Michigan Public Health Data Modernization Assessment

An Evaluation of Digital Public Health Capacity

December 2025

Michigan Public Health Institute

Center for Healthy Communities
Center for Social Change

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Acronym List

AI	Artificial Intelligence
CDC	Centers for Disease Control and Prevention
DHI	Digital Health Indicator
DHSS	Missouri State Department of Health and Senior Services
DMI	Data Modernization Initiative
DTMB	MDHHS Department of Technology, Management, and Budget
EHR	Electronic Health Record
ESSENCE	Electronic Surveillance System for Early Notification of Community-based Epidemics
FPHS	Foundational Public Health Services
FQHC	Federally Qualified Health Center
GLITC	Great Lakes Inter-Tribal Council
GLITEC	Great Lakes Inter-Tribal Epidemiology Center
HIMSS	Healthcare Information and Management Systems Society
LHD	Local Health Departments
MALPH	Michigan Association of Local Public Health
MCIR	Michigan Care Improvement Registry
MDHHS	Michigan Department of Health and Human Services

MDSS	Michigan Disease Surveillance System
MiHIN	Michigan Health Information Network Shared Services
MI WIC	Michigan Women, Infants, and Children
MPHI	Michigan Public Health Institute
PHAB	Public Health Accreditation Board
PHDS	Public Health Data Strategy
PHIG	Public Health Infrastructure Grant
THA	Tribal Health Agencies

Acknowledgments

Land Acknowledgment

The state of Michigan occupies the ancestral, traditional, and current lands of the Bay Mills Indian Community; Grand Traverse Band of Ottawa and Chippewa Indians; Hannahville Potawatomi Indian Community; Huron Potawatomi, Inc.; Keweenaw Bay Indian Community Tribal; Lac Vieux Desert Band of Lake Superior Chippewa Indians; Little River Band of Ottawa Indians; Little Traverse Bay Band of Odawa Indians; Pokagon Band of Potawatomi; Saginaw Chippewa Indian Tribe; Sault Ste. Marie Tribe of Chippewa Indians; and the Matchebenashshewish Band of Potawatomi. In addition to others that are not federally recognized. We acknowledge the Indigenous stewards of the land who continuously fight for environmental justice and Indigenous sovereignty for the occupied land and the people inhabiting it. We thank the caretakers of this land, who have lived here and continue to live here since time immemorial.

Partner Acknowledgment

Thank you to public health system partners from Michigan's state, local, and tribal public health agencies who participated in this data system assessment, providing information that will guide efforts to modernize public health data systems throughout Michigan.

Thank you to the Healthcare Information and Management Systems Society (HIMSS) for their partnership and for conducting the Digital Health Indicator (DHI) assessment and interviews, providing invaluable technical expertise, and delivering a comprehensive analysis of Michigan's digital public health landscape that informed this work.

Executive Summary

Purpose

The *Michigan Public Health Data Modernization Assessment* responds to Michigan's need for a modern, resilient, and equitable digital public health infrastructure that can support timely, data-driven decision-making and improve health outcomes statewide. Persistent challenges such as fragmented systems, manual data workarounds, limited real-time data access, and workforce constraints have hindered Michigan's ability to deliver efficient and equitable public health services. The assessment aims to identify those barriers and provide recommendations for growth and modernization.

Background

Utilizing Public Health Infrastructure Grant (PHIG) funding, the Michigan Department of Health and Human Services (MDHHS), in partnership with the Michigan Public Health Institute (MPHI) and HIMSS, launched a statewide initiative to assess the digital capacity of Local Health Departments (LHDs) and Tribal Health Agencies (THAs) with the aim to strengthen data interoperability, address digital inequities across local and tribal health agencies, and ensure Michigan's public health system is prepared for future health threats.

Methods

MPHI engaged HIMSS to assess the digital capacity of LHDs and THAs across the state utilizing their Digital Health Indicator (DHI) tool. HIMSS conducted interviews and surveys with LHDs and THAs to evaluate their digital capacity across four dimensions: Governance and Workforce, Interoperability, Person-Enabled Health, and Predictive Analytics. The process included both quantitative scoring and qualitative analysis to generate findings and recommendations. MPHI then conducted Sensemaking Sessions to ensure the recommendations were grounded in the lived experiences of Michigan's public health workforce and made revisions where necessary.

Results & Key Findings

The assessment found that while Michigan's LHDs and THAs have established foundational digital capacities, especially in the Governance and Workforce dimension, significant gaps remain in the Interoperability, Predictive Analytics, and Person-Enabled Health dimensions. Major barriers include fragmented systems, manual processes, and digital inequities between regions and populations.

Recommendations

This assessment resulted in five actionable recommendations for MDHHS to consider:

- Advance a statewide digital public health governance strategy incorporating coordinated learning and feedback mechanisms.
- Develop a sovereignty-based tribal public health data governance strategy in collaboration with Michigan's 12 federally recognized Tribal nations.
- Strengthen interoperability of digital public health infrastructure.
- Implement an advanced analytics strategy to enable predictive and operational analytics for faster, evidence-based decision-making.
- Advance equity-focused, person-enabled digital health services through ongoing collaboration with state, local, and tribal partners.

These recommendations are supported by strategies for collaborative governance, standardized data sharing, workforce development, and expanded access to digital tools. Implementation of these recommendations is expected to enhance data-driven decision-making, improve service delivery, and foster greater equity and collaboration across Michigan's public health ecosystem.

Introduction & Background

MDHHS is advancing efforts to strengthen Michigan's public health infrastructure by undertaking a statewide initiative to assess and modernize state and local public health data systems. MDHHS has applied the Public Health Infrastructure Grant (PHIG) in these efforts to create a stronger, more resilient public health system that is ready to face future health threats. PHIG was established by the Centers for Disease Control and Prevention (CDC) as a response to the critical needs identified in public health systems, highlighted by the challenges faced during the COVID-19 pandemic. PHIG provides funding for state, territorial, local, and tribal health departments to repair critical public health infrastructure through workforce development, strengthening systems, policies, and processes, and modernization of data systems.

MDHHS is using PHIG resources to invest in tools, technologies, and change management throughout the public health ecosystem that will enable use of public health data as a shared asset. The goal is to increase data interoperability and create a more modern, efficient data infrastructure to allow for increased availability and use of public health data. Through these efforts, MDHHS has invested in a comprehensive assessment of the current digital public health capacities of Local Health Departments (LHDs) and Tribal Health Agencies (THAs). The purpose of this initiative was to evaluate the current state of digital public health capacity to inform statewide planning to advance a modernized, robust digital public health ecosystem and advance public health services across the state.

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MDHHS/HIMSS/MPHI Partnership

In an effort to create a comprehensive and objective process, the MDHHS team partnered with the Michigan Public Health Institute (MPHI) to coordinate the data system assessment. For assessment activities, MPHI engaged the Healthcare Information and Management Systems Society (HIMSS) with guidance from the MDHHS team to assess the current state of its public health infrastructure. HIMSS is an American not-for-profit organization dedicated to improving health through the effective use of technology and systems. Missouri was the first U.S. public health system to utilize the HIMSS Digital Health Indicator (DHI) assessment in its data modernization efforts. (See Appendix D to review the Missouri report.) As an impartial third-party organization, the HIMSS team served as the primary data collectors for Michigan's assessment activities, utilizing the DHI assessment to conduct interviews and analyze data.

MPHI consulted with HIMSS and provided contact information and background details of the project objectives for all participating organizations. MPHI facilitated communication with LHD and THA teams to support their participation in the initiative. For THAs, MPHI met with the MDHHS Tribal Liaisons, who facilitated engagement with Tribal Health Directors. MPHI shared the purpose of the DHI assessment with the Tribal Health Directors and requested their participation in the data modernization initiative. After completion of the initial DHI assessment, MPHI engaged both LHDs and THAs in sensemaking sessions to verify HIMSS findings, ensure relevance, and capture important considerations for future implementation efforts.

The findings and recommendations resulting from the assessment will position the MDHHS team to take meaningful action to advance digital maturity and enable a data-driven, responsive, and high-performing public health system in Michigan.

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Approach

To assess Michigan's current digital public health landscape, a two-step approach was employed. First, MPHI partnered with HIMSS to conduct their Public Health Digital Health Indicator (DHI) assessment with LHDs and THAs across the state. Second, MPHI conducted 'Sensemaking Sessions' with THDs and THAs to present HIMSS' draft recommendations and gather feedback on any modifications that should be made. Based on this feedback, MPHI revised the recommendations and included considerations and anticipated outcomes for MDHHS to reference during the implementation phase.

Step 1: Public Health Digital Health Indicator (DHI) Assessment

Purpose

At its core, the DHI assessment aimed to evaluate and understand the current digital strengths and needs of Michigan's 45 LHDs and 12 federally recognized Tribal Nations, providing insight to support public health data modernization efforts. To accomplish this analysis, HIMSS utilized the DHI assessment to measure the digital capacity of each participating organization, offering a comprehensive view of digital capabilities across the state.

The four key dimensions include:

Governance and Workforce

Interoperability

Person-Enabled Health

Predictive Analytics

Beyond examining current capacity, this assessment sought to understand how well public health organizations across the state are positioned to support digital public health functions, strengthen data use, and advance Michigan's broader public health transformation goals. This included reviewing the extent to which systems communicate with one another, how data moves between programs, and whether the existing digital infrastructure supports effective, timely decision making. Utilizing data from these organizations, the DHI assessment identified key strengths that may be leveraged, gaps that may limit progress, and areas where targeted investment or support could advance Michigan's digital public health infrastructure.

It is important to note the DHI assessment results are not intended to assess, rank, or compare individual LHDs or THAs. Rather, they provide a critical snapshot of the diverse conditions, capacities, and constraints under which public health teams are working, and assist MDHHS in identifying opportunities to improve public health data use-maturity.

Methodology

HIMSS & DHI Assessment

The overall goal of the CDC's data modernization strategy is to transform the nation's public health data systems into a connected, resilient, adaptable, and sustainable "response-ready" data ecosystem.

The DHI is a comprehensive assessment tool owned by HIMSS to assess the digital health capabilities of an organization. It measures progress towards a digital health ecosystem that connects providers with people, enabling them to manage their health and wellness using digital tools in a secure and private environment whenever and wherever services are needed.

The DHI assessment evaluates an organization's performance across four key dimensions:

Governance and Workforce

Focuses on strategic leadership and oversight of digital health systems, ensuring that the policy and regulatory environment supports privacy, security, data stewardship, and accountability; emphasizes the importance of a sustainable, high-performing workforce supported to deliver digitally enabled health services.

Interoperability

Measures the capacity of entities to securely capture, store, and flow data across the organization and to external partners; highlights the ability of different information systems, devices, and applications to access, exchange, integrate, and cooperatively use data in a coordinated manner.

Person-Enabled Health

Focuses on the personalization of health services, where individuals or communities are the primary decision-makers in managing their health needs; this includes personalized care delivery, predictive population health, and proactive risk management.

Predictive Analytics

Examines the transformation of data into knowledge and real-world insights to inform decisions for public health services; includes operational analytics, predictive analytics, and personalized analytics, which together enable tracking and optimizing outcomes for unique populations.

The assessment is a 120-question survey that uses a five-point Likert scale to evaluate an organization's performance. Scores are created on a scale of 0-400 and then standardized to 100 to provide a percentage, with higher scores indicating a more mature digital health organization. The assessment provides valuable insights into the strengths and areas for improvement within an organization, helping to inform the development of strategic plans for further digital transformation. It also allows for benchmarking against industry standards and international comparisons to identify opportunities for advancing digital health capabilities. HIMSS has validated this tool in several settings in the USA, Canada, and Denmark.

The DHI assessment was used in the Missouri State Department of Health and Senior Services (DHSS) as part of their data modernization efforts. As part of the work done in Missouri, the DHI assessment was adapted for use in public health contexts. While the Missouri initiative focused on use of the assessment within administrative units of the DHSS for data collection, leaders at MDHHS chose to center this assessment around LHDs and THAs, as core users of the public health tools and technologies administered by MDHHS. MPHI and HIMSS modified the DHI assessment to ensure relevance and applicability with Michigan public health agencies by revising specific examples provided during DHI questions and removing examples relevant only to health care systems. Modification of the assessment also included the addition of an open-ended question, where participants were asked to imagine a world where anything was possible, and describe the public health data system improvements they would most like to see implemented.

Data Collection

From July 7, 2025, to August 20, 2025, HIMSS conducted **47 virtual interviews** via Microsoft Teams with LHDs and THAs across the state of Michigan. MPHI team supported HIMSS in the recruitment and scheduling of the LHDs and THAs, providing repeated and individualized outreach through email and virtual meetings to ensure teams had the information needed and opportunity to participate in the DHI. MPHI team members also attended each interview to observe, take notes, and provide additional context or clarity, as needed. Interviewers utilized the public health version of the DHI assessment to systematically guide the interviews, which were recorded to ensure quality and accuracy of transcribed responses. If the interview was not completed within the scheduled meeting time, LHDs and THAs were given the option to schedule a follow-up meeting or submit their written responses to the remaining DHI questions. In all, 38 interviews were conducted with LHDs and 9 were conducted with THDs. Of the teams who shared a reason for not participating in this assessment, the main barrier included a lack of staff capacity due to competing priorities.

HIMSS also conducted a guided discussion with 12 MDHHS staff members to gather state-level data. These discussions omitted questions related to direct service provision and only included those relevant to their roles with the State. Participants were also asked two qualitative questions regarding their top digital priorities for Michigan and their greatest barriers to digital capacity.

Data Analysis

DHI assessment data was analyzed using a mixed-methods approach that combined quantitative scoring with qualitative insights from the interviews with LHDs and THAs throughout Michigan. Quantitative measures highlighted the extent of digital public health capacity across these organizations, while qualitative findings explained why certain gaps exist and how they are working to address them. Preliminary findings were reviewed with MPHI staff to ensure the interpretations reflected Michigan's public health landscape and the experiences of the participating organizations. The HIMSS report provides full analytical detail (Appendix A).

Quantitative Analysis

The quantitative component of the DHI assessment applied the standardized Digital Health Indicator scoring methodology to measure digital capacity across participating agencies. Each team received an overall DHI score based on the percentage of applicable indicators achieved, along with scores in each of the four dimensions (i.e., Governance and Workforce, Interoperability, Person-Enabled Health, and Predictive Analytics) and their sub-dimensions. Indicators deemed not applicable to an agency's context were excluded from scoring to support equitable comparison. These quantitative findings offered a high-level picture of system-wide strengths and gaps and informed the identification of priority areas for digital modernization.

Qualitative Analysis

The qualitative analysis involved a thematic analysis of interview transcripts to provide context for the scoring data. Interview discussions offered insight into the experiences, challenges, and opportunities that influence digital capacity within both LHDs and THAs. Guided interview sessions generated transcripts that included both formal responses to DHI indicator questions and additional context shared through conversation. These transcripts were reviewed closely to identify recurring ideas and patterns, and meaningful segments of text were coded to capture both direct feedback and underlying contextual factors. Codes were then organized into themes that reflected common experiences across agencies. Attention was given to both themes that were shared across LHDs and THAs and those that were distinct to specific contexts, such as Tribal governance structures. The State DHI assessment was analyzed separately and then compared with the LHD and THA results to identify areas of alignment and divergence. Final themes were clearly defined with specific focus on what each theme captured about digital public health capacity, including the scope and boundaries of each theme.

Themes underwent iterative refinement to ensure they accurately represented the data and formed coherent patterns. Interpretations were reviewed with MPHI staff to ensure alignment with broader public health context in Michigan, and qualitative insights were considered alongside quantitative DHI scores to provide additional explanation. This process ensured the final themes captured both the range and depth of experiences shaping digital public health capacity statewide.

Results

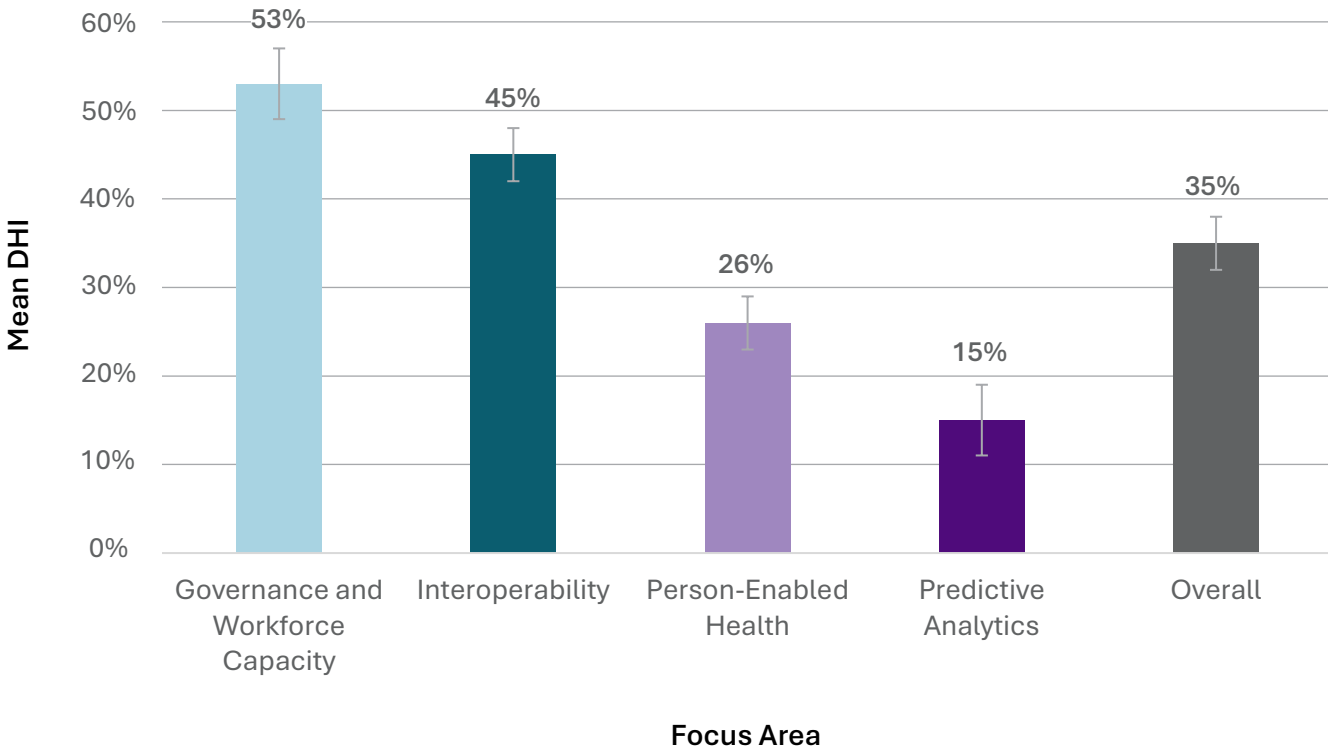
Building on the mixed-methods approach described above, the results outline the findings from both the quantitative DHI scores and the accompanying qualitative insights gathered through the guided interviews. Together, they highlight the diversity of digital public health infrastructure across teams and identify opportunities to build on existing strengths. Full methods and detailed findings may be found in the HIMSS report (Appendix A).

Quantitative Results: DHI Assessment Scores

A total of 47 teams completed the DHI assessment, including 38 LHDs and nine (9) THAs. Across participating teams, the average DHI score was 35%, reflecting the percentage of achievement (out of 100) across the four dimensions of digital maturity. Each dimension (i.e., Governance and Workforce, Interoperability, Person-Enabled Health, and Predictive Analytics) contributes equally to the overall score. Scores ranged from 14% to 60%, illustrating the breadth of digital maturity across LHDs and THAs. Importantly, these results are not intended to assess, rank, or compare individual LHDs or THAs. Rather, they provide a snapshot of the diverse conditions, capacities, and constraints under which teams are working. The variation in scores highlights both the significant progress many teams have made despite resource and infrastructure challenges and the opportunities for MDHHS to further champion statewide support and investment to advance data and digital maturity where it is most needed.

The figure below shows the average scores for each of the four DHI dimensions along with the overall mean score. These dimensions are interdependent and together describe each team's progress toward digital maturity. **As shown in Figure 1, Governance and Workforce had the highest mean score (53%), followed by Interoperability (45%).** Scores in these two dimensions were also more consistent across teams. Person-Enabled Health (26%) and Predictive Analytics (15%) had lower mean scores, with Predictive Analytics showing the greatest variability. The HIMSS analysis emphasizes that advances in Person-Enabled Health and Predictive Analytics rely on strong governance structures and the secure, reliable flow of data, without which person-centered digital services and advanced analytical tools cannot be effectively implemented.

Figure 1. *Overall Mean DHI Values (with Confidence Intervals)*



In analyzing the results of the DHI assessment across teams, each of the four dimensions were examined in greater detail, including a comparative analysis of subdimensions to provide additional insight into unique features of each of the four dimensions achieved by LHD teams and THA teams.

Governance and Workforce

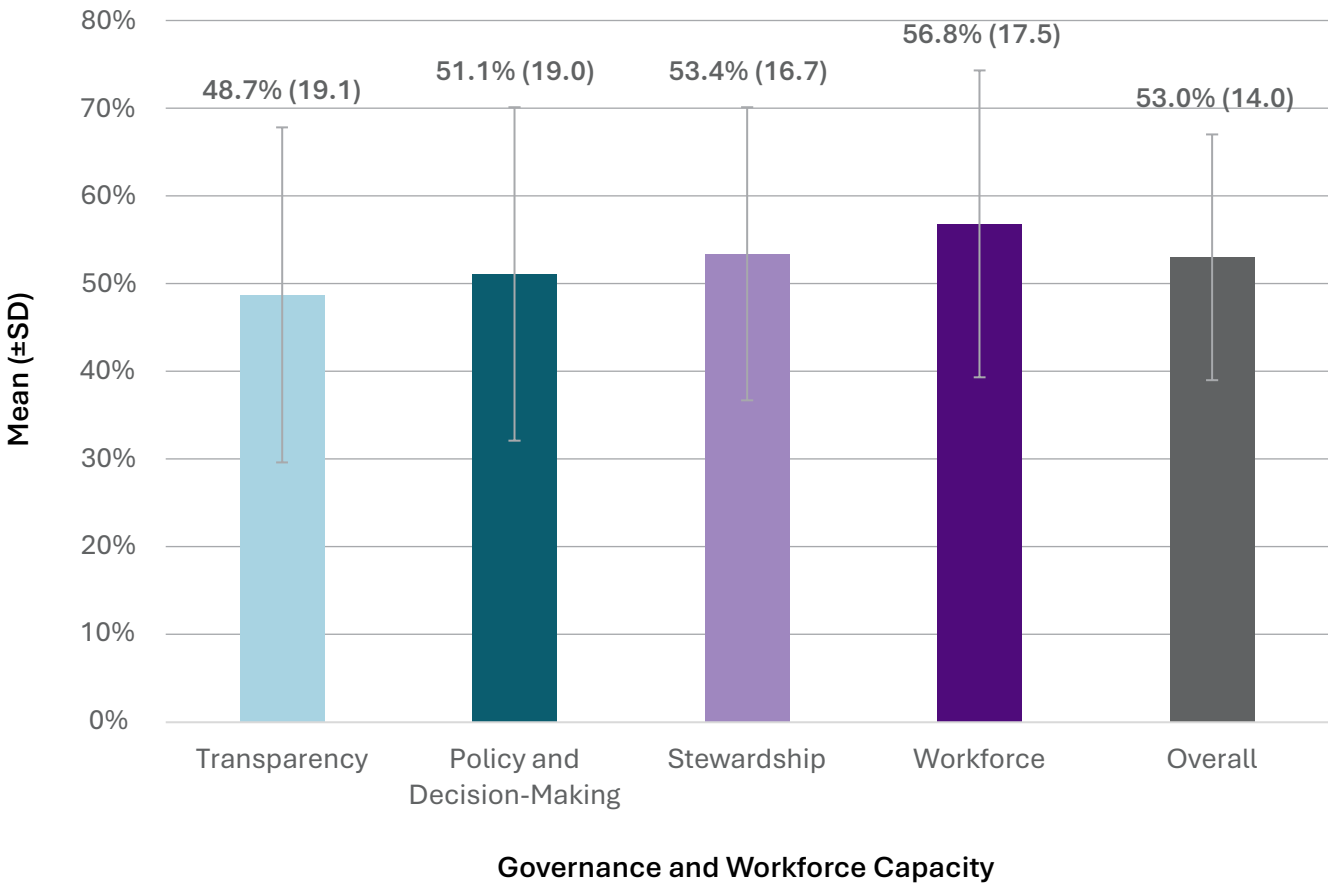
Governance and Workforce was the strongest of the four DHI dimensions, with an overall mean score of 53% and team scores ranging from 24% to 82%. The large range in scores suggests that there are varied approaches to Governance and Workforce among the teams.

The Governance and Workforce dimension includes four sub-dimensions that together reflect an organization's ability to guide, support, and sustain digital transformation:

- **Transparency** measures how organizations communicate performance, ensure equitable access to information, and enable residents to engage with and understand digital public health services.
- **Policy and decision-making** focuses on the processes, coordination, and evidence-informed strategies that shape digital priorities and resource allocation.
- **Stewardship** reflects leadership, vision, accountability, and the management structures needed to implement and oversee digital technologies.
- **Workforce capacity and competency** assesses whether teams have the skills, training, and support needed to adopt and use digital tools effectively.

Figure 2 shows mean scores across the sub-dimensions as well as the overall average for the dimension. **Teams demonstrated a similar rate of progress, with no significant difference in scores across these sub-dimensions.** This suggests that there are no major gaps in progress and teams are advancing steadily in the Governance and Workforce dimensions. As shown in Figure 2, Workforce Capacity demonstrated a slightly stronger performance with a mean of 57% while the remaining sub-dimensions – Transparency (49%), Policy and Decision Making (51%), and Stewardship (53%) – showed similar levels of achievement. The standard deviation, illustrated by the vertical bars, suggests there is variation in progress among teams and possibly several governance strengths and weaknesses across all teams.

Figure 2. *Means Scores for Governance and Workforce Sub-Dimensions*



Interoperability

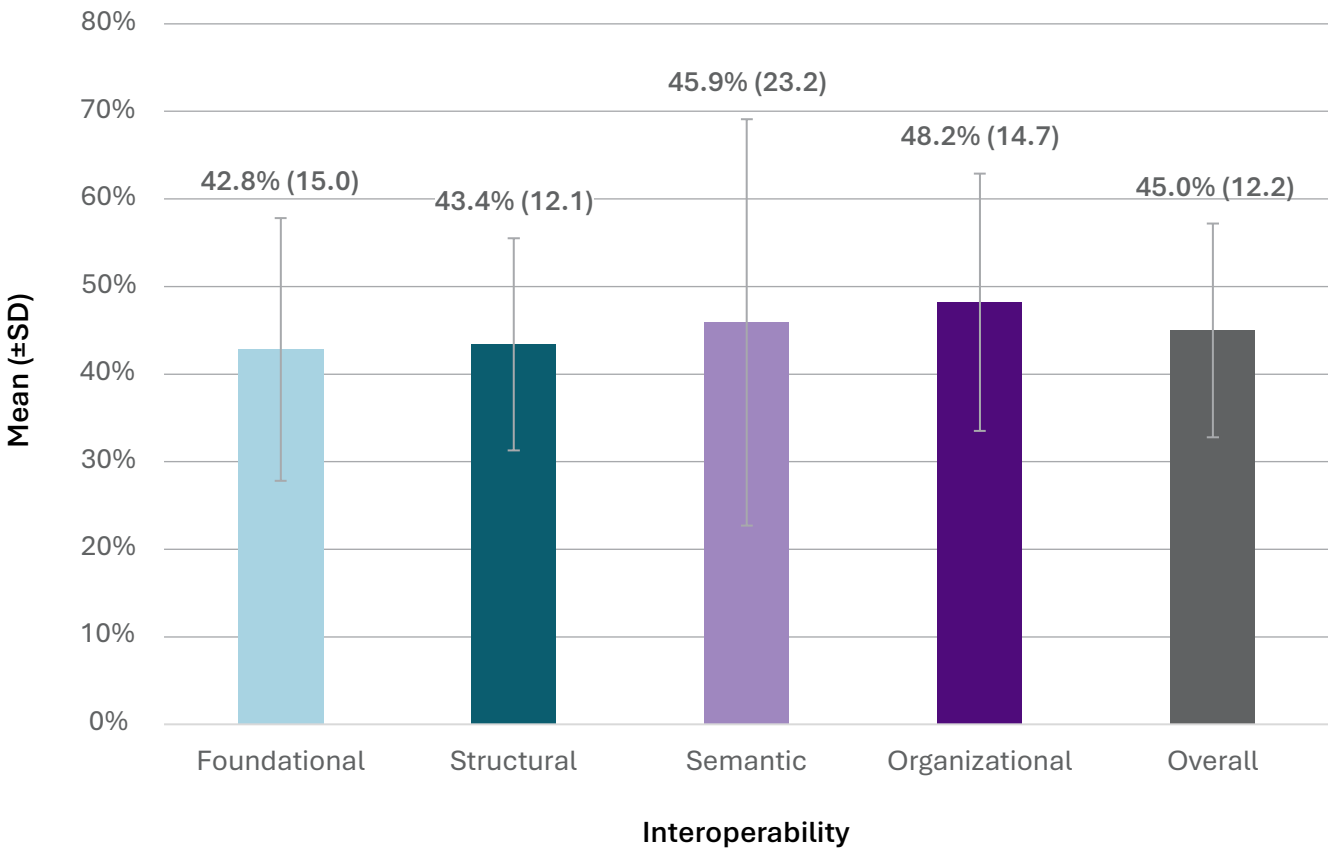
Interoperability was the second strongest of the four DHI dimensions, with an overall mean score of 45% and team scores ranging from 23% to 71%. The highest scoring teams were LHDs serving counties with metropolitan populations.

The Interoperability dimension includes four sub-dimensions that together reflect an organization's ability to connect systems and support coordinated use of information:

- **Foundational interoperability** captures the basic connectivity required for systems to send and receive data securely across settings.
- **Structural interoperability** describes the standardized formats and automated data flows that enable information to move efficiently across multiple platforms.
- **Semantic interoperability** focuses on shared coding vocabularies and standardized data definitions that support consistent interpretation of information.
- **Organizational interoperability** includes the governance, legal, and operational frameworks that enable secure, coordinated data exchange between entities.

As shown in Figure 3, **mean scores across these sub-dimensions were similar,** ranging from 42% to 48%. Standard deviations were varied (from 12 to 23) and highest for Semantic Interoperability suggesting differences in the use of common data standards across teams.

Figure 3. *Mean Scores for Interoperability Sub-Dimensions*



Predictive Analytics

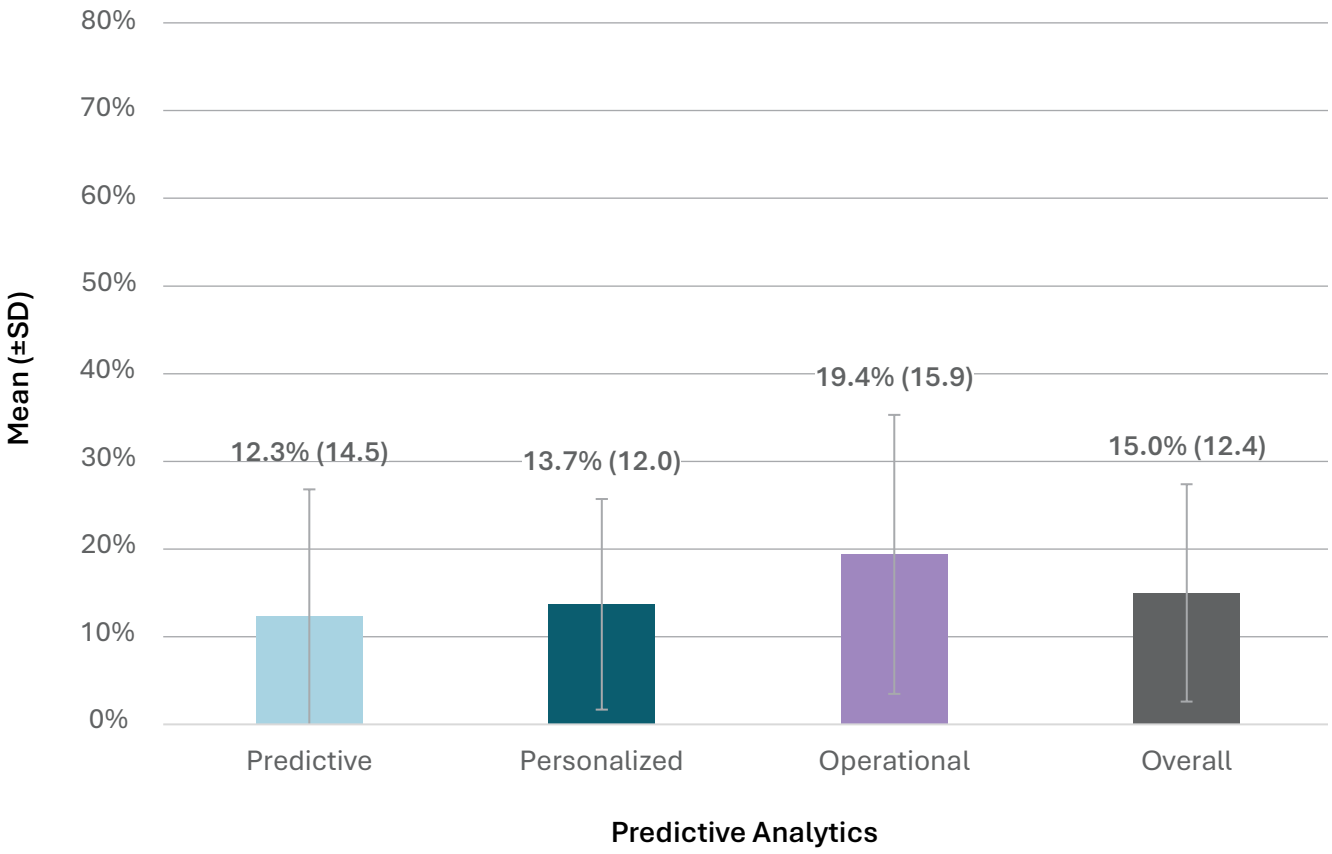
Predictive Analytics was the lowest-scoring DHI dimension, with an overall mean score of 15% and team scores ranging from 0% to 54%. While a small number of agencies demonstrated moderate progress, the majority scored below 20%, and several teams had not yet begun implementing predictive analytics approaches. **These results highlight a substantial opportunity to strengthen the use of data, forecasting tools, and outcome monitoring in public health practice.**

This dimension includes three sub-dimensions that together describe how analytic tools are used to inform public health decisions:

- **Predictive analytics** focuses on identifying risks and forecasting outcomes to guide proactive population health strategies.
- **Personalized analytics** involves using individual-level data from digital tools, devices, or other sources to support personalized health and wellness goals.
- **Operational analytics** tracks system performance outcomes using dashboards and analytic tools to inform decision-making.

As shown in Figure 4, **mean scores across these sub-dimensions were low overall**. Operational Analytics was the strongest area, with a mean score of 19%, reflecting emerging use of dashboards and performance data among some teams. Predictive Analytics (12%) and Personalized Analytics (14%) had even lower scores, signaling limited capacity to leverage data for forecasting or personalized insights. High standard deviations across all sub-dimensions suggest wide variation in progress and reinforce that **predictive analytics remains a significant growth area for digital transformation statewide**.

Figure 4. *Mean Scores for Predictive Analytics Sub-Dimensions*



Person-Enabled Health

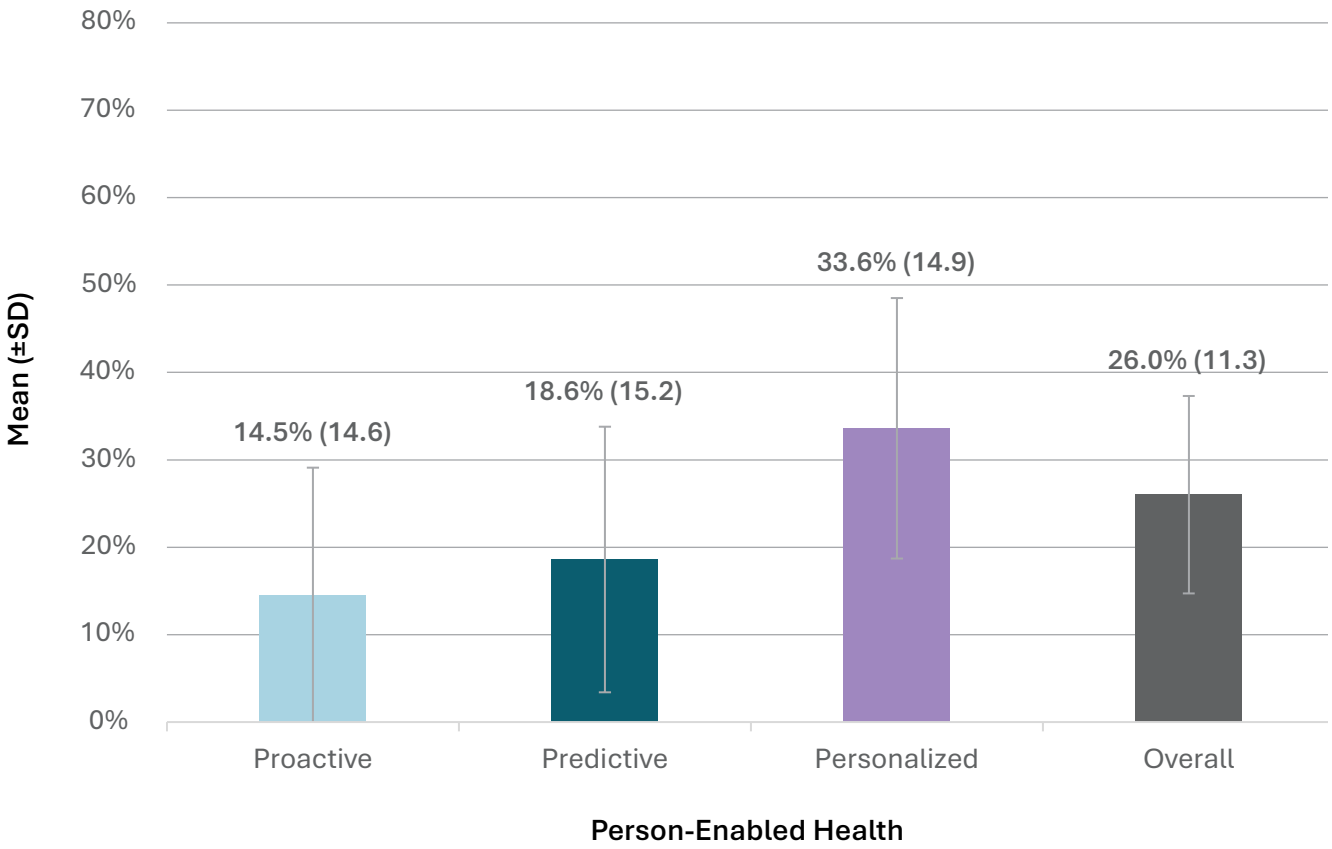
Person-Enabled Health was the second lowest-scoring DHI dimension, with an overall mean score of 26% and team scores ranging from 0% to 56%. While a few teams demonstrated moderate development in this area, the majority achieved less than 30% of the available indicators, signaling limited capacity to leverage digital tools to personalize and support individual and community health needs. This pattern is expected, as Governance and Interoperability are fundamental components of digital health transformation and underpin progress in Person-Enabled Health. Governance and Interoperability dimensions must first be strengthened before advancements in Person-Enabled Health and Predictive Analytics can occur.

This dimension includes three sub-dimensions that together describe how digital systems support personalization, proactive engagement, and data-driven population health strategies:

- **Proactive risk management** reflects the use of digital tools to anticipate health risks and support early intervention.
- **Predictive population health** captures the use of analytics and dashboards to identify risks and guide strategies for specific population segments.
- **Personalized care delivery** focuses on tailoring digital services to individual needs, preferences, life circumstances, and cultural contexts.

As shown in Figure 5, sub-dimension scores varied considerably. Personalized Care Delivery had the strongest performance, with a mean score of 34%, suggesting that some teams are beginning to implement strategies that tailor public health services to the needs of individuals and communities. In contrast, Proactive Risk Management (15%) and Predictive Population Health (19%) had much lower mean scores. High standard deviations across all three areas further highlight significant variation in progress across teams.

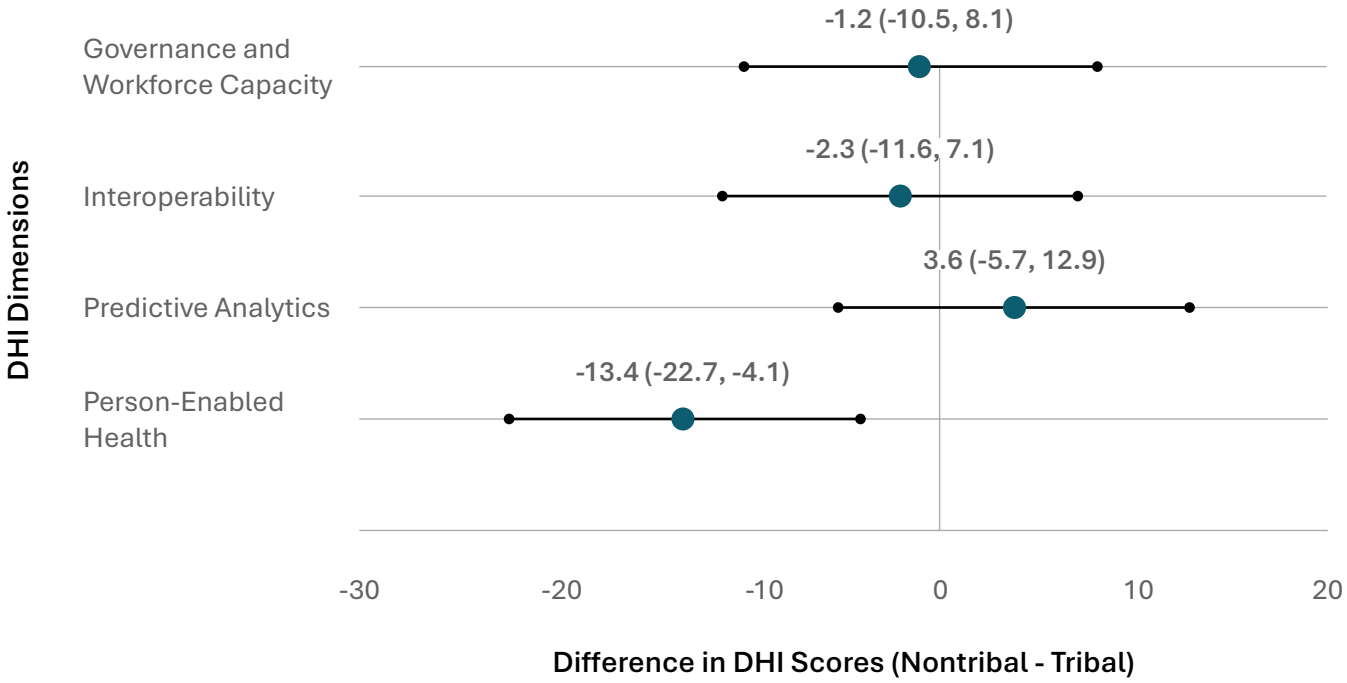
Figure 5. *Mean Scores for Person-Enabled Health Sub-Dimensions*



Differences Between Tribal Health Agencies and Local Public Health Departments

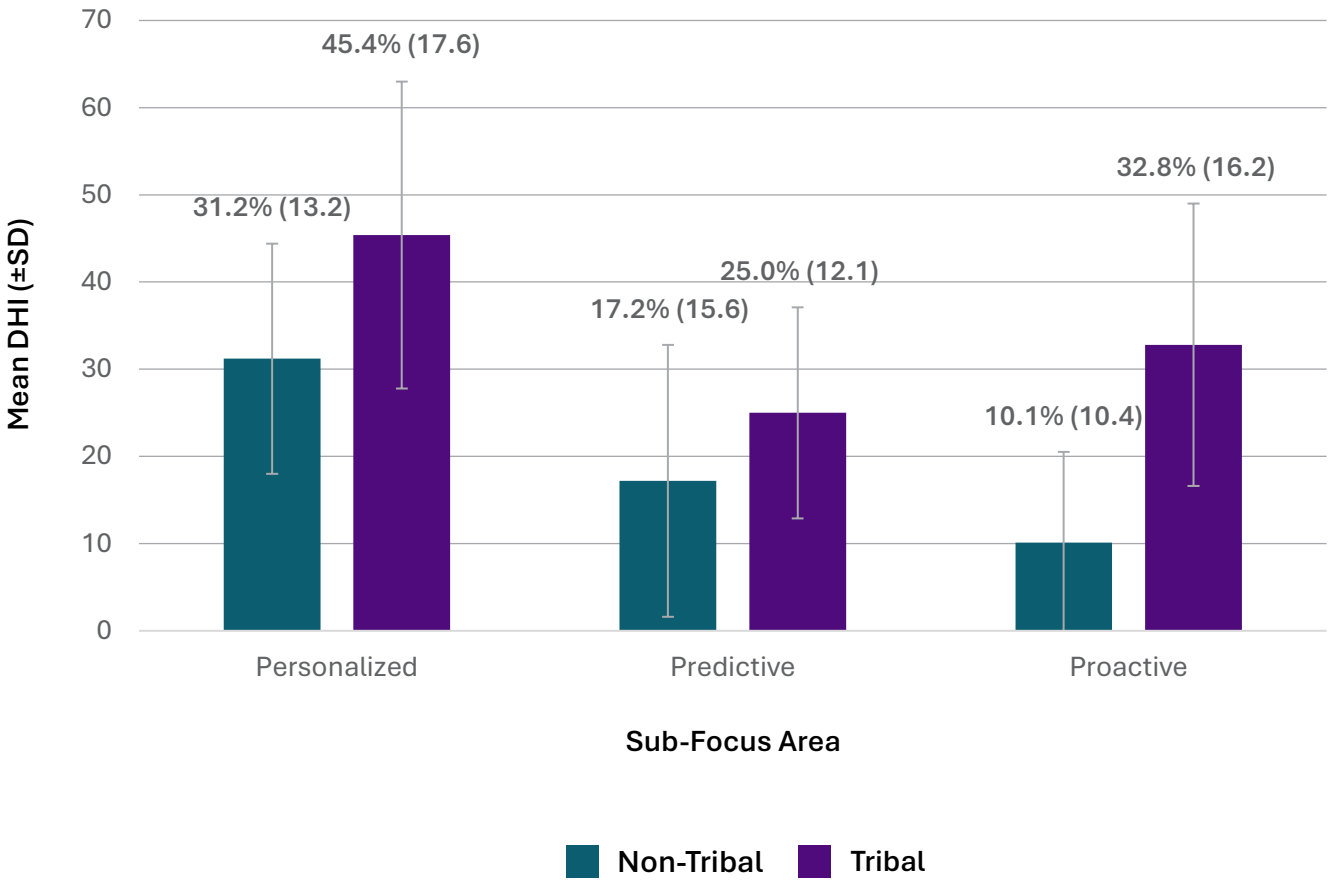
The following analysis explores variation in digital capacity between LHDs and THAs across the four DHI dimensions. As shown in Figure 6, most dimensions did not show significant differences between the two groups. The one exception was Person-Enabled Health, where THAs appear to be further along in the development of person-enabled approaches than LHDs (mean difference: –13.4; 95% CI: –22.7, –4.1). **These findings offer an opportunity for shared learning and to highlight areas where practices and approaches used by THAs may provide valuable insights for strengthening person-enabled health strategies more broadly.**

Figure 6. *Differences between Tribal Health Team Scores and Local Public Health Team Scores Across Four DHI Dimensions*



A deeper look at the Person-Enabled Health sub-dimensions (Figure 7) further illustrates this opportunity for learning. **THAs appear to be further along in both Personalized health services (difference: –14.2; 95% CI: –24.7, –3.73) and Proactive services (difference: –22.7; 95% CI: –32.6, –5.05).** While the difference in Predictive Population Health was not statistically significant, THAs appear to be further along in this sub-dimension. Together, these findings suggest that THAs have developed advanced approaches to implementing person-enabled digital health strategies, offering valuable insights for broader learning.

Figure 7. *Differences between Tribal and Non-Tribal Team Scores for Person-Enabled Health Dimension*



Summary of DHI Results

Overall, Michigan's public health teams have the strongest development in Governance and Workforce. Collectively, these results highlight LHDs and THAs as establishing foundational digital capacities, but significant opportunities remain to expand interoperability, analytics, and personalized public health capabilities.

Qualitative Results

Interview sessions with the teams provided important context for understanding digital health capacity statewide. These findings add context to the quantitative DHI results by illustrating how teams are navigating digital technologies, infrastructure, and public health responsibilities within their unique operating environments.

A thematic analysis was conducted using interview transcripts from 38 LHDs, nine THAs, and the State. Transcripts were reviewed and coded to identify patterns that were common across teams as well as themes unique to specific contexts. This process resulted in the identification of six (6) major themes among LHDs, four (4) themes for THAs, and three (3) themes for the State.

Together, these qualitative findings provide essential insight into how digital capacity is currently experienced and utilized. They help offer critical context for understanding current gaps, strengths, and the ways agencies are working within existing digital infrastructure. The full set of themes, illustrative quotes, and use cases are presented in the HIMSS report (Appendix A).

Qualitative Results for Local Health Departments

Theme 1. Fragmented Systems and Manual Workarounds

LHDs described working in a fragmented digital environment where systems do not communicate with one another, requiring extensive manual work to compile, reconcile, and report data. Teams reported relying on multiple disconnected state and local platforms, leading to duplicate data entry, repeated logins, and time-consuming workarounds that shift staff away from program planning and service delivery. These limitations were seen not only as technical challenges, but as barriers to timely decision-making, real-time analytics, and proactive action.

> "We're pulling reports from three different systems and trying to stitch them together."

> "We have to spend significant resources collecting and pulling data constantly to help inform our decision making and it's never easy."

Theme 2. Strong Data Culture with Varied Governance

LHDs consistently emphasized the importance of data for accountability, planning, and decision-making, reflecting a strong culture of valuing data across agencies. However, governance structures were widely described as unclear and inconsistent, with many teams uncertain about who holds responsibility for data ownership, stewardship, and decision-making. In the absence of standardized governance frameworks, teams often developed their own informal practices, **leading to uneven approaches across teams and limiting the ability to scale innovations or share solutions across programs**.

> "Governance? It's fuzzy. IT owns some things; public health owns others."

> "The governance piece of it…For my team, it's very informal. It's not really written into a charter or a document or anything like that."

Theme 3. Workforce Capacity Limitations: "We Are Handcuffed"

LHDs described workforce capacity as a major constraint on advancing digital health, with wide variation in access to IT, analytics, and informatics expertise across departments. Smaller and resource-constrained agencies often rely on only one or two staff to manage technology, data, and reporting, limiting their ability to adopt new tools or sustain digital initiatives. In contrast, **teams with dedicated epidemiologists or data analysts were better positioned to use data strategically, reinforcing inequities in digital capacity across the system**. LHDs also noted that budget cuts had, in some cases, required them to reduce staff or scale back programs, further constraining their ability to advance or sustain digital capacity.

> "We don't have an EPI [epidemiologist]. We don't have a way to analyze data."

> "We struggle locally with our IT support. We don't have full ownership and a limited staff that may not be educated or may not be able to manage projects to the level we desire...we are handcuffed."

Theme 4. Data Silos and Limited Access to Real-Time Data

LHDs rely heavily on retrospective data and dashboards designed for compliance rather than real-time decision-making. State data may be one to two years old by the time it is available, and teams frequently rely on manual processes (often Excel) to consolidate data from multiple sources, which limits their ability to monitor outcomes over time or target specific populations in a timely way.

> "Nothing is automatic... someone has to go in and pull it manually."

> "We don't have real-time dashboards, just reports someone runs when they have time."

Theme 5. Affordability, Geography, and Digital Inequities

LHDs consistently described significant inequities in digital infrastructure, affordability, and technical capacity across public health teams, often framing the challenge as a divide between "have" and "have-not". Rural and smaller communities face compounded barriers (e.g., limited broadband access, higher relative costs of digital tools, and fewer resources to invest in automation) making it harder to advance digital initiatives or sustain integrated systems. While some LHDs have implemented creative solutions such as mobile clinics, Wi-Fi–enabled vans, or providing devices to residents, these efforts were described as resource-intensive and difficult to scale without sustained investment.

> "Digital equity is a big barrier to implementation."

> "We have the ability. We just need time and money."

Theme 6. Limited Person-Enabled Services

Most LHDs reported limited person-enabled digital services. Clients often cannot access their own records, schedule appointments, or communicate digitally with public health teams, relying instead on paper, phone, or in-person visits. A few programs offer virtual visits or patient portals, but concerns about privacy, trust, and digital literacy, combined with resource constraints, slow broader rollout.

> "When its allowable, when we need to, and when we have the capacity."

> "Clients cannot get in there [their patient portal] at all… we do not communicate [digitally] at all with clients."

Qualitative Results for Tribal Health Agencies

The qualitative analysis examined THAs separately to capture themes shaped by the unique context of tribal communities. The following findings highlight challenges and opportunities specific to sovereign tribal nations.

Theme 1. Limited Digital Interoperability and Connectivity

THAs described working in highly fragmented digital environments where electronic health records, hospital systems, and data exchanges do not communicate automatically. **As a result, staff rely heavily on manual processes, often using Excel spreadsheets, to compile data, track care, and generate reports.** THAs noted that the unique sovereign governance of tribal teams contributes to limitations in data integration between State and Tribal data systems.

> "Our integration with the state systems really is limited to just our EHR and the information that comes through our EHR."

> "It's all manual in Excel spreadsheets."

Theme 2. Safeguarding Tribal Sovereignty

THAs emphasized that digital health practices are shaped by sovereignty principles that require strong protection of Tribal data and controlled information sharing. Data is viewed as a sovereign asset, and **all digital initiatives and external communications must pass through formal tribal approval processes and safeguards**, which may slow down processes, but are essential to maintaining self-determination and trust.

> "It's pretty hard to strike a balance between how much we safeguard our own data and trust where we should take our data to, or who we should give our data to…Tribes are rightfully so very protective of the data that we collect."

> "One thing with our tribal community and our policies and procedures is anything that comes out of the organization have to come out through our Tribal public relations or Tribal release of information system…has to be approved before it can go out."

Theme 3. Population Demographics and Geographic Inequities in Digital Access

Tribal health teams described significant challenges in accessing data that accurately reflects their communities and in securing the digital infrastructure needed to use health information systems effectively. State and national datasets were often seen as lacking sufficient Tribal-specific demographic detail, making it difficult to isolate health trends for Tribal populations.

> "Most of the data, when we do access the State-wide stuff, there's not a lot of racial breakdown."

> "We're in a mixed community...it's hard to isolate the people you serve versus whole community wide."

Theme 4. Participatory Governance and Personalized Care Delivery

THAs described strong community-centered governance models where community members play an active role in decision-making, program design, and service priorities. These participatory structures reflect Tribal values of shared leadership and ensure that health services remain responsive to community needs while also supporting individualized, person-centered care.

> "Our structures run by community members at the health board level and most of the decisions that are made in-house, they're all people who live within the Community."

> "Every Tribal member has their own login to access motions that are approved or denied. Any policies and procedures, any updates are all made available to Tribal members."

State DHI Results

This section synthesizes findings from the DHI assessment conducted with tribal, local, and state public health practitioners. Drawing on qualitative interviews, the analysis highlights three key themes that capture the State's current digital capacity, major implementation barriers, and priority opportunities for strengthening Michigan's public health data and technology systems to support a more proactive and data-driven approach to public health.

Theme 1. Interoperability as the Foundation for Automated, Proactive Public Health Services

State participants identified limited interoperability as a significant barrier to advancing Michigan's digital public health system. Siloed systems and limited automation require staff to rely on manual data extraction and reconciliation, slowing outbreak detection and keeping the system reactive rather than preventive. Participants emphasized that both technical limitations and gaps in statewide governance and policy guidance constrain progress, making interoperability a top priority for investment.

> "[We] do a lot of manual work, people look reviewing charts, calling up patients of cases to get information and usually these are sitting in different systems."

> "I think that just going back to our primary goal to prevent disease. [Interoperability] helps us identify any risk or outbreaks or anything in a much more timely fashion. A lot of times before we know about an outbreak, we're running behind it already. Some of that early data exchange would help us identify problems or any risks early enough."

Theme 2. Digital Workforce Capacity Building

Participants emphasized the need to strengthen internal digital skills so public health staff can develop and use data tools without relying heavily on centralized IT or costly vendors. They highlighted training in practical, user-friendly technologies, such as low-code platforms, as a way to enable faster, more tailored solutions. Additionally, participants noted the need for investment in the workforce.

> "The training programs should focus on empowering our data staff… Basically, helping the people who can help others so that instead of heavily relying on IT, we can build in-house low code, no code applications and we would be able to deploy them with co-ownership."

> "Upskilling staff to do pubic health work in the digital era. With recent funding cuts and staff loss, we were unprepared to continue on with our operations."

Theme 3. Governance and Cross-Agency Collaboration

Participants described challenges in cross-agency collaboration as a major barrier to advancing digital transformation. While public health teams are expected to share data across state agencies, inconsistent governance structures, lack of formal data-sharing agreements, and misaligned systems often force teams to rely on manual, inefficient workarounds instead of secure, automated exchange.

> "Better collaboration or data sharing between agencies would also help with better coordinated efforts at the state level."

> "We don't have a data sharing agreement…it's very awkward sometimes."

Future Digital Health Aspirations

To understand teams' priorities for digital health transformation, interviews concluded with a "magic wand" question asking what they would change about data use, state systems, or digital infrastructure. The themes below summarize key insights from Local Public Health Departments, followed by perspectives from Tribal Health Departments.

Local Health Department Responses

Theme 1. One Integrated Data System

Across LHDs, the most consistent aspiration was for a single, integrated data system that connects state platforms, local systems, and EHRs. Teams described feeling like "data collectors" rather than "data users," constrained by fragmented systems, duplicate data entry, and limited ability to use information for real-time decision-making, performance improvement, or strategic planning. An integrated system, supporting interoperability, shared platforms, real-time data access, and analytics infrastructure, was seen as essential for reducing administrative burden and enabling more effective, data-driven public health practice.

> "One thing that always comes to mind for me is like systems ability to kind of interface with each other."

> "I would love to have just one system instead of a system for this program, a system for that program that can't crossover all the time."

Theme 2. Data Access and Interface with External Entities

LHDs expressed a strong desire for seamless, real-time access to data from external partners, such as medical examiners, healthcare systems, insurers, neighboring states, and other public health domains. Teams described current processes as slow, fragmented, and overly manual, relying on fax, individual requests, and duplicate data entry that limit timely decision-making and coordinated response.

> "Having better access for healthcare information between all [healthcare] organizations... to be able to share data and access it when needed."

> "We've got a really great statewide vaccine registry, but we can't see any vaccines that were given in another state."

Theme 3. Shared Governance and Statewide Standardization

LHDs expressed a strong aspiration for clearer, statewide leadership on governance and standardization. They envision a coordinated system where the state establishes minimum standards, shared platforms, and formal data governance structures that local departments can adapt, reducing duplication, improving efficiency, and strengthening consistency.

> "I think it would be great if the state had set some standards that makes it easier for us so that every health department in the state isn't trying to do the same thing."

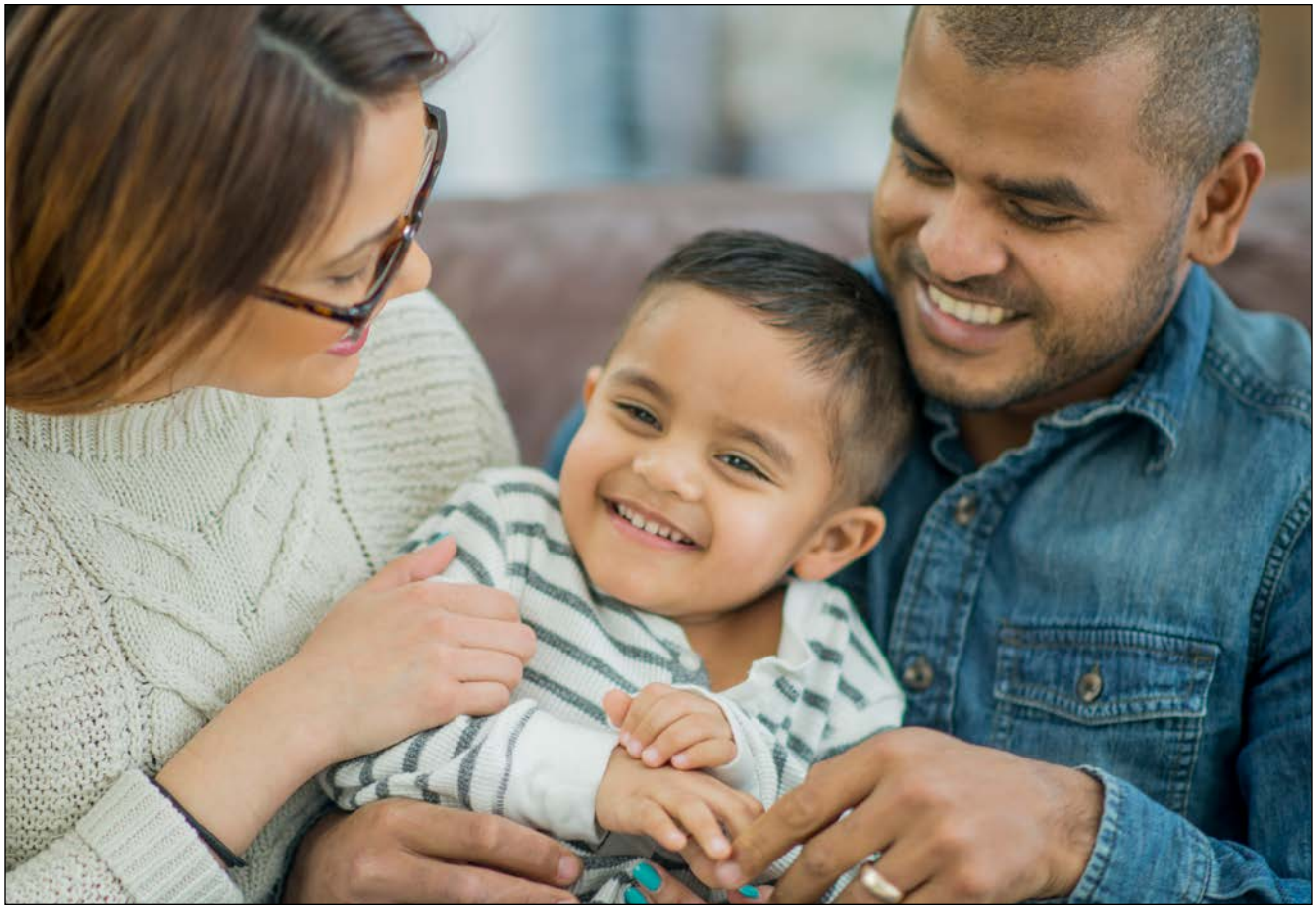
> "If there was a tool that was off the shelf, that had training that comes along with it that we could bring to our staff and then incorporate that into our work with our community."

Theme 4. Automation to Achieve Strategic, Data-Driven Insights

LHDs emphasized the need to move away from manual, repetitive work and toward automated systems that enable real-time data use, strategic analysis, and proactive decision-making. They envision a future where technology handles routine tasks (e.g., data entry, reporting, and administrative workflows) so staff can focus on community engagement, intervention, and improvement efforts. Automation, AI, and integrated systems are seen as critical to shifting from being "report machines" to learning organizations that generate insights, visualize data, and respond more effectively to public health needs.

> "I just wish that…we come up with tools that would just kind of automate these processes for us."

> "We don't have the time… computers can do it. Let's let them do it."



Theme 5. People-Centered Services and Tools for Communities and the Workforce

LHDs envision people-centered digital systems that are easy for staff to use and intuitive for communities to access, reducing training burden, streamlining workflows, and improving service experiences. Their aspirations emphasize human-centered design that puts people and processes before technology, alongside mobile tools, standardized forms, and feedback mechanisms that strengthen community engagement and responsiveness.

> "It needs to be people, process, then technology."

> "What we need is a system. What makes it easy for them [the staff]. From a leadership level, how are they going to use it? What kind of data are we putting into it? Are we making it easy for a person to put good quality data into the system?"

Tribal Health Agency Responses

When asked what they would change about data systems and digital infrastructure, THAs highlighted priorities that reflect both shared public health system needs and the unique realities of Tribal sovereignty.

Theme 1. Connectivity and Interoperability of Systems

THAs expressed a strong desire for unified, interoperable health information systems that allow data to flow seamlessly across Tribal providers, hospitals, insurers, and state systems. Their vision centers on integrated or shared EHRs, streamlined navigation across systems, and recognition of Tribal health organizations as full partners in the broader health data ecosystem.

> "Having one standard system where we are able to access the information that we need or put in a request."

> "Being able to do anything bidirectional versus unidirectional."

Theme 2. Data Sharing and Coordination

THAs expressed a strong desire for data-sharing systems that honor Tribal sovereignty while enabling more effective collaboration with state agencies and other Tribal nations. Participants described the need for standardized processes that reduce current fragmented, manual requests and create clearer pathways for secure, reciprocal data exchange.

> "Having a standard pipeline for that request…would streamline things for not only requesting [data] but having access to it directly within the system."

> "The ability to share data amongst the tribes."

Theme 3. Patient Empowerment and Community Health Engagement

THAs envision digital systems that empower patients and communities with direct access to health information, tools to support informed decision-making, and opportunities to meaningfully engage in their care. This reflects a shift from provider-centered models to community-empowered health, aligned with Tribal teams' stronger progress in person-enabled health and their emphasis on health literacy, patient voice, and shared decision-making.

> "I think if there was one thing I would change, it would be the accessibility of it [data] as well as the know how or the awareness. So that the everyday individual can truly start to feel like they have some control over their health and the priorities or their options and what is available."

> "To be able to access your labs is one thing, but to be able to understand it and know how to move forward with it…would be beneficial to the patient."

Theme 4. Data Accuracy and Digital Tools to Inform Decisions

THAs expressed a strong desire for digital systems that deliver accurate, reliable data and reduce unnecessary administrative burden, so information collected truly supports decision-making rather than compliance alone. THAs want tools that improve data quality, automate collection, and translate information into actionable insights, enabling both operational improvements and more strategic, cost-effective program decisions.

> "The data is inaccurate, but that is mostly because we unfortunately haven't mastered that yet. How and where it comes from in our system… we're trying to get the same thing, but we get different numbers."

> "I think that the ability to have systems in place to automatically collect data and give us feedback would be super helpful."

Step 2: Sensemaking Sessions

Purpose

To ensure data modernization recommendations accurately reflected the context and needs of THAs and LHDs throughout Michigan, the MPHI team conducted data sensemaking sessions with each group. In the sensemaking sessions, MPHI facilitators presented HIMSS' draft recommendations for advancing digital health and provided space for group reflection and discussion around three key questions:

1. How do the draft recommendations align with your experiences? If they do not, how might they be revised and improved?

2. What innovative and actionable solutions would mobilize the recommendations?

3. What are important considerations for moving the recommendations forward?

Methodology

The MPHI team engaged LHD representatives and THA representatives to respectively participate in the sensemaking sessions. Each group participated in 2-3 virtual meetings between October and December 2025.

Local Health Departments – MALPH DMI Group

MPHI scheduled three sessions with the Michigan Association for Local Public Health (MALPH) Data Modernization Initiative (DMI) group between October and December 2025. DMI group members represent LHDs across the state and had previously participated in the HIMSS DHI assessment.

During the first sensemaking session, participants reviewed the purpose of the DHI assessment and core data sources being assessed (Appendix B). Participants responded to questions about manual workarounds and emerging solutions their LHDs have developed to mitigate barriers experienced with current public health data systems. Participants shared which data sources were difficult to access, which were accessed most frequently using manual workarounds, which manual workarounds were essential for daily work, and which were most burdensome. Participants also had the opportunity to share ideas related to emerging solutions, which could be scaled statewide.

In the second sensemaking session, participants reflected on the five digital public health recommendations and strategies proposed by HIMSS. Facilitators reviewed each recommendation and supporting strategies and then asked the group to share how each recommendation aligned with their experiences with public health data systems. If a participant shared the recommendation did not align with their experiences, facilitators asked them to describe how the recommendation might be revised or improved. Participants then brainstormed ideas for innovative and actionable solutions to mobilize each recommendation. Participants who did not attend the session had the opportunity to review the meeting slides and reflection questions and contribute their ideas via email.

Tribal Health Agencies

MPHI partnered with the MDHHS Office of Tribal Government Services & Policy to invite THA representatives to participate in two sensemaking sessions. These individuals were previously engaged in the HIMSS DHI assessment. MPHI conducted a scheduling poll to find meeting times that would align with the group's schedules and offered three opportunities to participate. Individuals unable to attend the sessions could participate by responding to reflective questions through email.

The first sensemaking session was held in November. MPHI facilitators reviewed the purpose of the public health data modernization project and the DHI assessment and shared HIMSS' draft recommendations for advancing digital health in Michigan. The group focused on Recommendation #2, *Develop Sovereignty-based Tribal Digital Health Governance Strategy*, as a priority for reflection and sharing feedback. Participants reviewed the supporting strategies for this recommendation and shared how they aligned with their experiences, raised key considerations for advancing this work with the tribes, and provided suggestions for actionable steps for mobilization. Participants then reviewed the remaining four recommendations and provided feedback on how each aligned with their experiences and shared ideas and considerations for implementation. (See Appendix B for the slide deck.)

Theming and Revising Recommendations

The MPHI team analyzed information from the initial sensemaking sessions with LHDs and THAs to revise the data modernization recommendations and supporting strategies, with the intent of making them more reflective of public health needs and experiences in Michigan. The MPHI team used qualitative analysis to code and theme responses for each recommendation. The MPHI team combined and compared emerging themes across the two groups and assessed themes for each recommendation to determine whether each theme a) was consistent with the intent of the original recommendation; b) highlighted a need for clarification; c) identified a missing component; or d) suggested a language change. A recommendation was modified if there was a clear gap highlighted, or there were concerns and considerations not addressed by the original recommendation. In many cases, the sensemaking feedback provided rich context and valuable considerations for implementation, rather than a direct change to the recommendation language itself. Context and considerations are highlighted within the final recommendations section. Finally, the MDHHS team reviewed the revised recommendations and strategies and provided important feedback to ensure the final recommendations aligned with their goals and were feasible. (See Appendix C for revised recommendations and supporting strategies from sensemaking sessions.)

Final Sensemaking Session – Reviewing Final Recommendations

The LHD and THA representatives each participated in a final sensemaking session in December. During this session, MPHI facilitators engaged participants in a focused conversation with the aim of reviewing the revised recommendations and capturing final feedback. Participants shared if the revised recommendations accurately reflected their previously shared feedback, provided suggestions for revisions, and shared additional considerations to include for future planning and implementation efforts.

Digital Public Health Modernization Recommendations and Supporting Strategies

Below are the final recommendations and supporting strategies for modernizing the digital public health ecosystem in Michigan:

Recommendation 1

Advance a statewide digital public health governance strategy incorporating coordinated learning and feedback mechanisms.

Strategies:

Establish and sustain a participatory and collaborative governance structure with clear roles and accountabilities to serve as a guide for Michigan's public health data modernization initiatives.

Communicate policies and data standards that are accessible and transparent.

Engage in workforce capacity building through the creation of regional expert networks ensuring access for all in key fields.

Implement a funding strategy that prioritizes advancing data modernization efforts for areas with greatest needs.

Develop a statewide automated standardized data request, data sharing agreement, and communication process.

Considerations:

Participants shared the following considerations for advancing this recommendation:

- Develop feedback mechanisms and intentionally incorporate feedback from data users.
- All groups agreed they would like to be engaged continuously and have transparent communication during all phases of the data modernization initiative.
- Investment in public health data systems and infrastructure should consider different needs between tribal and non-tribal communities.
- One of the most frequent barriers shared was not knowing how to request state-held data. LHD and THA teams shared they often were uncertain of who to contact and the process of obtaining needed data.
- Participants were enthusiastic about the concept of a standardized, automated data request process and shared this would alleviate delays from the current review process with the compliance office. The LHD group suggested a specialized process be developed for LHDs, given their role in data sharing ownership rights and responsibilities under the Michigan Public Health Code.
- A specific example uplifted by the LHD group was Illinois' use of a data warehouse with a streamlined data request agreement. This case could be explored for potential adaptation and implementation in Michigan.

Anticipated Impacts:

If fully implemented, a collaborative, statewide digital public health governance strategy will lead to approaches and strategies that improve digital infrastructure across Michigan's public health system. Anticipated impacts include:

- Collaborative and responsive data modernization efforts with Michigan's state, local, and tribal public health agencies, as well as other public health partners.
- Enhanced access to public health data, allowing for better insights and more rapid response to public health needs.
- Increased understanding of needs, including current and future public health needs, allowing for adaptability as context changes over time.
- Enhanced workforce capacity related to digital public health infrastructure, epidemiology and analytics, and other capabilities that are key to providing effective public health monitoring and response.
- Improved accessibility of core public health data through a streamlined request approach and increased understanding of data policies and standards.

Recommendation 2

In collaboration with Michigan's 12 federally recognized Tribal nations, develop a sovereignty-based tribal public health data governance strategy.

Strategies:

Develop reciprocal standardized data request processes to streamline data sharing between tribes and the state.

Support the creation of voluntary inter-tribal data sharing frameworks.

Engage with each tribe's leadership and their identified partners to align data modernization efforts with individual tribal needs.

Considerations:

Participants from tribal health agencies shared the following considerations for advancing this recommendation:

- It is essential to collaborate and sustain engagement with individual tribal leaders at every step, along with their identified partners. This collaboration will create the conditions needed for buy-in and ensure alignment of data modernization efforts with each tribe's needs.
- Tribal health representatives identified Tribal Health Directors and Medical Directors as important partners to include in the work.
- It is important to ensure clarity for tribal leaders around important data questions, including the purpose of the data modernization initiatives, the benefits tribes would receive from participating, how data sovereignty would be protected, where public health data would be stored, who would be the designated "keeper" of the inter-tribal data network, etc. Tribal health representatives shared it would be beneficial to have these questions answered in advance of the initial meetings with tribal leadership.
- Tribal health representatives expressed enthusiasm for the idea of developing a centralized location for accessing data through a single, secure sign-on. They shared this would improve efficiency and ability to provide higher quality care for community members.

Anticipated Impacts:

Data modernization efforts that are collaborative and designed with consideration of each tribe's sovereignty and needs, as well as the needs and responsibilities of the state's public health system, will improve access to data to support decision making and health improvement activities. Anticipated impacts of this recommendation include:

- Enhanced understanding of data needs and the basis for those needs for both state and tribal public health agencies.
- Improved access to public health data which will allow for a better understanding of health needs for tribal populations. This access will also help develop a better understanding of needs related to data completeness, accuracy, and quality of demographic data for tribal members.
- Increased sharing of data across tribes and with communities to enhance understanding of public health trends and needs.
- Data modernization activities shaped by input and needs of tribal and public health leadership can result in improved relationships and trust between organizations.

Recommendation 3

Strengthen interoperability of digital public health infrastructure.

Strategies:

Advance interoperability across state, local, and tribal public health data sources.

Advance automated data exchange, including the development of single, secure login to streamline access to core datasets.

Establish cross-agency and cross-border data sharing agreements with traditional and non-traditional partners.

Considerations:

Participants shared the following considerations for advancing this recommendation:

- Data integration efforts must account for the highly varied electronic health record (EHR) landscape. While many participants shared the benefits of the EPIC Electronic Health Record System, many public health agencies do not use this software. Participants shared that each EHR has different functions, and this impacts the capacity to communicate and share data across public health system partners.
    - The Michigan Primary Care Association is in the process of implementing a common EHR for their Federally Qualified Health Centers (FQHCs). Lessons from this effort could be useful for future statewide data interoperability efforts.
- Participants shared it would be helpful to have interoperability with the following data sources, MCIR, MDSS, MI-WIC, MiHIN, ESSENCE, laboratory data, and Vital Records.
- Developing training to ensure the public health workforce can efficiently implement changes is an important component for implementing this recommendation. Participants suggested training staff within LHDs and THAs to support workforce training efforts and address technical challenges as they arise.
- Both groups shared a desire for a state point of contact for local health departments to streamline access for needed data.
- Tribal health representatives uplifted the Great Lakes Inter-Tribal Epidemiology Center (GLITEC) and the Seattle Indian Health Board (under the Urban Indian Health Institute) as important partners to include in this work.
- Participants shared appreciation for the inclusion of non-traditional partners (e.g., health plans, medical examiners, childcare providers, etc.) in public health data interoperability efforts.
- Tribal health representatives expressed a need for additional protection of tribal data as part of this recommendation, suggesting the creation of additional firewalls and necessary security measures.

Anticipated Impacts:

Increased automation and interoperability of public health data systems will make data exchange "fast, efficient, and less burdensome for everyone involved." Anticipated impacts from this recommendation include:

- Better access to consistent and timely data to assess health needs and trends, as well as threats to public health.
- Increased efficiency through automation and interoperability, reducing need for staff time to input data into multiple data systems, reducing opportunities for error and increasing time available to serve communities across the state.
- Improved ability to connect data and needs across jurisdictional lines allowing for the ability to track individuals as they move across the state and conduct cross-jurisdictional investigations into health threats.
- Reduced siloing of data across systems allowing for better analysis of related needs, factors, and health outcomes across public health programs and topic areas.

Recommendation 4

Implement an advanced analytics strategy that supports public health agencies' ability to conduct predictive and operational analytics to allow for faster, evidence-based decision making.

Strategies:

In collaboration with MDHHS, DTMB, and partners, develop a phased statewide analytics strategy that progresses toward predictive and AI-enabled public health data systems and is in alignment with state standards and requirements, to allow for faster, actionable insights for decision-making at all levels of public health. Establish statewide data standards to improve data quality, accuracy, accessibility, and ensure data are inclusive of Michigan's diverse communities.

Develop operational dashboards and benchmarking tools that align with accreditation processes and other organization priorities to support performance improvement and enable public health teams to make real-time, data-driven decisions.

Tribal health representatives shared it would be a benefit for state epidemiologists to work more collaboratively with organizations such as GLITEC to advance this recommendation.

Considerations:

Participants shared the following considerations for advancing this recommendation:

- The LHD group shared how professionals outside of public health, including those in business and academics, could be leveraged as experts to serve as thought partners and improve analytics technology and methods of implementation.
- Conversation around the progression toward AI-enabled public health centered around the importance of developing strict rules around checking for bias and ensuring human verification of data accuracy.
    - Tribal health representatives shared the need for rules around AI to respect tribal data sovereignty, including where data is stored and the interpretation and dissemination of data. They also shared that each tribe's leadership must be involved in all conversations around this recommendation.
- A consideration raised by all groups was the importance of allocating funding for workforce development and providing relevant training for all LHDs and THAs.

Anticipated Impacts:

A strategic approach to public health data analytics and increased access to data and analytic tools will allow public health practitioners to be more responsive to both ongoing and emerging public health needs. Anticipated impacts of this recommendation include:

- Improved ability to understand the public's health needs enhancing both proactive and responsive data-driven decision-making within and across jurisdictions.
- Faster detection of public health threats and outbreaks enabling timely investigation and response.
- Improved workforce capacity within and across jurisdictions through access to analytic tools that can support public health functions.

Recommendation 5

Advance equity-focused, person-enabled digital health services through an ongoing, collaborative process with state, local, and tribal public health partners.

Strategies:

Collaborate across Michigan's public health system to develop a statewide strategy to guide the development of public health services responsive to, and informed by, input from communities.

Identify and increase timely access to data to facilitate public transparency by making performance goals and outcomes available to all communities.

Identify and disseminate best practices in person-enabled public health and ensure all persons and communities can access public health information and services digitally.

Leverage strengths of tribal health teams in person-enabled health, sharing lessons learned and successes across public health organizations to support implementation more broadly.

Considerations:

Participants shared the following considerations for advancing this recommendation:

- Public health system partners use multiple EHRs, which is a challenge for streamlining communication and sharing data.
- It is important to design and employ a thoughtful and strategic plan to launch data modernization technology, programs, and services to be inclusive of all community members and avoid confusion for staff and community members. This planning should include the development and deployment of quality trainings for public health workforce and populations on how to use new digital technologies.
    - Tribal health representatives emphasized the importance of training tribal staff to support health agencies in launching and implementing data modernization initiatives.
- All groups shared the need to expand reliable internet access across the state, particularly for those living in rural communities.
- Participants in the LHD group felt it would be beneficial to approach this recommendation through the lens of discovery and would like to work with MDHHS to explore future opportunities.

Anticipated Impacts:

A collaborative public health system approach to person-enabled public health services will provide greater access to public health information and services to individuals living across Michigan. Implementation of this recommendation has the following anticipated impacts:

- Enhanced transparency and accountability of public health agencies with better ability to analyze and share public health information with communities.
- Increased reach of public health information through public-facing digital platforms.
- Improved access to public health services through digital tools that allow individuals to more easily schedule services, access information, and interact with public health staff.

Alignment with Public Health Frameworks

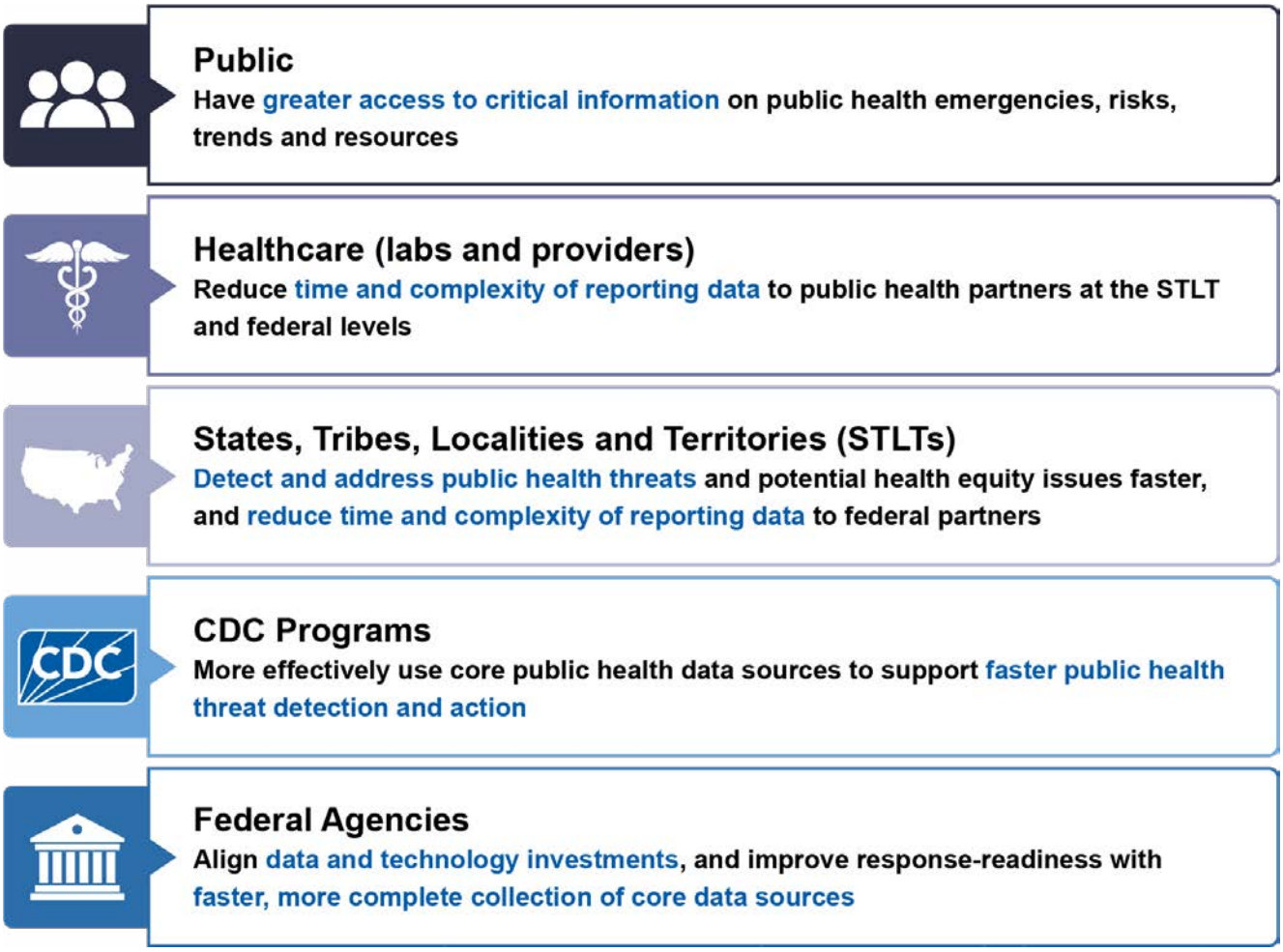
The recommendations developed through the DHI assessment align with public health frameworks and approaches as described in the CDC's Public Health Data Strategy (PHDS), the Foundational Public Health Services (FPHS) Framework, and standards for public health quality as defined by the Public Health Accreditation Board (PHAB). Implementation of the recommendations included above will allow Michigan's public health agencies to provide high-quality public health services to communities across the state.

CDC Public Health Data Strategy

CDC's PHDS goals are aligned with the recommendations described in this assessment. PHDS goals include:

- **Goal 1:** Strengthen the core of public health data.
- **Goal 2:** Accelerate access to analytic and automated solutions to support public health investigations and advance opportunities for all people to attain their highest level of health.
- **Goal 3:** Visualize and share insights to inform public health action.
- **Goal 4:** Advance more open and interoperable public health data.

PHDS implementation is anticipated to result in the following outcomes, all working toward protecting and improving the public's health:



Source: CDC Public Health Data Strategy (URL: https://bit.ly/3ZLXCBs)

Foundational Public Health Services Framework

The **FPHS** describes several capabilities that are aligned with the recommendations in this report and are key to supporting health of communities. Related FPHS include:

Capability	Responsibility	Activity
Assessment & Surveillance	Develop and maintain an assessment and analysis infrastructure.	Develop, maintain, and share internal electronic information systems and access external information systems.
		Maintain capabilities to collect, access, analyze, interpret, and use data from a variety of sources, including data disaggregated by geography (e.g., census tract, zip code), sub-populations, race, ethnicity, and other variables that describe the health and well-being of a community and the factors that influence health.
		Create and maintain infrastructure to collect foundational data to guide public health planning and decision-making at the state and local levels.
		Collaborate with community partners to collect, report, and use public health data relevant to communities experiencing health inequities.
		Develop and maintain internal systems and processes for receiving and responding to data requests from the public, policy makers, media, and others.
	Use collaborative processes to assess community health and identify health priorities.	Assess and analyze disparities and inequities in the distribution of disease and social determinants of health that contribute to higher health risks and poorer health outcomes.
	Develop and maintain a surveillance and epidemiology infrastructure.	Develop and maintain internal systems and processes for surveilling significant health risks in the population.
		Participate in or support surveillance systems to detect emerging health issues and threats.
	Develop and maintain a vital records infrastructure.	Develop and maintain secure electronic information systems for registering and storing vital records, consistent with National Center for Health Statistics (NCHS) guidelines.
		Manage and share vital records data according to internal practices and procedures.

Capability	Responsibility	Activity
Community Partnership Development	Develop and maintain capabilities to cultivate relationships and convene partners.	Develop and maintain systems and processes for routine information sharing with community members and partners.
	Use collaborative processes to develop health improvement plans to address identified priorities.	Convene public health partners, communities, and individuals to establish a system and metrics for monitoring the community health improvement plan and associated interventions.
Organizational Competencies	Provide or access services for information technology, privacy, and security.	Build organizational and individual staff competency around information systems to promote use of those systems and to improve population health outcomes.
Accountability & Performance Management	Maintain accountability according to accepted business practices, applicable policies, and public health accreditation.	Develop and maintain infrastructure and systems to manage and track accountability for governmental public health.
		Deliver public health services according to accepted business standards, applicable policies, and public health accreditation standards and measures.
Emergency Preparedness & Response	Establish governmental public health's role in preparedness and response to incidents.	Develop, implement, and maintain a bi-directional information-sharing infrastructure with partners and the public with unified, accurate, and geographically relevant information available on a 24/7 basis.
Foundational Areas	Provide timely, scientifically accurate, and locally relevant information.	Participate in and access external information systems for the reporting and surveillance of foundational areas and their control.
		Collect or access data related to foundational areas to guide public health planning and decision-making within the jurisdiction.
		Analyze data related to foundational areas and their control in collaboration with partners, communities, and individuals with lived experience.
		Conduct epidemiologic surveillance of the population with respect to foundational areas.

PHAB standards and measures, Version 2022, for initial public health accreditation related to the above recommendations include the following:

Domain 1

Assess and monitor population health status, factors that influence health, and a community's needs and assets.

Focus: Assess, collect, analyze, share, and apply public health data collaboratively.

Standard 1.1: Participate in or lead a collaborative process resulting in a comprehensive community health assessment.

- **Measure 1.1.1 A:** Develop a community health assessment. Required documentation. 1.1.1 c. Comprehensive, broad-based data must include primary data, and secondary data from two or more different sources.

Standard 1.2: Collect and share data that provide information on conditions of public health importance and on the health status of the population.

- **Measure 1.2.2 T/L:** Participate in data sharing with other entities (Tribal/Local).
- **Measure 1.2.2 S:** Engage in data sharing and data exchange with other entities (State).
    - Includes requirements for data use processes, confidentiality, and use of national/ international data standards (e.g., HL7, FHIR, LOINC, SNOMED-CT).
    - Demonstrates capacity for electronic data exchange (with federal government, other health departments, and other entities).
- **Measure 1.2.3 S:** Facilitate use of statewide data systems (State).
    - Support for Tribal and local health departments in accessing and using statewide data systems.
    - Includes providing data, seeking feedback, and offering technical support.

Standard 1.3: Analyze public health data, share findings, and use results to improve population health.

- **Measure 1.3.1 A:** Analyze data and draw public health conclusions (quantitative and qualitative).
- **Measure 1.3.2 A:** Share and review public health findings with stakeholders and the public (includes data visualization and distribution).
- **Measure 1.3.3 A:** Use data to recommend and inform public health actions.

Domain 2

Investigate, diagnose, and address health problems and hazards.

Focus: Surveillance systems, investigation protocols, and data-driven response.

Standard 2.1: Anticipate, prevent, and mitigate health threats through surveillance and investigation.

- **Measure 2.1.1 A:** Maintain surveillance systems.
    - List and description of surveillance systems used.
    - Protocols for data collection, quality control, analysis, disaggregation, confidentiality, security, and system testing.
- **Measure 2.1.2 A:** Communicate with surveillance sites (maintain contact lists, provide training, receive data).
- **Measure 2.1.7 A:** Use surveillance data to guide improvements (generate reports, identify disparities, improve systems).

Standard 2.2: Prepare for and respond to emergencies.

- **Measure 2.2.6 A:** Maintain and implement a process for urgent 24/7 communications with response partners (includes use of Health Alert Networks and other data systems).

Domain 6

Utilize legal and regulatory actions.

Focus: Enforcement and compliance, including data management for regulatory purposes.

Standard 6.1: Promote compliance with public health laws.

- **Measure 6.1.3 A:** Conduct and monitor inspection activities (requires databases or logs of inspection reports).
- **Measure 6.1.4 A:** Conduct enforcement actions (protocols may include data management for enforcement).
- **Measure 6.1.6 A:** Inform the public about enforcement activities (may involve data publication).

Domain 9

Improve and innovate public health functions.

Focus: Performance management, quality improvement, and use of data for decision-making.

Standard 9.1: Build and foster a culture of quality.

- **Measure 9.1.2 A:** Implement the performance management system (includes use of data, tracking, and reporting).

Domain 10

Build and maintain a strong organizational infrastructure.

Focus: Information management, data security, and confidentiality.

Standard 10.2: Manage financial, information management, and human resources effectively.

- **Measure 10.2.3 A:** Support programs and operations through an information management infrastructure.
    - Process for determining updates, enhancements, or replacement of information management systems.
- **Measure 10.2.4 A:** Protect information and data systems through security and confidentiality policies.
    - Policies for password complexity, physical and network security, user access management, confidentiality of data (including paper and electronic), and staff training on information security and cybersecurity.
    - Tracking staff participation in security training and confidentiality agreements.

Next Steps

Upon completion and publication of this assessment, MDHHS will begin the implementation phase of the data modernization initiative, which includes:

1. Capturing both the HIMSS recommendations and the MPHI contextualization of those recommendations.

2. Cross-walking final recommendations with the MDHHS public health data strategy.

3. Drafting a brief implementation plan that illustrates the specific activities MDHHS will pursue, how those activities address the recommendations presented in this assessment, and how they are aligned to the public health data strategy.

4. Socialize the implementation plan with partners.

Lastly, as an ongoing effort, these recommendations and associated implementation plan will enable monitoring indicators (i.e., specific, measurable benchmarks based on targets stemming from the Michigan Public Health Data Modernization Assessment recommendations) that MDHHS will use to regularly report back to partners.

Table of Appendices

Appendix A

HIMSS Digital Health Assessment of the Michigan Department of Health and Human Services

Digital Health Assessment of the Michigan Department of Health and Human Services

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Executive Summary

Introduction

Michigan's public health system is seeking to advance progress of its strategy for digital health transformation. Recognizing the essential role of Local Public Health Departments (LPHD) and Tribal health systems in protecting and promoting population health, the Michigan Department of Health and Human Services (MDHHS), in partnership with the Michigan Public Health Institute (MPHI), undertook a comprehensive assessment of the progress of digitally enabled public health services and operations capacity across 38 of the LPHD teams, nine Tribal health department teams, and one State-level team.

The primary objective of this project was to evaluate the current State of digital health capacity within these departments in order to inform Statewide planning to advance a modernized and robust digital health ecosystem to advance equitable public health services across the State of Michigan. To achieve this objective, the HIMSS Digital Health Indicator (DHI) tool was deployed as a measure of the "current State" of digital health capabilities, which generates both quantitative and qualitative data, organized into the four key domains of digital health ecosystems: interoperability, governance and workforce capacity, predictive analytics, and person-enabled health.

Digital health ecosystems are characterized by automated, secure, and private flow of data to inform decisions for community members, public health teams, and State-level decision makers. The DHI is a globally validated measure of digital transformation aligned with the World Health Organization digital health maturity domains and adapted for the unique mandates and responsibilities of public health organizations. This report presents the findings of the assessment, beginning with an overview of Michigan's public health system, followed by the project methodology, analysis of digital maturity across local and Tribal Health Departments, key findings, and recommendations for advancing digital health ecosystems across the State. The insights and recommendations emerging from this project are designed to provide State government leaders, health system partners, and Tribal authorities with objective evidence of current digital strengths and opportunities to advance and build on existing strengths to achieve a digital health ecosystem across Michigan that is person- and community-centric, connected, equitable, and resilient.

Background

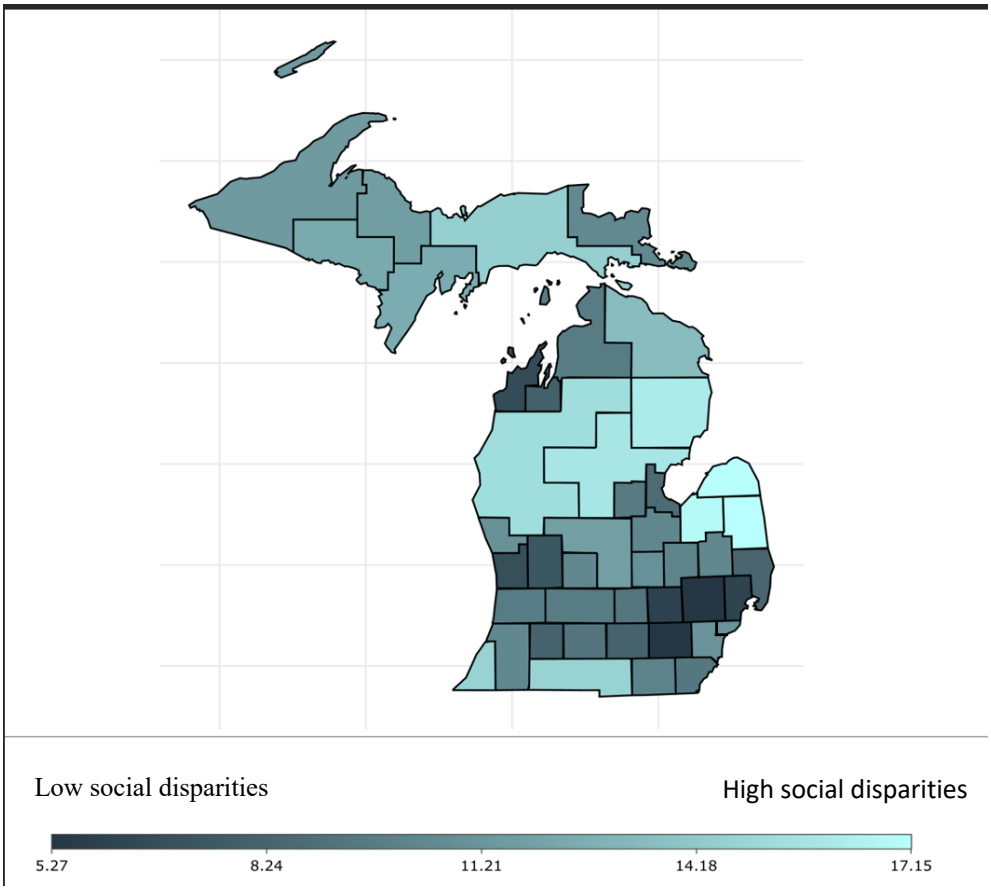
Michigan's public health system is foundational to safeguarding and supporting the health and well-being of the Michigan population of just over 10 million residents. The Public Health System is organized by a decentralized network of 45 LPHDs and 12 federally recognized Tribal Nation health departments with sovereignty over the health of Tribal communities. The system delivers essential services that range from communicable disease surveillance and control, maternal-child health programs, food safety, emergency preparedness, and environmental health protection (Michigan Department of Health and Human Services [MDHHS], 2025; State of Michigan, 2024). These departments focus on the key elements of public health, including population protection, public health promotion, and environmental surveillance. The 45 LPHDs include one city health department, 30 single-county departments, and 14 multi-county districts, as established under Michigan's Public Health Code, while Tribal Health Departments serve sovereign populations across the State (MDHHS, 2025). This structure has evolved to meet the distinct needs of urban centers, rural communities, and Tribal nations, reflecting Michigan's diverse populations and communities.

Governance of Michigan's public health system includes district boards of health comprising county commissioners, with local public health officers appointed by local governing entities or district boards (Michigan Legislature, 1978). The Michigan Department of Health and Human Services (MDHHS) provides oversight through its Division of Local Health Services, which administers more than $130 million annually to support LPHD activities and leads the Michigan Local Public Health Accreditation Program, a Statewide process designed to ensure standardized quality and accountability across all departments (MDHHS, 2025; Michigan Local Public Health Accreditation Program, 2023). Funding for LPHDs comes from a complex mix of State funding for Essential Local Public Health Services (ELPHS), federal grants, local contributions, and revenue from public health services fees such as environmental inspections, and licensing (MDHHS, 2025).

Michigan's public health system serves communities with diverse geographic, demographic, and socioeconomic characteristics. Like many U.S. States, Michigan's population varies widely in disparities of health outcomes, with rural areas experiencing higher rates of chronic disease, substance use disorders, and limited access to specialized care compared to urban counties (MDHHS, 2023; MDHHS & Michigan Public health Institute [MPHI], 2024). Disparities in access to digital technologies and access to internet services contribute to additional complexities to the delivery of public health services. Rural communities face disproportionate barriers to public health services due to geographic isolation and access to digital capabilities such as broadband that affect more than half of rural households (Broadband Breakfast, 2024). The Michigan Digital Equity Plan estimates that nearly 30 percent of households lack reliable or affordable broadband service, with gaps among low-income, racial and ethnic minority groups, older adults, and rural populations (Michigan Department of Labor and Economic Opportunity,

2023). Among households earning under $20,000 annually, 35 percent report no broadband connection, while approximately 22 percent of the population who are over the age 65 lack internet access altogether (Michigan Department of Technology, Management, and Budget, 2021). The percent of the population without broadband access is illustrated geographically in Figure 1 below:

Figure 1. P**ercent of the Population Without Computer and Broadband Internet Access** (Social Vulnerability Index, 2022)



Michigan's public health system is supported by digital infrastructure that is anchored in five Statewide platforms, which enable integration of disease surveillance data and information exchange across LPHDs and Tribal entities. The Michigan Care Improvement Registry (MCIR). Michigan Disease Surveillance System (MDSS), Vital Records/ Statistics (birth registry and death registry; State WIC System for special supplement nutrition program (MI-WIC), and Bureau of Laboratories Systems MiHIN. The MCIR functions as the Statewide immunization information system, supporting both clinical decision making and population-level monitoring of vaccination adoption across the State (Michigan Care Improvement Registry, 2025). The MDSS is designed to facilitate the electronic capture, tracking, and management of communicable diseases such as tuberculosis, COVID-19, and measles (MDHHS, 2025). The Michigan Department of Health

and Human Services (MDHHS) is the State-level agency overseeing these programs and services, using local health department data to conduct State-level analysis, public health reporting, and surveillance functions (MDHHS, 2025).

Tribal health systems represent a sovereign but integrated component of Michigan's public health system. The 12 federally recognized Tribal Nations maintain sovereign authority over their public health services and healthcare systems, which serve an estimated 200,000 enrolled Tribal members Statewide (MDHHS, 2025; MiHIN, 2022). Michigan ranks among the top 10 States nationally for Tribal population size, with a mix of Tribal communities on reservation and Tribal communities living in urban areas (Library of Michigan, 2025; MPHI, 2022). Formal coordination mechanisms are established through the MDHHS Tribal Government Services framework, which supports government-to-government consultation policies, decision making, and joint public health activities (MDHHS, 2024). While Tribal Health Departments maintain independent decision-making authority, they frequently collaborate with county and district health departments on specific public health priorities such as communicable disease control, environmental health, and emergency preparedness. Epidemiological assistance is further provided by the Great Lakes Inter-Tribal Epidemiology Center (GLITEC), which supports disease surveillance through epidemiological services and program support across Tribal communities in the Great Lakes region.

Michigan's public health system is a recipient of the Center for Disease Control (CDC) Public health Infrastructure Grant program, formally named as "Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems" (PHIG), which funds workforce, foundational capabilities, and data modernization initiatives since 2022 (CDC, 2024a). Michigan has been a consistent recipient of PHIG funding since 2022. The Michigan Department of Health and Human Services received $81.9 million, and the Detroit Health Department received $9.25 million in 2022 (Peters & Stabenow, 2022). In 2023, the State received an additional $91.24 million**,** and in 2024, $11.88 million for MDHHS, and $0.89 million for Detroit focused on workforce support (CDC, 2023; CDC, 2024). In 2025, Michigan saw continued investment of $5.88 million for the State and $0.89 million for Detroit (CDC, 2025).

To advance the digital transformation objectives relevant to Michigan Public Health, the Michigan Public Health Institute (MPHI) engaged with the Health Information Management Systems Society (HIMSS) to conduct a study of the current digital strengths, assets, and opportunities to strengthen digital capacity across the State of Michigan's public health system. MPHI and HIMSS established a partnership to complete a Statewide assessment of the digital capacity of Michigan's public health system in June of 2025. The following report profiles the results of a system-wide assessment of the current digital capacity of Michigan's public health system and Tribal health communities that elected to participate in this project.

Objectives and Purpose

The primary objective of this project is to evaluate the digital capacity and capabilities of Michigan's 45 LPHDs and the 12 federally recognized Tribal Nations to inform the State's digital public health transformation strategy. To achieve this objective, HIMSS deployed the Digital Health Indicator (DHI) assessment tool to individually measure each local health department and Tribal health department that agreed to participate in the project. The HIMSS team led data collection and analysis of findings to generate comprehensive, evidence-informed results and insights to inform and support State leaders seeking to advance digital health transformation planning across the State of Michigan.

Michigan's public health system comprises diverse geographic, demographic, and resource variations across urban, single-county departments, and rural multi-county districts. The goal of this study was to examine and understand the digital capabilities at the local county or multi-county level to identify patterns in digital strengths, gaps, and opportunities across the entire State public health system. This study was designed to achieve the following four key objectives:

- Assess interoperability and data flow, mapping the sources and flows of data both within and across LPHD teams and State level programs. The assessment evaluated the sources and flow of data within and across each local health department, examining integration with core State systems (such as MCIR, MDSS, and Vital Statistics).
- Evaluate how data informs decision-making processes at all levels, from service delivery to strategic planning.
- Identify existing patterns of data sharing and exchange between public health programs and external organizations.
- Assess the digital capacity required to advance a modern public health ecosystem, including aspects of governance, interoperability, workforce capacity, and public (or community) engagement.

This report synthesizes the findings for each of the four project objectives informed by the results of the DHI assessments to achieve three key outcomes:

- **Identified Digital Strengths and Capacities:** Documented existing digital capabilities within and across LPHDs, and participating Tribal teams, highlighting areas of strength.
- **Highlighted Critical Gaps:** Uncovered deficiencies in digital capacity that, if addressed, could significantly advance Michigan's integrated digital health ecosystem.
- **Strategic Opportunities:** Identified priority areas for advancing digital capacity to strengthen both day-to-day operations of public health teams, and emergency preparedness initiatives, ensuring recommendations account for the diverse needs of urban single-county departments, rural multi-county districts, and sovereign Tribal health systems.

The results are designed to inform targeted recommendations for digital health transformation that respect the decentralized governance structure of public health teams across the State, address equity considerations across Michigan's diverse communities, and support the State's broader goals for public health digital modernization and digitally enabled emergency preparedness capacity.

Methodology

The primary objective of this project was to assess the current State of digital capacity within LPHDs and Tribal Health Departments, with the aim of informing the State's digital health transformation strategy. The study utilized a mixed methods design that included both quantitative analysis of digital capacity using the DHI tool and a qualitative analysis of team experiences, insights, and expertise during the guided interviews to provide context and meaning to the results of the DHI scores.

Participants and Sample Recruitment

MPHI served as the liaison between HIMSS and the participating local and Tribal public health departments. MPHI provided contact information and background details of the project objectives and plan for all departments. MPHI facilitated communication to all teams to support their participation in the project. For Tribal Health Departments, MPHI first met with Tribal leadership to seek approval to invite Tribal teams to participate in the project. Tribal leadership agreed to the outreach by MPHI to ensure that participation respected Tribal governance and decision-making processes.

All 45 LPHD and 12 Tribal teams were invited to participate in the project using an email introduction of the purpose of the project inviting teams to participate by responding to the HIMSS team to arrange an interview. Thirty-eight LPHDs and nine Tribal Health Departments participated and completed the DHI assessment using guided telephone interviews conducted by the HIMSS team. In addition, 21 State leaders representing various public health departments across the State (e.g., Environmental Health, Immunizations, and Digital Transformation) completed a DHI assessment to provide State-level results and insights for the project. The participation of Tribal Health Departments was supported by MPHI's longstanding relationships with Tribal leadership, which ensured that the HIMSS team understood and was respectful of Tribal team sovereignty and decision-making processes.

To ensure the project remained in alignment with goals and objectives, HIMSS and MPHI held weekly meetings to share insights and engage support to appropriately respond to LPHD questions and concerns. State leaders, the HIMSS team, and the MPHI team convened on three occasions over the course of the project to review progress and provide strategic input into the data collection processes for the project.

Data Collection

Guided interviews conducted by the HIMSS team served as the primary data collection strategy, using the public health version of the Digital Health Indicator (DHI) tool. All interviews were conducted virtually using Microsoft Teams and lasted between 60 and 120 minutes, depending on the time each team required to respond to each question item. Interviews were recorded upon obtaining consent of each participant to allow the HIMSS team to ensure quality and accuracy of the responses provided for each DHI indicator item. Two of the 46 participants declined to be recorded, the HIMSS interviewer kept written notes to document team discussions and responses to each indicator item. All recordings and transcripts were stored on a secure server, with access restricted solely to the HIMSS interviewers responsible for data collection to guarantee both confidentiality and data integrity (Lincoln & Guba, 1985). A structured, guided interview format was employed to ensure that all indicator questions were addressed systematically, with teams offered time for questions and examples for each of the indicator questions to ensure clarity of the intent of each survey question item. MPHI team members were invited to join the data collection interviews as observers to provide additional context and support to the teams responding to question items. In cases where a department was unable to complete the DHI within the 120-minute allotted time, participants were offered the option of scheduling a follow-up Microsoft Teams session with the HIMSS team or complete the remaining questions independently and submit their completed DHI responses. Three teams completed the DHI questions independently following their scheduled guided interview with the HIMSS team.

The data collection process was conducted between July 7, 2025, and August 20, 2025. This structured approach to data collection provided consistent and standardized data collection for all participating teams, while also allowing for flexibility in completing the DHI question items to accommodate unique LPHD team needs. During guided interview sessions, teams were encouraged to discuss and consider their responses and were encouraged to achieve consensus responses to ensure that final scores reflected a collective departmental team perspective.

To conclude the data collection phase, a guided interview was completed with 21 members of the MDHHS team to collect data from the team working at the State level. As the State team does not provide direct public health services to communities, the DHI was shortened by removing question items focused on delivery of public health services that were not directly relevant to the work of the State leadership team. A total of 53 DHI indicator questions were included in this assessment representing each of the four dimensions of the DHI that were relevant to the State level roles of this team. Modifications were made to indicator items, such as changing the reference in original indicators to “the organization” that was changed to “the State” for this interview. Questions were asked using the Mentimeter tool to allow the 21 participants to enter their response independently and to insert comments that enabled a confidential space for respondents to share their insights. The Mentimeter comments were not visible to all participants to reduce the risk that participant responses could be influenced or biased by other responses. Two qualitative questions were asked of participants at the end of the DHI survey items as follows:

1) “If the State could achieve its top digital priorities tomorrow, what would these priorities be and why would you want to achieve it?”

2) “What are the greatest barriers to digital capacity? And why?”

Participants responded verbally during the interview, writing their responses in the Microsoft Teams chat, or by commenting in the dialogue forum option on the Mentimeter tool. All qualitative responses captured during the interview were included in the qualitative analysis.

Measurement: Digital Health Indicator (DHI)

The DHI tool is an evidence-based tool that measures progress toward a digital health ecosystem for health organizations and systems. Digital health ecosystems connect clinicians and provider teams with the people and communities they deliver health services to, enabling people to manage their health and wellness using digital tools in a secure and private environment when and where care is needed. The DHI measures the digital capacity of operational and public health services and processes, relative to population health outcomes. The DHI specifically measures health services informed by data, and real-world evidence, to inform decisions and public health services delivery strategies to advance and strengthen population health, supported by quality, safety, and performance of sustainable public health services.

Prior to the commencement of this project, the HIMSS team conducted a review of the DHI Indicator Statements to evaluate the relevance and consistency with public health organizations in the U.S. This review was guided by a public health expert and involved adapting terminology to ensure inclusivity across diverse populations and jurisdictions. For example, wording for indicators was changed from “citizens” to “communities” to better reflect the populations served by local and Tribal public health departments. In addition, public health examples were designed for each Indicator Statement to provide teams with examples for each question item. These refinements enabled the tool to be accessible, contextually relevant, and meaningful for public health teams. The DHI is a globally validated framework aligning with World Health Organization (WHO) digital health maturity domains and offering comparability to international benchmarks (HIMSS, 2022).

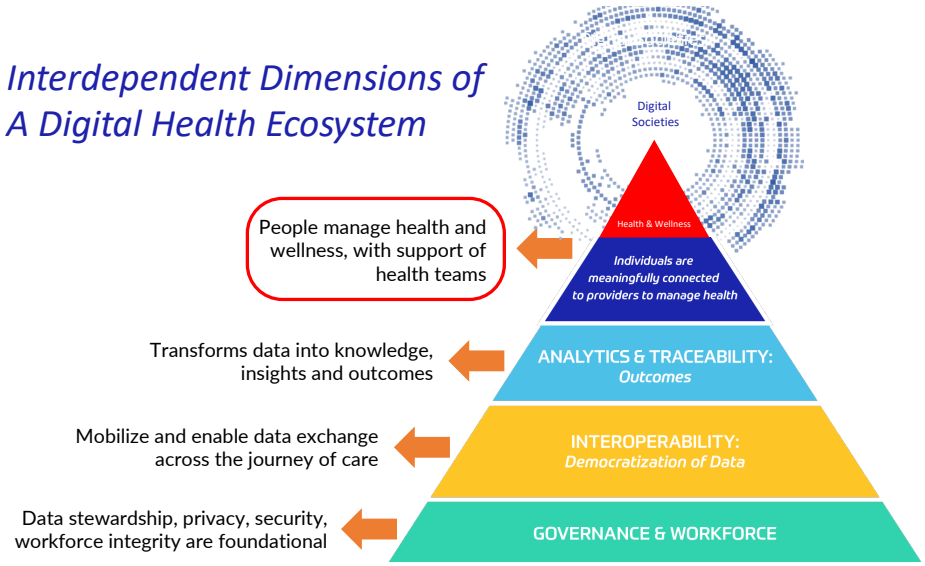
The DHI is a 120-question assessment that evaluates an organization’s performance across four dimensions of digital health (e.g., Interoperability, Person-Enabled Health, Predictive Analytics, Governance and Workforce) using a 5-point Likert scale: scored on a scale of 0-400 and then standardized to 100 to provide a percentage achieved for each dimension. Higher scores indicate a more advanced and mature digital health organization. The DHI score informs teams of their digital capacity and capabilities to identify digital strengths, assets, and gaps or areas required to advance digital transformation. Organizations use the DHI to benchmark their digital health capabilities against industry best practices and to inform the development of

strategic plans focused on advancing performance supported by digital transformation. Since its introduction in 2018, the DHI has demonstrated significant global impact and adoption, having been used across 33 countries, generating comprehensive benchmark data of organizational progress towards digital transformation (HIMSS, 2024). The DHI tool has been used widely to provide an evidence-based approach to evaluating current digital capabilities to inform and guide future investments in digital transformation goals and objectives.

DHI Dimensions

The DHI comprises four dimensions: Governance and Workforce, Interoperability, Person-Enabled Health, and Predictive Analytics. Each dimension measures the digital capacity of a specific feature of a digital health ecosystem. Figure 2 illustrates the interdependent nature of DHI's four dimensions. Governance and Workforce are foundational to digital transformation where governance policies protect the privacy and security of data, ensure accuracy and data stewardship, and support workforce competencies to support progress towards digital transformation. Interoperability allows for the secure democratization of data to flow across the organization to inform decisions. As interoperability advances, digital tools that support and enable analytics to translate data into information and insights to inform decisions and makes it possible to track performance outcomes. Person-enabled health is achieved when all three of these dimensions are advanced, which signals that people, communities, and populations have the digital tools to manage their health and wellness, supported by provider teams digitally connected in a safe and secure digital environment. The four dimensions of digital transformation are interconnected, and all four must be advanced to achieve digital transformation.

Figure 2. Dimensions of Digital Health Ecosystems



The following section describes the results of the DHI scores for each of the four dimensions and their sub-dimensions, which offer a more detailed and in-depth analysis of the features of digital capacity that allow advances in digital transformation.

1. Governance and Workforce

Governance and Workforce is the strategic leadership and oversight of digital health systems that ensures the policy and regulatory environment of health systems guards privacy, security, stewardship, and accountability. Governance places priority focus on a sustainable, high-performing workforce that is prepared to deliver digitally enabled health services. The future of sustainable, high-performing digital health ecosystems requires unique governance structures to transform workplace environments. These digitally enabled environments, in turn, enable care delivery models that are informed by data analytics, and guided by robust data stewardship, policy, and decision-making processes. Governance and Workforce is made up of four subdimensions: Policy and Decision Making, Stewardship, Workforce Capacity and Competency, and Transparency. These are explored below.

a. Policy and Decision Making

Policy and Decision Making describes the measurement, learning and feedback, resource allocation, and coordination used for governance processes that encompass policy and decision making required to support digital health transformation. Policy and decision-making processes include evidence-informed digital health strategy, alignment of digital processes, value-based health system incentives, and frameworks focused on achieving performance outcomes. The impact of digital transformation requires policy frameworks that support and incentivize performance (e.g., efficiency, productivity, quality, and cost) outcomes and enable health system stakeholders to build and sustain meaningful relationships with the people and populations health systems serve.

b. Stewardship

Stewardship describes the leadership, culture, vision, and objectives required to support digital health. It includes the accountability frameworks and management processes such as the responsibility of planning, building, running, and monitoring digital health as well as the resources and expertise to evaluate and use new digital technologies to advance organizational objectives. The adoption of new digital tools is informed by evidence and best practices to advance system-wide adoption and utilization of digitally enabled processes at scale. Criteria

aligned with the use of data and digital technologies are guided by and inform best-practice decision making to improve quality of care.

c. Workforce Capacity and Competency

Workforce Capacity and Competency is foundational to rapid evolution of digital health ecosystems and requires knowledge, skills and abilities across the workforce to support and enable adoption of digitally enabled health services and operational processes. Workforce policies support and retain a high-performing workforce that is incentivized to design, adopt, and scale digitally enabled care processes, workflows, and operational strategies focused on outcomes to achieve value and impact for people, populations, and the workforce while also advancing operational performance to strengthen health system sustainability.

d. Transparency

Transparency supports connectivity and relationships with people and populations, including digitally enabled communication of health system performance and transparency of quality, safety, and organizational performance outcomes. Every person is considered a partner in healthcare whereby governance and oversight ensure transparent access to personal health information and health system-level performance outcomes, as well as equitable access to healthcare services, data, and choices for digitally enabled public health services.

2. Interoperability

Interoperability is the capacity of diverse information systems, devices, and applications ('systems') to connect, access, exchange, integrate, and cooperatively use data in a coordinated manner. The interoperable flow of data within and across organizational, regional, and national boundaries provides timely and seamless portability of information to inform decisions that optimize the health of individuals and populations globally. Health data exchange architectures, application interfaces, and standards enable data to be accessed and shared appropriately and securely across the complete journey of care. The flow of data transcends all applicable care delivery settings (e.g., hospital, community, primary care, public health) with relevant stakeholders, including patients, communities, populations, and provider teams. Interoperability is made up of the four sub-dimensions: Foundational, Structural, Organizational, and Semantic, which are described in the following section.

a. Foundational Interoperability

Foundational Interoperability establishes the inter-connectivity requirements needed for one system or digital application to securely communicate data to and receive data from another digital system. It is defined as the exchange of data at the individual level, which is accessible across clinical, social, and community settings. Foundational features of interoperability include data and information capture; capacity for data storage and data management; access to data

to inform communication between individuals and clinicians, teams, and organizations; capacity for wireless and multimedia data exchange; and virtual/remote information exchange to communicate information.

b. Structural Interoperability

Structural Interoperability defines the format, syntax, and organization of data exchange including at the data field level for interpretation. It describes the flow of data and information that is automated and integrated across multiple and varied sources of data, data reporting and access functions, data center structure, data integrity, and information exchange across multiple and varied platforms.

c. Semantic Interoperability

Semantic Interoperability provides for common underlying models and codification of the data, including the use of data elements with standardized definitions from publicly available datasets and coding vocabularies, providing shared understanding and meaning of data to the user.

d. Organizational Interoperability

Organizational Interoperability includes governance, policy, social, legal, and organizational considerations to facilitate the secure, seamless, and timely communication and use of data both within and between organizations, entities, and individuals. These features enable shared consent, trust, and integrated end-user processes and workflows. Examples include secure access to individual-level data, identity and access management, centralized authentication, firewall integration, web and email security, and cloud orchestration and coordination (including both private and public cloud infrastructure). Organizational interoperability indicators also address quality of digital services and experience for users.

3. Person-Enabled Health

Person-Enabled Health focuses on the capacity of health systems to mobilize digital tools and technologies to support care delivery that meets the individual's needs, values, and personalized health goals. It recognizes the value and importance of connectivity between people and their care teams, creating a partnership based on individual needs and choice. It leverages digital options (such as online tools, handheld devices for care anywhere approaches, or apps that enable on-demand health and wellness care) to support self-management of personal health and wellness goals, personalized to respect the unique life circumstances, preferences, health needs, and choices of the individual. The Person-Enabled Health dimension is made up of the three sub-dimensions: Personalized, Proactive, and Predictive Population Health, which are explored below.

a. Personalized Care Delivery

Personalized Care Delivery is the personalization of health services, whereby individuals are the primary decision maker in managing their health and wellness. People choose the digital tools and technologies (e.g., personal digital tools, mobile devices, wearables) that best suit their unique life circumstances and personalized approaches to healthcare.

b. Proactive Risk Management

Proactive Risk Management focuses on care delivery that proactively identifies risks to a person's health and wellness, alerts individuals and their provider team partners of the risks, and identifies strategies to proactively intervene to prevent risk and sustain or strengthen progress toward health goals. Proactive care delivery requires a transformational shift from the siloed, disease management approach of today, to one where seamlessly integrating services and enabling care delivery in digital ecosystem environments enable personalized care delivery to individuals and populations. Proactive care delivery means anticipating and identifying populations who are at risk for deterioration in health and proactively intervening to support and prevent health threats to keep people well.

c. Predictive Population Health

Predictive Population Health is the mobilization of health data using robust analytics tools to track population health outcomes to anticipate risks to population health (e.g., gaps in health screening, risks of chronic illness, risk of medical error). Predictive population health supports public health teams to advance program-level strategies that manage and reduce risks to unique population segments, whereby programs focus on supporting or maintaining health and wellness. Predictive population health is informed by a robust analytics infrastructure that mobilizes digital tools, dashboards, and public reporting strategies to strengthen population health outcomes.

4. Predictive Analytics

Predictive Analytics is the transformation of data into knowledge and real-world insights that inform decisions for individuals, health teams, and health system leaders. Predictive Analytics mobilizes health system data from multiple sources, along with digital tools and population health data, to inform program delivery and operational strategies. Predictive Analytics creates personalized approaches to public health, informed by risk predictions to optimize outcomes. Analytics also track population health indicators proactively to evaluate the effectiveness of public health programs to support population health and wellness. Predictive Analytics comprises three sub-dimensions: Predictive, Personalized, and Operational, described in the following.

a. Predictive Analytics

Predictive Analytics track outcomes across the care journey for every individual person to then identify outcomes that work best for each individual and the conditions under which those outcomes are achieved. Predictive Analytics also track program- and population-level outcomes to identify risk for potential harm or poor outcomes to inform quality and safety strategies and proactively alert public health teams and to implement services with the aim of keeping people well.

b. Personalized Analytics

Personalized Analytics collect individual health and wellness data from multiple sources (e.g., personal digital tools, mobile devices, wearables), including progressive data sources (e.g., genomic and biometric), to allow individuals and their provider teams to track progress towards health and wellness goals. Personalized Analytics connect people to public health teams, enabling outcomes reporting, adverse events reporting, and tracking of progress towards meeting health goals.

c. Operational Analytics

Operational Analytics mobilize data to track health system performance outcomes, including supply chain, clinical, financial, and adverse events. Operational Analytics use digital tools and dashboards to track operational outcomes such as efficiency, productivity, quality, safety, access, equity, and cost. Operational Analytics include real-time dashboards for use by leaders and decision makers to assess value, system learning, and sustainability (e.g., workforce sustainability, financial sustainability). Aggregate performance outcomes are reported publicly to inform individuals, manufacturers, suppliers, government, and funders. Analytic tools track, monitor, and measure value-based outcomes to inform health system performance.

Secondary Data Analysis of Population Demographics across Michigan

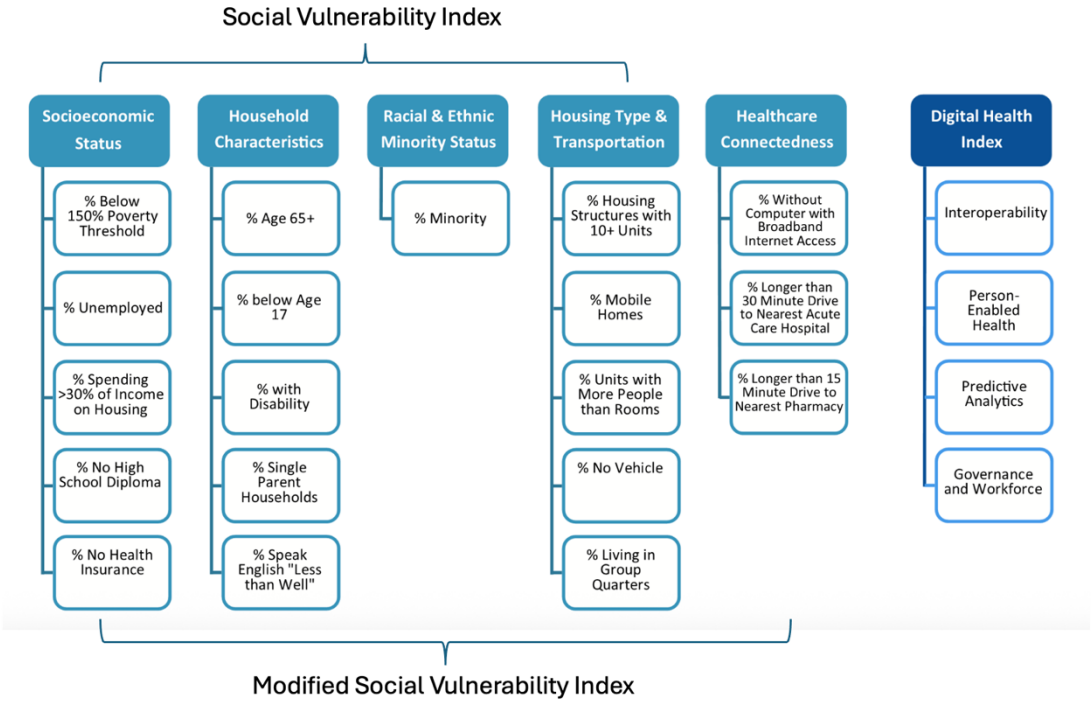
To contextualize DHI findings, additional publicly available datasets were identified and analyzed to better understand the population demographics served by LPHD teams and Tribal health teams. This analysis examined the population demographics data and compared these datasets to the DHI data to understand where and how digital transformation of public health services could best meet the needs of populations in each county. In addition, this analysis provided an important context for examining the results of the DHI. For example, for counties with a high prevalence of residents who do not have access to broadband/internet, then digitally enabled public health services may not be relevant or of value for this population. The following secondary datasets were included in this analysis (Table 1).

Table 1. Secondary Data Sources Analyzed for Relevance to the DHI Assessments

Data Set	Description	Analysis
Public health System Indicators	Primary care physicians per 100,000 and preventable hospital discharge rates were drawn from the *County Health Rankings & Roadmaps 2025* (University of Wisconsin Population Health Institute, 2025).	Examine access to primary care and prevalence of hospitalizations as indicators of access to care and population health respectively.
Social Vulnerability Index (SVI)	The *CDC/ATSDR Social Vulnerability Index (SVI) 2022 Database for Michigan*, which incorporates U.S. Census measures to capture socioeconomic and demographic risk factors (CDC/ATSDR, 2022). The dimension of **Healthcare Connectedness** was added to the SVI. This dimension is made up of two additional datasets to measure access to healthcare services (percent without computer and broadband internet access, longer than 30-minute drive to a hospital, longer than 15-minute drive to a pharmacy).	This is the most recent data available that captures socioeconomic and demographic risk factors. This was used to examine where digital transformation could advance health outcomes for populations at risk. This data was examined to identify where digitally enabled public health services could be valuable or not relevant depending on access to broadband internet services and distance residents travel to access hospital or pharmacy services.
Social Vulnerability Modified 5-year American Community Survey (2018-2022)	A yearly sample survey conducted by the Census Bureau. This dataset includes all SVI variables, as well as 'percent without a computer with broadband internet access'	

These data were analyzed to link the DHI results for each team to broader measures of health system capacity, vulnerability, population health, geographic, and demographic characteristics. Figure 3 illustrates the breakdown of each dataset and associated variables.

Figure 3: Datasets and Variables Used in Comparison of DHI



Modified from (MHDSS, 2024b)

Data Analysis

The DHI data were subjected to both quantitative and qualitative analyses to provide a comprehensive understanding of digital capacity across Michigan's local and Tribal public health departments. The quantitative analysis identified patterns, strengths, and gaps in digital capacity through scoring of the DHI, while the qualitative analysis offered contextual insights into the lived experiences, challenges, and opportunities expressed by public health teams during guided interviews. This mixed-methods approach allowed for both breadth and depth of understanding of how teams were using data and digital infrastructure in their workflows to examine opportunities for advancing digital health transformation. Quantitative measures highlighted the extent of digital capacity across organizations, while qualitative findings explained why certain gaps exist and how departments are working to address them. This mixed-methods approach aligns with best practices in mixed-methods research, which

emphasize the value of combining quantitative and qualitative evidence to generate a comprehensive understanding of complex organizational contexts (Creswell & Plano Clark, 2017). To ensure accuracy and rigor, preliminary insights from the analysis were reviewed with MPHI, which provided additional feedback informed by its participation in interviews and its knowledge of the State and Tribal public health digital landscape.

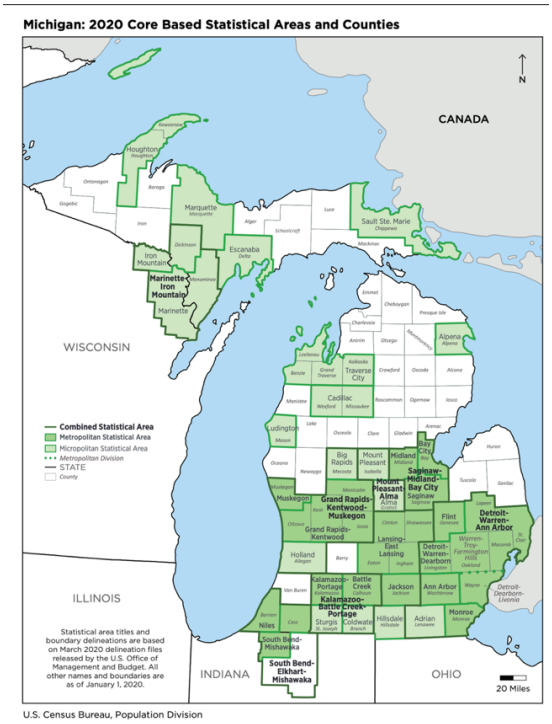
Quantitative Data Analysis

To anonymize results while enabling population-based analysis, departments were classified into categories defined by the U.S. Office of Management and Budget (OMB) (United States Census Bureau, 2025):

- **Metropolitan Statistical Areas:** Urbanized areas with populations ≥50,000.
- **Micropolitan Statistical Areas:** Urban clusters with populations between 10,000 and 49,999.
- **Outside Core-Based Statistical Areas (CBSAs) Defined as "Rural":** Counties with populations <10,000.

This classification aligned with federal census definitions and enabled consistent comparisons across diverse geographic contexts. Metropolitan, Micropolitan, and Rural areas are identified via the 2020 Census Map, that identifies population and county (United States Census Bureau, 2025).

Figure 4: 2020 Census Map of Michigan Statistical Population Density by County



Quantitative analysis was conducted using the standardized scoring approach of the DHI. For each participating LPHD team, an overall DHI score was calculated as a percentage of points achieved out of the total points possible. Dimension-level scores were similarly calculated by dividing the points achieved in each domain (e.g., Governance, Workforce, Interoperability, Analytics, Person-Enabled Services) by the total points possible for that dimension and multiplying by 100. This approach allowed results to account for indicators that were not applicable to certain organizations, as those points were excluded from the denominator.

Descriptive statistics, including means, ranges, and standard deviations, were used to summarize overall digital capacity across all participating organizations. Comparative analyses were conducted to explore variation between LPHDs and Tribal Health Departments, as well as across geographic classifications of metropolitan, micropolitan, and rural counties. Comparative analyses incorporated U.S. Census Bureau definitions of metropolitan, micropolitan, and rural classifications to ensure consistency with federal standards for population-based categorization. This stratification enabled analysis of how population density and geographic context shape digital health capacity.

Distinguishing LPHDs from Tribal Health Departments provided additional insight into how unique governance structures and resource environments influence maturity levels. Visualization outputs, including bar charts and comparative graphics, were developed not only as analytic tools but also to facilitate clear communication of findings to stakeholders across State and local levels. These statistical methods are consistent with established approaches for analyzing organizational and public health data (Field, 2017; Thiese, 2014). This quantitative analysis provided a high-level overview of digital capacity, enabling the identification of both system-wide patterns and jurisdiction-specific differences that informed subsequent qualitative interpretation.

Qualitative Data Analysis

The qualitative analysis employed a thematic analysis approach to examine the data collected during DHI interviews with LPHDs and Tribal Health Departments. This analysis was designed to uncover the experiences, challenges, and opportunities that shape digital health capacity. Recordings of guided interviews generated transcripts of team dialogue and discussion while determining their responses to each indicator item of the DHI. Transcripts were reviewed and analyzed to develop themes and subthemes. The data included not only formal responses to indicator questions, but also spontaneous comments, explanations, and contextual information shared by participants during interviews. The analysis followed Braun and Clarke's (2006) thematic analysis framework. Researchers conducted multiple comprehensive readings of all interview transcripts to develop deep familiarity with the data, involving immersive engagement with both LPHD and Tribal Health Department responses to identify initial patterns and areas of interest. Systematic coding was then applied to meaningful segments of text, with codes capturing both explicit Statements and implicit meanings in participant responses. Codes

were developed inductively from the data itself, allowing themes to emerge organically from participant experiences rather than being imposed by predetermined frameworks.

Initial codes were collated and organized into potential themes, with researchers identifying patterns that occurred across multiple departments and interview contexts. Special attention was paid to themes that emerged across both LPHD and Tribal departments, as well as divergent themes representing experiences unique to specific organizational contexts, such as Tribal Health Departments. Separate analysis also examined patterns specific to LPHDs versus Tribal Health Departments, recognizing that these organizations operate in different contexts with unique challenges and opportunities. The analysis of the State DHI was examined separately and compared to DHI scores for the LPHD and Tribal team DHI results. Identified themes underwent iterative review and refinement through multiple analytical cycles, with researchers examining whether themes accurately captured the coded data and whether they represented coherent patterns across the dataset. Final themes were clearly defined with a specific focus on what each theme captured about digital health capacity, including the scope and boundaries of each theme.

A multi-step validation process ensured rigor and trustworthiness. HIMSS interviewers developed and discussed the themes, allowing for refinement based on interviewers' direct experience with participants and their firsthand knowledge of contextual factors that influenced team responses. Themes were also shared and discussed with the MPHI team at a high level to compare qualitative findings with their broader knowledge of Michigan's public health landscape and their experience working with local and Tribal Health Departments. Additionally, themes were cross-referenced with quantitative DHI scores to identify areas where qualitative insights either supported or provided additional context for numerical findings. This process of member validation and iterative review also reinforced rigor and trustworthiness in line with qualitative research principles (Braun & Clarke, 2006; Lincoln & Guba, 1985). This comprehensive qualitative analysis approach ensured that the themes emerging from the data captured both the breadth of experiences across Michigan's public health department teams and the depth of understanding necessary to fully document digital health capacity Statewide.

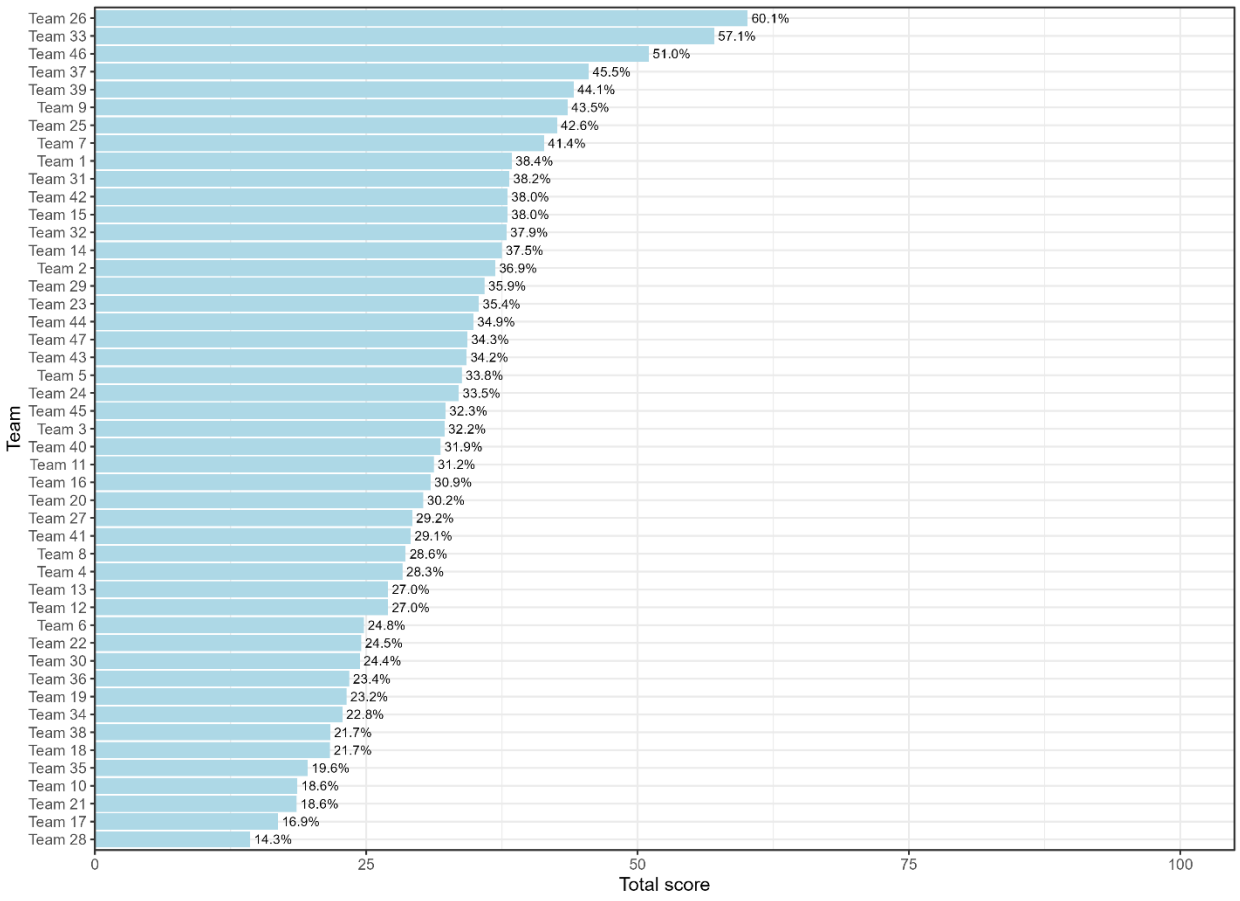
Results

The analysis of the digital health capabilities across the participating public health teams revealed significant variations across departments and programs. There were both notable strengths and opportunities for building on current strengths to advance digital transformation. The following section profiles the results of both the quantitative DHI results and the accompanying qualitative analysis of team discussions and insights expressed during guided interviews.

Quantitative Results: DHI Scores

Forty-seven teams participated and completed the DHI assessment. Of these, 38 were from LPHDs and nine were from Tribal team health departments. An additional DHI assessment was completed by leaders working at the State level within MDHHS. The team identities have been assigned a number to meet the requirement for anonymized results in the contractual agreement for the project. Figure 5 profiles the DHI scores for each team. The overall mean DHI score was 35 percent of the possible 100 points achievable across all four dimensions of the DHI. This DHI index score is a summative average across all 47 team scores, calculated as the percentage (out of 100) achievement for each dimension (Figure 5). Each of the four dimensions of the DHI contributes 25 percent of the possible points achieved to the overall score. The most digitally advanced team, Team 26, achieved 60.1 percent of the possible 100 points. In contrast, Team 28 had the lowest DHI score at 14.3 percent, indicating that this team is at a very early stage of its digital transformation journey. This overall mean DHI score reflects substantial variation across teams, with the majority achieving less than 50 percent of the potential 100 points on this measure of progress toward digital transformation.

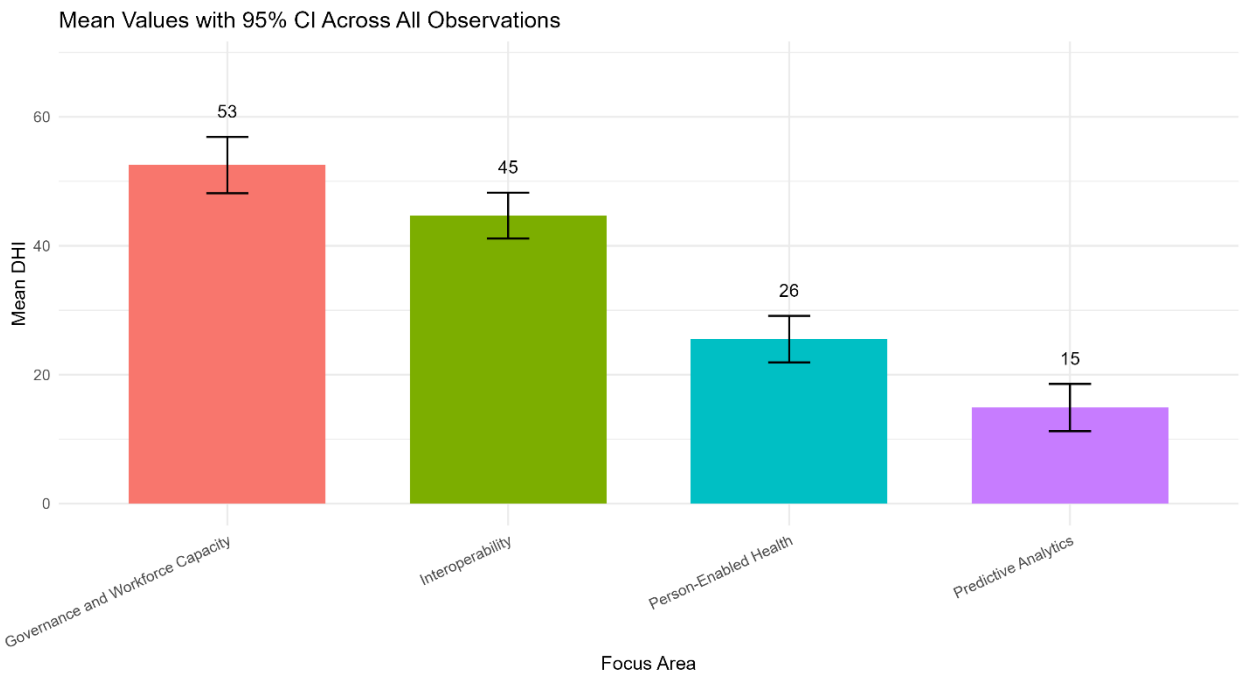
Figure 5. Overall DHI Scores by Team



The total DHI score represents the mean across all four dimensions of digital transformation, describing the areas of progress teams have achieved in Governance and Workforce, Interoperability, Person-Enabled Health, and Predictive Analytics. These four DHI dimensions are interdependent and integrated, as illustrated in Figure 6.

When looking at the DHI across all dimensions (Figure 6), the results reveal that Governance and Workforce is the most advanced dimension among the teams with a mean of 53 percent of possible indicators achieved, closely followed by Interoperability with a mean achievement of 45 percent of the possible 100 indicators. Governance and Interoperability are similar in the consistency of DHI scores on this dimension, while Predictive Analytics scores were the weakest and had the most variability among all four of the dimensions. Governance and Interoperability represent the two most foundational dimensions of digital health transformation and create the conditions necessary for advancement in both Person-Enabled Health, which had a mean achievement of 26 percent, and Predictive Analytics, which had a mean achievement of 15 percent of possible indicators. Without the safe and secure flow of data to both teams and community residents, Person-Enabled Health strategies are not possible. Similarly, predictive analytics tools are not possible to advance unless and until the secure capture, storage, mobilization, and flow of data to the point of a decision is achieved.

Figure 6: Overall Mean DHI Values (with Confidence Intervals)

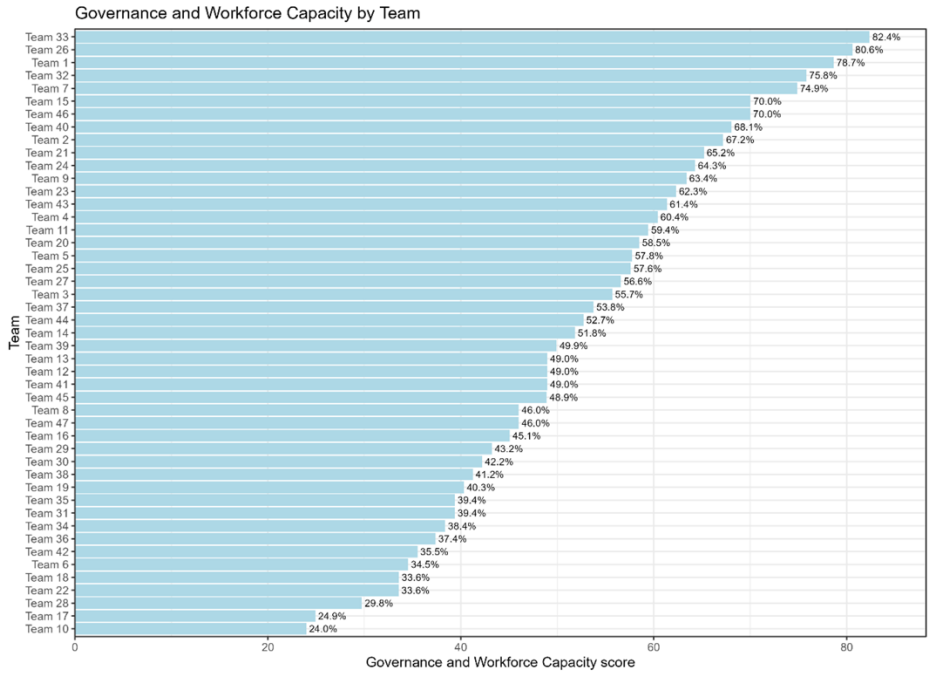


In analyzing the results of the DHI assessment across the county teams, each of the four dimensions were examined in greater detail, including a comparative analysis of sub-dimensions to provide additional insight into unique features of each of the four dimensions achieved by LPHD teams and Tribal health teams.

a) Governance and Workforce

Governance and Workforce was the strongest-performing dimension of the four DHI domains, with an overall mean score of 53 percent of the possible 100 points. The highest-scoring team was LPHD Team 40, which achieved 82.4 percent and serves a county classified as having a metropolitan population. Similarly, LPHD Team 30 achieved a score of 80.6 percent and also serves a metropolitan population, while LPHD Team 1 scored 78.7 percent and serves a micropolitan population (Figure 7). Sub-dimension analysis of the Governance and Workforce dimension (Figure 8) revealed that these high-performing teams demonstrated strengths across multiple governance and workforce indicators, although the specific areas of strength varied across teams. Several teams achieved scores above 80 percent, including Team 26 and Team 33, indicating more advanced governance and workforce capacity. In contrast, the lowest-scoring teams were LPHD Team 10, which achieved 24 percent and serves a metropolitan population, and LPHD Team 17, which achieved 24.9 percent and also serves a metropolitan population. These teams scored consistently low across all Governance and Workforce sub-dimensions, indicating weaker digital governance overall.

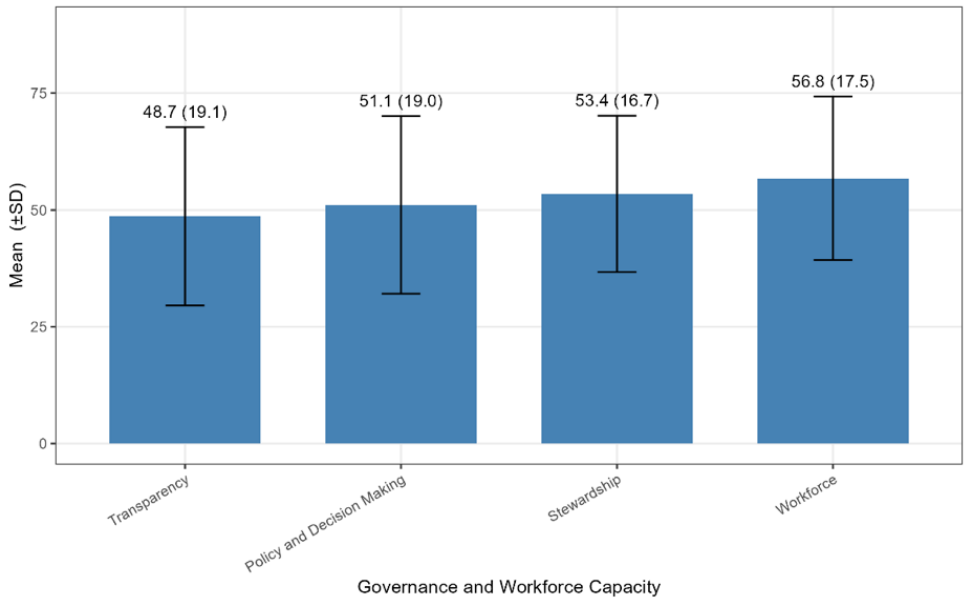
Figure 7. Governance and Workforce Dimension Scores for each Team



Across the four sub-dimensions of Governance and Workforce, teams demonstrated relatively similar levels of progress, with no single sub-dimension emerging as a significant outlier. This pattern suggests that governance and workforce capacity is advancing at a relatively even pace across policy and decision-making, stewardship, workforce capacity and competency, and transparency. Figure 8 illustrates the mean sub-dimension scores, which show slightly stronger performance in Workforce Capacity and Competency, with a mean score of 56.8 percent. Transparency achieved a mean score of 48.7 percent, Policy and Decision-Making achieved 51.1 percent, and Stewardship achieved 53.4 percent.

Standard deviations across Governance and Workforce sub-dimensions ranged from 16.7 percent to 19.1 percent, indicating meaningful variation in progress across teams (Figure 8). Extreme scores ranged from Team 33, which achieved 100 percent, to Team 10, which achieved 24 percent. Approximately half of participating teams scored below 50 percent on this dimension, suggesting that while governance and workforce capacity represents an area of relative strength across the system, substantial variability persists in how digital governance structures and workforce strategies are implemented in practice.

Figure 8: Governance and Workforce Sub-Dimensions by Mean



b) Interoperability

The second strongest domain scores of the DHI were Interoperability, with an overall mean score of 45 percent of the possible 100 DHI points. The highest scoring teams were LPHD teams, serving counties with metropolitan populations. Team 26 scored the highest interoperability

score at 70.6 percent, team 7 was similarly high at 68.3 percent, and team 16 scored 65.7 percent (Figure 9).

Detailed examination of these high-performing teams revealed that structural interoperability was the weakest of the four Interoperability sub-dimensions, indicating that automated data flow and integration across multiple data sources remain limited even among more advanced teams. When structural interoperability is underdeveloped, challenges persist in exchanging information across multiple State-level platforms, limiting the timely availability of data to inform decision-making. Despite these limitations, these teams demonstrated stronger performance in organizational interoperability, suggesting that policy, legal, and organizational frameworks supporting secure and seamless communication are more advanced, supported by established data security policies and operational practices.

In contrast, several LPHD teams serving metropolitan populations demonstrated notably lower Interoperability scores. Team 21 achieved a score of 23.4 percent, Team 43 achieved 23.9 percent, and Team 33 achieved 27.2 percent. These teams exhibited consistently low scores across all Interoperability sub-dimensions, indicating substantial variability in the progression of interoperability capacity across teams. Overall, a relatively small proportion of teams (n = 16) achieved Interoperability scores of 50 percent or higher, reflecting uneven advancement in secure and automated data exchange across the public health system.

Figure 9. Interoperability Scores for Each LPHD and Tribal Health Team

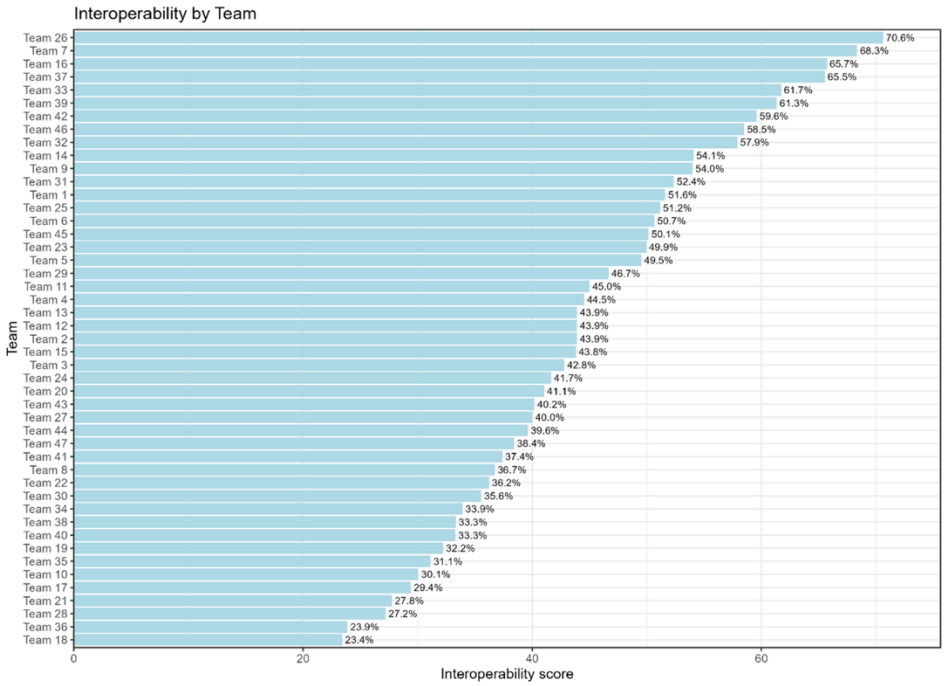
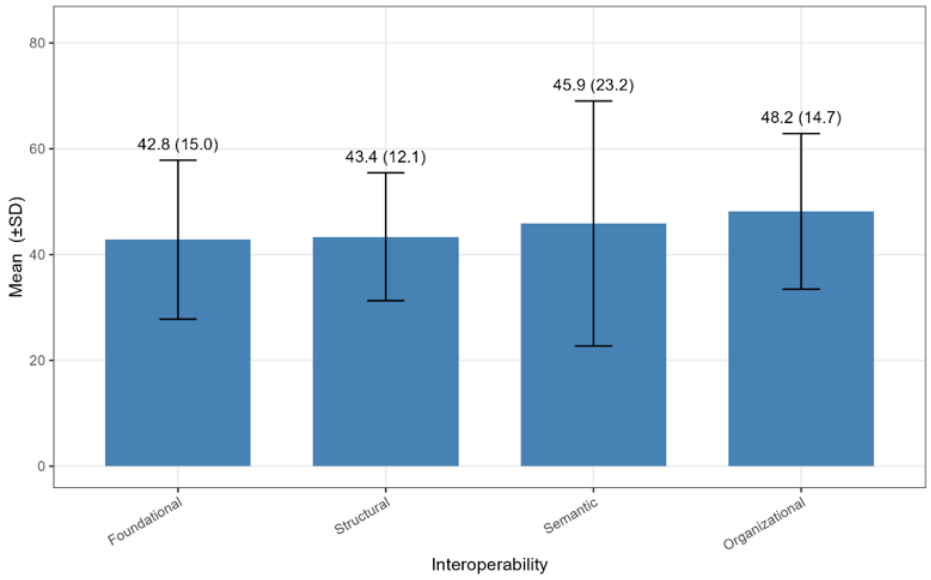


Figure 10 illustrates the mean scores across the four Interoperability sub-dimensions. Sub-dimension mean scores ranged from 42 percent to 48 percent, indicating relatively similar levels of progress across foundational, structural, organizational, and semantic interoperability. However, standard deviations varied substantially across sub-dimensions, ranging from 12.1 percent for Structural Interoperability to 23.2 percent for Semantic Interoperability. Semantic Interoperability measures the use of standardized data definitions, models, and coding vocabularies that enable shared understanding of data across systems and users. The higher variability observed in this sub-dimension suggests that approaches to data standardization and semantic consistency differ widely among participating teams.

Figure 10: Interoperability Sub-Dimensions by Mean



c) Person-Enabled Health

Person-Enabled Health was among the lowest-performing dimensions across Michigan public health teams. The highest scores were observed for LPHD Team 33, which achieved 55.7 percent and serves a metropolitan population, LPHD Team 46, which achieved 52.7 percent and serves a micropolitan population, and LPHD Team 26, which achieved 47.9 percent and serves a metropolitan population (Figure 11).

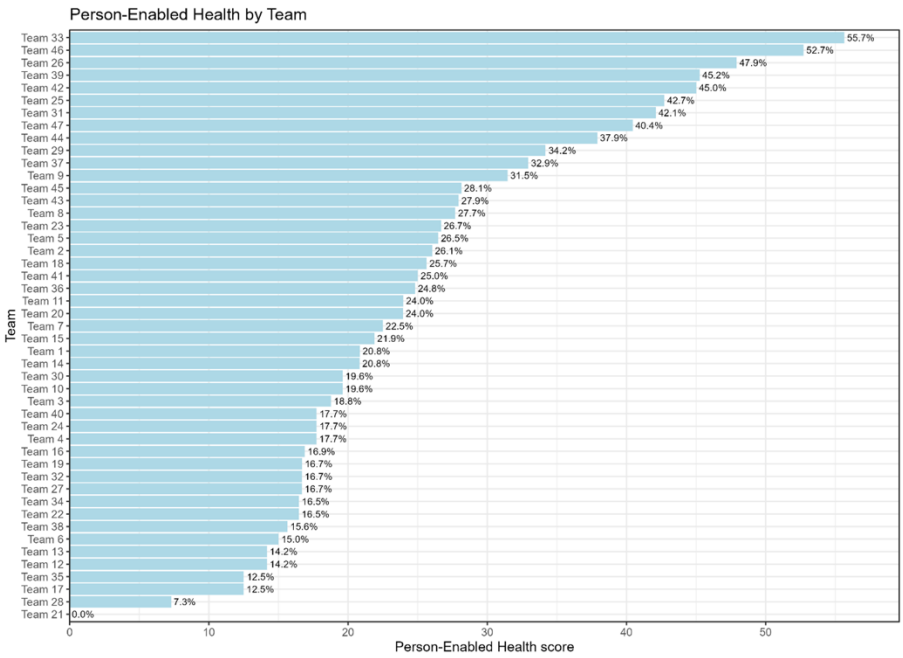
Among these higher-performing teams, the Personalized Care Delivery and Predictive Population Health sub-dimensions demonstrated stronger performance relative to Proactive Risk Management. The Personalized Care Delivery sub-dimension measures the extent to which teams tailor public health services to meet individual and community needs. Higher scores in this sub-dimension suggest that these teams are beginning to design and implement

approaches that reflect individual preferences, cultural contexts, and unique life circumstances. Similarly, stronger performance in Predictive Population Health indicates early progress in the use of data and analytics to identify population-level risks and inform targeted program strategies.

In contrast, many teams demonstrated limited progress in Person-Enabled Health. Several LPHD teams achieved scores below 30 percent, including LPHD Team 24, which scored 0 percent, LPHD Team 33, which scored 7.3 percent, and LPHD Team 20, which scored 12.5 percent. All these teams serve metropolitan populations. These low scores indicate limited adoption of digitally enabled strategies to personalize public health services or to support proactive engagement with individuals and communities through digital tools.

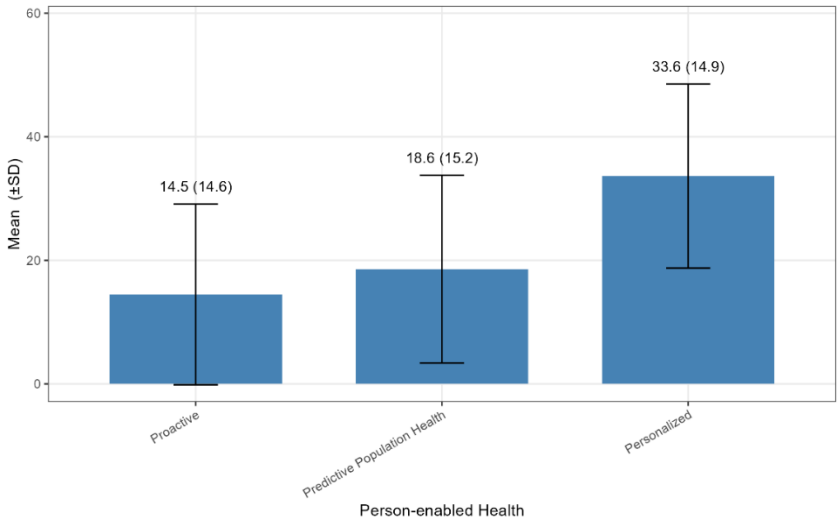
Figure 11 shows the sub-dimension mean scores for Person-Enabled Health, which demonstrate substantial variation across teams. Proactive Risk Management had a mean score of 14.5 percent, while Predictive Population Health had a mean score of 18.6 percent, representing the lowest-performing sub-dimensions. Personalized Care Delivery showed relatively stronger performance with a mean score of 33.6 percent, suggesting that personalization represents the earliest area of advancement within this dimension. Standard deviations across all three sub-dimensions ranged from 14.6 percent to 15.2 percent, indicating high variability in progress across teams. Overall, Person-Enabled Health scores suggest that most Michigan public health teams remain at an early stage of development in this dimension of digital transformation.

Figure 11. Person-Enabled Health Scores for Each LPHD and Tribal Health Team



Team scores on Person-Enabled Health (Figure 12) demonstrate high variation among sub-dimensions. Proactive Public Health Services with a mean of 14.5 percent and Predictive Population Health at 18.6 percent are the two lowest scoring sub-dimensions, while Personalized Health Services are strong with a mean of 33.6 percent, suggesting this as an area teams are beginning to advance. The standard deviations for all three sub-dimensions are consistently high, between 14.6 and 15.2, indicating substantial variation in progress across all teams.

Figure 12. Mean Sub-Dimension Scores for Person-Enabled Health



Person-Enabled Health scores among the teams suggest very early progress among the teams in this dimension of digital transformation.

d) Predictive Analytics

Predictive Analytics was the lowest-performing dimension of the DHI, with an overall mean score of 15 percent of the possible 100 points. Despite this low average score, three teams demonstrated early progress in this dimension. LPHD Team 26 achieved a Predictive Analytics score of 53.7 percent, LPHD Team 37 achieved 42.4 percent, and LPHD Team 14 achieved 39.9 percent. All three teams serve metropolitan populations (Figure 13).

Among these higher-performing teams, progress was most evident in the Operational Analytics sub-dimension, which measures the use of analytics and digital tools to monitor operational outcomes such as access to services, equity, and cost. In contrast, most teams achieved less than 20 percent in the overall Predictive Analytics dimension, with three teams scoring 0 percent, indicating no measurable progress in this area. Notably, all three teams with scores of 0 percent serve metropolitan populations.

Figure 13. Predictive Analytics Scores for Each LPHD and Tribal Health Team

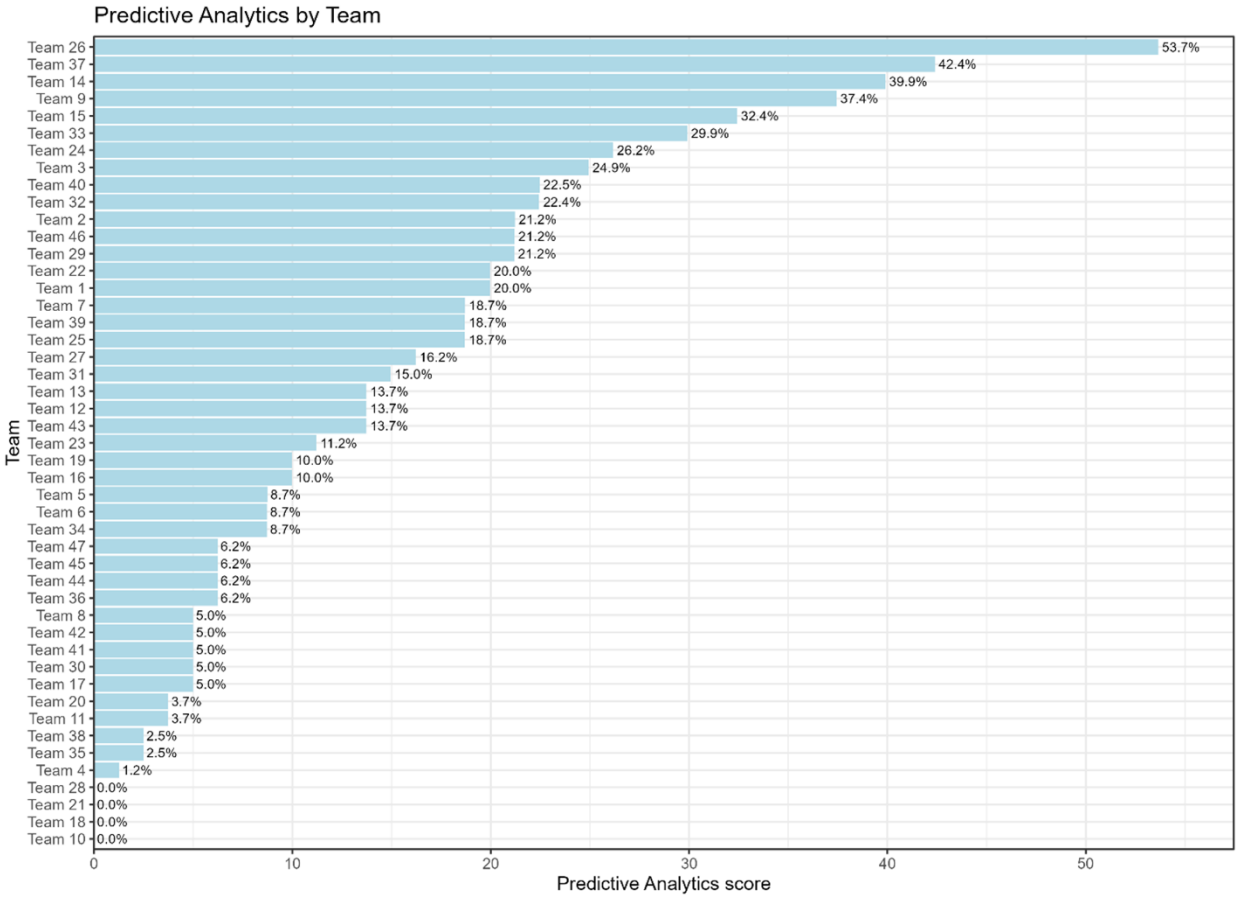
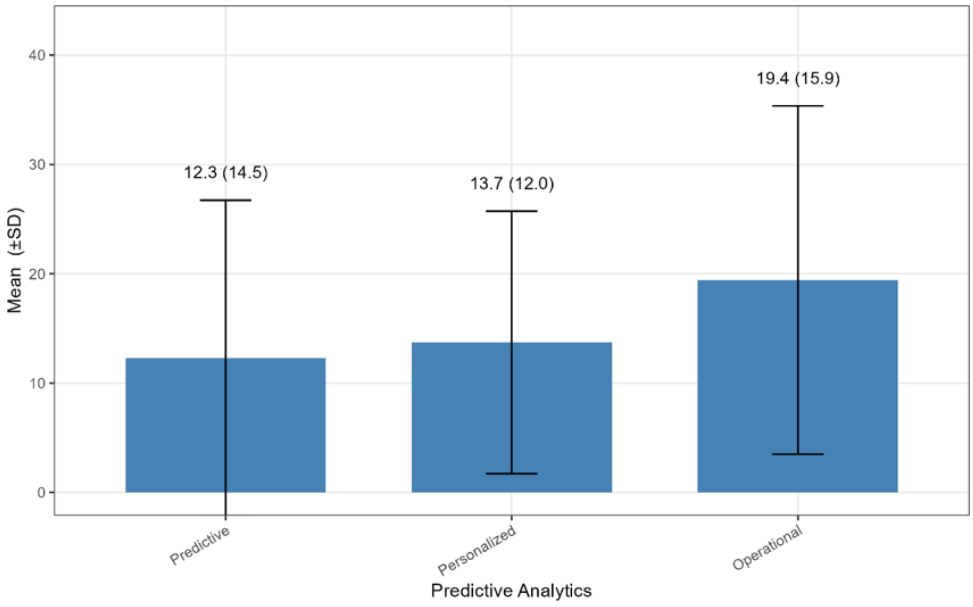


Figure 14 illustrates the mean sub-dimension scores for Predictive Analytics. Predictive Analytics and Personalized Analytics were the weakest-performing sub-dimensions, with mean scores of 12.3 percent and 13.7 percent, respectively. Operational Analytics demonstrated relatively stronger performance, with a mean score of 19.4 percent. Standard deviations across all Predictive Analytics sub-dimensions were high, reflecting substantial variability in analytics maturity across teams and indicating significant opportunity for advancement in this dimension.

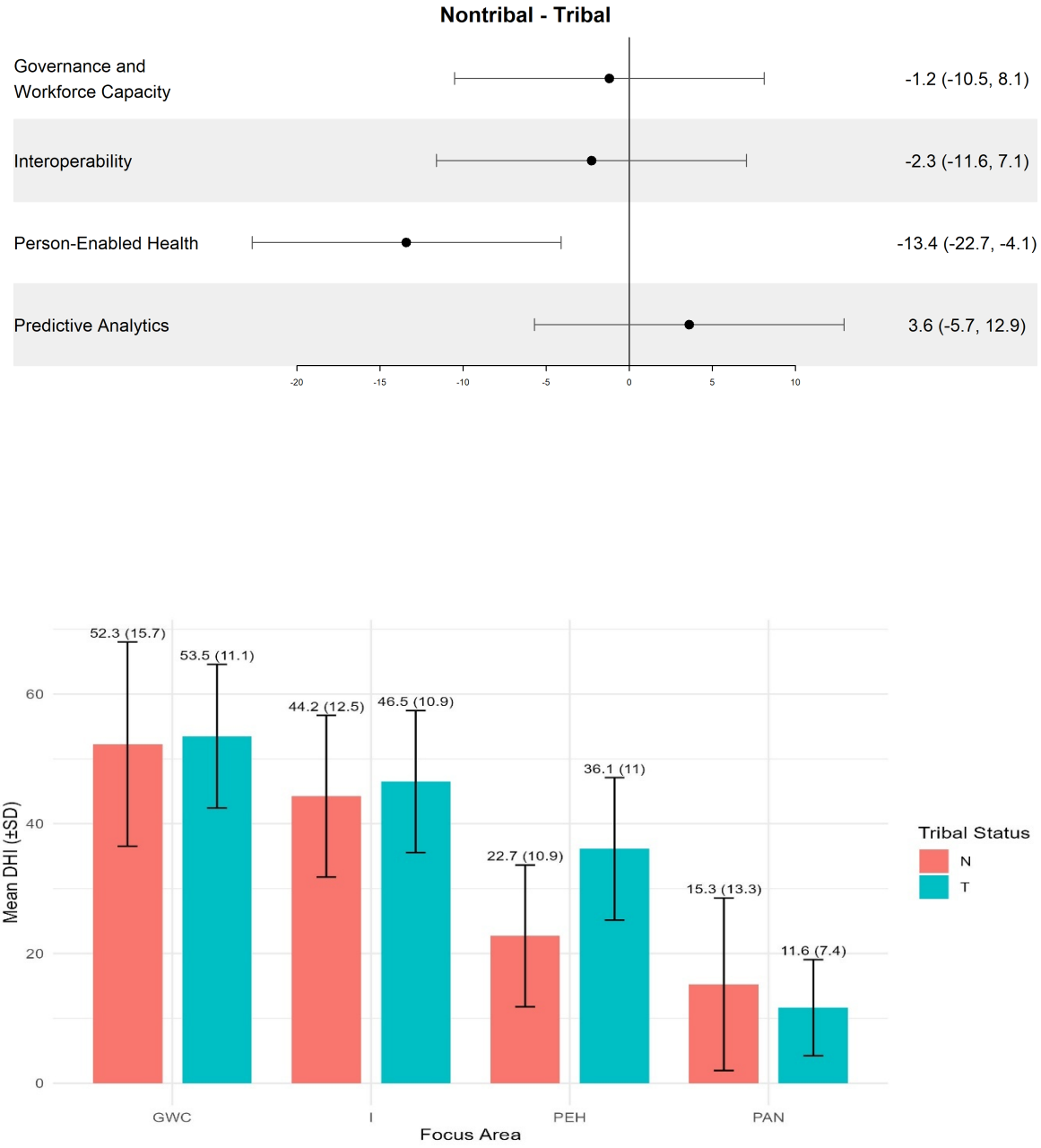
Figure 14: Mean Scores for Predictive Analytics Sub-Dimensions



Comparison of Local Public Health Departments and Tribal Health Team Progress in Advancing Digital Capacity

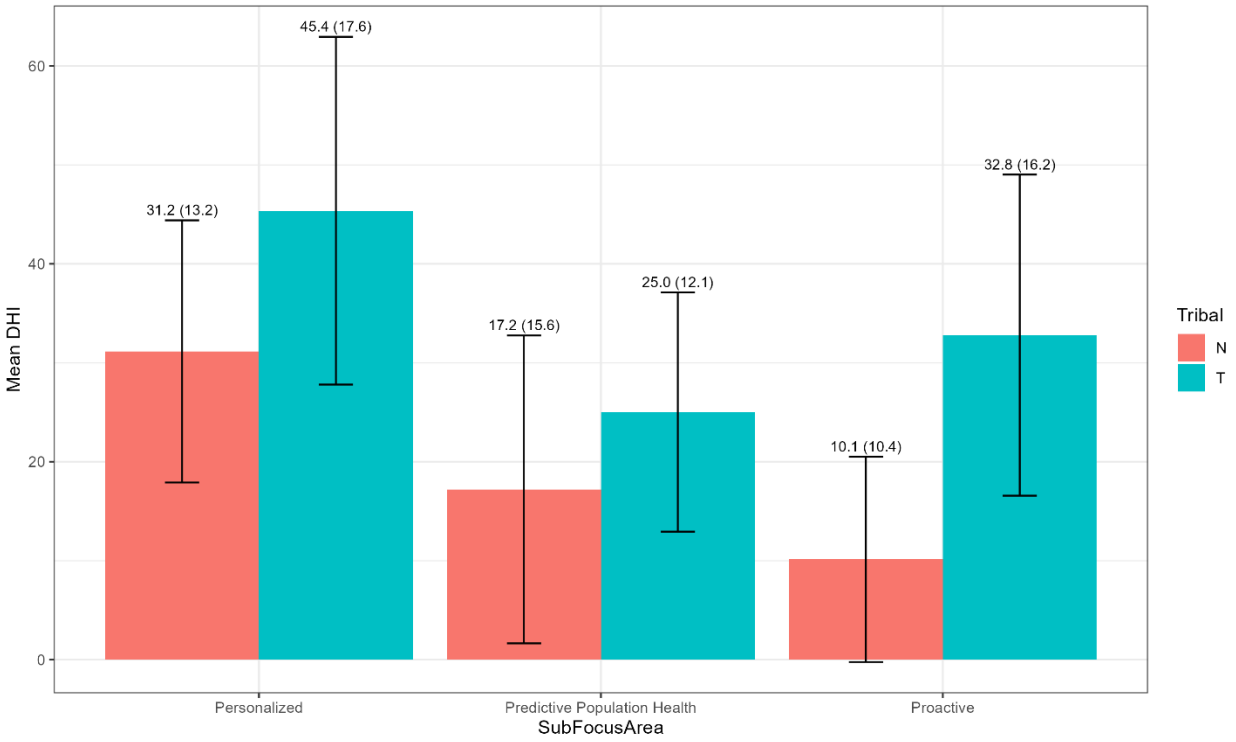
The purpose of the analysis was to examine similarities and differences in the progress of LPHD teams and Tribal health team strengths in digital capacity. Figure 15 displays the differences between non-tribal and tribal groups across the four focus dimensions of the DHI. Each point on the horizontal line represents the mean difference, while the length of the horizontal lines shows the corresponding confidence intervals. When a domain horizontal line crosses the vertical reference line at zero, it suggests that there is no statistically significant difference between the two groups for that particular dimension. Among all the dimensions assessed, the only one showing a statistically significant difference was Person-Enabled Health, with a mean difference of -13.4 and a confidence interval ranging from -22.7 to -4.1. . This finding reveals that Tribal health teams have progressed significantly more than local public health teams with higher scores on Person-Enabled Health.

Figure 15. Comparison of Tribal Health Team Scores with Local Public Health Team Scores



Tribal health teams demonstrated significantly higher scores across all three Person-Enabled Health sub-dimensions including Predictive, Personalized and Proactive. LPHD teams scored statistically significantly lower than Tribal health teams in the Personalized and Proactive sub-dimensions while the difference in Predictive was significant but not statistically significant. In Personalized Health Services, the LPHD teams were assessed at scores lower by 14.2 (95 percent CI: -24.7 to -3.73, p-value=0.008) while the difference in Proactive scores by a difference -22.7 (95 percent CI: 5.05 133 to -32.6, p-value< 0.0001).

Figure 16. Comparison of Tribal and Non-Tribal Team Scores for Person-Enabled Dimension



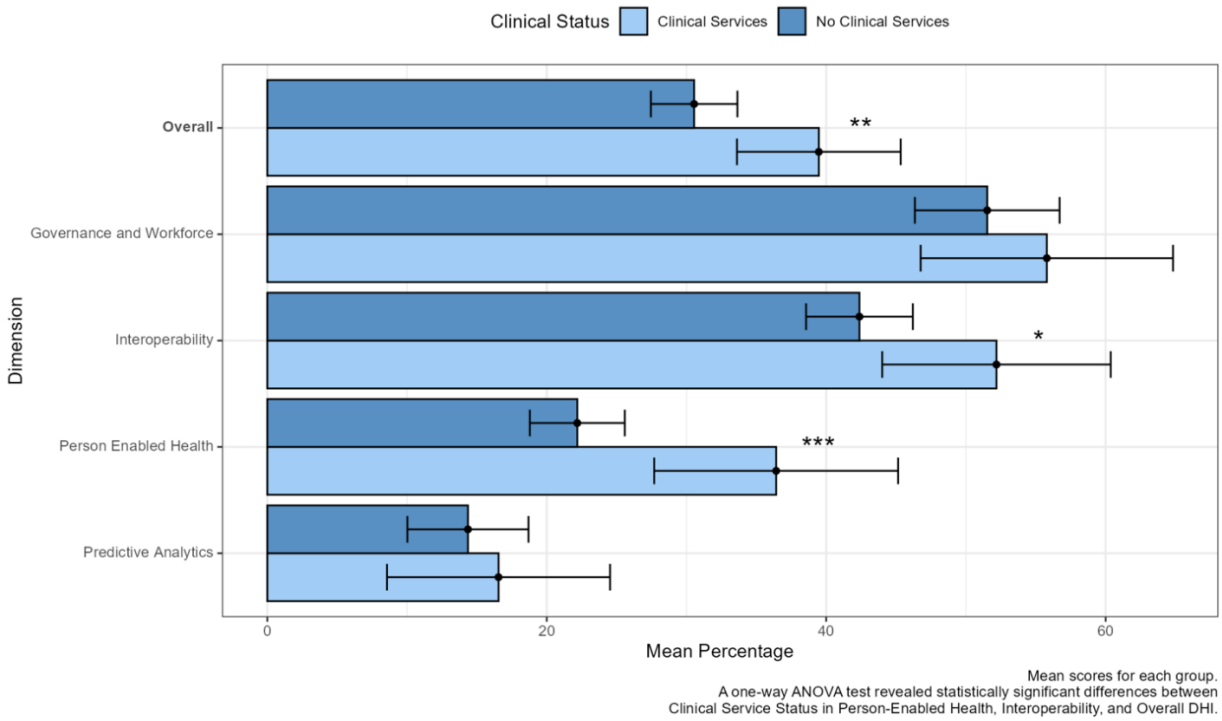
Comparison of Public Health Departments that Offer Clinical Services vs. Teams That Offer Only Public Health Services (Non-Clinical)

This comparative analysis examined differences in digital health capacity (DHI results) in two groups: LPHD and Tribal Health Departments that provide clinical services compared to LPHD and Tribal Health Department teams that do not offer clinical services. The teams placed in each grouping were verified by the MPHI team. The purpose of this analysis is to evaluate whether clinical services influences adoption of digital health tools and technologies.

Figure 17 illustrates the consistent differences between these two groups of teams that the analysis revealed. LPHDs that provide clinical services demonstrated stronger overall DHI scores, which indicates that they have progressed digital transformation more so than teams that do not offer clinical services. Teams that deliver clinical services scored higher than teams that only deliver public health services, with a mean score on the DHI of 39.5 (Figure 17). When dimension scores were compared, the most significant difference was observed in the Person-Enabled Health dimension, where teams that deliver clinical services scored 36.42 compared to

a much lower score (22.19) for this dimension for teams that only deliver public health services. This finding suggests that teams delivering clinical services are more advanced in offering person-enabled services that directly meet individual needs, which empowers patients to participate in managing their own health. Person-enabled services are highly relevant to teams that only deliver public health services as well as teams that deliver clinical care. For example, teams that offer vaccine clinics or surveillance programs for transmissible diseases can offer digitally enabled services that enable people to schedule appointments online, track results or vaccine information when administered, and report adverse events or outcomes relevant to public health services.

Figure 17: Differences in DHI Results for Teams that Deliver Clinical Services and Teams that Only Deliver Public Health Services

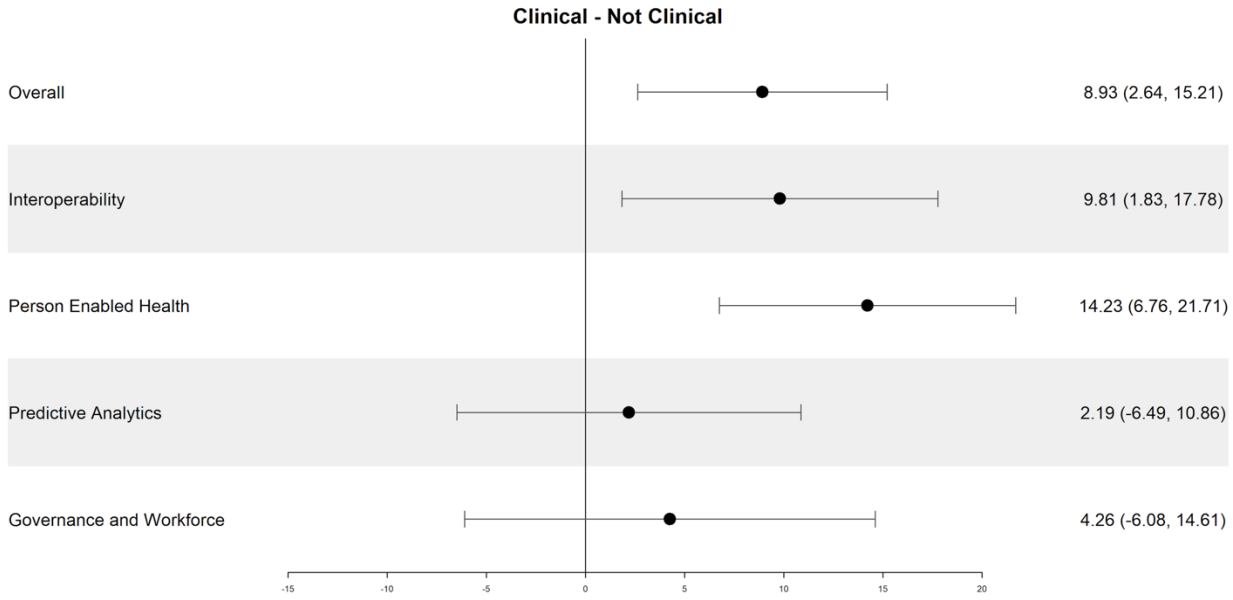


Note: Asterisks highlight results where differences between groups are meaningful, with multiple asterisks indicating stronger statistical significance.

A significant difference was also observed in the Interoperability dimension (Figure 18), which suggests that teams delivering clinical services are more likely to advance automated and integrated flow of data to support care coordination, inform decisions on care delivery and personalize care to unique patient groups. No statistically significant difference was observed for the Predictive Analytics or Governance and Workforce dimensions. This finding suggests that all teams across Michigan are continuing to advance these dimensions and have progressed at a similar level of digital maturity. Taken together, these results suggest that Local Health Departments and Tribal health teams that offer clinical services have greater capacity

and opportunity to advance digitally enabled services that advance digital transformation. This finding may be related to relationships these teams have with clinical organizations (e.g., hospitals, clinics) that have digital information systems, which teams are able to connect with or participate in. Teams that only deliver public health services, and are not offering clinical services, may be an opportunity for targeted investment and support to strengthen their digital capacity and ensure equitable transformation across the public health system.

Figure 18: Pairwise Differences of DHI By Clinical Status



DHI Scores Associated Population Density, Social Vulnerabilities, Health Connectedness

This analysis examined the relationship between digital health capacity scores achieved by each LPHD team and the population characteristics of each Michigan county. It excludes the Tribal Health Departments as they were not included in the publicly available datasets (SVI, Census, Healthcare Connectedness). The purpose of this analysis was to examine the characteristics of counties, (e.g., Social Vulnerability and Health Connectedness) to understand the alignment of population needs that could be met by digitally enabled public health services. Figure 19 profiles the DHI scores based on population density of counties served by Local Health Departments. Figures 19 and 20 illustrate the analysis of statistical significance of DHI scores

and census population (metropolitan, micropolitan, and rural). Results reveal that there is no statistically significant difference in average DHI scores for teams delivering public health services to rural, micropolitan, or metropolitan counties across Michigan. Consistent with the analysis of DHI scores, Local Health Departments serving large metropolitan counties were no more or less likely to have high or low DHI scores.

Figure 19: DHI Comparison to Population Density and Designation: Metropolitan, Micropolitan, and Rural

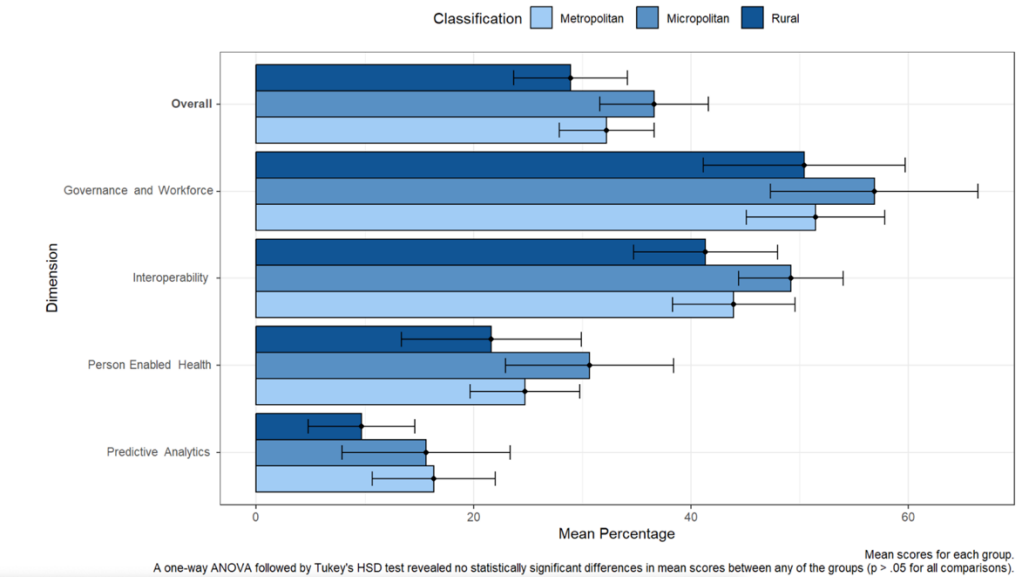
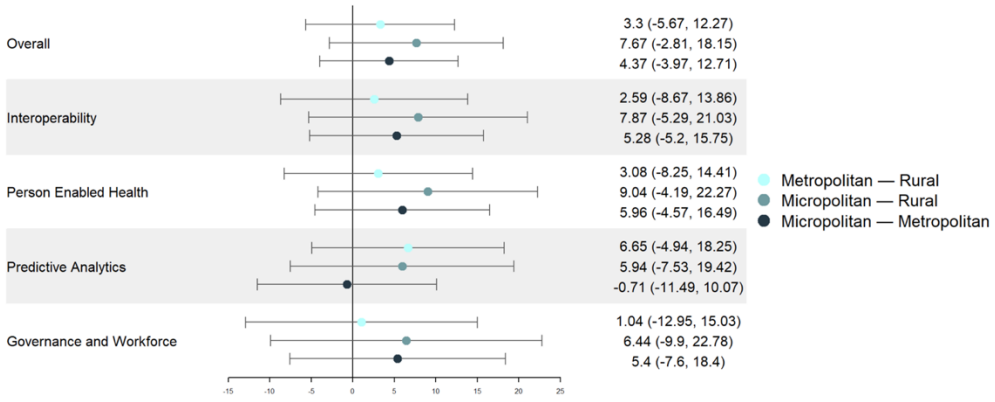


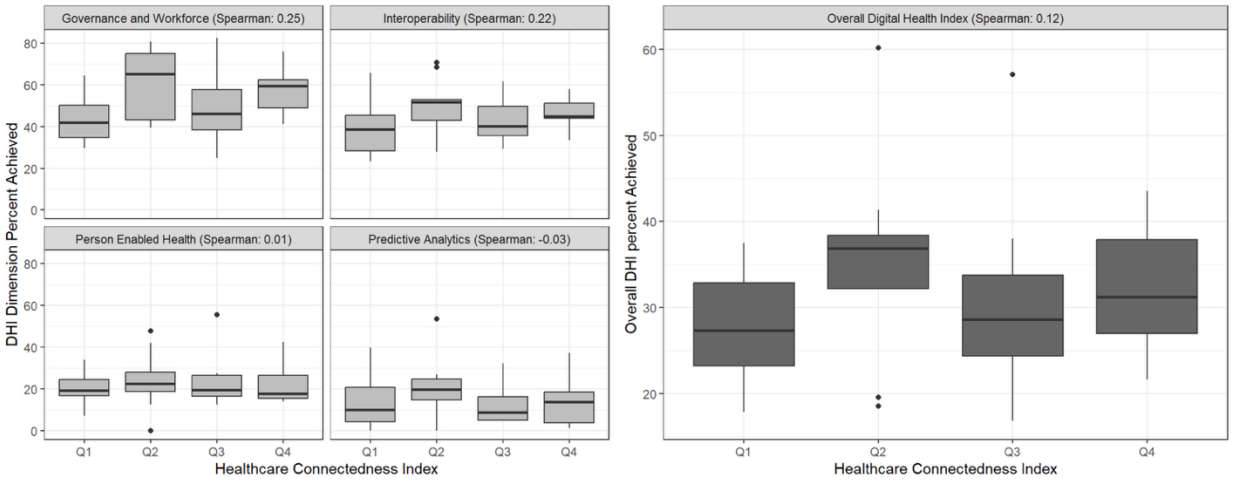
Figure 20: DHI Comparison to Population Density and Designation: Metropolitan, Micropolitan, and Rural



A similar analysis was completed for DHI scores among Local Health Departments and the Healthcare Connectedness index. For this analysis, teams were grouped into quartiles

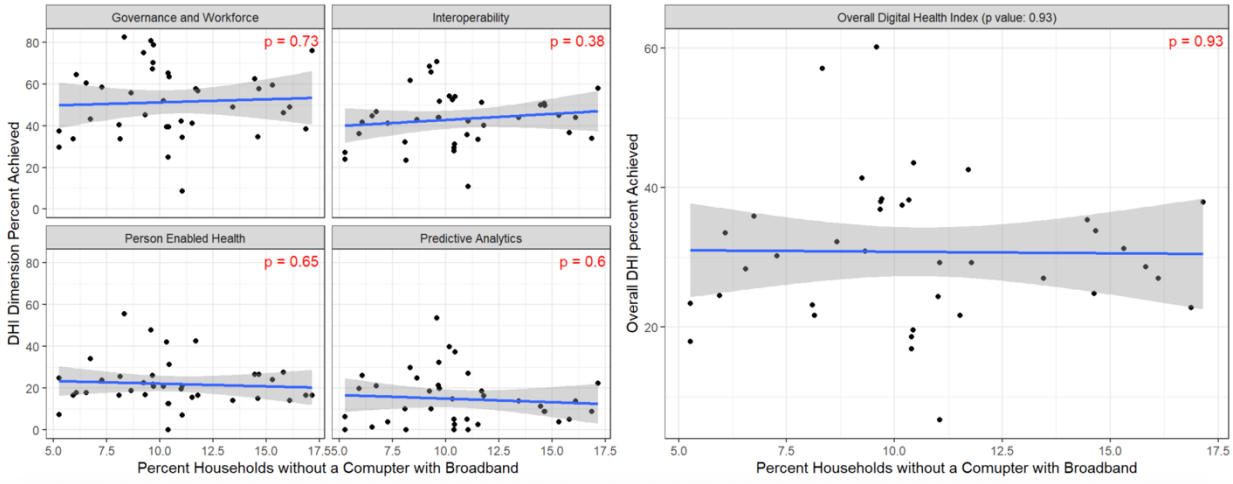
representing the group of teams scoring the lowest quartile of DHI scores (Q1), to the highest quartile of DHI scores (Q4). The horizontal bar in each quartile signifies the DHI score achieved by each quartile group of teams. The results revealed no significant difference in DHI scores for counties with high or low Healthcare Connectedness (Figure 21).

Figure 21: Healthcare Connectedness Index and DHI Score



Further analysis was conducted to look at percent of households with access to a computer with broadband, a dimension of Healthcare Connectedness (Figure 22). The data illustrates that there was no significant relationship between percent of households with access to a computer with broadband and digital capacity (DHI) scores.

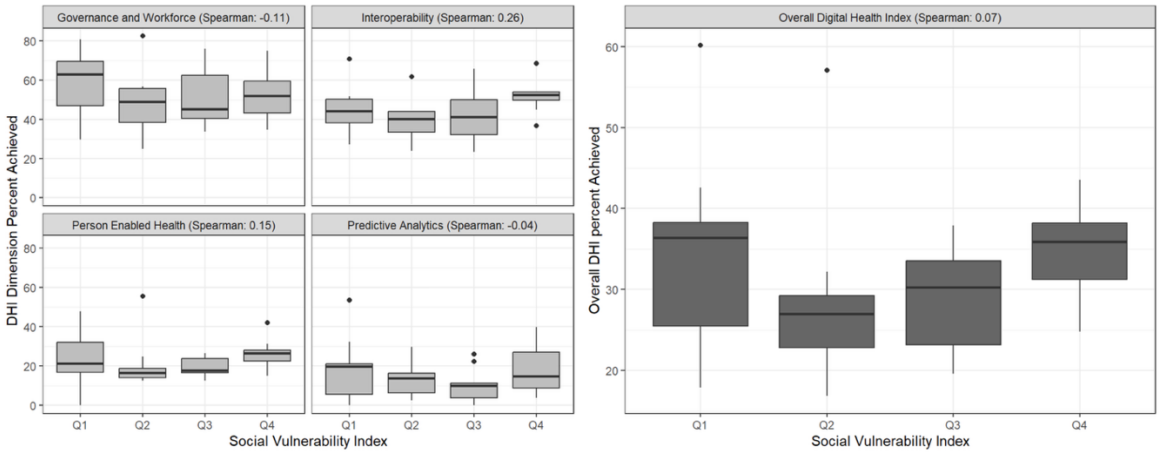
Figure 22: Percent of Households with Access to a Computer with Broadband and DHI Score



These results suggest that Local Health Departments serving highly connected populations have not advanced digital capacity more or less than Local Health Departments serving counties with very low Healthcare Connectedness and access to broadband internet. Findings suggest that advancing digital health capacity for teams serving highly connected communities may be more aligned to advances in Person-Enabled Health, whereas Local Health Departments serving counties with low levels of Healthcare Connectedness may be better aligned to priorities focused on interoperability and overcoming the challenges of access to broadband internet.

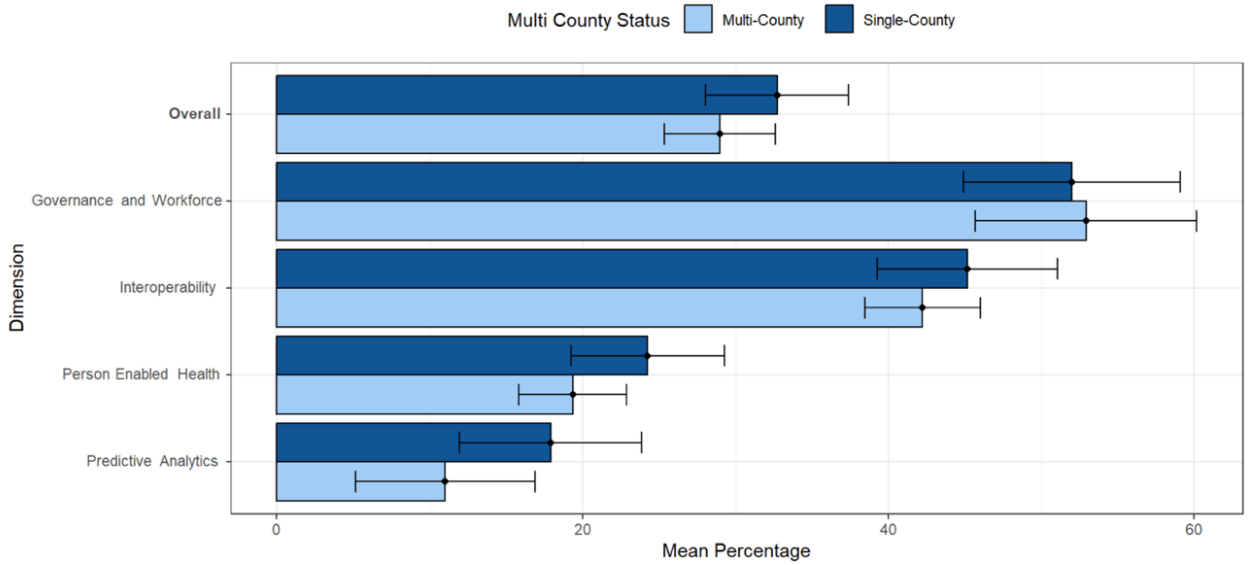
Finally, the DHI results were examined relative to Social Vulnerability in counties across Michigan. High levels of social vulnerability may be associated with risks to population health, which could inform decisions to advance unique digitally enabled public health programs to mitigate these risks. Alternatively, high social vulnerability may also require unique approaches to advancing digitally enabled public health services. Figure 23 profiles the results, which reveal that there is no statistically significant difference between the DHI scores of Local Health Departments serving counties with high versus low social vulnerabilities. There appears to be some difference whereby Local Health Departments with DHI scores in the lowest percentile, tend to be serving counties with low social vulnerability, whereas Local Health Departments serving counties with high social vulnerabilities have a similar DHI score to teams serving counties with low social disparities.

Figure 23: Social Vulnerability Index and DHI Score Comparison



In addition to grouping the teams by population density, analysis of differences in digital capacity between teams that served multiple counties or singular counties was examined to better understand if the number of counties served by a local health district affects the ability to use digital tools and technologies to provide services. We found that there was no statistical difference between teams in single-counties vs multi-counties, illustrated in Figure 24.

Figure 24: DHI Comparison to Single County and Multi-County



Summary of DHI Results

The results of the DHI assessment indicate that Michigan public health teams are progressing in their digital transformation, with primary advances concentrated in the foundational dimensions of Governance and Workforce and Interoperability. The overall mean achievement across State public health teams is 35 out of 100; however, there is significant variability ranging from 14 percent to 60 percent. Results for each of the four dimensions and their respective sub-dimensions provide more detailed and granular insights into where teams have made progress, revealing distinct strengths and areas of opportunity for advancement.

Governance and Workforce, and Interoperability were the two strongest dimensions, with relatively consistent achievement across teams and no significant differences between teams serving large metropolitan populations and those serving more rural counties. Person-Enabled Health and Predictive Analytics remain at a very early stage of development, likely reflecting the need for further progress in Governance and Interoperability to establish the foundational platform required to effectively advance both Person-Enabled Health Services and Predictive Analytics. As these more advanced dimensions mature, teams will have greater capacity to support digitally enabled public health services that are tailored to the unique needs of populations and communities. In addition, public health teams will have the foundational elements necessary to safely and responsibly advance analytics, including predictive analytics and AI, to support population health risk prediction, proactive prevention-focused services, and data-driven decision making across public health initiatives.

Several patterns across teams provide insight into the variability in DHI results among participating teams. There was a wide range in Governance and Workforce sub-dimension scores, ranging from 24 percent to 82 percent. Based on the qualitative analysis, teams that scored higher within this dimension reported having developed internal digital governance practices, including defined roles, responsibilities, and procedures. Other teams reported having no formal governance model or structure, which may have contributed to lower scores in this dimension. High-scoring teams also appeared to have greater clarity regarding accountability for digital decisions, how roles and responsibilities are managed, and how procedures are followed in practice. In contrast, teams without strong digital governance may rely on ad-hoc decision-making, which can function in routine contexts but may falter under pressure during public health emergencies or periods of increased system strain.

Public health depends on the ability to make rapid, coordinated, and evidence-informed decisions during crises. If governance and workforce practices are not well developed, or not consistent across teams, then there may be fragmentation or lack of coordination in the State's capacity to respond to public health emergencies in a timely manner. For example, during an outbreak, a local team with strong digital governance can quickly determine who is responsible for data collection, reporting, and communication, and can align digital tools to support case tracking, outcomes analysis, and community outreach, and understand their role and responsibilities with seamless implementation without the need for extensive internal consultations. Digitally enabled teams are more likely to be proactive and responsive to needs of communities and populations. Governance and Workforce showed narrower distributions between sub-dimensions, with greater consistency in scores among the teams, suggesting that although the scores are highly varied between teams, they are all progressing at a similar pace of building the foundation needed for a strong digital culture.

Interoperability was the second highest scoring dimension. Although teams scored similarly across the four sub-dimensions of Interoperability (foundational, structural, semantic, and operational), the overall scores varied widely (from as low as 23 percent to as high as 71 percent). While all teams face challenges in sub-dimensions of Interoperability, some teams are progressing towards stronger capabilities more quickly than others. The consistent finding that structural and foundational interoperability lags slightly behind suggests that automated exchange of data and information across systems remains underdeveloped. Interoperability is not just a technical issue; it is the backbone of timely, data-driven decision-making. When data does not flow automatically across teams and data systems, teams face delays in accessing the information needed to inform decisions. For the State of Michigan, there is an opportunity to advance interoperability to automate health information exchange across teams and counties to inform and coordinate public health responses. Currently, staff are required to manually upload data and information into multiple platforms and duplicate data entry, which diverts resources away from higher-value public health services and programs. Advancing interoperability will automate access to data, streamline flow of data to inform decisions, offer greater data accuracy, and offer greater responsiveness to emerging health threats, while optimizing staff workloads. In a well-integrated public health system, interoperability allows near real-time exchange of laboratory results, immunization records, emergency department

data, and school health reports. With data sources automatically flowing data into a shared platform, teams can quickly spot patterns of rising respiratory illness, identify under-immunized populations, and readily implement interventions such as vaccination clinics or community alerts. A digitally advanced public health system is highly effective and proactive in mitigating risks, such as an outbreak, or supporting vulnerable populations.

Predictive Analytics was the lowest-scoring DHI dimension, with an overall mean of only 15 percent. While a few metropolitan teams (Teams 30, 44, and 15) showed early progress (scoring between 39.9 percent and 53.7 percent) the majority of teams scored below 20 percent, and three teams registered no progress at 0 percent. There is some early progress in Operational Analytics, while Predictive and Personalized Analytics have not progressed. The wide variation and low baseline scores across teams suggest that analytics is an opportunity for Statewide advancement. However, to advance analytics, interoperability must ensure data flows seamlessly to analytics technologies to enable accurate analytics outcomes. Predictive analytics allows health departments to anticipate population health needs to inform program planning. Without automated flow of data feeding analytic models, teams have limited capacity to make data-driven decisions to inform proactive and preventive public health services. Advancing in analytics requires targeted investment in interoperable data systems, advanced analytics technologies such as artificial intelligence, and strengthening workforce expertise in use of advanced analytics. A strategy that advances interoperability to create a robust platform for predictive analytics could dramatically expand jurisdictional teams' capacity to anticipate health threats and implement equitable, accessible, and cost-effective public health outcomes. For example, the State could link Medicaid claims, WIC nutrition data, and social determinants indicators such as food insecurity and income levels to inform public health services tailored to the needs of each county and region. Such integrated data would allow the State to forecast which populations are at greatest risk for diabetes complications due to gaps in nutrition, limited access to preventive care, or poor medication adherence. Data-driven insights inform targeted nutrition programs, diabetes education, and community health worker support deployed before costly emergency visits or hospitalizations are needed.

Person-Enabled Health was the second lowest-scoring dimension across nearly all teams in Michigan, with only a few exceptions. Teams that performed higher showed stronger progress in personalizing services and designing public health services that adapt to individual and community needs, culture, and unique circumstances. However, most teams scored under 30 percent, indicating very early progress in person-enabled strategies. Sub-dimension scores describe some progress in Personalization, with a mean of 33.6 percent, compared to either Predictive population health (18.6 percent) or Proactive public health services at 14.5 percent. States that invest in Person-Enabled Health leverage digital technologies to better align services with population needs to strengthen prevention and close gaps in access to public health services. In a person-enabled public health system, individuals can securely access their own health information, such as immunization records, through a single, interoperable platform. For example, parents could log into a mobile app and see that their child is due for a measles vaccine. The platform could provide educational materials in the parent's preferred language, explain why measles vaccination is urgent and share data on current community risk, and offer

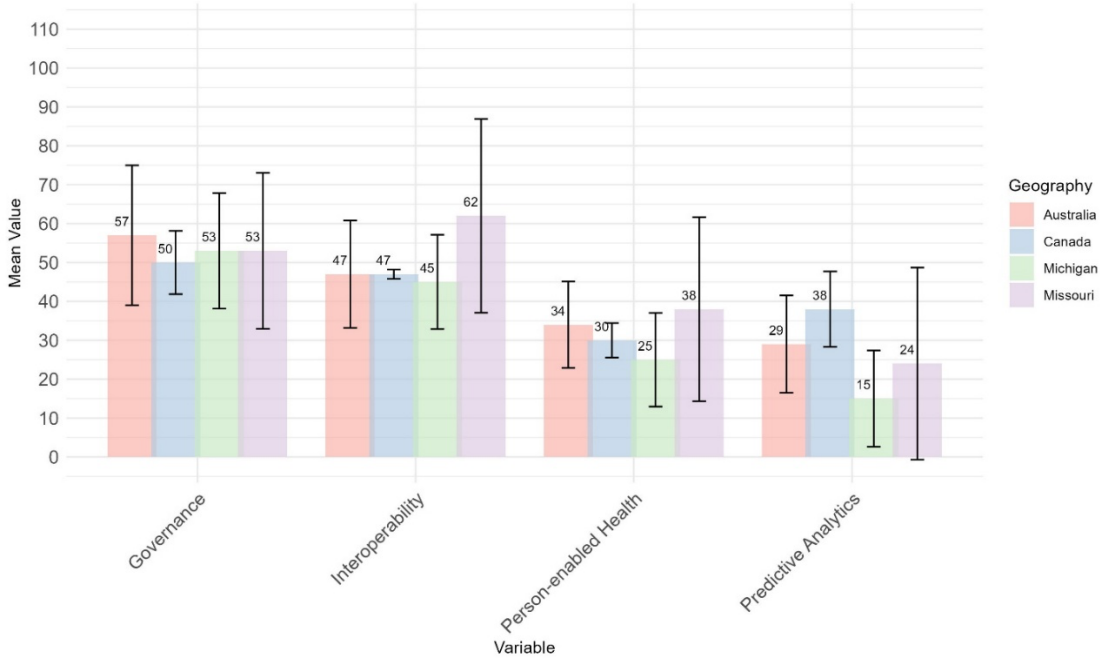
connectivity to a public health nurse to report vaccination outcomes or to ask questions. The system could also link to local clinics, showing appointment availability and transportation options. This kind of digital capacity in public health empowers families to make informed decisions, strengthens trust by connecting them directly with providers, and ensures timely uptake of critical vaccines.

International Comparison

Benchmarking Michigan's digital health capacity with other jurisdictions provides insights into how progress across jurisdictions is advancing within similar jurisdictional contexts of publicly funded health services. Within the U.S., a similar study of the State of Missouri offers a State-level comparison of a public health system that is similarly shaped by decentralized governance and supported by public funding. Comparison with British Columbia, Canada and the State of Queensland in Australia introduces additional regional perspectives situated within publicly funded healthcare systems that integrate both health services (e.g., acute care, primary care) and public health services. Including these jurisdictions allows Michigan's results to be contextualized not only against another U.S. State, but also against global health systems operating within somewhat similar governance structures and funding models. This analysis benchmarks digital maturity across jurisdictions, which may be influenced by structural or policy differences.

The analysis used statistical methods to determine whether differences between locations were meaningful or could be attributed to normal variation, illustrated in Figure 25.

Figure 25: International Comparison of Mean DHI Scores Across Jurisdictions



In Governance**,** Michigan's performance does not significantly differ from that of Australia, Canada, or Missouri, which suggests that Michigan is broadly aligned with other jurisdictions in governance areas such as leadership, privacy and security, policy direction, and workforce strategies. Interoperability scores in Michigan are significantly lower than Missouri ($p < 0.001$), suggesting there are notable gaps in digital connectivity and data exchange across the State. However, Michigan results are not significantly different from either Australia or Canada, indicating that advanced in interoperability across Michigan are consistent with these other jurisdictions. For the Person-Enabled Health dimension**,** Michigan again performs significantly lower than Missouri ($p < 0.01$), highlighting that teams across the State are focused primarily on the foundational dimensions of Governance and Interoperability, both of which are required to be well established in order to advance Person-Enabled Health strategies to enable individuals to access, use, or benefit from digital health services. The differences with Australia and Canada do not reach statistical significance, which suggests that while Michigan has not progressed to the level Missouri has, Michigan's performance is very comparable to other international comparators. Predictive Analytics is a dimension where Michigan shows the largest gap when compared to Australia ($p < 0.01$), which illustrates relatively limited progress towards advancing analytics tools to strengthen data-driven decision-making, forecasting, and population health planning. Differences with Missouri is trending towards lower levels of achievement, but differences are not statistically significant ($p = 0.056$), and comparators in Canada, are also not statistically significant.

Taken together, these results of this comparative analysis indicate that Michigan's progress towards digital health maturity is comparable and aligned with international peers in governance structures, which is foundational to advancing digital transformation. There are significant opportunities to advance Michigan's progress by strengthening interoperability across the State, which then makes it possible to expand person-enabled care delivery, supported by data-driven decision-making for both public health teams and the communities they serve, enabled by advanced predictive analytics capacity. Targeted investments and strategies to close these gaps, will provide the critical foundation for modernizing Michigan's public health to progress towards more proactive, connected, and patient-centered care.

There are several limitations in this global benchmarking analysis. Although British Columbia and Queensland provide relevant sub-national comparators, both operate within national health systems that differ fundamentally from the U.S. in terms of funding models and governance structures. Differences in the structure of public health in these jurisdictions vary, which may limit direct comparability. In addition, the analysis draws on a small number of DHI assessments: only two from British Columbia and a limited number from Queensland. These methodological constraints mean the findings should be considered as providing directional insights, where limitations preclude robust benchmark analyses. Limitations in comparability with the Missouri results are associated with the structure of public health teams in this State, which are organized by public health services rather than geographic counties. Missouri teams included teams such as laboratory, narcotic and controlled substance regulatory, long-term care, and others, which cannot be directly compared with county-level public health services in Michigan. The Missouri study did not include Tribal organizations and was limited to

participation by state and public health bureaus. These results should be interpreted within the limitations of unique structures of how public health teams are organized at the State level.

Qualitative Results

Interviews with Public Health teams across the State of Michigan provided very rich and robust qualitative data that offered insights into the experiences, expertise, and insights of each of the participating teams. Rich insights into the lived experiences, challenges, and opportunities that shape the digital health landscape for these organizations and for the State of Michigan emerged from the interview data. This qualitative analysis offers the unique context both local and Tribal Health Departments are working in with digital technologies, digital infrastructure, and public health programs in Michigan.

A thematic analysis of public health team interviews that engaged 38 LPHD and nine Tribal Health Departments, was completed using transcripts from Microsoft Teams interviews, with the consent of each team. Transcripts from interviews with Tribal health, LPHDs, and the State were coded individually to identify themes that were both common to all teams and unique themes for individual teams. Transcripts were reviewed and examined for patterns and themes within and across teams, which were then coded manually in each Microsoft Word file. Categories were first identified through reading the transcripts multiple times and eventually themes and subthemes emerged. Six prominent themes emerged from the analysis of the LPHD teams that capture the insights and shared experiences across these teams with digital technologies, work processes, and digital health capacity. Similarly, themes emerged from the analysis of the Tribal Health Departments, which were presented separately. Three themes emerged from the State department that were presented. Collectively, these themes offer a unique and critical context for understanding the digital capacity and patterns of utilization of digital technologies across the State of Michigan. These thematic findings may also serve to inform decision-makers regarding current gaps in digital capacity and how departments are working within the context of both the gaps and the available digital infrastructure to achieve the mandate of Public Health across the State of Michigan.

Analysis of team dialogue was completed for all public health team interviews (n=47), and then separate analysis was completed for Tribal Health Departments to examine unique perspectives and experiences of these teams within the context of tribal culture and sovereign governance. Each theme includes a detailed description, key insights drawn from the data, illustrative quotes from participants, and example use cases that demonstrate how these themes are manifested in practice. Together, these findings provide essential context for understanding the current State of digital health capacity in Michigan and inform the recommendations that follow.

Theme 1: Digital Interoperability Limitations

Participants described their digital environment as fragmented, often referring to it as: *"It's a patchwork. It doesn't talk to each other."* (LPHD Team 9). Local public health teams described operating in a fragmented digital environment, often dependent on multiple State and local platforms (such as MI WIC, MCIR, or MDSS) that do not interface or communicate with one another. This lack of data integration required extensive manual processes, including duplicate data entry, paper-based workflows, and compiling reports by manually extracting data from several systems and entering data into Excel, referring to themselves as functioning like "report machines" stitching together data from three or more systems into Excel to create usable reports.

> *"We just have a really large gradient of how integrated technology is. Some programs and divisions are doing a lot of it [digital tools and technologies] and some are not doing as much."* (LPHD team 6)

> "*We're pulling reports from three different systems and trying to stitch them together*." (LPHD team 5)

> *"It's still very paper-based in some of our regions."* (LPHD team 4)

Teams reported that limited interoperability with local platforms required duplicate data entry, manual reconciliation, and repeated "multiple logins" across multiple systems. State-mandated digital systems were described as challenging to use and not fully aligned with the operational needs of local public health teams. Teams described the need to enter data into multiple systems and double check data for accuracy across different platforms. These processes were seen to increase workload and reduce efficiency, redirecting staff time away from program planning and service delivery.

> *"It would be comparing programs against each other and doing the math manually. Nothing would be automatic."* (LPHD team 1)

> *"We have in our electronic health record system; we keep track of how many doses of everything we have. Then we also have to tell MCIR what we have, and we have to reconcile once in a while… somebody just has to make sure that they both reconcile to be the same."* (LPHD team 12)

> *"They don't share in-between systems. You would have to actually log into each of the systems [individually]."* (LPHD team 16)

Several participants also noted that State systems were developed without sufficient attention to how front-line staff interact with them, which affected usability and limited their ability to support daily operations.

> *"We're at the mercy of the systems the State tells us to use."* (LPHD team 3)

> *"When it comes to technology, we create a lot of software and technical systems. They are very biased for a variety of reasons, but we don't think of the human behaviour and the person using the system. Our staff members. How are they using the system? What makes it the most useful for them? How is it easier for them?"* (LPHD team 12)

Greater integration and interoperable flow of data to support access and automation in mobilizing State data could accelerate the progress of teams to retrieve data to inform the design of new initiatives, secure grant funding, and mobilize data to instruct planning and operational program delivery strategies.

> *"I have the role of the technology side of HIPAA, and I get asked often and pressured heavily to be flexible on some of the rules to check boxes for different measures that we are accountable for. Maybe if we could share more of the data we could [meet the requirements] and get more grant funding."* (LPHD team 12)

Case 1: Burden of fragmented data systems on public health teams (LPHD team 13)

Most teams described the significant time and burden on resources required to access, and compile data from fragmented data systems to track progress of public health programs and to inform decisions. Staff must manually compile data and information from multiple sources just to build a basic picture of program activity. Manually accessing and downloading data must be completed for each individual program, which requires substantial time for teams to successfully identify public health needs in communities in each county. As one participant noted:

> *"We have to spend significant resources collecting and pulling data constantly to help inform our decision-making, and it's never easy. Even for one program, we have to pull from multiple sources sometimes to get a clear picture of really what's happening."* (LPHD team 13)

Staff acknowledged that while they can generate reports retrospectively by manually accessing data from multiple sources, there is no infrastructure to support real-time analytics, predictive tools, or AI-enabled forecasting.

Case 2: State lab results not interoperable with EHR, which impacts team productivity and may contribute to patient harm (LPHD team 12)

One LPHD described the difficulty and frustration that they had with lack of integration of State lab data. While most lab results from hospital partners flow electronically into the department's EHR via MiHIN (sometimes accompanied by duplicate faxes), the Michigan State Lab does not interface with local public health teams. Lab results from the State are only sent out by fax, requiring manual review and data entry. Staff described this as *"frustrating,"* noting the technology exists but is not implemented at the State level. As one participant explained:

> *"The State lab doesn't want to connect… I don't understand that... if the State lab would just start connecting with MyMichigan… that seems to be the thing that would make sense." (LPHD Team 12)*

This gap in connectivity with State lab data was described as delaying access to critical communicable disease data, which increases the risk of the spread of communicable disease and prevents full integration of lab data into client records for timely follow-up and coordinated public health reporting. Staff noted it's *"just one of those things that's frustrating because we have the technology to do it... the State needs to get on board."*

Case 3: Burden of manual State data systems limits LPHD planning (LPHD team 9)

Staff in a small county LPHD highlighted the extensive manual work required to meet State reporting mandates, which leaves little time for proactive program planning. They described how lab results from the State must be manually entered into their EMR:

> "*It's thousands of dollars to set up and configure [an interface], and then hundreds of dollars a month. We have to pay a nurse to physically go through and type them all in… we just can't afford it.*" (LPHD team 9)

Participants noted that this duplication of effort wastes valuable staff capacity, as nurses spend hours entering information already available at the State level, instead of focusing on community program delivery. Throughout the interview, the team highlighted that they had the technology to do many things, such as allowing patients to access and use a patient portal, but they could not afford the additional fees to use the technology.

Key Insights

- **Multiple disconnected systems require manual and duplicate data entry**: Participants reported needing to enter identical information across multiple platforms, with teams describing themselves as "pulling reports from three different systems and trying to stitch them together."
- **Statewide systems operate independently without data integration**: Teams indicated that systems like WIC, MCIR, and surveillance platforms function separately from other digital infrastructure, requiring manual access and use of this data.
- **Compliance and accountability takes priority over data-driven decision-making**: Teams noted that data systems are used more often for accountability purposes than for informing current program planning and decision-making.

- **Multiple logins were required across different platforms**: Teams reported that staff must repeatedly access separate systems throughout the day, with participants entering multiple and separate logins to access each data system.
- **State systems design may not align with front-line operational needs**: Mandated State systems are developed without sufficient consideration of how front-line staff interact with them, affecting usability and daily operations.
- **Data reconciliation processes were required between systems**: Staff must manually verify that information matches across platforms, with participants noting the need to ”make sure that they both reconcile to be the same.”

Theme 2: Strong Data Culture with Varied Governance

Public health teams consistently described themselves as valuing data to inform decisions, with many staff emphasizing the importance of data for accountability, planning, and reporting purposes. However, there was wide variation in team knowledge or awareness of governance policies. Some teams reported that policies were already in place at the county or State level (e.g., privacy and security policies), yet other team members were less clear and not aware that these policies existed. Similarly, governance roles were described as “fuzzy,” whereby teams were uncertain about whether the information technology team, public health leadership, or State agencies were accountable for data governance responsibilities. Many of the teams created their own governance structures or acted within their own knowledge of what they felt should be the correct approach. There appeared to be no formal data governance policies universal across health departments.

> *“Governance? It’s fuzzy. IT owns some things, public health owns others.*” (LPHD team 7)

> *”The governance piece of it. We have a deputy who says the word ’governance’ but my understanding of data governance is that roles are defined. Who is the owner? Who is the steward? For my team, it’s very informal. It’s not really written into a charter or a document or anything like that.”* (LPHD team 12)

Teams described many data, or digital, innovations had originated from individuals who were passionate about improving digital processes and workflows and often created new processes or digital tools on their own time. In one example, team members created dashboards to support teams accessing data to inform decisions. It was highlighted that these tools were limited to one program, as there was no digital infrastructure to integrate these solutions across programs or team workflows. Teams also reported the need for “buy in” at the State level, described in the following:

> "*We need help to nudge our administrations to shift the thinking of 'what is possible.' It is happening from the bottom up… but we need to get that buy-in from the top."* (LPHD team 12)

Access to data by members of the public or communities was described by teams as absent or confined to annual reports rather than digital access to data as a matter of routine.

> "*We don't specifically share information with the public, no."* (LPHD team 15)

Key Insights

While there is widespread recognition of the importance of data to inform decisions, there is no consistent governance framework defining ownership of data, use of technology, or decision-making authority.

- **Governance roles and responsibilities described as "fuzzy":** Participants reported uncertainty about whether IT departments, public health leadership, or State agencies hold accountability for data governance decisions.
- **Policies and processes are not standardized among teams**: Teams are often developing their own policies and processes, leaving teams to have individualized approaches across Michigan.
- **Innovation in use of digital tools occurs ad hoc**: Many digital tools and data processes were designed by passionate individuals working on their own time, rather than through formal organizational processes.
- **Public data sharing limited to traditional reporting methods**: Community access to reporting or information is limited to annual reports rather than transparent reporting of public health programs or outcomes.
- **Data governance infrastructure lacks formal documentation**: Participants noted that roles for data ownership and stewardship are not clearly defined in written charters or organizational documents.

Theme 3: Workforce Capacity Limitations: "*We Are Handcuffed*"

Workforce capacity limitations were identified by several teams including limitations in access to, and management of, data. Participants described considerable variation in workforce capacity to advance digital processes and workflows. Some departments reported having only one or two staff responsible for IT, analytics, and reporting functions, creating limitations in advancing initiatives, especially if those individuals were unavailable. Others, particularly larger departments, described having dedicated epidemiologists or data analysts within their teams, which enabled more advanced use of data and digital tools. These differences reinforced

inequities in capacity and expertise across departments, with some able to pursue more sophisticated analytics and others limited to manual data management and reporting. Teams also noted that, in some cases, budget cuts had required them to reduce staff or scale back programs, further constraining their ability to advance or sustain digital capacity.

> *"Look at some of the characteristics of the health departments of who actually has some of this stuff in place and who doesn't… I mean, we don't have an epidemiologist."* (LPHD team 15)

> *"We struggle locally with our IT support. We don't have full ownership and a limited staff that may not be educated or may not be able to manage projects to the level we desire. We want to go AI routes and manage our processes, and they can't even conceive of how to do that. We are handcuffed."* (LPHD team 19)

> *"We've got [Name], our IT guy, but that's it. We don't have an EPI [epidemiologist]. We don't have a way to analyze data. We don't have anyone like that."* (LPHD team 9)

Training and professional development were also described as a limitation. Teams reported that most training focused on role-specific digital tools, such as EHR functions or statistical packages. Broader training to support digital literacy, cross-functional digital skills, and use of emerging technologies was less common. Participants generally viewed training positively and the need for further opportunities for digital education and workforce upskilling as an important future priority.

Key Insights

- **Limited staff capacity**: Participants reported having "only one or two staff responsible for IT, analytics, and reporting functions," which limited their capacity to advance digital workflows or use of data.
- **Variation in capacity among teams:** Larger teams have access to expertise and specialized roles such as epidemiologists, while smaller teams noted "we don't have an epidemiologist" or dedicated data analysts.
- **Budget constraints affect digital capacity building**: Participants reported that funding limitations are barriers to digital capacity, such as using the Patient Portal feature of the EMR but being unable to pay the fee.
- **Training limited to role-specific education**: Most professional development initiatives focus on use of specific digital tools rather than broader digital health literacy, data management, governance, or cross-functional skills.
- **IT capacity for local teams is limited:** Existing IT staff expertise is limited with some teams reporting they "can't even conceive of how to do this" when referring to advancing digital initiatives.

Theme 4: Data Silos and Limited Access to Real-Time Data

Participants described limited analytics capacity noting that dashboards and data reporting tools were used primarily for retrospective reporting, rather than for informing decisions in real time. Several participants shared perspectives that data limitations restricted their ability to analyze public health needs of unique populations, whether by geography, demographics, or social determinants of health. State datasets were described as outdated, in some cases by one to two years, or contained information that was no longer clinically relevant.

Dashboards and reporting tools were typically retrospective, used more for compliance than for proactive planning, and offered little capacity to track outcomes over time. Teams frequently described reliance on Excel to manually consolidate data from multiple sources into a single file.

> *"Nothing is automatic… someone has to go in and pull it manually."* (LPHD team 4).

> *"I can't tell you if we're really making a difference... the data is so siloed."* (LPHD team 2)

Participants also noted the absence of detailed demographic information in State-level data, which restricted their ability to identify health disparities, outcomes, or tailor programs to the needs of specific populations.

> *"We have to spend significant resources collecting and pulling data constantly to help inform our decision-making, and it's never easy. Even for one program, we have to pull from multiple sources sometimes to get a clear picture of really what's happening."* (LPHD team 13)

> "*We don't have real-time dashboards, just reports someone runs when they have time.*" (LPHD team 1)

> "*There's so much potential out there in the future for public health. But we have an old facility; we have the old system."* (LPHD team 14)

> "*I wish we could be more proactive, but the data doesn't support that yet.*" (LPHD team 16)

Case 1: Limitations in population-level social determinants of health data (LPHD team 14)

Local health department teams emphasized that while social determinants of health (SDOH) are increasingly recognized as critical to community well-being, the availability of SDOH data remains fragmented and very difficult to access to achieve meaningful analysis of SDOH for unique populations. One participant explained:

> *"When you talk about social determinants of health, for example, all these people doing screenings… it [the data] only lives within that environment, with those people. There's not really a way that we can look at that kind of data at population level, outside of what's reported in vital statistics."* (LPHD team 14)

Teams described being unable to use SDOH data to identify emerging inequities, design targeted public health interventions to meet the public health needs of specific populations, or to proactively anticipate community needs. Without the ability to analyze SDOH data at the population level (e.g., across geography, demographics, or socioeconomic groups), advanced analytics such as predictive analytics tools remain out of reach, leaving public health teams to rely on static, retrospective data points that limit proactive public health planning or prevention initiatives.

Key Insights

- **Dashboards are used primarily for retrospective reporting**: Existing reporting systems focus on meeting compliance requirements rather than informing (e.g., actionable insights) for current program planning.
- **Data access and management is manual and labor intensive:** Teams spend significant time collecting and pulling data manually from multiple sources for program reporting.
- **State datasets are retrospective**: State level data can be "one to two years old" when made available to local public health teams.
- **Social determinants data is limited**: While SDOH screening occurs, teams describe that there is no way to examine unique population-level data.
- **Technology capabilities exist, but integration is limited**: While advanced digital tools are being tested and examined by some teams, they remain isolated from broader workflows and are not connected to State datasets.
- **Data silos limit program performance visibility**: Barriers to access to data limit team capacity to monitor and examine outcomes and effectiveness of public health programs and initiatives.

Theme 5: Affordability and the Rural–Urban Divide and Digital Inequities

Participants consistently described inequities in digital infrastructure, affordability of digital technologies, and expertise across public health teams. Many framed this as a divide between "have" and "have-not" jurisdictions, with rural teams being disadvantaged in their ability to advance digital initiatives, or their capacity to afford the use of digital tools and technologies. Geographic isolation, smaller populations and communities, and affordability challenges were reported as key barriers to deploying digital tools or using data to inform decision-making. In some cases, access to digital tools or data was limited due to broadband services being unavailable in remote areas.

> *"Digital equity is a big barrier to implementation."* (LPHD team 5)

> *"Many of our counties don't have internet… we take our service to them."* (LPHD team 6)

Some teams described efforts to bridge these gaps, such as providing mobile clinics and Wi-Fi-enabled vans, or purchasing tablets for community members. However, these solutions were resource-intensive, temporary, and difficult to scale across communities.

> *"I think it would be kind of nice for the State to look at similarly situated health departments and make sure that they all have what they need."* (LPHD team 15)

For other teams, broadband access existed but was unaffordable for either residents or local public health teams. Affordability was described as a barrier at multiple levels. Residents in rural and remote areas often could not afford broadband or digital devices, which limited their ability to engage with patient portals or video-based telehealth.

> *"It's thousands of dollars to set up and configure and then hundreds of dollars a month… we just can't afford it."* (LPHD team 9)

> *"We're not a large provider. It doesn't seem feasible to spend as much as a larger county would spend… it's never feasible to automate because we can't afford it."* (LPHD team 9)

Public health teams also struggled with the costs of digital infrastructure, such as interfaces, laboratory connectivity, or automation tools. Often, the digital tools allowed for such integrations, such as the EHRs, but teams could not afford the additional cost of upgrading their services to allow for the connection of a patient portal or laboratory services. For some smaller counties, these costs were prohibitive and left them dependent on manual processes.

> *"I mean, there's those that can do more of this [and] those that don't have the resources. We can't do as much of this stuff."* (LPHD team 15)

> *"We have the ability. We just need time and money."* (LPHD team 18)

> *"I love local public health. There's tons of things and I would love to do way more… but also, we just don't have the funding to do it."* (LPHD team 15)

Case 1: "Home grown" digital tools to advance digital capabilities (LPHD team 12)

One public health team reported the use of sophisticated digital tools including business intelligence tools, data loss prevention measures, and successful vaccine inventory management tools that are integrated with State systems. The team described:

"[Name] uses [Power] BI... we also have SQL Server reporting services and within our own EHR system we have multiple ways of doing reports."

They discussed automated procurement processes and integration of product data into patient records (e.g., EHR):

"When we receive the vaccine, it immediately gets put into the EHR that we've received it so that we know it's in the refrigerator."

"We automatically send the information [to the EHR] every time we administer a vaccine."

This team also described plans to implement digital strategy to automate identification of population health needs to advance *"care quality... where we can just query people's broad health information and import it."* This team described plans to expand medication tracking beyond vaccines. However, even this well-resourced department faces limitations in external data exchanges for financial reporting, noting:

"We're really good at creating systems so that we can get reports quickly but then it usually takes somebody to look at them before we upload them to a grant system."

Case 2: Affordability as a barrier to automation in smaller jurisdictions (LPHD team 9)

A smaller, more rural health department described themselves as being less well-resourced than other public health departments. Staff described how automation remains financially unfeasible:

"We're not a large provider. It doesn't seem feasible to spend as much as a larger county would spend because we have to connect to the same lab or the same data center as the as a larger county would. It's never feasible to automate because we can't afford it."

Relatively basic digital tools, such as patient portals or automated integration of lab data carry prohibitive ongoing costs:

"It's thousands of dollars to set up and configure and then hundreds of dollars a month if we want our labs to come in from the State lab and come right into our EMR."

"We don't have enough lab submissions to justify that... we're small. We're so small."

Smaller jurisdictions highlighted impressive ambitions in advancing digital initiatives, but described financial resources to do so as a barrier to achieving these ambitions:

> *"Since I've known [name], she wants kiosks in our lobbies, so clients check in and out and update their own demographics and phone numbers and stuff. But, that also comes with reoccurring costs."*

Affordability of digital tools and infrastructure was a limitation described by several public health teams. Affordability was associated with teams serving smaller communities that are more rural and remote, linked to both the costs of internet access and digital tools for the community members and the costs of creating digital tools to integrate with State data systems for public health teams given limitations of current funding resources.

Key Insights:

- **Geographic location is linked to affordability challenges**: Rural and remote counties face simultaneous challenges of limited broadband infrastructure for residents.
- **Affordability is a barrier to advancing digital initiatives:** Affordability challenges impact both teams' capacity to purchase digital tools and residents' ability to access internet services or digital technologies to engage with public health teams.
- **Financial barriers block achieving digital infrastructure and services**: Investments in digital infrastructure and operational costs for system connectivity was described as prohibitive, with participants noting "thousands of dollars to set up and configure, and then hundreds of dollars a month."
- **Inequities exist in digital capacity**: Variations in funding to support digital infrastructure may contribute to disparities among public health team capacity to advance digital aspirations.

Theme 6: Limited Person-Enabled Services

A consistent theme among most public health teams was the very limited opportunities for person-enabled digital services. Few patients or communities are able to engage with public health teams digitally, with no access to personal health information (e.g., vaccines, scheduling), and very few communities with access to digitally enabled public health services (e.g., smoking cessation, management of chronic illness or communicable diseases). When it came to providing personalization of services or being able to offer choice within services, teams were limited. Some teams were able to provide some virtual services, as described by a participant:

> *"When its allowable, when we need to, and when we have the capacity."* (LPHD team 3)

Others, did not provide virtual care or felt that they were limited:

> *"In the future but we're not utilizing telehealth options right now."* (LPHD team 2)

> *"Some of our WIC services will do virtual appointments but the State mandates that people come in occasionally."* (LPHD team 1)

Patient portals, kiosks, or mobile tools to support health education or health literacy were either unavailable or restricted to very specific programs, leaving most residents reliant on paper records, phone contact, or in-person visits to engage public health teams. Public health data or program information are not routinely shared with the public, who must rely primarily on information posted on websites such as annual reports. As teams described:

> *"Privacy and trust issues are huge, but we haven't had a way to talk about them."* (LPHD team 8)

> *"Community input doesn't shape our systems."* (LPHD team 5)

Some of the teams described outreach efforts, such as mobile clinics to support direct engagement with communities, but described these as not digitally connected and difficult to scale. Very few teams identified isolated examples of initiatives such as continuous glucose monitoring using digital tools, which they saw as promising examples of person-enabled tools, but emphasized that such cases were exceptions. Privacy, trust, and health literacy of the public were described as barriers to advancing person-enabled digital public health services. Many teams described aspirations to expand digital literacy and personalized access to digital tools for residents, but limitations of resourcing these initiatives was a barrier that limited progress:

> *"Clients cannot get in there [their patient portal] at all… we do not communicate [digitally] at all with clients."* (LPHD team 18)

> *"I mean they can access our website to see our hours and our availability… we don't have any scheduling platforms."* (LPHD team 15)

Teams across the State described that lack of digitally enabled services to engage communities and patients for knowledge sharing may be associated with limited transparency and trust.

Key Insights:

- **Digital patient engagement tools are largely unavailable**: Most residents cannot access health information or engage with public health services through digital technologies or platforms, with teams noting "it's still very paper-based in some of our regions."
- **Community engagement relies on traditional communication methods**: Public health communication occurs primarily on information posted on websites and annual reports.

- **Personalization of services limited**: There are limited opportunities and programs that allow for personalization of services. Some programs are offered by some LPHD virtually; others are doing all programs in-person.

Summary of Qualitative Results for LPHD Teams

The qualitative findings illustrate that Michigan's public health teams are navigating a digital environment that is currently siloed, resource-intensive, and uneven in its ability to support timely decision-making. Staff consistently described working across multiple unconnected systems, often entering the same data two or three times into State and local platforms. This has real consequences for public health practice. Nurses and program staff spend valuable time re-keying laboratory results or reconciling numbers between systems, which means less time is available for core activities such as immunization clinics, contact tracing, or direct community outreach. In the case of measles, delays in updating immunization records can prevent teams from quickly identifying unvaccinated children in affected schools, limiting the ability to contain outbreaks at the earliest stage.

Governance of data and digital tools is equally inconsistent. Teams reported that roles and responsibilities for data ownership are "fuzzy," with little clarity about whether IT, public health leadership, or State agencies are accountable. As a result, digital governance has been made by each team, creating a highly varied landscape. An example of this impact is that if no one is clearly responsible for reconciling data between MCIR and a local EHR, vaccine records can be incomplete or inconsistent. A child may appear "up to date" in one system and "overdue" in another. In a measles outbreak, that lack of clarity means public health nurses waste time verifying records across systems instead of contacting families. This delay increases the window where exposed, unvaccinated children might spread disease in schools.

Constraints were identified in both the quality of data and the ability for staff to utilize the data. Some health departments reported having only one or two staff responsible for IT, analytics, and reporting, while others had dedicated analysts or epidemiologists. These differences shape how teams can use data. When analytic staff are present, departments can examine program performance and begin using digital tools more strategically. Where staff are limited, reporting remains retrospective and manual. One team described not being able to confirm whether their programs were making a difference because their only option was to pull static reports that lacked demographic breakdowns. Without the ability to disaggregate data by factors such as race, geography, or socioeconomic status, it is difficult to identify disparities or tailor interventions. This has direct implications: a diabetes education program may run county-wide, but without population-specific data, it cannot identify whether complications are concentrated in certain neighborhoods or demographic groups.

The lack of real-time analytics further limits proactive public health. Teams reported that State datasets can be one to two years old by the time they are made available, and dashboards are

often designed for compliance rather than active planning. Staff explained that they often compile data manually to understand current conditions. This reliance on retrospective reporting constrains the ability to anticipate needs or respond early. For example, influenza vaccination coverage might only be visible after a season is complete, leaving teams unable to target outreach while uptake is still lagging.

Person-enabled services remain limited overall. Most teams reported that residents cannot digitally access their records, schedule services, or communicate directly with public health staff. Instead, communication is primarily one-directional, through websites or annual reports. When residents can securely access their own health records, it changes how they engage with public health. A parent who can see their child's vaccination record online does not have to rely on phone calls or paper slips from school; they can confirm immunization status immediately, understand what is overdue, and act before an outbreak spreads. A patient managing diabetes who can review their lab results in real time can spot rising blood sugar levels early, adjust their diet or medications in consultation with their care team, and prevent complications that otherwise might lead to an emergency room visit. Access to data and information also builds trust. When people can see their own data, they are better able to understand why public health is asking them to take specific steps such as coming to a flu clinic, enrolling in a diabetes program, or attending a behavioral health program. Without this access, residents are dependent on one-way communication and generic messaging. With it, they become active participants in prevention, which strengthens both individual outcomes and system-level resilience.

Qualitative Results for Tribal Health Departments

The Tribal Health Departments were analyzed separately to examine the themes and patterns among Tribal health teams serving public health services within the unique context of tribal communities. The following themes emerging from Tribal Health Department teams identify challenges and opportunities that are specific to sovereign tribal nations and capture insights into how federal-tribal relationships, cultural considerations, and jurisdictional complexities shape digital health capacity and experiences of Tribal Health Departments.

Theme 1: Limited Digital Interoperability and Connectivity

Tribal health teams reported operating within fragmented digital ecosystems where electronic health record (EHR) systems, health information exchanges, and hospital systems do not communicate or share data automatically. This lack of interoperability requires teams to rely on manual processes for data management including extracting information from multiple separate data systems and compiling it manually in Excel spreadsheets to create usable reports or to track patient care.

”I think having all the data in one system would be really great. We have a pharmacy record and then of course the tribal data is on CRM, so there’s multiple different systems and they don't talk to each other.” (Tribal team 1)

“Having one standard system where be able to access the information that we need or put in a request. There’s a lot of separate systems for where data is reported both at State and Federal levels between States and communities.” (Tribal team 2)

“You can’t share data with outside systems. We can’t bring data directly into the system. It does not communicate with anybody. It’s set up in a way that it made sense to the developers and only the developers.” (Tribal team 4)

“It’s all manual in Excel spreadsheets.” (Tribal team 4)

One of the key barriers is the lack of integration of data systems; however, the unique sovereign governance of tribal teams contributes to limitations in data integration between State and Tribal data systems. This is described by a participant:

“In a perfect world it would all just work together and we could have access to the hospital’s [data], and they would have access to ours. What the HIEs were trying to do. But, we can’t put our information in there and they can’t come into ours, so not really helpful.” (Tribal team 6)

”Our integration with the State systems really is limited to just our EHR and the information that comes through our her.” (Tribal team 1)

The manual access to data system contributed to Tribal teams functioning primarily as “report machines,” spending most of their working time on compiling administrative data rather than on direct patient care or strategic health initiatives.

“That is 90 percent of our day... for [Name] and I. To try and figure out where we can get this data from and then compiling it. [Name] is a report machine.”" (Tribal team 4)

Tribal teams viewed the transitions to EHRs as a significant opportunity and for being better digitally connected, benefiting both public health teams and patients:

“The move to (EHR name) is just going to be just a whole new world for the clinic here and it’s going to bring so much more offerings that not only the staff will benefit from but the patients. They will also be able to get their hands on information at the touch of their fingertips.” (Tribal team 7)

Case 1: Vendor limitations with data interoperability (Tribal team 4)

A Tribal health organization described the lack of connectivity of its EHR and other systems as "highly limiting." They experience difficulty with EHR integration and integration with other healthcare organizations (e.g., local hospitals). Tribal team members are required to physically log into their own EHR systems that may not be connected to the local hospital. If a person uses a different healthcare organization outside of the Tribal community, that information is not shared until it is requested, then faxed over to the Tribal organization and manually entered into its EHR system. This lack of interoperability of the EHR across hospitals and Tribal health teams means there is no way to know when or if a person has been hospitalized or discharged, one staff member explained:

> "*Until they (patient) come in for a visit and they're like: 'hey, you know, I was in the hospital last week for three nights.' We're like, 'OK, what hospital?' and then we find that out and we have to track it down*."

> "*It you can't share data with outside systems; we can't bring data directly into the system. It does not communicate with anybody. It's set up in a way that it made sense to the developers and only the developers."*

The lack of connectivity results in the Tribal team not being aware of the patient's needs. It leaves important care details 'siloed' into independent systems that are only shared if discovered by "chance."

Case 2: Data accuracy challenges due to fragmented reporting systems (Tribal team 6)

This Tribal health organization reported experiencing significant data quality and reliability issues that stem directly from their fragmented digital systems. Staff indicated that identical reports could produce different results depending on how they are generated, as data systems are linked to varied data sources that do not align within the same platform. Participants noted that historical data management creates additional complications:

> *"Somebody was diagnosed with something 20 years ago but they show up on a report as having it currently."*

This makes it difficult to distinguish between active and historical health conditions. The organization reported struggling with unidirectional data flows, stating they cannot achieve "anything bidirectional (data interchange) versus unidirectional because we can't do that right now." While teams indicated that they have technical access to a Health Information Exchange (HIE), they described it as "not really helpful" because "we can't put our information in there and [it] can't come into ours." Participants suggested this creates a compounding situation where data inconsistencies from fragmented systems, which make it difficult to rely on reports for accurate decision-making. The inability of Tribal health teams to participate fully in HIE networks prevents them from accessing more complete and current patient information that could improve data quality and care coordination.

Key Insights:

- **Manual data access for tracking progress**: When digital systems fail to integrate, organizations develop extensive manual tracking processes using Excel spreadsheets as the primary method for data management, report generation, and trend analysis.
- **Limitations in data flow**: Current systems allow data to flow in only one direction, preventing Tribal Health Departments from both contributing to and accessing complete patient health information from external partners.
- **Manual "Report Machines":** The combination of data systems and manual data access requires Tribal teams to complete manual data processing, taking away time from public health programs.
- **Hospital EHR integration**: Care coordination with hospitals requires staff to physically log into separate systems, manually extract and enter data into their Tribal health data own system, which is labor intensive and creates significant delays and opportunities for errors. EHR system changes are seen as rare chances to achieve true interoperability.
- **Data inaccuracy due to system communication failures**: When systems cannot properly sync or communicate, organizations experience significant data quality problems that undermine decision-making and patient care coordination.

Theme 2: Safeguarding Tribal Sovereignty

Participants indicated that Tribal health organizations operate under unique sovereignty frameworks that create distinct requirements for data protection, community accountability, and controlled information sharing that differ fundamentally from standard healthcare data governance models. Teams reported that these governance structures reflect Tribal values of community control and self-determination, where Tribal data is viewed as a sovereign asset requiring protection from external access or misuse. Participants noted that transparency and information sharing operate primarily within tribal community boundaries through member-specific access systems, rather than broader public disclosure. Teams described that all external communications, digital platform use, and data-sharing arrangements must pass through formal tribal approval processes, which can slow technology adoption but are viewed as essential safeguards for maintaining sovereignty. Tribal health organizations must carefully balance protective data practices with operational needs for collaboration and information exchange, often seeking reciprocal partnerships where external entities provide useful analysis and insights back to the tribe, rather than simply extracting data. Teams reported that Tribal Health Departments demonstrate strong protective data governance practices rooted in sovereignty principles, even when formal written policies may be less well developed than protective practices.

> *"Despite the structure behind how we make those decisions, the written part of the structure is not fully there. I feel like from the administrative running of things, I think [Name], and I run a tight ship... We've actually come face to*

> *face with plenty of people that want to confront us about access to stuff, and we're like, no, no, no."* (Tribal team 5)

> *"It's pretty hard to strike a balance between how much we safeguard our own data. Trust where we should take our data to, who we should give our data to. Because you know the Tribes are rightfully so very protective of the data that we collect."* (Tribal team 5)

One team described challenges sharing data between the Tribal Health Departments and the State. They indicated that they wished for a standard way to exchange information with the State:

> *"A standard system for all of the data that was reported in it would streamline things for not only requesting but that also having access to it directly within the system. It would also help State health departments too, in terms of communicating with their staff and then also gathering the datasets and sharing them. Because right now they're in separate systems and then have to be downloaded and then have to be re-uploaded to another system."* (Tribal team 2)

External communications require formal Tribal approval processes. Tribal Health Departments do not communicate or share information widely, such as to the general public, but instead send information that is approved to their community only.

> *"One thing with our tribal community and our policies and procedures is anything that comes out of the organization have to come out through our Tribal public relations or Tribal release of information system. It basically has to be approved before it can go out."* (Tribal team 7)

> *"This one's a little bit different for us because we are a Tribal nation, everything is recorded and documented and made available. However, only to our Tribal nation... every Tribal member has their own login to access motions that are approved are denied data."* (Tribal team 7)

Case 1: Protective data governance practices: balancing sovereignty with operational needs (Tribal team 5)

Sovereignty principles create distinct data governance requirements that differ from standard healthcare data management approaches. Tribal health organizations operate under constant tension between protecting Tribal data sovereignty and needing access to external data to inform effective healthcare delivery and decision-making. Teams described a reciprocal strategy used to engage in data sharing with partners, where "if you're going to use and analyze all this

stuff, you know, pump back out to in a way that's useful to me." Teams require assurance that external partners will "use the data and work with it to make it more useful to me." Tribal teams were unique in their approach to data governance whereby Tribal Health Departments maintain absolute control over their data assets, while seeking partnerships that provide tangible benefits to their tribal communities, rather than simply extracting information for external use.

Key Insights:

- **Tribal data is a sovereign asset**: Health and community data are assets that belong to the Tribal nation and require protection from external access or use without Tribal approval.
- **Transparency within Tribal community boundaries supports the community**: Information sharing and transparency are practices designed to serve Tribal members through specialized access systems rather than broader public disclosure required by other government entities.
- **Formal Tribal approval is required for all digital initiatives**: All digital communications, platform adoptions, and external data sharing must be approved through established tribal governance channels, which can slow technology adoption, but maintains sovereignty controls.
- **Digital platform adoption must align with Tribal governance protocols**: Technology choices and digital tool implementation must be formally approved by Tribal governance structures, creating additional review processes beyond standard healthcare organization approval.
- **Privileged access to Tribal information ensures privacy and security**: Tribal citizens receive specialized access to governance information and decision-making processes through dedicated login systems and member-specific platforms.
- **Data sharing protection is both cultural and strategic**: Data protection practices reflect both traditional Tribal values of community control and strategic recognition of historical exploitation and current sovereignty maintenance needs.

Theme 3: Population Demographics and Geographic Inequities in Digital Access

Tribal health organizations experience significant disparities in both accessing relevant, disaggregated data, and disparities in access to digital infrastructure required to effectively use data and health information systems. These challenges vary by geographic location, population demographics, and economic factors, creating barriers to effective digital health implementation. Available State and national datasets were described as lacking sufficient racial and ethnic data indicators, cultural relevance, or geographic granularity needed for Tribal health planning and decision-making. Teams described this challenge as particularly acute for organizations serving communities where Tribal-specific data cannot be easily isolated from

broader population statistics to inform tribal teams of how their community members are progressing.

> *"We live in a mixed community... it's hard to isolate [data]. Just the people you serve versus whole community wide."* (Tribal team 5)

> *"I'll look at the data and it doesn't feel like our numbers match what the State says."* (Tribal team 5)

> *"Most of the data, when we do access the Statewide stuff, there's not a lot of racial breakdown and things like that... I usually I'll look at State data and then I'll usually look up in HIS, to go back and forth and compare."* (Tribal team 5)

Some teams described that rural Tribal communities experience additional challenges including limited internet infrastructure, economic barriers to connectivity, and geographic isolation that urban Tribal Health Departments do not face.

> *"We have so many patients who don't have Internet access. We learned during the COVID pandemic when we were trying to deliver services via telehealth options that we couldn't do that. We had to do a lot of phone visits."* (Tribal team 9)

> *"The demographic can't afford the expense of the Internet. There are multiple reasons why people don't have access to it but it's a significant hardship for us here."* (Tribal team 9)

> *"Internet access is so spotty. Certain places we try to connect with Starlink. It becomes prohibitive."* (Tribal team 8)

The unique structure of Tribal data requires teams to manually triangulate information uploaded from multiple data sources. Tribal teams develop informal expertise in data interpretation and extrapolation and rely on clinical observations to validate or question official statistics that may not reflect local community realities. Teams noted that these inequities create fundamental barriers to digital health engagement, limit telehealth effectiveness, and force organizations to develop alternative service delivery models to ensure equitable access to care.

Case 1: Affordability of access to Internet and impact on use of digital tools (e.g., telehealth and patient portal adoption) (Tribal team 9)

Participants from a rural Tribal health organization described how lack of Internet access within their community creates a fundamental barrier to digital health engagement. During the COVID-19 pandemic, attempts to deliver care through telehealth were undermined both by connectivity challenges and the lack of affordability of internet among communities with high social disparities; this continues today. The team described that a large part of their population

is unable to access the internet due to their geographical location, and even if they could, the cost of digital devices would still be a challenge. The following are examples of the teams' challenges:

> *"I envy tribes that are, you know, in more urban settings that that's a non-issue. I think they can access their patients much easier than we can."* (Tribal team 9)

> *"Trying to get people to sign up for the patient portal, and they, you know, are saying, well, I don't have Internet access." (Tribal team 9)*

> *"We have such a small patient base. We only have 98 Tribal elders and about 47 of them live within [a] 60-mile radius."* (Tribal team 9)

Key Insights

- **State-level data may underrepresent or misrepresent Tribal communities**: Official State health statistics may not accurately capture tribal population health status or may not adequately capture Tribal-specific data.
- **Mixed communities are challenged to isolate Tribal-specific data**: Teams reported that organizations serving both Tribal and non-Tribal populations are challenged to separate data for specific sub-populations – Tribal and non-Tribal residents – which makes targeted health planning difficult.
- **Racial and ethnic data indicators not available in State datasets**: State and national health databases lack sufficient demographic indicators to distinguish health trends, disparities, or needs unique to Tribal populations.
- **Affordability of the internet is a barrier for Tribal communities:** Cost is a fundamental barrier for Tribal communities to support digital health engagement. Digital health engagement tools cannot be effectively utilized when community members lack basic connectivity.
- **Limitations in connectivity preclude adoption of digital health services:** Inadequate internet access requires organizations to use less-effective communication methods for remote care delivery such as phone rather than digital services**.**
- **Geographic isolation limits connectivity and data access**: Rural communities experience the dual challenge of poor Internet infrastructure and limited representation in available health datasets.

Theme 4: Participatory Governance and Personalized Care Delivery

Tribal health organizations demonstrated distinctive approaches to community engagement that center community members as active participants in governance, policy development, and program design and health decisions. Across all the Tribal health department teams, participatory frameworks appeared to reflect Tribal values of shared decision-making to ensure

that health services remain responsive to community needs and preferences. Participants consistently described governance structures where community members hold decision-making authority and provide direct input on organizational priorities and service delivery approaches.

> *"Our structures are run by community members at the health board level and most of the decisions are made in-house. They're all people who live within the Community."* (Tribal team 5)

Individuals with lived experience in the community maintain authority over health policy and program decisions, creating accountability to community members rather than external stakeholders. Community members receive privileged access to organizational information and decision-making processes through specialized systems designed to facilitate transparency within tribal boundaries. A Tribal team member described their approach to ensure every member has access:

> *"Every Tribal member has their own login to access motions that are approved or denied. Any policies and procedures, any updates are all made available to Tribal members.""* (Tribal team 4)

The commitment to community-driven programming was particularly evident in how organizations used community feedback and outcomes to shape service priorities and launch new initiatives. One team described their approach:

> *"We've made a huge push towards outcome-driven ways. We look at our health outcomes and to try to spearhead new initiatives and launch new services. That is primarily how we are looking at this. [That and] community feedback."* (Tribal team 4)

Person-centered service delivery emerged as a core component of community engagement among tribal communities, with organizations actively promoting individual choice and customization of services. When asked about person-centered care approaches, participants responded definitively:

> *"I think that it is fully enabled and we have some programs that really promote the choices of their patients, their clients."* (Tribal Team 5)

The emphasis on individual choice within community-driven frameworks reflects the dual commitment to both collective governance and personalized care.

The implementation of community health workers represented another mechanism for ensuring community input and engagement. Organizations described full utilization of staff who are fully embedded in the community and serve as trusted connectors between formal health services and community members. These workers provide culturally responsive outreach and

help ensure that program development remains grounded in community needs and preferences.

> *"Our behavior health consultant has a few patients that regularly text her about their needs. Our nurse care manager also has a specific patient base that will text her about the needs that they may have. It's pretty much based on the role that you''re playing here. They will give out their work cell phone number to some patients that that need that extra help or extra care."* (Tribal team 4)

Community engagement among tribal communities reflects the broader commitments to Tribal sovereignty and self-determination, where community members maintain control over health policy decisions and service delivery approaches. The integration of community voice into organizational governance, policy development, and program design creates accountability structures that ensure health services remain responsive to community priorities while respecting individual choice and cultural values.

Across the Tribal Health Departments, use of digital devices for supporting individual care was relatively low, but there were three teams (Team 4, Team 8, Team 5) that identified the use of some digital devices, specifically continuous glucose monitoring, with some communities that are participating in diabetes care programs.

Case 1: Digital device implementation with partnership-based care coordination (Tribal team 4)

This Tribal health organization has implemented multiple digital health devices to support patients across different health conditions and age groups, representing an emerging model of technology-enabled care delivery in resource-constrained settings. Staff described their current digital health capabilities:

> *"The only one would be CGM... continuous glucose monitoring."*

The organization extends beyond diabetes management to include safety monitoring for vulnerable populations through strategic partnerships. Staff noted:

> *"We also have a fall protection device, but we partner with a local hospital for that. It tracks falls for our elders."*

This case illustrates how smaller health organizations can expand their digital health capabilities through partnership arrangements rather than direct investment in all technologies. The approach allows the organization to provide advanced monitoring services while leveraging external infrastructure and expertise for device management and emergency response protocols.

However, the implementation reveals common challenges in digital health adoption among Tribal health organizations. When asked about analytics capabilities, staff indicated minimal capacity for advanced data processing, suggesting that while they can provide monitoring devices to patients, their ability to aggregate data for population-level insights or predictive interventions remains limited.

Key Insights:

- **Specialized member access systems enable transparency**: Tribal members receive privileged access to governance information through dedicated login systems that provide real-time updates on policies, procedures, and organizational decisions.
- **Community feedback directly shapes program development**: Organizations integrate community input with outcome data to launch new initiatives and services, ensuring programs remain responsive to community-identified priorities.
- **Person-centered care is emphasized within community frameworks**: Organizations value individual choice and service customization while maintaining collective governance structures, balancing personal autonomy with community values.
- **Community health workers serve as trusted connectors**: Full utilization of community-embedded staff ensures culturally responsive outreach and maintains connections between formal health services and community needs.
- **Flexible communication accommodates individual preferences**: Staff provide personalized outreach including direct cell phone access for patients requiring additional support, demonstrating responsiveness to individual circumstances.
- **Governance structures reflect Tribal sovereignty principles**: Community engagement practices operationalize broader commitments to self-determination, where tribal members maintain control over health policy and service delivery approaches.

Summary

The qualitative findings illustrate that Michigan's public health teams are navigating a digital environment that is currently siloed, resource-intensive, and uneven in its ability to support timely decision-making. Staff consistently described working across multiple unconnected systems, often entering the same data two or three times into State and local platforms. This has real consequences for public health practice. Nurses and program staff spend valuable time re-keying laboratory results or reconciling numbers between systems, which means less time is available for core activities such as immunization clinics, contact tracing, or direct community outreach. In the case of measles, delays in updating immunization records can prevent teams from quickly identifying under-vaccinated children in affected schools, limiting the ability to contain outbreaks at the earliest stage.

Governance of data and digital tools is equally inconsistent. Teams reported that roles and responsibilities for data ownership are “fuzzy,” with little clarity about whether IT, public health leadership, or State agencies are accountable. As a result, digital governance has been made by each team, creating a highly varied landscape. An example of this impact is that if no one is clearly responsible for reconciling data between MCIR and a local EHR, vaccine records can be incomplete or inconsistent. A child may appear “up to date” in one system and “overdue” in another. In a measles outbreak, that lack of clarity means public health nurses waste time verifying records across systems instead of contacting families. This delay increases the window where exposed, unvaccinated children might spread disease in schools.

Constraints were identified in both the quality of data and the ability for staff to utilize the data. Some health departments reported having only one or two staff responsible for IT, analytics, and reporting, while others had dedicated analysts or epidemiologists. These differences shape how teams can use data. When analytic staff are present, departments can examine program performance and begin using digital tools more strategically. Where staff are limited, reporting remains retrospective and manual. One team described not being able to confirm whether their programs were making a difference because their only option was to pull static reports that lacked demographic breakdowns. Without the ability to disaggregate data by factors such as race, geography, or socioeconomic status, it is difficult to identify disparities or tailor interventions. This has direct implications: a diabetes education program may run county-wide, but without population-specific data, it cannot identify whether complications are concentrated in certain neighborhoods or demographic groups.

The lack of real-time analytics further limits proactive public health. Teams reported that State datasets can be one to two years old by the time they are made available, and dashboards are often designed for compliance rather than active planning. Staff explained that they often compile data manually to understand current conditions. This reliance on retrospective reporting constrains the ability to anticipate needs or respond early. For example, influenza vaccination coverage might only be visible after a season is complete, leaving teams unable to target outreach while uptake is still lagging.

Person-enabled services remain limited overall. Most teams reported that residents cannot digitally access their records, schedule services, or communicate directly with public health staff. Instead, communication is primarily one-directional, through websites or annual reports When residents can securely access their own health records, it changes how they engage with public health. A parent who can see their child’s vaccination record online does not have to rely on phone calls or paper slips from school; they can confirm immunization status immediately, understand what is overdue, and act before an outbreak spreads. A patient managing diabetes who can review their lab results in real time can spot rising blood sugar levels early, adjust their diet or medications in consultation with their care team, and prevent complications that otherwise might lead to an emergency room visit. Access to data and information also builds trust. When people can see their own data, they are better able to understand why public health is asking them to take specific steps such as coming to a flu clinic, enrolling in a diabetes program, or attending a behavioral health program. Without this access, residents are

dependent on one-way communication and generic messaging. With it, they become active participants in prevention, which strengthens both individual outcomes and system-level resilience.

Qualitative: Future Digital Health Aspirations: The ”Magic Wand” Question

To capture teams' aspirations for digital health transformation in the future, interviews concluded by asking teams the following: “If you had a magic wand and could change anything regarding the use of data, the State data systems, or digital infrastructure, what would you change?” Team responses reveal the priority needs and aspirations among teams for data solutions across Michigan's public health system. The following themes highlight the LPHD responses, followed by the Tribal Health Department responses.

Local Public Health Team Responses

Theme 1: One Integrated Data System

All the LPHD teams discussed the need for digital connectedness, or interoperability, between the State data systems and their local system data and EHRs. The teams described the fundamental challenges LPHDs face in accessing, utilizing, and leveraging State and local data to inform operational decision-making, strategic planning, and performance optimization. Many of the LPHD teams described themselves as functioning as “data collectors” rather than “data users,” which severely constrains their capacity to operate as learning organizations to continuously improve performance. Teams revealed a critical disconnect between data collection activities mandated by the State and the practical utility of accessing State data for evidence-based public health practice. LPHDs describe collecting substantial amounts of data but lack the infrastructure to utilize that data affectively. Teams described the impact on workload for staff related to duplicate data entry and significant administration time.
Many of the teams described the challenges with integration between systems and a wish for Connectedness between State systems and the EHRs. Features of the Integrated Data System are as follows:

a. Interoperability was identified most often to automate the flow of data within and between local and State data systems.

> *“I would love to have just one system instead of a system for this program, a system for that program that can't crossover all the time.”* (Team 6)

"A lot of our systems are dependent on the State and they're not interoperable. They're not very efficient." (Team 2)

"*I think what I'd like is just more universal systems so that you can see more in one place. Instead of having one here, one here, you have to have access to this one."* (Team 7)

"*We've got a really great Statewide vaccine registry, but we can't see any vaccines that were given in another State."* (Team 7)

"I just one thing that always comes to mind for me is like systems ability to interface with each other."(Team 7)

b. Integration between EMRs and State data systems. Participants described challenges with managing EMRs and other State data systems. An important feature of State-wide digital infrastructure would be creating the interoperability between State data systems and individual EMRs.

"I think it would be nice to have a [single] EMR across all health departments. It works for the Army very well, and I don't understand why we don't have it for all of Michigan. There's [sic] States that do purchase Patagonia [an EMR] for all their county." (Team 9)

"*We don't have the bidirectional [information flow] but that is something for me that would be big for nurses. It would be such a time saver and a wonderful opportunity. I don't understand what is so hard about that because of all of the other providers in all of these big health systems can get in. I can look into Care Everywhere and see stuff."* (Team 10)

"*Having better access for healthcare information between all [healthcare] organizations. We can see some data through Epic but to be able to access that data we have to put in a fax request. [We would like to be able to] to share data and access it when needed."* (Team 22)

"The frustration comes [from the fact that] nurses hate to dual document things. Dual documentation is a huge waste of time and effort. I won't use the other word, it's a lot of time and effort, but like our surveillance system, for instance, I wish that there was a way [for it to be interoperable]." (Team 10)

"There are a lot of health departments that still are not on board with this, but we don't have a way. Like, if I'm seeing a TB client. I don't have a way that all of the documentation goes into the surveillance system to interface with our documentation in the Patagonia system. If I want that information in our EMR, I have to physically type it in there. Do you know what I mean? And what a waste of time when it is the same stuff." (Team 10)

c. Common Data Platform across the State that can be customized by Local departments. A common platform by which all data systems can be connected and integrated was suggested as a strategy to automate access and use of data and remove duplication to enable teams to advance digital transformation.

> "*On a Statewide basis, it would be nice if there were some shared platforms that we could all use. Then we wouldn't have to invent this all ourselves. There could be one solution for 45 health departments. A lot of us do the same sorts of things so why couldn't the State provide the support for at least a baseline tool that could be customized at a local level."* (Team 23)
>
> "*The ability to have consistency between systems."* (Team 22)
>
> "*Improved speed in the response of systems."* (Team 31)
>
> "*Improving the redundancies of the State systems."* (Team 31)
>
> *"I have thoughts and feelings about the whole term dashboard. We have reports ten ways from Sunday to do all sorts of things. We have a couple of people that can write reports on just about anything. The epi team, the EHR team, we can do all sorts of things. But to have a cohesive place of entry to be able to do all that stuff. That we don't have."* (Team 12)
>
> "*There is a lot of clicking the same thing. Navigation is challenging and there is a lot of redundancies built it. There is a lot of, 'Didn't I just do this?'"* (Team 30)

d. Real-time, data-driven decision-making: Access to data that is both current accurate to inform decision-making.

> *"We just need more real-time solutions to help us from to assist in avoidance of being archaic or antiquated and if we can continue to be progressive with attaining viable information to help make best decisions possible."* (Team 2)
>
> *"I would change the how accurate the information is in real time. It will help you to decipher if this is a good decision or how are things trending across the State."* (Team 2)
>
> *"If I had a magic wand I would like more real-time information. If I couldn't get that, I would get at least consistent information. Some stuff is six months behind. Some is a year behind."* (Team 22)

e. Analytics infrastructure to track outcomes and metrics: Teams suggested that comparative analytics infrastructure would support Michigan's Public Health System's ability to drive continuous improvement and evidence-based resource allocation.

> *"I personally would like our organization to have a better metric tracking that is aligned with other health departments because of our health, public health system and the State of Michigan being a diversified system."*– (Team 10)

> *"We all really do our own thing, when it comes to the way we run our health departments... As a whole, we do a lot of different programs. We do a lot of different outcome data looking and output."* (Team 10)

> *"I would just really love better general metric tracking for how public health departments are doing as a whole. We don't have a great purview in the State of Michigan for how well public health is doing. It would be nice to have a system to say our health department Is number one in the State for XY and Z, not in a competitive way, but just in like a county health rankings way."* (Team 5)

> *"We go through an accreditation process every three years. In theory, we're all accredited on the same metrics, relatively speaking, depending on which programs we have. But, there's no comparison that comes out of it."* (Team 10)

Theme 2: Data Access and Interface with External Agencies and Jurisdictions

LPHDs' described aspirations for seamless access to data from external partners (e.g., medical examiners, healthcare systems, insurance companies, neighboring States). LPHDs envision a future where administrative and regulatory barriers are removed, enabling real-time data sharing that supports comprehensive public health assessments, coordinated services, and effective emergency response. They desire systems that can automatically pull relevant health information from multiple sources (e.g., medical examiner, insurance, other State jurisdictions) while maintaining appropriate privacy protections, eliminating the current reliance on manual requests, downloading and manual entry of data, fax systems, and fragmented data collection processes.

> *"Increase or more accessibility to medical examiner data. That would give us a lot of information in a number of ways. I wish we had a better partnership with the ME office. It's just I've been trying to cultivate that throughout this past year and it's just it's been a journey."* (Team 5)

> *"Access to whether it's insurance data around diagnosis or hospital data. I know that's there's challenges around that, but we are challenged with trying to find*

and quickly access Detroit data around diseases. How we get that is through insurance companies." (Team 5)

Teams want to move beyond current manual processes for healthcare data access:

> *"Having better access for healthcare information between all [healthcare] organizations. We can see some data through EPIC, but to be able to access that data we have to put in a fax request."* (Team 22)

Cross-State data sharing represents a significant aspiration, particularly for border communities:

> *"We've got a really great Statewide vaccine registry but we can't see any vaccines that were given in another State."* (Team 7)

> *"We have been asking for years to have an interface with other States for immunization registry information. We have to get in manually into Indiana, which is our border State here. We have a lot of families that go to Indiana for immunizations. When they pull the data out for Michigan kids that live in this County, it looks like our percentages of coverage are terrible... we have to manually update them, literally type them into the Michigan database to get their records up to date."* (Team 10)

LPHDs envision seamless integration of data systems outside of Public health and State Jurisdictions that could improve coordination of public health services and stronger public health outcomes:

> *"From patient care side of things, we have access for some records but not all. Some of that is our department specific, we are looking to be able to access more health records. Then there are concerns of HIPPA [sic] and privacy, our hands are tied. When an individual's medical records from when they leave the hospital, then the doctor's office has a different portal they use. We get a lot of questions that if a patient gets a vaccine, will it go into their health record. It goes into MCIR, but it doesn't necessarily go into their portal at their doctor's office."* (Team 33)

> *"As public health, our hands are tied as far as treatment. We can encourage them to follow-up with their doctor, like if they test positive for STI. Maybe they are tested at their doctor as well. Everything we do here at public health, if it could better communicate with their record, doctors record, whatever it may be."* (Team 33)

Teams also express aspirations for enhanced integration with broader public health domains:

"I want to see integration between zoonotic diseases and animal, all of the animal diseases. How it can affect health outcomes in our populations, so that we can target farmers and infrastructure that need to know how to stop the spread or just have like general [knowledge that] bat bites can give you rabies. It is amazing how many people don't realize that." (Team 1)

"I also want to talk more heavily and have more communication with our adult and childcare facilities. [Better understand] things that happen in those places when it comes to food safety, water safety, overall safety, communicable disease. Integration with adult and childcares is really something that I think is lacking." (Team 1)

Theme 3: Shared Governance and Statewide Standardization

LPHDs' described aspirations for Statewide coordination and standardizing of processes, common resources, and formal governance frameworks. LPHDs envision a future where the State provides leadership in establishing minimum standards, shared platforms, unified data management approaches, and clear data governance structures that individual departments can customize locally. They desire a plan to move away from the current model where each health department independently develops solutions for common challenges and operates under informal governance structures toward a coordinated system that leverages shared resources and clear protocols while maintaining local flexibility.

"The governance piece of it. We have a deputy who says the word 'governance' but, I mean, my understanding of data governance is that roles are defined. Who is the owner? Who is the steward? For my team, it's very informal. It's not really written into a charter or a document or anything like that." (Team 12)

"I think it would be great if the State had set some standards that makes it easier for us so that every health department in the State isn't trying to do the same thing. Like for example, when it comes to our community connections program and data sharing, it would be great if the State came up with a unified consent language you should have to share SDOH data." (Team 6)

"The State really could go a long way by just developing minimum standards for software and data program or data collection... a lot of times just give data back to the State that's kind of useless and irrelevant like because we've always been doing it that way." (Team 2)

Teams highlighted a wish for standardized forms and processes that would improve both efficiency and client experience:

"I think some of the forms too is that we have every health department has a different form. It would be nice to have unity in some of that and making it electronic or you know, easier for the clients." (Team 6)

"The same policies. Because if all of us are working on it, that's a waste of resources right now. If someone else has a template that we can take and without having to do a thousand, or however many health departments are in the State, legal reviews. That would be phenomenal." (Team 6)

Smaller departments particularly express the need for accessible, standardized solutions with training support:

"We are a smaller department. We are in the low 30's staffing wise. When we look at electronic tools, the mention of apps and dashboards, we are inspiring them to having. But to be able to get those tools, off the shelf, would be amazing." (Team 31)

"If there was a tool that was off the shelf, that had training that comes along with it that we could bring to our staff and then incorporate that into our work with our community." (Team 33)

Theme 4: Automation to Achieve Strategic Data-Derived Insights

The LPHDs described a need to eliminate manual, repetitive tasks and implement automated systems that would free staff to focus on direct public health services and strategic activities. They described wanting the ability to pull and utilize real-time data to gain insights and make strategic decisions. LPHDs envision a future where technology handles routine data entry, report generation, and administrative processes, while intelligent systems insights that they can use to improve their services and programs. They desire to move away from functioning as "report machines" toward being strategic public health organizations where staff time is dedicated to analysis, intervention, and community engagement rather than manual data manipulation.

"Automate a lot of processes that we've been working on and I'm saying strictly from the CD point of view, I know there have been projects working on. We talked a lot about the Qi processes, the performance indicators and when we do it there is there is a bit of manual process involved." (Team 5)

"I just want integrated so badly is all I want is for AI to be a part of the future of all of this. We don't have the time, or money to spin in circles about this like computers can do it. Let's let them do it." (Team 1)

"I just wish that, you know, we come up with tools that would just kind of automate these processes for us/" (Team 5)

> *"Communication between like for communicable disease investigations, I have to manually enter a lot of data about what day were they hospitalized. When was the lab ordered? What lab did they have, you know?"* (Team 7)

> *"A lot of just data entry that could be automated, but much easier said than done. That would be nice."* (Team 7)

> *"I think It would be nice to have a lot of the automation. A lot of this is manual, even though we have it. It would just be nice to have some automation."* (Team 6)

The teams described what they could do with more automated data systems:

> *"In the most beautiful world, something happens. Someone submits a report and an AI analyzes who needs to see this. Could it be CD, it could be food, it could be both. And everybody who needs to be at the table is at the table."* (Team 1)

> *"To have the layer of like being able to create like visualizations and things to be able to share with the public straight out of the system too."* (Team 1)

> *"A mobile app that's specific to our health department. And the money and staff to do it."* (Team 3)

Teams envision expanded monitoring capabilities using advanced technologies:

> *"I want to add also like a much more robust wastewater monitoring across our counties and our State would be great."* (Team 1)

Theme 5: People-Centred Services and Tools for Communities and the Workforce

The LPHD teams discussed their desire for technology and processes designed around the needs of both the public health workforce and the communities they serve. LPHDs envision user-friendly systems that minimize training time and maximize productivity for staff, while simultaneously providing accessible, convenient services for community members. Teams strive for administrative convenience with human-centred design that considers how both staff and clients interact with technology, emphasizing intuitive interfaces, streamlined workflows, and accessible service delivery options that improve experiences for all users.

> *"When it comes to technology, we create a lot of software and technical systems. They are very biased for a variety of reasons, but we don't think of the human behaviour and the person using the system. Our staff members, how are they*

using the system? What makes it the most useful for them? How is it easier for them?" (Team 12)

"What we need is a system. What makes it easy for them [the staff]. From a leadership level, how are they going to use it? What kind of data are we putting into it? Are we making it easy for a person to put good quality data into the system. On the flip side, are we showing the reports to the leadership in a meaningful manner in a way that they can manipulate different criteria in a report that makes it useful for them? In an easy way that makes it easy for them for good understanding of the information." (Team 12/13)

"It needs to be People, Process, then Technology." (Team 12)

LPHDs describe the opportunities to advance digital transformation by advancing mobile and digital solutions that improve community access and engagement:

"I would love to be able to have more of a mobile app capability for someone to be able to do scheduling or get in touch with us, sign up for a variety of different programs." (Team 3)

"A mobile app that's specific to our health department. And the money and staff to do it." (Team 3)

Teams want to improve client experience through standardized, accessible forms and processes:

"I think some of the forms too is that we have every health department has a different form. It would be nice to have unity in some of that and making it electronic or you know, easier for the clients." (Team 6)

Teams are motivated to engage more direct engagement with communities to strengthen public engagement to meet public health needs including feedback to inform strategies to better understand and respond to community needs:

"I wish we could improve our patient satisfaction surveys to get more responses to get more meaningful information." (Team 3)

"To have the layer of like being able to create like visualizations and things to be able to share with the public straight out of the system too." (Team 1)

Tribal Health Teams: “Magic Wand” Responses

This analysis presents the key themes described by Tribal health teams in response when asked what they would change about data systems and digital infrastructure if given a ”magic wand.” Responses revealed unique aspirations focused on both public health system integration needs, and unique sovereignty-related needs for their communities. This analysis reveals distinct themes that highlight Tribal Health Departments’ vision for digital transformation, within the context of their sovereign nation status mandated to serve their communities.

Theme 1: Connectivity and Interoperability of Systems

Tribal health organizations described their aspirations for unified health information systems that would consolidate patient data across multiple providers, insurance systems, and care settings. They envisioned seamless access to comprehensive patient records that would eliminate current barriers to care coordination that would enable more effective implementation and management of public health services to their communities. This includes desires for integrated EHRs, streamlined insurance verification processes, and systems that recognize Tribal health organizations as legitimate healthcare providers within the broader health ecosystem. Examples of aspirations by respondents include bi-directional flow of data, single point of access to all data in a common system, and streamlined navigation of State data systems, described as follows:

> *”Being able to do anything bidirectional versus unidirectional because we can’t do that right now. Accurate data. Making sure that that's happening.”* (Tribal Team 6)

> *”Uniformity would be very helpful and understanding of the navigation of the particular system because the State doesn’t, they’re not able to navigate their data. They have people that are in place and again not to speak poorly of them because they’ve been great partners with us, but nobody knows all the data that they have.”* (Team 2)

> *”I think having all the data in one system would be, you know really great. We have a pharmacy record and then of course the tribal data is on CRM, you know, so there’s multiple different systems and they don’t talk to each other, you know?”* (Tribal Team 1)

> *”Having one standard system where be able to access the information that we need or put in a request, there’s a lot of separate systems for where data is reported both at State and federal levels between States and communities.”* (Tribal Team 2)

> *"I think having that one place where you can go in and pull patient records and you can see all the providers they've seen all that."* (Tribal Team 1)

The Tribal Health Department specifically discussed the wish for connectedness between State systems and EHRs, either by creating interfaces between the EHRs or establishing one common EHR across the State. Teams described the many benefits of connectivity for public health reporting and disease surveillance systems:

> *"In a perfect world, it would all just work together, and we could have access to the hospitals, and they would have access to our kind of like the Health Information Exchanges we're trying to do, but we can't. Put our information in there and can't come into ours, so not really helpful."* (Tribal Team 6)

> *"For me, the largest thing is just communication across [State] systems, including EHRs. It would make it easier for reporting data into systems for like disease surveillance and case reports."* (Tribal Team 2)

> *"Let's connect the EHRs so that they're all talking to each other."* (Tribal Team 1)

> *"A State-sponsored EHR that provides access to you know your patient's data, you load your patient's data in. To us, that's our one of our biggest barriers to providing effective care is. We don't know where our patients go. Until they come in for a visit and they're like, hey, you know, I was in the hospital last week for three nights. We're like, OK, what hospital and then we find that out, then we have to track it down and then all the time, we often times we get a hard time getting that data because a lot of the health systems don't like to recognize us as a provider."* (Tribal Team 4)

In addition, Tribal Health Department teams aspired to have streamlined insurance verification and administrative processes:

> *"I want to just put in name, date of birth, so it will let me run against every single insurance company. Do they have insurance or not? I'm sick of going to 19 different sites to verify a plan."* (Tribal Team 4)

Theme 2: Government-to-Government Data Sharing and Coordination

The Tribal Health Departments described the need for streamlined, standardized data access systems that respect tribal sovereignty while enabling effective collaboration with State agencies and other tribal nations. They envision centralized data portals for automated data exchange, improved communication protocols, and systems that accommodate government-to-government relationship building that serves to eliminate current fragmentation that requires multiple and diverse requests and manual processes. This theme includes desires for inter-tribal

data sharing capabilities, standardized request processes that recognize sovereignty, comprehensive data inventories, and collaborative frameworks that strengthen tribal healthcare capacity through collective action.

> *"Having a standard pipeline for that request of data because. I know there's nuances for Tribes, being sovereign nations for how they would request data and what has to be in the documents with the State health departments. A standard system for all of the data that was reported in it would streamline things for not only requesting but having access to it directly within the system. it would also help State health departments too, in terms of communicating with their staff and then also gathering the datasets and sharing them, because right now they're in separate systems and then have to be downloaded and then have to be re uploaded to another system."* (Tribal Team 2)

> *"The ability to share data amongst the tribes because then that kind of circumvents the, you know, sharing with official government agencies things like that like we are government to government tribal nations. We were trying to look at something like that, but it is so hard to get."* (Tribal Team 4)

> *"We don't really share it [data] with other tribes unless they ask, you know, I mean. But if we did have, you know, general population, like if we could build a tribal health databank in Michigan, of all the tribal members that are seeing."* (Tribal Team 4)

> *"Don't give us more work for no reason, and if it's not going to reach an end point that's useful to me, then why are we going to, you know, contribute to the whole mess and give all of our data if it's not going to be useful back to me in some way."* (Tribal Team 5)

Teams want collaborative approaches that recognize tribal sovereignty and create collective bargaining power:

> *"I even tried to work with some folks to get set up on our own incentive track through Blue Cross Blue Shield and things of that nature to make our own provider organization as a combination of all the tribes and nobody wants to listen to us no matter how hard we fight for it, we are just not. This community is so overlooked and underfunded that it is just blown off."* (Tribal Team 4)

Teams aspire to achieve comprehensive data inventories and automated data collection capabilities:

> *"Some sort of appendix of information that you're able to pull from in some level, you know, or they're able to share. This is what we have. This is where we know it's being stored at. This is how it's being stored."* (Tribal Team 2)

Theme 3: Patient Empowerment and Community Health Engagement

Tribal Health Departments described the desire for digital systems that empower patients with direct access to their health information and access to digital tools to support making informed healthcare decisions. They envision digital platforms that provide patients with comprehensive access to their health data, educational resources for interpreting that information, and tools that enable more engaged participation in their healthcare. This theme is aligned to the DHI results which illustrate progress among Tribal health teams in advancing Person-Enabled Health for their communities. The vision of healthcare that extends beyond provider-centered systems to community-empowered management of health and care are central to this theme.

> *"I think if there was one thing I would change, it would be the accessibility of it [data] as well as the know how or the awareness. So that the everyday individual can truly start to feel like they have some control over their health and the priorities or their options and what is available."* (Tribal Team 7)

> *"The patient needs to have access at their fingertips [to their information] so that they can make good sound decisions for themselves."* (Tribal Team 7)

Teams describe the importance of advancing digital tools that support patient engagement and support patient decision-making:

> *"Any apps, any digital access, I think that could be made available for the patient is really important because as healthcare providers and employees in the healthcare field. We have so much access, but as a patient I want to be able to have access as well so that I can not only be more aware but help make better decisions and I'm more like timely manner versus being you know I got a 30-minute appointment, and I need to make a decision now."* (Tribal Team 7)

Tribal Health Departments want systems that provide not just access but also that build health literacy to support patients to help them understand their health information:

> *"To be able to access your labs is one thing, but to be able to understand it and know how to move forward with it is it would be beneficial to the patient."* (Tribal Team 7)

Tribal health teams also described the desire to engage patients meaningfully to provide feedback on their services and insights into community needs:

"I wish we could improve our patient satisfaction surveys to get more responses to get more meaningful information." (Tribal Team 3)

Theme 4: Data Accuracy and Digital Tools to Inform Decisions

Tribal Health Departments discussed the need for data systems that provide accurate, useful information that supports decision-making and avoids creating unnecessary administrative burden. They desire systems that ensure data quality, provide meaningful feedback, and serve clear purposes that benefit their communities rather than simply fulfilling compliance requirements. This includes addressing current challenges with the quality and accuracy of data and ensuring that data collection efforts produce actionable insights.

"The data is inaccurate, but that is mostly because we unfortunately haven't mastered that yet. How and where it comes from in our system… we're trying to get the same thing, but we get different numbers because you can run it like two different ways." (Tribal Team 6)

Tribal Health Departments want systems that support both operational and analytical needs:

"Then you have everything in one system that can analyze, pull those reports. I do like the idea of having the financial information as well as the quality information so that you can take programs and really compare you know what the cost effectiveness is. You can really have a good, not just a qualitative, a quantitative approach to what programs you want to continue to support or you know where you need to make changes." (Tribal Team 1)

"I think that the ability to have systems in place to automatically collect data and give us feedback would be super helpful." (Tribal Team 3)

"We currently don't have any dashboards or anything." (Tribal Team 3)

State DHI Results

This section presents findings from a modified Digital Health Infrastructure (DHI) assessment conducted with participants from the Michigan Department of Health and Human Services (MDHHS) team. The analysis draws from a qualitative analysis of interview responses with the State team to identify key themes describing digital capacity priorities and implementation barriers within the State public health system. Three primary themes emerged from this analysis, each representing both challenges and strategic opportunities for advancing digital transformation. These themes may inform strategic decisions to advance the State of

Michigan's capacity to achieve proactive, data-driven public health system.

Theme 1: Interoperability as the Foundation for Automated, Proactive Public Health Services

Participants identified data exchange and system interoperability as their primary barrier and highest priority for investment. The State team described that critical public health data often remains siloed, which traps data and information in separate, incompatible digital systems that cannot communicate with each other. These unique data systems require manual extraction and re-entry in order to move data between platforms. Staff regularly navigate multiple disconnected databases, EHRs, and reporting systems to compile comprehensive reports for decision makers as one participant explained:

> "[We] *do a lot of manual work, people look reviewing charts, calling up patients of cases to get information and usually these are sitting in different systems."*

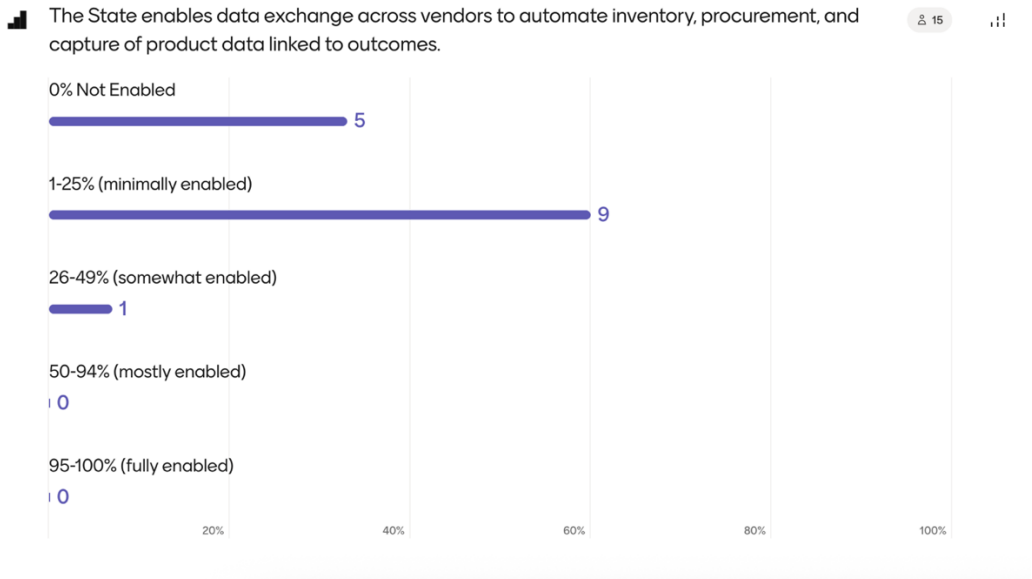
The manual nature of current processes was emphasized by another participant who noted: "We have very little that's automated." Participants directly linked interoperability challenges to their organization's reactive rather than proactive operational posture. The lack of seamless data exchange delays outbreak detection and response capabilities, as described by one participant:

> *"I think that just going back to our primary goal, right, to prevent disease. [Interoperability] helps us identify any risk or outbreaks or anything in a much timelier fashion. A lot of times before we know about an outbreak, we're running behind it already. Some of that early data exchange would help us identify problems or any risks early enough and intervene into really redirecting some of that manual work, for reviewing charts and extracting data to putting that work into hey, let's be proactive."*

Participants were asked about their system's ability to automatically link health product data to individual participants (e.g., vaccine data linked to patients receiving the vaccine) and program outcomes — representing the core functionality needed for effective interoperability. For example, this would enable a measles vaccination record to be automatically captured, linked to a person's electronic medical record, and connected to broader immunization surveillance outcomes without manual intervention.

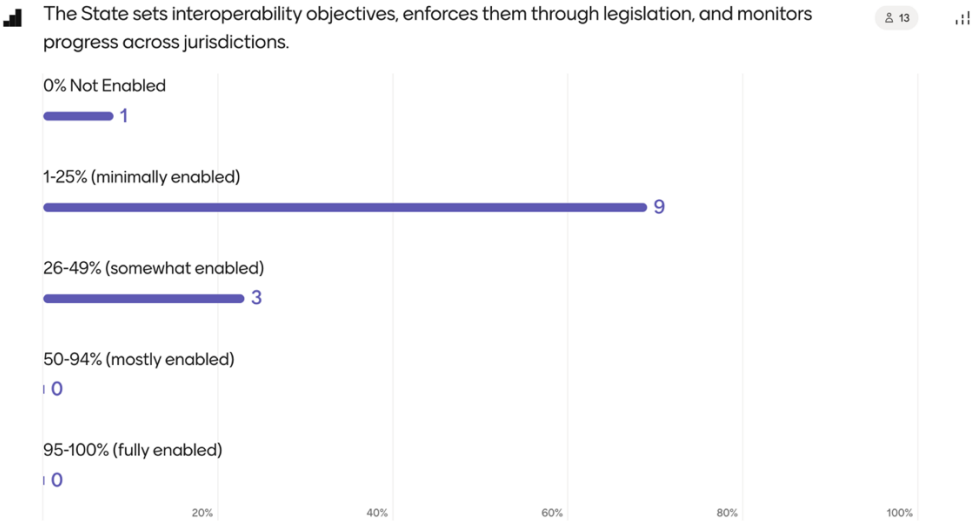
The majority of MDHHS participants (n=9) rated the State as "minimally enabled" in achieving data exchange across systems (e.g., vendors) tied to outcomes (Figure 26). This assessment aligns with the qualitative descriptions of manual data extraction and disconnected systems.

Figure 26: MDHHS Participants Mentimeter Response to Data Exchange Across Vendors Tied to Outcomes



Beyond technical capabilities, participants evaluated the broader policy environment supporting interoperability initiatives. The assessment revealed significant gaps in State-level leadership and infrastructure for advancing interoperability goals. The majority of participants indicated that there was minimal State support for public health organizations in developing interoperability policies and data exchange frameworks (Figure 27).

Figure 27: MDHHS Participants Mentimeter Response to State Supported Interoperability Objectives and Legislation



Results suggest that technical barriers are compounded by limited governance structures and policy guidance from State leadership, creating a dual challenge of both technical capability gaps and regulatory standardization limitations.

The importance of interoperability was further validated when participants were asked to identify the State's top three digital priorities. Multiple participants specifically highlighted interoperability, data exchange, and data access as critical investment areas. The convergence of these priorities in participant responses demonstrates recognition among State team members of the importance of interoperability and the current gaps that create the urgency for advancing the capacity for interoperability across State systems. Participants wrote in Mentimenter:

> "*Enhancing current data systems, future proofing systems, increasing interoperability"*
>
> *"Identify and promote policies and legislation to mandate and/or incentivize electronic reporting by healthcare providers and local public health"*
>
> *"Data sharing. We have very low transparency. Scalability/Improvements, working with DTMB takes too long to be viable in changing environments"*
>
> *"Partner with HIE more closely to leverage existing infrastructure and relationships with healthcare providers"*
>
> *"1. Complete interoperability between patient care and public health resources. 2. Be tracking of quality metrics used to drive public health programs. 3. Better access to resources for disadvantaged"*
>
> *"Unified Open-Source Health Information Systems to address the problem of too many siloed, restrictive, and expensive systems by focusing on consolidation through unified, interoperable, and cost-effective [systems]"*
>
> *"Better leveraging the master person index services, coordinating more with local public health and engaging communities in data exchange and digital tools, and automating reports and visualizations"*

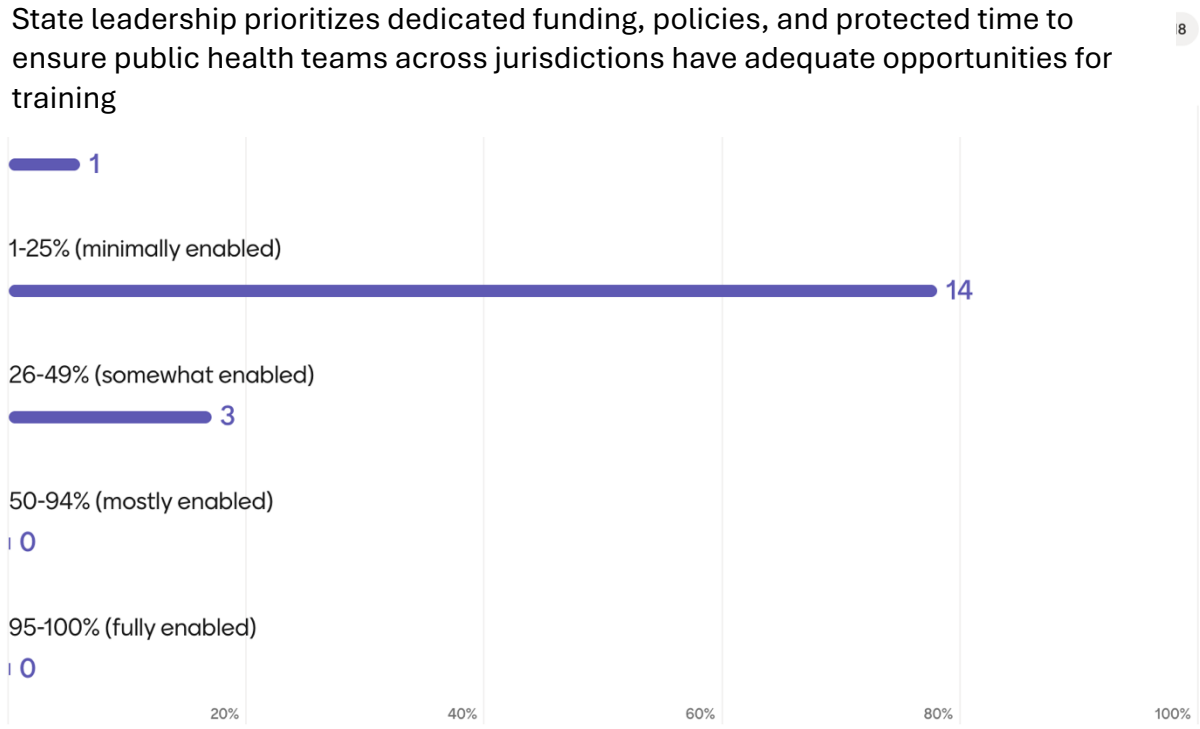
Theme 2: Digital Workforce Capacity Building

Participants discussed the need to upskill current workforce with digital skills to build the internal capacity of the workforce and reduce the need to rely on external staff. For example, rather than waiting for centralized IT departments to develop solutions or purchasing expensive vendor products, participants envisioned training their own staff to create applications and analytical tools using user-friendly, low-code platforms that don't require extensive programming knowledge. This approach would enable program staff to rapidly prototype and deploy solutions tailored to their specific needs. One participant described:

"The training programs should focus on empowering our data staff, and because our internal in-house data staff can help a lot of our program staff and operation staff. Basically, helping the people who can help others so that instead of heavily relying on IT, we can build in-house low code, no code applications and we would be able to deploy them with co-ownership."

Participants were asked to assess whether State leadership prioritizes dedicated funding, policies, and protected time to ensure public health teams across jurisdictions have adequate learning opportunities to enhance a digitally enabled workforce. The majority of participants rated the State on this indicator as "minimally enabled" (Figure 27), suggesting that the current investments in the digital capacity of the workforce is insufficient to meet the needs of the State's public health system.

Figure 28: State DHI Answers to Digital Workforce Training for Public Health Teams



The importance of workforce capacity building was further reinforced when participants identified their top three digital priorities for the State. Training and Workforce Development consistently appeared among the highest-ranked priorities.

MDHSS participants identified their top three digital priorities:

"*Data-driven culture, data and technology workforce development, enterprise data platform"*

"*Automation, modernizing data systems, and upskilling staff to do public health work in the digital era. With recent funding cuts and staff loss, we were unprepared to continue on with our operations."*

Theme 3: Governance and Cross-Agency Collaboration

Participants identified structural and procedural barriers to cross-agency collaboration that extend well beyond technical limitations. These barriers impede coordinated digital transformation efforts and limit the effectiveness of inter-agency data-sharing initiatives. The current landscape requires public health teams to work across multiple State agencies and departments, each with distinct organizational cultures, procedures, and technology platforms. This fragmentation creates substantial friction in collaborative efforts, as described by one participant: *"better collaboration or data sharing between these agencies would also help with better coordinated efforts in the State level."*

Specifically, when agencies are legally required to share information, the absence of formal data-sharing agreements, incompatible technology platforms, and differing organizational cultures create substantial challenges to data sharing. Information exchange often defaults to primitive methods like emailing spreadsheets rather than automated, secure data transfers. One participant described receiving Excel spreadsheets from environmental agencies despite legal mandates for data sharing, noting, "*We don't have a data sharing agreement... it's very awkward sometimes."*

The need for data was highlighted by Mentimeter responses provided by MDHHS in identifying the State's top three priorities:

"Data visibility, simple access to public data, streamlined transfer between jurisdictions and State. These are necessary to improve efficiency in data development and to improve outcomes equitably."

"Getting data out to the public to be able to view in a digestible format"

"Access to public health datasets in real-time"

Participants with the ability to do so identified specific areas where State-level improvements could enhance inter-agency collaboration and data-sharing effectiveness. Rather than abstract discussions of coordination challenges, participants pointed to concrete organizational relationships and processes that currently impede collaborative efforts. Participants identified barriers related to payer systems (particularly Medicaid coordination) and relationships with State IT departments as significant impediments to effective collaboration. These findings

provide actionable insight into where governance and procedural improvements could yield the greatest impact on collaborative capacity. This was further outlined in the MDHSS responses on Mentimeter when asked about the greatest barriers to digital maturity:

> *"Redefine relationship with State IT org (DTMB) X 3. This is the biggest barrier to improving digital capacity"*
>
> *"Work more closely with Medicaid and other payers to leverage data available"*
>
> *"DTMB, DTMB, DTMB"*
>
> *"Communication and conflicting priorities between work areas. Lack of visibility between work areas creates redundancies."*

The specificity of these responses suggests that collaboration barriers are not merely philosophical or cultural but are embedded in particular institutional relationships and processes that could potentially be addressed through targeted policy and procedural interventions.

Summary of State Participant Results

The findings from MDHHS participants reveal significant opportunities to optimize State public health system performance, with important implications for both immediate health outcomes and long-term population health investment. Interoperability barriers create operational constraints that affect both responsiveness of local public health teams and limit the capacity for oversight by State leadership. For example, when Local Health Departments cannot access hospital admission data or communicable disease data, detection and response timelines become lengthy and require more resource-intensive efforts to contain spread of disease, which are much more costly than delayed and complex responses once communicable diseases have spread.

At the State level, limitations in interoperability mean that MDHHS cannot effectively monitor disease outbreaks or population health trends across the State in real time, compromising its ability to identify emerging outbreaks before they cross jurisdictional boundaries. When Local Health Departments operate with delayed information, the State loses early warning capabilities that are essential for effective coordination of multi-county public health responses. Delays in recognizing and tracking communicable disease spread can also force emergency resource mobilization rather than planned intervention deployment needed for effective containment measures.

The digital capacity of the public health workforce reveals limitations in workforce investments at both local and State levels. When highly skilled epidemiologists and public health nurses

allocate significant time to manual data processing, this may limit capacity for disease investigation, prevention programming, or community engagement initiatives. Interoperability advances may be an opportunity to strengthen performance of the public health teams across the State by automating access to data systems, streamlining data sharing to inform decisions proactively, and optimizing the workforce capacity to respond to public health challenges.

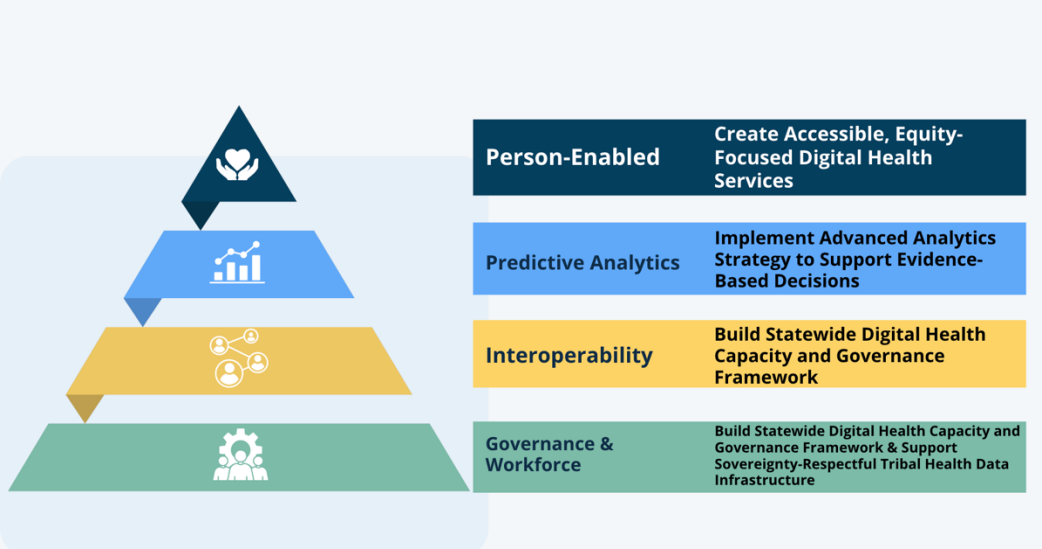
The cross-agency collaboration challenges identified by participants suggest that there are cultural and governance challenges that must be overcome for MDHHS to execute public health programs efficiently and effectively. Developing relationships with Medicaid programs and State IT departments is an opportunity to strengthen operational processes related to data sharing and cross-jurisdictional collaboration, and to build the State's capacity to implement integrated public health strategies. For example, implementation of automated surveillance capabilities during an emerging health threat offers proactive monitoring across the State and enables relationship building with external departments and jurisdictional teams.

From an operational standpoint, these structural limitations mean that public health initiatives requiring cross-agency coordination face inherent implementation challenges. Complex public health interventions addressing issues like chronic disease prevention, environmental health hazards, or health equity initiatives often cannot achieve optimal effectiveness because they must navigate governmental structures that were not designed to support integrated, multi-agency approaches to population health challenges.

Recommendations

Five recommendations have emerged from the DHI assessments and qualitative analysis of respondent discussions during guided interviews. These recommendations are grounded in direct feedback from local and Tribal Health Department teams. Each recommendation addresses specific challenges identified through the assessment while respecting Michigan's unique governance structure, geographic diversity, and sovereign Tribal relationships.

Figure 29: State of Michigan Digital Public Health Landscape Recommendations



The recommendations are aligned to the four foundational elements of digital transformation, illustrated in figure 28. Most public health teams are currently early in advancing the foundational elements of governance and interoperability. To continue to build on digital transformation across Michigan's Public Health System, Governance and Interoperability must continue to develop for all teams, particularly those that are early in their progress so that all teams have the capacity to advance foundational elements of digital transformation. The following recommendations begin with advancing these foundations of Governance and Interoperability across all public health teams to reduce variability and to standardize governance strategies across the State that enable all teams to access and use data systems equitably and ethically.

Recommendation 1: Advance a Statewide Digital Health Governance Strategy

A formal Digital Health Governance Strategy describes policies and decision-making processes that support learning and feedback from teams across the State, allocates resources, and clearly defines policy and decision-making that advances digital transformation. Standardized policies support and incentivize performance outcomes and enable public health teams to meaningfully engage with people and the populations they serve. Governance also supports workforce capacity building that is foundational to advancing digital transformation across the public health system in Michigan. Clearly established roles, responsibilities, and accountabilities within and across teams will reduce the significant variability in governance and workforce capacity across the State. Alignment of governance processes and decision-making across the State is varied, where teams have created governance processes in absence of well-established governance processes and principles to guide their work effectively and efficiently. Advancing governance across the State includes the following 5 strategies.

a. Participatory and Equitable Governance Structure

A participatory governance approach ensures local and Tribal Health Departments have a voice in defining and advancing governance processes and policies. A participatory Statewide governance strategy that is co-designed by every level of jurisdiction ensures that each health department, regardless of size or resources, operates within a well-defined, shared governance framework with standard roles and accountabilities to fully participate in a modernized, digitally enabled public health system. The State may wish to consider participatory co-design with team representatives so that decision-making processes and protocols meet the needs of unique county teams and Tribal populations. Participatory and equitable governance builds a collaborative learning network within and across teams and State leaders that enable teams to share challenges and solutions, learn from each other, and strengthen capacity across the State.

b. State-Level Governance and Cross-Agency Collaboration

A Statewide digital health governance strategy should include policies and decision-making processes that strengthen inter-agency collaboration at the State level. This is including defined data-sharing agreements, collaborative working relationships with agencies such as DTMB, and payer agencies. Building inter-agency collaboration may serve to automate processes and data-driven decision-making to enable more effective coordination between State agencies. This strategy overcomes challenges for teams in managing payer systems and DTMB where technology is not compatible, data-sharing agreements are not well established, and competing priorities among agencies are a barrier to building collaboration. Inter-agency agreements overcome challenges such as information and data sharing that is currently manual and labor intensive.

c. Standardized Policies and Data Standards

Standardized governance processes, data stewardship, and policies must be readily accessible and transparent. Accountability frameworks and management processes such as planning, building, running, and monitoring enable progress towards digital health objectives, informed by evidence to support Statewide adoption of digital technologies and utilization at scale. Findings emphasized that public health teams value Statewide policies with defined processes such as privacy, data security standards, compliance regulations, data standards, and governance processes that are flexible and support teams to advance digital public health services. Governance policies and practices must be paired with Statewide data standards, such as common data formats, terminology, and code directories, to allow for seamless exchange of data (e.g., immunization records, case reports, or surveillance data) without the need for manual downloading or reformatting.

d. Workforce Capacity Building

Workforce capacity and competency is the rapid evolution of digital health ecosystems that requires knowledge, skills, and abilities across the workforce to support and drive adoption of digital health strategies that aid person-enabled care focused on health and wellness. Workforce capacity building is an area of considerable opportunity for Michigan to support establishing ways for teams to access shared health knowledge or expertise, such as epidemiologist expertise that can serve the entire system, which would allow more equal opportunity for all teams to have greater insight into their local data. This system is already used by Tribal Health Departments, which have the Great Lakes Inter-Tribal Epidemiological Centre that provides research and data assistance to Tribal Health Departments in Michigan. Regional expert networks or centers of excellence enable sharing of expertise among teams across the State to mentor and help all teams to strengthen equity of expertise for all teams to overcome perceptions of "the haves and the have nots." For instance, a regional network approach could offer public health teams serving remote and rural communities the expertise of epidemiologists or data analysts to run case data and generate predictive models and track critical outcomes for their populations. This approach democratizes expertise across regions and teams to ensure every team has access to the expertise needed.

Workforce capacity building also requires comprehensive digital health literacy curricula, which can be mobilized and supported by partnerships with educational partners. Digital transformation education and training modules must be accessible to all staff to ensure Michigan has the capacity to advance digital transformation across the State equitably and responsibly. For example, training programs on foundational concepts of data and digital infrastructure, governance, resilience, predictive analytics, and AI would strengthen workforce capacity to automate their workflows and adopt digital tools to monitor and track progress of public health programs, services, and outcomes, which ensures that Michigan is digitally ready for the future.

e. Funding Allocation that Prioritizes Equity Across Public Health Departments

A State funding strategy would allocate resources to teams serving populations at greatest risk. Michigan can reduce the gaps by prioritizing funding to the teams in the two lowest quartiles of the DHI results to reduce the exceptional variability across teams . Reducing the variability will contribute to accelerated progress for all teams across the State to advance equity and progress for digital capacity Statewide. In addition, funding must be prioritized for counties where access to broadband internet or digital technologies is either not available or affordable, either for community members or local public health teams.

Digital connectivity is foundational to advancing digital transformation; however, Michigan has significant gaps in internet access due to geography and affordability. A Statewide broadband strategy is needed to ensure that every county can advance digital transformation and all

residents have the resources to access broadband internet. This will allow all counties to build on existing successful approaches, such as mobile clinics and outreach services, in underserved areas and scale solutions that address local needs.

Advancing governance across the State offers the potential for greater collaboration and strengthens access to expertise. This will democratize digital transformation potential where every jurisdiction operates with shared governance, supported by policy frameworks for data-driven decision-making, and a skilled and expert workforce to thrive in a digitally enabled public health system.

Key Points

- Establish a Statewide digital health governance strategy with clear roles and accountabilities that are transparent and serve as a guide for governance practices and policies for all public health teams across the State.
- Develop standardized policies for data sharing and privacy and security to enable every team to operationalize robust governance processes with consistent and transparent governance approaches to advancing digitally enabled public health across the State.
- Implement common data standards to support accuracy and timeliness of data and seamless information exchange across jurisdictions.
- Create regional expert networks to ensure that every public health team has the access needed to experts in key fields (e.g., epidemiology, advanced analytics, cybersecurity, privacy, IT support) to Local Health Departments and Tribal communities. This mobilizes existing expertise across the State, makes it accessible, and overcomes equity concerns (e.g., perceptions of the “haves” and “have nots”).
- Build a comprehensive digital health literacy strategy to create capacity across the public health workforce. This strategy will enable competency building and upskilling needed to advance digital public health across the State.
- Prioritize funding to advance progress for teams in the bottom quartiles of the DHI results to reduce variability in digital capacity among teams (“haves” vs. “have nots”). This will enable State initiatives, such as data interoperability, to be adopted by all teams, not just those that have advanced their digital infrastructure. Leverage shared learning across teams and regions, to ensure that every public health team has access to expertise and digital infrastructure across all jurisdictions.
- Implement a Statewide Broadband Strategy that accelerates connectivity of rural and remote communities and overcomes challenges for these communities while being responsible to public health needs.

Recommendation 2: Develop Sovereignty-Based Tribal Health Governance Strategy with the State

This strategy must be grounded in a government-to-government governance framework that recognizes Tribal Nations as sovereign governments. A governance approach built on this foundation honors sovereignty while enabling collaboration, secure data sharing, and the development of Tribal-relevant digital transformation initiatives. Findings show that Tribal teams envision centralized data portals for automated data exchange, improved communication protocols, and systems that explicitly accommodate government-to-government relationship building. Advancing these priorities would reduce friction in data requests and ensure platforms are designed to respect sovereignty while building collaborative strategies that advance the health of Tribal communities. This approach offers the State the opportunity to strengthen and build trust and respect and uphold sovereign governance with Tribal communities. Greater collaboration between the State and the Tribal communities may serve to enable reciprocal agreements on data sharing, strengthen accuracy of State data to better reflect tribal health, and generate greater accuracy of public health insights and initiatives to support the needs Tribal communities across the State.

a. Reciprocal Agreements with the State

Core to this recommendation is the development of reciprocal standardized Tribal data request processes between public health teams in Tribal communities, which helps make MDHHS data accessible through health information exchange. Reciprocal data sharing that respects the sovereignty of Tribal governments also supports Tribal health teams that must request and report data from State systems in alignment with sovereignty protocols. Formalized reciprocal agreements between the State and Tribal communities will reduce uncertainty, improve data accuracy, and may build productive relationships between State and Tribal partners.

b. Voluntary Inter-Tribal Data-Sharing Frameworks

This recommendation helps create a flexible data-sharing framework strategy that is synergistic with State data-sharing initiatives, while at the same time provides a framework for Tribal communities to share data with each other, where they deem relevant and important to advancing Tribal health. Findings from this project revealed that inter-Tribal data sharing remains limited, imposing barriers to coordinated responses and shared learning among Tribal communities. Flexible frameworks that respect Tribal sovereignty and enable Tribal Nations to collaborate, share data, and work together on regional health challenges, provides opportunities for the State to advance the health of tribal populations by developing a foundation for collaboration that does not compromise Tribal autonomy to make decisions.

Reciprocal agreements between the State and Tribal communities provides a foundation for more accurate data, greater collaboration that may inform public health planning, and services programing to best meet the needs of public health systems. For example, reciprocal data

agreements with the State offer collaboration on data standards that reflect the uniqueness of Tribal populations and greater accuracy in data sharing and reporting that reflects racial, cultural, and Tribal-specific indicators. Greater accuracy and standardization of State data that represents communities, both tribal and non-tribal, authentically serves to inform more targeted and equitable public health interventions.

This recommendation builds on the strengths of Tribal health teams and creates a digital health data infrastructure that honors sovereignty while enabling richer, more accurate health data to inform decisions. The outcomes of this recommendation may include stronger collaboration and more accurate data that empowers Tribal Nations to advance population health outcomes for their communities. In addition, the outcomes for the State include greater collaboration with Tribal communities, data-driven decisions to advance equity, and building trust in digital systems to advance population health for Michigan's Tribal communities.

Key Points

- Develop standardized and streamlined processes for Tribal data requests that respect sovereignty protocols.
- Design flexible reciprocal data sharing and digital health agreements that enable Tribal health teams to collaborate with other Tribal communities and the State public health teams, respecting the sovereignty of Tribal communities.
- Establish trusted, accurate socio-demographic data systems supported by Tribal teams that strengthen representative and meaningful engagement with Tribal communities.
- Integrate Tribal data systems with Statewide data platforms to enable automated report generation, automation in data access, and reporting for timely access to data by Tribal health teams.
- Support the creation of voluntary, inter-Tribal data-sharing frameworks that respect sovereignty while enabling collaborative approaches to regional health challenges.
- Develop shared data portals and automated reporting and communication processes with the State that streamline Tribal and State data requests, while respecting sovereignty approval processes, and lay the groundwork for government-to-government collaboration.

Recommendation 3: Strengthen Interoperability of Digital Public health Infrastructure

a. Advance Interoperability across State, Local, and Tribal Data Systems

An Interoperability Strategy is recommended to create automated flow of data between Michigan's core public health data systems (MCIR, MDSS, MI-WIC, MiHIN, and Vital Statistics),

local public health data, and Tribal health data systems. Rather than developing one Statewide data infrastructure and platform, prioritize making these data systems flow data to designated, securely identified stakeholders for seamless exchange data. A fully interoperable, unified data infrastructure would address the many challenges of the current siloed data systems and offer a number of key opportunities, including secure single sign-on for users and person identification that ensure robust privacy and security of access to State data systems. Interoperable data systems have the significant advantage of reducing the burden on public health teams, strengthening data accuracy and data integrity, automating workflows, and advancing data-driven decision-making for all teams to drive proactive, evidence-based decisions.

Integrated data flow and automated reporting functions across the State would enable data-driven decision-making for all public health teams. Findings emphasized that the lag in available State datasets, often one to two years old, severely constrains proactive public health decision-making. Interoperable data systems generate automated reports on vaccination coverage, prevalence of communicable disease or chronic illness, case incidence, or maternal health outcomes. Interoperable data systems enable teams across the State to proactively track and monitor public health indicators to identify changes in population early, which informs proactive prevention-focused public health services.

b. Integration with Electronic Health Records (EHRs)

A critical element for public health teams delivering clinical services is the integration of State data systems with the EHRs used by local and Tribal Health Departments, hospitals, and clinics. Findings highlighted that unclear governance over reconciliation between MCIR and local EHRs often left vaccine records, lab records, and hospitalization outcomes incomplete or inconsistent, forcing nurses to manually verify histories. Clinical health record systems that are interoperable with State data systems ensures that data flows bidirectionally between clinical care teams and public health teams supported by digital infrastructure that automates reporting and data flow (e.g., for surveillance, population health data) across the State. This integration further advances monitoring and surveillance of health outcomes, communicable disease prevalence, or other population health indicators. Alignment of public health data and clinical data helps strengthening continuity of care for individuals (e.g., chronic illness population) who receive services from public health, primary care, and community-based services. This data integration also offers more robust population health monitoring with full visibility of use of health services relevant to public health outcomes. In addition, data integration can help reduce duplication of services and enable teams to identify potential risks to communities or identify service delivery gaps.

c. Automated Data Exchange

Interoperable data systems can automate data access and the reporting and use of advanced analytics, which will enable the State to monitor public health outcomes and proactively predict risks to communities. Automated data exchange supports streamlined, single point of access to

State and local data systems with flexible business intelligence tools that allow automated monitoring and tracking of key public health indicators (e.g., immunization, surveillance, maternal and child health outcomes) to inform decisions, program planning, and strategic planning across the State. An interoperable data system that offers automated data exchange reduces the burden on teams that enter data once and makes data visible across all relevant data systems. Automated exchange of State data and local public health data also ensures that data can be readily accessed in a timely manner, when and where needed. One example of advancing interoperability is to automatically upload a vaccination record in MCIR into WIC, which would be tracked by surveillance databases, thus eliminating data entry errors and delays in accessing data.

d. Interoperable Laboratory Data Systems

Digitally enabled and automated laboratory reporting was identified by many teams as a way to improve data-driven decision-making and, in particular, communicable disease surveillance. Teams described receiving laboratory data by fax or in spreadsheets, which must be manually entered into surveillance data systems and consumes significant staff time and resources. Requiring all State lab results to flow through MiHIN would reduce reliance on fax reports and ensure that conditions such as influenza, RSV, or foodborne illness are readily identified and tracked within the public health surveillance system in near real time. Real-time data flow of lab results would make public health datasets, which currently lag in availability by up to one or two years, more accurate and timely. Automated reporting of lab results would provide the most up-to-date information possible to inform decisions.

e. Cross-Agency and Cross-Border Data Sharing Agreements

To address barriers identified with non-traditional partners such as medical examiners, insurance providers, childcare facilities, and veterinary systems, the interoperability strategy should include standardized agreements and technical pathways for automated data exchange across these organizations and facilities. Data sharing with these organizations would support data-driven decision-making informed by analytics, which transition data into knowledge and insights that advance personalized interventions to unique populations and communities. Data-sharing collaboration with neighboring States (e.g., Indiana, Ohio, and Wisconsin) would further close data gaps for border communities to ensure that every individual has a complete and accurate public health record. In addition, public health emergencies such as outbreaks can be readily tracked across State borders to support rapid response initiatives that strengthen regional resilience.

Collectively, advancing interoperability across the State creates seamless and automated flow of data to State and public health teams to support data-driven decision-making that is accurate, comprehensive, and responsive to public health risks and emergencies. For Michigan, this strategy is set up for earlier detection outbreaks, greater coordination of public health responses, and greater precision in reducing risks to the health of communities and automating workflows to strengthen the capacity of the public health workforce. Ultimately, an integrated

data infrastructure enhances efficiency, strengthens trust in public health data, and equips the State to quickly and confidently protect communities.

Key Points

- Strengthen interoperability between MCIR, MDSS, MI-WIC, MiHIN, and Vital Statistics.
- Integrate State data systems with EHRs across hospitals, clinics, and Local Health Departments to enable population health surveillance and continuity of care.
- Implement secure, single login, which streamlines access to all core datasets.
- Automate data exchange, which would eliminate duplicate entry and manual data reporting processes.
- Enable mandatory digital laboratory reporting through MiHIN.
- Support real-time data flow to continuously refresh data, which will ensure data is current, accurate, and accessible to public health teams.
- Advance cross-border data-sharing agreements (Indiana, Ohio, Wisconsin) to deliver accurate data for border communities.
- Establish standardized data-sharing agreements and interoperability pathways with non-traditional partners (medical examiners, insurers, childcare facilities, and veterinary systems) to automate data exchange and strengthen cross-sector public health coordination.

Recommendation 4: Implement Advanced Analytics Strategy to Support Evidence-Based Decision-Making

a. Develop a Statewide Analytics Strategy

An Advanced Analytics Strategy defines how data will be collected, validated, and mobilized to guide public health decisions. Findings indicate that Michigan's analytics environment is early in its development, often described as compliance-driven, with datasets lagging by one to two years. Staff explained that this delay limits analytics to retrospective reporting, manual use of excel sheets, and very limited use of analytics to anticipate risks or act early. A Statewide analytics strategy and implementation plan with defined goals, roles and accountabilities must be developed to progress analytics across the State. A Statewide approach ensures that analytics are accessible and supported by workforce capacity building to give every public health team the competency to adopt and responsibly use advanced analytics to serve all Michigan populations. Advancing analytics across the State of Michigan can transition its public health system to a proactive, public health system with the capacity for proactive, evidence-based decisions at every level.

b. Improve Data Quality and Inclusivity

The quality of data that represents the diverse communities across Michigan needs to be improved. Findings highlighted that many departments cannot disaggregate data by race, geography, or unique population segments, which hinders tracking population health to evaluate program outcomes. Data quality is strengthened when data accurately reflects populations and unique demographics and is inclusive of all population segments. When every community is reflected in the data, State and local organizations can better understand disparities, tailor interventions, and leverage data for setting priorities and public health planning. For example, if public health teams had access to accurate and timely vaccination data by age, race, ethnicity, and geography, the State and local teams could quickly identify communities with lower coverage rates and implement programs designed to improve vaccination rates. Having timely, inclusive data ensures that public health programs are tailored to the unique needs and life circumstances of every community.

c. Dashboards and Benchmarking Tools

Dashboards and benchmarking tools can help mobilize data so public health teams can track progress towards public health goals, identify shifts in population health early to inform prevention strategies, and monitor the effectiveness of public health programs. Operational dashboards and Statewide performance benchmarking allows Local Health Departments to efficiently and effectively track their performance, benchmark their progress relative to peer counties, identify strengths and gaps in services, and scale public health programs. A dashboard strategy that lets teams select key data points for their counties and track data to monitor progress and performance (e.g., costing, access time, outcomes) informs decision-making and planning among local and State leaders and addresses retrospective reporting challenges . Findings also highlighted the opportunity to align comparative analytics with Michigan's accreditation process, creating a standardized mechanism for health departments to benchmark outcomes and performance indicators across peers. Alignment of dashboard tools with Accreditation offers a practical strategy for teams that leverages existing structures while building analytics maturity Statewide.

d. Roadmap to Predictive Analytics

The Analytics Strategy for the State should include a phased strategic roadmap that helps Michigan achieve predictive and AI-enabled analytics maturity. Predictive and personalized analytics advances require automated data flow within and across multiple data systems, connecting individual-level data from EHRs, devices, and portals with State data systems. This will enable predictive and prescriptive analytics tools to proactively identify public health risks (e.g., risk of outbreaks or spread of communicable disease), which in turn will inform public health strategies and highlight prevention or proactive services opportunities that mitigate health risks for individuals and communities. Advancing a strategy towards predictive analytics across the State builds on the strengths of State and local data systems, mobilizes data to inform decisions, and includes building workforce capacity among public health teams to integrate predictive analytics into workflows and public health strategic planning. These tools will allow public health to identify early signals of emerging risks, such as declining vaccination

rates to predict disease outbreaks, which will inform the design of interventions that mitigate risks and protect the health of communities. As the State builds analytics maturity, predictive modeling can begin with simple forecasting and progress toward advanced applications such as artificial intelligence tools to predict public health outcomes. Importantly, the strategy ensures that this evolution is strategic and systematic: first building reliable data and data infrastructure, then advancing strategic public health goals where analytics is used to track progress towards goals, and finally advancing toward predictive and AI-enabled insights that inform prevention strategies to support and sustain population health.

The outcomes of a Statewide Advanced Analytics Strategy are transformative. For public health overall, the strategy will create a more accurate, inclusive, and timely understanding of health across Michigan, driving earlier detection of risks and informing proactive and targeted interventions, to achieve equitable health outcomes across the State. For Local Health Departments, analytics informs decision-making and provides reliable tools to better monitor and track the health of their communities, benchmark their progress against peers, act on real-time insights, and reduce workload with automated reporting. A State-level strategy creates a consistent framework that aligns and standardizes analytics approaches across jurisdictions, while also allowing flexibility for teams to tailor analytics and dashboards to the needs of their county populations. Analytics also strengthens transparency and lets leaders allocate resources more effectively based on evidence of population health risks and outcomes. As the State continues to develop its analytics strategy, it creates the foundation for predictive and AI-enabled public health systems that continuously learn, adapt, and improve responsiveness to the public health needs of every community and population.

Key Points

- Create a phased Analytics Strategy that evolves from access to reliable standardized data and progresses toward predictive and AI-enabled analytics that informs proactive and agile public health across the State.
- Establish Statewide data standards to ensure accuracy, timeliness, and inclusivity of data that represents all populations and jurisdictions.
- Develop operational dashboards and benchmarking tools to support local and State teams' decision-making in real time to advance public health goals.
- Leverage Statewide analytics to align with accreditation processes, enabling standardized benchmarking and performance comparability across all Local Health Departments.

Recommendation 5: Advance Equity-Focused, Person-Enabled Digital Health Services

Equity is foundational to the mandate of public health. Michigan's public health system serves diverse rural, urban, and Tribal populations; this diversity is both a strength and a driver of public health strategy. The digital capacity assessment revealed varied and limited progress among teams in advancing Person-Enabled Health initiatives. The significant lag in these advances are a result of the public health teams' current lack of governance and interoperability maturity . As these foundational dimensions are advanced, public health teams will be well positioned to offer equitable and person-enabled public health services that honor and reflect the unique public health needs of each county and Tribal community across the State. These personalized services will help people and populations meet their health and public health needs and engage with public health teams through the use of digital tools and technologies..

a. Personalized Public Health Services for Community and Workforce

Person-enabled digital health services lets individuals and communities choose how they wish to engage with public health teams based on their language, culture, and unique life circumstances. Digitally enabled tools and technologies provide flexibility, personalization, and timely access to public health services. Personalized services allow public health teams to meaningfully engage the communities they serve by building trust and making services more accessible and relevant. For example**,** a resident in a rural community can use digital scheduling and virtual care delivery as an alternative to traveling long distances, and a working parent can log into a portal after hours to book a vaccination appointment for their child. Findings highlighted that public health teams aspire to leverage digital technologies designed with workforce and community users in mind, emphasizing intuitive interfaces, reduced training burden, and streamlined workflows that automate processes for staff and connect clients to services through mobile apps and portals.

b. Population Health Services Tailored to Community Needs

Person-enabled health also requires personalization at the population level, where public health services are designed to address the unique needs and health challenges of entire communities. This strategy involves using local public health data and mobilizing community engagement to inform program design that is tailored to the population needs and aspirations. Personalized programs ensure interventions are relevant and equitable to communities. For example, a county with high diabetes prevalence could integrate culturally relevant nutrition support that is personalized to communities and populations into digital platforms and apps to bolster program delivery. A Tribal community might co-design immunization outreach strategies that align with community values and cultural traditions to support vaccine uptake. By embedding personalized approaches to into population health programs, public health can

more effectively address disparities and advance culturally relevant and personalized public health services for communities and populations.

c. Leverage Tribal Strengths in Person-Enabled Health

Tribal Health Departments demonstrate particular strength in Person-Enabled Health compared to other local public health teams. Tribal health teams advance public health programs grounded in foundational principles such as participatory governance and community engagement that embed community voice in data use and design of programs and services. The expertise of Tribal public health teams can be leveraged to support learning and capacity building for teams that are earlier in advancing person-enabled services. Building on the strengths of Tribal health teams, the State can accelerate progress of every LPHD to strengthen personalization of public health services, community engagement, and participatory governance that are consistent with community values and aspirations.

d. Patient Portals and Self-Management Tools

Expanding patient portals and self-management tools that support people to manage their health and care is a core element of Person-Enabled Health. Portals provide residents with secure and timely access to their data such as vaccination records, lab results, and maternal-child health data. They can also host health literacy tools, public health program guides, translation services, program reminders, vaccine information, communicable disease reporting, and outbreak updates. Integrated scheduling and communication functions allow residents to book services, receive updates, and communicate directly with public health staff. These features can serve to reduce administrative delays and empower residents to manage their health in more personalized approaches that align with their unique values and life circumstances.

- ## Transparency and Public Accountability

Transparency and public accountability are central to person-enabled public health. Public health performance reporting and sharing population health outcomes data should be reported publicly in accessible formats, on websites and portals, and communicated on a regular basis with communities and populations. Transparency of public health data, outcomes, and performance indicators builds trust with communities, strengthens engagement, and opens opportunities for community input and feedback to inform public health planning.

- ## Equity as a Hallmark of Person-Enabled Public Health

Equity must remain the hallmark of Person-Enabled Health, ensuring every individual and

community can access public health information and services digitally**.** Significant variability among public health teams exist with most still early in developing digitally enabled services. As the State advances both Governance and Interoperability, teams will have the foundation to advance digital public health services that reflect the needs of every individual and community. Person-enabled public health services create a system that is proactive, transparent, and community-driven, offering individuals and families greater control and flexibility in accessing public health services. Over time, this will strengthen community engagement, trust, and health outcomes as residents become active participants rather than passive recipients of public health services.

Key Points

- Establish a Statewide strategy to guide the design and development of person-enabled services at both the individual and population level.
- Implement patient portals and self-management tools across all State-funded systems to give individuals and communities secure, personalized access to services and data.
- Deploy digital scheduling and communication tools that strengthen self-service access and responsiveness to diverse community needs.
- Leverage the successes of Tribal health teams to advance participatory governance and community engagement, with the support of personalized digital health tools.
- Scale and support strategies for reaching communities without reliable internet access.
- Advance public transparency by making performance, goals, and outcomes available publicly to communities.

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Appendix B

Sensemaking Session Slides
& Discussion Questions

Data Modernization Sensemaking Session

October 21, 2025

Agenda

- Review Data Modernization Initiative
  - DHI Assessment
- Purpose of Sensemaking Session
- Group Discussion
- Next steps & Wrap Up

Data Modernization Initiative

Goal: Evaluate the current state of digital health capacity to inform statewide planning to advance a modernized, and robust digital health ecosystem to advance equitable public health services across the state.

July and August 2025: 38 health departments, 9 tribal health agencies, and one State level team participated in Digital Health Indicator (DHI) Assessment.

Four Key Domains Measured in DHI Assessment

1) Governance & Workforce Capacity: Data stewardship, privacy, security, workforce integrity

2) Interoperability: Mobilize and enable data exchange across the journey of care

3) Predictive Analytics: Transforms data into knowledge, insights, and outcomes

4) Person-Enabled Health: People manage health and wellness, with support of health teams

Data Modernization Wishlist – Local Health Departments: If you had a magic wand, what would you change?

Need for digital connectiveness/interoperability between State data systems and their local system data and EHR.

Desire for a common data platform across the State that could be customized by local health departments

Access to data that is both current and accurate to inform real-time decisions

Seamless access to data from external partners (e.g. medical examiners, healthcare systems, insurance companies, neighboring states).

State-wide coordination and standardizing of processes, common resources, and formal governance frameworks

Need to eliminate manual, repetitive tasks and implement automated systems that would free staff to focus on direct public health services and strategic activities

This session will ask about:

Homegrown solutions and local workarounds that departments and tribal agencies have developed to keep services running

Gaps being filled by local fixes and what opportunities or challenges they create

Core Data Sources

Case Data. Case data represent comprehensive disease and condition information used by public health to understand disease burden, to know who is at risk, and to identify outbreaks.

Laboratory Data. Laboratory data, including test results and test type, enable public health agencies to track disease trends and identify outbreaks or exposures and help frontline providers diagnose and treat health conditions.

Emergency Department (ED) Data. ED data, including clinical diagnoses, signs and symptoms, help identify near real-time trends for new, emerging and developing public health threats to inform faster detection and response.

Vital Record and Vital Statistics Data. Vital record and vital statistics data include birth and death data and are essential to understand disease severity, mortality, trauma and toxicity that might signal a larger public health emergency.

Immunization Data. Immunization data capture vaccine doses administered (both routinely recommended and response-related) to support calculating vaccination coverage levels and trends.

Healthcare Capacity and Utilization Data. Healthcare capacity and utilization data assess availability of healthcare resources, including staff, beds and equipment.

Wastewater Surveillance Data. Wastewater surveillance data capture the presence of virus through assessment of wastewater samples, serving as an early warning of viruses spreading throughout a community.

Michigan's Statewide Data Systems

- Michigan Care Improvement Registry (MCIR)
- Michigan Disease Surveillance System (MDSS)
- Bureau of Laboratories Systems
- Vital Record and Vital Statistics Data
- State WIC System (MI-WIC)
- Michigan Health Information Network (MiHIN)
- Great Lakes Inter-Tribal Epidemiology Center (GLITEC)

Manual Workarounds

These approaches keep daily work functioning but are burdensome, staff-dependent, and not sustainable long-term.

Examples pulled from conversations with HIMSS:

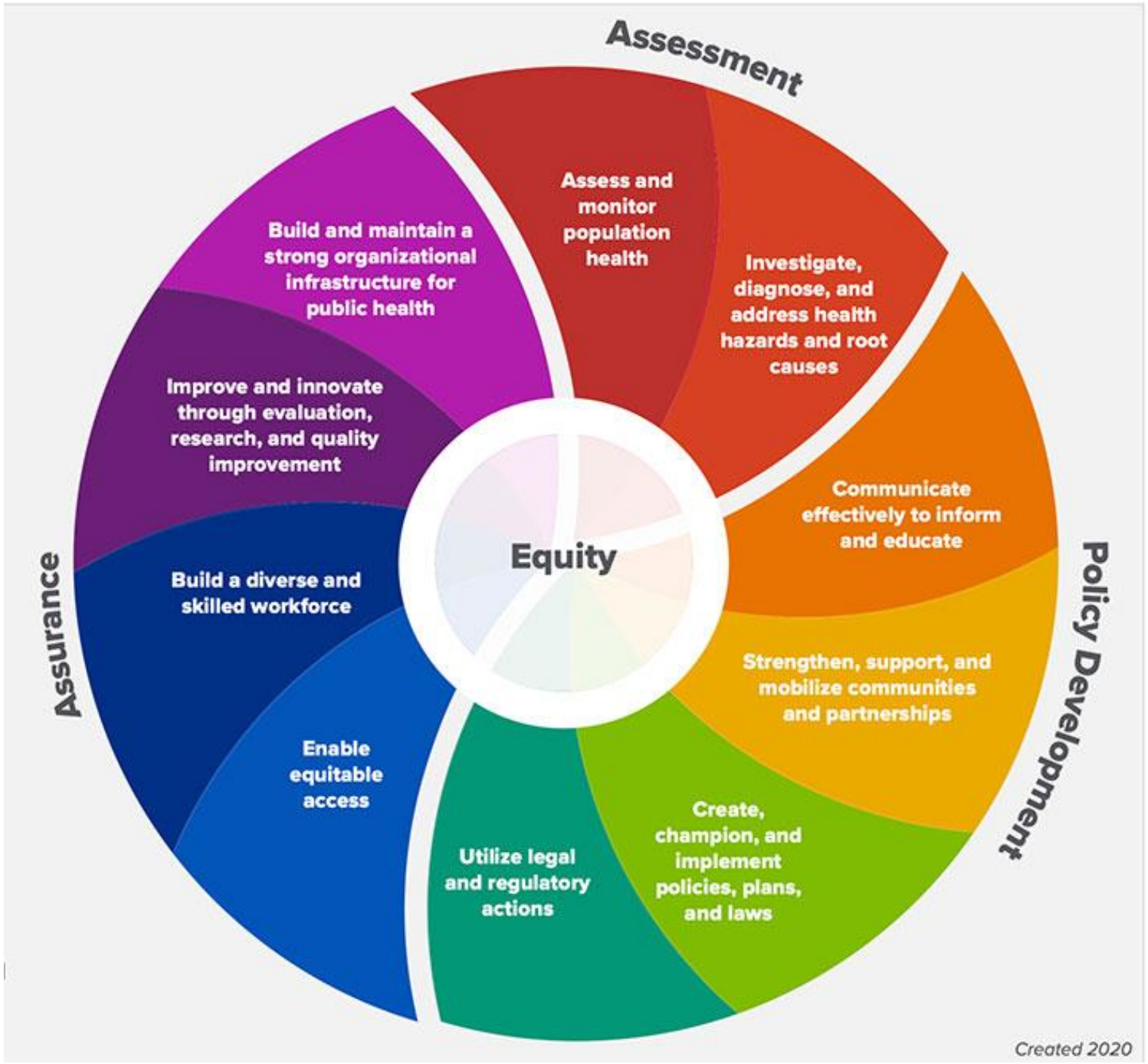
- Manual processes/data lookup
- Manual tracking of lab results/manual data entry of lab results
- Some data is still being faxed to the state or having to call alerts on adverse events
- Manual surveillance identification
- Compiling data and producing reports without automation
- Others?

Emerging Solutions

These approaches currently fill gaps and could evolve.

Examples pulled from conversations with HIMSS:

- SQL queries
- Power BI/Tableau/MySidewalk access
- SDOH screening tools
- Local attempts to connect EMRs and labs
- MiThrive Collaboration
- Partnerships with Universities for data analysis
- Others?



10 Essential Public Health Services

1. **Assess and monitor** population health.
2. **Investigate, diagnose and address** health hazards and root causes.
3. **Communicate effectively** to inform and educate.
4. **Strengthen, support and mobilize** communities and partnerships.
5. **Create, champion and implement** policies, plans and laws.
6. **Utilize legal and regulatory actions.**
7. **Enable equitable access**.
8. **Build a diverse and skilled** workforce.
9. **Improve and innovate** through evaluation, research and quality improvement.
10. **Build and maintain** a strong organizational infrastructure for public health.

Next Steps

- Our team will create final recommendations based on this session and the session with Tribal Health Officers
- Upcoming meetings:
  - November date TBD – please complete scheduling poll!
    - We will ask you to provide feedback on initial recommendations for Michigan's data modernization efforts.
  - December 16th at 10am
    - Will share revised recommendations for group input and approval

Data Modernization Sensemaking Session

Tribal Health Agencies

November 19, 2025

Welcome!

Please share:

- Name
- Organization
- What is something bringing you joy lately?

Agenda

- Review Data Modernization Initiative
  - DHI Assessment
- Purpose of Sensemaking Session
- Review Recommendations
- Group Discussion
- Next steps & Wrap Up

Data Modernization Initiative

Goal:

Evaluate the current state of digital health capacity to inform statewide planning for a modernized, robust digital health ecosystem and advance equitable public health services across the state.

July and August 2025:

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Wastewater Surveillance Data. Wastewater surveillance data capture the presence of virus through assessment of wastewater samples, serving as an early warning of viruses spreading throughout a community.

Data Modernization Wishlist – Tribal Health Agencies: If you had a magic wand, what would you change?

Unified health information systems that would consolidate patient data across multiple providers, insurance systems, and care settings.

Streamlined insurance verification and administrative processes

Connectiveness between State systems and EHRs, either by creating interfaces between EHRs or establishing one common EHR.

Need for streamlined, standardized data access systems that respect tribal sovereignty while enabling effective collaboration with state agencies and other tribal nations.

Digital systems that empower patients with direct access to their health information and access to digital tools to support making informed healthcare decisions.

Provide accurate, useful information that supports decision-making and avoids creating unnecessary administrative burden.

Overview of Draft DHI Recommendations

1. Advance a statewide digital health governance strategy
2. **Develop sovereignty-based tribal digital health governance strategy with the state**
3. Strengthen interoperability of digital public health infrastructure
4. Implement advanced analytics strategy to support evidence-based decision making
5. Advance equity-focused, person-enabled digital health services

Develop Sovereignty-based Tribal Digital Health Governance Strategy

HIMSS recommended strategies:

- Develop standardized and streamlined processes for tribal data requests
- Design reciprocal data sharing and digital health agreements
- Support creation of inter-tribal data sharing frameworks
- Develop data portals and automated reporting and communication processes with the state

<u>Group Reflection:</u>
How does this recommendation align with your experiences and needs?
What could make this recommendation actionable?

Strengthen Interoperability of Digital Public Health Infrastructure

Recommended strategies:

- Strengthen interoperability between MICR, MDSS, MI-WIC, MiHIN, and Vital Statistics
- Integrate state data systems with EHRs across hospitals, clinics, and LHD/tribal health agencies
- Single, secure login to streamline access to core datasets
- Automated data exchange
- Enable mandatory digital laboratory data reporting through MiHIN
- Cross-border data sharing agreements with states
- Standardized data sharing agreements and interoperability pathways with non-traditional partners (medical examiners, insurers, childcare facilities, etc.)

Advance a Statewide Digital Health Governance Strategy

Recommended strategies:

- Establish transparent roles and decision-making processes as a guide for all teams
- Implement common data standards and seamless information exchange
- Create regional expert networks to ensure access (epidemiology, IT, privacy, etc.)
- Prioritize funding for teams scoring lowest in DHI

Implement Advanced Analytics Strategy

Recommended strategies:

- Create a phased analytics strategy progressing toward predictive and AI-enabled analytics
- Establish statewide data standards
- Develop operational dashboards and benchmarking tools
- Leverage statewide analytics to align with accreditation processes, and enable standardized benchmarking

Advance Equity-Focused, Person-Enabled Services

Recommended strategies:

- Create statewide strategy to guide development of person-enabled services
- Implement patient portals and self-management tools
- Deploy digital scheduling and communication tools
- Advance public transparency by making performance goals and outcomes available
- Scale and support strategies for communities without reliable internet
- Leverage successes of tribal health teams in advancing community engagement

Next Steps

- MPHI will theme actionable steps & share back for final feedback
- MPHI will develop final recommendations based on this session and the session with Local Health Departments
- Upcoming meeting: December 11 at 10:00am
  - Will share final recommendations for group input and approval

Data Modernization Sensemaking Session 2

November 5, 2025

Welcome!

Please share in the chat:

- Name
- Organization
- What song is stuck in your head lately?

Agenda

- Welcome and Purpose
- Recap of Session 1
- Review Recommendations from DHI Assessment
- Group Reflections
- Next steps & Wrap Up

Data Modernization Initiative

Goal:

Evaluate the current state of digital health capacity to inform statewide planning for a modernized, robust digital health ecosystem and advance equitable public health services across the state.

July and August 2025:

38 health departments, 9 tribal health agencies, and one State level team participated in Digital Health Indicator (DHI) Assessment.

Four Key Domains Measured in DHI Assessment

1) Governance & Workforce Capacity: Data stewardship, privacy, security, workforce integrity

2) Interoperability: Mobilize and enable data exchange across the journey of care

3) Predictive Analytics: Transforms data into knowledge, insights, and outcomes

4) Person-Enabled Health: People manage health and wellness, with support of health teams

Data Modernization Wishlist – Local Health Departments: If you had a magic wand, what would you change?

Need for digital connectiveness/interoperability between State data systems and their local system data and EHR.

Desire for a common data platform across the State that could be customized by local health departments

Access to data that is both current and accurate to inform real-time decisions

Seamless access to data from external partners (e.g. medical examiners, healthcare systems, insurance companies, neighboring states).

State-wide coordination and standardizing of processes, common resources, and formal governance frameworks

Need to eliminate manual, repetitive tasks and implement automated systems that would free staff to focus on direct public health services and strategic activities

Recap of Session 1: What We Heard…

- Access varies widely: Differences in what state epi's can access vs epi's in LHD's. Differences in access between LHD's. Need to streamline the process to request data
- Changes in compliance: Requirements change every couple of years, adding confusion (i.e. vital records)
- Improve platforms: MyGateway/MyHIN has been difficult to navigate; MCIR has limited vaccines and issues with access
- Outbreak/contact investigations: No easy way to query across counties; a lot of workarounds
- Need for statewide consistency: Shared REDCap license (example: Illinois) and EMR agreements by the state could make work more efficient

This session will focus on:

- Draft Recommendations from DHI assessment
- Group Feedback on Recommendations
  - How do these recommendations align with your experiences and needs?
  - Are there recommendations that feel like they do not align with your experiences/needs? What doesn't feel right? How could it be improved?
  - Which recommendations feel most relevant and helpful if they were implemented?

Overview of Draft DHI Recommendations

1. Advance a statewide digital health governance strategy
2. Develop sovereignty-based tribal health governance strategy with the state
3. Strengthen interoperability of digital public health infrastructure
4. Implement advanced analytics strategy to support evidence-based decision making
5. Advance equity-focused, person-enabled digital health services

Advance a Statewide Digital Health Governance Strategy

Recommended strategies:

- Include descriptions of policies and decision-making processes that support learning and feedback across the state and allocate necessary resources
- Establish transparent roles and decision-making processes as a guide for all teams
- Implement common data standards and seamless information exchange
- Create regional expert networks to ensure access (epidemiology, IT, privacy, etc.)
- Prioritize funding for teams scoring lowest in DHI

Develop Sovereignty-based Tribal Health Governance Strategy

Recommended strategies:

- Develop standardized and streamlined processes for tribal data requests
- Design reciprocal data sharing and digital health agreements
- Support creation of inter-tribal data sharing frameworks
- Develop data portals and automated reporting and communication processes with the state

Strengthen Interoperability of Digital Public Health Infrastructure

Recommended strategies:

- Strengthen interoperability between MICR, MDSS, MI-WIC, MiHIN, and Vital Statistics
- Integrate state data systems with EHRS across hospitals, clinics, and LHDs.
- Single, secure login to streamline access to core datasets
- Automated data exchange
- Cross-border data sharing agreements with states
- Standardized data sharing agreements and interoperability pathways with non-traditional partners

Implement Advanced Analytics Strategy

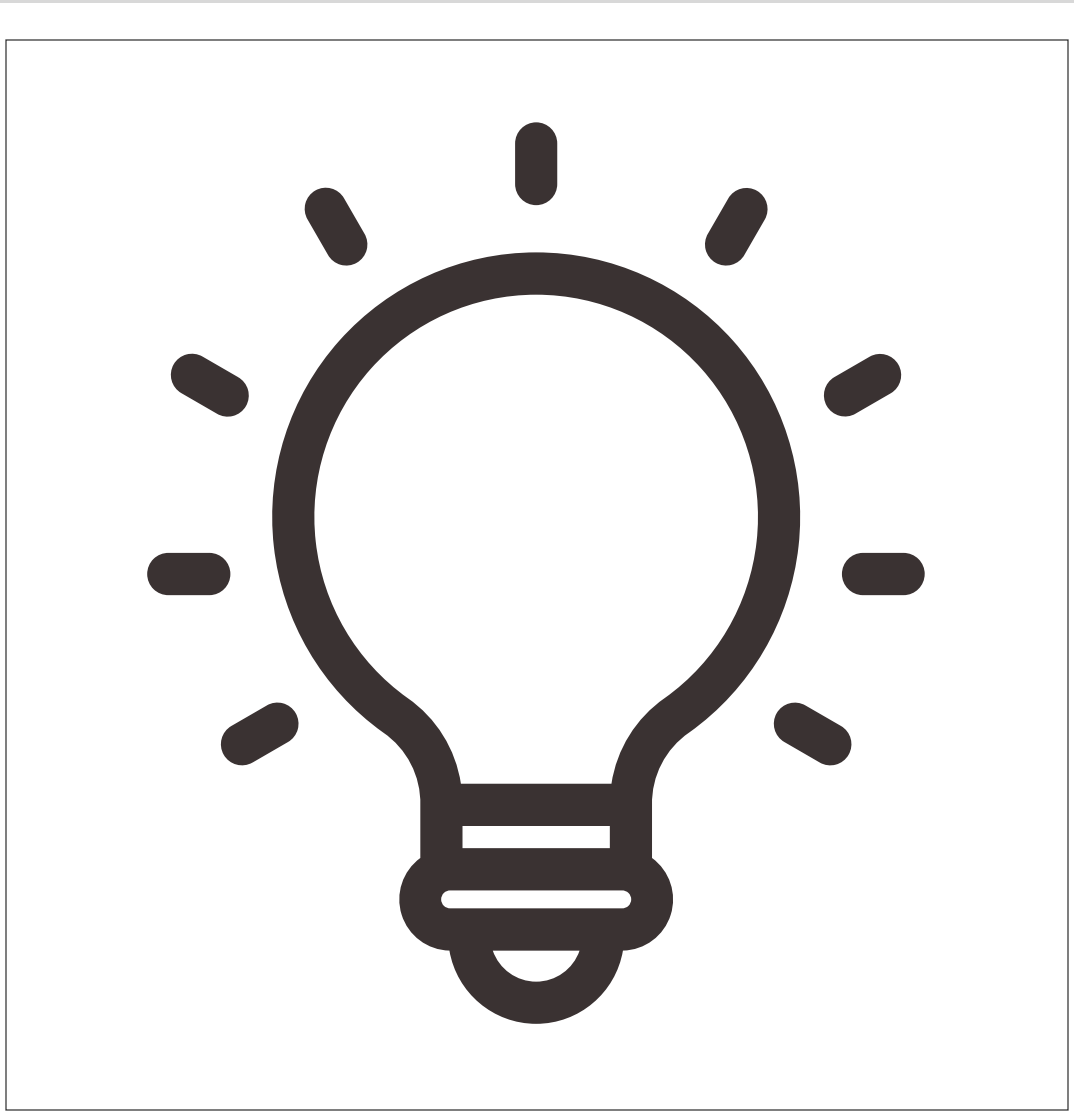
Recommended strategies:

- Create a phased analytics roadmap
- Establish statewide data standards
- Develop operational dashboards and benchmarking tools
- Leverage statewide analytics to align with accreditation processes, and enable standardized benchmarking across LHDs

Advance Equity-Focused, Person-Enabled Services

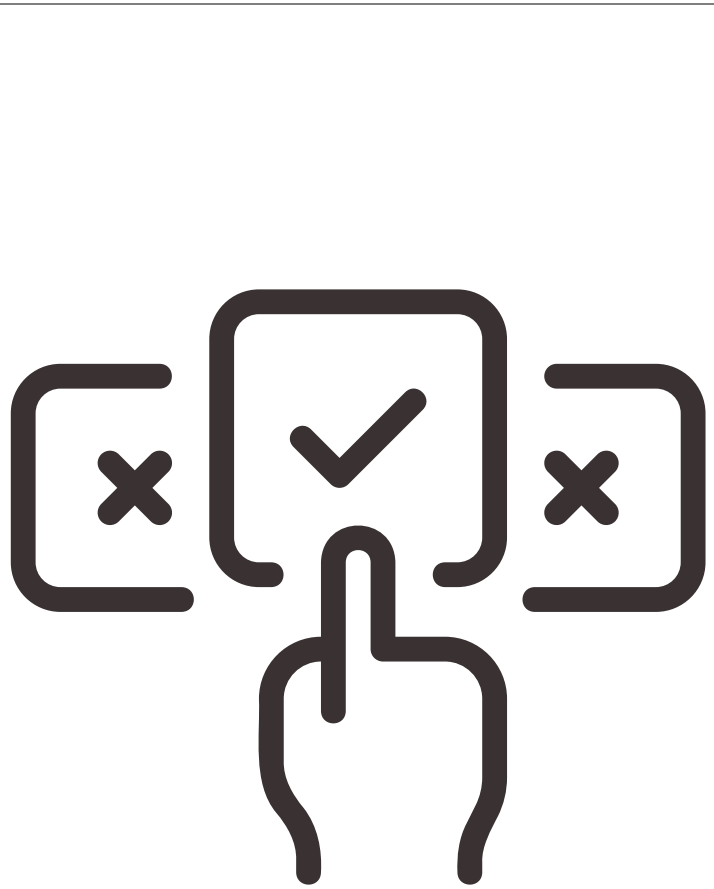
Recommended strategies:

- Create statewide strategy to guide development of person-enabled services
- Implement patient portals and self-management tools
- Deploy digital scheduling and communication tools
- Advance public transparency by making performance goals and outcomes available to all
- Scale and support strategies for communities without reliable internet
- Leverage successes of tribal health teams in advancing community engagement



Group Reflections

- How do these recommendations align with your experiences and needs?
- Are there recommendations that feel like they do not align with your experiences/needs? What doesn't feel right? How could it be improved?
- Which recommendations feel most relevant and helpful if they were implemented?



Polling

- Vote for **2 recommendations** you would like to see the State prioritize first, considering factors like feasibility to make changes and impact.

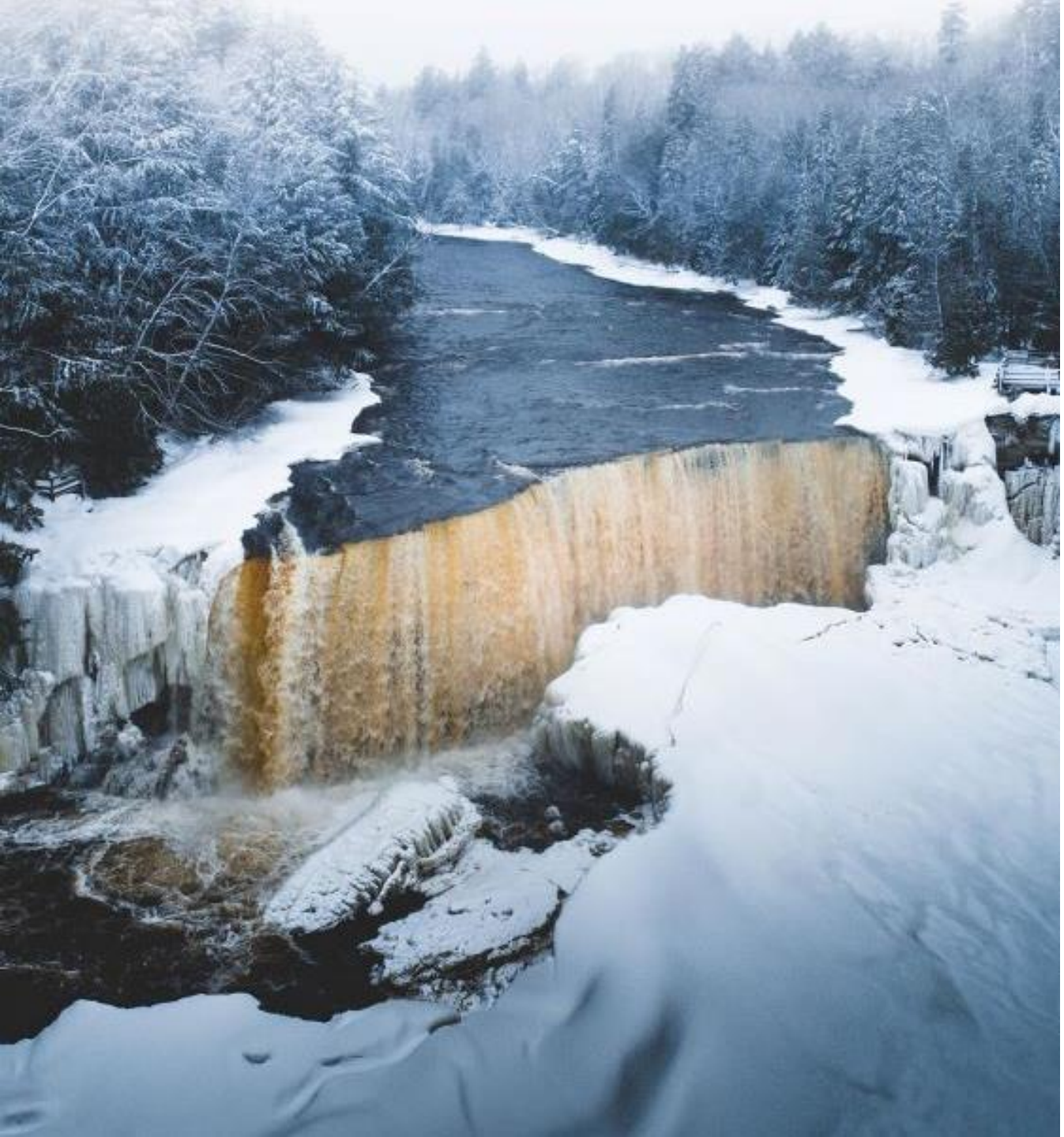
Next Steps

- MPHI will theme actionable steps & share back for final feedback
- MPHI will develop final recommendations based on this session and the session with Tribal Health Officers
- Upcoming meetings:
  - December 16th at 10:00am
    - Will share final recommendations for group input and approval

Data Modernization Sensemaking Session

Tribal Health Agencies

December 11, 2025



Welcome!

Please share:

- Name
- Organization
- Your favorite thing about winter

Agenda

- Review of the Data Modernization Initiative
- Review Revised Recommendations & Key Considerations
- Group Reflections
- Next Steps & Wrap Up

Review of Data Modernization Initiative

Goal:

Evaluate the current state of digital health capacity to inform statewide planning for a modernized, robust digital health ecosystem and advance equitable public health services across the state.

July and August 2025:

38 health departments, 9 tribal health agencies, and one State level team participated in Digital Health Indicator (DHI) Assessment.

Four Key Domains Measured in DHI Assessment

1) Governance & Workforce Capacity: Data stewardship, privacy, security, workforce integrity

2) Interoperability: Mobilize and enable data exchange across the journey of care

3) Predictive Analytics: Transforms data into knowledge, insights, and outcomes

4) Person-Enabled Health: People manage health and wellness, with support of health teams

Core Data Sources

Case Data. Case data represent comprehensive disease and condition information used by public health to understand disease burden, to know who is at risk, and to identify outbreaks.

Laboratory Data. Laboratory data, including test results and test type, enable public health agencies to track disease trends and identify outbreaks or exposures and help frontline providers diagnose and treat health conditions.

Emergency Department (ED) Data. ED data, including clinical diagnoses, signs and symptoms, help identify near real-time trends for new, emerging and developing public health threats to inform faster detection and response.

Vital Record and Vital Statistics Data. Vital record and vital statistics data include birth and death data and are essential to understand disease severity, mortality, trauma and toxicity that might signal a larger public health emergency.

Immunization Data. Immunization data capture vaccine doses administered (both routinely recommended and response-related) to support calculating vaccination coverage levels and trends.

Healthcare Capacity and Utilization Data. Healthcare capacity and utilization data assess availability of healthcare resources, including staff, beds and equipment.

Wastewater Surveillance Data. Wastewater surveillance data capture the presence of virus through assessment of wastewater samples, serving as an early warning of viruses spreading throughout a community.

Data Modernization Wishlist – Tribal Health Agencies: If you had a magic wand, what would you change?

Unified health information systems that would consolidate patient data across multiple providers, insurance systems, and care settings.

Streamlined insurance verification and administrative processes

Connectiveness between State systems and EHRs, either by creating interfaces between EHRs or establishing one common EHR.

Need for streamlined, standardized data access systems that respect tribal sovereignty while enabling effective collaboration with state agencies and other tribal nations.

Digital systems that empower patients with direct access to their health information and access to digital tools to support making informed healthcare decisions.

Provide accurate, useful information that supports decision-making and avoids creating unnecessary administrative burden.

Today we will:

1. Compare the original recommendations from the HIMSS digital health indicator assessment with revised recommendations from the sensemaking sessions (held with tribal health organizations and local public health departments).
2. Discuss what we learned from the sensemaking sessions related to each recommendation.
3. **For each recommendation, we will ask the group to:**
   - React to the proposed revisions – how do the revisions feel? Are there adjustments you would recommend before they are finalized?
   - Share other considerations to be added to our list.

REVISED RECOMMENDATIONS

RECOMMENDATION #1:

Advance a statewide digital public health governance strategy **incorporating coordinated learning and feedback mechanisms**

Original Strategy	Revised Strategy
1. Establish transparent roles and decision-making processes as a guide for all teams	1a. Establish and sustain a participatory and collaborative governance structure with clear roles and accountabilities to serve as a guide for Michigan's public health data modernization initiatives.
2. Implement common data standards and seamless information exchange	2a. Communicate policies and data standards that are accessible and transparent.
3. Create regional expert networks to ensure access (epidemiology, IT, privacy, etc.)	3a. Engage in workforce capacity building through the creation of regional expert networks ensuring access for all in key fields.
4. Prioritize funding for teams scoring lowest in DHI	
	5. New Addition: Develop a statewide standardized data request, data sharing agreement, and communication process.

Recommendation #1: Advance a Statewide Digital Health Governance Strategy **incorporating coordinated learning and feedback mechanisms**

What we heard from you (key considerations for this recommendation):

- It is important to develop feedback mechanisms and routinely seek out and incorporate feedback from data users.
- There is a desire for continuous engagement and transparent communication.
- Ensure funding strategy considers different needs - tribal vs non-tribal communities.
- One of the most frequent pain points was not knowing where/how to request state-held data

RECOMMENDATION #2:

In collaboration with Michigan's 12 recognized Tribal nations, develop sovereignty-based tribal public health data governance strategy

Original Strategy	Revised Strategy
1. Develop standardized and streamlined processes for tribal data requests.	1a. Develop reciprocal standardized data request processes to streamline data sharing between tribal communities and the state.
2. Design reciprocal data sharing and digital health agreements.	Note: Included within strategy #1a.
3. Support creation of inter-tribal data sharing frameworks.	2a. Support the creation of voluntary inter-tribal data sharing frameworks.
4. Develop data portals and automated reporting and communication processes with the state.	Note: Included within strategy #1a.
	3a. New Addition: Engage with each tribe's leadership and their identified partners to align data modernization efforts with individual tribal needs.

Recommendation #2 cont.: In collaboration with Michigan's 12 recognized Tribal nations, develop sovereignty-based tribal health data governance strategy

What we heard from you (key considerations for this recommendation):

- Must collaborate and sustain engagement at every step with individual tribal leaders to ensure buy-in and alignment of efforts with each tribe's needs.
- Important to ensure clarity for tribal leaders around key data questions (i.e., purpose, use, benefits for tribes, etc.)

RECOMMENDATION #3:

Strengthen interoperability of digital public health infrastructure

Original Strategies	Revised Strategies
1. Strengthen interoperability between MICR, MDSS, MI-WIC, MiHIN, and Vital Statistics.	1a. Advance interoperability across state, local, and tribal public health data sources.
2. Integrate state data systems with EHRs across hospitals, clinics, and LHD/tribal health agencies.	Note: Included in strategy 3a.
3. Single, secure login to streamline access to core datasets.	3a. Advance automated data exchange, including the development of single, secure login to streamline access to core datasets.
4. Automated data exchange.	Note: Included in strategy #3a.
5. Enable mandatory digital laboratory data reporting through MiHIN.	Note: Included within strategy #1a.
6. Cross-border data sharing agreements with states.	4. Establish cross-agency and cross-border data sharing agreements with traditional and non-traditional partners.
7. Standardized data sharing agreements and interoperability pathways with non-traditional partners (medical examiners, insurers, childcare facilities, etc.).	Note: Included in strategy #4.

Recommendation #3: Strengthen Interoperability of Digital Public Health Infrastructure

What we heard from you (key considerations for this recommendation):

- Integration efforts must account for the highly varied EHR landscape.
- Data sources mentioned: MICR, MDSS, MI-WIC, MiHIN, MSS/ESSENSE, laboratory data, and Vital Statistics
- Must consider workforce training needs
- Need for additional protection for tribal data (e.g., additional firewalls)

RECOMMENDATION #4:

Implement an advanced analytics strategy that supports public health agencies' ability to conduct predictive and operational analytics to allow for faster, evidence-based decision making

Original Strategy	Revised Strategy
1. Develop a statewide analytics strategy	1. Develop a statewide analytics strategy with defined goals and actionable steps toward implementation.
2. Establish statewide data standards	2. Establish statewide data standards to improve data accuracy, accessibility, and ensure data are inclusive of Michigan's diverse communities.
3. Develop operational dashboards and benchmarking tools	3. Develop operational dashboards and benchmarking tools that align with accreditation processes to support performance improvement and enable public health teams to make real-time, data-driven decisions.
4. Leverage statewide analytics to align with accreditation processes, and enable standardized benchmarking	Note: Included in strategy #3.
5. Create a phased analytics strategy progressing toward predictive and AI-enabled analytics	4. In collaboration with Department of Technology, Management, and Budget (DTMB) and partners, develop a phased analytics strategy that progresses toward predictive and AI-enabled public health data systems and is in alignment with state standards and requirements, to allow for faster, actionable insights for decision-making at all levels of public health.

Recommendation #4: Implement Advanced Analytics Strategy to Support Evidence-Based Decision Making

What we heard from you (key considerations for this recommendation):

- Establish strict rules for using AI technology respecting tribal data sovereignty, ensuring checks for bias, and human verification of data accuracy.
- Tribal leadership to be involved in all conversations.
- Consider funding for workforce development and training within health agencies.

RECOMMENDATION #5:

Advance equity-focused, person-enabled services through an ongoing, collaborative process with state, local, and tribal public health partners.

Original Strategies	Revised Strategies
1. Create statewide strategy to guide development of person-enabled services.	1a. Collaborate across Michigan's public health system to develop a statewide strategy to guide the development of public health services responsive to, and informed by, input from communities.
2. Implement patient portals and self-management tools.	2a. Removed due to lack of relevance to state public health data systems
3. Deploy digital scheduling and communication tools.	3a. Advance person-enabled public health and ensure all persons and communities can access public health information and services digitally.
4. Advance public transparency by making performance goals and outcomes available.	4a. Identify and increase timely access to data to facilitate public transparency by making performance goals and outcomes available to all communities.
5. Scale and support strategies for communities without reliable internet.	5a. Identify and disseminate best practices in person-enabled public health and ensure all persons and communities can access public health information and services digitally.
6. Leverage successes of tribal health teams in advancing community engagement.	6a. Leverage strengths of tribal health teams in person-enabled health, sharing lessons learned and successes across public health organizations to support implementation more broadly.

Recommendation #5: Advance Equity-Focused, Person-Enabled Services

What we heard from you (key considerations for this recommendation):

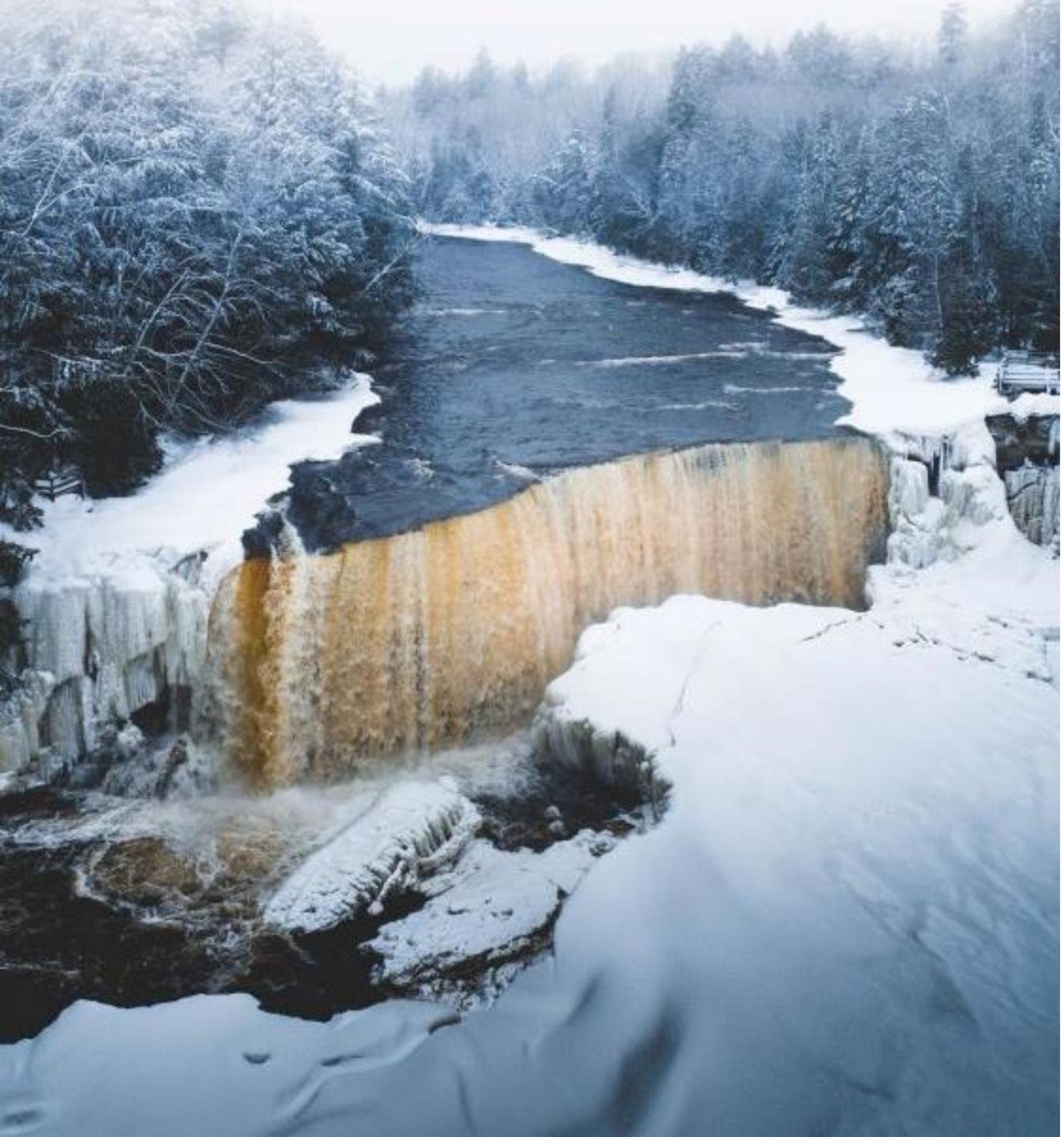
- In an ideal world, everyone would be on one EHR system for streamlined communication.
- Design and employ a thoughtful and strategic plan to launch programs and services to be inclusive of all community members and avoid confusion for staff and patients.
- Develop quality trainings for workforce and populations on using portals, digital scheduling, etc.
- Train tribal staff to support health agencies in data modernization initiatives.
- Efforts are needed to expand reliable internet access across the state.

Next Steps

- MPHI will finalize recommendations based on this session and the session with local health departments.
- The final report will be shared with MDHHS & participating organizations.

Data Modernization Sensemaking Session

December 16, 2025



Welcome!

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Agenda

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- Review Revised Recommendations & Key Considerations
- Group Reflections
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Access to data that is both current and accurate to inform real-time decisions

Seamless access to data from external partners (e.g. medical examiners, healthcare systems, insurance companies, neighboring states).

State-wide coordination and standardizing of processes, common resources, and formal governance frameworks

Need to eliminate manual, repetitive tasks and implement automated systems that would free staff to focus on direct public health services and strategic activities

Today we will:

1. Compare the original recommendations from the HIMSS digital health indicator assessment with revised recommendations from the sensemaking sessions (held with tribal health organizations and local public health departments).
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REVISED RECOMMENDATIONS

RECOMMENDATION #1:

Advance a statewide digital public health governance strategy **incorporating coordinated learning and feedback mechanisms**

Original Strategy	Revised Strategy
1. Establish transparent roles and decision-making processes as a guide for all teams	1a. Establish and sustain a participatory and collaborative governance structure with clear roles and accountabilities to serve as a guide for Michigan's public health data modernization initiatives.
2. Implement common data standards and seamless information exchange	2a. Communicate policies and data standards that are accessible and transparent.
3. Create regional expert networks to ensure access (epidemiology, IT, privacy, etc.)	3a. Engage in workforce capacity building through the creation of regional expert networks ensuring access for all in key fields.
4. Prioritize funding for teams scoring lowest in DHI	4a. Implement a funding strategy that prioritizes advancing data modernization efforts for areas with greatest needs.
	5. New Addition: Develop a statewide standardized data request, data sharing agreement, and communication process.

Recommendation #1: Advance a Statewide Digital Health Governance Strategy **incorporating coordinated learning and feedback mechanisms**

What we heard from you (key considerations for this recommendation):

- It is important to develop feedback mechanisms and routinely seek out and incorporate feedback from data users.
- There is a desire for continuous engagement and transparent communication.
- Ensure funding strategy considers different needs - tribal vs non-tribal communities.
- One of the most frequent pain points was not knowing where/how to request state-held data

RECOMMENDATION #2:

In collaboration with Michigan's 12 recognized Tribal nations, develop sovereignty-based tribal public health data governance strategy

Original Strategy	Revised Strategy
1. Develop standardized and streamlined processes for tribal data requests.	1a. Develop reciprocal standardized data request processes to streamline data sharing between tribal communities and the state.
2. Design reciprocal data sharing and digital health agreements.	Note: Included within strategy #1a.
3. Support creation of inter-tribal data sharing frameworks.	2a. Support the creation of voluntary inter-tribal data sharing frameworks.
4. Develop data portals and automated reporting and communication processes with the state.	Note: Included within strategy #1a.
	3a. New Addition: Engage with each tribe's leadership and their identified partners to align data modernization efforts with individual tribal needs.

Recommendation #2: In collaboration with Michigan's 12 recognized Tribal nations, develop sovereignty-based tribal health data governance strategy

What we heard from participating tribal health organizations (key considerations):

- Must collaborate and sustain engagement at every step with individual tribal leaders to ensure buy-in and alignment of efforts with each tribe's needs.
- Important to ensure clarity for tribal leaders around key data questions (i.e., purpose, use, benefits for tribes, etc.)

RECOMMENDATION #3:

Strengthen interoperability of digital public health infrastructure

Original Strategies	Revised Strategies
1. Strengthen interoperability between MICR, MDSS, MI-WIC, MiHIN, and Vital Statistics.	1a. Advance interoperability across state, local, and tribal public health data sources.
2. Integrate state data systems with EHRs across hospitals, clinics, and LHD/tribal health agencies.	Note: Included in strategy 3a.
3. Single, secure login to streamline access to core datasets.	3a. Advance automated data exchange, including the development of single, secure login to streamline access to core datasets.
4. Automated data exchange.	Note: Included in strategy #3a.
5. Enable mandatory digital laboratory data reporting through MiHIN.	Note: Included within strategy #1a.
6. Cross-border data sharing agreements with states.	4. Establish cross-agency and cross-border data sharing agreements with traditional and non-traditional partners.
7. Standardized data sharing agreements and interoperability pathways with non-traditional partners (medical examiners, insurers, childcare facilities, etc.).	Note: Included in strategy #4.

Recommendation #3: Strengthen Interoperability of Digital Public Health Infrastructure

What we heard from you (key considerations for this recommendation):

- Integration efforts must account for the highly varied EHR landscape.
- Data sources mentioned: MICR, MDSS, MI-WIC, MiHIN, MSS/ESSENSE, laboratory data, and Vital Statistics
- Must consider workforce training needs
- Need for additional protection for tribal data (e.g., additional firewalls)

RECOMMENDATION #4:

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4. Leverage statewide analytics to align with accreditation processes, and enable standardized benchmarking	Note: Included in strategy #3.
5. Create a phased analytics strategy progressing toward predictive and AI-enabled analytics	4. In collaboration with Department of Technology, Management, and Budget (DTMB) and partners, develop a phased analytics strategy that progresses toward predictive and AI-enabled public health data systems and is in alignment with state standards and requirements, to allow for faster, actionable insights for decision-making at all levels of public health.

Recommendation #4: Implement Advanced Analytics Strategy to Support Evidence-Based Decision Making

What we heard from you (key considerations for this recommendation):

- Establish strict rules for using AI technology respecting tribal data sovereignty, ensuring checks for bias, and human verification of data accuracy.
- Tribal leadership to be involved in all conversations.
- Consider funding for workforce development and training within health agencies.

RECOMMENDATION #5:

Advance equity-focused, person-enabled services through an ongoing, collaborative process with state, local, and tribal public health partners.

Original Strategies	Revised Strategies
1. Create statewide strategy to guide development of person-enabled services.	1a. Collaborate across Michigan's public health system to develop a statewide strategy to guide the development of public health services responsive to, and informed by, input from communities.
2. Implement patient portals and self-management tools.	2a. Removed due to lack of relevance to state public health data systems
3. Deploy digital scheduling and communication tools.	3a. Identify and disseminate best practices in person-enabled public health and ensure all persons and communities can access public health information and services digitally.
4. Advance public transparency by making performance goals and outcomes available.	4a. Identify and increase timely access to data to facilitate public transparency by making performance goals and outcomes available to all communities.
5. Scale and support strategies for communities without reliable internet.	5a. Included in 3a.
6. Leverage successes of tribal health teams in advancing community engagement.	6a. Leverage strengths of tribal health teams in person-enabled health, sharing lessons learned and successes across public health organizations to support implementation more broadly.

Recommendation #5: Advance equity-focused, person-enabled services through an ongoing, collaborative process with state, local, and tribal public health partners.

What we heard from you (key considerations for this recommendation):

- In an ideal world, everyone would be on one EHR system for streamlined communication.
- Design and employ a thoughtful and strategic plan to launch programs and services to be inclusive of all community members and avoid confusion for staff and patients.
- Develop quality trainings for workforce and populations on using portals, digital scheduling, etc.
- Train tribal staff to support health agencies in data modernization initiatives.
- Efforts are needed to expand reliable internet access across the state.

Next Steps

- MPHI will finalize recommendations based on this session and the session with tribal health agencies.
- The final report will be shared with MDHHS & participating organizations.

Appendix C

Revised Recommendations and Supporting Strategies from Sensemaking Sessions

Recommendation 1: Advance a statewide digital public health governance strategy incorporating coordinated learning and feedback mechanisms.

Supporting Strategies:

a. Establish and sustain a participatory and collaborative governance structure with clear roles and accountabilities to serve as a guide for Michigan's public health data modernization initiatives.

b. Communicate policies and data standards that are accessible and transparent.

c. Engage in workforce capacity building through the creation of regional expert networks ensuring access for all in key fields.

d. Develop a statewide standardized data request, data sharing agreement, and communication process.

Recommendation 2: In collaboration with Michigan's 12 recognized Tribal nations, develop sovereignty-based tribal public health data governance strategy.

a. Develop reciprocal standardized data request processes to streamline data sharing between tribal communities and the state.

b. Support the creation of voluntary inter-tribal data sharing frameworks.

c. Engage with each tribe's leadership and their identified partners to align data modernization efforts with individual tribal needs.

Recommendation 3: Strengthen interoperability of digital public health infrastructure.

Supporting Strategies:

a. Advance interoperability across state, local, and tribal public health data sources.

b. Advance automated data exchange, including the development of single, secure login to streamline access to core datasets.

c. Establish cross-agency and cross-border data sharing agreements with traditional and non-traditional partners.

Recommendation 4: Implement an advanced analytics strategy that supports public health agencies' ability to conduct predictive and operational analytics to allow for faster, evidence-based decision making.

Supporting Strategies:

a. Develop a statewide analytics strategy with defined goals and actionable steps toward implementation.

b. Establish statewide data standards to improve data accuracy, accessibility, and ensure data are inclusive of Michigan's diverse communities.

c. Develop operational dashboards and benchmarking tools that align with accreditation processes to support performance improvement and enable public health teams to make real-time, data-driven decisions.

d. In collaboration with Department of Technology, Management, and Budget (DTMB) and partners, develop a phased analytics strategy that progresses toward predictive and AI-enabled public health data systems and is in alignment with state standards and requirements, to allow for faster, actionable insights for decision-making at all levels of public health.

Recommendation 5: Advance equity-focused, person-enabled digital health services

Supporting Strategies:

a. Develop a statewide strategy to guide the development of personalized public health services for individuals and communities.

b. Implement patient portals and self-management tools across all state-funded systems.

c. Advance public transparency by making performance goals and outcomes available to all communities.

d. Advance person-enabled public health and ensure all persons and communities can access public health information and services digitally.

e. Leverage strengths of tribal health teams in person-enabled health.

Appendix D

References

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