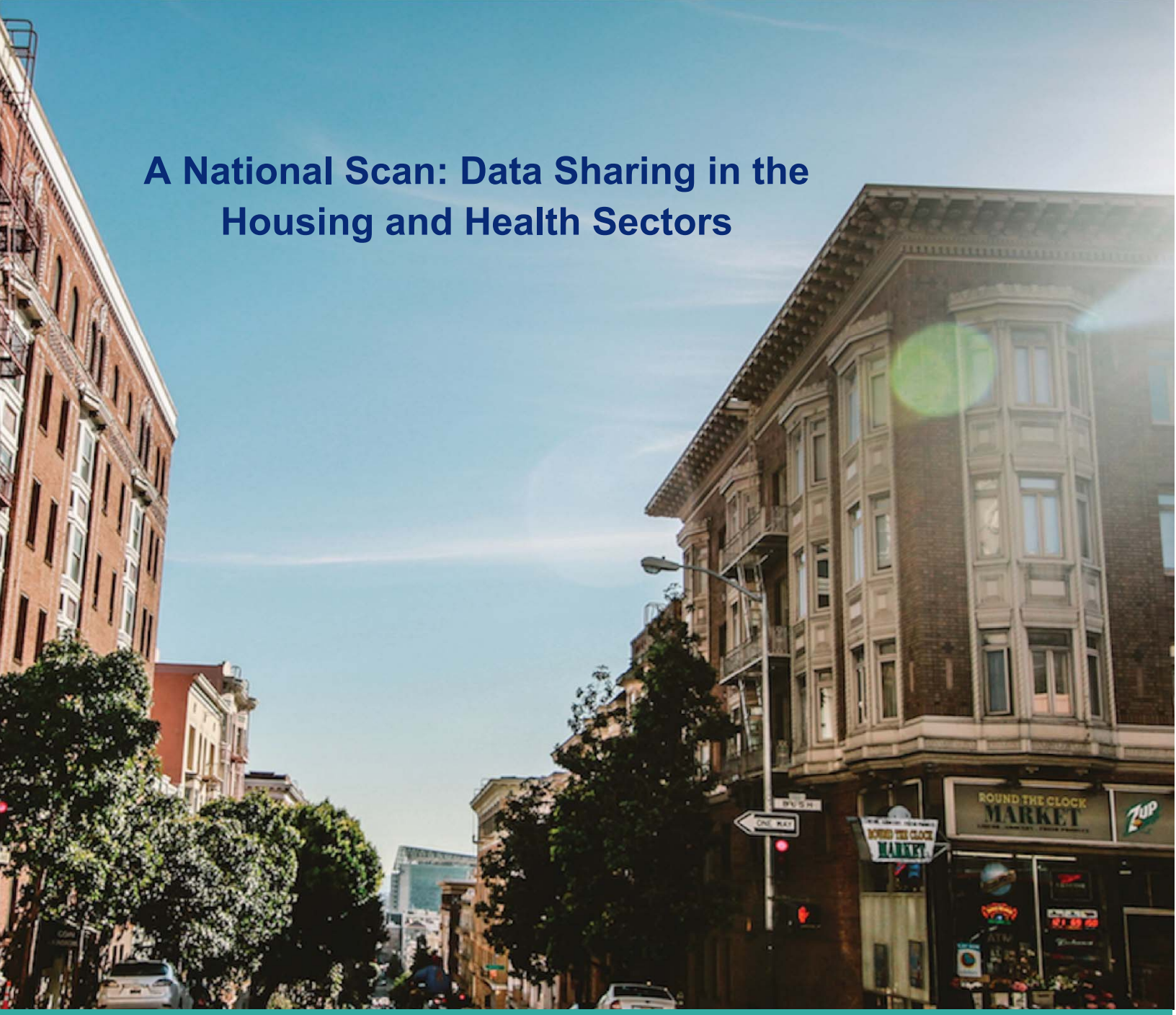
A National Scan: Data Sharing in the Housing and Health Sectors



All Chicago

Making Homelessness History

October 2019

Introduction

All Chicago is dedicated to uniting and leveraging our community around solutions that ensure everyone in Chicago has a place to call home. Along with emergency financial assistance, community partnerships, and training and research, All Chicago manages a city-wide Homeless Management Information System (HMIS). The US Department of Housing and Urban Development (HUD) requires that each metropolitan area use the Homeless Management Information System, a database system that collects specific, local data on client, housing, and homeless services. Collecting standardized data from all our partner agencies helps All Chicago better understand homelessness in Chicago and allows us to measure progress towards specific goals. The data collected informs homeless policy and decision making at the federal, state, and local levels. All Chicago's goal is for data to drive every conversation around ending homelessness.

There is an increasing need to merge data from other sources, share certain data sets with community stakeholders, and allow for the exchange of data between HMIS and other community and service systems. All Chicago's vision includes plans for an integrated health and human services data hub that provides a centralized and trusted source of client data specifically designed to address the need of individuals with the lived experience of homelessness.

All Chicago completed a national scan to engage with other HMIS leads, Continuum of Care (CoC) leads, homelessness analytics leaders, sector partners, and related software vendors to identify solutions that could be leveraged to achieve our vision of a city-wide Community Information Exchange (CIE). All Chicago's scan included 18+ communities around the United States. In addition, project leads discovered relevant work being done overseas in the United Kingdom and Australia.

Scope

All Chicago project leads reached out to HMIS administrator leads at the following agencies: Michigan Coalition Against Homelessness (Lansing, MI); Partners in Care Hawaii, (Honolulu, HI); Coalition for the Homeless of Houston (Houston, TX); Alleghany County Department of Human Services, (Alleghany County, PA); The Regional Task Force on the Homeless (San Diego, CA); Middlesex County, NJ; Maricopa County, AZ; Sacramento Steps Forward, (Sacramento, CA); and Boulder County Housing & Human Services, in Boulder County, CO,

The scan included discussions with six Continuum of Care leads in the following communities: Houston, TX; Denver Metro, CO, (Metropolitan Denver Homeless Initiative); Contra Costa, CA, (Contra Costa County Health, Housing & Homeless Services); Boston, MA; and, Austin, TX;

All Chicago project leads spoke with five vendors/service providers involved in the homeless space: Green River Developers, Actionable Intelligence for Social Policy (AISP), Salesforce (Service Cloud); Tableau (Solutions for Non-profits); Built for Zero (part of Community Solutions International, Inc.); and, the Center for Data Science and Public Policy (DSaPP) at the University of Chicago.

In addition, project leads met with six sector partners: 211 San Diego (https://211sandiego.org/), the Corporation for Supportive Housing (https://www.csh.org/), the Illinois Public Health Institute (IPHI) (https://iphionline.org/), Health Management Associates (https://healthmanagement.com/), Wellcare-Harmony MCHP, and Northwestern Memorial Hospital in Chicago, IL.

Commonly Identified Challenges across Communities

Each stakeholder stated that there are existing efforts to manage and share certain data sets with community stakeholders. All organizations are interested in the exchange of data between their Homeless Management Information Systems and other sectors. A key takeaway is that integration more manageable if the entities leading the effort are housed under the Department of the Health and Human Services, or equivalent.

All Chicago project leads spoke with HMIS administrators that used the same vendor as All Chicago. They had similar reporting and data analytics challenges. Most of the challenges stem from the inability to easily export data that aligns to the specific performance metrics needed for standardized data collection on homeless individuals and families across systems. In addition, funding limitations and the absence of a strong governance model also contributed to some of the challenges communities faced with cross sector data sharing.

Technology Solutions for Data Sharing

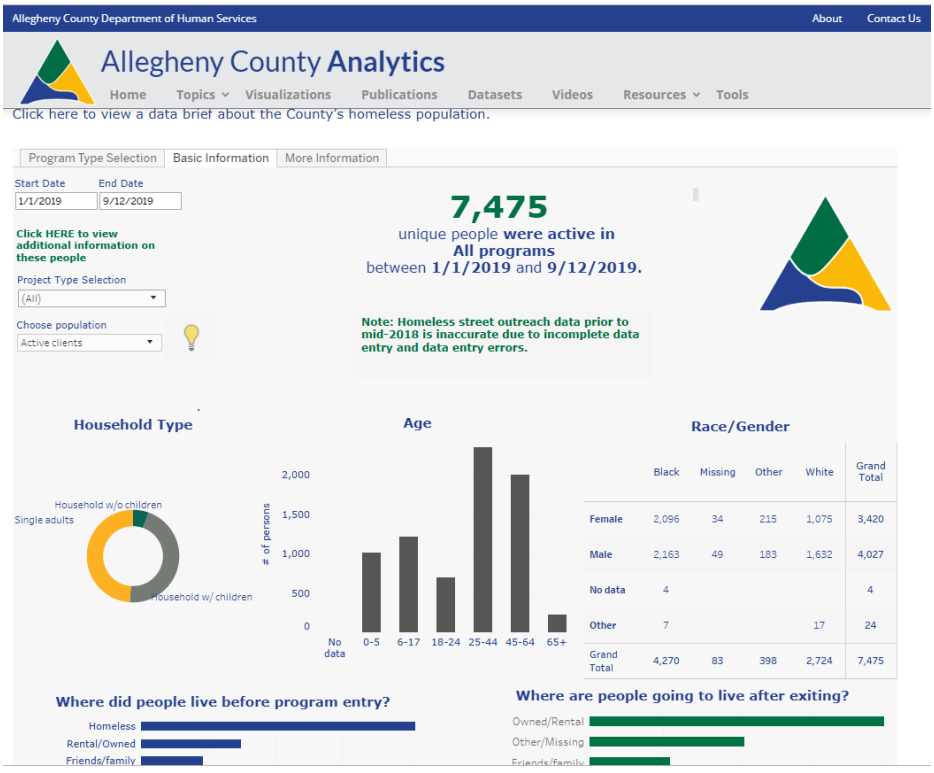
Several of the communities have taken steps to create a data repository for advanced reporting and analysis. At this time, there is no established standardized process for this. Approaches include the use of more primitive data tools such as Google Sheets and Microsoft Excel, more advanced technologies such as Tableau and Microsoft Power BI, and state-of-the-art technology that includes Azure, Informatica, and Salesforce.

The Michigan Coalition Against Homelessness located in Lansing, MI, built a statewide data warehouse model for data matching and designed a predictive algorithm for scale of acuity analysis. They use Tableau for dashboard creation. Due to the complex technical work needed, this agency uses a third party consultancy (Optum) for the build out.

Administrators in Contra Costa, CA, use QlikSense to merge data for HMIS and other departments. Their matching process includes a SQL Server Reporting Services (SSRS) scripts that run daily for client matches. Selected external data on the matched data set is then sent back to HMIS, hosted on Clarity, which is then shared with the users.

In Maricopa County, AZ, administrators use Tableau as a platform for the data warehouse that allows data sharing with Managed Care Organizations (MCOs). Compliance with the Health Insurance Portability and Accountability Act (HIPAA) is easier with MCOs which enabled them to share data with their users.

In Alleghany County, PA, administrators built a similar infrastructure. Their external data warehouse is built on a MS SQL Server platform stack running in a cloud environment (Azure). Reports and dashboards are built using Microsoft BI tools including Power BI and SSRS. A sample dashboard is below.



Improved Coordinated Entry Systems

"Coordinated Entry" is a system developed to ensure that people experiencing a housing crisis are quickly identified, assessed, referred, and connected to housing and assistance through a centralized process. Chicago's Coordinated Entry System (CES) serves as a front door to connect people facing homelessness to housing and other service supports in an accessible, equitable, and transparent manner. In Chicago, this workflow process is built into the in to the HMIS system.

Conversations uncovered at least four entities (Colorado, Hawaii, Boston, and Los Angeles) run their CES outside of HMIS. Boston's Coordinated Access System (CAS) includes a housing match engine that ties homeless individuals with housing opportunities and tenancy support services based on eligibility and length of time homeless.

Reducing Incarceration through Homeless System Data Sharing

Individuals with multi-faceted challenges (e.g., homelessness, mental illness, and chronic health conditions) make repeated contacts with multiple service providers including the criminal justice system. Several communities and partners have been working with local justice systems to share data to identify high risk individuals and conduct proactive outreach.

The University of Chicago's Center for Data Science and Public Policy (DSaPP) collaborated with the Corporation for Supportive Housing (CSH) to integrate data from the criminal justice systems with the following jurisdictions to standardize the development of a matching tool: Boone County, MO; Clark County, NV; McLean County, IL; and Salt Lake County, UT. The chief purpose of the matching tool is to integrate data from homeless services and criminal justice systems to identify frequent users of both systems and provide interventions.

Administrator leads in Johnson County, KS, as described in *Reducing Incarceration through Prioritized Interventions*[1], built a machine learning system in concert with the University of Chicago. This system predicts when individuals with histories of mental illness and incarceration are at risk of re-incarceration. The Johnson County court system has an integrated justice management system that covers interactions from booking through probation. The Early Interventions System (EIS) combines that data with Emergency Medical Services and public mental health data. This model would allow All Chicago to fully integrate data to ensure people are seamlessly connected to the services they need.

[1] This work was done as part of the 2016 Eric and Wendy Schmidt Data Science for Social Good Fellowship at the University of Chicago.

Reducing Emergency Room Visits

Research shows that 50% of health care expenditures are attributable to 5% of the population—individuals commonly referred to as "super-utilizers" of care. (Institute for Healthcare Policy & Innovation, University of Michigan). Mainstream health services, especially hospital emergency departments seek to identify people who are homeless or at risk of homelessness. Many hospitals All Chicago staff spoke with said they often review their policies and practices to better address this group to more fully integrate this knowledge into the care they provide.

In Contra Costa County, CA, administrators send data from EPIC into a SQL database where it is stored locally and merged with homeless data. A VPN connection is used to download this data into their data warehouse which then converts the records into a local data “mart”. The data mart sits separate from the HMIS data that tracks patients’ episodic history.

The City of Boston, working with Green River Developers, created a program called “Coordinate Care” which pulls EHR from EPIC using a file export of case management notes instead of getting this information directly from an API. Green River also hosts Boston’s HIPAA compliant server on an AWS platform. The Green River system is flexible and allows for integration from other systems, such as the justice system and the unemployment system. The AWS RDS follows HUD specifications for the underlying database with an S3 bucket, which is the most common method used for data exchanges.

Middlesex County, NJ, works with various hospitals to provide lists of high utilizers regardless of housing status. If there is a social determinant factor for a health condition, Middlesex County conducts an interview. They also use a third party for analytics solutions.

Montgomery County, MD, uses a platform called CRISP (Chesapeake Regional Information System for our Patients) which allows clinical information to move electronically among disparate health information systems. Patient Information is provided by Enterprise Integrated Case Management (EICM). The HMIS administrator pulls information from EICM and HMIS to add to prevention efforts. Visualizations and HMIS user reports are built with Microsoft Power BI. It took the Information Technology department in this location over three years to build the EICM and cost approximately $20 million. This is sustained by the state budget appropriations.

In Austin, TX, data administrators use blockchain technology to give homeless individuals a portable, digital identity. It is possible this same approach can be extended to health and other social service exchanges. Blockchain technology creates an electronic ledger for each client that tracks them as they visit various providers and contains a running record of pertinent data entered by each of these providers. This data is available for all of the client’s providers - from an emergency room doctor, to case worker or health insurer.

Although Health Information Exchanges (HIE) are useful in their own right, the greater value comes once health data is merged with and shared across other social service sectors. A Master Person Index (MPI) can be used to match clients across systems and sectors. The Illinois Public Health Institute (IPHI) is currently working with an MPI project in partnership with the University of Illinois Hospital & Health Sciences System (UI Health).

Pilots and Prototypes

All Chicago has completed successful HMIS data sharing pilots between health and housing systems and has now identified at least two partners to develop a pilot with: Northwestern Memorial Hospital and Wellcare/Meridian.

Northwestern Memorial Hospital

Northwestern Memorial Hospital administrators stated that there is a need to evaluate and understand the needs of Chicago's homeless population before attempting to deploy additional resources. EPIC's Care Everywhere allows for health exchanges between hospitals that use EPIC. All Chicago will be modeled after the Illinois Prescription Monitoring Program (PMP) approach which performs patient/client matching with outside data and provides this information to doctors in an auxiliary screen attached to the patient profile.

Some of the pilot efforts may include: establishing a data partnership with All Chicago; addressing legal use agreements for HMIS and EPIC; possible restructuring of the ED registration process; developing NM ED-based data collection and storage architecture; building a pilot panel of patients; developing and deploying an ED Operational Impact Team; deploying data-sharing among pilot panel; develop "Social Vital Signs", and launching provider education/training.

Wellcare/Meridian

Wellcare/Meridian (Wellcare) focuses primarily on providing government sponsored managed care services to families, children, seniors, and individuals with complex medical needs primarily through Medicaid, Medicare Advantage, and Medicare Prescription Drug Plans, as well as the Health Insurance Marketplace.

Wellcare works with Heartland Alliance Housing (HAH) and All Chicago on a data sharing pilot. The goal of Heartland Alliance Housing is to enhance navigation for its members. Currently HAH is using All Chicago HMIS data to find individuals that are currently homeless and they discovered an overlap of clients between the All Chicago HIMS and HAH. Heartland Alliance Housing seeks to harness HMIS to generate actionable data for its members.

Wellcare worked with All Chicago on an 18-month exploratory data match. Data from Wellcare has identifying information for over 100,000+ enrollees that was matched with the HMIS dataset. The match has allowed All Chicago to better learn and understand the disparities that exist in the data. Administrators prepare a detailed diagnostic and cost analysis to find the diagnoses that are more prevalent among the homeless population. This partnership has allowed information/data sharing between the housing and healthcare sectors and has created an opportunity for coordinated engagement, outreach, and innovative service delivery. Currently, All Chicago, in partnership with Heartland Alliance Housing (HAH) and Wellcare are beginning to embark on Phase 2 of this project to enhance efforts around care coordination, coordinated entry, and to share information through this effort.

Governance and Security

The most common refrain from all the communities All Chicago project leads met with was that governance, data sharing agreements, and privacy protections are the most challenging and time-consuming aspects of managing and sharing data sets with community stakeholders. Inadequate governance structures resulted in a lack of vision around priorities, delays in HMIS implementation advancements, setbacks in data quality, and an unclear understanding of HMIS's role in the community.

Boulder County, CO, uses many several different governance structures. One structure is dedicated to coordinated entry, another is tailored to providers and includes concerns outside of the patient's housing status. Boulder County administrators defined common case practice models and trained their staff to ensure everyone's buy-in.

The Metro Denver Homeless Initiative includes consuls and committees. The HMIS information resides in the system performance console. Underneath the system performance console are two committees: The Data Governance committee, which examines data definitions and quality concerns, and a Process Improvement committee that focuses on merging data to facilitate analysis.

San Diego's community information exchange is supported by a multi-level governance structure in which different partners each play a unique role in guiding the vision and ongoing development of the CIE. While 2-1-1 San Diego staffs the CIE, the CIE also relies heavily on the contributions of its advisory board, a partner network, and several workgroups, as well as the 2-1-1 San Diego Board of Directors. Their roles are defined below:

- 2-1-1 San Diego is a private, nonprofit corporation with extensive expertise managing information and referral services between healthcare and social service providers throughout San Diego County. Integrally involved with the CIE since its creation, the agency serves as the

backbone or hub of CIE operations with oversight of both the partner network, various workgroups, and the CIE technology.

- The CIE Advisory Board is comprised of executive leaders of healthcare and provider organizations, Community Based Organizations (CBOs), health plan partners, and the local Health Information Exchanges (HIEs). This group meets monthly to facilitate the development, adoption, innovation, and sustainability of the CIE, advance the work of the CIE partner network and awareness of health and social influences that impact the wellness outcomes of individuals and the community. The CIE Advisory Board is facilitated by people within 2-1-1 San Diego's executive leadership team, partner engagement staff, and a 2-1-1 San Diego board member.

- The CIE Partner Network is comprised of staff from current and prospective partner organizations. This group meets monthly to share information about their experience participating in the CIE. Discussions are focused on what is working well and what challenges need to be addressed and share emerging best practices. The partner network also participates in ongoing training and provides input on CIE governance policies and technology platform functionality.

The Case for an Integrated Data System

Integrated Data Systems (IDS) foster social innovation through speeding up the knowledge-to-practice-development cycle, according to Dennis Culhane, Professor of Social Policy at the University of Pennsylvania. This is accomplished by linking administrative data across multiple agencies to monitor and track how services are being used and to what effect. Integrated data systems provide a more complete picture of how different policies and programs affect the individuals they are intended to serve. This provides agency decision makers with the actionable intelligence necessary to better address the needs of people and systems more efficiently. Integrated data systems are also used to test social policy innovations through high speed, low-cost randomized control trials (RCTs) and quasi-experimental approaches. Integrated data systems can also be used for continuous quality improvement efforts and benefit cost analysis.

All Chicago met with Dennis Culhane about his extensive work in impacting social policy and data governance. His work spurred the formation of an association called *Actionable Intelligence for Social Policy* (AISP). The AISP is currently collaborating with Swansea University in Wales

(UK) in the data sharing space. They offer an all-in-one, turn-key technology solution to conform to governance and data security requirements. Currently AISP is trying to license this product for use in the United States. This data is de-identified by an encrypted key for linkage purposes. By using the Swansea University system approach, each partner is able to have their data on premises in a separate server that will interact with compatible servers from other partners. Starting with a de-identified IDS system will provide the opportunity to demonstrate the impact of actionable programs. To start this process, a planning committee needs to be formed that codifies policies and procedures. The advantage of building an IDS before a CIE is that an IDS can receive and store data from many different sources in bulk because it is all anonymous, thereby avoiding privacy concerns.

Culhane recommends building trust and partnerships that will be crucial for the success of this project. Once this is established, moving to a CIE is more feasible. Dennis Culhane stated that the Enterprise Linkage Program (ELP) in Los Angeles has access to every county department.

Culhane describes three levels of data sharing with specific intentions and methods to achieving each level. The first level is an API approach for clinical case management that allows for an interface with a healthcare providers, such emergency room staff, with access controls. The second level is data analytics in real time where a provider can compare a person's local data to data from other cities and regions. The third level provides a comprehensive research platform which processes requirements for various data handled in a secure, controlled method.

Conclusion

People who experience homelessness are deeply impacted by other social determinants of health, such as food security, access to medical care, and other services from homelessness service providers. They may not always seek a coordinated entry agency as a first point-of-contact. Instead, they may apply for and use other social services and/or utilize local emergency departments for healthcare. Currently, people approach each health and social service agency separately, which can result in incomplete diagnoses and insufficient interventions.

Communities across the country are interested in using data to promote individual well-being as a foundation for a more holistic approach to community health. They want to explore how integrating data from multiple sectors can enhance their understanding of the social determinants of health. Communities are working towards innovative cross-sector partnerships can break traditional silos, improve real-time care coordination, reduce the cost of public services, get high quality data that informs public policy, and ultimately achieves positive individual health outcomes and housing stability. Some organizations have achieved the goal of a Community Information Exchange, in such locations as San Diego County, CA, and Boston, MA.

Building a data warehouse to improve the quality and reporting of HMIS data is a logical first step. From there, an Integrated Data System can be leveraged to receive and store data from other sources because it is anonymous. Pilots and prototypes should be built to help address technical uncertainties, a data sharing agreement, and data governance structure. Ultimately, a community information exchange can be deployed to achieve All Chicago's vision for an integrated health and human services data hub that provides a single trusted source of client data.