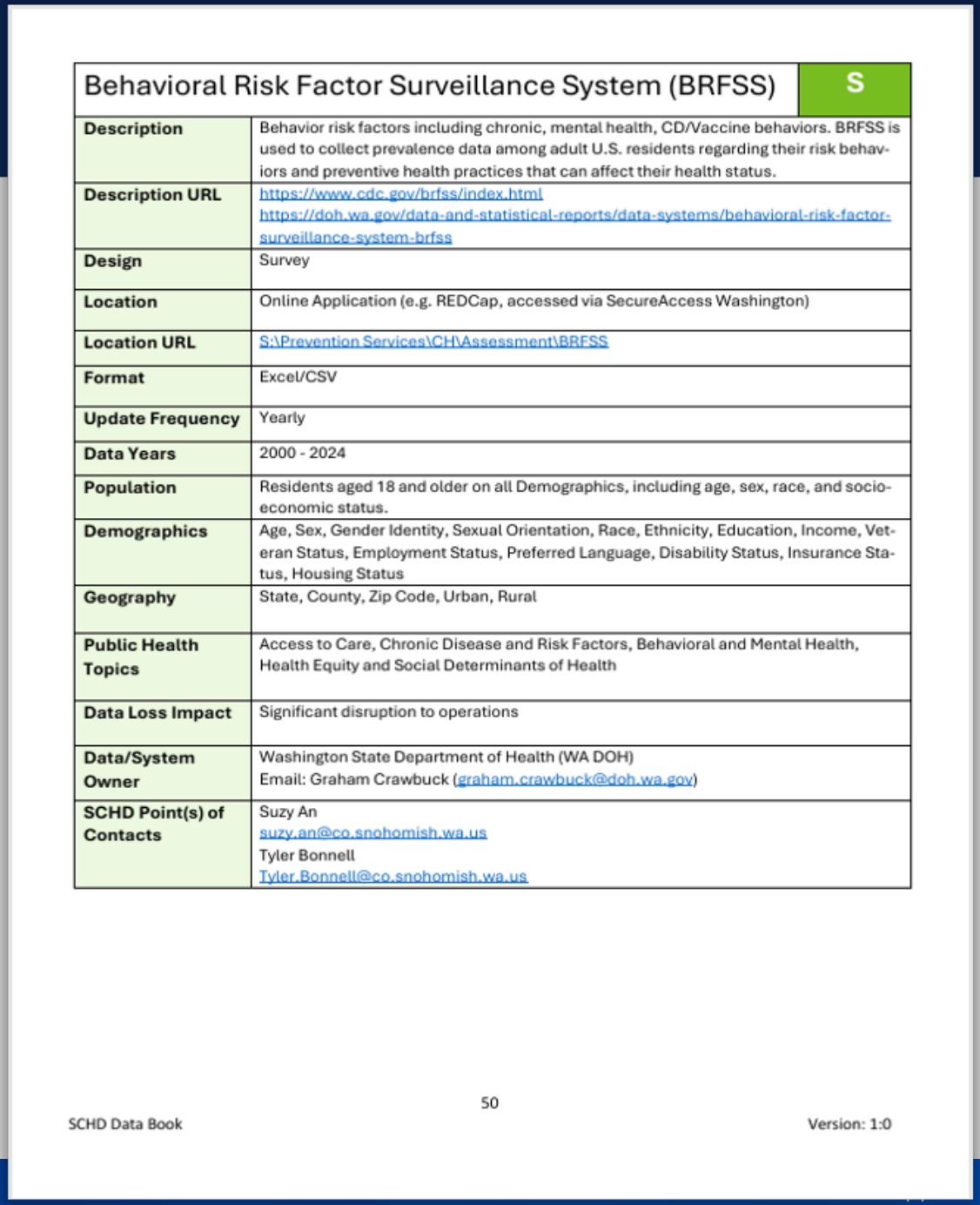
Rejected submissions require resubmission or additional review and are not added to the Production Data Inventory.

Data Book
(Public Health Data Inventory End Products)

High-level description of the type of information in each data asset

Benefits of a Data Book

- Allows new and existing staff to get information about what data is collected, where it is stored and who to contact regarding questions about the data.
- Single source of truth for all SCHD data assets
- Promotes the visibility of available data across health department teams

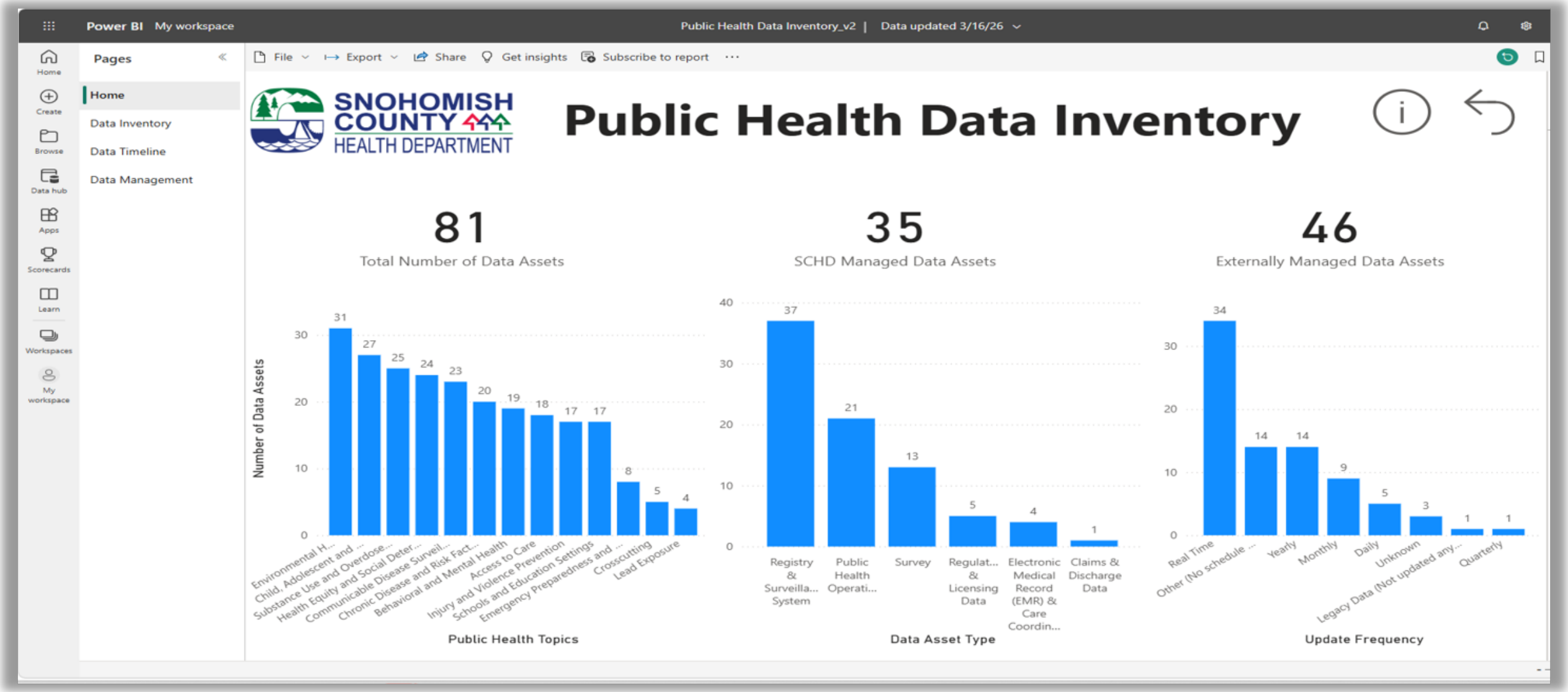


Behavioral Risk Factor Surveillance System (BRFSS)	S
Description	Behavior risk factors including chronic, mental health, CD/Vaccine behaviors. BRFSS is used to collect prevalence data among adult U.S. residents regarding their risk behaviors and preventive health practices that can affect their health status.
Description URL	https://www.cdc.gov/brfss/index.html https://doh.wa.gov/data-and-statistical-reports/data-systems/behavioral-risk-factor-surveillance-system-brfss
Design	Survey
Location	Online Application (e.g. REDCap, accessed via SecureAccess Washington)
Location URL	S:\Prevention Services\CH\Assessment\BRFSS
Format	Excel/CSV
Update Frequency	Yearly
Data Years	2000 - 2024
Population	Residents aged 18 and older on all Demographics, including age, sex, race, and socio-economic status.
Demographics	Age, Sex, Gender Identity, Sexual Orientation, Race, Ethnicity, Education, Income, Veteran Status, Employment Status, Preferred Language, Disability Status, Insurance Status, Housing Status
Geography	State, County, Zip Code, Urban, Rural
Public Health Topics	Access to Care, Chronic Disease and Risk Factors, Behavioral and Mental Health, Health Equity and Social Determinants of Health
Data Loss Impact	Significant disruption to operations
Data/System Owner	Washington State Department of Health (WA DOH) Email: Graham Crawbuck (graham.crawbuck@doh.wa.gov)
SCHD Point(s) of Contacts	Suzy An suzy.an@co.snohomish.wa.us Tyler Bonnell Tyler.Bonnell@co.snohomish.wa.us

50

SCHD Data Book Version: 1:0

Power BI Dashboard
(Public Health Data Inventory End Products)



Outcomes

Improved Visibility

Centralized view of departmental data assets — questions about ownership and location now answered quickly.

Enhanced Knowledge Retention

Institutional knowledge no longer resides only with individuals — reduces staff turnover vulnerability.

Improved Governance

Standardized metadata, clear ownership structures, annual review processes & documentation expectations.

Operational Efficiency

Staff no longer rely solely on word-of-mouth. Data Book & Power BI reduce time locating information.

Sustainable Maintenance

Automated annual reviews reduce administrative burden — no more manually contacting dozens of programs.

"This elevates our department to the next level." — "This work is meaningful and impactful." — "The Data Book is clean, well-organized, and useful."

Lessons Learned

What Worked Well

Early Stakeholder Engagement

Frequent feedback sessions improved adoption and gave users ownership over the product.

Start Simple

Building with available tools allowed quick movement — perfection was not required to begin delivering value.

Automation for Sustainability

Annual review prevents the inventory from becoming obsolete over time.

Challenges Encountered

Metadata Standardization

Programs described similar concepts differently; shared definitions required considerable discussion.

Managing Change

Structural changes to Forms/SharePoint occasionally disrupted Power Automate flows.

Defining Ownership

Determining Points of Contact required thoughtful conversations and clear expectations.

Best Practices & Tips

1 Establish Governance Earlier

Formal governance structures would have accelerated decision-making from the start.

2 Develop Maintenance Processes Sooner

Sustainability planning should begin at project initiation, not after deployment.

3 Standardize Metadata Definitions Upfront

A metadata dictionary created early would reduce inconsistencies throughout.

4 Build Knowledge Transfer Plans Concurrently

Transition planning should occur alongside implementation — not after.

5 **Centralized communication hub** around Data Inventory activities (Surveys, FAQs, Reports/Outputs) is important for consistent messaging and useability of the tools.

Resources

- **Data Inventory Examples**
  - Vermont Department of Health – Health Department Data Encyclopedia
  - NC DHHS Data Sharing Guidebook
    - See *NCDHHS Data Asset Inventory chapter*
  - NYU Data Catalog

- **Additional Resources**
  - https://learn.microsoft.com/en-us/power-automate/overview-cloud
  - Power BI for Data Analytics - Full Course for Beginners

Key Takeaway

Local health departments do not need expensive enterprise platforms to strengthen data governance.

- Leverage existing tools strategically
- Engage stakeholders early
- Focus on sustainability from day one

Our Data Inventory Program is an investment in organizational memory, operational efficiency, business continuity, and our ability to better serve our communities.

From Hours to Minutes: Automating Daily Hazard Surveillance in Washington County, OR

Blanca Pérez

NACCHO
National Association of County & City Health Officials

From Hours to Minutes: Automating Daily Hazard Surveillance in Washington County, OR

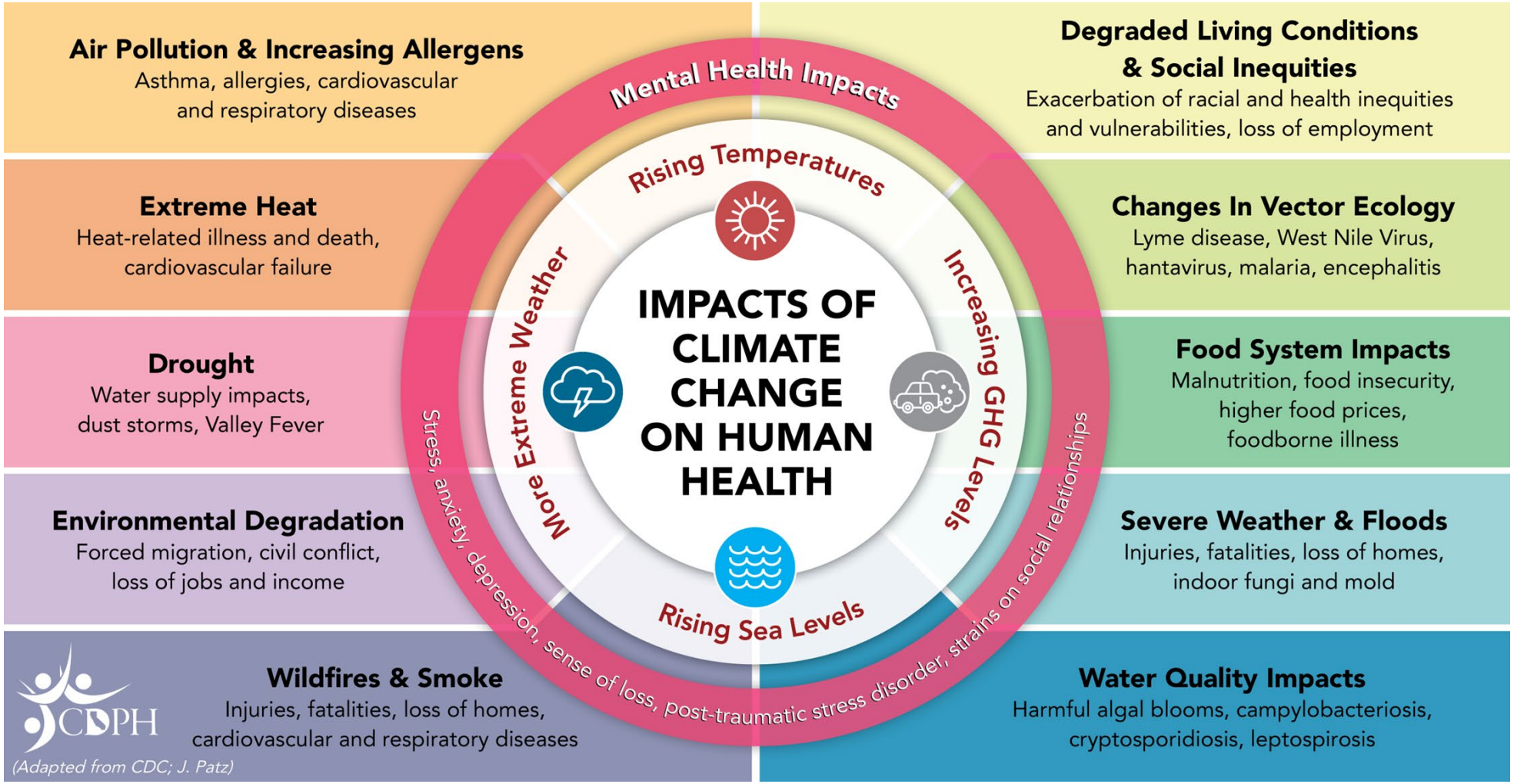
2026 NACCHO Low-cost Solutions
June 25, 2026
Blanca Perez, Environmental Health and Emergency Preparedness Data Scientist

washingtoncountyor.gov

Washington County Public Health

We are in the northwest part of the Portland Metro Area in Oregon, and serve a population of 611,708 residents

Climate and Health



When Minutes Matter

Common Barriers

Manual data extracts & wrangling (time-consuming).

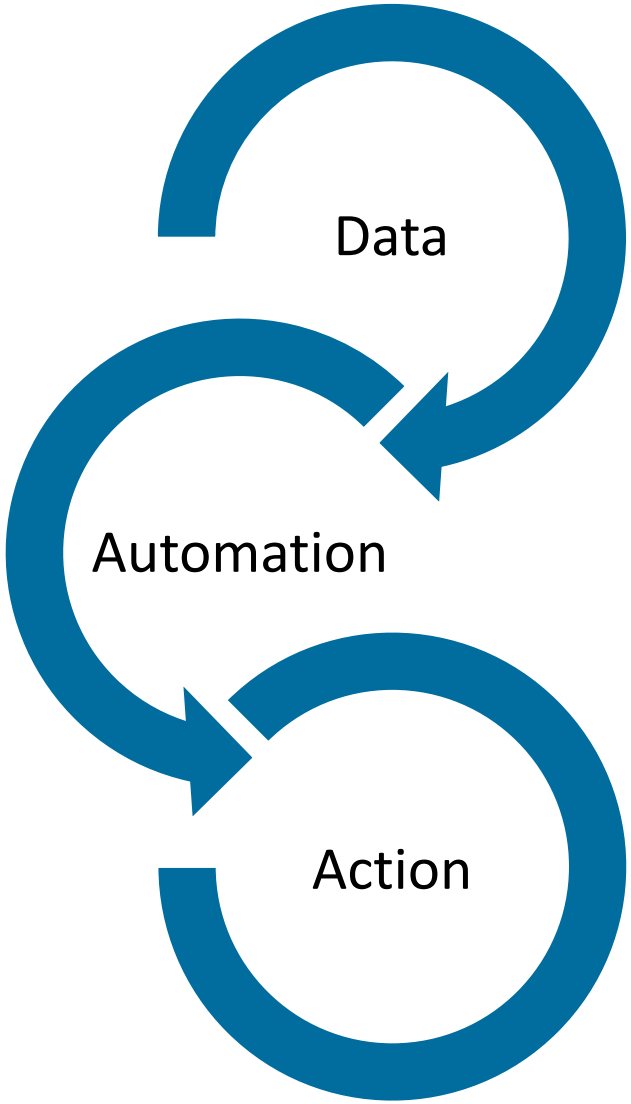
Limited analytics capacity & staff bandwidth.

Delays between weather alerts and public messaging.

Difficulty identifying who and where to prioritize.

Operationalized Preparedness Through Automation

- Open-source tools (R) + simple scheduling (Windows Task Scheduler) = Daily Actionable Intelligence
- No new software purchases required
- Existing ESSENCE access and EMS feeds
- Daily, consistent, cross-division information.



DATA SOURCE AND INTEGRATION

Bringing diverse data together. Turning raw data into operational intelligence.

DIVERSE DATA STREAMS

ESSENCE API
Emergency Department Visits

Climate-related Syndromes

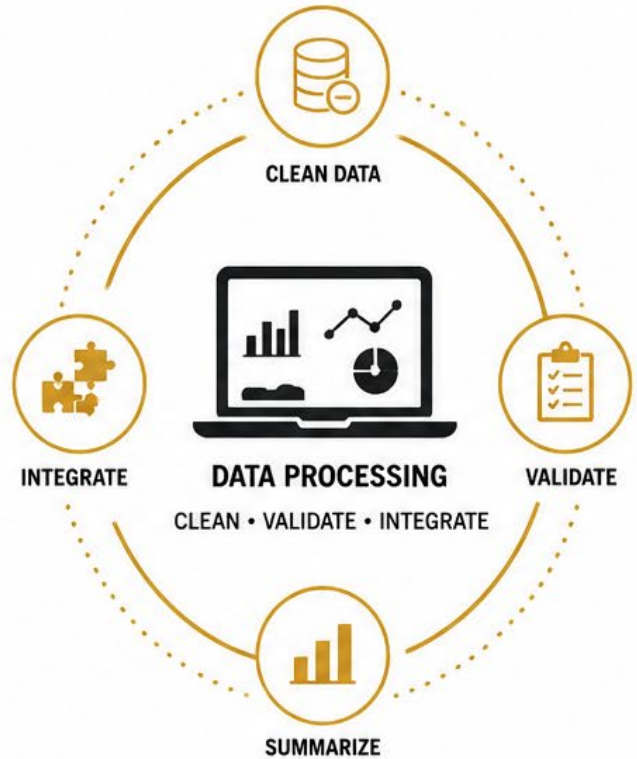
ESSENCE API
Weather Data

Climate-related Syndromes

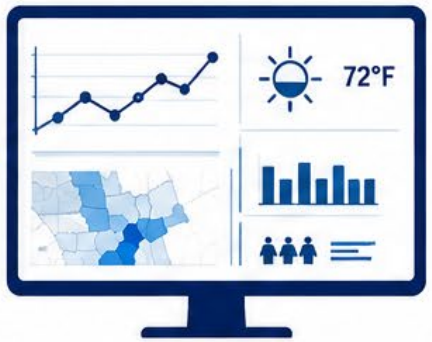
EMS CALL FEEDS
Daily feeds from partner agencies

OTHER SOURCES
Population, Alerts, Air Quality, etc.

R SCRIPTS
Stitch. Summarize. Visualize.



OPERATIONAL INTELLIGENCE



Unified, actionable view of hazard impacts

Clear. Timely. Actionable.

EVERY MORNING
Automated Daily Workflow

R SCRIPTS RUN
Transform raw data into insights

DASHBOARD CREATED
Visual, easy-to-understand intelligence

DELIVERED
To key public health teams each morning

TRANSFORMING RAW DATA INTO CLEAR, OPERATIONAL INTELLIGENCE—EVERY DAY.

From Hours to Minutes: Automating Daily Hazard Surveillance in Washington County, OR

Open-source R + Windows Task Scheduler = Daily, Actionable Intelligence

1. DIVERSE DATA STREAMS

ESSENCE API
Emergency Department Visits & Weather Data (Climate-related Syndromes)

EMS CALL FEEDS
Daily feeds from partner agencies

OTHER DATA
Population, SDoH, Alerts, & more

2. AUTOMATED WORKFLOW

~5:00 AM EVERY DAY
Windows Task Scheduler triggers the workflow

R SCRIPTS RUN
Modular .R scripts stitch, summarize, visualize data

Runs every day (weekends & holidays)

Reliable. Consistent. Resilient.

3. OPERATIONAL PRODUCT

HTML REPORT / DASHBOARD
Brings together status, trends, context, and equity to show what's changing, where, and who's affected.

4. DELIVERED ON TIME, EVERY DAY

AUTOMATIC EMAIL DELIVERY
HTML report emailed each morning to key teams

- Emergency Preparedness
- Environmental Health
- Medical Examiner

TURNING DATA INTO ACTIONABLE SIGNALS – EVERY DAY | Cross-divisional information • Low-cost • Open-source • Scalable

HOW IT WORKS: MODULAR, FUNCTION-DRIVEN ARCHITECTURE

1. SCHEDULED EVERY MORNING

Windows Task Scheduler
triggers the workflow
around 5:00 AM

2. MODULAR R SCRIPTS

Each .R file = one purpose (function)
Easy to maintain. Easy to scale.

- **run.R**
  Script run by Windows Task Scheduler. Source the rest of the scripts
- **01_utilities.R**
  Load all the needed libraries
- **02_data.R**
  Import and clean raw data
- **03_trends.R**
  Create trend analyses and time series
- **04_demographics.R**
  Demographic and equity analyses
- **05_map.R**
  Create maps and rankings
- **06_indicators.R**
  Calculate indicators and summaries
- **07_satscan.R**
  Spatial scan statistics (cluster detection)
- **08_output_data.R**
  Render the HTML report
- **09_email_report.R**
  Only send the report

3. DATA → INSIGHT

Raw Data
(ESSENCE API, EMS, Weather, Other Sources)

↓

Clean & Process
(standardize, validate, merge)

↓

Analyze & Summarize
(trends, indicators, demographics, spatial analysis)

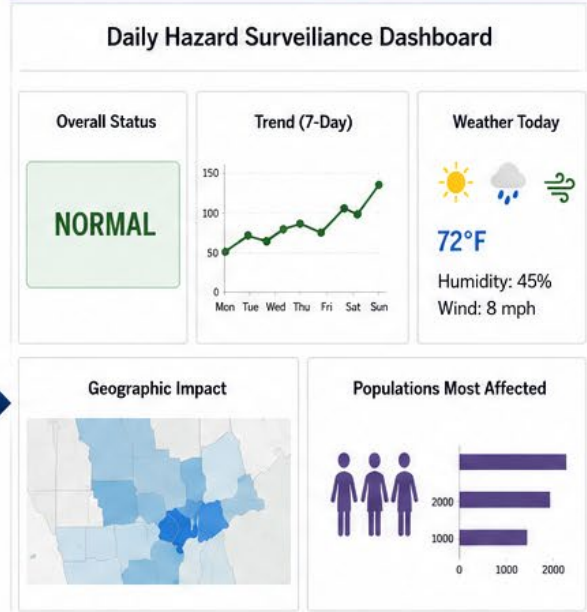
↓

Visualize
(charts, maps, metrics)

↓

HTML Report
(compiled for communication)

4. DELIVERED TO DECISION MAKERS



- Clear, actionable, and equity-focused
- Delivered daily by email
- Empowers teams to act with confidence

HTML report emailed each morning to key teams

- **Emergency Preparedness**
- **Environmental Health**
- **Medical Examiner**

WHY IT MATTERS

- **Saves hours every day**
- **Supports cross-divisional coordination**
- **Low-cost, open-source solution**
- **Scalable to more syndromes and indicators**

What the Report Produces

Winter Hazards Daily Report

Cold Related Illness | Traffic Related | **Asthma** | Unintentional Carbon Monoxide Exposure | Falls | EMS calls

CCDD Categories Tracked

21.1

Current 7-Day ED Visits Average

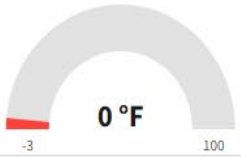
22.1

Prior 7-Day ED Visits Average

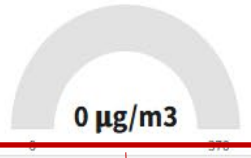
-4.5%

Change in 7-Day ED Visits Average since Prior Week

Minimum Temperature Yesterday



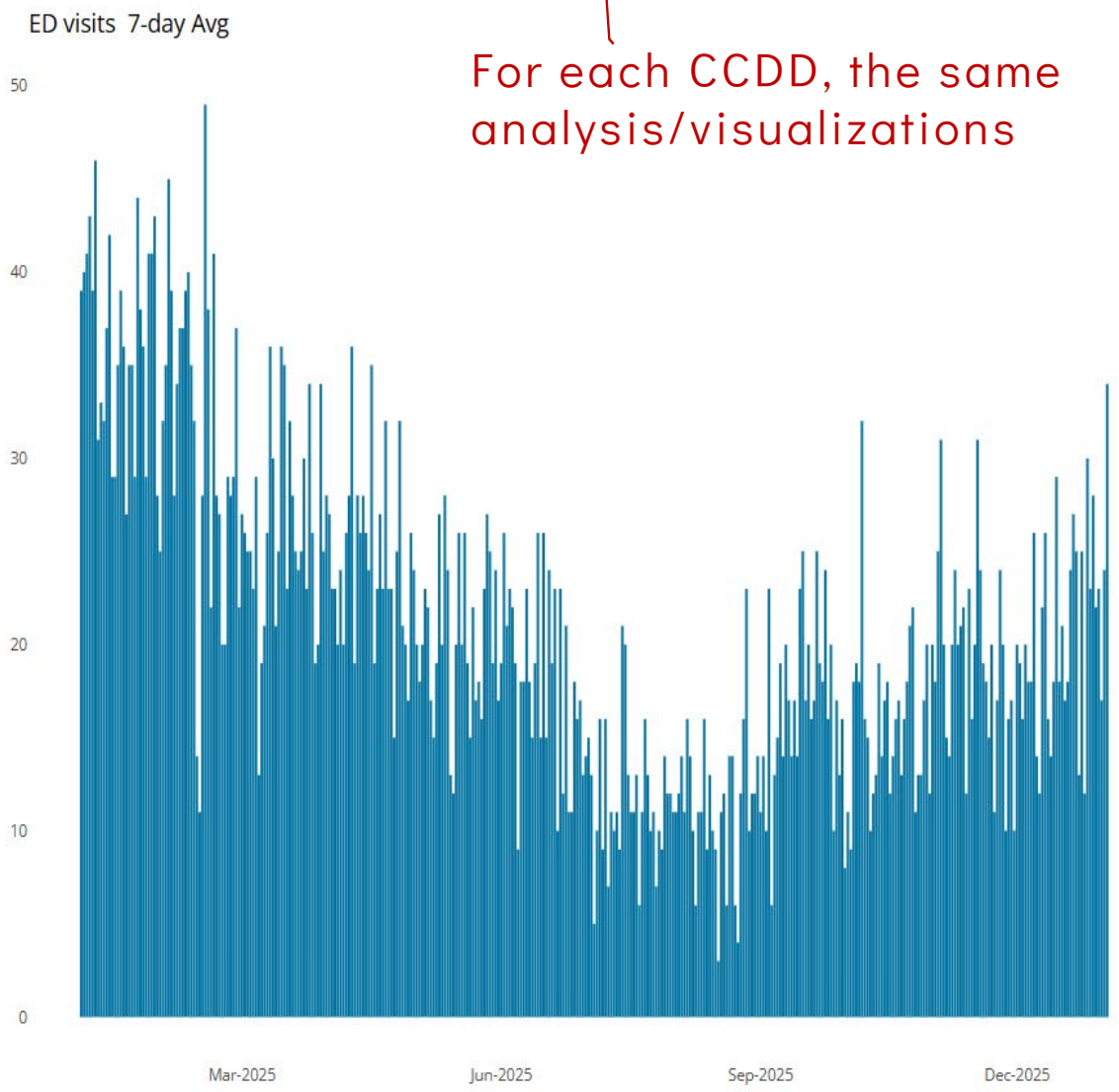
Air Quality Yesterday



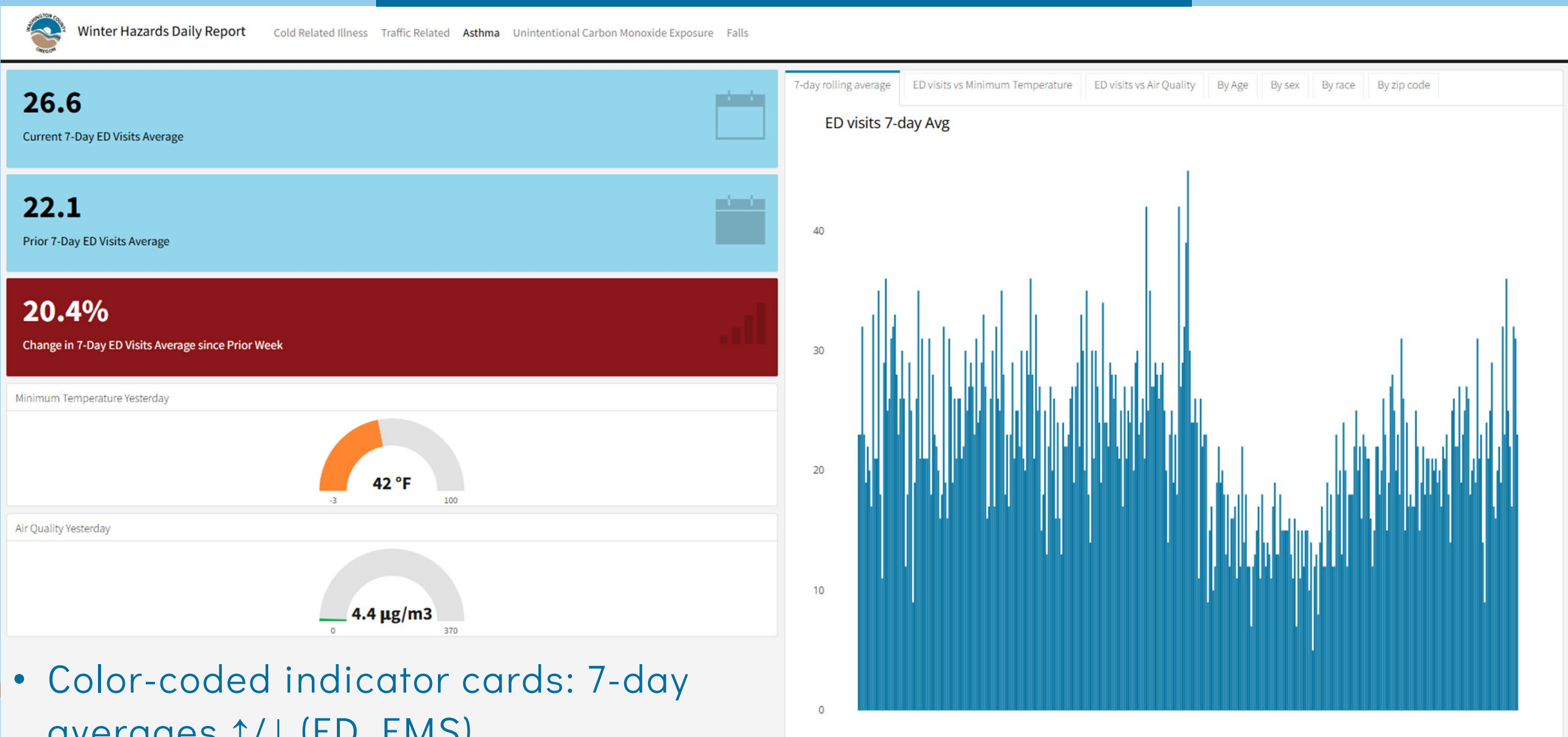
Trends and Weather Indicators

7-day rolling average | ED visits vs Minimum Temperature | ED visits vs Air Quality | By Demographics | By zip code | Spatio-temporal clusters

For each CCDD, the same analysis/visualizations

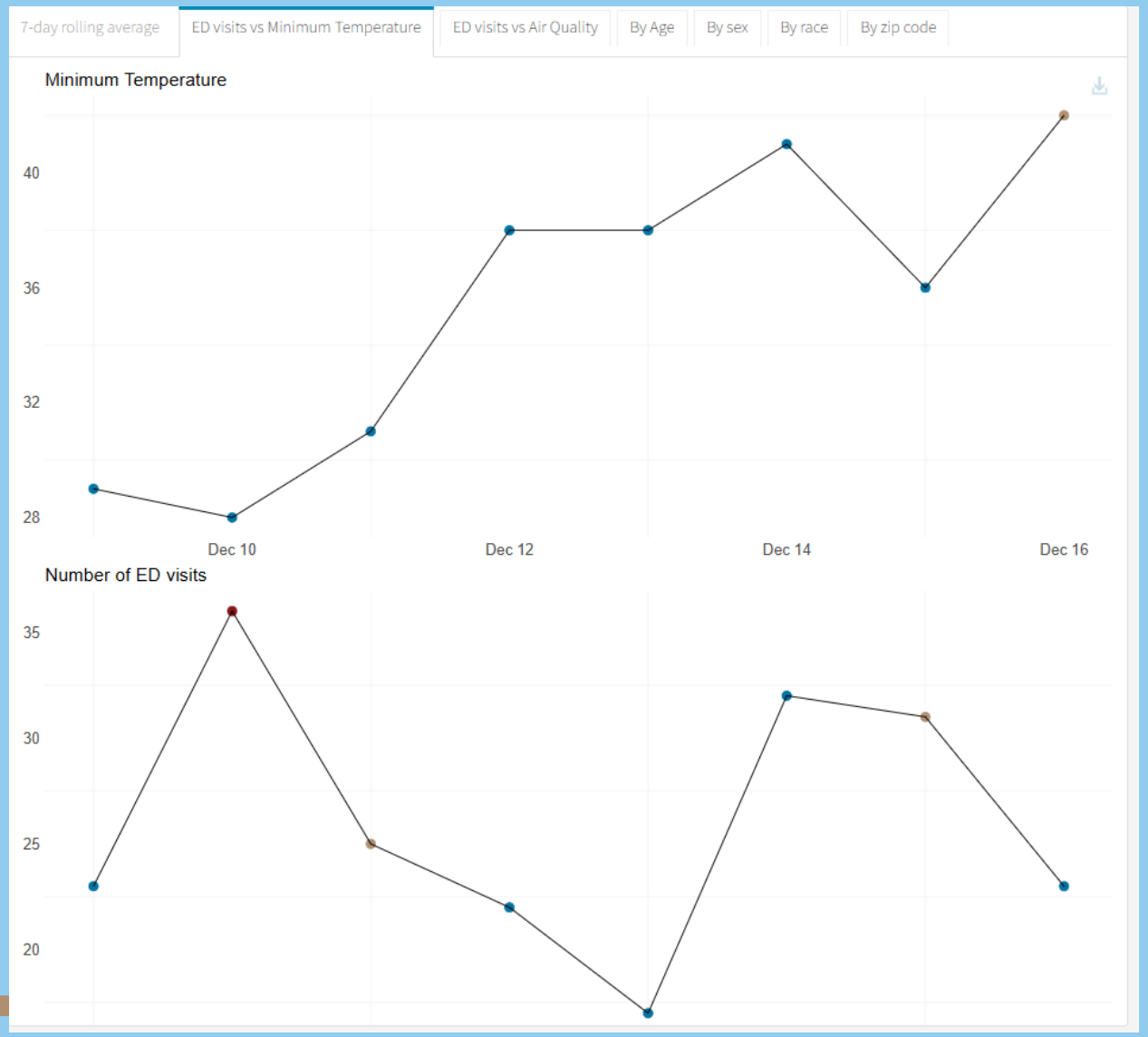


What the Report Shows



- Color-coded indicator cards: 7-day averages ↑/↓ (ED, EMS)

What the Report Shows



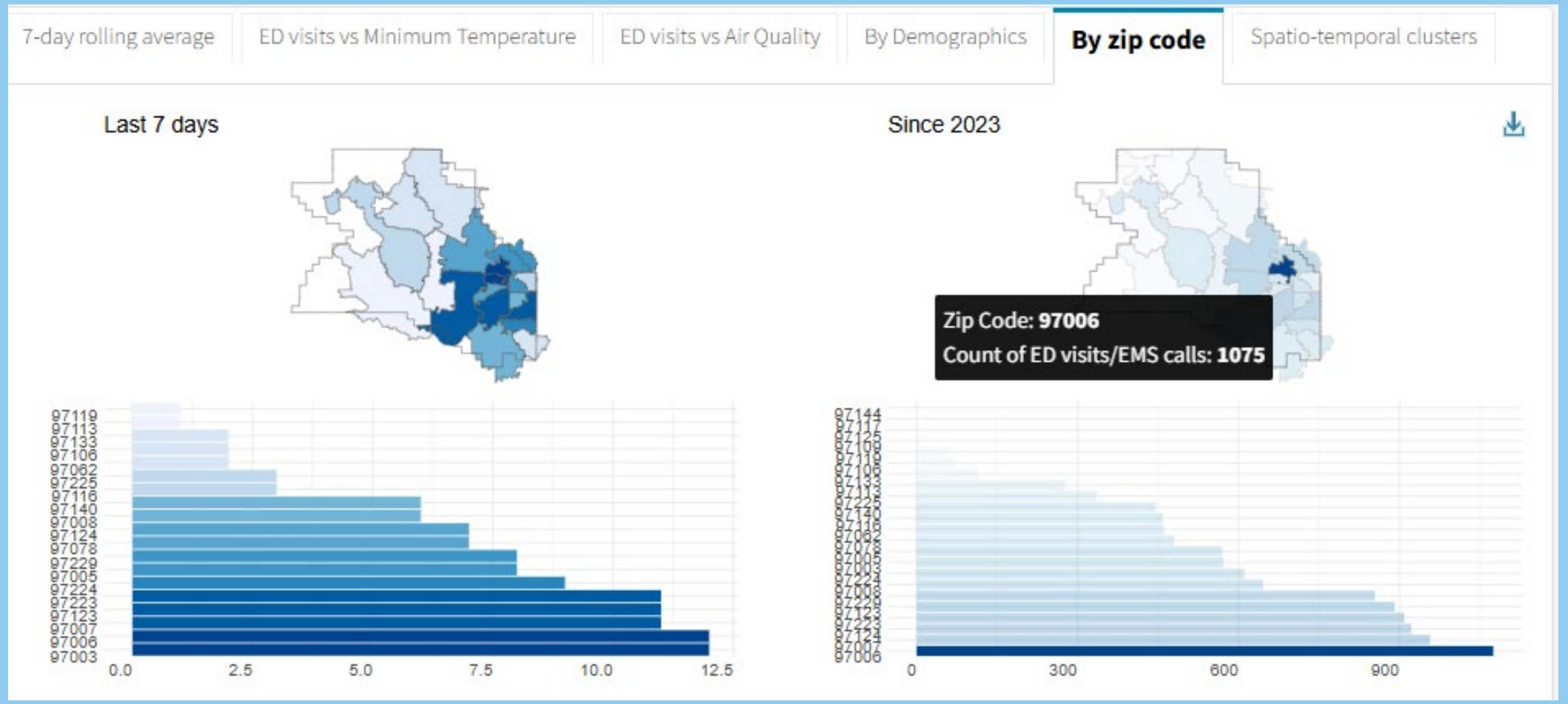
- Time-series trends with above-expected shading
- Comparative charts ED visits/EMS calls vs. temperature, precipitation, snow, AQI

What the Report Shows

Category	Demography	Since 2023	Last 7 Days	Yesterday
▼ Sex (3)				
	F	37.0% (235)	57.1% (4)	0.0% (0)
	M	62.8% (399)	42.9% (3)	0.0% (0)
	Unknown	0.2% (1)	0.0% (0)	0.0% (0)
▼ Age (7)				
	Preschool (0-4)	8.0% (51)	0.0% (0)	0.0% (0)
	Childhood (5-9)	0.3% (2)	0.0% (0)	0.0% (0)
	Adolescence (10-17)	1.9% (12)	0.0% (0)	0.0% (0)
	Younger Adult (18-44)	30.7% (195)	42.9% (3)	0.0% (0)
	Older Adult (45-64)	29.6% (188)	14.3% (1)	0.0% (0)
	Senior (65-74)	9.9% (63)	14.3% (1)	0.0% (0)
	Older Senior (75+)	19.5% (124)	28.6% (2)	0.0% (0)
▼ Race Alone (9)				
	American Indian and Alaska Native alone	0.8% (5)	0.0% (0)	0.0% (0)
	Asian alone	4.7% (30)	0.0% (0)	0.0% (0)
	Black or African American alone	4.3% (27)	14.3% (1)	0.0% (0)
	Hispanic	11.2% (71)	14.3% (1)	0.0% (0)
	Native Hawaiian and Other Pacific Islander alone	0.8% (5)	0.0% (0)	0.0% (0)
	Some Other Race alone	3.1% (20)	0.0% (0)	0.0% (0)
	Two or more races	0.2% (1)	0.0% (0)	0.0% (0)
	Unknown	9.8% (62)	0.0% (0)	0.0% (0)
	White alone	65.2% (414)	71.4% (5)	0.0% (0)

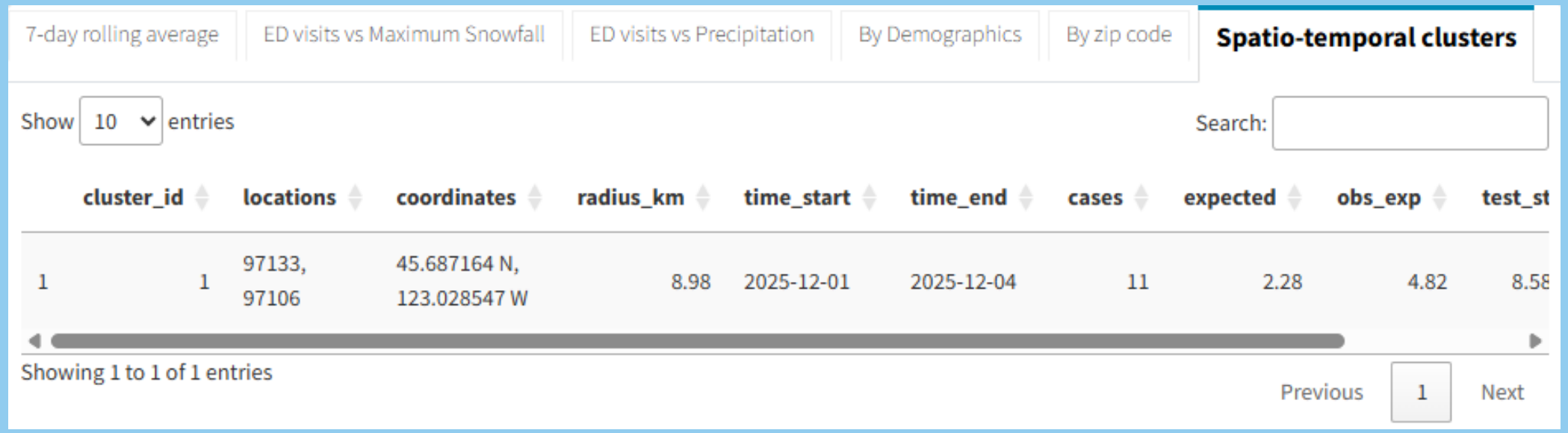
- Demographics: age, sex, race/ethnicity

What the Report Shows



- Geography: ZIP-level maps

What the Report Shows



7-day rolling average | ED visits vs Maximum Snowfall | ED visits vs Precipitation | By Demographics | By zip code | **Spatio-temporal clusters**

Show 10 entries Search:

	cluster_id	locations	coordinates	radius_km	time_start	time_end	cases	expected	obs_exp	test_st
1	1	97133, 97106	45.687164 N, 123.028547 W	8.98	2025-12-01	2025-12-04	11	2.28	4.82	8.58

Showing 1 to 1 of 1 entries Previous 1 Next

- Clusters: spatio-temporal hotspots (rsatscan)

Visual Design Choices

01 Washington County branding: logo and colors

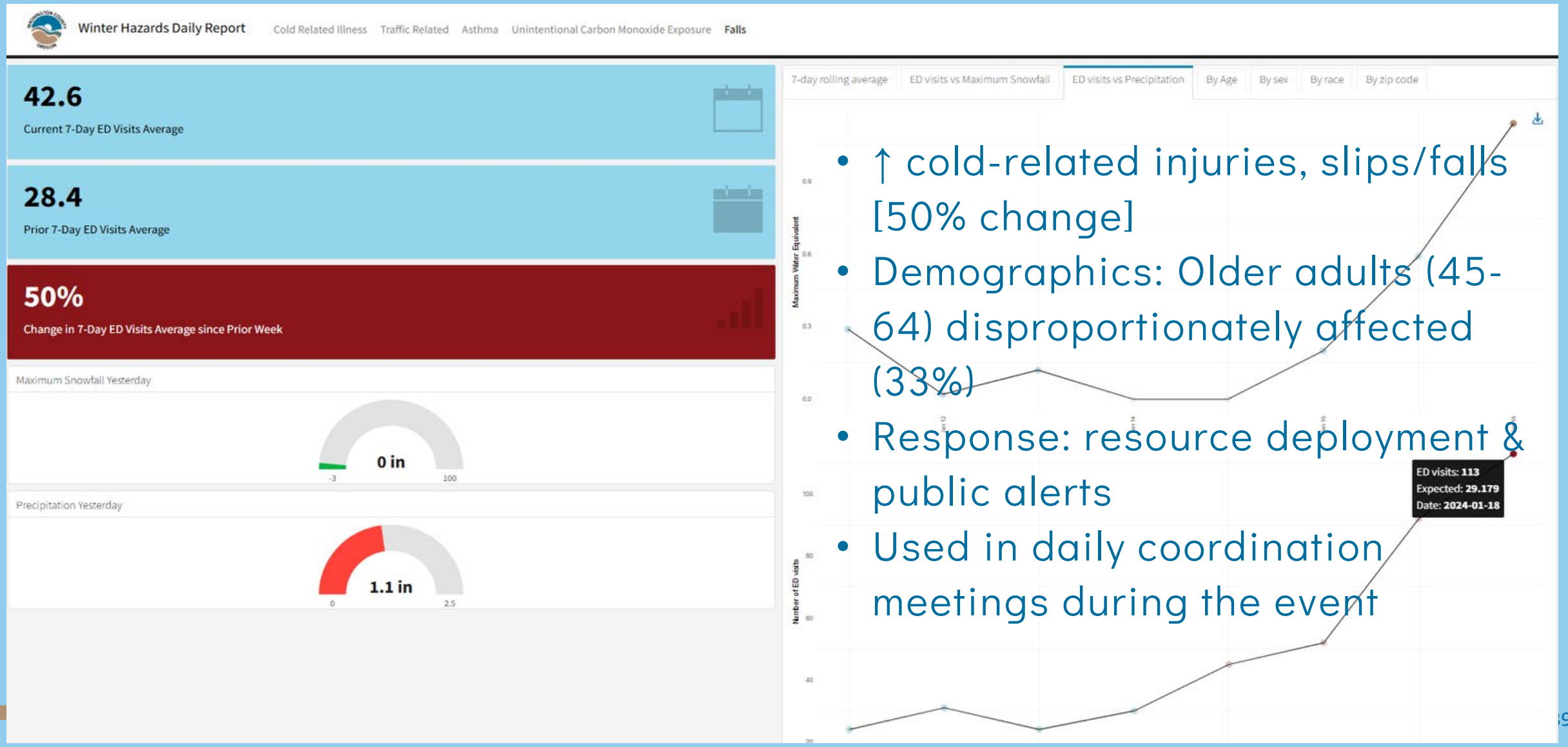
02 Consistent visualizations for different CCDD categories

03 Uncluttered

04 Minimal text, clear takeaway with color coding indicators

05 Iterative process: ongoing meeting with different public health programs and end users

Case Study — Winter Freeze (2024)



- ↑ cold-related injuries, slips/falls [50% change]
- Demographics: Older adults (45-64) disproportionately affected (33%)
- Response: resource deployment & public alerts
- Used in daily coordination meetings during the event

IMPACT — FROM HOURS TO MINUTES

BEFORE

Hours of manual work.

- Manual extraction
- Manual cleaning
- Manual chart creation
- Weekly report
- Single syndrome

AFTER

Automated. Fast. Proactive.

- Automated
- Daily
- Multiple syndromes
- Weather integration
- Demographics
- Maps
- Clusters

TIME SAVED:
from hours → minutes

CONTINUITY:
runs on weekends and during staff absences

LEAD TIME:
earlier detection during hazards

CROSS-DIVISION COMMUNICATIONS:
daily email improves alignment

PORTABILITY:
any jurisdiction with ESSENCE/EMS-like inputs. Already replicated in Benton and Lincoln counties

COST-EFFECTIVE:
open-source R, existing Windows Task Scheduler in Windows

What You Need to Build This

REQUIRED

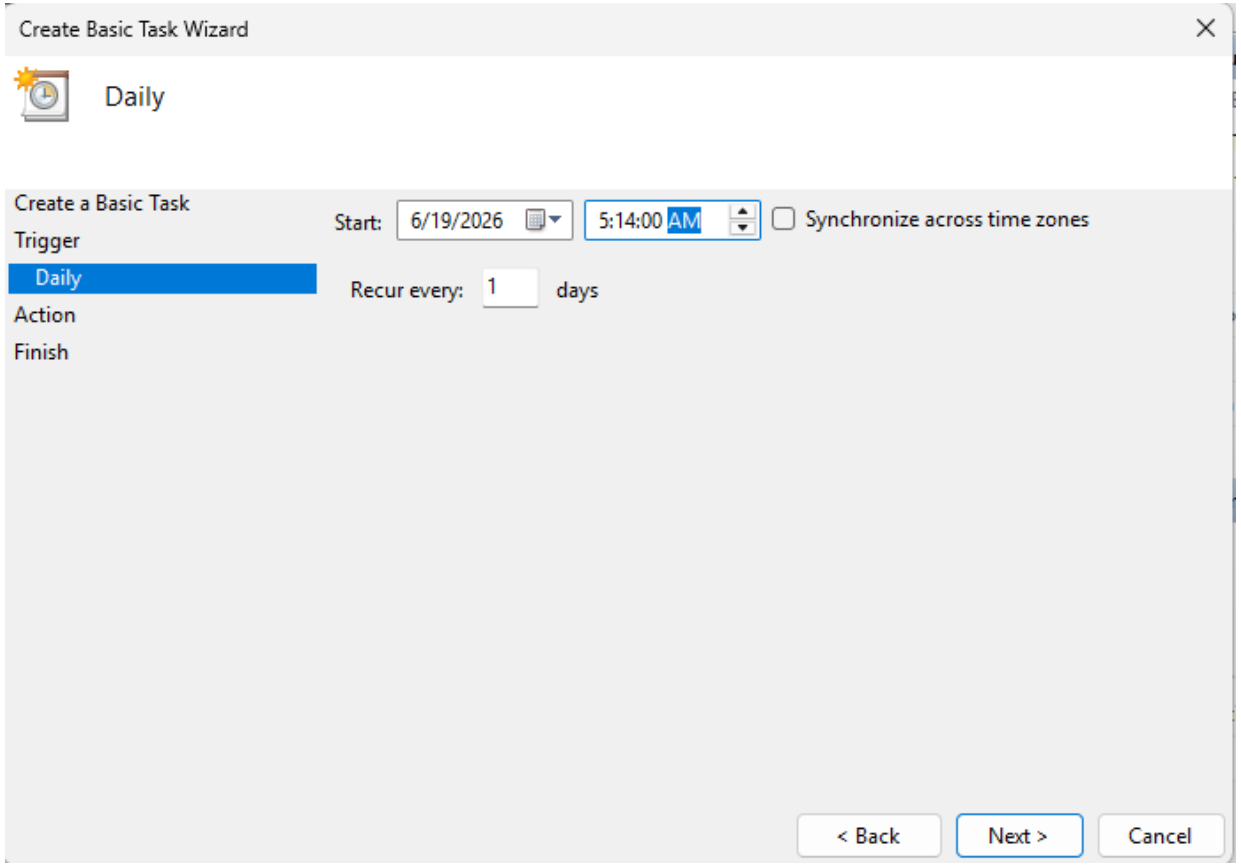
- ESSENCE API access
- R and R Studio
- Quarto
- Windows Computer
- Windows Task Scheduler
- Outlook email

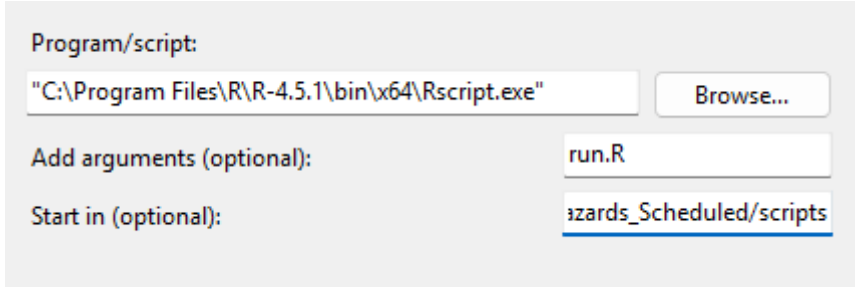
HELPFUL

- EMS feeds
- SatScan (free software)
- Basic R skills
- Stakeholder feedback

Total software cost: approximately $0

Windows Task Scheduler





LIMITATIONS AND LESSONS LEARNED

1 ED AND EMS REPORTING DELAYS

Data may arrive late.
Timeliness can vary.

2 CLUSTER DETECTION NOT EQUAL CAUSATION

Signals correlation,
not causation—context is key.

3 KEEP DATA VISUALIZATIONS SIMPLE

Simple visuals support faster understanding and better decisions.

AUTOMATION DOESN'T ELIMINATE UNCERTAINTY. ED and EMS data can have reporting delays, and cluster detection signals correlation—not causation—so context remains essential.

ITERATIVE PROCESS

ALWAYS IMPROVING

- Adding new visualizations
- Expanding analyses
- Enhancing usability
- Responding to evolving needs

OUR GOAL: MAKE THESE TOOLS MORE ACTIONABLE AND RESPONSIVE—EVERY DAY.

ACKNOWLEDGE LIMITATIONS. COMMUNICATE CONTEXT. CONTINUOUSLY IMPROVE. BETTER DATA. BETTER DECISIONS. BETTER OUTCOMES.

Thank you!

Blanca Perez
Blanca_Perez@washingtoncountyor.gov

NACCHO
National Association of County & City Health Officials

Future webinar dates ...

What's Working Right Now: Low-Cost Tools from Local Health Departments webinar series

- *Tuesday, June 30, 1-2pm ET*
- *Tuesday, July 7, 1-2pm ET*

NACCHO
National Association of County & City Health Officials

[Evaluation] What's Working Right Now: Low-Cost Tools from Local Health Departments #1

For any questions, please email phinformatics@naccho.org

NACCHO
National Association of County & City Health Officials