Sentinel

Health Information Exchanges

Health Data Utilities: Comprehensive Health Data on Whole Communities

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Disclaimer

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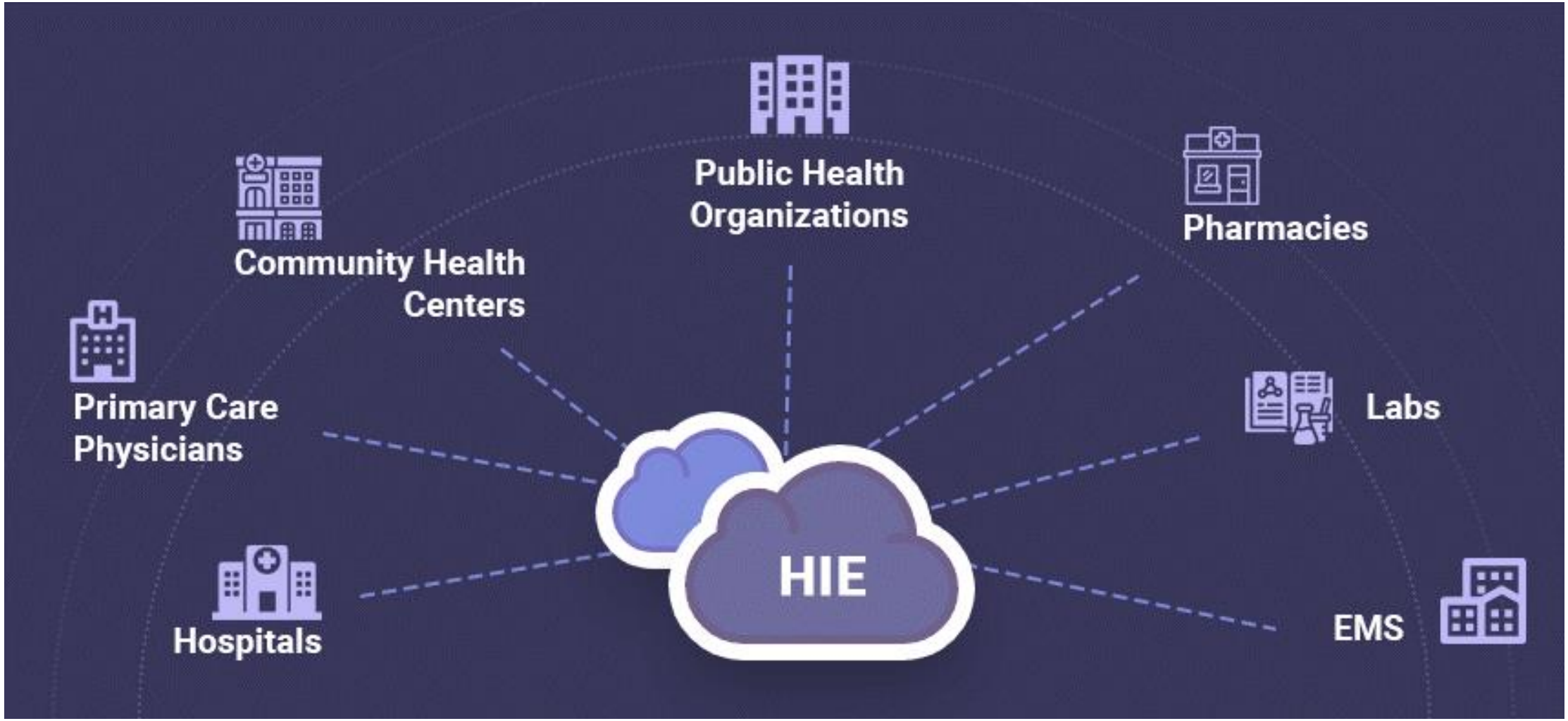
Agenda

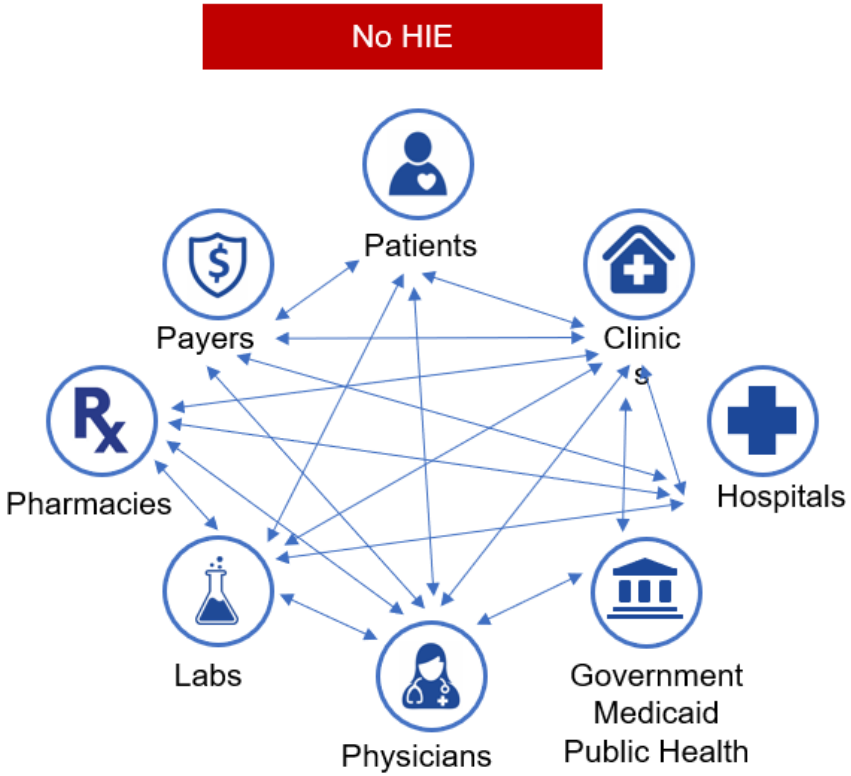
- Health Information Exchange (HIE)
  - Data Elements
  - Nationwide Coverage
  - Unique Data Source
- Health Data Utility (HDU)
  - Introduction
  - HIEs Evolving into HDUs
- MyHealth Access Network
  - Data Fragmentation
  - SDOH Data Capture
  - Data Quality
- Data characterization exercise with Sentinel
  - Description
  - Results

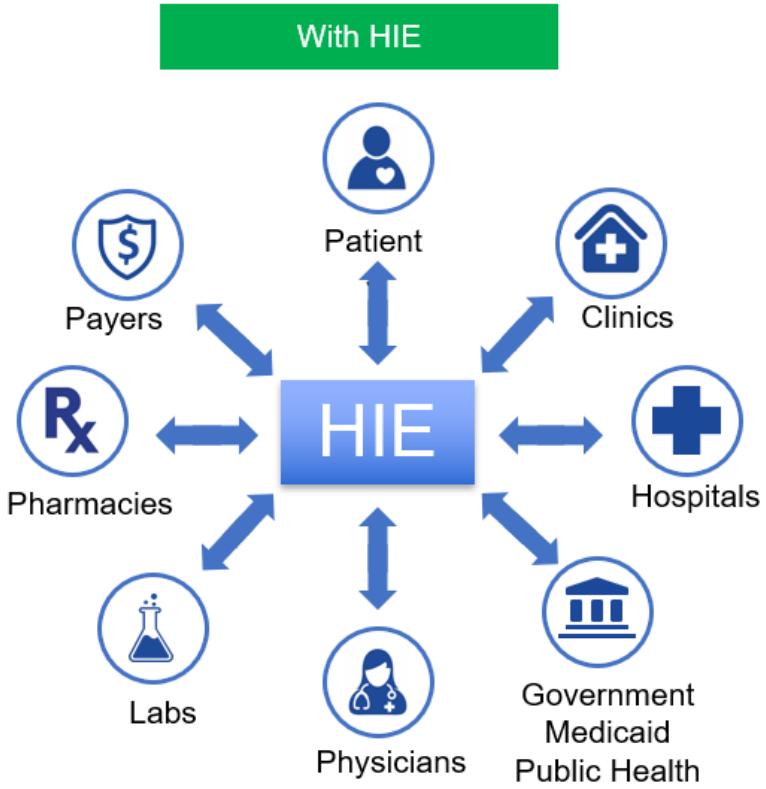
Introduction to HIEs



Introduction to HIEs

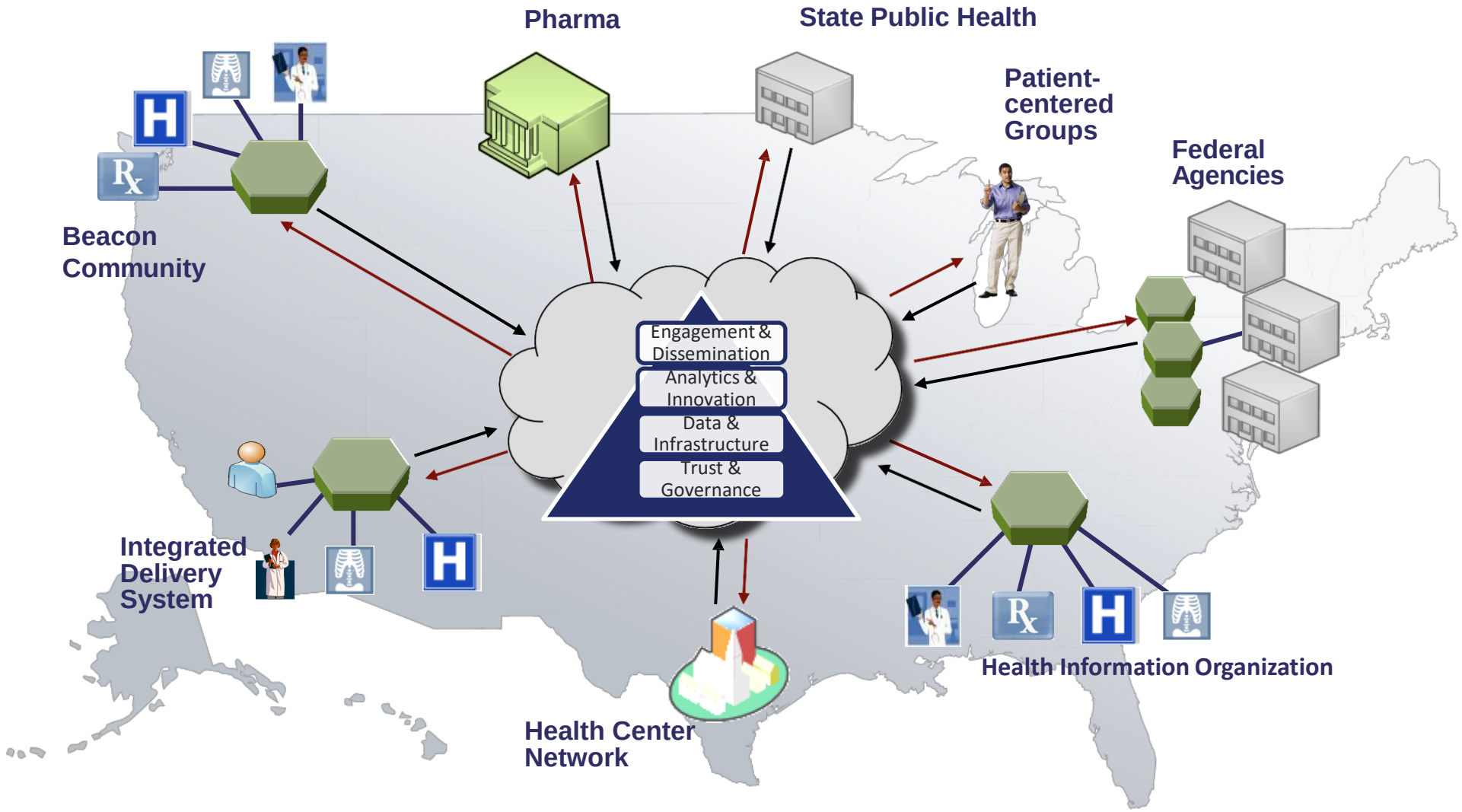
Health Information Exchanges (HIEs) securely share vital medical information among healthcare and social service providers in real-time. HIEs standardize data, link records across providers, manage consent, and store data for population level analysis and insights.





HIE Services: Master patient ID; Longitudinal patient data; Role-based access; Hospital admit/discharge alerts; Secure data exchange; Consent management; Population data

A National Learning Health System requires Interoperability

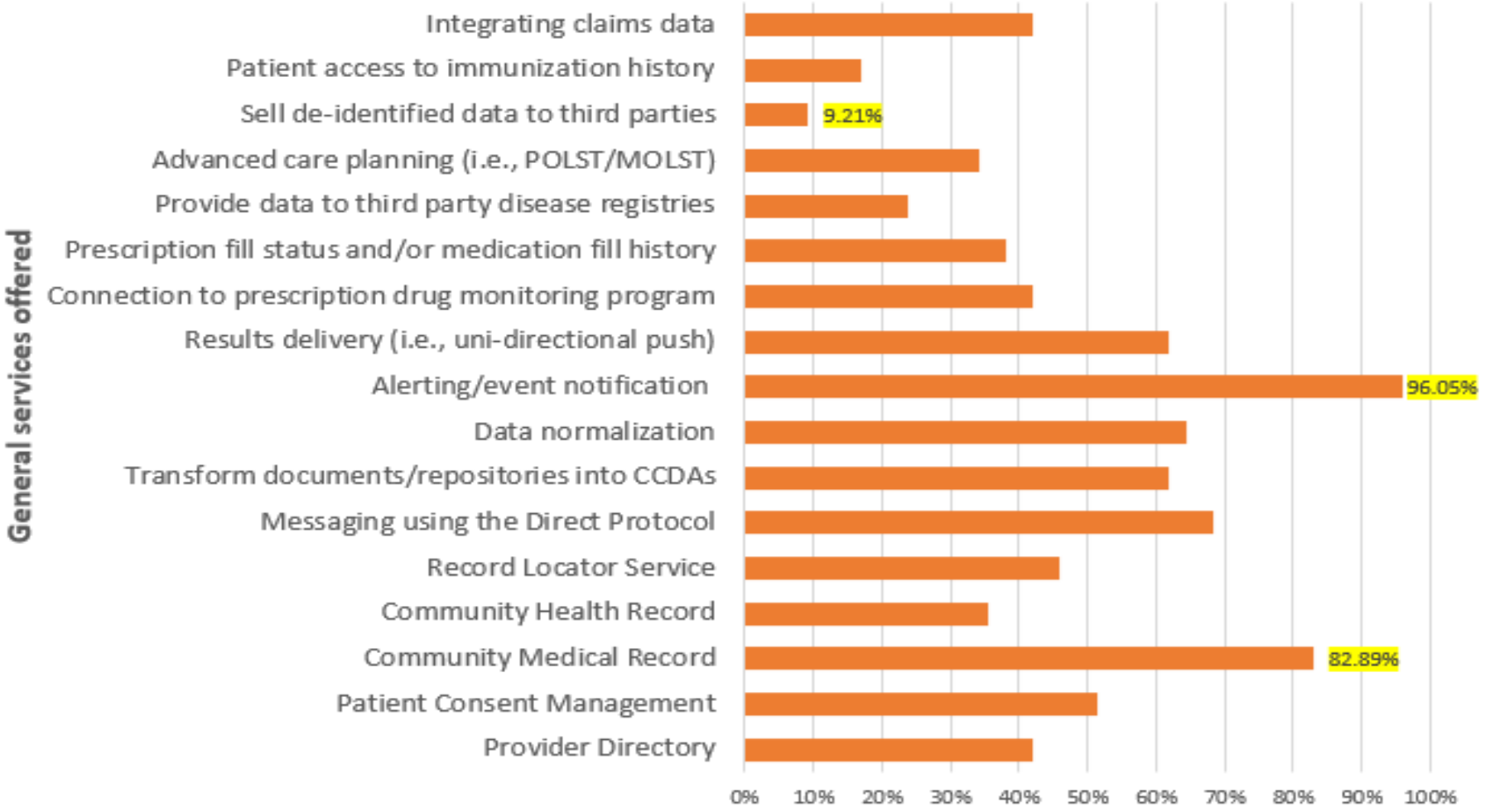


Credit: Chuck Friedman

Data Elements in HIEs

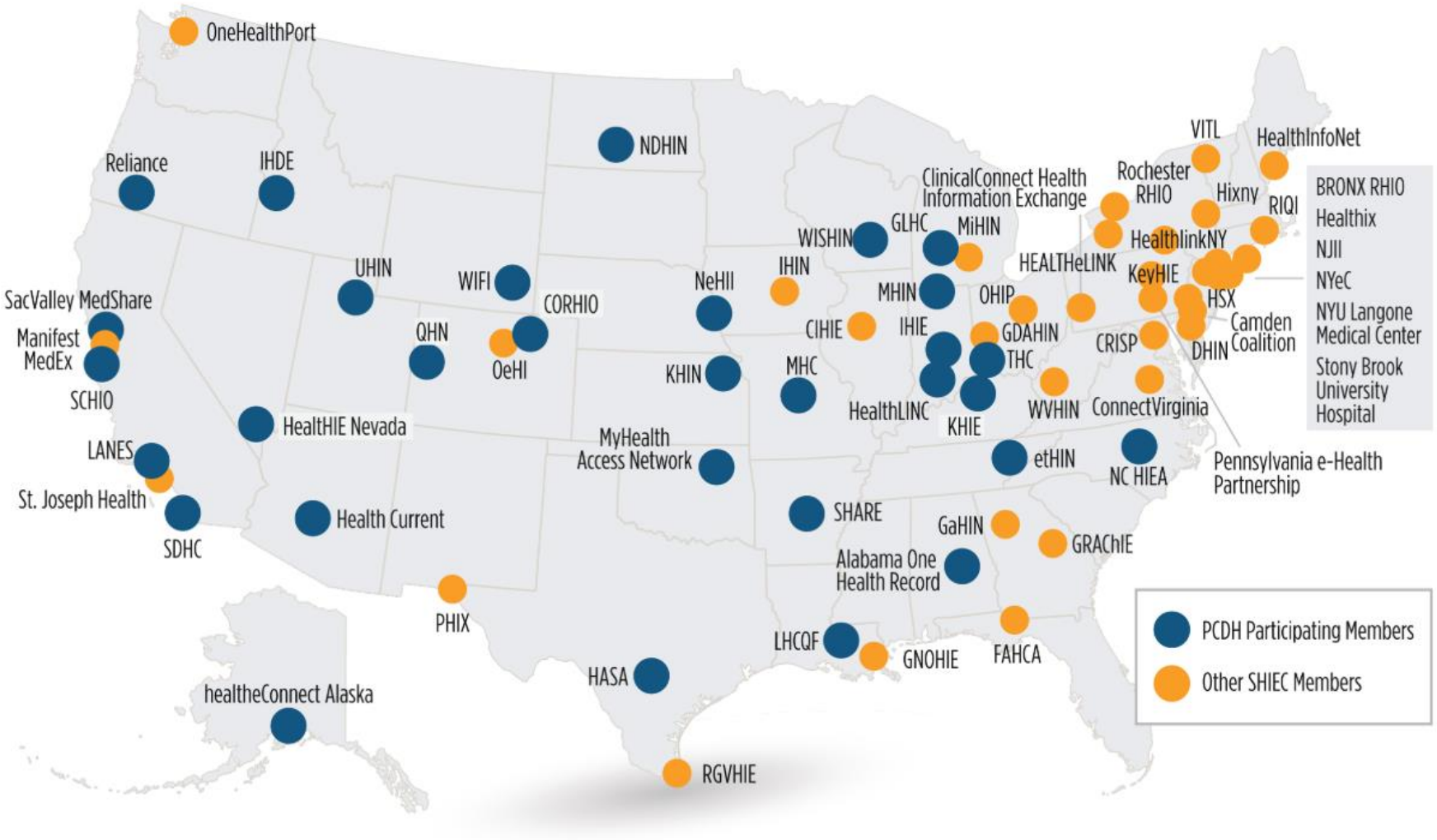
The United States Core Data for Interoperability (USCDI) is a standardized set of health data classes and constituent data elements for nationwide, interoperable health information exchange. **HIEs and electronic health records (EHRs) are mandated by Health and Human Services Commission (HHSC) and the Office of the National Coordinator for Health Information Technology (ONC) to use USCDI**. Below is a visual showing the main data elements and tables from USCDI v2 (current requirement)

HIE Services



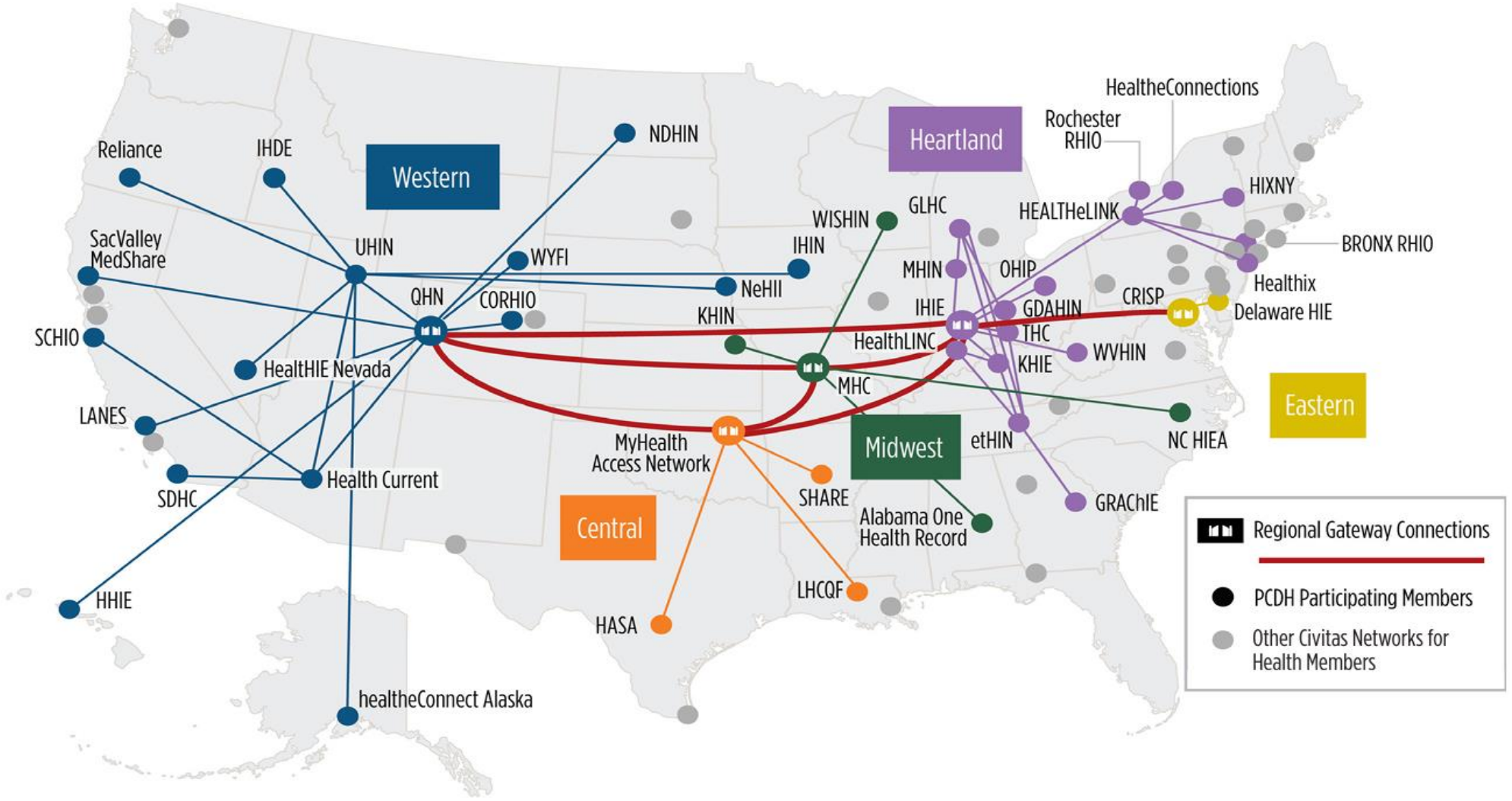
Civitas and UCSF conducted the 2023 National HIO survey, which included nationwide state and local HIEs/HDUs/HIOs involved in electronic health exchange as of 1/1/19.

How Does the HIE model Scale Nationwide?



PCDH = Patient Centered Medical Home
SHIEC = Strategic HIE Collaborative

Patient Centered Data Home™ Nationwide Coverage



Uniqueness of HIEs as a Data Source

- More representative and inclusive population-based data
  - *uninsured, underinsured*
  - *out of pocket prescriptions*
  - *rural*
- Access to EHR data without dealing with many health systems
  - *legal*
  - *technical*
- Linkage with specialized clinical data
  - *Imaging**
  - *inpatient labs*
  - *Pharmacies**
  - *long-term care**
- Access to state-level registries that are connected to local HIEs*
- Access to patient-level charts and details, if needed
- Unstructured data from clinical notes*

** Additional capabilities in an increasing number of HIEs*

Some HIE Successes

Public Health Reports®

CDC ASPPH

Impact Fac
5-Year Impact Fac

Free access | Research article | First published online April 6, 2020

Improving Notifiable Disease Case Reporting Through Electronic Information Exchange–Facilitat
Decision Support: A Controlled Before-and-After Trial

and affiliations

Bhattacharyya et al.
BMC Medical Research Methodology (2023) 23:172
https://doi.org/10.1186/s12874-023-01907-7

BMC Medical Research Methodology

RESEARCH Open Access

Comparison of health information exchange data with self-report in measuring cancer screening

Oindrila Bhattacharyya[1,2,3], Susan M. Rawl[4], Stephanie L. Dickinson[5] and David A. Haggstrom[6,7,8,9*]

ELSEVIER

Drug and Alcohol Dependence
Volume 212, 1 July 2020, 107992

Leveraging health information exchange for clinical research: Extreme underreporting of hospital service utilization among patients with substance use disorders

Jan Gryczynski [a], Courtney D. Nordeck [a], Ross D. Martin [b], Christopher Welsh [c], Robert P. Schwartz [a], Shannon Gwin Mitchell [a], Jerome H. Jaffe [a]

Open Forum Infectious Diseases

MAJOR ARTICLE

IDSA Infectious Diseases Society of America | hivma hiv medicine association | OXFORD

Using a Health Information Exchange to Characterize Changes in HIV Viral Load Suppression and Disparities During the COVID-19 Pandemic in New York City

Emma Tucker,[1,0] Harry Reyes Nieva,[2,3,0] Kayla Schiffer,[2] Michael T. Yin,[4,0] Delivette Castor,[4,0] Peter Gordon,[4] Noémie Elhadad,[2,0] and Jason Zucker[2,4,0]

[1]Vagelos College of Physicians and Surgeons, Columbia University, New York, New York, USA, [2]Department of Biomedical Informatics, Columbia University, New York, New York, USA, [3]Department of Medicine, Harvard Medical School, Boston, Massachusetts, USA, and [4]Division of Infectious Diseases, Columbia University Irving Medical Center, New York, New York, USA

RESEARCH ARTICLE

Evaluation of a health information exchange system for microcephaly case-finding — New York City, 2013—2015

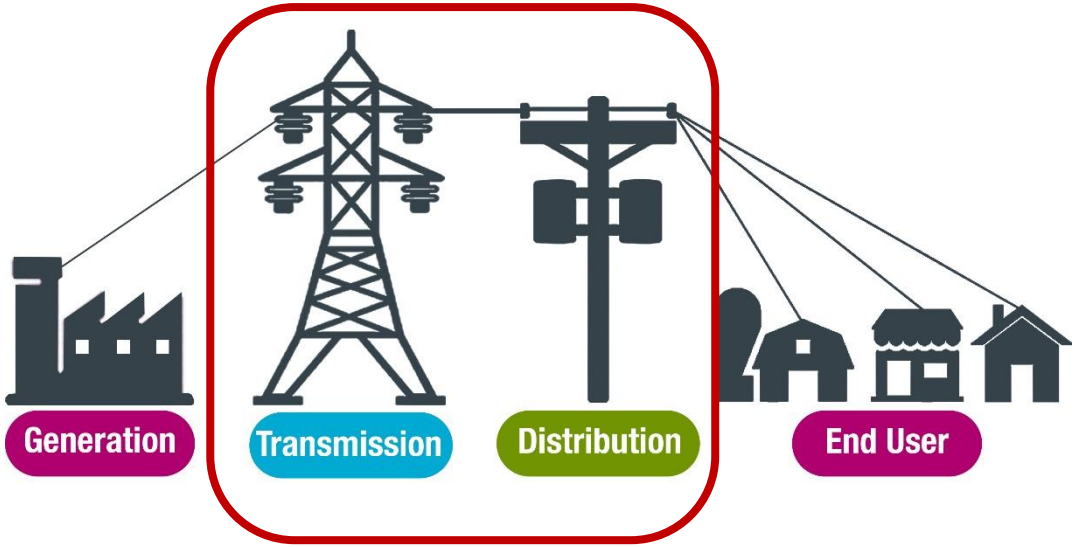
Eugenie Poirot[1,2], Carrie W. Mills[2], Andrew D. Fair[2,3], Krishika A. Graham[2], Emily Martinez[2], Lauren Schreibstein[3], Achala Talati[2], Katharine H. McVeigh[2]*

1 Epidemic Intelligence Service, Division of Scientific Education and Professional Development, Centers for Disease Control and Prevention, Atlanta, Georgia, United States of America, **2** New York City Department of Health and Mental Hygiene, New York, New York, United States of America, **3** Bronx RHIO, New York, New York, United States of America

* tmcveigh@health.nyc.gov

Health Data Utility

- Defined as entities which are ideally not-for-profit organizations with multistakeholder governance that combine, enhance, and exchange disparate electronic health data sets to provide comprehensive health data and analytics, supporting a specified geographic region.
- Typical functions of an HIE are a subset of HDU operations
- Add non-clinical, environmental, and other types of data that impact health



HIEs Evolving into HDUs

	HIE	HDU
Governance	Usually healthcare providers, mostly covered entities	Local and state governments, community organizations, healthcare providers, etc.
Data	Mainly clinical	Clinical, social, educational, crime, geographical, environmental, etc.
Use	Mainly in healthcare operations and reporting	Beyond healthcare for homelessness, food insecurity, housing, transportation, etc.
Stakeholders	Health systems, health plans, health departments	Broad group of state agencies, tribal governments, employers, policy-makers, correctional systems, schools, etc.
Regulatory environment	HIPAA and rules related to covered entities	HIPAA, FERPA, and rules & regulations applicable in other sectors
Major function	Mostly limited to interoperability and some reporting/analytics	Mostly around use cases like supporting managed care organizations, population health strategies, cross sector coordination, value-based care models, accountable communities, etc.

Role in Health AI

NEJM AI

DOI: 10.1056/AIpc2400401

POLICY CORNER

The Role of Health Data Utilities in Supporting Health AI

Ahmad Alkasir, Dr.P.H., M.P.H.,[1] Gabriel Seidman, Dr.P.H.,[1] Jolie Ritzo, M.P.H.,[2] Lisa Bari, M.B.A., M.P.H.,[2] Anjum Khurshid, M.D., Ph.D.[3]

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Abstract

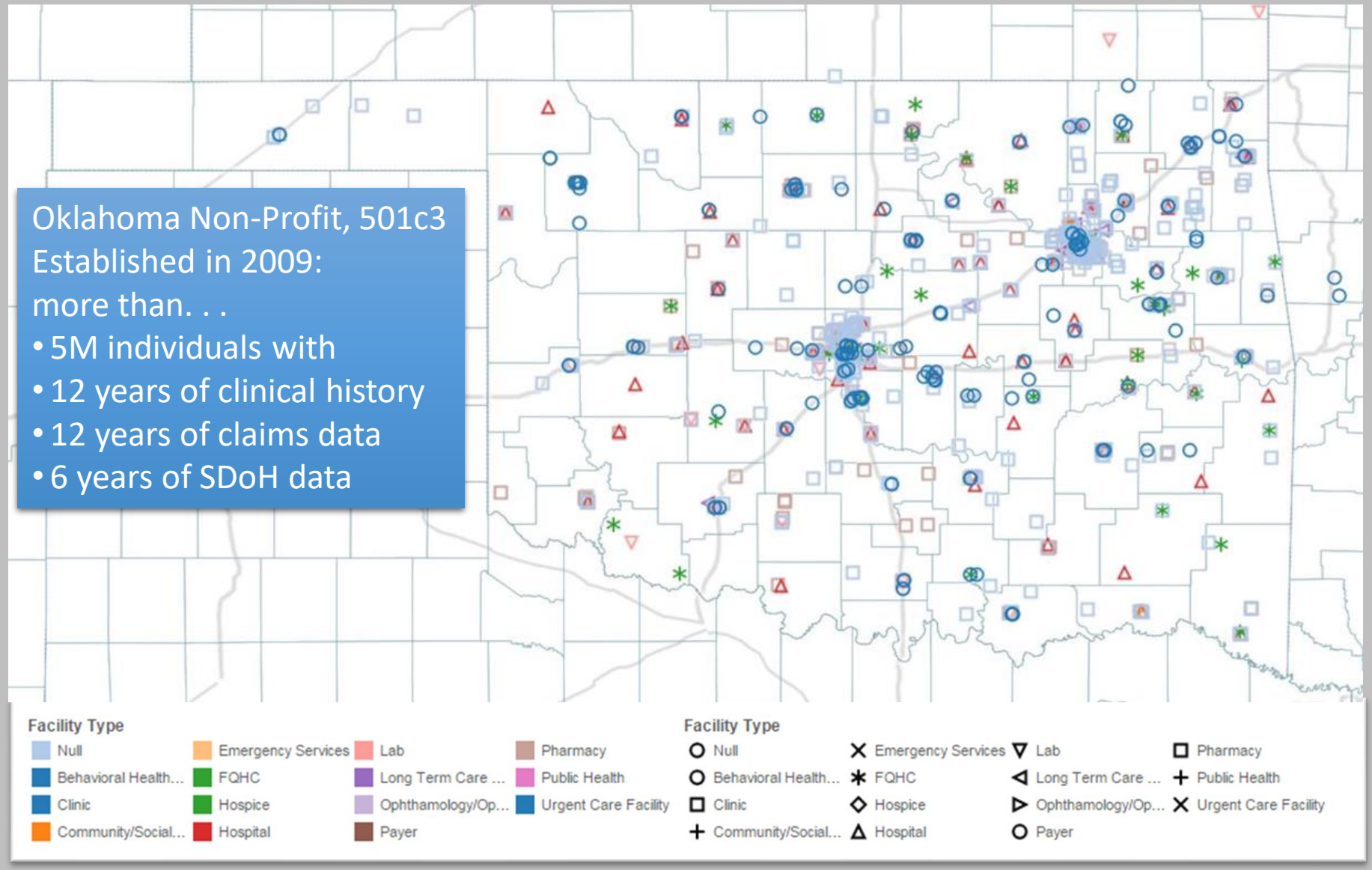
New developments in AI hold enormous promise for improving clinical delivery, health care administration, and public health, all of which contribute to better health outcomes. However, the ability to capture tangible improvements in health outcomes from the paradigm shift in AI capabilities will remain constrained unless health information systems, regulations, and governance structures are modernized for the AI era in a manner that enables effective development, rigorous validation, and ongoing monitoring of models for safety and efficacy (e.g., AI assurance). In this article, we summarize the role that health information exchanges (HIEs) have played in establishing the existing technical infrastructure and governance for collecting, sharing, and reusing health data, mostly for primary use cases (e.g., care coordination) and less so for secondary use cases (e.g., public health, research). We highlight the opportunity to modernize HIEs into health data utilities (HDUs) — statewide entities with diverse stakeholder governance structures that support the informatic needs of a variety of users in a state or region. Moreover, we regard health AI development as a secondary use of data and note how establishing state-designated HDUs would support AI advancements through their enhanced capabilities and authority as aggregators and stewards of validated, high-quality, multisource health data. Furthermore, while HIE networks are widely acknowledged as critical infrastructure for data exchange, we explain why and how these networks — as they transition to HDUs — could support AI assurance policy for a subset of health AI models by promoting AI regulatory guidance, standards, and best practices; enabling robust model evaluations and transparent reporting; and supporting prospective monitoring of deployed applications.

Sentinel

MyHealth Access Network

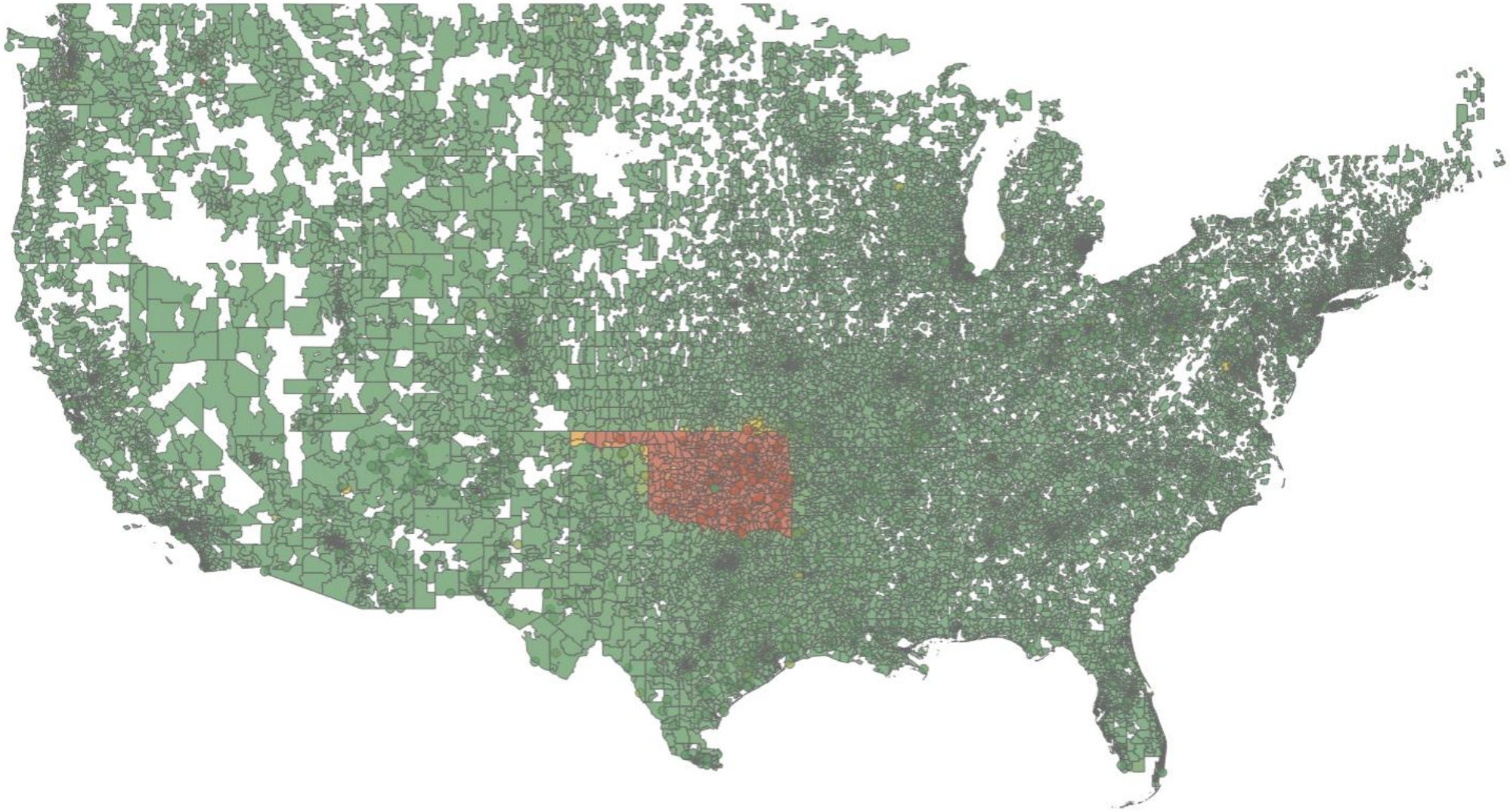
MyHealth ACCESS NETWORK

>2200 locations serving >130,000 patients daily



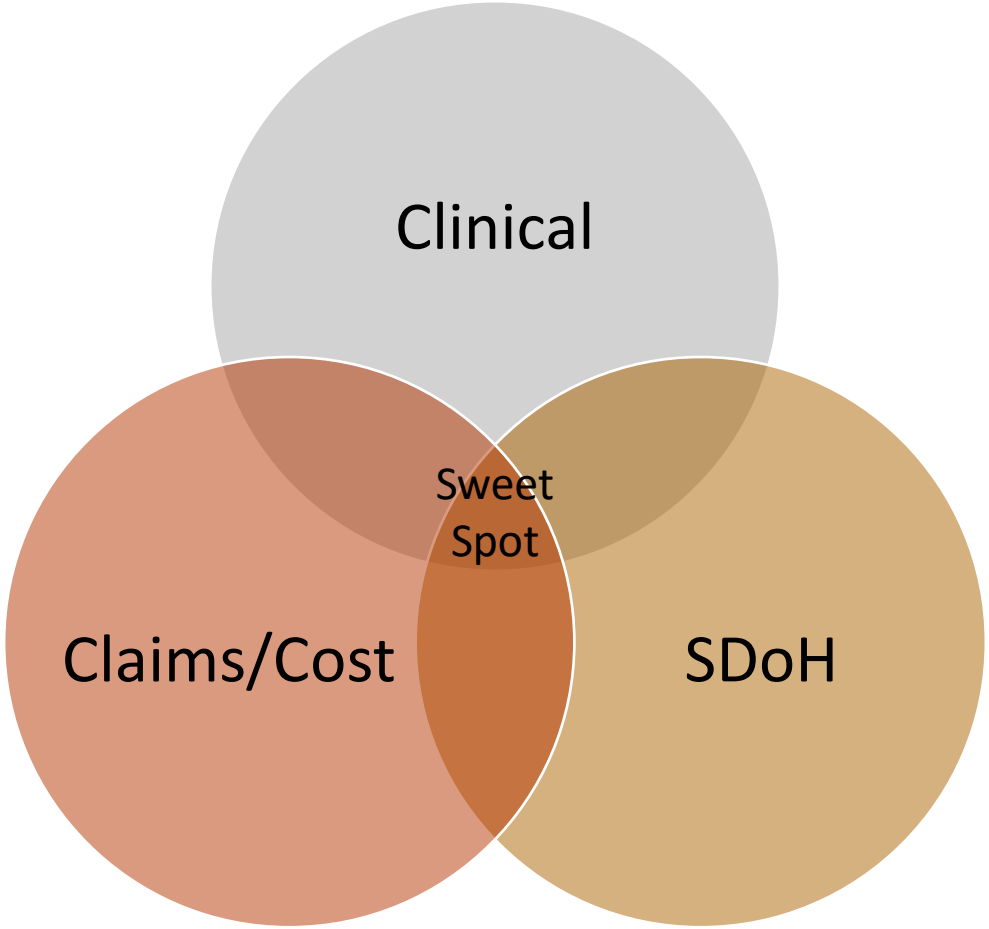
MyHealth ACCESS NETWORK

Patients often get care far from home



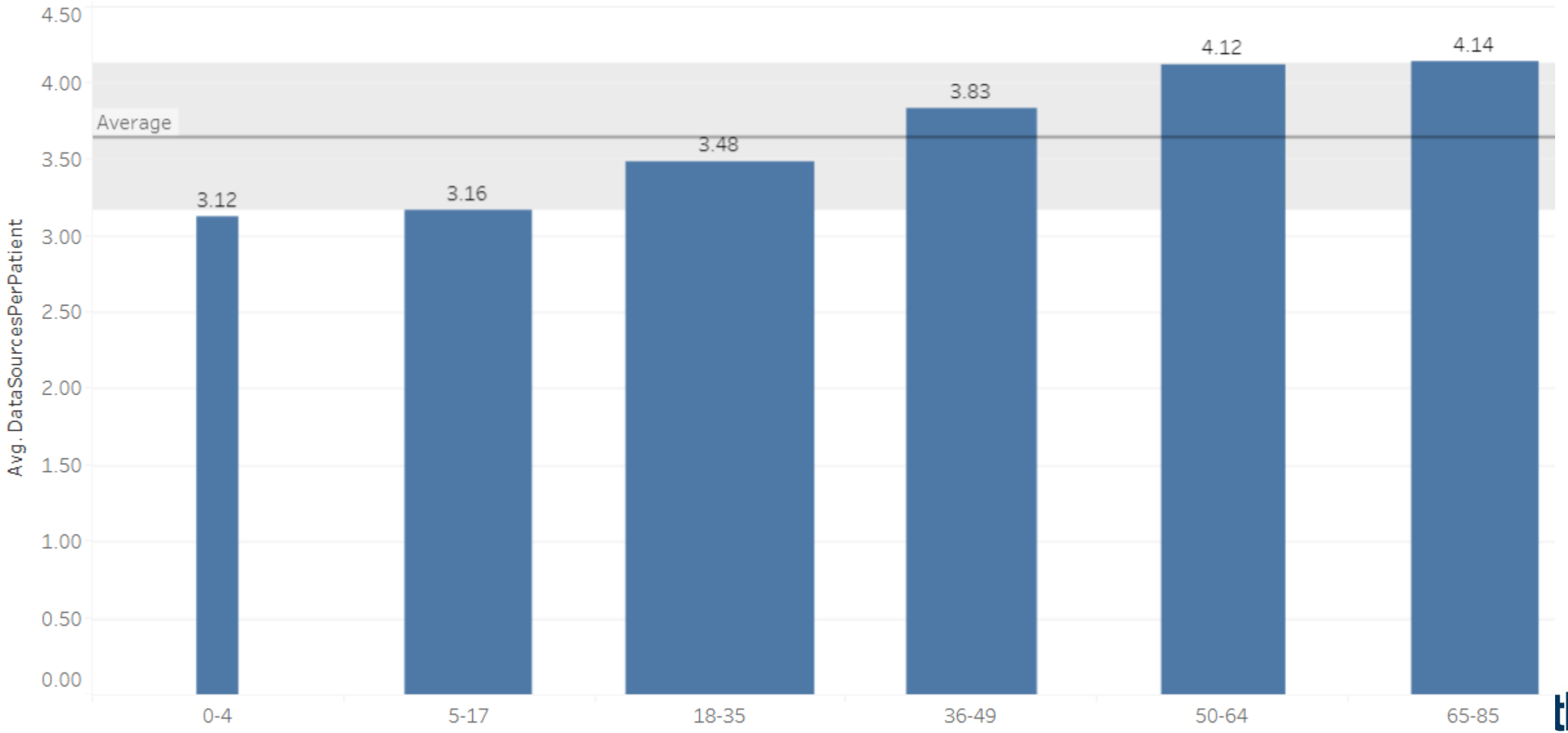
MyHealth ACCESS NETWORK

Putting it All Together

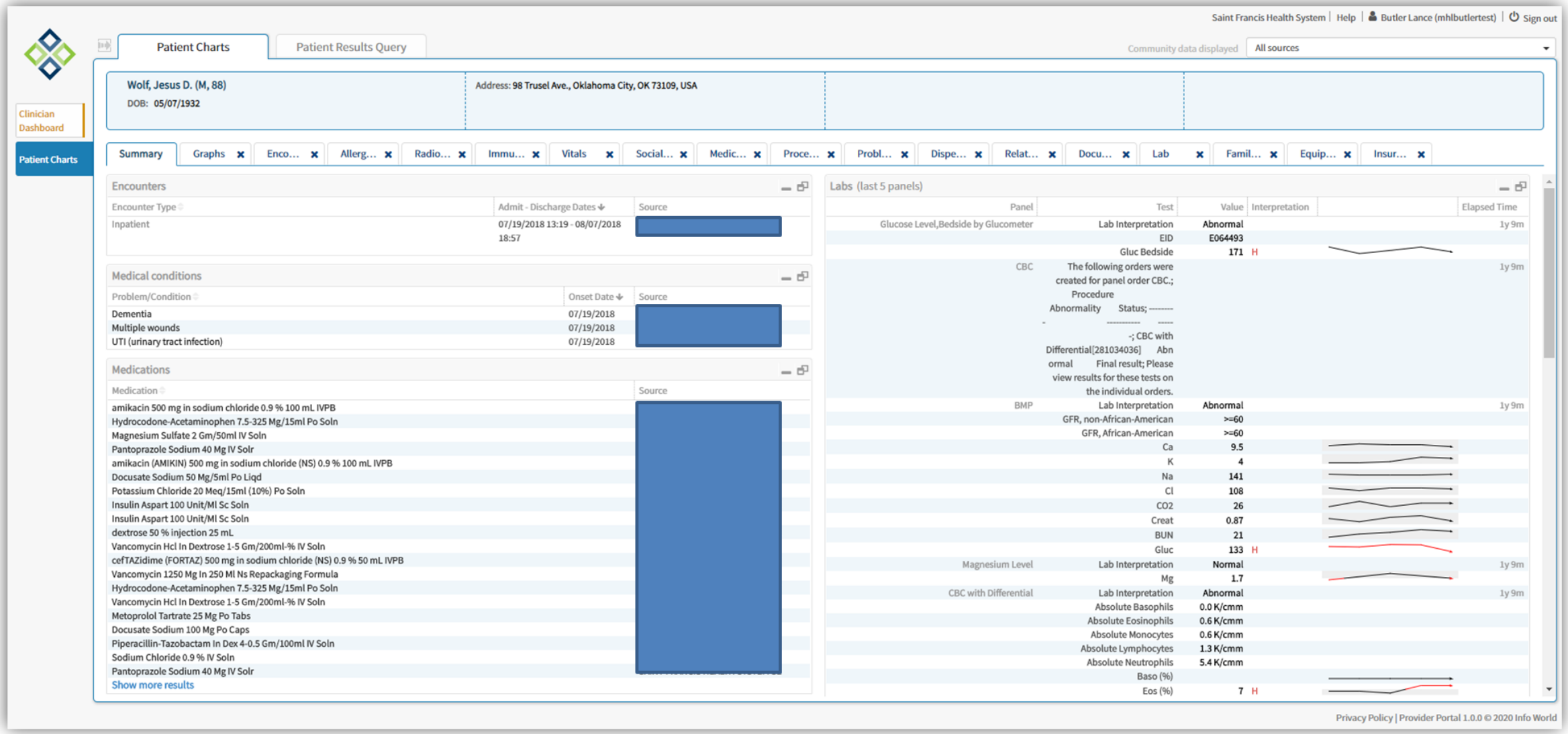


MyHealth
ACCESS NETWORK

Fragmentation of Data Sources by Age



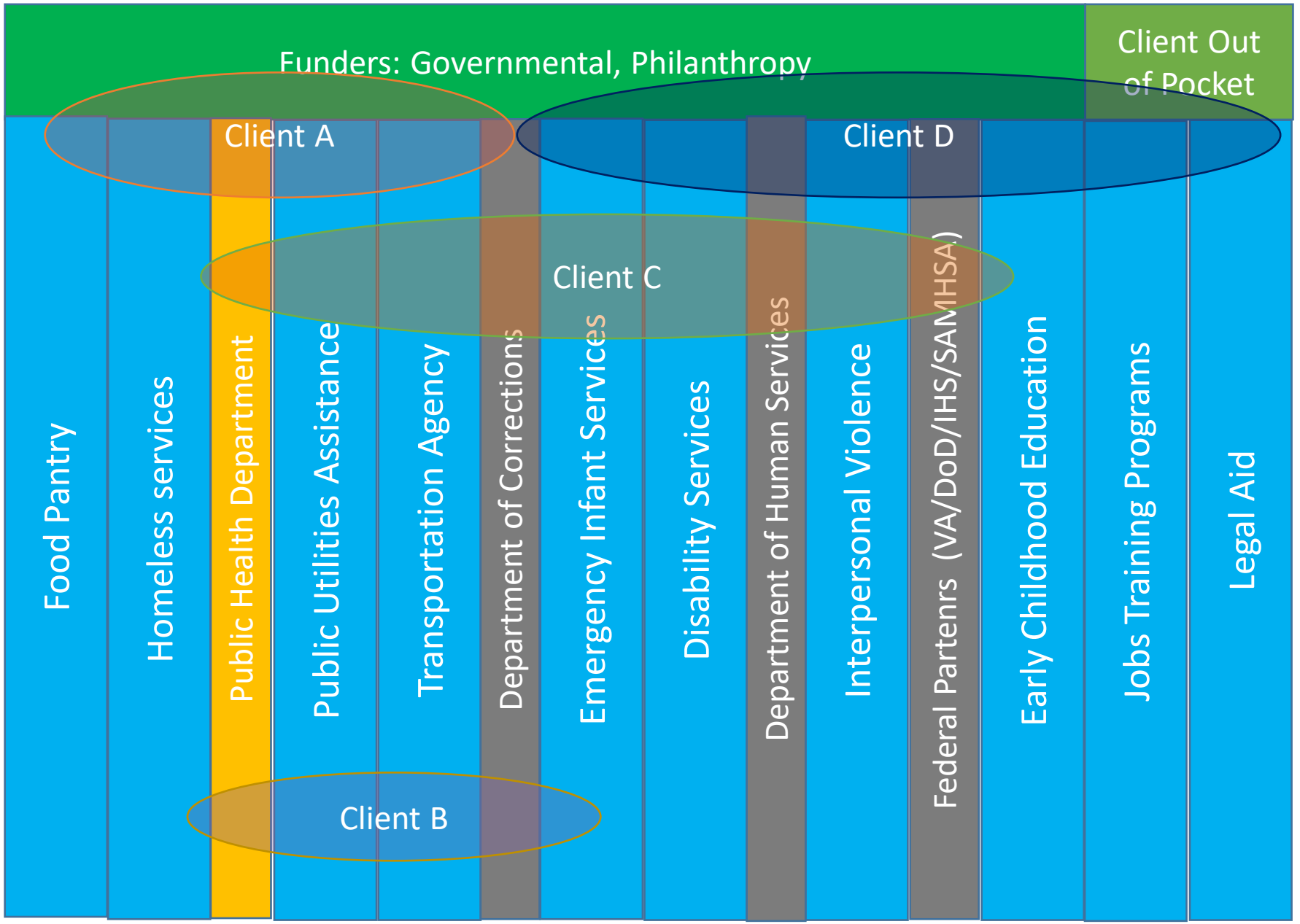
MyHealth Provider Portal + FHIR API*



** FHIR API = Fast Healthcare Interoperability Resources Application Programming Interface*

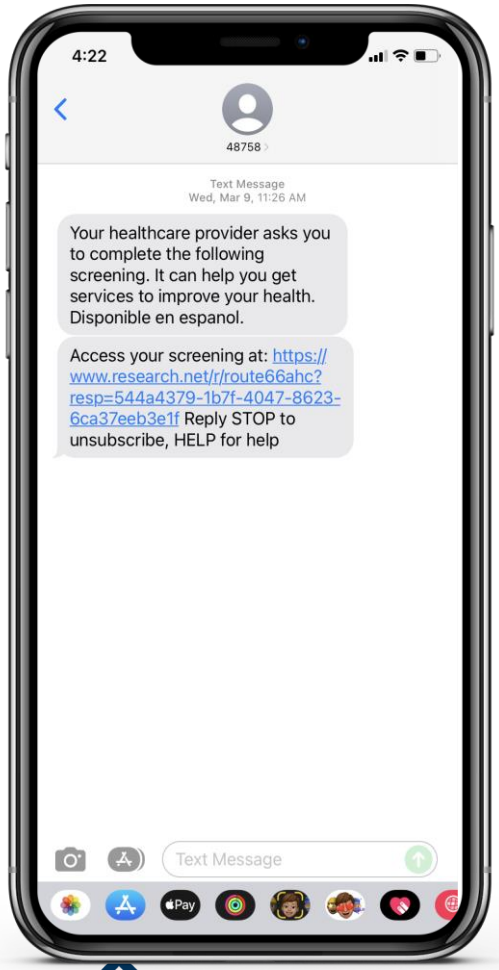
MyHealth ACCESS NETWORK

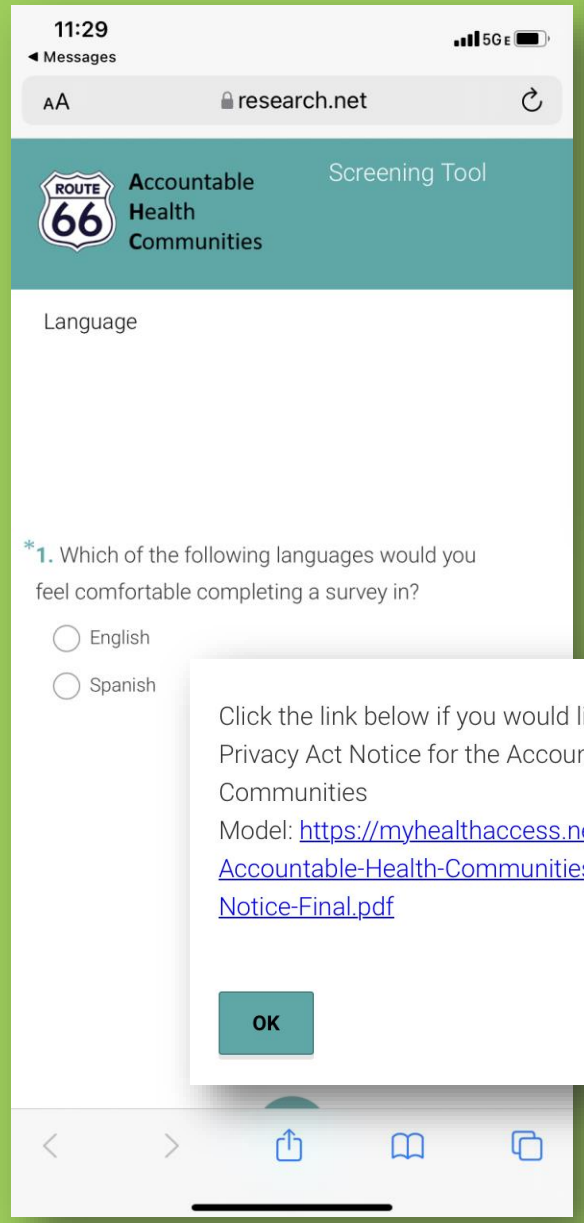
Fragmentation of Social Determinants of Health

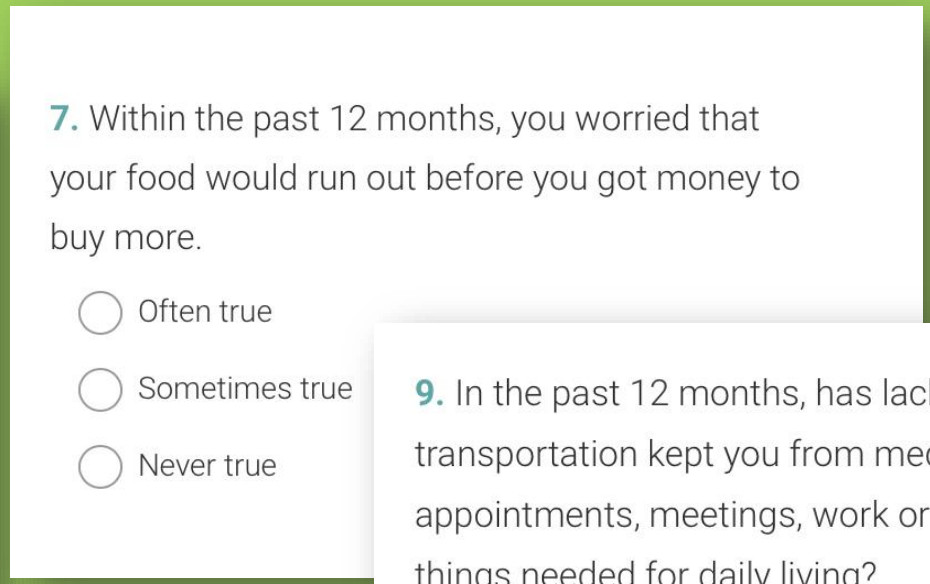


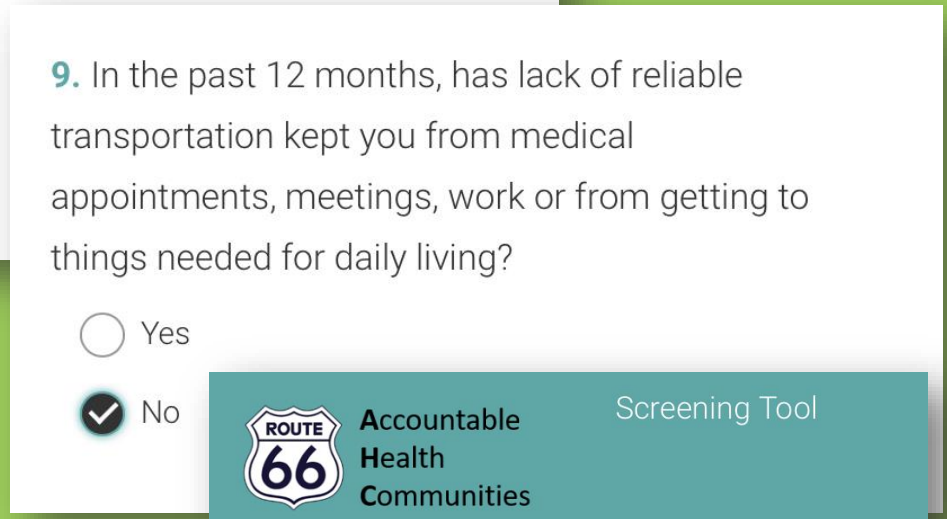
MyHealth ACCESS NETWORK

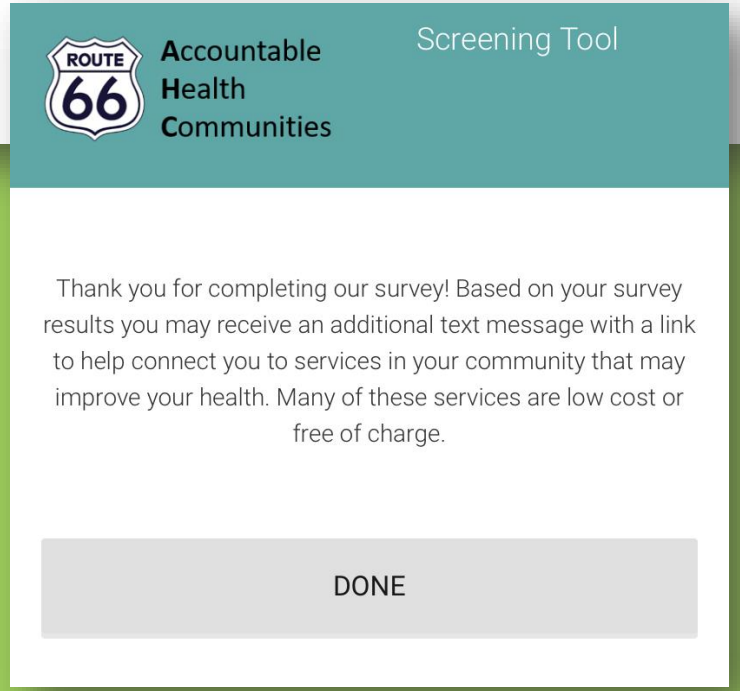
SDOH Mobile Screening











MyHealth® ACCESS NETWORK

SDoH Program Metrics

August 2018– May 30, 2024

By the numbers:

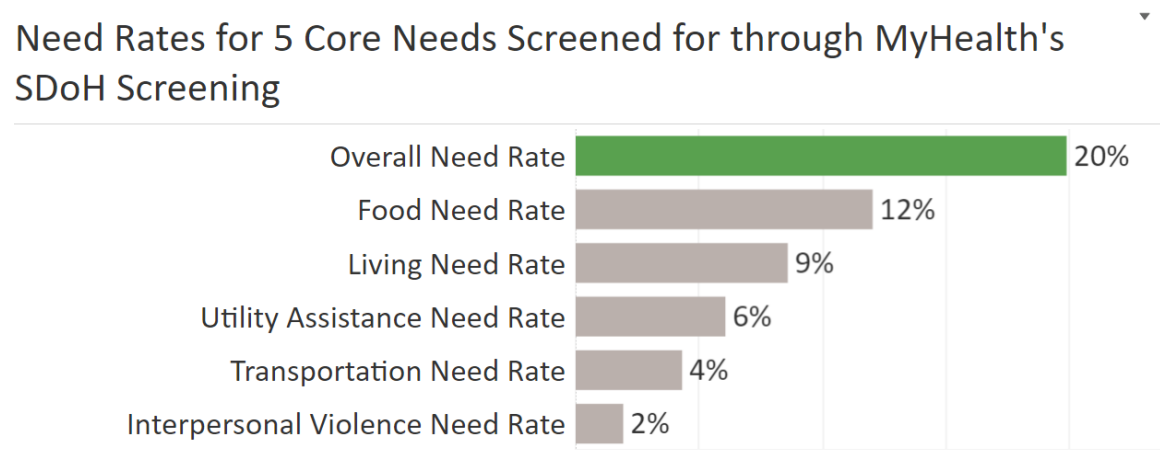
- ✓ **4.6+** million offers to screen
- ✓ **900,000+** responses
- ✓ **300,000+** responses with needs
- ✓ **400,000+** individual needs reported & addressed

Screening Delivery Rate

83%

Screening Response Rate

21%



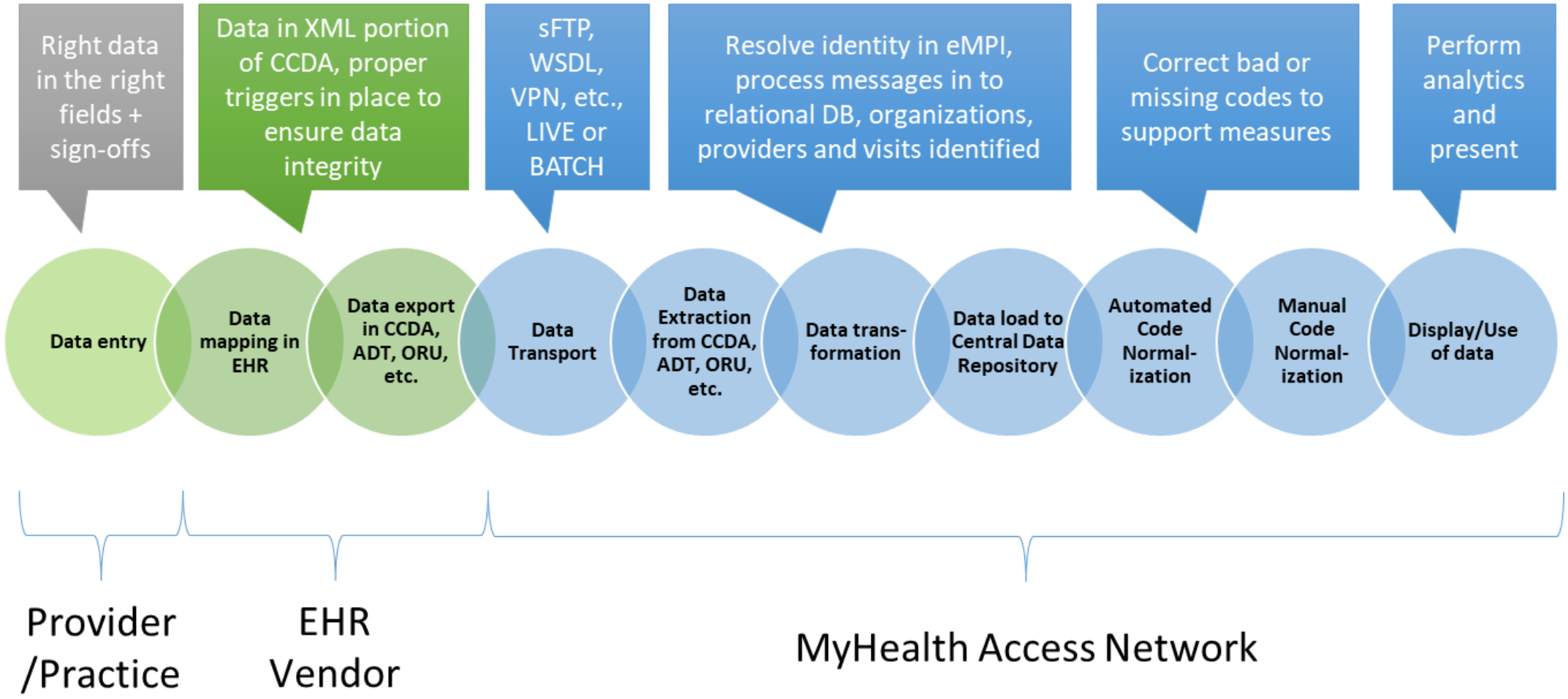
24% of responses report 2+ needs

average of **1.7** needs are reported per need positive screening

85% of responses with a living need is due to living conditions* rather having a place to stay

**Living condition issues include lack of heating, lead paint or pipes, mold, oven or stove not working, pests, missing or not working smoke detectors, and water leaks*

Data Quality: Chain of Evidence



CCDA – Consolidated Care Document Architecture
eMPI – electronic Master Patient Index

ADT – Admission, Discharge, Transfer
WSDL – Web Services Description Language

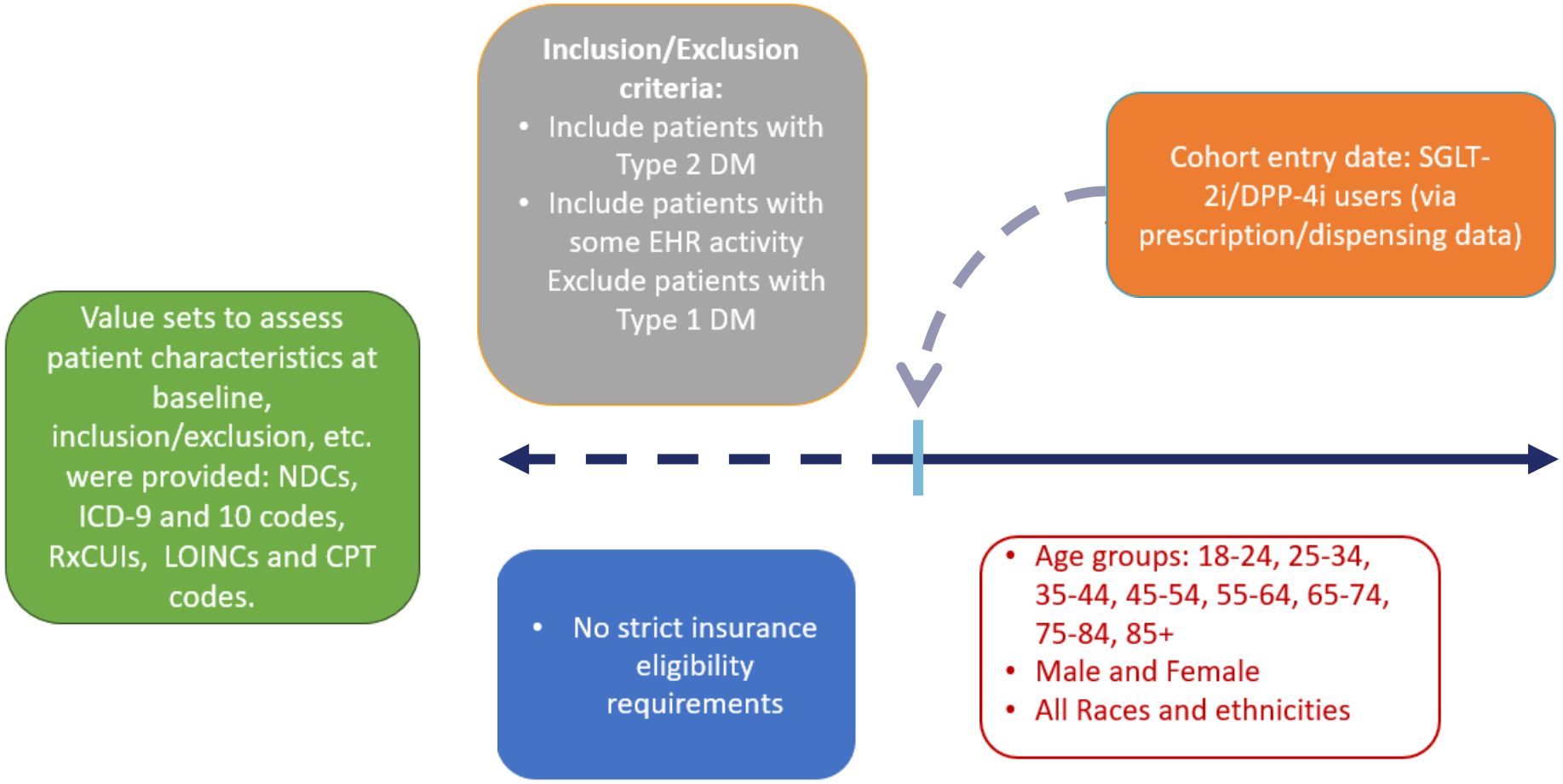
MyHealth ACCESS NETWORK

Data Characterization Exercise with Sentinel Innovation Center*

**Data Analyzed by MyHealth Access Network*

Visual Summary of the Study Design

HDU Governance approvals



Thank You

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