

Building Healthier Communities: End-to-End Data Analytics Can Foster Health and Well-Being for All

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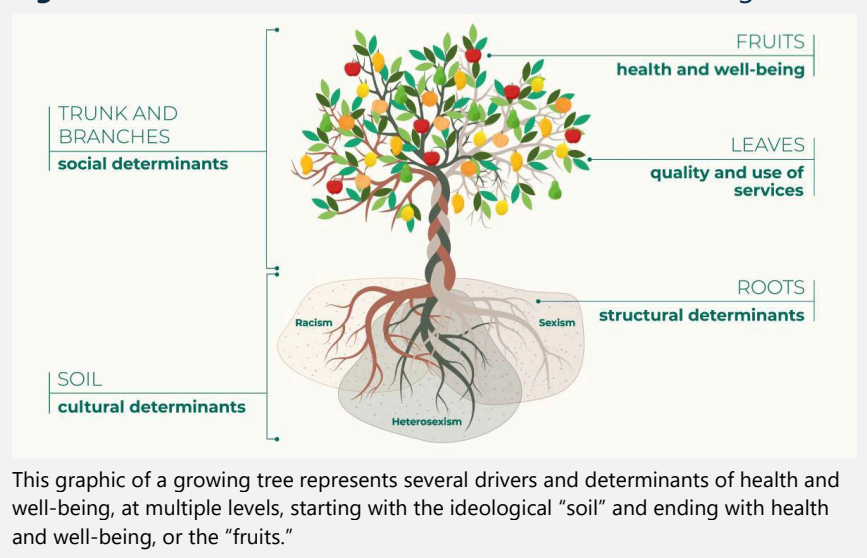
Introduction

Health and well-being are the product of myriad interconnected factors (Figure 1). At the heart of this complexity lie social determinants, the multifaceted circumstances in which people are born, grow, live, work, and age. They include the conditions of neighborhoods and schools, access to healthy food, transportation, and other resources needed to achieve and maintain health.

Social determinants of health and well-being are shaped by structural factors, including policies and practices that lead to the intentional or unintentional exclusion of specific populations. When individuals experience these determinants, they are sometimes called health-related social needs (HRSNs). For example, food access in *a neighborhood* is a social determinant of health, which contributes to *a person's* food security or insecurity, an HRSN. Structurally rooted inequities in the distribution of social determinants of health contribute to persistent inequities in HRSNs, and ultimately in people's health and well-being, by race, ethnicity, citizenship status, disability status, primary language, sexual orientation and gender identity, and other social identities and demographic characteristics.

Addressing these inequities requires an approach that is multilevel, holistic, and coordinated across sectors, as shown in Figure 1 and discussed in this [related blog post](#). At Mathematica, we partner with our clients to identify solutions to problems no matter where they fall on the continuum of challenges, from structural determinants (the "roots") to the quality and use of health services (the "leaves").

Figure 1. Levels of determinants of health and well-being



This graphic of a growing tree represents several drivers and determinants of health and well-being, at multiple levels, starting with the ideological "soil" and ending with health and well-being, or the "fruits."

Understanding the Landscape

Social determinants of health and well-being can be difficult to address because they're not restricted to a single silo and require coordination across sectors, [most of which fall outside of health care](#). In fact, [some estimates](#), including from the National Academy of Medicine, suggest that clinical care affects only 10 to

20 percent of overall health. Rather, the challenges are multidimensional and require partnering across areas and organizations to find the best solutions.

Addressing social determinants of health and well-being requires data that are accessible across programs. For example, when a child protective services agency removes a child from a caregiver, the child is automatically eligible for Medicaid. That same child is also likely to receive nutrition services and might participate in programs such as Early Head Start or Head Start. From data collection through data ingestion, cleaning, storage, analysis, visualization, interpretation, and deployment, end-to-end data analytics and collaboration across these domains—nutrition, education, insurance, health care, and others—can increase our chances for long-term success in serving marginalized groups.

Data on social determinants are challenging to access, although insurers are increasingly encouraging the collection of HSRN data via changes in screening procedures. Analyses of these data are important for understanding trends, uncovering insights, and making evidence-informed decisions.

In 2022, [Mathematica held focus groups](#) with Accountable Health Communities Model awardees, or bridge organizations, sponsored by the Centers for Medicare & Medicaid Services (CMS). These bridge organizations included health systems, health information exchanges, and community-based organizations (CBOs) and partnered with clinical sites to screen Medicare and Medicaid patients for HRSNs and refer them to services. Our focus groups revealed many challenges to integrating HRSN screening into health care systems and addressing HRSNs, including uncertainty among health care providers on how to find or use HRSN results and inconsistencies in how different departments in the same system collect and report these data. Similarly, a lack of funding and other incentives was a barrier for CBOs that might otherwise share HRSN data, as funding for these initiatives is often primarily directed to health care systems. Even if more funding were available, many of these CBOs lack the capacity and resources to effectively [coordinate the care needed](#).

Turning ideas into action

What does collaboration across systems look like in practice? [A case study](#) on an Accountable Health Communities awardee shows how the awardee developed a community referral platform across four health care systems and 170 CBOs to inform priorities, decision making, and collaboration. ▲

Unlocking Equity Through Data and Analytics

Data and analytics are indispensable tools for understanding and addressing HRSNs, enabling us to uncover patterns, trends, and correlations within populations. By analyzing various socioeconomic factors such as income, education, housing, and access to health care, we gain insights into how these determinants affect health outcomes. Again, as Figure 1 shows, this understanding is crucial for developing effective interventions and policies.

Similarly, data analytics can help us identify inequities in health outcomes among different demographic groups. By pinpointing populations with the greatest needs, policymakers and health care providers can allocate resources more effectively and tailor interventions to address specific challenges faced by marginalized and under-resourced populations. And by measuring key indicators related to social determinants and health and well-being we can drive evidence-based decision making on policies and practices.

Advancing Solutions for Lasting Impact

Unlocking important insights through analytics requires a comprehensive approach that prioritizes equity, transparency, and inclusivity. By providing funding and incentives to systems, proactively mitigating biases, promoting inclusion, and partnering strategically, we can collectively address social determinants of health and foster holistic well-being. Potential policy and practice approaches include the following:

Increase funding for and connections between independent practitioners and CBOs. Typically, Federally Qualified Health Centers are the focus of the conversation on providing supports to socially vulnerable patients—and they are the chief recipients of funding for such efforts. But the same cannot be said of smaller independent practices. A [recent study](#) by Mathematica and the American Board of Family Medicine’s senior vice president of research and policy revealed that physicians in independent practices with a majority of socially vulnerable patients reported financial concerns, “substantial time addressing access issues and social determinants of health,” and “insufficient connection to CBOs.” Physicians also expressed deep concern over the future of their practices, despite their personal commitments to serving socially marginalized populations. Policies that focus on health equity—and include sufficient funding—have the potential to support the care these physicians provide to their communities.

Prioritize patient voices in data-sharing initiatives. Participants in the CMS focus group stressed the significance of prioritizing patient perspectives in data-sharing efforts. They said integrating patient voices can foster trust and enhance the ability of such initiatives to recognize and effectively address patient concerns on issues such as privacy and security protocols, consent procedures, and dissemination of HRSN screening results. Mathematica’s expert data analysts, supported by its Lived Experience Panel, regularly advise on what kinds of social determinants of health and HRSNs matter and why, how best to ask about specific social determinants of health and HRSNs, and other topics to inform data collection.

Provide incentives for CBOs to participate in data-sharing initiatives with health outcomes data, funding, and opportunities for co-creation. The focus groups revealed that CBOs want to participate in secure exchanges of patient-specific health outcomes data to help them better understand their clients’ physical health and to share their own data (for example, on [demographics and socioeconomic, community resources and infrastructure, and use of social services](#)). Without this level of data sharing, health care systems and CBOs risk misaligning or duplicating data. Funding for this work could focus on federal policies such as Medicaid managed care organization flexibilities and [section 1115 Medicaid waivers](#).

Eliminate risk in the data journey through end-to-end analytics. Mathematica has experience with rigorous data analytics and expert advisory services to eliminate risk in your data journey. For example, artificial intelligence (AI) presents a transformative opportunity for health care systems to work with community organizations in delivering holistic care, enabling them to integrate and analyze diverse data sets to support a comprehensive understanding of patients’ needs. But integrating diverse data sets from health care systems and community organizations can be complex due to differences in data formats, quality, and standards. Moreover, AI algorithms might perpetuate biases present in the data used to train them, resulting in disparities in care delivery and outcomes. Addressing algorithmic bias and ensuring equitable access to AI-driven interventions are essential to avoid exacerbating health disparities—and

require both a “human in the loop” at every stage and the integration of community and lived experience expertise.

Conclusion

Data, partnerships, and innovation are the cornerstones of effective action on social determinants of health and well-being. They help us understand the complex connections between social factors and health outcomes and guide us toward solutions that make a real difference. To learn more about how Mathematica can support you on this journey, contact us at info@mathematica-mpr.com.