

USING DATA TO IMPROVE LOCAL GOVERNMENT DECISION MAKING



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With support from the Robert Wood Johnson Foundation, the NYU Grossman School of Medicine and ICMA are assisting municipal leaders and community stakeholders in driving improvements to urban health and well-being via the [City Health Dashboard](#), a free web-based resource to place city- and neighborhood-level data into the hands of policy makers and their partners.

The inspiration for the City Health Dashboard came from observations by ICMA, the National Resource Network, and NYU Grossman School of Medicine that, despite being heavily influenced by local actors, most health data were not available at the city or neighborhood level. When health data were made available by public or private sources, they were often at the county level, blurring out important variation that more granular data can bring to light. This lack of actionable data caused health to be less prominently on the radar of cities than issues from other sectors.

Following the development by the team at the NYU Grossman School of Medicine of an initial pilot website featuring 26 indicators across four cities, the fully scaled Dashboard site now shows over 35 measures of health and its drivers across the 750+ largest U.S. cities, representing populations of approximately 50,000 and above. The meaningful, actionable, regularly updated measures are organized into five domains: clinical care, health behaviors, health outcomes, physical environment, and social and economic factors. Two-thirds of the dashboard's measures drill down to the census tract level and one-third can be parsed by demographic characteristics such as race/ethnicity or gender.

In July 2019, ICMA and the Dashboard team hosted representatives from six cities—Brownsville, Texas; Kalamazoo, Michigan; Medford, Oregon; Birmingham, Alabama; Providence, Rhode Island; and Hampton, Virginia—for a workshop, “Data-Driven Decision Making for Better Health Outcomes.” The members of the city teams represented a broad range of disciplines and functions, occupying positions in municipal administration, planning, engineering, public safety, and public health units, as well as with community anchor institutions. The action-oriented workshop provided insight into how the Dashboard supports cross-sector conversations and initiatives addressing health in their communities. Cities discussed how they can use the Dashboard and its data as a neutral agent to help overcome challenges inherent to coordinated health policy and programming.

The importance of data in driving policymaking is not new. However, its use in decision making for public health is perhaps not as ingrained in local governments because of the lack of a centralized source that can be used to accomplish this goal. The report that follows gives a roadmap for how data and evidence can be integrated into the critical decisions being made every day by city policymakers. With the data in hand through a resource like the City Health Dashboard, cities can take those steps toward becoming healthier, more equitable communities.

Using Data to Improve Local Government Decision Making

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INTRODUCTION

Now more than ever in our history, local government leaders and the public fully appreciate the importance of data to maintaining the health, safety, and wellbeing of their communities. As the country and the world try to reopen and return to a new normalcy after COVID-19, the underlying value of health data to assist with policy decisions and governance continues in importance. This lesson can and should be applied to those health and societal challenges that continue to impact daily life in cities, such as obesity, which may move hand in hand with other chronic diseases and other social drivers, such as poverty. The goal of this report is to encourage local government leaders to review and creatively apply community data from various sources to address the health needs of their communities.

This report can be viewed as a companion to a previously published ICMA report, *Improving Quality of Life: Effects of Aligning Local Service Delivery and Public Health Goals*, which offers evidence and ideas for how local governments can improve the overall well-being of their residents. This earlier report discussed a myriad of ways that local governments impact the health of their residents and visitors. In addition to the more apparent health-related services such as water, sanitation, emergency response, and public safety, the report also delved into how parks and recreation, public transportation, street design, and planning also contribute to residents' well-being. After reading the

current report, you may be interested in (re)reading *Improving Quality of Life* and see the many ways that local governments can create long-lasting improvements to public health through their different services.

What follows next is an overview of evidence-based decision making (EBDM) and case studies from three cities that are using data and forms of EBDM to tackle tough and perennial community challenges. The report concludes with lessons to be learned from the case studies and how their successes support the traditional data analyses and application methods used by public health officials.

UNDERSTANDING EVIDENCE-BASED DECISION MAKING

Evidence-based decision making is a decision process that integrates data, science-based interventions, and community preferences to improve public health.¹ The EBDM process is founded on local needs. To address them, traditional science-based research is integrated with practitioner experience and existing evidence. It has been defined as “making decisions on the best available scientific evidence using data and information systems systematically, applying program-planning frameworks, engaging the community in decision making, conducting sound evaluation, and disseminating what is learned.”² In essence, EBDM is a form of policy analysis focused on public health. The goal is to determine the best

¹ Jacobs, J., E. Jones, B. Gabella, B. Spring, and R. Brownson. June 2012. “Tools for Implementing an Evidence-Based Approach in Public Health Practice,” *Preventing Chronic Disease*. Vol 9; Brownman, R., J. Fielding, C. Maylahn. 2009. “Evidence-Based Public Health: A Fundamental Concept for Public Health Practice,” *Annual Review of Public Health*. Vol 30: 175-201.

² Brownman, R., J. Fielding, C. Maylahn. 2009. Pg. 175.

intervention (or program, if blending or using multiple interventions) to improve the health of a community or subpopulation.³

The application of EBDM is growing among local governments because of its benefits, namely more successful outcomes, which concomitantly results in a more cost-effective use of resources.⁴ This success stems from basing policy decisions on local data and a realistic prioritization of community health needs. Likewise, the interventions are selected because they are known to be effective, substantially increasing the probability for success. By addressing, even partially, health challenges like chronic disease, local policy makers can reduce inequities that often result from unequal distributions of disease within populations.⁵ When effective, these community approaches are far less costly than providing healthcare to individuals. Positive outcomes increase efficiency in the consumption of public and private resources. Conversely, local governments and their citizens pay a high opportunity cost when less effective health interventions are adopted.⁶ Because of the benefits to be gained through implementation of EBDM, local governments should seriously consider how they can be applied to their jurisdictions.⁷

The EBDM Process

Effectively adopting EBDM requires several components: support from leadership, using data and information systematically, engaging the community, and making

decisions based on the best available peer-reviewed evidence.⁸ EBDM often requires significant resources, expertise, and staff time.⁹ The EBDM process is very similar to the steps undertaken to perform traditional policy analysis. Though the literature¹⁰ varies somewhat, the process generally entails:

1. Collect and evaluate community health and socio-economic data.
2. Identify and quantify the issue.
3. Review the scientific literature to determine what is known about the issue and effective treatments.
4. Prioritize intervention, programs, and policy options.
5. Develop the intervention plans and implement them.
6. Evaluate results of the interventions and policies.
7. Disseminate information.

Collect and Evaluate Community Health Data. Having sound health and socio-economic data about your community is foundational for EBDM (and public health practice generally)¹¹ because a proper intervention cannot be chosen if health conditions are unknown. The ongoing collection, evaluation, and dissemination of health data is referred to as health surveillance.¹² Socio-economic data are also important because these factors represent the antecedents to health and help inform challenges that may arise in implementing certain interventions. For example, if those with diabetes are primarily elderly, then different interventions may be warranted than if focusing on a working-age population.

³ Hardy, A., C. Nevin-Woods, S. Proud, and R. Brownson. 2015. "Promoting Evidence-Based Decision Making in a Local Government Health Department, Pueblo City-County, Colorado," *Prevention of Chronic Disease*, Vol 12:140507.

⁴ Brownson, R., J. Fielding, and C. Maylahn. 2009; Hardy, A., C. Nevin-Woods, S. Proud, and R. Brownson. 2015; Sosnowy, C., L. Weiss, C. Maylahn, S. Pirani, and N. Katagiri. 2013. "Factors Affecting Evidence-Based Decision Making in Local Health Departments," Vol 45: 763-768; Diaz, H., D. Ainsworth, and M. Schmidlein. July 2019. "Funding Priorities: Data Driven Approach for Prioritizing Community Health Needs in Vulnerable Communities." *Health Promotion Practice*, Vol 20: 616-623.

⁵ Lovelace, K., R. Aronson, K. Rulison, J. Labban, G. Shah, and M. Smith. 2015. "Laying the Groundwork for Evidence-Based Public Health: Why Some Local Health Departments Use more Evidence-Based Decision-Making Practices Than Others," *American Journal of Public Health*, Vol 105 (Supplement): S189-S195.

⁶ Brownson, R., J. Fielding, and C. Maylahn. 2009.

⁷ Fielding, J. and Peter Briss. July/August 2006. "Promoting Evidence-Based Public Health Policy: Can We Have Better Evidence and More Action?" *Health Affairs*, Vol 25: 969-978.

⁸ Jacobs, J., E. Jones, B. Gabella, B. Spring, and R. Brownson. June 2012; Sosnowy, C., L. Weiss, C. Maylahn, S. Pirani, and N. Katagiri. 2013; Diaz, H., D. Ainsworth, and M. Schmidlein July 2019.

⁹ Jacobs, J., E. Dodson, E. Baker, A. Deshpande, and R. Brownson. September/October 2010. "Barriers to Evidence-Based Decision Making in Public Health: A National Survey of Chronic Disease Practitioners." *Public Health Reports*, Vol 125: 736 - 742; Sosnowy, C., L. Weiss, C. Maylahn, S. Pirani, and N. Katagiri. 2013; Diaz, H., D. Ainsworth, and M. Schmidlein. July 2019.

¹⁰ Brownson, R., J. Fielding, C. Maylahn 2009; Sosnowy, C., L. Weiss, C. Maylahn, S. Pirani, and N. Katagiri, 2013; Diaz, H., D. Ainsworth, and M. Schmidlein. July 2019; Jacobs, J., E. Jones, B. Gabella, B. Spring, and R. Brownson. June 2012; Fielding, J. and P. Briss. July/August 2006.

¹¹ Jacobs, J., E. Jones, B. Gabella, B. Spring, and R. Brownson. June 2012; Jacobs, J., P. Clayton, C. Dove, T. Funchess, E. Jones, G. Perveen, B. Skidmore, V. Sutton, S. Worthington, E. Baker, A. Deshpande, and R. Brownson. 2012. "A Survey Tool for Measuring Evidence-Based Decision Making Capacity in Public Health Agencies." *BMC Health Services Research*, Vol 12: 57; Fielding, F. and P. Briss. July/August 2006; <https://www.cdc.gov/surveillance/index.html>

¹² Jacobs, J., E. Jones, B. Gabella, B. Spring, and R. Brownson. June 2012.

Ideally, data would include not only quantitative data such as rates of chronic disease, vaccination, and poverty, but also qualitative information about the needs, concerns, values, and assets of a community. Qualitative data may be collected via in-person surveys, but also through focus groups of committees representing key segments of the community. The major hurdle to collecting qualitative-based data is cost.

Local data is particularly important for EBDM because the characteristics of communities differ considerably, even within a metropolitan area or county. These differences help inform the most appropriate health intervention or policy to implement. Data can be collected through centralized sources, such as the U.S. Census or National Vital Statistics System, or through local surveys. Centralized sources of health data tend to report at the county or state level, not the city or neighborhood level, though, so they may not be as useful for city leaders. The major hurdles to surveys are cost and time. One free, easily accessible source for data on health and its drivers at the city and neighborhood level is the City Health Dashboard.

The City Health Dashboard is a free, online resource to provide city- and neighborhood-level data on 35+ measures of health outcomes, health determinants, and health equity for over 750 U.S. cities. This resource also allows users to compare cities, creating an opportunity to learn how cities with similar characteristics have addressed similar challenges. The City Health Dashboard can be found at: <https://www.cityhealthdashboard.com/>

When possible, geo-coded data can be extremely valuable for EBDM.¹³ Geo-coding allows public officials to understand what health challenges exist in different areas within a jurisdiction. This specificity permits more tailored health interventions, which can increase

their effectiveness and reduce costs by implementing an intervention only where or to whom it is needed. Through spatial analysis, patterns can be identified to predict the need for services as well, much like crime data for law enforcement.

Identify and Quantify the Issue. After the health status and social context of a community is understood through data collection, the key health issue(s) need to be identified and quantified. Questions to consider include: What is the number-one health concern in the community? Does this health issue impact the entire population or is it concentrated in particular groups? Are there social factors that might impact the pattern of disease we see in the community? The information gleaned from the community health data should drive what will be addressed through an intervention or policy change.

Review Scientific Literature. In this step, local government staff research and review the scientific literature to determine which intervention(s) would be most effective in addressing the identified health issue. The ability to interpret this literature requires staff time and expertise across departments.

Prioritize Interventions, Programs, and Policy Options. After the scientific literature has been reviewed, possible interventions and priorities need to be decided. Several issues should be considered and weighed, such as the scope and social context of the health issue, feasibility for addressing it, length of time needed to make an impact, resource requirements, availability of external funding, organizational capacity, applicability of evidence-based approaches, and community readiness.¹⁴

Local governments ought to incorporate community engagement in this step because the intervention should be based upon the needs, characteristics, values, and preferences of those who will be affected by the intervention.¹⁵ For example, local governments could determine intervention or policy priorities through a committee of stakeholders so that multiple perspectives can be heard. Fortunately, resources exist to assist local government officials. The Association for Community Health Improvement has developed an assessment toolkit¹⁶ to assist local governments in prioritizing health needs.

¹³ MacQuillan, E., A. Curtis, K. Baker, and Y. Back. 2017. "Using GIS Mapping to Target Public Health Interventions: Examining Birth Outcomes Across GIS Techniques." *Journal of Community Health*, Vol 42: 633-638.

¹⁴ Diaz, H., D. Ainsworth, and M. Schmidlein. July 2019.

¹⁵ Jacobs, J., E. Jones, B. Gabella, B. Spring, and R. Brownson. June 2012.

¹⁶ Can be found at <https://www.healthycommunities.org/resources/community-health-assessment-toolkit>

Develop and Implement Intervention Plan. With decisions made about what intervention(s) or policy will be adopted, local government staff develop a specific plan and implement it. The plan should be developed with an appreciation of behavioral science theory, i.e., understanding what encourages or discourages people to act in a desired way. Depending upon the intervention, multiple local government departments and community organizations may be involved; therefore, local government managers and their direct staff are an integral part of this process.

Evaluate the Results. To know whether the intervention actually met the health improvement objective, results of the intervention should be evaluated, requiring local governments to continue to collect data. This step requires additional resources, but is necessary in order to determine if the intervention should be adjusted—such as through funding levels or partnerships—or even stopped.

Disseminate Information. Information dissemination must occur with key decision makers and stakeholders¹⁷ so that they can review the intervention results and address needed changes. For all audiences to fully appreciate the evaluation results, data should be presented in a way that is concise and clear to the non-medical reader.¹⁹ Likewise, local government leaders need to share the results with the community at large.

Barriers to EBDM

While the benefits of EBDM are known and accepted by public health departments, some local governments have still not fully adopted the process for a variety of reasons.¹⁹ A national study about the adoption of EBDM practices by local health departments (LHDs) found that full EBDM adoption was slight, with the largest number of LHDs only partially using it.²⁰ For example, 61% of LHDs reported undertaking a community health assessment while just 26% applied the research findings, which is an important step in the process. The challenges in implementing EBDM can be categorized as internal to

an LHD or external. External challenges would include other local government departments, elected officials, community organizations, and state government.

Several internal challenges to applying EBDM exist, such as insufficient resources, lack of staff expertise, limited ability to apply health intervention research to a community's own environment, and lack of support from leadership.²¹ Insufficient resources, particularly regarding staff, can seriously hinder an EBDM effort. Smaller departments often lack the personnel to conduct many of the steps required for EBDM. Data collection can also be expensive, particularly when it requires gathering qualitative information or creating resident surveys. Data is further limited for cities because it is typically collected at the county level, which may not fully match the health conditions of city residents. Some data tools, though, like the City Health Dashboard and single-state databases like California's Healthy Places Index, are parsing relevant data to the city boundary. Effectively interpreting data and literature on different interventions requires expertise, as does understanding how to adapt an intervention to a specific community. Overcoming this lack of expertise necessitates additional training. Even with qualified staff, the existence of tested interventions that are applicable to a community's circumstances is often limited. Evaluating programs and policies can be difficult as well, since LHD staff may lack the knowledge to properly measure and evaluate some interventions.²² Because of the above challenges, as well as a simple resistance to change, LHD directors may not support full adoption of EBDM.

External challenges are generally associated with limited buy-in from political leadership and a fragmented local and state public health system.²³ Political pressure can thwart the adoption of interventions supported by scientific evidence because the intervention goes against the community's mores, strongly deviates from historical practice, or those who may "lose" from an intervention have more political voice than those who will benefit.

¹⁷ Sosnowy, C., L. Weiss, C. Maylahn, S. Pirani, and N. Katagiri. 2013; Diaz, H., D. Ainsworth, and M. Schmidlein. July 2019.

¹⁸ Callahan, K. and E. Stuart. 2018. "Bringing Evidence to Bear on Public Health in the United States." *Public Health Reports*, Vol 133 (Supplement): 205-235.

¹⁹ Callahan, K. and E. Stuart. 2018; Brownson, R., J. Fielding, and C. Maylahn. 2009; K. Lovelace, R. Aronson, K. Rulison, J. Labban, G. Shah, and M. Smith. 2015.

²⁰ K. Lovelace, R. Aronson, K. Rulison, J. Labban, G. Shah, and M. Smith. 2015.

²¹ Jacobs, J., P. Clayton, C. Dove, T. Funchess, E. Jones, G. Perveen, B. Skidmore, V. Sutton, S. Worthington, E. Baker, A. Deshpande, and R. Brownson. 2012.

²² Sosnowy, C., L. Weiss, C. Maylahn, S. Pirani, and N. Katagiri. 2013.

²³ Jacobs, J., P. Clayton, C. Dove, T. Funchess, E. Jones, G. Perveen, B. Skidmore, V. Sutton, S. Worthington, E. Baker, A. Deshpande, and R. Brownson. 2012.

For example, smoking ordinances can face community resistance because they are perceived as violating personal freedoms even though the medical benefits of smoking ordinances for nonsmokers is well established. In other cases, the data may be perceived as insufficient to convince local leaders that adopting an intervention is worth the resources and/or political risk. To overcome resistance, intervention proponents often need to create coalitions across the community.²⁴ Economic evaluations that show the financial benefits from an intervention can also be helpful in garnering support.²⁵

The very nature of public health administration in the United States can also be a hindrance to EBDM. A lack of coordination between state and local health departments or among local health departments within a region can hinder the cooperation needed for EBDM. Likewise, resource restrictions at the state level may limit a LHD's ability to adopt EBDM practices.

Additional Tools

There are several types of EBDM tools available for improving public health beyond the general process discussed in the previous section, including health impact assessment (HIA), economic evaluation, and community health needs assessment (CHNA).²⁶ HIAs estimate the probable impact of a policy or intervention on the community beyond the health sphere, such as on the economy, environment, etc. Economic evaluations are a form of cost-effectiveness analysis that estimate the relative value of a health intervention, such as through decreased medical costs, economic productivity, etc. Finally, CHNAs are performed by hospitals as required under the Affordable Care Act. Local governments can use these comprehensive assessments as an information tool to determine the health status of their community and guide where interventions are most needed.

While the literature on EBDM focuses largely on LHDs, there are many ways local governments can improve community health, such as through recreation programs, safe streets, and public transportation. Local government managers can adopt their own versions of EBDM. Using community health data, such as that provided by the

City Health Dashboard, county health department, and the U.S. Census Bureau, local governments can work through the EBDM process in their own way.

CASE STUDIES

The following case studies discuss the efforts of three cities to improve the public's well-being by addressing specific challenges—obesity and chronic disease, poverty, and homelessness. Though these challenges differ greatly, the cities' methods to tackle them are very similar. Each city relies heavily on data for problem identification and policy direction, creates partnerships, has strong leadership support, and respects the importance of evaluation to assess impact.

CITY OF BROWNSVILLE, TEXAS

Located on the border between Texas and Mexico along the Gulf Coast, the city of Brownsville has applied health and socio-economic data to guide several of its health policies and programs over the past several years. The city manages its own public health department, and its director, Dr. Arturo Rodriguez, has developed partnerships with the University of Texas's local public health campus and other government organizations and nonprofits to improve community well-being. The city's commitment to this goal has been demonstrated through investments in hiring an epidemiologist, building miles of trails, and passing health-related ordinances.

Brownsville uses a council-manager form of government and has a population of 183,392, median household income of \$36,499, and poverty rate of 31.0%.²⁷ As a border community, the city also has a large Hispanic population (94.0%), requiring city staff to communicate in two languages and appreciate the values of multiple cultures.

Dr. Rodriguez started focusing on obesity and chronic disease about 15 years ago when he saw that these metrics were moving in the wrong direction. Currently, 34% of residents are overweight and an additional 50% are obese. Concomitantly, residents experience high levels of diabetes (28%).²⁸ Initially, addressing this

²⁴ Brownson, R., J. Fielding, and C. Maylahn. 2009.

²⁵ Jacobs, J., P. Clayton, C. Dove, T. Funchess, E. Jones, G. Perveen, B. Skidmore, V. Sutton, S. Worthington, E. Baker, A. Deshpande, and R. Brownson. 2012.

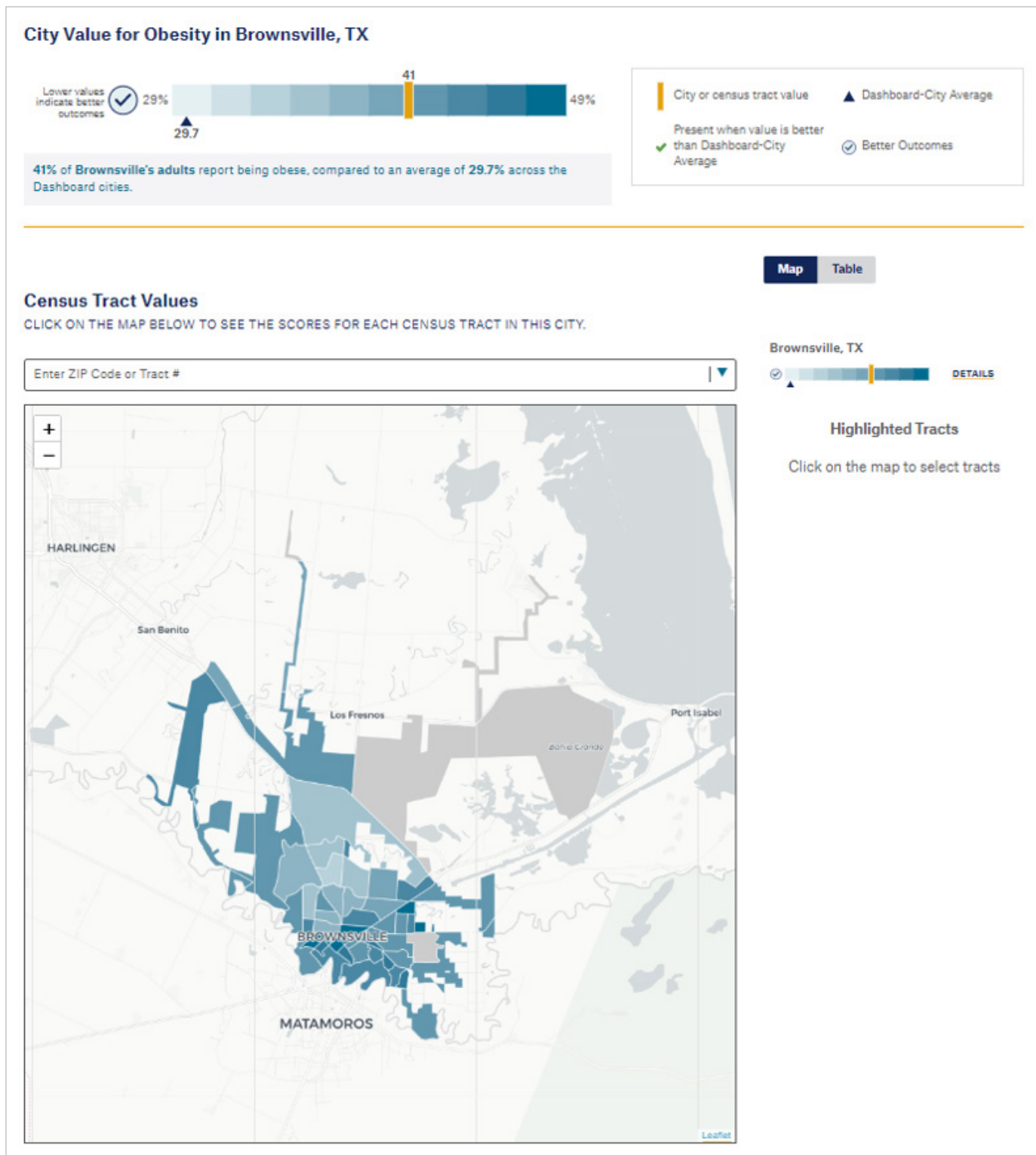
²⁶ Diaz, H., D. Ainsworth, and M. Schmidlein. July 2019; Fielding, J. and Peter Briss. July/August 2006; Brownson, R., J. Fielding, and C. Maylahn. 2009

²⁷ 2018 estimate. U.S. Census Bureau. Found at www.Census.gov/quickfacts/

²⁸ <https://www.brownsvillewellnesscoalition.com/about>

situation was not easy because the community lacked the economic and social infrastructures to support wellness. For example, the city's single private gym closed at that time. Wellness was a problem and the city began taking an active role to fix it.

Brownsville started by viewing wellness comprehensively, tying it to a quality-of-life campaign. The strategies focused on increasing exercise and improving health literacy and nutrition in order to reduce obesity and diabetes rates across the population. Particularly strong



Courtesy of City Health Dashboard

internal advocates for these approaches have been City Commissioner Dr. Rose Gowen and the city manager. Importantly, stakeholders accepted that success would take time and thus were not discouraged by a lack of instantaneous change from residents. However, the city's efforts did receive national recognition, winning the Culture of Health prize from the Robert Wood Johnson Foundation in 2014, and being named an All-America City by the National Civic League that same year.

Collaboration Efforts

The city's efforts to improve public health have greatly benefited from collaborating with the University of Texas School of Public Health in Brownsville (UTHealth). Dr. Belinda Reininger came to Brownsville in 2001 with the opening of the UTHealth Brownsville campus. From the beginning, she knew that establishing community partnerships was essential to achieving UTHealth's mission because community engagement is at the core of public health. The result was establishing the Collaborative Action Board (CAB), which serves as a large network for organizations to learn about, prioritize, plan, and implement public health initiatives. The mission of the CAB is to create a joint vision, objectives, and projects that support community well-being.

With approximately 200 representatives from a multitude of interests including government, education, hospitals, economic development, and other various nonprofits, the group meets quarterly. (About one-fourth of members attend any one meeting.) There are additional meetings among specific CAB members to discuss grants and projects as needed, and collaborative actions take place between meetings. When Dr. Reininger was creating the CAB, she wanted everybody at the table because of the many interfacing issues affecting public health. Furthermore, she knew the city of Brownsville would need to be a CAB leader because it serves as the backbone of the community. The decisions of the city through ordinances, resource allocation, comprehensive planning, etc., all impact public health. The CAB serves as a meeting ground for community organizations, local universities, and the city to improve public health and in turn educate the community. Because the city's local government is so critical to public health, it has multiple CAB representatives from different departments, including public health, parks and recreation, and police.

Data Access

The initiatives of the Brownsville Public Health Department (BPHD) are based on what the data reveals. The BPHD wanted data that was focused solely on the city and greater internal research capacity, so an epidemiologist was hired in 2016. With city-level data, BPHD and citywide officials are now able to have focused conversations with residents. They can also develop data-driven narratives, which have been more impactful because they are "closer to home." With its epidemiologist, the city has been able to perform research that focuses on its own health concerns, such as maternal and child health, Zika, and sexually transmitted diseases, and in ways that address equity and diversity.

For Brownsville and the CAB, data provides the foundation for health intervention decisions. Both Brownsville and CAB members apply the general principles of EBDM because they "do not have money to waste, so they need to make wise decisions."²⁹ First, the data is reviewed to prioritize what health needs should be addressed. Then CAB members like the Brownsville Health Department and UTHealth review the literature to determine which interventions make the most sense. Resources and political support are then garnered, and the intervention is implemented. Likewise, evaluation data has been critical to learning whether an intervention was effective.

Data has also been very important for messaging. According to Dr. Reininger, "data in combination with local scenarios is the most powerful way to educate." Dr. Rodriguez has also integrated health data with economics to get the attention of public and community leaders, such as explaining the lost productivity and higher medical costs associated with poor community health.

UTHealth has been able to bring data resources to the network. Through its collaborations with the CAB, Brownsville has access to public health datasets with more variables and details than what is typically available from vital statistics. The datasets include the Behavioral Risk Factor Surveillance System from CDC, which is county-level data; and the Cameron County Hispanic Cohort (CCHC). (Brownsville is located within Cameron County.) The CCHC is a prospective, population-based cohort that began in 2004 and now includes over 5,000 people who are followed over time. Because Brownsville is 94% Hispanic, the

²⁹ Phone interview with Belinda Reininger on February 24, 2020.

cohort represents this population. The CCHC provides extensive clinical, genetic, behavioral, and geospatial characterization of the health status of the population. The faculty leaders for the cohort are active members of the CAB and share results often.

Using Data to Improve Well-being

Brownsville has used health data in a variety of ways to improve community health, its well-being initiative being the most comprehensive. For example, data revealed that residents were not eating enough fresh produce, so Brownsville and the CAB made healthy eating a priority and established a community farmers market. Several stakeholders came together to open the market in 2008. The market is held every Saturday morning in a city park. To increase participation from all demographics, vendors accept SNAP and WIC vouchers. The market has between 300 and 600 weekly attendees and offers extra activities, like free exercise classes for adults and kids. As for successful outcomes, 62% of market attendees report eating more fruits and vegetables.³⁰ The farmers market is part of a larger nonprofit, the Brownsville Wellness Coalition,³¹ that provides additional healthy food initiatives like community gardens, a mentoring farming program, cooking and nutrition classes, exercise programs, and a mobile market.

The city and region are also making significant investments to increase the physical activity of residents, again in order to improve the health outcomes. Programs include free exercise classes, after school programs, and recreational trails. The department has used evaluation data, collected in partnership with UTHealth, to better understand the impact of its programs on improving physical activity. Brownsville and neighboring cities have made significant financial commitments in recreational trails. Brownsville has 32 miles of biking and walking trails, including a nine-mile rail trail (the Historic Battlefield Trail) that runs through the heart of the city, connecting residential neighborhoods to amenities such as restaurants, shopping, and public transportation.³²

The Historical Battlefield Trail is part of an extensive planned trail network called the Caracara Trails.³³ The Caracara Trails network includes 428 miles of multi-use trails that link beaches, wildlife preserves, and cultural sites across 10 cities and towns in Cameron County. Formally adopted in November 2016, the core goals of the trail system are to “transform the health of local citizenry”³⁴ and increase economic development through activity-based tourism. Research has shown that residents who live near trails are more likely to achieve the CDC’s exercise guidelines³⁵ than those who do not. An economic impact study was conducted to analyze the trail system’s financial potential and the findings were very encouraging. The study estimated that in the tenth year after Caracara Trail fully opens, there should be a \$57 million economic impact of which \$39.6 million will come to the county from non-local visitors.³⁶ Moreover, the study predicted an estimated yearly medical cost savings to residents between \$3 million and \$6.5 million within the decade.

Another key health success for Brownsville came with the passage of its comprehensive non-smoking ordinance. In 2012, CAB members discussed the benefits from the city adopting a non-smoking ordinance. At that time, no other city in south Texas had adopted such an ordinance, so Brownsville would be a leader in this area. Dr. Rodriguez examined the health data and saw that overall, the smoking rates for residents were about average in the state: 90% of adults were non-smokers. Based on these figures, the BPHD proposed the ordinance as a means to protect the air and health for the vast majority of the population who did not smoke. The city manager at the time was very supportive of this idea. The city did face substantial resistance from smokers who perceived the proposed ordinance as an infringement on their rights. However, advocates used data and testimonials to make compelling arguments and the city commission passed the non-smoking ordinance unanimously.

Change is occurring in Brownsville. With a unified vision, key partnerships, and committed leaders, Brownsville continues to make significant strides in

³⁰ Reininger, B. Webinar, “Creating a Culture of Health for your Community” found at https://sph.uth.edu/content/uploads/2014/09/Creating-a-culture-of-Health-in-Brownsville-Texas_web.pdf

³¹ <https://www.brownsvilwellnesscoalition.com/about>

³² <https://brownsville.org/members/historic-battlefield-trail/>

³³ Formerly known as the “Active Plan.”

³⁴ <https://www.railstotrails.org/traillblog/2017/april/14/a-new-star-for-texas-the-lower-rio-grande-valley-active-plan/>

³⁵ <https://www.cdc.gov/physicalactivity/basics/index.htm>. 150 minutes of moderate aerobic activity per week and muscle-strengthening activity twice a week for adults.

³⁶ <https://www.railstotrails.org/traillblog/2017/april/14/a-new-star-for-texas-the-lower-rio-grande-valley-active-plan/>

improving community well-being. One foundational component has been using high quality data for decision making. Data was first used to highlight the city's health challenges and then establish priorities for action. EBDM was applied to determine which initiatives to adopt. And finally, data is used to evaluate program impact. Community leaders and other stakeholders accept that it may take decades to create significant widespread cultural change, but all are committed to improving the health of city residents. That lone gym which went out of business 10 years ago has been replaced by more than 20 exercise-related businesses across the city. These businesses represent a variety of price points and exercise interests, reflecting the slow but steady progress toward achieving the city's vision of community health.

CITY OF KALAMAZOO, MICHIGAN

The city of Kalamazoo has a plan. More specifically, this city of 76,545³⁷ created its Shared Prosperity Kalamazoo (SPK)³⁸ plan in 2018 to achieve three overarching goals:

1. Promote the healthy growth, development, and learning of children.
2. Increase access to good jobs.
3. Promote strong families.

The genesis of SPK occurred when the city council voted in 2014 to make reducing poverty, particularly for children, one of its top priorities. The city's total poverty rate (30.4%) is more than double the state of Michigan's (14.1%).³⁹ Additionally, its childhood poverty rate equaled 34.1% in 2018⁴⁰ and 75% of students in the Kalamazoo Public School District (KPS)⁴¹ qualify for free or reduced-price school lunch. During a single school year, KPS enrolls 13,000 children.

The city established a team that extensively researched poverty through qualitative and quantitative methods from 2014 through 2018. They studied previous and current efforts to reduce poverty and consulted with experts to learn about best practices in poverty reduction. The work from this team created the foundation for SPK

and demonstrates the city's commitment to using data and EBDM to effectively bring about real change and improve the lives of all city residents.

For Kalamazoo to truly achieve its first goal, "Promote the healthy growth, development, and learning of children," elected and community leaders needed to know what variables are most likely to impact a child's educational success and future employment. To do this, the city has partnered with the W.E. Upjohn Institute for Employment Research (Upjohn Institute), the Kalamazoo County Health and Community Services Department, and the Western Michigan University Homer Stryker MD School of Medicine (WMed)⁴² to create a multi-faceted database that tracks children living in the city from birth through their first years in the workforce. A major goal of the database is to learn what interventions have the most impact in reducing generational poverty (an antecedent to health) and to track their progress in reducing poverty. In other words, what ends intergenerational poverty? The opportunity to create this unique and potentially groundbreaking dataset occurred in 2018 when the city received a \$1 million grant from a philanthropic community leader.

Answering this foundational question of what works has been difficult because so many variables, like household income, neighborhood conditions, parental education, access to healthcare, etc., affect intergenerational poverty. Kalamazoo's database hopes to account for many of these issues through its massive collection of data that tracks individual children for decades from birth to career. The database will integrate health, equity, and service delivery data. The data can also be analyzed by school grade cohort to track the progress of a single cohort or to see if successive cohorts are more successful. The data sources and variables include⁴³:

- State Birth Records: address at birth, name of parent(s), parental ages, parents' educational levels, race/ethnicity, births financed through Medicaid (used as a proxy for being born into poverty or close to it), maternal access to prenatal care, maternal health indicators, and infant birth outcomes (full-term or not, healthy birthweight or not).

³⁷ US Census 2018 estimate

³⁸ City of Kalamazoo. 2018. "2018 Shared Prosperity Kalamazoo Action Plan."

³⁹ www.census.gov

⁴⁰ City Health Dashboard found at <https://www.cityhealthdashboard.com/mi/kalamazoo/metric-detail?metric=10>

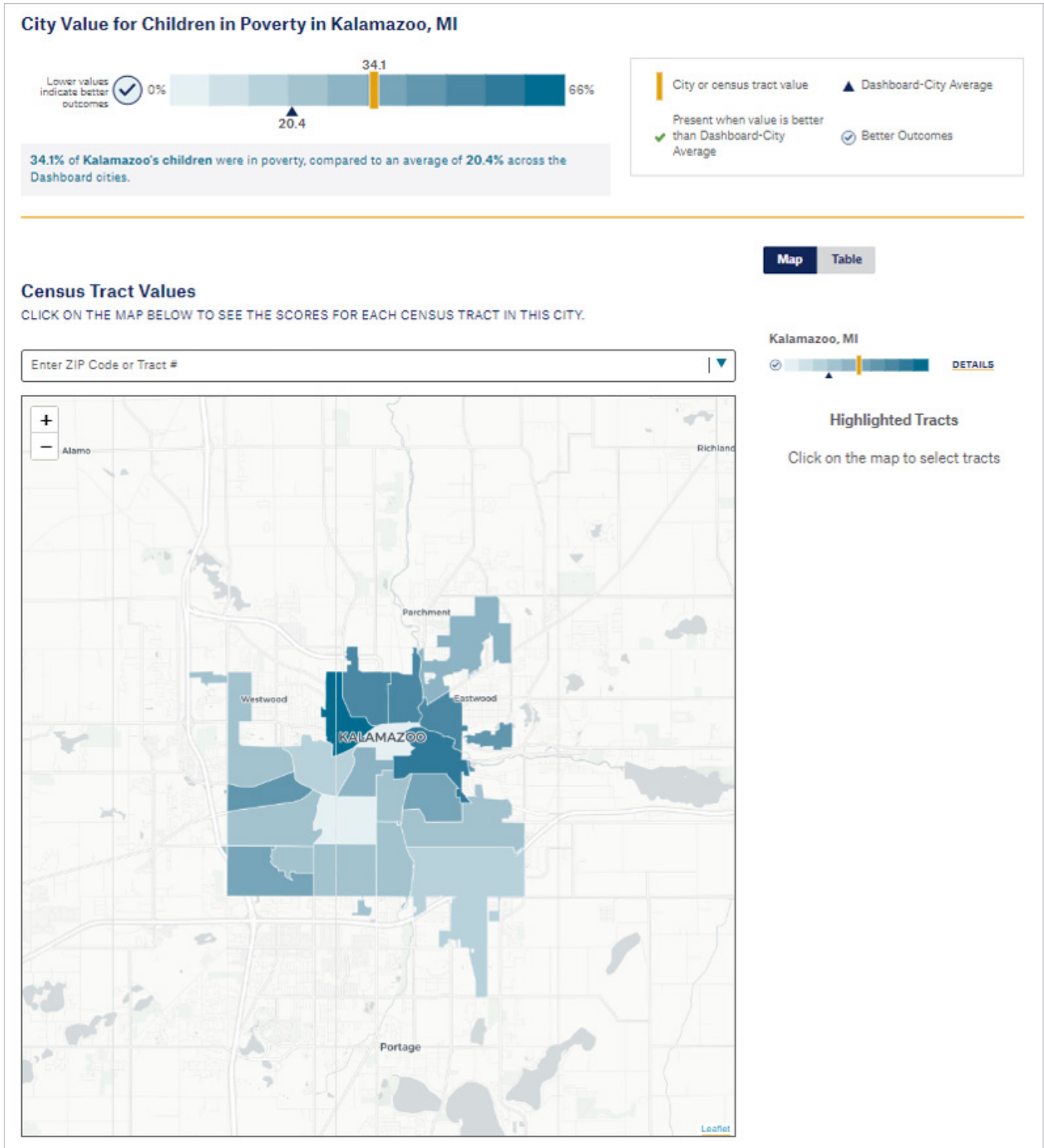
⁴¹ The Kalamazoo Public School District's service boundaries extends beyond the city's boundaries.

⁴² Both the Upjohn Institute and WMU are located in Kalamazoo. The Upjohn Institute is a non-partisan, nonprofit research organization.

⁴³ While the Upjohn Institute has data for all the variables listed, some will be integrated into later phases, such as parental ages and educational level, preschool attendance, and maternal health indicators.

- Kalamazoo Public Schools: address(es), specific school attended, preschool attendance, kindergarten attendance, receiving free/reduced lunch, standardized test scores, grade point average, high school graduation date (or not).

- County Juvenile Court: whether in juvenile court system, whether incarcerated, severity of offense(s).
- National Student Clearinghouse: name of higher education institution (if attending), graduation from higher education institution.



Courtesy of City Health Dashboard

- Michigan Unemployment Insurance Agency: earnings data from the Unemployment Insurance system.⁴⁴

The Upjohn Institute was viewed as an ideal partner to create the dataset for several reasons, such as its extensive research experience in the area of poverty and employment, ability to develop and manage large datasets containing sensitive information, and their current relationship with KPS. For several years, the Upjohn Institute has been assisting KPS by analyzing its Kalamazoo Promise Program,⁴⁵ a scholarship program funded from anonymous donors. Through this existing partnership, the Upjohn Institute had already compiled data on KPS attendees and been following their success in graduating from high school and at institutions of higher education.

Designing and collecting sensitive data is not easy. The Upjohn Institute has established memoranda of understanding with the above-mentioned organizations for data-sharing agreements, which included several guarantees for data protection. The data are stored on stand-alone servers at the Upjohn Institute with no virtual access. Only a few researchers are allowed access to the data, and the information technology staff within the institute monitor who looks at it. After data has been merged, including the earnings data from Michigan's UI system, all identifying information of the children is deleted and replaced with identification numbers. To avoid complications associated with open records requests, the Upjohn Institute will continue to hold the data after it is made public. Likewise, the Michigan Department of Health and Human Services' Institutional Review Board (IRB) has reviewed and approved the first phase of this project.

The city expects the database to grow over time with the inclusion of additional partners. For example, the city and WMed are working with community organizations that serve children, such as after school programs, to have their data included in the project. With these additional variables, the city can better understand which of these programs are most effective at improving outcomes for children over the

long term. Yet, providing information about program effectiveness can be risky for community organizations. The city is working with these organizations to address any concerns regarding how outcome data will be presented. A data platform has been put into place offering different levels of data privacy, depending upon who is looking at the information. For example, one option is to have two levels for accessing this type of information—one for partners and one for the general public. For the organizations themselves, they could see the impact of their programs in order to assess whether and how to improve, while the public might only see the aggregated impact of a large category of private organizations serving children.

The city would also like to include health data to strengthen its analysis. Bronson Methodist Hospital, the largest hospital in the region, recently finished its community health needs assessment. The assessment was comprehensive and includes health statistics collected from individuals and organizations, as well as information on the social determinants of health, such as the physical, environmental, and social environments of the people the hospital serves. In the future, Kalamazoo would like to integrate this valuable health data into its larger childhood poverty database. Of course, issues related to privacy and HIPAA requirements would need to be addressed. This data integration could also help the hospital tailor health interventions for children more effectively. Finally, poverty reductions should increase the overall health of the community.

The first phase of database development is nearly complete. As Randy Eberts, senior researcher at the Upjohn Institute, said, "We don't want perfect to get in the way of practical." The data will be aggregated by census tract to ensure the privacy of children and their families. The city hopes to have the data available on a website in the summer of 2020. Additional data will only add to the depth and complexity of what is currently available. When it is done, Kalamazoo and WMed can conduct analyses and EBDM that are at the forefront of understanding intergenerational poverty and hopefully addressing a core societal challenge.

⁴⁴ UI wage data excludes self-employed and farm worker income. However, wage data covers 99% of workers, including youth.

⁴⁵ The Kalamazoo Promise has been in existence since 2005, and funds tuition and fees for any KPS graduate who has been a resident within the school district four years prior to graduation. The scholarship pays tuition (up to four years) and fees at any Michigan public university, college, or community college, as well as private universities with limitations.

CITY OF MEDFORD, OREGON⁴⁶

Located in the southern part of Oregon along Interstate 5, the city of Medford is addressing a challenge that many other communities have struggled with or simply ignored: finding the homeless places to live. Medford is a mid-sized city of 82,347⁴⁷ with higher than average housing costs and poverty rate as compared to the state. Medford's poverty rate is 19.1% versus 11.8% statewide, with a notable homeless population. To address the homeless situation in Medford and the rest of Jackson County, the city, along with its partners, began by analyzing data and then worked together to develop and implement best-practice solutions that are working.

Understanding Homelessness

The first task in addressing homelessness was to fully understand its scope. The Jackson County Continuum of Care (CoC) and its partners decided to improve the methodology for counting homeless persons by integrating two sources of data into a Homeless Management Information System (HMIS), which tracks and compares data on the homeless. The first data source comes from a Point in Time Count (PTC), where volunteers conduct a census on the number of homeless during a single night. The PTC has been conducted countywide for the past several years and shown steadily increasing counts, reaching 732 in 2018. However, the PTC typically undercounts the total number of homeless so the Medford-Jackson community also uses data from its Coordinated Entry System (CES).⁴⁸ Eighteen homeless service providers gather intake data from their clients and this information is entered into the common CES database. This information provides a more complete picture on the characteristics of the homeless and their service needs. In essence, the CES provides the most accurate gauge of homelessness for the community. According to the CES, there were 2,081 homeless persons in Jackson County in February 2019, and at least 74% of them were within Medford's city limits. The lead agency for managing the data is ACCESS, a nonprofit organization that provides a

variety of social services, including rental assistance and affordable housing, food assistance, and home energy and weatherization programs.

The city also studied the causes of homelessness and its impact on the community. Several complex and varied issues arose from this investigation, thus requiring a broader scope of solutions. The first major component was a lack of affordable housing, which has led to low vacancy rates and higher rents. Like many communities, the area has its share of residents with mental health and substance abuse issues who have ended up homeless as well. Some of the area's homeless have migrated to the city by following Interstate 5 from other states or parts of Oregon. The county also is home to the U.S. Veterans Administration Southern Oregon Residential Rehabilitation Center and Clinics (VA SORCC). Veterans from across the country come to this center for assistance and may not have sufficient resources for housing.

The costs of homelessness are high at the individual and community level. For people that are homeless, the situation is extremely stressful and "can have significant long-term repercussions on their health, well-being, and economic stability."⁴⁹ The costs to a community are serious as well. The Medford police chief estimates that approximately 20% of homeless individuals in the city have a criminal record and that percentage increases to almost 60% when bench warrants and citations are included. It was calculated that one homeless person costs the city approximately \$35,217 annually in medical costs, public safety demands, etc. This expenditure was contrasted against the \$11,358 that is needed to provide a homeless person with supportive housing and services.⁵⁰

The city has also experienced problems over the past several years with homelessness along the Bear Creek Greenway. The greenway is an 18-mile paved, multi-use trail with great potential for exercise for the community and visitors.⁵¹ The greenway has been historically flanked by blackberry bushes and other vegetation that have created secluded areas for homeless persons to live, and in turn, discouraged others from using the

⁴⁶ Case study is based on an interview with City of Medford employees: Carla Paladino, Planning Department; Angela Durant, Planning Department; and Scott Clauson, Chief of Police, on March 25, 2020. Additional information came from the "City of Medford Homeless System Action Plan." Revised December 2019. Lesar Development Consultants; PowerPoint "Jackson County Continuum of Care 2019 Summary," presented to the Medford City Council on January 9, 2020; City of Medford Council Meeting Agenda February 15, 2018.

⁴⁷ U.S. Census Quickfacts.

⁴⁸ The CES is federally mandated through the U.S. Department of Housing and Urban Development.

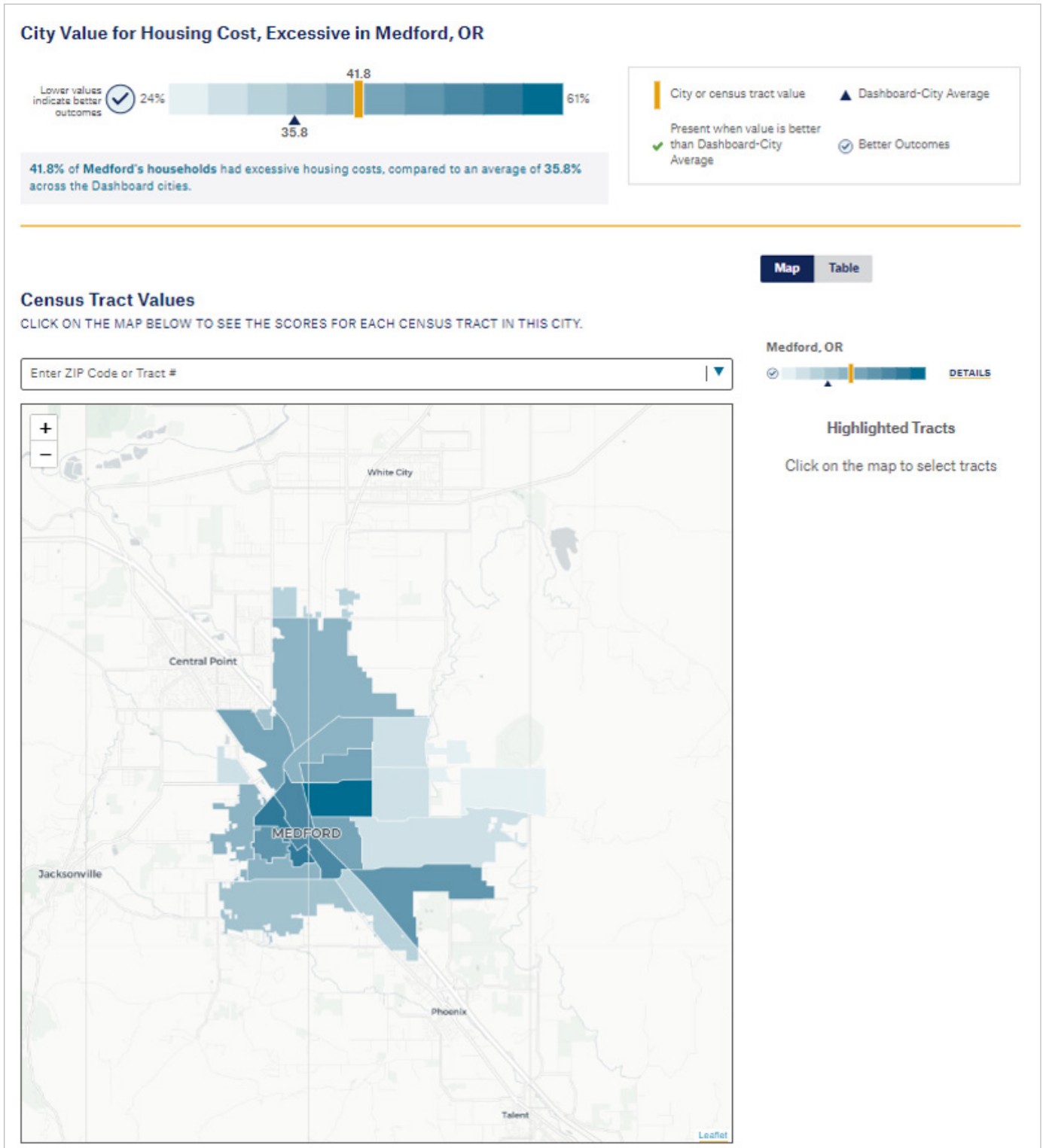
⁴⁹ "City of Medford Homeless System Action Plan." Revised December 2019. Lesar Development Consultants. Pg. 8.

⁵⁰ PowerPoint "Jackson County Continuum of Care 2019 Summary," presented to the Medford City Council on January 9, 2020.

⁵¹ The Bear Creek Greenway connects Medford with a few other nearby cities.

trail. The Medford Parks and Recreation Department has worked diligently to remove bushes and vegetation in order to discourage encampments of homeless persons there. At one point, the city geocoded 147 encampments along the greenway.

The city's expense to clean up its portion of the greenway and remove encampments has been substantial. The Medford Parks and Recreation Department spends \$2,500 for each encampment cleanup effort, which happens several times a year.



Courtesy of City Health Dashboard

Approximately two tons of trash and debris are removed during each cleanup. Annually, the departments devote \$143,000 to greenway maintenance for mowing, trash and vegetation removal, riparian mitigation, infrastructure repairs, and general maintenance. The Police Department assists with removing the homeless from the encampments at a cost of \$30,000 annually due to staff overtime. Additionally, the fire department regularly responds to emergency calls at the greenway from homeless persons starting fires at encampments.

Creating a Plan and Working with Partners

The city used the data from the HMIS to understand both the number of homeless and the population's characteristics. With this more complete understanding, the city developed an action plan in 2018, the "Homeless System Action Plan (HSAP)." This plan considered what the city could and should do rather than taking on responsibilities that were actually the purview of its partners. The plan established and prioritized realistic short- and long-term goals based on best practices that are to be implemented over the next several years. The city and its partners expect that when action items (of which there are many) under the goals have been accomplished, the homeless population should be significantly reduced. The plan's five overarching and interrelated goals are:

1. Increase the supply of affordable and supportive housing.
2. Increase leadership, collaboration, and funding.
3. Address unsheltered homelessness and encampments.
4. Increase temporary housing programs and successful placements.
5. Increase diversion and prevention strategies.

Achieving success for difficult public challenges requires the support of elected officials. Beyond the HSAP, the city council has approved new policies, established revenue sources, and hired personnel focused solely on the plan's initiatives. The city is spending \$1.6 million annually on homeless-related programming using funds from its Community Development Block Grant, city general fund, and its new construction excise tax (to be discussed later in this case study). The funding has supported a variety of programs, such as land acquisition for transitional and permanent affordable housing, rehabilitation of existing rental and owner-occupied housing, rental supports, homeless youth

shelter services, outreach to homeless families, legal services, and addiction recovery, domestic violence, and mental health support services. Additionally, the Medford Urban Renewal Agency (MURA) is targeting affordable and workforce housing development as a key outcome of its ongoing neighborhood and downtown revitalization efforts. MURA has already committed \$2 million to acquire property for infill housing development.

The city of Medford is not working alone and recognizes the critical importance of its partners, which include Jackson County, the CoC, nonprofit housing and human services organizations, the VA SORCC, and faith-based groups. Medford's HSAP is actually part of a larger community effort to improve the area's response to homelessness. For example, CoC⁵² was also recently reformed to strengthen coordination among participating agencies and to improve overall effectiveness. The CoC now has 27 members, including all major stakeholders, who meet monthly to discuss data, programmatic needs, and service delivery approaches. The CoC also established a new governing board with Medford's city manager serving as the board's chair for its first year. The CoC now has working groups to address specific issues and subpopulations, helping to ensure that no one group is forgotten. The CoC has strived to create a culture of collaboration and resource sharing, respect for each member's services and expertise (i.e., avoiding mission creep), and best practice programming. According to Angela Durant, a principal planner for Medford, the reformed CoC has given momentum and renewed energy to addressing homelessness communitywide.

Innovative Interventions

This report focuses on two action points within the HSAP because they are particularly innovative and demonstrate how data was used to effect action. They are the city's new livability team and an excise tax for affordable housing.

Medford Police Department's Livability Team. As the first action under Goal 3, "Address Unsheltered Homelessness and Encampments," the Medford Police Department created a livability team that assists the city's chronically homeless population. For the city's FYS 2018/2019 biennial budget, the city council appropriated \$1.2 million to fund three officers, one code enforcement officer, and one record management position. The philosophy behind the livability team is that a city cannot arrest its way out of homelessness.

⁵² The CoC is a federally mandated coordinating committee composed of public and nonprofit organizations.

This new police unit focuses on working with the chronically homeless to help them receive housing, as well as mental health and substance abuse services. Since police officers regularly interact with this population, they have intimate knowledge about the people and can develop a strong rapport with them. This specialized team does not seek to arrest people, but instead build trust in order to learn individuals' different stories and needs. With this information, a police representative regularly meets with a group of homeless advocates and service providers to discuss the various situations of the homeless in the city. When a shelter, treatment, or transitional housing space opens up, the officers then reach out to homeless individuals, providing information and encouragement for them to take advantage of the service(s). In many respects, the livability team can be considered case managers for this special and often ignored population.

The team has been making an impact and receiving outside support. After seven months in existence, the Livability Team has assisted 23 individuals by moving them into temporary or permanent housing. One story is particularly compelling and also shows the potential cost savings from this type of program. In 2018, the team assisted a man who had been homeless for approximately 20 years. He had a serious substance abuse problem, resulting in 180 visits to the emergency room during a single year. Because of the livability team and its partners, this person is now in a substance abuse recovery program. This type of success has encouraged additional partners. In 2019, the local hospital donated \$50,000 that enabled the city to fund a transitional home that can serve three people.⁵³ The city hopes to gather more financial partners in the future.

Affordable Housing Excise Tax. Medford is also addressing the lack of affordable housing. In implementing the HSAP, the city council appointed the Housing Advisory Commission in order to assist with housing production and policy. The council has also implemented a variety of new zoning rules to encourage housing density and established an excise tax on new construction. The city worked with the building community to establish the excise tax and it took six months to work out the details. The tax was officially approved by the city council in February 2018. The excise tax is on construction of new square footage with the revenues dedicated to affordable housing. The tax

rate is one-third of 1% on the value of the improvement and capped at the value of \$50,000 per building permit or \$50,000 per structure, whichever is less. Per state statute, several types of facilities are exempt from the tax, such as affordable housing projects, religious facilities, hospitals, agricultural buildings, and nonprofit long-term and residential care facilities. How the tax revenue will be spent varies by type of property. All the tax revenue generated from commercial property will be spent to fund development and construction of housing that is 120% of area median income (AMI). For residential properties:

- 15% of net revenue⁵⁴ is to be remitted to the Oregon Department of Housing and Community Services to fund home ownership programs.
- 35% of net revenue will fund programs and incentives for the development and construction of affordable housing for households at or below 80% of AMI.
- 50% of net revenue will fund incentives for the development and construction of affordable housing authorized by the city.

After one year and a half in existence, the city has collected \$444,000 from the excise tax and already issued an RFP for a new affordable housing development. The development will be owned and managed by a nonprofit organization. The city has also appropriated \$150,000 for a new youth homeless shelter and \$250,000 for the construction of 16 permanent supportive housing units for veterans.

Appreciating the importance of evaluation, the new ordinance mandates that the tax be reviewed every five years to determine its impact on housing. The review must include information about the number of units created, revenue collected, and types of projects built from the funds. After the review, the council can make changes to the housing program or terminate it.

Achievements and Looking Forward

Evaluation and review are an important part the HSAP. The city and the CoC regularly review data from the HMIS and the results are encouraging. Some important accomplishments include:

- 755 individuals received shelter and housing through coordinated entry in 2019.

⁵³ The transitional housing will be managed through a lease between a housing provider and a shelter provider. The city is the funding agent securing new grant money.

⁵⁴ The county is allowed to keep 4% of revenue for administration.

- 470 individuals were placed in permanent housing in 2019 compared to 117 in 2018, which is a three-fold increase.

Ms. Durant attributed the community's success with the HSAP to a new culture of cooperation among stakeholders and everyone being open to learning and adopting new strategies. Because of the HSAP's success, the city plans to continue serving the homeless population through its current (and expanding) initiatives.

DATA USE FOR PUBLIC HEALTH ABROAD

Several national and regional health agencies around the globe offer their localities access to a wide variety of health surveillance data.⁵⁵ These agencies have created sophisticated public websites (dashboards) to assist local officials with decision making and inform the general public. By having consistent and detailed health data, officials are also able to easily compare their health standing against other local governments. The financial investment in these databases can inform all levels of government about current and emerging health needs.

These health dashboards allow the user to search health data by local health area and within each locality to look up specific diseases or medical conditions. For example, the Public Health England (PHE) dashboard focuses on seven health issues that are within the purview of local health authorities, such as child obesity, tobacco control, drug treatment, and sexual and reproductive health. Within these broad categories, the public can search for additional specific health measures as well. Within New Zealand's Institute of Environmental Science and Research Ltd. (ESR) dashboard, information on a wide variety of diseases is given. The British Columbia (BC) Centre for Disease Control dashboard⁵⁶ integrates multiple sources of data that allow comparisons for health, demographics, and social and environmental factors, such as crime or education, among other indicators. These various websites also allow the user to view information at higher, more general layers, research specifics, and even download datasets.

Data are presented through maps, tables, and charts, making it more accessible to a wider audience. Data on these websites can be found for a single year or several years to see trends for a particular health indicator. In the BC dashboard, the user can view community health data by profile for a province, through a database to explore health topics for local health areas, or through its "atlas," which shows health indicators on a map across the province of BC. Likewise, PHE's dashboard is highly visual with colored maps that indicate the relative status (by quartile) of different local health areas for the health conditions tracked. The websites provide a variety of health reports for users to download as well.

Generally, the level of government hosting the website reflects that country's system for health care provision. For example, since England has a national health care system, it follows that the National Health Service (NHS) collects and reports the health surveillance data. Likewise, in Canada, health services are delivered through provincial or territorial systems and the health data websites are sponsored by their respective provincial health agencies. For the United States, our federal system and approaches to delivering public health make these types of national dashboards, which require extensive data collection, more challenging, although good examples, such as the City Health Dashboard or County Health Rankings and Roadmaps, do exist.

LESSONS LEARNED

When considering the literature and case studies in combination, several lessons regarding how local governments can use data to improve public health emerge:

1. **Data is the starting point.** All three case studies used data to determine the scope for the challenges they wanted to address, adhering to the EBDM process. For Brownsville, the city's health director and other partners studied residents' health data on obesity and chronic disease, while Medford used data to learn the size and characteristics of the community's homeless population. Kalamazoo spent years

⁵⁵ For examples, please see Public Health England's dashboard at <https://fingertips.phe.org.uk/topic/public-health-dashboard>; the British Columbia Centre for Disease Control's Observatory at <http://www.bccdc.ca/our-services/programs/bc-observatory-for-pop-public-health>; the New Zealand Institute of Environmental Science and Research Ltd. (ESR) dashboard at <https://www.esr.cri.nz/our-services/consultancy/public-health/notifiable-diseases-intelligence-dashboard/>; and Alberta's Interactive Health Data at <http://www.bccdc.ca/our-services/programs/bc-observatory-for-pop-public-health>

⁵⁴ BC Community Health Atlas at <http://maps.gov.bc.ca/ess/hm/cha/>

collecting data to develop its Shared Prosperity Kalamazoo Plan. Furthermore, Kalamazoo's new cutting-edge database will be used to determine what interventions will most successfully reduce generational poverty.

2. **Use more than one data source if possible.** All three cities rely on multiple data sources for making decisions. Kalamazoo's new database integrates data from the public school system, state health records (birth certificates), juvenile court, higher education institutions, and state unemployment office (for wages). The city and its partners plan to include additional data sources over time, such as from nonprofit organizations that serve children and possibly the local hospital. Likewise, Brownsville and Medford both study multiple data sources to understand the populations they are assisting. The BPHD and the CAB use data from the Behavioral Risk Factor Surveillance System, City Health Dashboard, Cameron County Hispanic Cohort, and the BPHD's own epidemiologist, as well as other sources. For Medford, the community decided to integrate data from two totally different data sources to understand the homeless population—the Point in Time Count and the Coordinated Entry System. By having these different sources of data, city leaders and their partners better understand the complexities, behaviors, and needs of the people they seek to help.
3. **Create a plan guided by data and implement best practice.** For all three cities, once city officials and stakeholders studied the data, they created a plan to implement specific interventions based on best practice. In Medford, the plan is called the "Homeless Service Action Plan" while in Kalamazoo it is named "Shared Prosperity Kalamazoo." For Brownsville, the city and its partners have implemented a series of initiatives all with a common goal of community wellness. By having a plan, the city, other stakeholders, service recipients, and the community at large can keep focused on long-term goals, as well as understand which actions, i.e., interventions, should be undertaken.
4. **The programs and interventions being implemented by these cities are evidence-based.** The BPHD and CAB adhere to the EBDM process quite closely. After analyzing health data and prioritizing needs, CAB members research successful interventions and select those found to be most effective and applicable to the community. Likewise, Medford and the CoC are committed to implementing social service programs that represent best practice. Finally, the purpose of Kalamazoo's childhood poverty database is to determine what variables have the greatest impact on generational poverty, enabling the city to adopt the most appropriate intervention(s).
5. **Take advantage of partnerships.** The three cities rely heavily on partnerships, whether it be for data collection, program prioritization, intervention implementation, resources, or advocacy. Kalamazoo's childhood poverty database is being created through partnerships with Western Michigan University and the Upjohn Institute. Moreover, additional partners provide the necessary data, such as the local public school system and state agencies. For Brownsville and Medford, community stakeholders have joined together to address their respective challenges. For each city, the stakeholders share a common goal. Even though the stakeholders each have their own specific interest or service, they collaborate to achieve a greater end. This teamwork is especially evident through the CAB in Brownsville. The city has greatly benefited from the expertise, resources, and commitment of faculty at UTHealth.
6. **Support from leaders is critical.** Having good data is a necessary and preliminary condition to successful health interventions. Data alone will not provide the resources required to implement an intervention or policy. A champion is needed who can clearly present and explain the data to the community. All three cities have strong support from elected leaders and senior administrators as evidenced by the adoption of long-range plans, committed revenues, and approval of new programs, policies, and ordinances.
7. **Use data to evaluate impact.** Evaluation is a critical component in the EBDM process. Without it, the impact of an intervention remains unknown. Brownsville's wellness interventions are regularly evaluated, such as through changes in residents' physical activity from the construction of new trails or the amount of fresh produce they purchase at the farmers market. Likewise, Medford is tracking the number of homeless people served and moved into housing. Evaluation is even a requirement for its new construction excise tax.
8. **Think long term.** The challenges that the three cities are trying to tackle are some of the most difficult we face in the United States—intergenerational poverty, homelessness, and communitywide

obesity. Success requires building a service infrastructure that addresses the underlying sources of the problem. Furthermore, solutions initially are about changing individual behavior that once reaching a tipping point creates a new community culture. In many respects, changing individual behavior on a large scale can be the most difficult challenge in public health and often takes many years of consistent effort to achieve. Therefore, community leaders must be patient and think long term.

CONCLUSION

By viewing EBDM as a form of policy analysis, city and county managers can adopt this process to implement programs to achieve community health goals. The first

step is understanding the health status of the community through data. The City Health Dashboard, which includes multiple variables across several health areas and drivers of health, is one resource that provides local data for a more comprehensive picture of health and its drivers within a locality. From this base, managers, with their boards and administrators, can devise a plan or program that best suits the needs and priorities of citizens.

With cities and counties reopening and reevaluating community health in light of the COVID pandemic, leaders are at a crossroads. EBDM can provide a path forward where leaders can bring a renewed energy to their role in protecting and improving community health and well-being to tackle perennial challenges, such as obesity and chronic disease, poverty, and homelessness. To do so, health data should act as the foundation for these efforts.



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