



2022 Data Modernization Needs Assessment and Gap Analysis

Washington state's goal is to modernize disease surveillance systems and the overall health information system ecosystem for improved data management, governance, analytics capabilities and increase interoperability, especially when it comes to sharing data with our partners.

The Washington State Department of Health (DOH) uses approximately 50 different surveillance data systems, leading to duplicative data structures, data formats, data standards, legacy system processes, and protocols. In addition to required maintenance and training efforts to ensure personnel have the skills to work across these systems, the diversity of systems limits interoperability and DOH's capacity to share data with its partners. DOH is working to collaboratively address these issues, but first we needed to understand the scope of the problem.

Gap Analysis

DOH contracted with the University of Washington to conduct an assessment and gap analysis of our data infrastructure, systems, and workforce. Guided by the objectives outlined in the CDC's [Data Modernization Initiative Strategic Implementation Plan](#), the UW performed a series of semi-structured interviews with key staff from DOH and local health jurisdictions (LHJs).

Participants

Washington State Department of Health

DOH participants were identified by the Office of Innovation and Technology (OIT) project manager. The sample included two groups: 1) individuals who originally participated in DOH's CDC Public Health Data Modernization Assessment survey in December 2021 and 2) additional staff based on promotion into key roles, subject matter expertise, and leadership positions.

Thirty DOH staff participated in semi-structured interviews.

Local Health Jurisdictions

Invitations to participate were included in a Data Modernization Initiative (DMI) presentation at the March 2022 Washington State Association of Local Public Health Officials (WSALPHO) meeting. Follow-up email invitations were distributed to LHJ leaders and staff who expressed interest in participating. Direct email requests were sent to specific LHJs to ensure a balanced representation of geographic location and LHJ size. Participating LHJ staff included those with expertise in surveillance data systems, notifiable diseases, laboratory, case records, and birth and death vital

records.

Thirty-eight people from 13 LHJs participated in semi-structured interviews.

Key priorities established by the CDC

- Build the Right Foundation
- Accelerate Data into Action
- Develop a State-of-the-Art Workforce
- Support and Extend Partnerships
- Manage Change and Governance

Results





Priority: Build the Right Foundation

DMI PRIORITY 1	
BUILD THE RIGHT FOUNDATION	
CURRENT STATE	 <ul style="list-style-type: none"> • Key DOH surveillance systems no longer meet business needs. Decision-making and actions are hampered by the current state of the public health data ecosystem. • Access to and sharing of critical data is limited by systems that do not meet minimal interoperability standards. Issues with DOH's outdated legacy system and infrastructure trickle down and adversely impact LHJ public health work. • In the absence of automation, key systems rely on manual, inefficient data processing, curation, and sometimes duplicative protocols. • Information flows and data access are limited by storage and processing capacities. Data stream breakdowns and lags further exacerbate data quality and timeliness. • The DMI agenda is unclear; it's uncertain what "problems" DMI will fix.
DESIRED STATE	 <ul style="list-style-type: none"> • DOH surveillance systems are scalable, interoperable and standards-based. • An agile infrastructure that can easily handle fluctuating storage and surge capacities during low- and high-peak public health events. • Stakeholders are confident systems will provide real-time, high-quality, actionable data to meet their information, surveillance and monitoring needs. • Legacy and single-use/-disease systems are replaced with lower-burden and integrated systems that require minimal manual processing. • Broad public health support for DMI goals.
GAP ANALYSIS	 <ul style="list-style-type: none"> • The DMI program needs consistent, dedicated leadership. • Continued building of siloed and parallel systems to meet immediate needs contributes to a fractured public health information ecosystem. • Lack of applying standards limits connectivity between systems and their data. • Moving to cloud-enabled systems will require security, resource and training investments to ensure stakeholders derive their promised value. • DMI planning needs to include DOH and LHJ stakeholders. More information is needed to promote the DMI, its vision, benefits and timeline.
ROADMAP RECOMMENDATIONS	 <ul style="list-style-type: none"> • Develop a high-level, comprehensive DMI plan to implement a low-burden, sustainable public health information system that provides access to foundational systems and services in collaboration with state and local stakeholders. • Prioritize the transition of legacy, single-use and siloed systems to systems that work for all diseases and use cases (surveillance, emergencies, etc.) • Develop a public health DMI communications strategy to improve conversations regarding DMI, establish common definitions, and enable a shared vision among all stakeholders.




Priority: Accelerating Data into Action

DMI PRIORITY 2	
ACCELERATE DATA INTO ACTION	
CURRENT STATE	 <ul style="list-style-type: none"> Restrictive data use policies and funding mandates contribute to data siloing. The readiness to invest resources that could link data across disparate data sources requires organizational support, budget allocations and personnel investments Personnel are burdened with cleaning, harmonizing, transforming and transmitting data between systems and/or data partners, which adversely impacts productivity. Interoperability is a top priority and the need to improve data linkages is widely recognized. User experiences can help guide data linkage improvements. LHJs have valuable user experience and feedback that can be incorporated in this effort.
DESIRED STATE	 <ul style="list-style-type: none"> DOH surveillance systems are considered interoperable. Policy hurdles are revised to reduce silo/single-use data systems. Data is readily available and in a format that is usable. Staff are relieved from data cleaning, etc. tasks so they can work at their highest level within the organization. Data linkages support conducting high-quality, timely, longitudinal analyses and assessments. LHJs no longer need to maintain duplicate and/or redundant tracking systems. Funding for data linkages is consistent, reliable, and sufficient for maintenance, sustaining and improving systems. DOH and its stakeholders can leverage forecasting and predictive analytics to make efficient and effective decisions in response to public health events. Decision-making and actions are supported and informed by the public health data ecosystem.
GAP ANALYSIS	 <ul style="list-style-type: none"> Siloed and inconsistent funding drives siloed data systems. Lack of data standardization is a barrier to true interoperability. Line-level and aggregated data from critical partners such as healthcare providers is available in a format that requires intensive handling. Record-querying across disparate systems hampers conducting analyses and assessments.
ROADMAP RECOMMENDATIONS	 <ul style="list-style-type: none"> Improve communications around the interoperability public health value proposition to ensure stakeholders are confident and supportive of the DMI roadmap. Prioritize utilizing resources such as FHIR to increase data linkages and reduce data silos and duplicate systems. Incorporate LHJ and other user experiences into planning around improving data linkages. Develop protocols that reduce duplication in data entry and redundant, local systems. Coordinate with policy-makers to reduce policy hurdles that contribute to data siloing. Develop cross-agency data governance protocols.

Priority: Developing a State-of-the-Art Workforce

DMI PRIORITY 3	
DEVELOP A STATE-OF-THE ART WORKFORCE	
CURRENT STATE	 <ul style="list-style-type: none"> • Burnout and lack of capacity in IT hinder all other areas of data modernization. • There are numerous roadblocks that prevent hiring data scientists. • LHJ staffing is dependent on COVID program funding. It is unclear what will happen when this funding ends. • Lack of data system interoperability prevents LHJs from focusing their time on reporting and predictive analytic work. • Lack of time, resources and capacity shortages present barriers to training existing staff in data scientists skills. • There is no actionable DMI workforce development program at DOH.
DESIRED STATE	 <ul style="list-style-type: none"> • Data science workforce capacity is increased through both increased hiring and training of currently employed staff. Staff are cross-trained. • DOH has dedicated IT support for programmatic projects. • Workforce capacity and capability needs and opportunities to contribute to DMI are identified and an actionable DMI workforce development program is created. • DOH and LHJ employees can link and analyze large volumes of disparate data faster and more accurately using new and modern data science skills. • DOH and LHJs have the upskilling opportunities and technical assistance needed to meet their interoperability needs and participate in standards development and testing processes. • Funding to close gaps in data science workforce needs is secured. • Public health leaders receive training that supports their stewardship towards DMI and culture changes generated by data modernization.
GAP ANALYSIS	 <ul style="list-style-type: none"> • DMI workforce development needs dedicated leadership. • Time and resources to support training and upskilling are not available. • Administrative barriers to creating new job classifications hinders data modernization and public health's ability to be response to changing workforce needs and priorities. • Unpredictability of funding contributes to organizational strain. • Staff are unable to focus on reporting and analytic work due to time spent cleaning data, etc.
ROADMAP RECOMMENDATIONS	 <ul style="list-style-type: none"> • Develop a DMI plan for Priority 3 objectives in collaboration with state and local stakeholders and training experts. • Create a DMI workforce development lead. • Develop a robust data science training program that increases the data science knowledge of the workforce. • Prioritize utilizing existing training resources to fill well-known training gaps, such as Effective Communications, Communication Technical Topics, Leaderships Skills, etc. • Develop a DMI training and workforce development communications strategy around workforce development goals and trainings.

Priority: Supporting and Extending Partnerships

DMI PRIORITY 4	
SUPPORT AND EXTEND PARTNERSHIPS	
CURRENT STATE	 <ul style="list-style-type: none"> • Multiple DUAs create barriers for accessing, sharing, and using DOH systems data. • DOH policies are perceived as discouraging open data sharing. • LHJs want more autonomy regarding the data they submit to DOH. • Communications between DOH and its LHJ partners around availability, exchange and use of data is perceived as unreliable and inconsistent. • Peer-to-peer collaborations and partnerships are highly valued, however barriers to participation and restrictions on information sharing impose unneeded limitations.
DESIRED STATE	 <ul style="list-style-type: none"> • A standardized DUA template is developed and utilized to reduce burden for accessing, sharing, and using data. • DOH policies encourage open data sharing. • LHJs are empowered to access and use the data they have collected for their jurisdiction, and to share with their partners for specific purposes. • Documentation for users regarding DOH data systems and structures is robust and up-to-date. The accompanying user support and troubleshooting system can respond rapidly to user information requests. • Peer-to-peer collaborative learning opportunities and sharing of best practices are open to all partners. Communications around and from these meetings ensure all partners are able to benefit and provide valuable input.
GAP ANALYSIS	 <ul style="list-style-type: none"> • Numerous DUAs create administrative burden and barriers to data access and use. This contributes to a fractured public health information ecosystem. • Perceived lack of transparency around data sharing is harmful to critical partner relationships. • Lack of documentation and user support adversely impacts DOH system and data users who are unable to complete their work. • Collaborative learning opportunities are not open to all who might benefit.
ROADMAP RECOMMENDATIONS	 <ul style="list-style-type: none"> • Develop a high-level DMI plan for sustaining and extending partnerships that incorporates current partner experiences and input regarding data systems and policies governing their use. • Prioritize developing a standardized DUA template and policies that support its use. • Prioritize user support documentation and "call desk" support to rapidly respond to user needs. • Develop targeted communications to LHJs and other partners that articulate the value of DMI for accelerating data sharing.

Priority: Managing Change and Governance

DMI PRIORITY 5	
MANAGE CHANGE AND GOVERNANCE	
CURRENT STATE	 <ul style="list-style-type: none"> • Change management is acknowledged as important but is not effectively utilized. • Current agency re-organizations, staffing shortages and pandemic burnout create a challenging environment for undertaking new, major initiatives. • Despite the current state, it is widely acknowledged that the culture and technology need to change • Data governance is specific to the tool, system or silo. • The acquisition process contributes to data silos. • LHJs are key DMI partners and want to be part of DMI planning and decisions.
DESIRED STATE	 <ul style="list-style-type: none"> • Data governance and policies align with a shared vision for modernization. • All public health organizations support policies and practices to promote a culture of learning, collaboration and innovation. • Acquisition processes are efficient but allow flexibility to support innovation. • DOH leadership and management are facile in change management competencies. • LHJs are full partners in DMI planning and decision-making. • Monitoring and evaluation ensures continuous DMI QI. • Consistent, clear communications that articulate the value of DMI and how its changes impact all organizations at all levels.
GAP ANALYSIS	 <ul style="list-style-type: none"> • Change management training gap. • Current organizational climate is still recovering from the pandemic. • Organizational restructuring adds to climate uncertainty. • Multiple data governance protocols add to confusion over how to access and share data. • DMI planning and decision-making needs to include all its stakeholders, including LHJs. • No effective, routine communication channels to drive engagement, provide progress updates, and maximize knowledge of DMI strategy, resources, and potential to all stakeholders.
ROADMAP RECOMMENDATIONS	 <ul style="list-style-type: none"> • Develop a high-level governance and change management plan in collaboration with state and local stakeholders. • Prioritize aligning data governance and policies across systems and divisions. • Develop policies and practices that promote a culture of learning, collaboration and innovation. • Develop enterprise-wide acquisition processes that ensure DOH and its partners receive needed resources in a timely manner but with flexibility to support innovation. • Establish routine communications regarding evaluation and monitoring of DMI progress.

Next Steps

Since the completion of the gap analysis, DOH has established the Center for Data and Systems Modernization, led by Michelle Campbell. This team is finalizing the implementation plan and developing processes and tools to support our collaborative effort. Additionally, the team is developing a workforce training pilot that addresses competency gaps identified through the analysis. As we proceed, we look forward to working with you and will be in contact soon.

DOH 822-041 March 2025

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