

CHAPTER 5

MODERNIZING PUBLIC HEALTH DATA USE AND SYSTEMS

RECOMMENDATION 2..... 42





The collection, access, and use of public health data needs modernization and investment in order to improve health outcomes. Public health must thoughtfully address what information is collected; how it is collected, analyzed, interpreted, and shared; and develop the capacity for efficient data collection, analysis, and dissemination. To fully address the root causes of poor health outcomes, public health must integrate relevant datasets on topics such as housing, education, and transportation. In partnership with the North Carolina Association of Local Health Directors (NCALHD),^A the NCIOM Task Force on the Future of Local Public Health convened a work group to discuss topics related to data in local public health and to identify opportunities for improvement. The work group engaged in four conversations to address these topics:

1. Community and population data (e.g., health factors and status for whole populations)
2. Epidemiological, preparedness, and surveillance data systems (e.g., disease surveillance and emergency response)
3. Local public health service system (e.g., services, staffing, funding)
4. Agency and program performance data (e.g., quality and outcomes of public health programs)

Within and interconnected with these topics are issues related to:

- workforce capacity and competencies,
- using data to make decisions and talk about the issues affecting the health of communities,
- sharing data with communities,
- cross-agency data connectivity and partnerships, and
- developing necessary technology and tools for collecting and sharing data.

The technology and methodologies to address these issues are available, but to achieve data modernization public health must enhance workforce and infrastructure capacity and build connectivity between data systems and across partners. Addressing these challenges would help local public health develop compelling stories that demonstrate the impact that modern and strong public health infrastructure can make in communities across the state.

“This nation has failed to invest in the core capabilities of public health data, data analytics, predictive data analysis. We really need to make that investment.”

*A Conversation with Robert Redfield. Council on Foreign Affairs.
<https://www.cfr.org/event/conversation-robert-redfield>*

National organizations and groups, such as the Centers for Disease Control and Prevention (CDC) and the Robert Wood Johnson Foundation (RWJF), have identified the changes needed to streamline data systems and ensure equitable collection and use of information. The problems they identified include siloed information, outdated skills, heavy burdens for public health workers, older technologies, and lack of connections with the health care data ecosystem. The **CDC Data Modernization Initiative** lays out “priorities and objectives that will lead to specific desired outcomes,

including response-ready systems, a common operating picture that brings data together to inform action across public health, a highly skilled workforce, strong partnerships, and effective governance.”¹¹ The **National Commission to Transform Public Health Data Systems**, convened by the RWJF, developed recommendations to support “reimagining how data are collected, shared, and used, and identifying the public- and private-sector investments needed to modernize our public health data infrastructure and improve health equity.”¹² Their recommendations cover a broad spectrum of responsible parties, including state and federal government, business, health care systems, and local public health. Along with these strategic planning efforts, the federal government has dedicated funding for data modernization through the Coronavirus Aid, Relief, and Economic Security (CARES) Act and American Rescue Plan Act (ARPA).

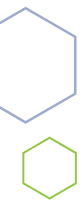
There are many different data systems that North Carolina local health departments are required or recommended to use (see Figure 7). Most of these systems do not directly communicate with each other, leading to redundant data entry and a burden on staff time. In addition, health departments are required to report data to the North Carolina Department of Health and Human Services (NCDHHS) Division of Public Health (DPH) related to funding agreements for programs and services, known as Agreement Addenda (AA).

Figure 7. North Carolina Data Systems Health Departments are Required or Recommended to Use

- LHD-Health Services Analysis
- Environmental Health Inspection Data Systems (EHIDS)
- Aid-to-Counties System
- NC Health Alert Network (HAN)
- Electronic Birth Registration System (EBRS)
- NC Database Application for Vital Events (NC DAVE)
- Environmental Health Inspection Data System (EHIDS)
- Clear Impact Scorecard
- Controlled Substance Registry System
- NC Health Information Exchange (NC HealthConnex)
- NC Electronic Disease Surveillance System (NCEDSS)
- NC COVID
- COVID-19 Community Team Outreach (CCTO)
- Crossroads
- Smart Sheet
- NC Immunization Registry (NCIR)
- COVID-19 Vaccine Management System
- NCCARE360
- NC Disease Event Tracking and Epidemiologic Collection Tool (NCDETECT)
- VMSG Dashboard Public Health Performance Management System

Source: Lovette, B. Presentation to the NCIOM Task Force on the Future of Local Public Health: Brief Overview of Current Data Flow: DPH/LHD Perspective. November 8, 2021. https://nciom.org/wp-content/uploads/2021/07/Lovette_DHHS_DPH_LHD-Data-slides-for-NCIOM_FLP-Task-Force-meeting-Nov-8-final.pdf

^A NCALHD work associated with this task force is also supported by funding from the Kate B. Reynolds Charitable Trust.



Streamlined and accessible public health data systems will allow users to share and access data more easily, reducing inefficiencies and redundancies in staff time and resources. A modernized public health data system will also enhance a health department’s ability to concentrate on using data to track community health outcomes, monitor agency performance, identify emerging threats to health, and act quickly. Enhanced staff knowledge of data use and communication will increase their ability to:

- help community members understand the factors that can impact their health and empower them to engage in healthy behaviors,
- develop strategies to improve community health, and
- advocate for changes to policies.

There are also significant strengths to build upon in North Carolina. Data systems and infrastructure could be (and are being) leveraged to strengthen local public health capacity in data collection, analysis, and dissemination. For these reasons, the task force recommends the following:

RECOMMENDATION 2

Transform local public health’s capacity to collect, share, use, and communicate data to drive continuous improvement in programs, agencies, and whole communities

Four strategies are recommended by the Task Force on the Future of Local Public Health to move to a future vision of effective data collection, sharing, use, integration, and communication:

Strategy 2a. Drive Improvement and Strengthen

Connectivity The North Carolina Department of Health and Human Services Division of Public Health should strengthen the public health data ecosystem in North Carolina by supporting and investing in the creation of a strong statewide structure to prioritize, advance, and create collective accountability for improvement opportunities, with a shared set of values, across public health and other relevant data partners.

Strategy 2b. Identify Funding Needs for Data

Modernization The statewide structure recommended in Strategy 2a should identify funding needs and potential funding sources, and a plan to secure resources for continued public health data use and system modernization, that are outside of the capacity of the Division of Public Health to support.

Strategy 2c. Evolve Health Department Data Capabilities Local health departments should evolve internal and external capabilities in data collection, sharing, and use by pursuing trainings for staff, developing capabilities around data sharing with community partners, creating a culture of learning, and adopting a shared set of values around intentional data development, use, sharing, and communication.

Strategy 2d. Support for Data Capacity and Modernization North Carolina public health philanthropies and nonprofit organizations, as well as partners in academia, health care, and the private sector should support developing work in local public health data capabilities by collectively investing in or collaborating on prioritized improvements and innovations related to workforce capacity, skill development, technical assistance, system improvement, and filling gaps in available data.

The strategies related to Recommendation 2 were also supported by the Carolinas Pandemic Preparedness Task Force. Please see the final report from the Carolinas Pandemic Preparedness Task Force for additional details and information at <https://nciom.org/carolinas-pandemic-preparedness-task-force/>.



Strategy 2a – Drive Improvement and Strengthen Connectivity

The North Carolina Department of Health and Human Services Division of Public Health should streamline data collection, improve data access, and strengthen alignment and connectivity across relevant data partners and data systems for local health departments by:

1. Supporting and investing in the creation of a strong statewide structure that includes state, local, and Tribal public health, public health non-profits, and other public health leadership, to:
 - a. Prioritize improvement opportunities,
 - b. Develop a shared set of values around intentional data development, use, sharing, and communication, and
 - c. Promote alignment of data systems across public health data partners.
2. Including representatives from local and Tribal public health and other public health data partners in discussions and planning for use of available federal funds to build infrastructure, clarity, and connectivity in local public health data systems and operations.

Desired Result

A statewide group will closely monitor, and have accountability for, ongoing needs for improvement and investment in public health data modernization. This group will help advance priority improvements, remove barriers to change, leverage and secure assets, reduce duplication, elevate knowledge and skills, fuel momentum, assure that data is available to address the needs of vulnerable populations, and ignite interest in the field.

Why does the task force recommend this strategy?

With a decentralized local public health system in North Carolina, there are a variety of data reporting requirements and multiple data reporting systems used for various purposes. According to reports from data work group members, as well as participants in listening sessions conducted by other entities throughout the state, the staff time needed to complete often duplicative data reporting is burdensome. Requirements for access to the various data systems are also a challenge to manage. These and other issues connected to public health data modernization suggest that a statewide structure to align priorities, goals, and activities with relevant public health data partners would ensure that this important aspect of the public health system gets the attention needed to make necessary improvements.

Additional Context

The North Carolina Department of Health and Human Services Division of Public Health (DPH) and the North Carolina Association of Local Health Directors have already begun to work toward solutions in several areas to streamline data reporting and connectivity, including:³

- Initiation of the Agreement Addenda (AA) Alignment Project,
- Review of funding allocation methodologies,
- Development of a health equity data initiative and data consortium with Historically Black Colleges and Universities (HBCUs) in the state,
- Building customizable data dashboards, and
- Modernizing vital records for more efficient data access.

The DPH AA Alignment Project is a “quality Improvement initiative to streamline the operational process around AA reporting^B and to evaluate AA content to maximize activity impact for improving public health.”³ DPH is also working with the NCALHD to “review funding allocation methodologies for equity and impact and jurisdictional collaboration, review performance metrics, and improve workflows.”³ Meanwhile, an NCALHD work group on Local Health Department (LHD) Performance Measures & State Reporting Metrics is “develop[ing] a common set of LHD performance measures to tell the local public health story [and] explore the need for new data systems.”⁴

Discussions with the task force data work group led to the development of a comprehensive list of activities that could be considered by a statewide structure to collaborate for public health data modernization.⁵ These activities include:

- Creating a strategy to better connect current and potential data partners and collaborators,
- Enhancing opportunities for peer learning (e.g., WNC Health Network and Health ENC),
- Exploring public-private partnerships to support data infrastructure and access to new workforce skills,
- Enhancing academic/research partnerships and student training, and
- Addressing data gaps and identifying disparities in health outcomes between different groups (e.g., WNC Health Network).

One topic that data work group members discussed is the need for more local-level data and data that is disaggregated by demographics to understand the disparities in health and health outcomes across North Carolina. This is an area in which a statewide structure dedicated to public health data modernization can develop a shared set of values for future improvement, and aligns with a recommendation of the **National Commission to Transform Public Health Data Systems**, convened by the Robert Wood Johnson Foundation. The commission recommended that, “As part of public health data system redesign, collect self-reported data by race, ethnicity, income, education, gender identity, sexual orientation, disability, and social position (i.e., how people are placed in a hierarchy of value by society, as perceived by the individual and by others). The data could be used to identify areas of disadvantage where investment and action are needed.”²

How would this impact the health of communities?

Access to timely and accurate data is vital to understanding the needs of the community and acting accordingly to protect everyone’s health. Increased access to data on the local level that provides granularity by geography and group demographics will help to identify successes and challenges in health outcomes. In addition, local public health staff time and funding are limited. Eliminating duplication in data reporting and streamlining access would free staff time to engage in other important elements of addressing population health.

Who is responsible?

- North Carolina Department of Health and Human Services Division of Public Health

Who are the partners?

- Local health departments
- Tribal public health
- Public health non-profits
- Other public health leadership
- North Carolina Department of Health and Human Services Information Technology Division

^B Agreement Addendum are contracts between a local health department and the North Carolina Department of Health and Human Services Division of Public Health related to funding for certain programs and services.

⁵ These actions are a summary of the data work group input developed by the group facilitator, Heather Gates of Human-Centered Strategies, LLC.





Strategy 2b – Identify Funding Needs for Data Modernization

The statewide structure recommended in Strategy 2a.1 should identify funding needs and potential funding sources and develop the implementation plan to secure these resources for continued public health data integration and modernization that are outside of the capacity of the Division of Public Health to support.

Desired Result

The statewide public health data structure will evaluate the funds required to make needed improvements to modernize public health data systems and determine sources for continued support.

Why does the task force recommend this strategy?

The work needed to modernize public health data use and systems will require resources and efforts across state, local, and Tribal public health, as well as relevant public health organizations and nonprofits, and with that, funding to support the work. While there will undoubtedly be a need for additional funding, it is not clear yet which parties will be responsible for carrying out the work and the cost to do so. The statewide structure proposed in Strategy 2a should be responsible for developing action plans and budget forecasts for coming years of data modernization efforts. That planning process should also include representatives of potential funding sources, including the North Carolina General Assembly, local governments, and public health philanthropies, as well as a proposal for securing those funds in a realistic and timely manner.

“Establish and implement a coordinated federal, state, and local investment strategy that includes regular fiscal support of state infrastructure coupled with intermediate and long-term system development and data collection.”

-Recommendation 2b from the National Commission to Transform Public Health Data Systems.

<https://www.rwjf.org/en/library/research/2021/10/charting-a-course-for-an-equity-centered-data-system.html>

Additional Context

The North Carolina Department of Health and Human Services Division of Public Health (DPH) is planning to use funds from the American Rescue Plan Act to assist in some of the work needed to modernize public health data reporting systems. To address data literacy and capacity issues affecting local health departments across the state, DPH will provide both funding and technical expertise related to data access, reporting, and sharing. This support will include training for health department leadership and staff in data modernization tools and resources. DPH will also provide support for internal and public facing dashboards that help to streamline processes and enhance public access to public health information and data resources.

One of the ongoing needs to address public health data modernization is developing new job classifications and descriptions and increasing salaries to enhance recruitment and retention at the state, regional, and local levels for data-related professionals (see Chapter 7 – Sustaining and Supporting the Local Public Health Workforce).

How would this impact the health of communities?

Funding to support activities to modernize public health data will help provide the changes needed to allow for rapid response to public health issues, identification of successes and challenges in population health, and continuous adjustments to public health programs and partnerships to appropriately address ongoing needs and developing crises. These data improvements will help local public health be more proactive, rather than reactive, to community health issues and will provide greater transparency in service provision and need.

Who is responsible?

- Statewide structure recommended in Strategy 2a.1

Who are the partners?

- North Carolina General Assembly
- County Commissioners
- Public health philanthropies



Strategy 2c – Evolve Health Department Data Capabilities

Local health departments should grow internal and external capabilities in data collection, sharing, and use by:

1. Providing access to existing trainings for staff to develop competencies in quantitative and qualitative data collection and analysis with framing in health equity from regional and statewide public health nonprofits and academic institutions.
2. Developing capabilities around data sharing with community partners.
3. Creating a culture of learning to promote continuous improvement for the meaningful collection and use of agency and program performance data.

Desired Result

Local health departments will have a culture and practice of meaningful data collection, sharing, and continuous improvement, both within the health department related to agency, program and service performance, and externally related to community health data collection and sharing. This includes a local public health workforce that is knowledgeable about, and competent in, equitable data collection and sharing. Also see Strategy 6c for discussion of opportunities to support innovation, including regional data capabilities.

Why does the task force recommend this strategy?

Local health department workforce knowledge and capabilities related to public health data vary across North Carolina, often due to resource availability. Once given adequate access to resources, modernizing and transforming public health's data capabilities requires that local health departments develop a culture of data development, use, sharing, and communication if they have not already had resources to do so. This begins with a workforce that is trained to understand, analyze, and make informed decisions using quantitative and qualitative data. Internally, this is important for purposes of examining health department programs and services to evaluate performance and potential areas for improvement. On the community level, it is important for understanding the collection and use of data that represents various demographic groups and how to use that data to communicate about health issues and support improvements in population health.

Additional Context

The North Carolina Association of Local Health Directors performance data work group is collaborating with the North Carolina Department of Health and Human Services Division of Public Health to identify priority performance measures and a collective strategy that will support health departments locally in prioritizing, using, and communicating data to drive improvements.

⁹ Results-Based Accountability™ (“RBA”) is a disciplined way of thinking and taking action used by communities to improve the lives of children, families and the community as a whole. RBA is also used by agencies to improve the performance of their programs. https://1r65612jvqxn8fcup46pve6b-wpengine.netdna-ssl.com/wp-content/uploads/2016/07/RBA_Guide_Clear_Impact-1.pdf

Several training resources are available to begin the process of growing skills and competencies in data collection, analysis, and communication. These include:

- The **North Carolina Institute for Public Health (NCIPH)** at the University of North Carolina – Chapel Hill Gillings School of Global Public Health – “Healthy Places NC Data Foundations Training Series”
- **WNC Health Network** - Paid services are available related to Results Based Accountability (RBA)⁹, “tailored analysis of our regional health data set,” “collect[ion of] additional local data and stories,” and “strategic support for your health communications efforts.”⁵
- The North Carolina Division of Public Health (DPH), the Foundation for Health Leadership & Innovation, and North Carolina Area Health Education Centers are collaborating to train DPH staff and the broader community in Results Based Accountability.³
- The **North Carolina Public Health Training Center** at the University of North Carolina - Wilmington College of Health and Human Services – “Data Analytics and Visualization for Public Health Practitioners”⁶
- **Region IV Public Health Training Center** through the Public Health Learning Network – Many trainings on data, including “Data Quality and Evidence-based Decision Making in Public Health;” “Data Analytics for Public Health;” and “Practical Evaluation Skills for Public Health Practitioners.”⁷

There have been previous efforts in North Carolina to support continuous quality improvement in the public health system. The North Carolina Public Health Quality Program “provid[ed] training in quality improvement (QI) methods and tools and develop[ed], [ed], and support[ed] strategic QI initiatives for the Division of Public Health and local public health agencies” in the state with funding from several public health philanthropies and the Centers for Disease Control and Prevention.⁸ The program successfully trained public health professionals in QI and led initiatives for several years, but is no longer active due to challenges with funding sustainability.

How would this impact the health of communities?

A local health department with staff competent in data use and sharing, access to data analytics professionals, and an intentional culture of equitable data collection, use, and subsequent quality improvement will be able to effectively identify health department and community health successes and challenges. With that information, health departments will be able to effectively address community need and share data with community partners who can use that information to enhance their own work.

Who is responsible?

- Local health departments

Who are the partners?

- Community partners (i.e., organizations that can use and contribute to public health data)
- North Carolina Association of Local Health Directors
- Public health non-profits that offer training on data topics
- Public health academic partners
- ARPA Regional Workforce Hubs





Strategy 2d – Support for Data Capacity and Modernization

North Carolina public health philanthropies and nonprofit organizations, as well as partners in academia, health care, and the business sector should support developing work in local public health data capabilities by collectively investing in or collaborating on prioritized improvements and innovations related to workforce capacity, skill development, technical assistance, system improvement, and filling gaps in available data.

Desired Result

Local health departments will have a robust set of assets and resources, supported by partners and funders, to facilitate data capabilities, maintain data-related workforce competencies, and optimize data development for the improvement of community health.

Why does the task force recommend this strategy?

The expertise of partners in public health nonprofit organizations, academia, health care, and the private sector related to public health data collection and analysis is a vital resource to achieve a comprehensive modernization of the public health data landscape. These partners hold knowledge about aspects of community health, as well as capabilities in using and communicating that data. In addition, public health philanthropies have an interest in building an effective and sustainable public health data system supported by a knowledgeable workforce.

Additional Context

Local health departments are often incredibly resourceful in participating in, or developing, partnerships to solve community health or workforce capacity challenges. An example of a partnership that has contributed to the capacity to collect or share public health data is the BUILD Health Challenge partnership in Greensboro. Focused on housing and health, in this partnership between Guilford Public Health, Greensboro Housing Coalition, and Cone Health, Cone Health analytics provided data on diagnoses that could have environmental influences to evaluate the impact of renovations on an apartment complex.⁹

Guilford County has also partnered with SAS for Public Health Modernization to improve its public health data capabilities.¹⁰ Initial work will integrate epidemiology dashboards, with future options for further integration with other data sources. The project also includes the creation of analytic tools and visualizations that will help public health professionals explore trends and emerging public health threats.

The WNC Health Network in Western North Carolina is a successful example of strong regional partnership between health departments, hospitals, and other community partners to “improve efficiency, quality, and standardization of community health assessment data collection and reporting of data and

plans,” among other goals.¹¹ WNC Health Network helps these local partners with “standardizing and conducting data collection” and “creating reporting and communication templates and tools.”

Another opportunity to enhance the modernization of the public health data landscape lies with the workforce of the future. In academic settings for public health workforce training such as community colleges and universities, competencies in data collection and analysis could be developed through inclusion of coursework and certifications on these topics. This would help to prepare the future public health workforce and could have the potential for cross-training those in data science fields who may be interested in serving in local public health.

How would this impact the health of communities?

Effective partnerships to fund or assist with data collection, analysis, or training would enhance local public health’s ability to identify community health needs and efficiently address them.

Who is responsible?

- Public health philanthropies
- Public health nonprofits

Who are the partners?

- Academia
- Health care systems
- Business leaders with relevant knowledge and resources to contribute to public health data innovation



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