HENNEPIN COUNTY

MINNESOTA

Public Health

Toward becoming an informatics-savvy local health department: lessons from the first three years

Dave Johnson and Aaron Peterson
Hennepin County Public Health
July 16, 2025 | NACCHO360

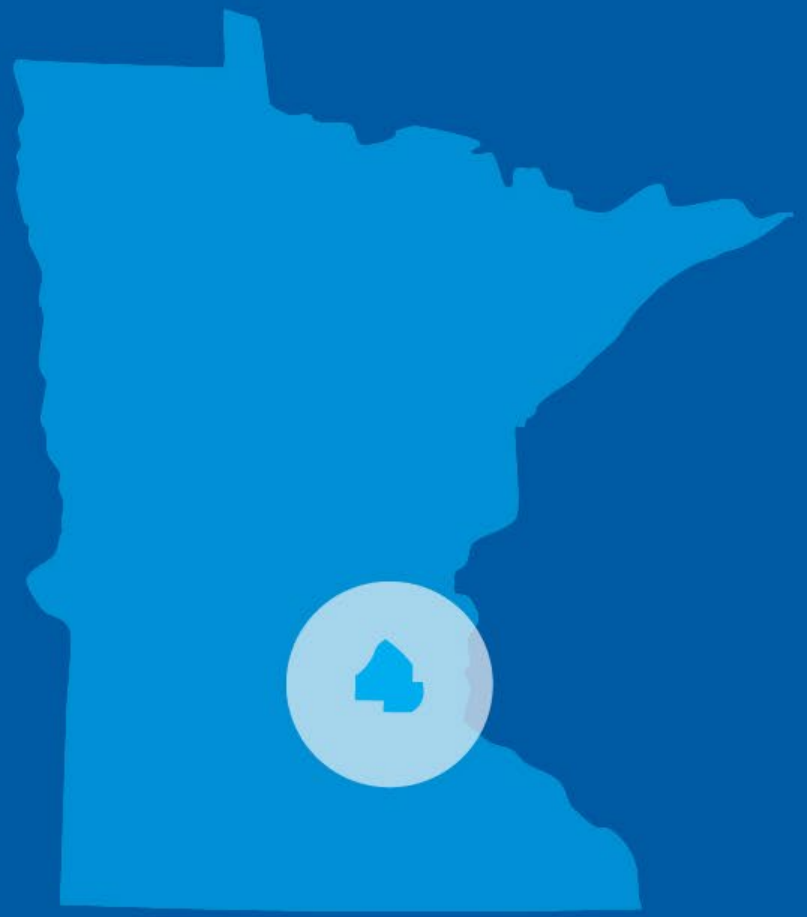
Objectives

- Demonstrate why developing informatics capacity is crucial for public health data modernization
- Recognize challenges and solutions that were encountered
- Share best practices and successful case studies highlighting capabilities
- Provide actionable steps and strategies to benefit others in informatics program development

Agenda

- Initial state and change catalysts
- Key steps in creating an informatics unit
- Describe the human resources, legal framework, and IT components needed for data modernization
- Better data can improve public health

Background

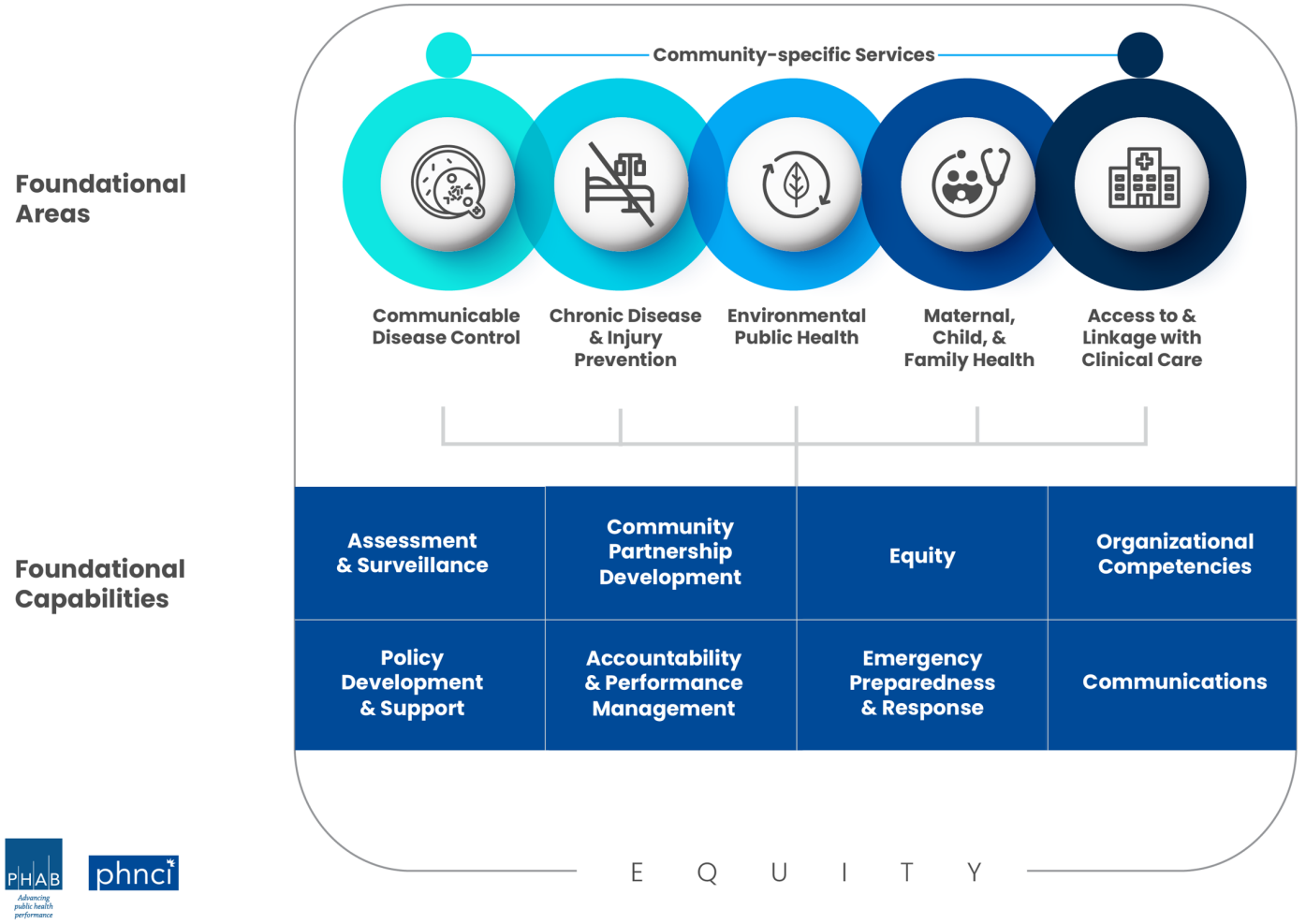


Hennepin County

- Largest county in Minnesota
- 1.28 million residents
- 45 cities, including Minneapolis
- Public health department has about 430 employees

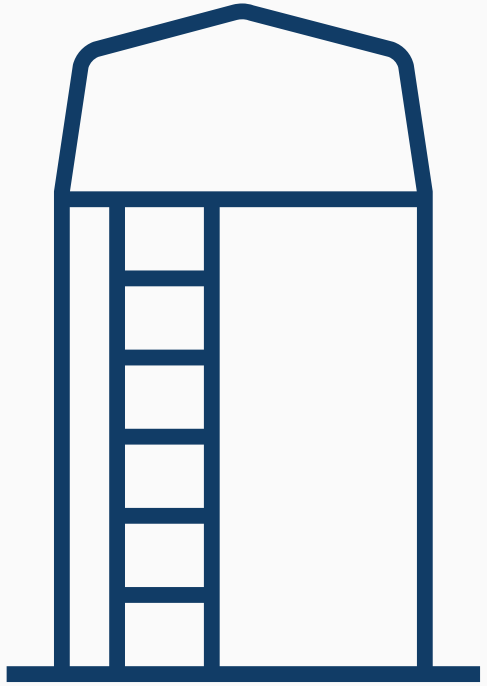
Known for…

Foundational Public Health Responsibilities



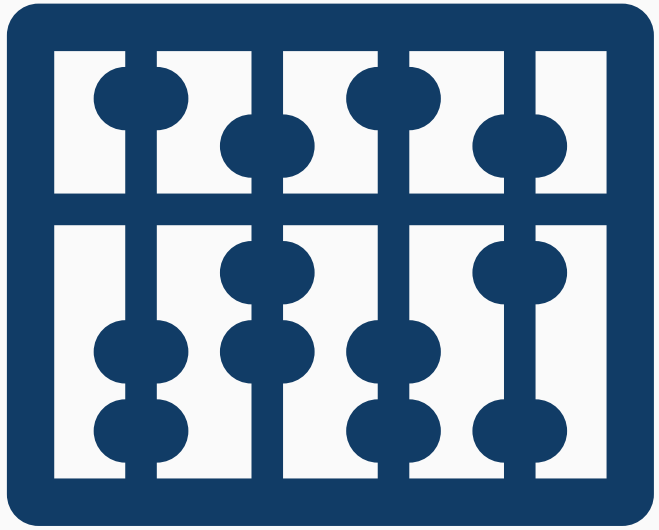
Initial state of data practice

- Primary data and surveillance responsibilities managed by two units: Assessment Team and Epidemiology
- Other responsibilities diffusely distributed across programs
- Analysts worked independently on datasets to respond to requests, develop research and evaluation projects
- Program specific data could be decentralized, unknown data/surveys/tracking/etc.



Working infrastructure

- Annual flat files (csv, xls/xlsx, SPSS, SAS) on prem network
- State systems with archaic databases
- IT support was centralized and public health was a smaller player



Audience poll

- Who has ever experienced this type of data environment?
- Who is still in this place?

Situational assessment

Strengths

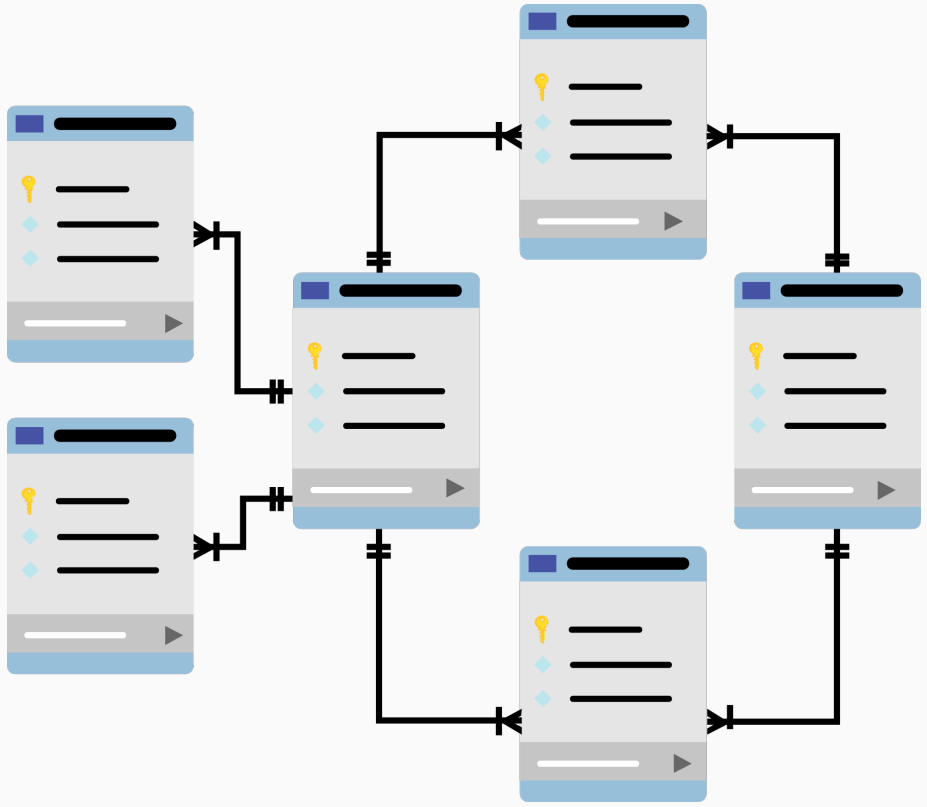
- Analyst proficiency in core public health surveillance principles
- Primary data assets maintained and utilized broadly to inform department strategies

Weaknesses

- Data silos and data sprawl
- Staff-specific knowledge
- Redundant work and lack of standardized procedures
- Limited community of practice

Key Lesson 1: HIV cross-sector project

- Desire to utilize multiple data sources to better serve people living with HIV
- Ryan White HIV/AIDS Program clients were matched to social services
- Overlap in services provide opportunities to improve health outcomes



Key Lesson 2: COVID

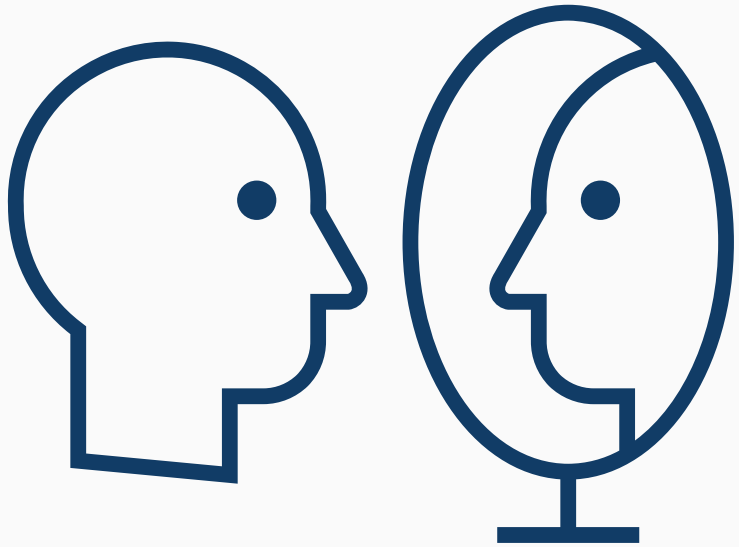
- Policy makers required timely information
- New data sources emerged that required integration
- Public health lacked experience in emerging technologies (web scraping, dashboards)
- Recruited data engineers and analysts from other areas
- Contracted externally to manage vaccine data needs

COVID after-action planning

- Leadership imperative to continue to improve departmental data capacity
- Data managers and staff gained experience from changes to systems

Audience reflective question

- What was one lesson you learned from COVID about the need for data modernization?

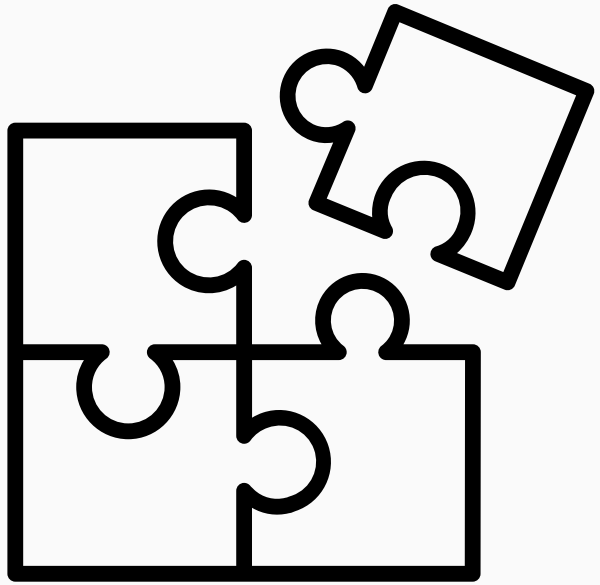


Our challenge: Could we improve our data processes?

Initial vision and strategy

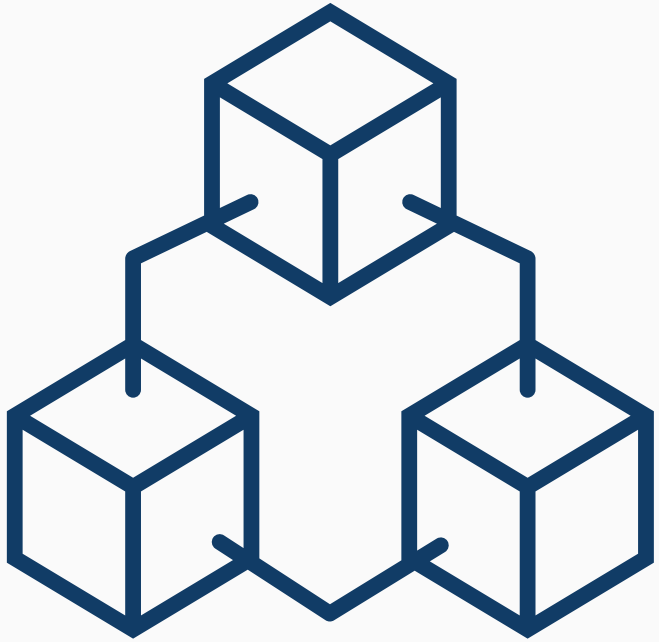
Data modernization components

- IT resources
- Human resources
- Legal Framework



Unique role of informatics

- Data engineering
- Data and information management
- Data governance



Defining our scope

- Data AND Information Management
  - "Traditional" data (e.g., vital records, disease surveillance, surveys…)
  - Raw and unstructured data (e.g., inventories, records, informational content)
  - Documentation, procedures, manuals, reports

Value-driven development

- Future ready
- IT alignment
- Documented
- Standardized and replicable

Informatics responsibilities

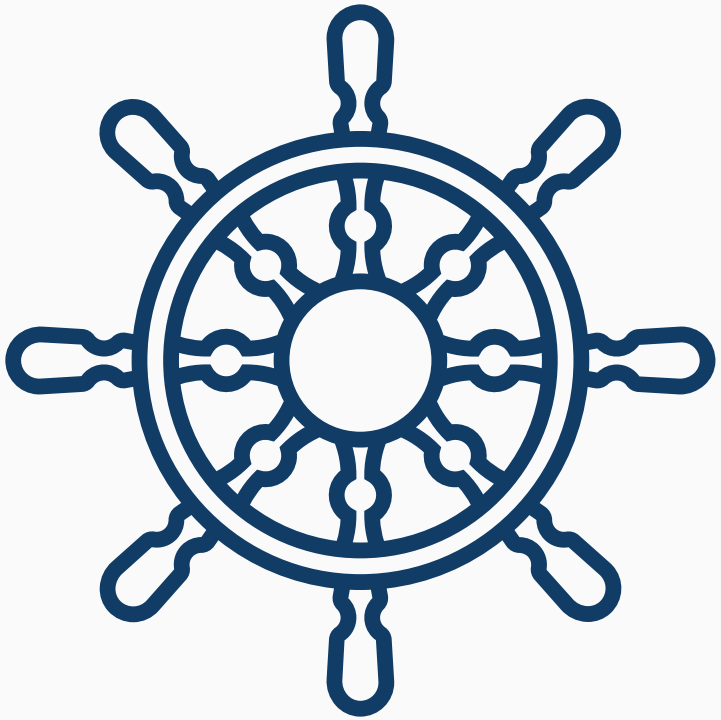
- Data lake provisioning
- Extract, transform, and load (ETL) process support
- Cross-sector framework
- Data technology stack expertise and management
- Documentation organization
- Internal and external data web presence

Building connections

- Connected to state and federal data modernization initiatives
- Alignment with co-occurring county data modernization effort
- Relationship building with state health department

Gaining leadership support

- County Chief Data Officer directed and oversaw technical support to Public Health
- Central Data Analytics staff assigned to assist public health informatics
- IT teams that supported modernization
- IT resources: cloud storage, coding platforms, dashboarding, data extract, transform, and load (ETL) tools



Resource request approved

County board actions based on American Rescue Plan Act (ARPA) funding approved:

- Addition of two Informatics staff
- Dedicated IT staff and technology investments to improve public health data infrastructure

Infrastructure: human resources

Key staff positions

- Manager
  - Create data modernization vision and gain leadership support
- Supervisor
  - Develop tactics to operationalize modernization vision
- Data engineer
  - Provide data expertise to accomplish tactics

Human resources challenges

- Unprecedented scope of work:
  - Did not have Informatics job classifications
  - Lack of training resources

Infrastructure: legal framework

Establishing authorized data use

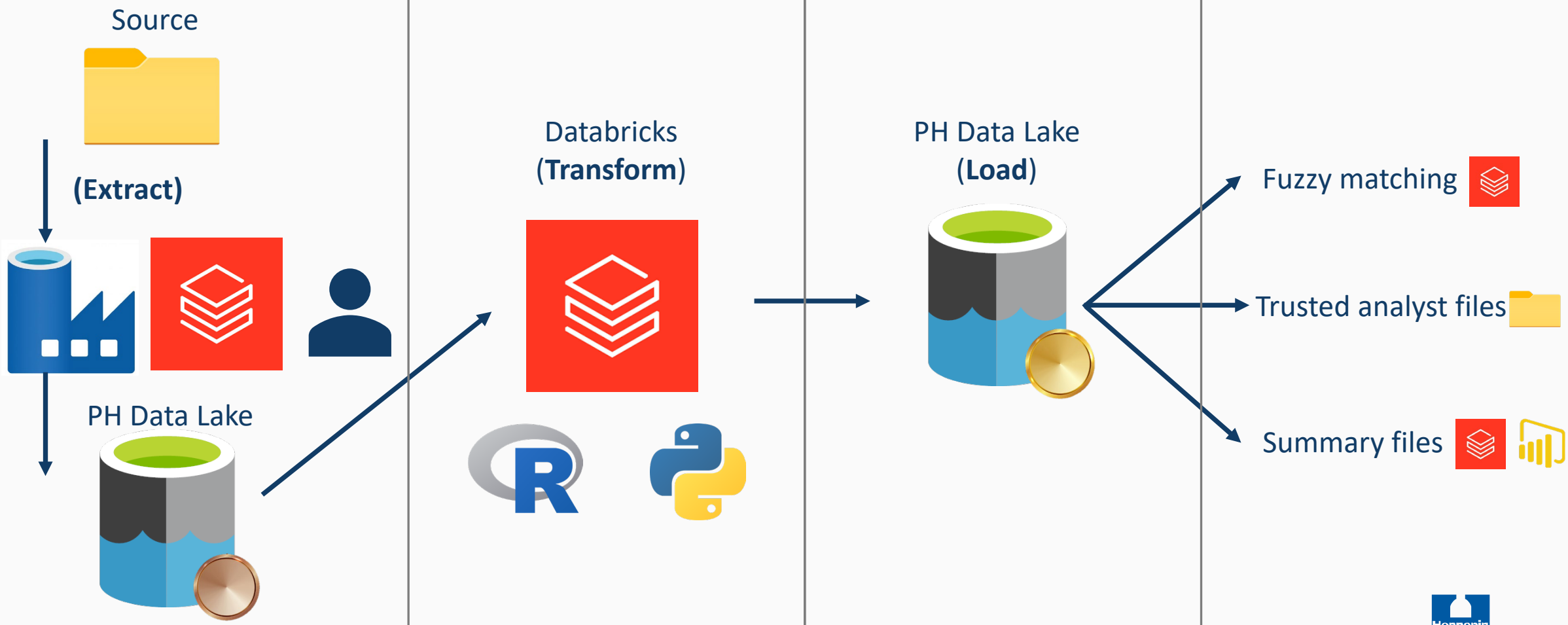
- Leveraged state public health data statutes to create a legal framework for data collection and sharing.
- Fostered partnerships with the county attorney's office and data privacy officer.
- Developed relationships and data sharing agreements with state health and human services departments.

Assuring data security and compliance through modernization

- Access control
- Audit trails
- Data minimization
- Backups
- Controlled transfer

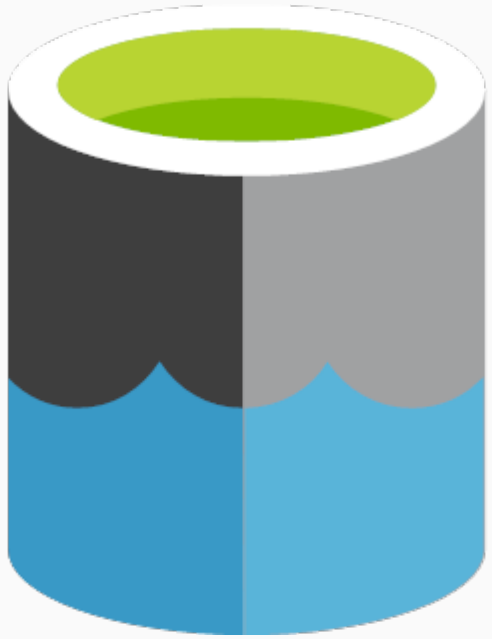
Infrastructure: information technology

Storage and compute work in parallel to extract, transform, and load (ETL) data



A data lake is a highly structured file* storage system

- HCPH: Azure Data Lake Storage, Gen 2
- Traditionally: network drives, databases
- * Files, objects, blobs



Folder structuring is key to a great data lake

- Medallion architecture
  - Raw
  - Refined
  - Trusted
- Retain original data
- Analyst files are in Trusted
- Cross-sector folder

Standardize your file and field names

- HCPH: snake_case
  - camelCase, PascalCase, kebab-case
  - skill_interval vs SkillInterval
- Dates: YYYY-MM-DD

Standardize your file and field names

- Establish a file naming policy and procedure
  - topic_[start date]_[end date]_[extracted date]
  - measles_2024-01-01_2024-12-31_2025-01-07
- Metadata fields
  - record_added, record_last_updated,
  - dataset_added, dataset_last_updated

Moving files into the data lake can be a nontrivial task

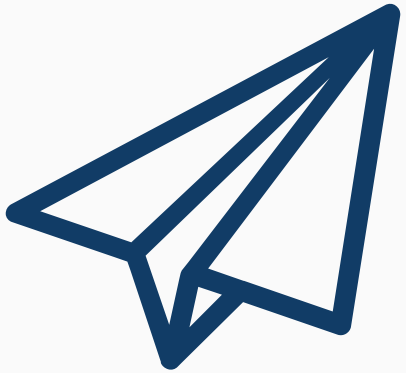
- SFTP folders
  - Secure file transfer protocol
- On-prem[ise] resources
- Manual downloads and uploads
- Azure Data Factory

Compute is the platform that manipulates data

- HCPH: Azure Databricks
- Data files to dataframes: there and back again
- Code-first solutions

The data, information, reporting, communications, action pipeline

- Data to action
- Data *and* information
- Information and communications technology (ICT) instead of IT



Public dashboards

- Annual death reporting
- Opioid-related deaths
- Substance involved emergency and hospital visits
- SHAPE 2022 results
- Hepatitis B surveillance
- Hepatitis C surveillance
- Minnesota Ryan White HIV/AIDS Program -- Hosted by Hennepin County; built collaboratively with Department of Human Services

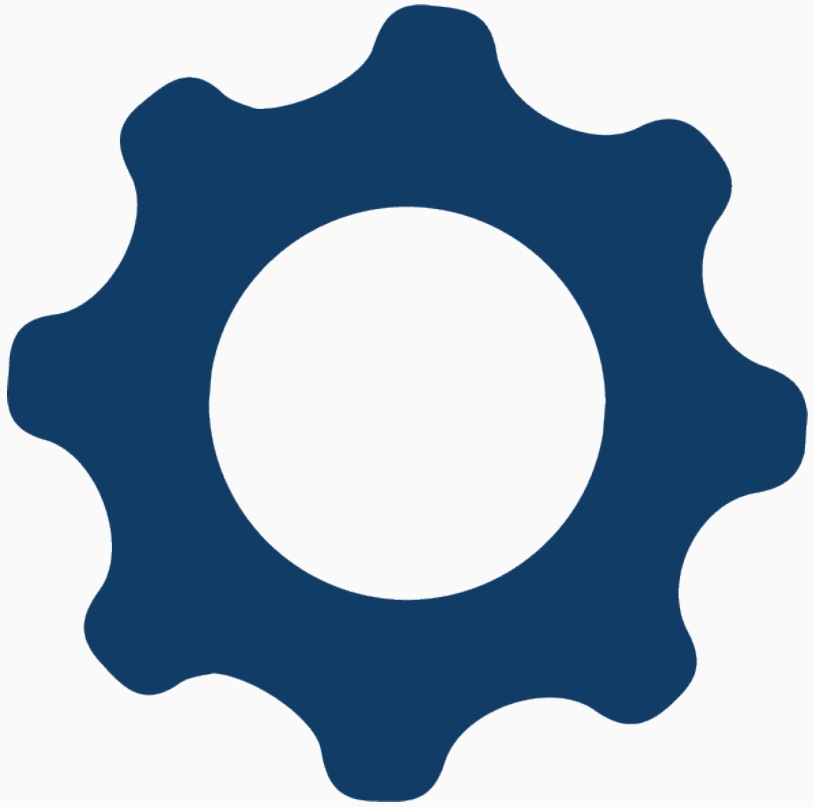
Public health cross-sector data framework

Quantifying the social and structural determinants of health

- Public health cohorts
- Social services
- Incarceration
- Death records

Sectors

- Housing services
- Public health insurance (ex: Medicaid)
- Food assistance
- Cash assistance
- Case management
- Healthcare services
- Other services



Fuzzy (probabilistic) matching

- RecordLinkage R package
  - Name
  - Date of birth
- Social security number is useful if available

Lessons learned

Documentation

- Word documents
- Markdown files
- Webpages

Tidbits

- Informatics and BI access
- Email alerts
- Data lake inventory and monitoring

Accomplishments and next steps

Accomplishments in the first three years

- IT relationship building
- Core public health data sources in the data lake
- Staff training
- Mpox response
- InfoSavvy Assessment

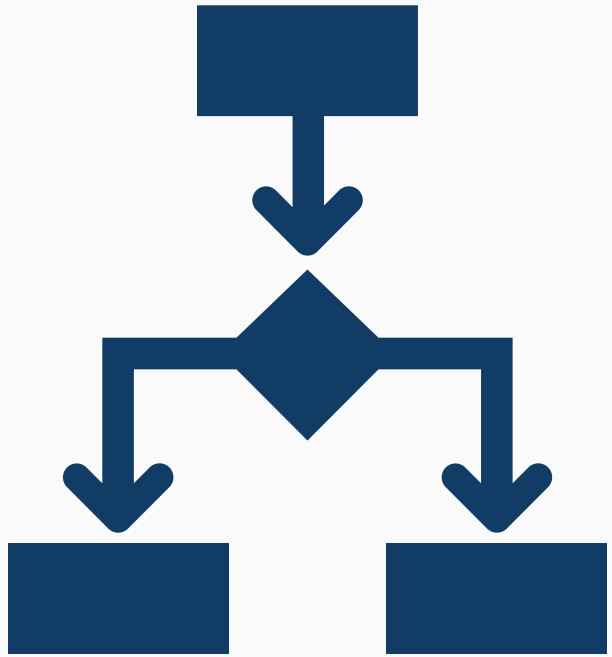
About InfoSavvy

- Collaborative assessment through facilitated activity
- Diverse staff convened to rate informatics capabilities
- Final report


Agenda

InfoSavvy outcomes

- Final report with recommendations to improve maturity
- Developed closer relationships with staff who participated
- Shared recommendations with department leadership
- Incorporated recommendations into Informatics planning



What's ahead? Barriers, opportunities

- IT relationship building
- State-local collaboration
- Data sharing agreements

Sustainability

- Secured stable funding by transitioning the budget from ARPA to property tax
- Maintain ongoing engagement with internal/external stakeholders
- Identify training needs for informatics and analyst staff
- Align informatics with updated departmental strategic plan updates and refine performance measures

Group discussion and questions

Dave Johnson
david.johnson2@hennepin.us

Aaron D. Peterson
aaron.peterson@hennepin.us