



SOCIALLYDETERMINED

How Social Determinants of Health Data can Enhance Patient Centricity in Life Sciences Research

Summary

The current healthcare environment – characterized by increasing volatility, the rising costs of care and therapeutics research, and the push for more equitable access to care – presents a unique opportunity to apply innovative data sources that enable a more patient-centric approach. The use of granular social determinants of health (SDoH) data in life sciences holds immense opportunity. In fact, it is crucial for developing fit-for-purpose life sciences research in support of the entire development pipeline to understand health outcomes of targeted populations, refine clinical trial recruitment and retention, predict healthcare utilization, increase treatment efficacy and improve adherence gaps. Prior studies have explored the usefulness of leveraging publicly available data assets such as the Social Deprivation Index (SDI) and Area Deprivation Index (ADI) in combination to measure SDoH. The positive results indicate clear value in understanding and measuring SDoH and reveal how social needs data can drive research to improve health and well-being.

This whitepaper describes the value that is available through robust, normalized SDoH data and its integration into compelling risk evaluation metrics for research. These evaluation metrics can inform pharmaceutical research with the goal of ultimately enhancing patient outcomes. This paper will explore characteristics of available data assets and discuss protections on individual privacy.

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KEY TAKEAWAYS

- **Social Factors (especially SDoH) significantly influence health outcomes and mortality** and are being used increasingly to diversify datasets.
- There is a need to understand **how best to integrate SDoH to act on resulting analytic derivatives** in all aspects of the pharmaceutical pipeline.
- Deidentified social risk scores and metrics **eliminate privacy concerns when aggregating data across sources**, expediting certification for deidentification.



What are Social Determinants of Health (SDoH)?

The rapidly evolving health and regulatory landscape, influenced by the dramatic needs presented by the COVID-19 pandemic, has evoked both urgency and opportunity to leverage population-based data for improved patient care. Population-based data, which in the context of this paper refers to social determinants of health (SDoH), are the conditions in which people are born, grow, live, work, and age that affect their health and well-being.¹ A wide range of social and economic factors shape these determinants, including income, education, employment, social support networks, culture, proximity to healthy food options, and access to healthcare. As it pertains to life sciences, knowledge of these factors and how they present in people's lives, contributes to delivery of and adherence to therapeutics and devices.

Historically, life science organizations have not been as active as other healthcare stakeholders (e.g., payers) in addressing SDoH. They have been highly dependent on claims data plus social data like race and ethnicity, an approach that does not take many influential social factors into consideration. Integrating SDoH data into the life sciences research ecosystem enables a deeper understanding of health inequity. Organizations that leverage this comprehensive, data-driven strategy are better equipped to enhance access and adherence for all patients.

To account for SDoH, Socially Determined proposes an approach that incorporates community-level and individual-level social risk factors and associated contextual and demographic information. These data that go well beyond the traditional SDoH data elements used most often – race, ethnicity, and income – will add value across both research and commercial use cases as well as models that may be used to predict outcomes. Because SDoH are significant indicators of risk and adherence, these data can be applied to real world evidence (RWE) research and contribute to a more granular understanding of the patients and their journey.

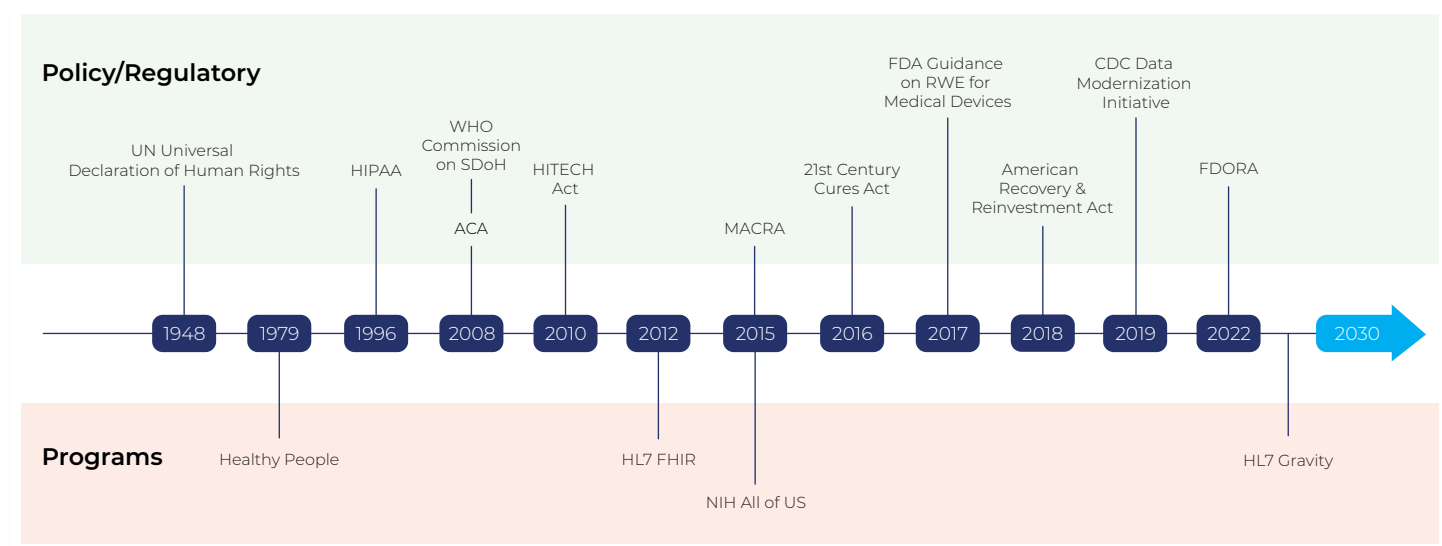


1. <https://www.cdc.gov/about/sdoh/index.html>

The Impact of Social Determinants of Health

A “state of complete physical, mental and social well-being” is imperative to global health and has guided epidemiology studies since the 1948 United Nations Charter identified it as a priority. Research shows that social risk factors influence a significant portion of health outcomes for an individual. Studies have shown that more than 80% of a patient's total wellness is driven by factors outside of the clinical setting, and nearly 50% of that is influenced by social risk factors such as health literacy and food access.² Despite this insight, most treatment decisions are based solely on clinical data.³ This limited view is not surprising considering that, on average, an adult in the United States interacts with a physician in the outpatient setting⁴ for about 63 minutes per year.⁵ In the context of life sciences, it is estimated that as many as 50% of Americans do not take their chronic long-term therapy medications as prescribed,⁶ and poor adherence contributes to more than \$500 billion in avoidable healthcare costs.⁷ Given that outcomes are impacted so greatly by nonclinical factors, an understanding of patients' environmental context and social risk should be applied in patient treatment and in research efforts utilized to prove the usefulness of medications, treatment strategies, and to address adherence.

FIGURE 1. EVOLVING FACTORS IMPACTING SDoH INTEGRATION INTO THE RESEARCH DATA ECOSYSTEM



2. <https://www.sciencedirect.com/science/article/abs/pii/S0749379715005140>

3. <https://aspe.hhs.gov/sites/default/files/documents/e2b650cd64cf84aae8ff0fae7474af82/SDOH-Evidence-Review.pdf>

4. Physician face time is inclusive of ambulatory visits broken out by primary care, surgical care specialty and medical specialty.

5. <https://link.springer.com/article/10.1007/s11606-022-07688-x>

6. <https://pubmed.ncbi.nlm.nih.gov/12218770/>

7. <https://pubmed.ncbi.nlm.nih.gov/29577766/>

Life sciences companies face barriers to adopting a proactive SDoH strategy. Despite these challenges, and recognizing the value across a variety of use cases, a growing number of organizations are investing in SDoH data.

Barriers to leveraging SDoH data include:

1. **Data privacy:** Research often requires certification for deidentification of data. This can make each analysis time-intensive and subject to third party review, especially when aggregating across sources.
2. **Limited resources:** Developing and implementing targeted interventions to address SDoH can be costly and resource intensive.
3. **Regulatory constraints:** Guidelines and requirements placed on life sciences companies by various regulatory bodies may limit the ability of companies to develop and market products that target specific demographic or socioeconomic groups.
4. **Lack of incentives:** The existing U.S. healthcare reimbursement model typically rewards interventions that focus on treating specific diseases or conditions, rather than addressing underlying social and economic factors that may also influence outcomes.
5. **Data specificity and accountability:** Many publicly available SDoH measurement tools lack precision and visibility into the source data or analysis methodology.



In addition to these barriers, there are several common misconceptions about SDoH:

1. **SDoH are solely the responsibility of individuals:** One of the most common misconceptions about SDoH is that they are the result of poor choices that individuals make, with little outside influence. While individuals can make choices that impact their health outcomes, these choices are limited by the available options. And, even when an objectively healthy choice is available and selected, positive effects are often constrained by larger structural and environmental factors.
2. **SDoH only affect low-income individuals:** SDoH can affect people from all socioeconomic backgrounds. For example, low health literacy is not limited to a particular segment of the population. Elderly patients across all socioeconomic strata may not be able to find or understand relevant health information if it is only available through digital channels they do not regularly access.
3. **SDoH data collection is difficult, data are inconsistent, and combining this data increases the risk of reidentification:** There are millions of variables describing an individual and their environment. Normalizing these data and understanding what is relevant for understanding how a patient feels, functions, and lives while ensuring privacy and preventing reidentification risks is possible with the right data assets.

These misconceptions often drive the exclusion of this type of data in critical outcomes research or educational materials, leaving 80% of the influence of an outcome or adherence model out of analyses.⁸

8. <https://www.sciencedirect.com/science/article/abs/pii/S0749379715005140>

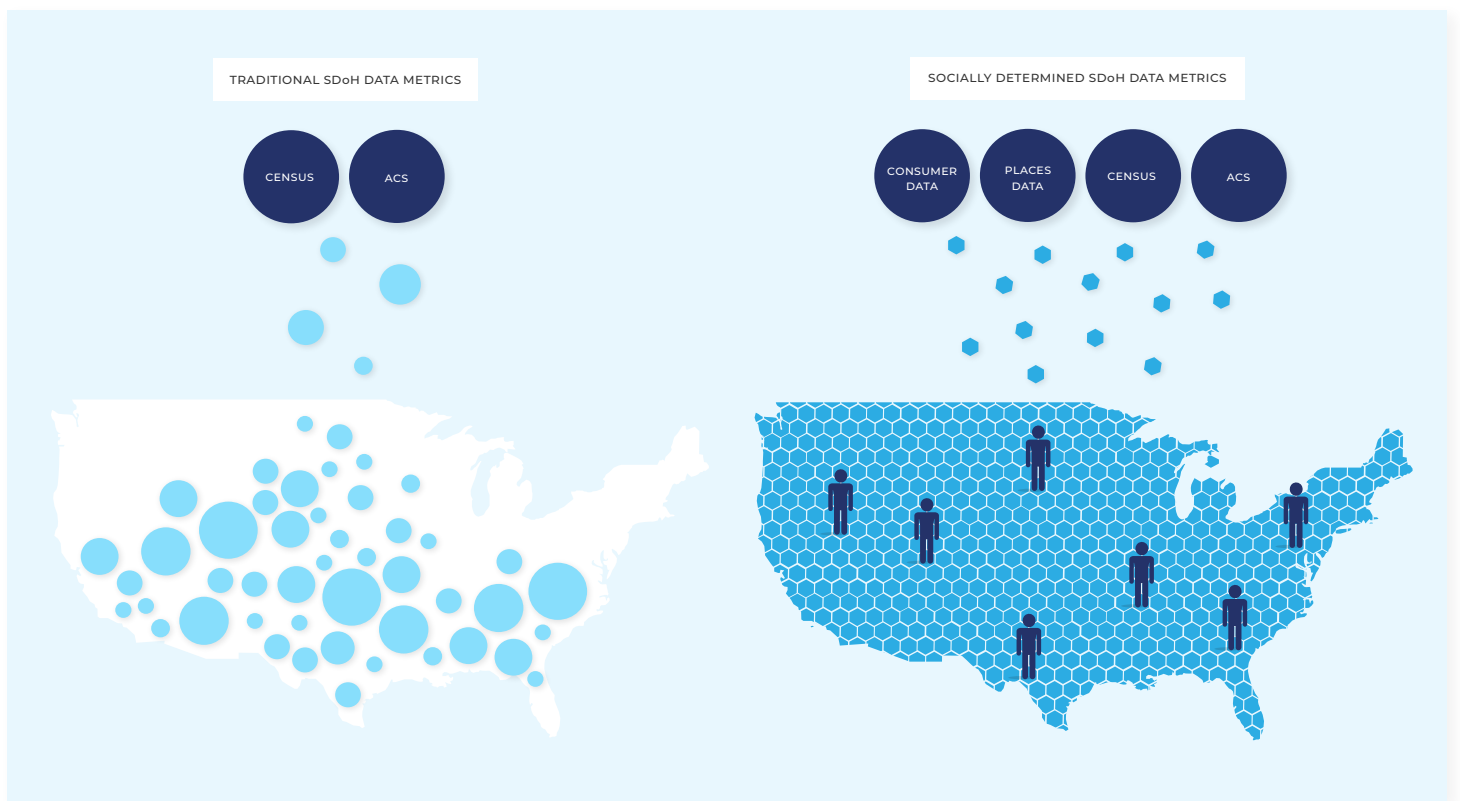


Existing Models and Indices

The life sciences industry broadly recognizes the need to integrate SDoH data as part of the journey towards health equity. Additionally, organizations have continued to invest more heavily in specialized analytics to integrate, combine, and analyze data to better understand patients' lived experiences with fewer biases.

Initial efforts have focused on leveraging publicly available SDoH data to advance analysis. Within the real-world data and real-world evidence research space, U.S. Census data and the American Community Survey (ACS) are widely applied and used as part of the Area Deprivation Index (ADI), the Social Deprivation Index (SDI), and the Social Vulnerability Index (SVI). Private companies like Socially Determined have taken this approach a step further, leveraging publicly available data in addition to commercial and consumer data to create an even more robust, granular SDoH data asset that is not only normalized and primed for integration, but also designed to provide actionable insights to support business decisions throughout the entire product life cycle (Figure 2).

FIGURE 2. TRADITIONAL SDoH DATA VS. SOCIALLY DETERMINED SDoH DATA



Area Deprivation Index (ADI): The Area Deprivation Index uses seventeen variables from the ACS to create a composite measure of various socioeconomic factors. The ADI is primarily used for community planning, but studies have shown that ADI is a useful tool for predicting health outcomes including mortality, chronic disease, and mental health. For example, people who live in areas with elevated levels of deprivation, as measured by the ADI, are more likely to have poorer health outcomes than those who live in less deprived areas.⁹ However, the ADI has limitations. It does not capture all the factors that can impact health, such as social support and access to healthcare, and may not accurately reflect individual-level socioeconomic status or experiences.

Social Deprivation Index (SDI): The Social Deprivation Index is a tool developed to measure SDoH in relation to health outcomes. The SDI uses data from the ACS to create a composite measure with seven variables based on socioeconomic factors that can impact health outcomes. It includes measures related to social isolation, family structure, and immigration status and is useful in predicting health outcomes, including mortality, chronic disease, and mental health. Additionally, the SDI has been shown to be a useful tool for identifying vulnerable populations. However, the SDI may not capture significant differences between individuals within the same geographic area.

Social Vulnerability Index (SVI): The Social Vulnerability Index focuses on identifying communities that may be more susceptible to the negative impacts of hazards or disasters. It takes into account sixteen social factors from the ACS to create a composite measure for each census tract. While it was primarily created for disaster planning, the SVI has been found useful in some health research. However, approaching social factors as a composite measure may miss important community nuances.

Socially Determined: Socially Determined offers normalized social risk data focused on providing visibility into both communities and individuals through actionable SDoH insights. Socially Determined uses hundreds of data elements from federal, state, and local data, combined with commercial and consumer data, to create modeled risk scores, drivers, and related metrics across the following unique domains: Economic Climate, Food Landscape, Housing Environment, Transportation Network, Health Literacy, Digital Landscape and Social Connectedness. The data is powerful, as it is an analysis-ready asset that can be used to understand SDoH risk exposure at a subblock and person-level across the U.S., and enhance strategic imperatives surrounding SDoH.

9. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6341202/>

FIGURE 3. SOCIALLY DETERMINED COMMUNITY AND INDIVIDUAL SDoH DOMAINS



Social Determinants of Health Data and Patient Centricity

SDoH are critical factors that affect patient outcomes. In the life sciences space, integrating SDoH data can enhance initiatives across the lifecycle of treatments, from pre-launch to understanding outcomes, non-adherence, treatment avoidance, market access and expansion opportunities. Additionally, the evolving regulatory framework requires improved diversity and equal representation in clinical trials. By incorporating SDoH data, life sciences companies can move beyond traditional insights gathered solely from claims data and EMRs to truly understand potential barriers and other community and individual factors impacting patient lives. This perspective enables companies to take a whole-person approach to meet patients where they are.

Nuanced SDoH insights will help to:

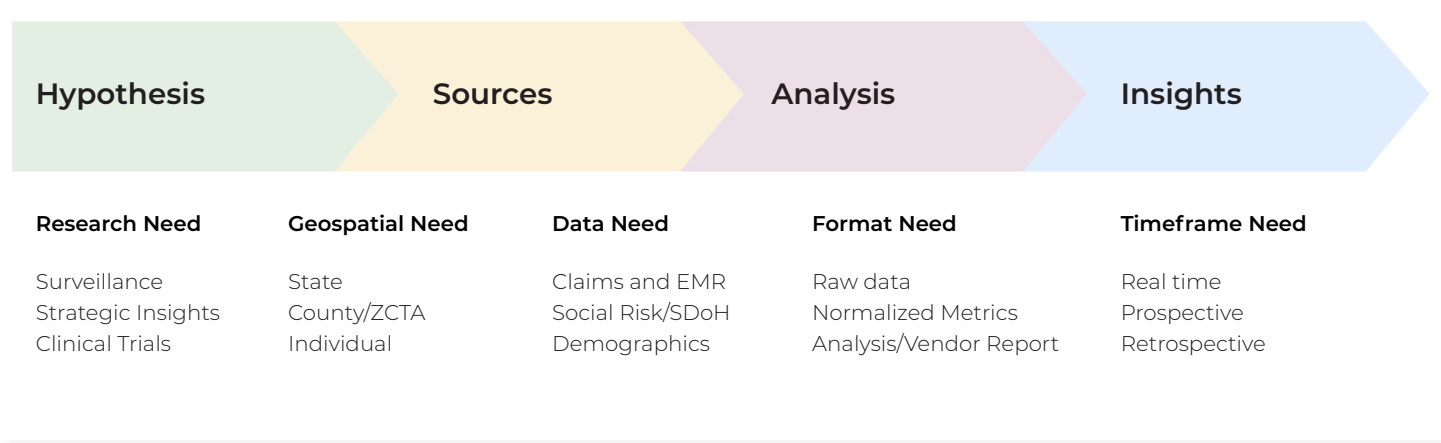
1. **Address diversity, equity, and inclusion** in clinical development and marketing strategies.
2. **Develop more effective interventions and programs** that can be utilized in parallel to the development and commercialization of treatments.
3. **Design healthcare practitioner (HCP) support materials** that can aid providers in addressing SDoH within their patient populations.
4. **Prioritize subsets of the patient population** for optimized patient support and patient engagement programs.
5. **Collaborate with customers** (e.g., payers, providers) to co-develop initiatives aimed at addressing identified risk factors.
6. **Identify challenges impacting patient adherence** in order to implement effective mitigation strategies.

As healthcare continues to shift towards a value-based care model where payment is based on outcomes and quality of care, understanding population- and individual-level SDoH becomes increasingly important in identifying opportunities to improve health outcomes while reducing costs.

Access to outcomes data that provides a detailed view of the patient population can increase adherence by supporting programs and messaging tailored to the specific needs of that population. For example, when aiming to increase cancer screening, understanding non-clinical context and social risk barriers can inform program design (e.g., offering Spanish-language materials and transportation vouchers). Resources spent on programs like free cancer screening may be wasted if patients lack awareness of or access to those programs.

Integrating granular SDoH metrics within analyses also provides a competitive advantage by generating sensitive measures that help to 1) predict successful outcomes for regulators, HCPs and other stakeholders and 2) ensure that programs and information reach and are consumable by the intended population. Importantly, these data add to the ecosystem of health and life sciences research with the aim toward delivering therapeutics and devices faster, with better patient compliance and significant improvements in efficacy.

FIGURE 4. INTEGRATING SDOH IN LIFE SCIENCES RESEARCH



The Future of Social Determinants of Health in Life Sciences

SDoH factors are complex and multifaceted. Historically, this has made it difficult to develop effective and targeted interventions that address SDoH. Without detailed insight into the individual circumstance, analysis on outcomes will always be compromised. With robust and actionable SDoH data available on individuals and communities alike, it is more possible than ever to support populations in need – in the way that they need. While the government can enact policies and support interventions that address SDoH through funding for certain programs, life sciences companies can contribute to research-backed initiatives that impact the point of care. With these insights, life sciences organizations can be a part of the coordinated efforts across all stakeholders, including community organizations, public health agencies, government entities, and private corporations, to drive action.

The shift toward a more patient-centric approach through the integration of comprehensive SDoH data assets that are normalized and ready for integration with other data can fundamentally change a patient's experience, adherence, and resulting outcomes. Life sciences organizations have the unique ability to play a leading role in the efforts to utilize SDoH data across all facets of healthcare and help to drive health equity at scale. Understanding a patient's lived experience in addition to their clinical journey will provide necessary insights to improve patient outcomes as well as business performance.





Get full visibility into social risk and its impact on those you serve. Our unparalleled insights drive strategic, measurable programs to improve healthcare and outcomes at scale. To learn more, visit sociallydetermined.com/life-sciences today.

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