Zip Codes Alone Don't Deliver

Behavior and Engagement Data Drives Targeted Strategies and Action

EXECUTIVE SUMMARY

As the healthcare industry shifts to value-based care and improving the health of populations, disruptors in the space increasingly appreciate the role that non-medical factors play in shaping health. To optimally manage population health, care management, and business improvement programs, the industry must look beyond the data traditionally captured in the medical record to obtain a wider perspective of the factors that influence our health.

As a result, the industry has come to embrace the importance of the social determinants of health (SDoH)—factors such as our socioeconomic status and our physical environment. Yet this great step forward in our understanding of health still falls short of providing critical insights about the beliefs, behaviors, and attitudes that contribute to 40% of our health. See Figure 1.

Obtaining those deeper insights requires healthcare organizations to recognize and tap into the power of consumer-centric data. That data can reveal factors such as how often a population eats fast food, how socially isolated they are, what communication channels they prefer, their attitudes about taking prescribed medications, and to what extent they trust their doctor and follow their advice. This abundance of data has been successfully applied by other industries, but has yet to be widely harnessed for healthcare applications.

Combining this consumer behavioral data with SDoH data creates a more holistic view of what drives a population's health—creating, in essence, the "socio-*behavioral* determinants of health (SBDoH)." An SBDoH dataset can lead to more effective engagement and intervention strategies than SDoH alone, allowing healthcare organizations to shape as much as 60% of people's overall health. See Figure 1.

This paper provides examples of the impact that SBDoH data can have on organizations and individuals, including:

- Identifying an incremental 33% of a population at risk within a targeted geography
- Efficiently focusing marketing resources while shaving millions of dollars from a health plan's operational launch budget
- Segmenting a diabetic population by their beliefs, attitudes, and behaviors to improve the efficacy of health interventions
- Increasing effective engagement strategies from 0% to 65% in an at-risk population across two and a half zip codes

FIGURE 1:

What Determines Your Health?

Combining consumer behavioral data with SDoH data creates a more holistic view of what drives a population's health— creating, in essence, the "socio-behavioral determinants of health (SBDoH)."

40% Consumer Behaviors

TOBACCO USE — DIET & EXERCISE — ALCOHOL USE — SLEEP HABITS — SOCIAL CONNECTEDNESS

30% Genomics

20% Socioeconomic & Environmental Factors

EDUCATION — JOB STATUS — FAMILY/ SOCIAL SUPPORT — INCOME — COMMUNITY SAFETY

10% Health Care

Adapted from: Schroeder, Steven. "We Can Do Better — Improving the Health of the American People." N Engl J Med 2007; 357:1221-1228 DOI: 10.1056/NEJMsa073350

ZIP CODES AND BEYOND:
A STUDY OF MARY AND SUSAN

Over the last decade, David Nash, MD, and other thought leaders in population health have advanced the industry's recognition that where you live directly influences your health—in short, 'you are your zip code.'

Contributing to the paradigm shift, the Robert Wood Johnson Foundation noted that overall health "incorporates the social determinants of health, which can include economic stability, education, social community, health care access, physical environments, and social support."

While it's widely accepted that those attributes reflected in a person's zip code are a powerful influence on their health, it's also clear that healthcare entities can't change the majority of socioeconomic variables, such as a person's education level or socioeconomic status, nor can providers move poor performing populations into a different zip code to impact their health.

This report recognizes the importance of socio-economic analysis like zip code profiles in understanding health, and explores how they can be further enhanced by layering on an understanding of people's behaviors, beliefs and attitudes. It examines how these more comprehensive health determinants, or SBDoH, can be mapped in unique ways—across

conditions, or to the individual, cohort, or community level—to create deeper health insights and more effective engagement than SDoH alone.

For example, knowing a person's zip code may tell you they live in a food 'desert' that lacks fresh produce, but it doesn't provide critical insights into their behaviors, attitudes, or beliefs about food—or how often they're eating fast food rather than preparing a healthier meal at home. It also doesn't tell you why some women like "Mary," a 64-year-old woman with diabetes, are managing their health far better than other women like "Susan," who share the same zip code, age, socio-economic status and health conditions.

Those kinds of insights require a different type of dataset—the kind that can be gained with SBDoH.

As Gartner noted in a 2017 report, "It has become ever clearer that social, environmental and behavioral determinants of health have a stronger influence on long-term health outcomes than what takes place in healthcare delivery." They believed that data collected from outside the electronic health record (EHR) would become as or more important than medical record data.

A small group of companies are developing solutions that can mine this motherlode of data and turn it into 'gold.' They're taking self-reported consumer information and mapping it within a specific geography to provide geospatial insights into the behaviors, beliefs and

> *"This [SBDoH] data helped the [health] plan save over a million dollars while creating effective strategies to connect with physicians and potential members. Having information on the target's behaviors, attitudes and media usage completely changed leadership's understanding of how to reach and motivate these members."*

**SHARON WILLIAMS,
MANAGEMENT CONSULTANT AND OWNER, SWB CONSULTING GROUP**

ENGAGEMENT SUCCESS IN SUNNYSIDE

A community-wide initiative led by The University of Texas Prevention Research Center at UT Health School of Public Health sought to reduce teen pregnancy in the greater Houston area. The Sunnyside neighborhood in particular had a variety of challenges including a high incarceration rate and an elevated teen birth rate of 1 in 10.

While the Center successfully rallied the community around the initiative, they were challenged in their ability to connect with the youth population. Realizing they needed more clarity on the underlying attitudes, beliefs and behaviors of this at-risk subset, they turned to CentraForce Health as a data partner.

Using SBDoH data, the Center was able to identify seven unique populations designed to engage, adopt, and support the appropriate interventions. For example, they discovered that the teen population was outspoken, loved magazines (80%), and spent over six hours a day on cell phones, both texting and online.

The Center was able to use deep-dive insights from web-accessible dashboards and targeted media profiles to guide appropriate tone and messaging, and to retool their communications campaign to engage teens via social media and online magazines.

Beyond the digital content, programs were deployed within churches and schools to ensure that the target populations received access to care, built relationships with families and communities, and got the support they needed to adopt effective interventions.

RESULTS:
- Increased engagement from 0% to 65% participation with an at-risk population across 2.5 zip codes.
- A 20% decline in teen pregnancy over three years.

attitudes that drive population health and total cost of care. One firm is even including 'communication preference' data—data about beliefs and media consumption habits that guide targeted engagement campaigns and messaging that resonates with the intended audiences. The use of this kind of information is still in the early stages, but as the case studies presented here show, leaders that are already applying this insight see meaningful value.

To be effective, SBDoH solutions must collect thousands of data points: demographics, behaviors and attitudes, health conditions, engagement insight and healthcare provider information from many trusted sources. Then that data is mapped for a user-defined population. The resulting insight helps executives

form strategies, close data gaps and make more informed decisions.

CentraForce Health, in Dallas, Texas is one of the companies pioneering this use of SBDoH. "We include more than 15 million locally-sampled, self-reported, PHI-compliant data records across every market in the US, then project that onto a database of over 240 million actual records," says Jay Kleinman, executive vice president. "With geospatial mapping, we help customers apply this data to their specific populations—to drive everything from behavior management programs to improve population health to targeted marketing."

Revisiting our earlier example of groups like Mary and Susan, our understanding of their health drivers would be far richer if we knew where

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FIGURE 2:

Using SBDoH to Segment a Diabetic Population

HEALTH DETERMINANTS	HEALTH CONSCIOUS DIABETICS *(MARY)*	IN DENIAL DIABETICS *(SUSAN)*
Socio-economic determinants		
Age	64	64
Zip code	Inner-city neighborhood	Inner-city neighborhood
Education	High school	High school
Income	$40,000/year	$40,000/year
Health condition(s)	Diabetes	Diabetes
Socio-behavioral determinants		
Fast food restaurant visits in the last 30 days	2	14
Fast food fits my lifestyle	Strongly disagrees	Agrees
Has time to eat healthy food	Strongly agrees	Disagrees
Tries to adhere to a healthy diet	Strongly agrees	Disagrees
Following doctor's advice is important	Strongly agrees	Disagrees
Taking prescribed meds is important	Strongly agrees	Disagrees
Exercises at least three times a week	Yes	No
Uses the internet for health information	Often	Rarely

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A TALE OF THREE POPULATIONS: SMARTER STRATEGY

A mid-Atlantic health plan seeking to launch a Medicare Advantage plan in an intensely competitive environment used SBDoH data to inform their launch. The data helped them reduce their focus from eight to three Metropolitan Statistical Areas (MSAs) and to holistically understand the beliefs, behaviors and media consumption of three target audiences—existing seniors with Medicare Advantage, seniors with traditional Medicare, and 60 to 64-year-olds. They learned that these groups had distinct messaging needs that would require different communication strategies.

The data revealed that the 60 to 64-year-old target population was more online-savvy than expected, driving a shift from heavy dependence on direct mail to a more robust, bi-directional patient portal. The data allowed them to reduce their marketing spend while creating larger, more meaningful physician panels.

RESULTS:
"This data helped the plan save over a million dollars while creating effective strategies to connect with physicians and potential members," says Sharon Williams, a management consultant who owns SWB Consulting Group. "Having information on the target's behaviors, attitudes and media usage completely changed leadership's understanding of how to reach and motivate these members. The next step is to use this data to design benefit packages and health intervention strategies."

Driving Clinical and Business Improvement with SBDoH

Understanding a population's behaviors and communication preferences creates an opportunity to drive better clinical and business outcomes.

DATA
-Social determinants
-Behaviors, Attitudes, and Beliefs
-Communication Preferences

LEADS TO

UNDERSTANDING
-Strategic Insights

LEADS TO

ACTION
-Effective patient and member engagement
-Driving better health

LEADS TO

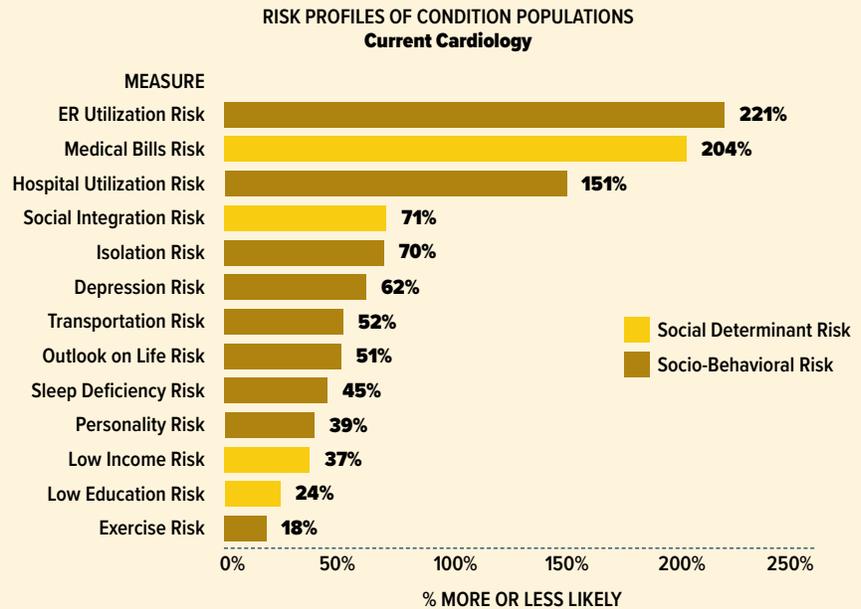**IMPROVEMENT**
-Clinical
-Business

SNAPSHOT OF AMERICA: PREDICTING RISK IN COLUMBUS, OHIO

A recent study quantitatively supports the theory that organizations can identify significantly more health risks in their populations by applying proprietary socio-behavioral determinants of health (SBDoH) data than social determinants of health (SDoH) data alone.

To quantify the added value, CentraForce Health turned to the Columbus, Ohio metro area, whose population of 1.9 million adults is demographically representative of the U.S. The study found that SBDoH **identified 33% more of the measured population at potential health risk** than SDoH alone.

The study applied the widely-recognized Kaiser Family Foundation's SDoH factors of economic stability, neighborhood and physical environment, education, food, community and social context to the population. Then, it measured SBDoH, which incorporates the Kaiser SDoH factors but also adds important behavioral risk categories that include alcohol/tobacco use, BMI, depression, isolation, lifestyle, medication, sleep deficiency, outlook on life, and attitudes about providers.

The study also measured SDoH and SB-DoH in eight populations with pre-existing chronic diseases. While results varied by condition, on average, SBDoH data were **27% more predictive of a behavioral risk**

RISK PROFILES OF CONDITION POPULATIONS
Current Cardiology

MEASURE	% MORE OR LESS LIKELY
ER Utilization Risk	221%
Medical Bills Risk	204%
Hospital Utilization Risk	151%
Social Integration Risk	71%
Isolation Risk	70%
Depression Risk	62%
Transportation Risk	52%
Outlook on Life Risk	51%
Sleep Deficiency Risk	45%
Personality Risk	39%
Low Income Risk	37%
Low Education Risk	24%
Exercise Risk	18%

Social Determinant Risk
Socio-Behavioral Risk

that negatively impacts the status of their chronic disease.

The chart above, which illustrates results for the population with chronic cardiology disease, shows that **SBDoH data can predict that this population is 221% more likely than the general population to utilize the ER.** Armed with this knowledge, providers can focus their outreach efforts on redirecting this at-risk group to a location of lower intensity of care, such as a physician's office, clinic or urgent care center as appropriate.

Applying SBDoH data to a more traditional risk analysis offers insights that can positively impact both accountable lives and bottom lines.

SBDoH IN ACTION

The true value of SBDoH lies in its potential to predict the propensity of any given population, hone outreach efforts, and engage and activate patients and members. Some SBDoH applications for different sectors of the healthcare industry are:

HEALTH SYSTEMS AND ACOS

- **Identify risk** in those with chronic diseases and target those "ticking time-bombs" before they have a health catastrophe.
- **Identify and address key factors increasing utilization,** such as a patient with a high risk of missing appointments and not completing prescribed medications.
- **Improve health needs assessments:** populate electronic health records with over 100 behavioral or engagement attributes before first physician or nurse visits.
- **Engage patients** by tailoring reminder messages to the medium most preferred and trusted by the patient.

PAYERS AND EMPLOYERS

- **Decrease per-member per-month (PMPM) costs** by identifying factors that drive out-of-network utilization and optimal communication channels and messages for changing utilization to in-network providers.
- **Identify** pockets of seniors ready to enroll in Medicare Advantage and target messaging to them.

POPULATION HEALTH VENDORS (PHMS) AND CONTRACT RESEARCH ORGANIZATIONS (CROS)

- **CROs can increase enrollment in clinical trials and lower costs** by segmenting target groups and applying unique messaging/outreach to each.
- **PHMs can help clients gain actionable insights on existing patients** by embedding specific SBDoH data targeted at the record or cohort level.

they shop and eat out; their diet and exercise habits and attitudes; their household composition; how socially connected they are; their online and other media habits; their attitudes about physicians and pharmacists; how and where they travel; and their political and religious views.

In this example, the group of 'health conscious diabetics' like Mary is virtually indistinguishable from the 'in denial' group like Susan by any SDoH measure. But when socio-behavioral information is added to the picture, it's clear that 'Marys' have different behaviors and lifestyles than 'Susans.' 'Health conscious diabetics' are socially engaged, frequently access the internet for health information, rarely eat fast food and try to follow a healthy diet, follow their doctor's advice, take prescribed medications, and make exercise a part of their daily routine. See Figure 2.

This additional information would help a provider understand why his/her 'health conscious diabetic' population has lower hemoglobin A1c levels than the 'in denial' population, and in turn, would inform different intervention strategies for each group.

The newly established Science of Behavior Change initiative from the National Institutes of Health (NIH) also identified *behavior* change as an institutes-wide priority, noting on their website that "behaviors are among the most important factors that determine whether people will live long, healthy lives."

SBDoH data can also provide insights about how a population perceives their relationships with physicians/pharmacists, which hospitals they prefer to use, what untreated health conditions they have, and much more.

"From our perspective, the addition of socio-behavioral and also engagement channel score data to traditional social determinants takes the measurement and utility of such data for prevention and population health management to a new level," says David Richardson, Artemis Strategy Group, a strategic research and motivational segmentation consultancy.

SBDoH ADDRESSES AN URGENT BUSINESS PROBLEM

In 2017, Gartner acknowledged that behavioral, social, and environmental determinants are essential for value-based care success. They stated that this capability is "more than a theoretical conundrum—it is an urgent business problem. Organizations that find a way to address these contributing factors will thrive; those that cannot will fall behind. Leaders are investing now."

Stephen Newman, MD, executive chairman of CentraForce Health, agrees. "Comprehensively understanding both the social-economic and the socio-behavioral determinants of health will allow payers and providers to design more targeted interventions. That focus will improve clinical outcomes and business performance. In other words, SDoH provides context, whereas SBDoH leads to action."

As Gartner observed in 2017, "Health agencies will have to become at least as sophisticated as other consumer/retail industries in analyzing a variety of data that helps uncover root causes of human behavior. The ability to influence *behavior* will be the key to transformative long-term management of cost and quality outcomes."

The challenge for healthcare providers and payers already grappling with data overload is how to turn a deeper understanding of patient behaviors and motivators into better interventions and better health.

A wide range of players in the healthcare space—payers, providers, vendors, and clinical research organizations—can benefit from solutions that tap into the wealth of consumer data and map it to user-defined populations. Healthcare entities that harness the power of SBDoH to inform their PHM strategies are more likely to succeed, while those that ignore them may find themselves falling behind their competition as value-based care becomes more critical to their survival. ∎

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