



# **KANSAS PUBLIC HEALTH INFORMATICS WORKGROUP**

*Final Workgroup Report*



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## *Final Workgroup Report*

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*Prepared for the Kansas Public Health Informatics Workgroup*

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## Executive Summary

Health status in the United States has improved substantially over the last 100-plus years, with more than 30 years being added to average life expectancy at birth between 1900 and 2014. While improvements in health care have played a role, most of this progress is largely attributed to public health measures, such as vaccinations, better sanitation and improvements in working conditions. Despite these successes, challenges to the public's health continue to emerge. In 2014, life expectancy declined for the first time in more than 20 years. As researchers, public health leaders and policymakers strive to understand the complex factors driving this phenomenon, access to and effective utilization of data and information about the health of individuals—and the determinants of health—will be paramount.

As population health leaders recognize the increasingly important role of information and information technology, the multi-sector Kansas Public Health Systems Group formed the Public Health Informatics Workgroup (referred to as “Workgroup” in this document) in the fall of 2014. The Workgroup is comprised of representatives from the state and local health departments, academic institutions and non-governmental organizations—all working together to support a strategic vision for public health informatics in Kansas.

Early on, the Workgroup identified several barriers to effective utilization of data to drive public health programs and services, including inadequate planning and coordination of information technology, applications and data systems; lack of common data elements and standards across public health programs; policies and regulations that inhibit or prevent access to needed data and information; and lack of a coordinated informatics workforce development plan and resources. The Workgroup identified objectives and potential activities to support its overall goal to improve the practice of public health informatics in the state.

The first major project undertaken by the Workgroup was the Kansas Public Health Informatics System Assessment. Using an assessment tool organized around the *Foundational Capabilities of the RESOLVE Foundational Public Health Services model—Assessment, All Hazards Preparedness and Response, Communications, Community Partnership Development, Policy Development and Support, and Organizational Competencies*—an interdisciplinary focus group representing local, state and academic public health leaders considered the respective capacities of the local public health departments and the state health department. Overall, the capacity

assessment identified strengths in the *Assessment* and *All Hazards Preparedness and Response Foundational Capabilities*. However, considerable gaps in the public health system were identified, particularly at the local health department level.

As a resource to assist local health departments in identifying their own strengths and weaknesses in informatics, the Workgroup developed a self-assessment tool based on the Public Health Informatics Institute's (PHII) Informatics-Savvy Health Department Self-Assessment Tool. The tool evaluates informatics around four domains: Vision, Strategy and Policy for Informatics; Workforce Capability; Organizational Competencies; and Data Exchange. In addition, the Workgroup developed a supplemental scoring tool to help the departments in analyzing their self-assessments, as well as a resource document to address gaps.

The second major project of the Workgroup has been the development of a central resource with information about public health data in the state. While Kansas has a considerable amount of public health data available, finding those data sources—and understanding their characteristics and relative usefulness—can be a challenge. To address this need, the Workgroup identified several major data sources primarily housed at Kansas Department of Health and Environment (KDHE). Data stewards at KDHE provided detailed information about these data sources (e.g., description, update frequency, data limitations, etc.). The metadata about these data sources has been compiled and a public, query-based online application is being developed and will be publicly available in July 2017. This should serve as a valuable resource to public health practitioners, researchers and policymakers.

It is important that the Workgroup continue to build on the successes of its activities from the past few years. To do so, the Workgroup will need to develop a strategic plan to guide its future work. The Workgroup is well-positioned to support the public health system. This support might include technical assistance for local health departments in completing self-assessments and in identifying strategies to address areas of improvement. The Workgroup could also play a lead role in public health informatics workforce development in the state. Finally, the Workgroup could serve as a convener and facilitator for informatics throughout the system, which would help to ensure activities are communicated among stakeholders.



## Introduction

The health of the public in the United States has greatly improved since the beginning of the last century, with life expectancy increasing from 47.3 years of age for persons born in 1900<sup>1</sup> to 78.8 years of age for persons born in 2014.<sup>2</sup> While advances in medical care have contributed to the improvement, most of the gains in life expectancy are due to public health measures, such as vaccinations, safe and healthier foods and safer workplaces, among others. Despite these achievements, life expectancy in 2014 declined for the first time in more than 20 years.<sup>3</sup> While the underlying reasons for this decline are not well-understood and it may only be a random occurrence, it reflects the complexity of health and how challenges and needs can change over time. It also reinforces the important role of measures directed at populations—not just individuals—plays in promoting and protecting health.

In recent years, the use of technology and electronic information resources in the governmental public health sector has increased substantially, pressuring public health agencies to rapidly adapt to an unfamiliar environment. Immunization information systems (or registries), reportable disease surveillance systems, electronic health records systems, client databases and management systems, and syndromic surveillance systems are just a few examples. Effective application of these systems—and the information they can provide—is imperative to improve public health programs and services.

It is critically important for public health leaders to have access to these various sources of data on the health of their populations and have the resources they need to analyze and interpret these data. Smart public health decisions depend on the right data getting to the right people, at the right time, and in a form they can use.

### ***Formation of the Kansas Public Health Informatics Workgroup***

Public health informatics is “...the effective use of information and information technology to improve public health practice and outcomes.”<sup>4</sup> Recognizing the increasingly important role of informatics, the Kansas Public Health Systems Group (PHSG), a multi-sector coalition of state partners representing public health practice, academic institutions, and government and charitable organizations that was formed in 2001 to explore common interests and projects, established the Public Health Informatics Workgroup (“Workgroup”) in the fall of 2014.

Membership of the Workgroup has included representatives from local health departments, the state health department, graduate public health programs in academic institutions, and non-governmental organizations. Through informal discussions, the Workgroup identified several issues that were impeding the ability of public health practitioners to access and use quality data for practice and research. These issues included: inadequate planning and coordination of information technology, applications, and data systems; lack of common data elements and standards across public health programs; policies and regulations that inhibit or prevent access to needed data and information; and lack of coordinated informatics workforce development plans and resources.

Based on these identified issues, the Workgroup developed an overall goal to support a strategic vision for public health informatics in Kansas, and identified the following objectives and potential activities to support this goal.

- Developing a shared vision for the public health system in Kansas to identify, use and improve informatics resources.
- Coordinating and planning of information exchange, information systems and information technology.
- Developing and recommending strategies to obtain needed information for public health practice and research.
- Reviewing and making recommendations on policies and regulations affecting data collection, access, analysis and dissemination.
- Recommending core elements to be included in data sets useful for public health informatics.
- Developing and recommending technology and data standards.
- Developing and making recommendations related to workforce development in public health informatics.

With funding provided by the Kansas Health Foundation, the Workgroup prioritized two primary projects that will help the state make progress in developing its informatics capabilities: (1) statewide informatics capacity assessment; and (2) development of an online, descriptive

inventory of public health data sources in Kansas. In addition to these two primary projects, the Workgroup was involved in a variety of other activities to support the budding practice of public health informatics in the state. This report provides summaries of the primary projects and activities of the Workgroup to date, and presents a discussion of potential future activities.

## **Workgroup Project Reports**

### ***Kansas Public Health Informatics System Assessment***

As noted above, data and information, and the information systems (hardware and software) that house them, are central to most public health work. However, there are often challenges to the effective utilization of these data and technology in a systematic and coordinated manner. The Public Health Informatics Institute defines an informatics-savvy health department as one that has three core elements:

- An overall vision and strategy for how it uses information and information technology as strategic assets;
- A skilled workforce; and
- Well-designed and effectively used information systems.<sup>5</sup>

These issues, though generally agreed upon, had not been studied to identify gaps in informatics capacity within Kansas, and the Workgroup determined that an assessment of current capacity throughout the state would be instrumental in identifying needs and future planning efforts.

The Workgroup was tasked with (1) studying the relevance of existing tools to assess the informatics capacity of Kansas health departments; (2) adapt an existing tool or create a new tool to be used within Kansas; and (3) administer the final tool to assess the informatics capacity within the Kansas public health system.

### ***Assessment Methods***

Workgroup members adapted the assessment tool from nationally available resources to create a tool unique to Kansas' decentralized public health system, with considerations for local and state informatics infrastructure and activities. The structure of the tool and process matches that of the assessment instruments developed by the Association of State and Territorial Health

Officials (ASTHO) for the Centers for Disease Control and Prevention's (CDC's) National Public Health Performance Standards Program. The tool had sections organized by *Foundational Capabilities*—cross-cutting skills to be present in each governmental health department—as defined by the RESOLVE Foundational Public Health Services (FPHS) model: *Assessment, All Hazards Preparedness and Response, Communications, Community Partnership Development, Policy Development and Support, and Organizational Competencies*.

Using the adapted tool, a focus group was conducted in October 2016 to identify capacity scores for public health informatics at the local, state and system levels. The focus group was interdisciplinary, with key stakeholders representing local and state governmental public health, academic and other partners. Within this focus group, the assessment process considered the capacity of the local health departments separately from the capacity of the state health department—Kansas Department of Health and Environment (KDHE). Overall system capacity was assessed by calculating average scores of the local and state capacities—with equal weighting—for each item on the assessment instrument.

## ***Key Findings***

The Informatics System Assessment resulted in a collaborative determination of the current informatics capacity within the Kansas public health system as well as an understanding of gaps in specific capacities; this was reported within the *Public Health Informatics System Assessment: Summary Report*.<sup>6</sup> Focus group participants scored KDHE as having higher informatics capacity than local health departments for all but a few topic questions, often by a wide margin. The public health system was highly regarded in informatics capacity by focus group participants for the *Assessment and All Hazards Preparedness and Response Foundational Capabilities*, while the *Policy Development and Support Foundational Capability* was determined to be at a lower capacity. Informatics functions related to communicable disease control were scored the highest within the public health system. Interoperability and information system design, often characterized by data silos, were cited as barriers to increasing system capacity.

Participants highly regarded the state in its staff expertise, data quality, data collection and data-sharing processes while local health departments had strengths in informatics activities related to partnerships and data sharing.

Capacity scores provided a metric to estimate the current informatics performance versus maximum possible performance: local health departments (36 percent of potential capacity), state health department (60 percent of potential capacity), public health system (48 percent of potential capacity). It is important to reiterate that the overall system score was derived from an equal weighting between the local and state scores. Although the state was assessed as having high capacity in many areas, significant gaps exist at the local health department level.

The Informatics System Assessment was a critical first step in the process to increase the informatics capacities within the Kansas public health system. This assessment will allow stakeholders to devise and prioritize interventions to address the gaps perceived by the focus group, in order to move toward an optimal state of informatics performance.

### ***Self-Assessment Tool***

In addition to the statewide Kansas Public Health Informatics System Assessment, the Workgroup determined that a self-assessment tool should be created to assist health departments in understanding their strengths and weaknesses in informatics. With a decentralized system comprised primarily of individual county public health departments in rural settings, many of those departments may rely upon regional shared services or the state for some services. Data from the self-assessment, if obtained by the Workgroup, would complement the Informatics System Assessment.

The Workgroup was tasked with (1) identifying and modifying an assessment tool to make it suitable for use by local health departments in Kansas; (2) pilot testing the tool with a small number of agencies; and (3) providing the final tool to local health departments for their use.

### ***Activities***

Much of the content and organization of this tool was based on the *Public Health Informatics Institute's (PHII) Informatics-Savvy Health Department Self-Assessment Tool*.<sup>7</sup> The PHII tool was modified to be applicable to local health departments in Kansas, including expansion of PHII's original three informatics domains to four informatics domains. The *Kansas Public Health Informatics Self-Assessment Tool* evaluates activity for twenty-nine informatics topic questions within the following four domains: *Vision, Strategy, and Policy for Informatics; Workforce Capability; Organizational Competencies; and Data Exchange*.<sup>8</sup> Each topic question includes key

concepts to provide additional clarifications for topics as well as key questions to stimulate deeper discussion.

The Workgroup also developed a supplemental scoring tool to assist agencies in analyzing their capability maturity for each topic question, by section and by a set of related informatics functions. To address any gaps identified within the self-assessment, a list of helpful resources was developed and compiled within a separate document: *Kansas Public Health Informatics Resources*. This document provides resources that may help to address informatics gaps that fall within a set of related informatics functions.

## ***Data Catalog and Relational Database***

While Kansas public health data are available online through various resources, such as Kansas Health Matters (<http://www.kansashealthmatters.org>), Kansas Information for Communities (<http://kic.kdheks.gov/>), and the Kansas Behavioral Risk Factor Surveillance System (<http://www.kdheks.gov/brfss/index.html>), a centralized list of Kansas public health data sources did not previously exist, and the characteristics and relative usefulness of each source were not clearly documented. This has led to missed opportunities for efficiency and effectiveness in the way information is shared and used in the state. The Workgroup envisioned a means of centralizing information about these public health data sources into an online index to meet the needs of multiple public health partners.

The Workgroup was tasked with (1) obtaining an inventory of major public health data sources for Kansas; (2) creating a relational database from the metadata within inventoried data sources; and (3) designing an online index for users to identify public health data sources.

## ***Activities***

The Workgroup revisited a data source inventory project from 2015 and contacted the Kansas Department of Health and Environment (KDHE) in spring 2016 to compile an inventory of “major” data sources that support public health capabilities, functions, programs and services. The data sources being targeted were primarily those located within the KDHE Division of Public Health. Staff identified as data source stewards at KDHE were requested to provide information on their respective data source(s) for specific metadata fields (e.g., *Description, Update Frequency, Data Limitations*). The metadata “records” obtained for each data source were incorporated into a data catalog spreadsheet. Most records were made for Division of Public

Health data sources, although a few records exist for data sources outside of that division—additional public health data sources within the KDHE Division of Public Health, within other KDHE divisions and outside of KDHE will be entered, as available, at a later time.

The Workgroup established the Relational Database Subcommittee for a series of stakeholder focus group discussions to identify (1) public health data needs; (2) barriers to data access; and (3) design requirements for an online index and relational database for the data catalog records. A contractor was hired to develop the online index and incorporate the desired functions in early spring 2017. The online index is anticipated to be available to the public in July 2017.

### ***Outcomes of Project***

The completed data catalog of Kansas public health data sources was incorporated into a relational database to assist users in locating public health data sources for their unique needs. An online index for this data catalog was developed and will be made available in July 2017 with the following features:

- Individual “record” pages per data source that describes each data source by relevant fields;
- Web links, where available, for data sources able to be accessed electronically;
- A query-based system with advanced search, including filtering by metadata fields;
- An online data inquiry feature which sends a custom inquiry from the user directly to the data steward for each data source; and
- A password-protected login for the site to allow individuals designated as data stewards to update fields for their data source and for administrators to oversee the index.

### ***Other Workgroup Activities***

#### ***KALHD Informatics Subcommittee***

In summer 2016, the Kansas Association of Local Health Departments (KALHD) created the KALHD Informatics Subcommittee, under the direction of the Center for Public Health Initiatives at Wichita State University’s Community Engagement Institute. The KALHD Informatics Subcommittee is comprised of directors from local health departments who volunteered to

discuss common issues with information technology, data use and techniques, and Kansas public health information systems. The Subcommittee completed two primary activities following its inception: (1) a survey of local health departments to characterize uses of Kansas public health information systems; and (2) completion of a strategic planning session and summary report. This work has complemented the Kansas Public Health Informatics Workgroup over the last year, with each group collaborating toward a common goal of improving the capabilities and capacities of public health informatics in Kansas.

### *Other Activities*

The Workgroup coordinated several other activities toward improving the informatics capacity in Kansas. The Workgroup hosted multiple speakers to further the conversations related to state health information exchanges (including the Kansas Health Information Network and KAMMCO Health Solutions), overviewing public health informatics and workforce development considerations.

In addition, Workgroup members were invited to present on the progress of the public health informatics system assessment and metadata catalog and online index at the 2016 Public Health Informatics Conference in Atlanta, Georgia.<sup>9</sup>

## **Conclusion and Future Directions**

The Kansas Public Health Informatics Workgroup was formed out of the recognition of the increasingly important role that data and information technology and systems plays in delivering effective and efficient public health services in the state. In many respects, the Workgroup was formed to address a wide range of challenges with respect to data and information technology throughout the public health system. Inadequate planning and coordination has led to applications and data systems that do not fully meet the needs of users and stakeholders. A lack of standards and common data elements across public health program applications make it more difficult to link records between systems or to track information across programs. Policies and regulations hinder access to data and information needed for assessment, program planning, and evaluation. And, inadequate workforce development planning inhibits the ability for public health agencies to advance the practice of informatics throughout the system.



The Workgroup has engaged in several activities to begin addressing some of these challenges. The Kansas Public Health Informatics Systems Assessment has identified strengths and opportunities that can serve as the basis for future planning efforts and activities. The online, query-based data inventory has the potential to be a valuable resource for public health practitioners throughout the state, researchers, students and anyone interested in population health issues in Kansas. Finally, efforts to increase the knowledge base of Workgroup members through invited presentations from outside organizations, coordination with the KALHD Informatics Subcommittee, and presenting the work of the Workgroup with local partners and the national public health informatics community will facilitate networking and sharing of ideas and resources that will help advance the practice of informatics in Kansas.

## **Recommendations**

**Continuation of Workgroup:** It is evident that informatics will continue to grow as an important component of public health practice, and the public health system will benefit from state-level guidance and coordination of informatics activities. Soon after its formation, the Workgroup identified several barriers to effective utilization of data and information throughout the public health system, and much work is needed to address many of those issues. To continue the progress and successes the Workgroup has demonstrated, it is important that the Workgroup continue as an organizational and coordination tool, and identify and seek the resources it will require to support its future activities.

**Guidance and coordination for statewide informatics activities:** With the evolution of public health agencies to include more emphasis on engaging community partnerships, the Workgroup is well-suited to serve as a convener and facilitator for informatics throughout the public health system. The workgroup members have identified some current, mission-critical data sources that support a multitude of programs and essential services. Perhaps the two of the most prominent are the Behavioral Risk Factor Surveillance System (BRFSS), with its enhanced sample that allows a broader use of much needed local data, and Kansas Health Matters, which remains the go-to site for many partners and public health practitioners for health-related data needed for assessment and planning. These and other data sources identified as vital will need to be maintained and continuously re-assessed and improved through discussions and coordination by the Workgroup. Some additional gaps remain and can be addressed by the Workgroup.

One specific area of interest is leveraging data from health care and human services organizations to monitor population health, identify areas of need, and work collaboratively to address community health problems. As one of the major health information exchanges in the state—with broad participation and integration with the Lewis and Clark Information Exchange (LACIE)—the Kansas Health Information Network (KHIN) has been identified as an important data asset for public health. Most efforts to utilize KHIN for public health appear to be fragmented and narrow in scope. With limited resources, KHIN and its public health partners would benefit from a more coordinated approach to exploiting the rich information KHIN could provide. Working with KHIN, the Workgroup could help articulate the needs of public health and develop a plan for accessing and utilizing these data.

Similar approaches—with the Workgroup serving as convener and facilitator to identify priorities, advocate for access and support effective utilization—could potentially be used for other sources of data.

The Workgroup also could provide representation at meetings and conferences throughout the state as well as national conferences and continued collaboration with the KALHD Informatics Subcommittee. In addition, the Workgroup could serve as an external advisor in the development of new public health information systems or in the improvement process for existing information systems within Kansas, where appropriate, to advise in system interoperability and local user-friendliness.

**Increase the informatics capabilities within Kansas health departments:** Results from the Kansas Public Health Informatics System Assessment suggest that there is a high degree of capacity in some informatics domains at the state health department level, but significant gaps exist at many local health departments. A potential future role of the Workgroup would be to support local health departments in completing an assessment using the Kansas Public Health Informatics Self-Assessment Tool developed by the Workgroup. This would help participating local health departments to identify areas of improvement, and the Workgroup could also provide technical assistance with implementing and evaluating strategies to address these areas.

**Workforce development:** Although a formal workforce assessment has not been completed, there appears to be a limited number of staff throughout the public health system in Kansas with formal training in public health informatics. The Workgroup could consider developing an informatics training plan based on findings from the system assessment and information shared

by local health departments that undergo a self-assessment process. Additional needs could be identified and tracked through existing data collection efforts, such as the KDHE Aid-to-Local survey process.

**Needs assessment and strategic plan:** For the public health community in Kansas to continue building on these successes, it will be important for the Workgroup to refine its purpose, improve coordination and identify its strategies through the development of a charter and strategic plan. That, in turn, can lead to the development of statewide strategies that can maximize the results of the investments in public health informatics at the state and local levels. It will be important for the Workgroup to utilize what it learned from the statewide informatics capacity assessment in the development of a strategic plan, but it will also be important to consider where knowledge gaps still exist. For example, a needs assessment focused on workforce development will be necessary for the Workgroup to develop an effective strategic plan that includes specific training and educational components. This strategic plan will help guide future activities.



## Appendix A: Endnotes

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## **KANSAS HEALTH INSTITUTE**

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