

2021

MISSISSIPPI PUBLIC HEALTH INSTITUTE

A photograph showing two individuals, likely healthcare workers, wearing blue scrubs and sitting at a wooden table. They are looking at and pointing to various data visualizations, including a laptop screen, a printed bar chart, a pie chart, and a dashboard with multiple small charts. The background is slightly blurred, showing an outdoor setting with wooden benches.

DATA SHARING + VISUALIZATION PLAN

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EXECUTIVE SUMMARY



CFHC currently has a vast amount of data that is not easily accessible to be leveraged by the community for public health activities. By incorporating CFHC's data alongside state and national datasets into a streamlined sharing and visualization platform, community members will be empowered to identify insights to improve community health.

To accomplish this mission, MSPHI formed a Steering Committee* that included members from different sectors and engaged HLN Consulting (Innovators in Public Health) to spearhead this project.

Phase 1 of the project consisted of a five-step process, including a project kick-off; requirements gathering; a discovery period; a presentation of the findings and recommendation to implement a modular approach; and the development of the final plan document.

Phase 2 of the project will include refining the requirements; identifying the solutions and services necessary to build the modular solution; developing a governance approach; collaborating with the Steering Committee Members (SCM) for project direction and guidance; building a comprehensive modular solution; and designing and implementing a community outreach and marketing plan.

**Refer to Appendix A for the list of Steering Committee Members.*



The Mississippi Public Health Institute (MSPHI) in collaboration with Coastal Family Health Center (CFHC), a local Federally Qualified Health Center (FQHC), seeks to establish a data sharing and visualization solution focused on reducing the risk factors for chronic diseases in three Gulf Coast counties-- Jackson, Harrison, and Hancock.

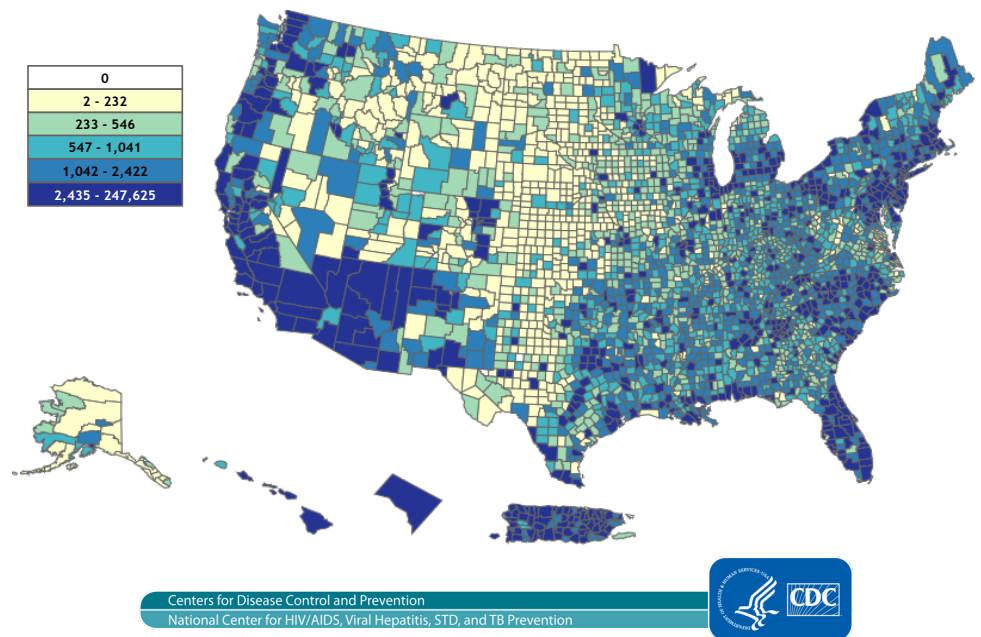
DATA IN PUBLIC HEALTH



Households living
below the federal
poverty level

5-year estimates
(2015-2019)

All age groups
All races/ethnicities
Both sexes
US Map-County Level



Social determinants of health map (poverty shown above) can be used with other data sources to match chronic disease prevention programs and policies to the needs of communities.

The project's primary mission is to lead data democratization in Mississippi by investing in a data sharing and visualization platform, which will be designed to foster a secure environment for community members to access and leverage relevant data in a user-friendly interface.

Democratizing data is the ongoing process of enabling community members, regardless of data literacy, to work with data comfortably. Community members should feel confident talking about it and thus make data-driven decisions. Leveraging data to inform public health work is a core tenet of the **Public Health 3.0 model**, which aims to address social, environmental, and economic conditions that affect health and health equity.

Data is a powerful tool for public health particularly in understanding gaps, barriers, and disparities. In the COVID-19 pandemic, community-level data has been utilized to visualize not only hotspots and vaccination rates but also has revealed health inequities and directed public health mitigation strategies.

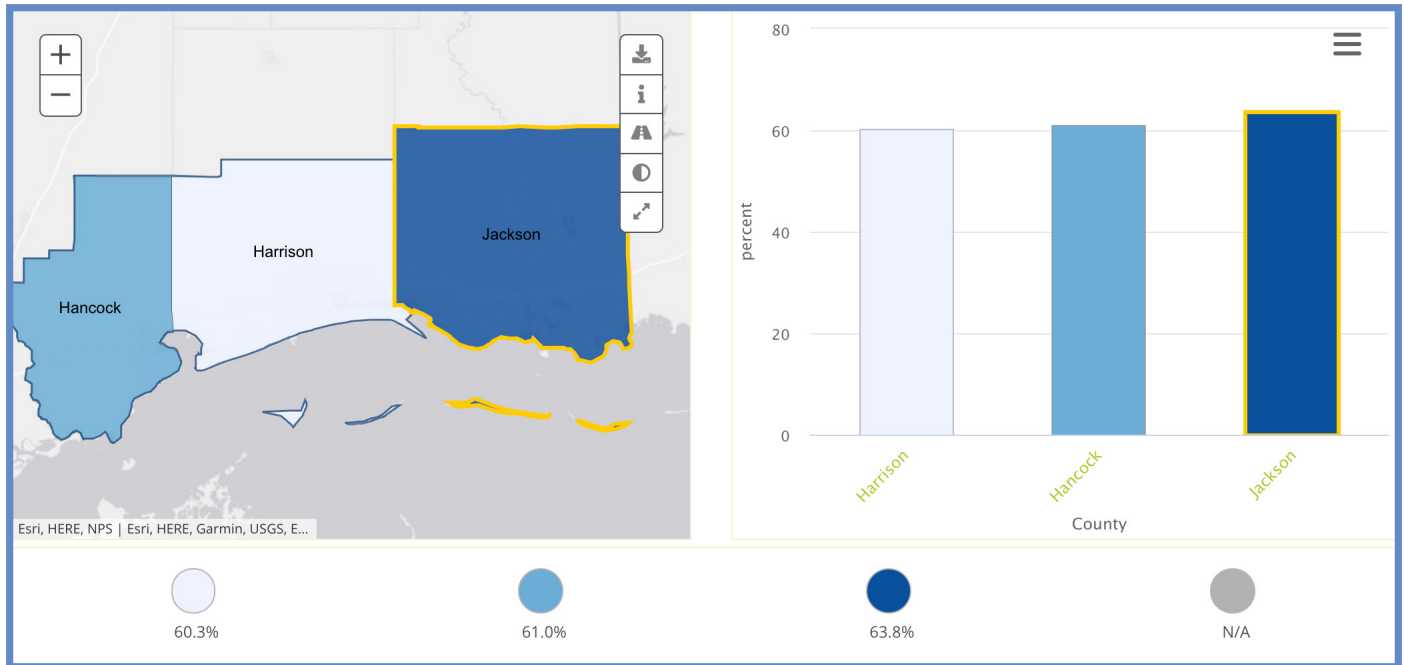
Within the framework of Public Health 3.0, MSPHI is serving as the **Chief Health Strategist** to facilitate partnerships across multiple sectors.

The availability of **Electronic Health Records (EHR)** data, where thousands of patient information records are collected, enables public health to leverage this near real-time information to determine the prevalence of chronic diseases more accurately than using surveys or extrapolated three to ten year-old national and state data.

EHR data coupled with **social determinants of health (SDOH)** data mapping allows community organizations to pinpoint problem locations and use resources more efficiently. Local health coalitions could easily track disease prevalence in their community, identifying clusters of chronic conditions like hypertension and linking hotspots to social determinants of health. A primary care provider would have the ability to visualize aggregated, real-time vaccination data from local EHR and analyze the gaps by age, race, gender or neighborhood to focus outreach to his or her patients.

With data driving health decisions, healthcare spending shifts from acute care to prevention. Preventative health care leads to cost savings and healthier populations by reducing hospital admissions, treating disease early on, and decreasing risk factors for developing communicable and non-communicable disease.

URGENT NEED FOR DATA IN MISSISSIPPI



The above map shows Mississippi Gulf Coast counties' chronic heart disease prevalence among adults aged 18-64.



Mississippi has an opportunity to access and leverage local, FQHC Electronic Health Record (EHR) data to share, easily visualize, and map out chronic diseases and social determinants of health to improve community action.

More than 700,000 Mississippi adults have **high blood pressure** and thousands more may be at risk. The state's public health agencies are challenged with managing and preventing chronic diseases like high blood pressure. Due to siloed datasets and limited data access, Mississippi's agencies lack a complete picture of the problem to take action to improve community health. MSPHI is proposing to pilot a visualization platform focusing on the Gulf Coast community and their local FQHC EHR data along with other local, state and national data. The data visualization platform would offer insight into racial, gender, economic, and age **disparities in health** and social determinants of health. Data is an essential tool to discover, reduce, and prevent disparities.

Presently, the Gulf Coast community in Mississippi uses **an existing web solution** that provides data sharing and visualization but lacks key requirements as noted in both survey responses and SCM interviews.

The current solution does not provide for interactive selection of data layers to create insightful maps to drill down into the data. Even though the existing solution provides local data, it does not provide real-time data. It also lacks the ability to automatically absorb EHR data for mapping and visualization.

OUR PROJECT



The Problem

Mississippi health data are siloed off, often unavailable, and difficult to interpret for community members. Without data, it is impossible to accurately pinpoint community-based problems and develop action plans to address and mitigate pressing issues. Currently our focus area, the Gulf Coast, reflects these statewide trends of inaccessible data. **The Centers for Disease Control and Prevention (CDC)** has recognized the need for local data available for communities and champions new initiatives to make data accessible for decision-making.

What We've Accomplished

MSPHI initiated the project in early 2021. They assembled a Steering Committee with members from different sectors aligned with the Public Health 3.0 approach. They engaged HLN Consulting to provide oversight and manage the project. HLN gathered project requirements from SCM surveys/interviews, reviewed and met with stakeholders and facilitators from prior efforts, researched potential vendors, and recommended a strategy for implementation.

The Goal

- Transform public health by democratizing data for Mississippi communities.
- Implement a data sharing and visualization platform, incorporating local, state, and national data to better understand community problems and mitigate pressing issues.
- Ensure broad utilization by assembling, training, and empowering community stakeholders to access and leverage data to solve their community's problems.

PROJECT APPROACH

HLN instituted a robust project management approach to initiate the project, define the scope and timeline, and engage key stakeholders to achieve the project goals and objectives.



Kick-Off

HLN met with SCM and presented project goals, timeline, and activities.

Discovery



HLN evaluated potential data sharing vendors and agencies. HLN requested a demonstration of vendor solutions that aligned with priority requirements.

Plan



Final plan development included synthesizing the project steps and outlining a modular solution for implementation.

Requirements Gathering



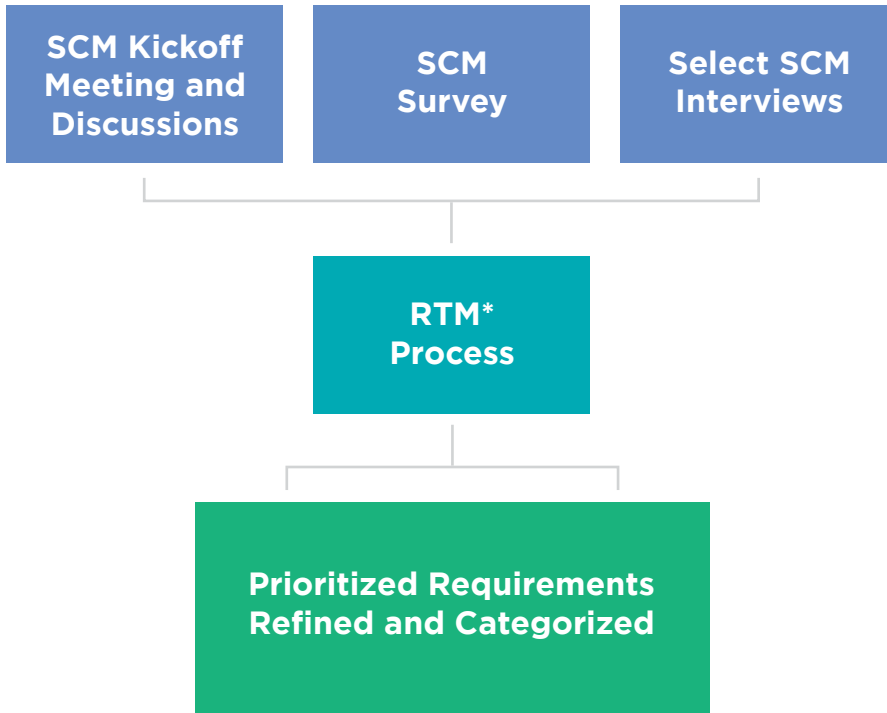
Included surveying SCM, interviewing key SCM, discussions with project sponsor and solution architects from various MS data sharing initiatives and determining high-level project requirements.

Recommendations

HLN presented the findings and recommended a modular solution approach.



REQUIREMENTS GATHERING PROCESS



**RTM - Requirements Traceability Matrix*




HLN collected requirements for the project through facilitated discussions, an administered survey of Steering Committee Members (SCM), and personalized interviews with select SCM.

Answers to survey and interview questions were organized into high, medium, and low levels of priority based on the responses and maintained in a Requirements Traceability Matrix (RTM), an industry standard tool for collecting, creating, and tracking requirements.

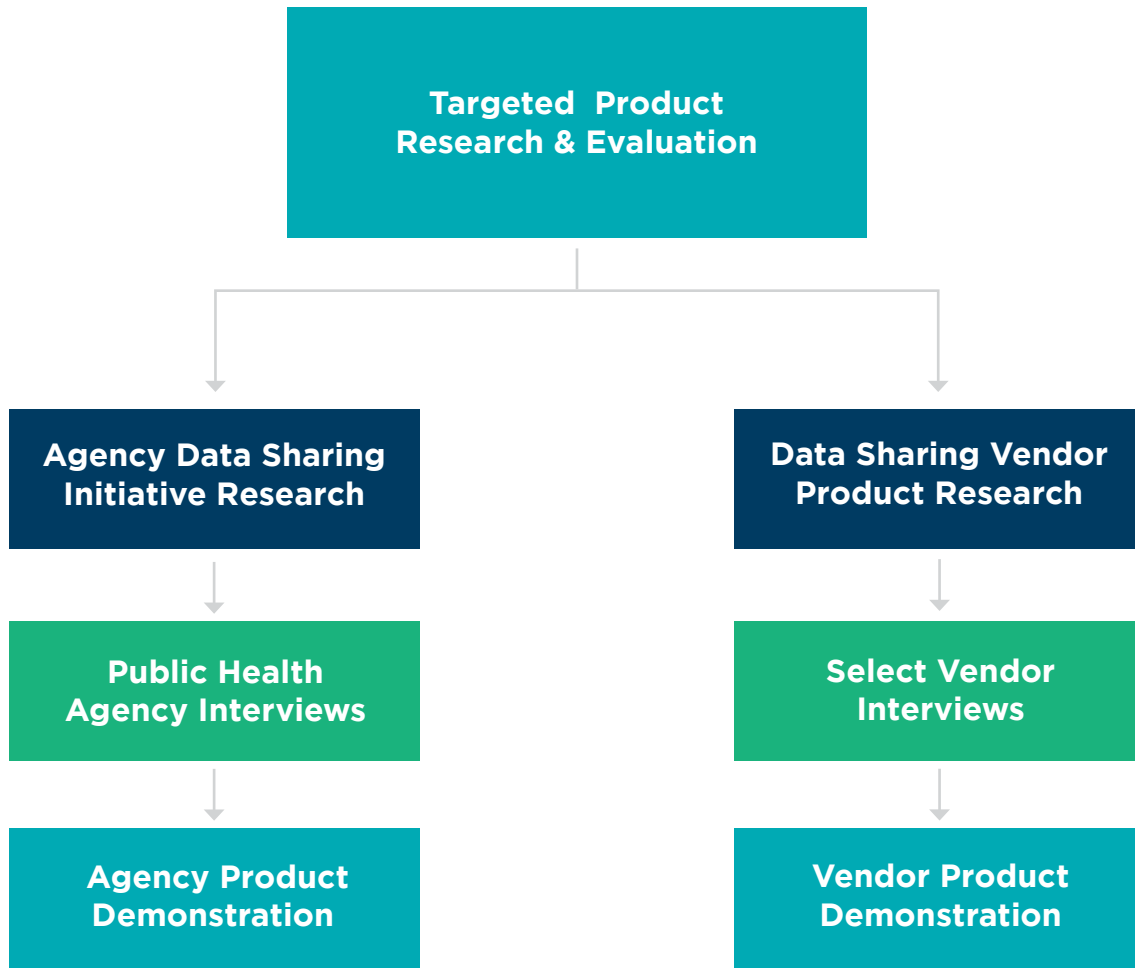


PRIORITIZED REQUIREMENTS

The prioritized requirement categories below indicate the breakdown used to solicit and organize the requirements from SCM via the survey and interview questions.

 Datasets and Access	 Data Visualization	 Technical Attribute
<p>SCM emphasized the importance of visualizing local EHR aggregated data at the neighborhood level and include demographics, chronic disease, and social determinants of health data.</p> <ul style="list-style-type: none">• Electronic Health Records Data• Social Determinants of Health Data• Chronic Disease Data• Neighborhood-Level Data• State & National Data	<p>SCM specified interactive data visualization and mapping functionality with the ability to track trends over time to determine disparities.</p> <ul style="list-style-type: none">• Interactive Mapping• Interactive Data Visualization• Chronic Disease Data• Health Inequities• Evidence-Based Action Plan	<p>SCM highlighted the necessity of the solution being cloud-hosted, secure, and scalable.</p> <ul style="list-style-type: none">• Cloud Hosted• Scalable• Data Retention• Security and Privacy• Export Data and Print Reports

DISCOVERY PROCESS



Utilizing the refined prioritized requirements within the RTM as a guide and baseline, HLN conducted targeted research and evaluation of available vendor products and existing public health agency data visualization initiatives.



Several products were evaluated by conducting online research, vendor/agency discussions, and product demonstrations. User stories with SCM priority requirements were provided to vendors so they could focus product demonstrations on SCM requirements.

PROJECT FINDINGS AND RECOMMENDATIONS



Based on stakeholder priority requirements as documented within the RTM, as well as key findings from vendor product and agency initiative evaluations and demonstrations, HLN recommends an overall strategy reflected below. This recommendation is intended to address current and future data sharing and visualization needs, as well as issues and gaps in the existing solution.

1

Implement a modular solution to leverage components from various vendor products and services to meet the SCM priority requirements.

2

Provide safe, trusted, and secure access to local non-PHI community-wide health-related information.

3

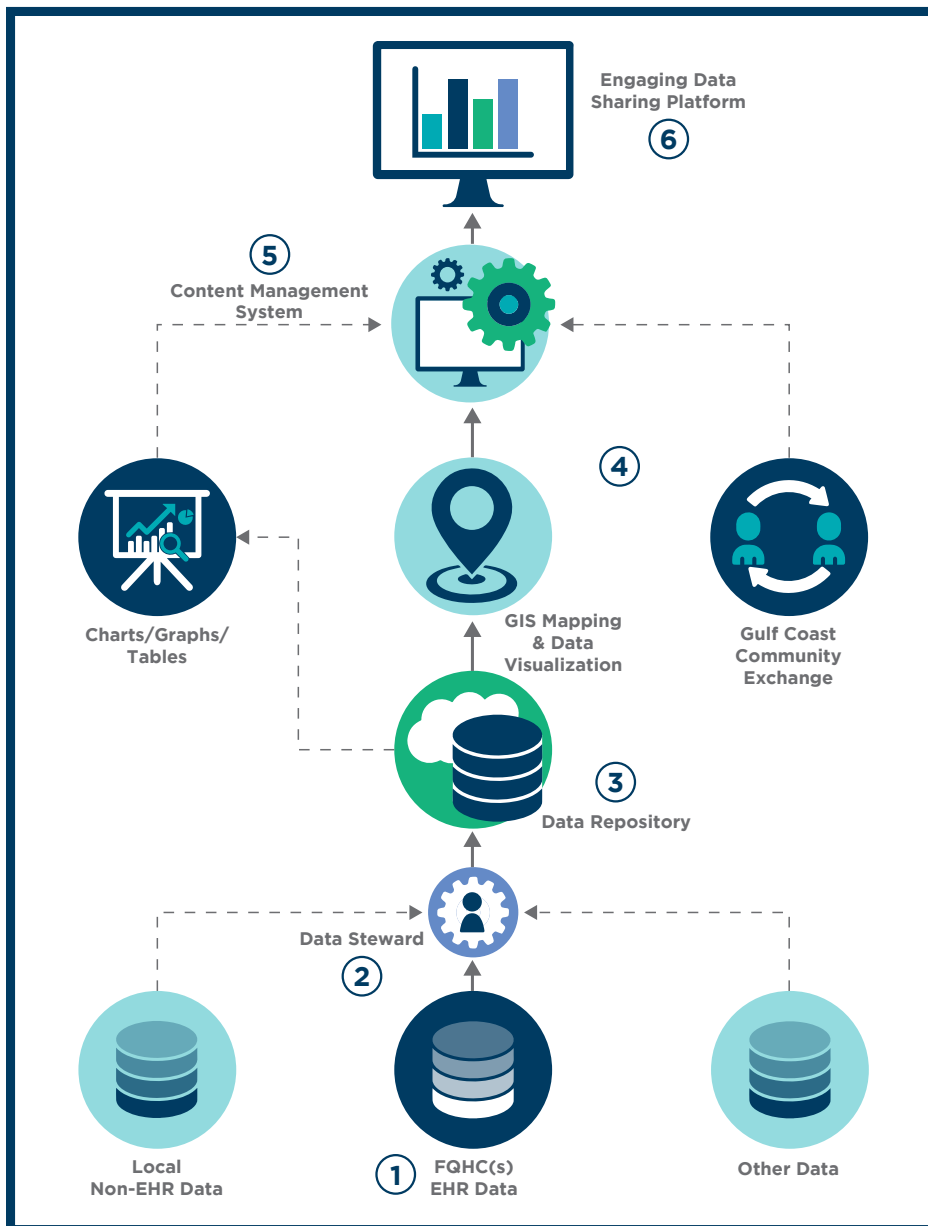
Select products and services to build a robust and highly available infrastructure for user access.

4

Build a data sharing and visualization platform in a staged approach and provide incremental value in each stage.

IMPLEMENTATION MODEL

HLN proposes a progressive implementation roadmap (Stages 1, 2, & 3) to implement a platform that resolves more immediate challenges and builds a more robust solution over time with multiple data sources and a myriad of data sharing and visualization capabilities.



Strategy Details

1. Import **local FQHC EHR and other data** in stages
2. Review by an assigned **Data Steward** to meet the governance criteria established by the SCM
3. Store the local data in the **Data Repository**
4. Data made available to:
 - a. GIS Mapping (stage 1) tool
 - b. Add/link Gulf Coast Community Exchange visualization (stage 2)
 - c. Charts/Graphs (stage 3) tool
5. The **Content Management System** assembles this data
6. Present the data as a cohesive and **Engaging Data Sharing Platform**

IMPLEMENTATION ROADMAP SUMMARY

The proposed roadmap* for implementing the data sharing and visualization platform is reflected below. A staged approach is proposed for a robust solution beginning with a local data source (FQHC EHR) and supporting multiple data sources and capabilities to provide incremental value over time.

Stage 1

Stage 2

Stage 3

Key Activities

- Requirements validation
- Data Governance set-up
- Data Repository set-up
- GIS Mapping tool set-up
- Data sharing platform hosting
- Community outreach & training

- Requirements collection
- Additional Data - PH
- GCCE data link
- Data sharing platform hosting
- Marketing/training plan

- Requirements collection
- Additional Data
- Data visualization tool
- Data sharing platform hosting
- Marketing/training

Project Management

- Roles & responsibilities
- Data Governance in place

- Refine implementation processes
- Manage resources
- Streamline workflows

- Adjust implementation processes
- Manage resources
- Streamline workflows

Stage Attributes

- EHR data de-identified
- Products that meet requirements

- Additional data sources
- Expanded functionality

- Additional data sources
- Expanded functionality

Potential Products & Services

- Cloud hosted data repository
- GIS Mapping tool
- Public data map layers

- National, state and neighborhood SDOH data on prevalence, hospital discharge and death

- GIS tool integrated to add supplemental data visualization capabilities

INITIAL STEPS FOR IMPLEMENTATION



The following steps will be initiated to support the implementation of the data sharing and visualization platform with guidance and direction from Steering Committee Members.

1

Requirements Validation

Refine requirements further based on product research/ demonstrations to develop a specific visualization catalog/wireframes and help with product selection.

2

Product Selection & Procurement

Identify products and services for the modular data sharing and visualization platform - like the GIS mapping tool, content management system, supplemental data visualization tool, and data repository.

3

Data Governance Model

Establish and execute legal agreements, guidelines for standardized data sharing processes, and technical framework to support project goals and promote sustainability.

4

Project Management

HLN and MSPHI team up to support the Phase 2 activities. SCM provides guidance and strategic direction. HLN coordinates and drives business and technology functions.

IMPLEMENTATION COST



The costs provided below are broad estimates based on the high level project workplan.

	Stage 1	Stage 2	Stage 3
Proposed Timeline	12 Months	8 Months	6 Months
Product Annual License* Stage 1 <ul style="list-style-type: none"> • Desktop/online GIS mapping and analysis tools • Content management system • Hub (cloud hosting & storage) Stage 2 <ul style="list-style-type: none"> • Gulf Coast Community Exchange Integration Stage 3 <ul style="list-style-type: none"> • Supplemental data visualization tool 	\$10,000	\$10,000	\$10,000
Product Vendor Support Recommended set-up, configuration, and support services: Stage 1: GIS vendor services Stage 2: GCCE vendor services Stage 3: Data visualization tool vendor services	\$60,500	\$25,300	\$35,500
HLN Project Management and Implementation Services**	\$745,600	\$360,400	\$270,300
Total Estimated Cost	\$816,100	\$395,700	\$315,800

*Assumption: 75-80% non-profit vendor product discount

**Refer to Implementation Roadmap for specific project management and implementation activities.

ACKNOWLEDGEMENTS

MSPHI

MSPHI supports and promotes public health to help frame an evolved, modern approach to advance population health in Mississippi. MSPHI's mission is to engage in partnerships and activities that improve Mississippi's health.

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HLN Consulting

HLN Consulting is a leading health information technology consulting company. HLN's mission is to enhance and support the capabilities of public health organizations by providing high-quality consulting services, strategic planning, software development including open source solutions, and software hosted as a service.

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If you are interested in being a part of this exciting project as a data contributor or as a funding partner, please contact Roy Hart at 601.398.4406.

We thank you for your continued support of our efforts to build a healthier Mississippi.

APPENDIX A

Steering Committee Members

Names	Organizations
Stacey Curry	Coastal Family Health Center
Brandon Frizzell	Coastal Family Health Center
Larry Knight	Coastal Family Health Center
Meagan Parker	Coastal Family Health Center
Murray Harber	Employer Health Benefits Solutions, Managing Member
Kelsey Johnson	Gulf Coast Community Design Studio
Kezi Jones	Gulf Coast Community Design Studio
David Perkes	Gulf Coast Community Design Studio
Tracy Wyman	Gulf Coast Community Design Studio
Karin Thurman	MS State Dept. of Health, Bureau Director
Davy Trewolla	MS State Dept. of Health, Data Policy & Governance
Jan Dawson	MSPHI
Roy Hart	MSPHI
Natalie Keller	MSPHI
Jacinda Roach	MSPHI
Rod Thurman	MSPHI
Gary Touchstone	MSPHI
Stephen Farrow	National Diabetes & Obesity Research Institute of MS
Pamela Hogan	United HealthCare, Maternal & Child Health Coordinator
Lei Zhang	University of MS Medical Center, School of Nursing
Jerome Kolbo	University of Southern MS, MSPHI Board Member

APPENDIX B

Implementation Roadmap (Detailed)

Objective: Develop a plan to establish a data sharing and visualization solution that meets community stakeholders' current and future requirements documented utilizing a Public Health 3.0 approach.

Stage 1: Requirements validation and product selection to address stakeholders' tactical needs and stand up data visualization platform as a proof of concept. The completion of this stage will deliver initial base functionality that includes access to FQHC (CFHC) EHR data.

Stage 2: Expand the data repository to include public health data and links to existing/relevant data sources.

Stage 3: Further expand the MSPHI data visualization platform to include supplemental local data and capabilities.

Key Activities

Requirements Validation

- Drill down on documented requirements based on product research/demonstrations
- Develop specific **visualization "catalog" and wireframes**
- Determine the solutions for data repository, GIS mapping tool, **Content Management System (CMS)**, and supplemental data visualization tool
- Identify prospective data sources and contributors

Develop data governance model

- Develop and execute legal agreement(s) for data sharing with data contributors
- Establish a Data Governance Committee
- Document data governance roles and responsibilities
- Determine sustainable funding sources/approaches

Build the data repository

- Identify and import EHR data using FHIR
- Deploy repository in cloud-hosted environment

Implement GIS mapping tool

- Procure GIS mapping tool and content management system
- Work with vendor on integrated implementation plan and timeline
- Execute planned implementation activities

Link to CMS and Data Sharing Platform

- Create a website with engaging content and visualization according to the visualization catalog and wireframe

Requirements Collection

- Document additional stakeholder requirements

Additional data

- Link and store public health data to the repository
- Use this data to create interactive maps for visualization

Gulf Coast Community Exchange (GCCE)

- Link GCCE to the Content Management System for access on the data sharing platform
- Extract data from GCCE using an API to create visualization according to the visualization catalog and wireframe

Platform Usage

- Develop marketing plan to promote and train end-users

Requirements Collection

- Document additional stakeholder requirements

Additional data

- Identify additional data sources for inclusion within the repository
- Use this data to create interactive maps for visualization

Supplemental data visualization tool

- (charts/graphs)
- Procure supplemental visualization tools
- Work with vendor on integrated implementation plan and timeline
- Execute planned implementation activities

Link to CMS and Data Sharing Platform

- Add additional content and visualization according to the visualization catalog and wireframe

Platform Usage

- Execute marketing and training plan
- Enhance users' experience with the platform based on lessons learned/steering committee/advisory group recommendations

Project Management

Roles and responsibilities

- Determine and establish appropriate forum(s) e.g., Steering Committee, advisory group, etc. to solicit guidance and strategic direction
- Leverage HLN team for project oversight and support of project implementation; and coordination of operational and technical activities

Data Governance Model

- Develop guidance document to define standardized data sharing processes and protocols to include:
 - Engagement and onboarding data contributors
 - Extraction and loading data from a myriad of sources/formats
 - Setup of user accounts/access
 - Obtain data usage/sharing agreements

- Clarify and refine implementation processes

- Manage resources and expectations to meet project time frames
- Streamline implementation workflows

- Clarify and adjust implementation process
- Manage time and resources
- Streamline implementation workflow

Stage Attributes

- Products and functionality that meet the priority requirements
- EHR data de-identified or aggregated for use
- Selection capability of various data layers for mapping and visualization
- Data governance in place to specify guidelines/protocols

- Expanded data sources for visualization
- Web-based visualization functionality enabled for user access

- Additional data sources for visualization
- Additional platform capabilities

Potential Products & Services

- Data repository
- Cloud-host
- GIS mapping tool
- Web-based Content Management System (CMS)
- Mapping tool that will bring in national, state and neighborhood-level health data

- National, state and neighborhood-level social determinants of health data on prevalence, hospitalization, hospital discharge and deaths

- GIS mapping tool(s) integrated in platform to provide supplemental data visualization capabilities

APPENDIX C

Project Acronyms

CFHC	Coastal Family Health Center
CMS	Content Management System
EHR	Electronic Health Records
FHIR	Fast Healthcare Interoperability Resources
FQHC	Federally Qualified Health Center
GCCE	Gulf Coast Community Exchange
GIS	Geographical Information System
MSDH	Mississippi State Department of Health
MSPHI	Mississippi Public Health Institute
RTM	Requirements Traceability Matrix
SCM	Steering Committee Member
SDOH	Social Determinants of Health

