onduo by verily

Social Determinants of Health and Equity

A message from our CEO

In many ways, healthcare is a reflection of the community. When we talk about health equity, we use the word community a lot and for good reason—it's communities where the pain of health inequities is felt most sharply. The global pandemic made these inequities more clear.

We know that social determinants of health (SDoH) directly impact the well-being of individuals, communities, and society as a whole. In communities under long-term stress, we can see their increased vulnerability due to the cumulative impact of many factors—in communities where the economics are not particularly good, where folks have been shut out of opportunities, where banks have red-lined many families out of purchasing property. Moreover, the impact is magnified in communities where residents don't have access to preventive or routine chronic care and is reflected in the increased prevalence of chronic conditions.
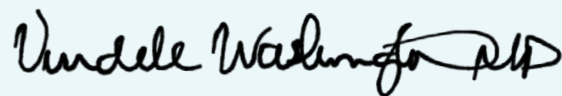
Reducing health inequities requires us to examine and take action on the factors that make our health system inequitable and inefficient. In the past, SDoH were discounted or deemed the province of people other than those of us in healthcare. As a result, people living in vulnerable communities are, too often, excluded from efforts to improve individual and overall healthcare system outcomes. To redress inequities in vulnerable communities, we must shift our focus from a one-on-one solution to population health.

Employers and payers can wield significant influence. Together, we can identify the moments of greatest impact in chronic condition management, and focus our resources in ways that help bring healthcare access and support to our most in-need communities.

At Onduo, we seek to reshape healthcare by scaling personalized care. We are committed to inclusive design; we use data as a tool combined with patient-centered care. At Onduo and Verily, we're using our skills—and our commitment to making health more equitable—to build the most detailed understanding of how health works at an individual level. In doing so, we're opening up opportunities for transformative change at the community level.

This white paper offers context and insights for organizations committed to health equity. We also look to define the role Onduo plays in scaling care responsibly and purposefully to help improve health equity. While we understand that change takes time, we're committed to listening, learning, and making the incremental changes that lead to broader improvements throughout all our communities and systems of care.

Let's work together,

Vindell Washington, MD, MS
CEO
Onduo by Verily

The business case for addressing social determinants of health and equity

Supporting good health is good business

While there is a corporate social justice case to be made for supporting the well-being of employees, members, and customers, the data is as compelling as the imperative. Simply put, supporting good health is good business.

"Social determinants of health can impact costs both positively and negatively for employers and payers," explains Adam C. Powell, PhD, President of the *Payer+Provider Syndicate*. "Employers provide healthcare benefits, and wellness and disease management programs to improve employees' health and well-being—which are largely impacted by SDoH."

Payers focus on wellness and chronic condition management to produce better outcomes, optimal utilization, and cost efficiency, while avoidance allows those factors to impede progress toward individual and community improvement. "To get ahead of the cost curve and accelerate value-based care programs, payers are investing heavily in the whole person and removing SDoH-related barriers," Powell says.

By using member claims data to identify SDoH at the population level, public and private payers can:

- Design payment policies that address the challenges
- Create incentives for providers and employers
- Develop partnerships with community-based organizations

Social determinants of health are defined by the CDC as, "the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks."[1]

Direct action on these social determinants can:

Improve recruitment and retention.

With low unemployment rates nationally, competition for top talent is high. Several sectors are experiencing serious labor shortages prompted by changes in consumer demand or burnout. Employers who take a whole-person approach and better understand the challenges their employees face are more likely to retain current employees and attract qualified candidates.

Boost presenteeism and productivity.

The CDC estimates productivity losses from personal and family health problems cost employers $1,685 per employee each year.[2] Addressing SDoH-related issues within other well-being programs can help reduce general absences (such as time off for family member illness or transportation issues) and health-related absences (for employees' own medical issues). Eliminating health disparities could reduce lost productivity by $80 billion.[3] Ultimately, these efforts benefit the organization while also improving employee well-being.

Support Diversity, Equity, and Inclusion (DEI).

One concrete way to create meaningful movement on DEI is to look at workplace and employer-provided health and benefit programs. "Employers recognize the need for greater diversity and inclusion in the workplace, and are taking steps to address equity and access in their benefits programs," Rachael McCann, senior director of health and benefits at Willis Towers Watson (WTW), said in a statement. "By shifting benefit program discussions from inclusivity to equitable health and wealth outcomes, employers will be able to identify specific areas for improvement—and that often leads to a focus on access, affordability, and quality."

67%

of employers responding to the WTW survey say SDoH is important to their health and well-being strategies now
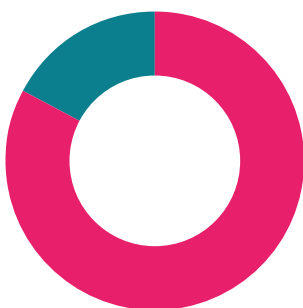
83%

believe it will be essential over the next three years
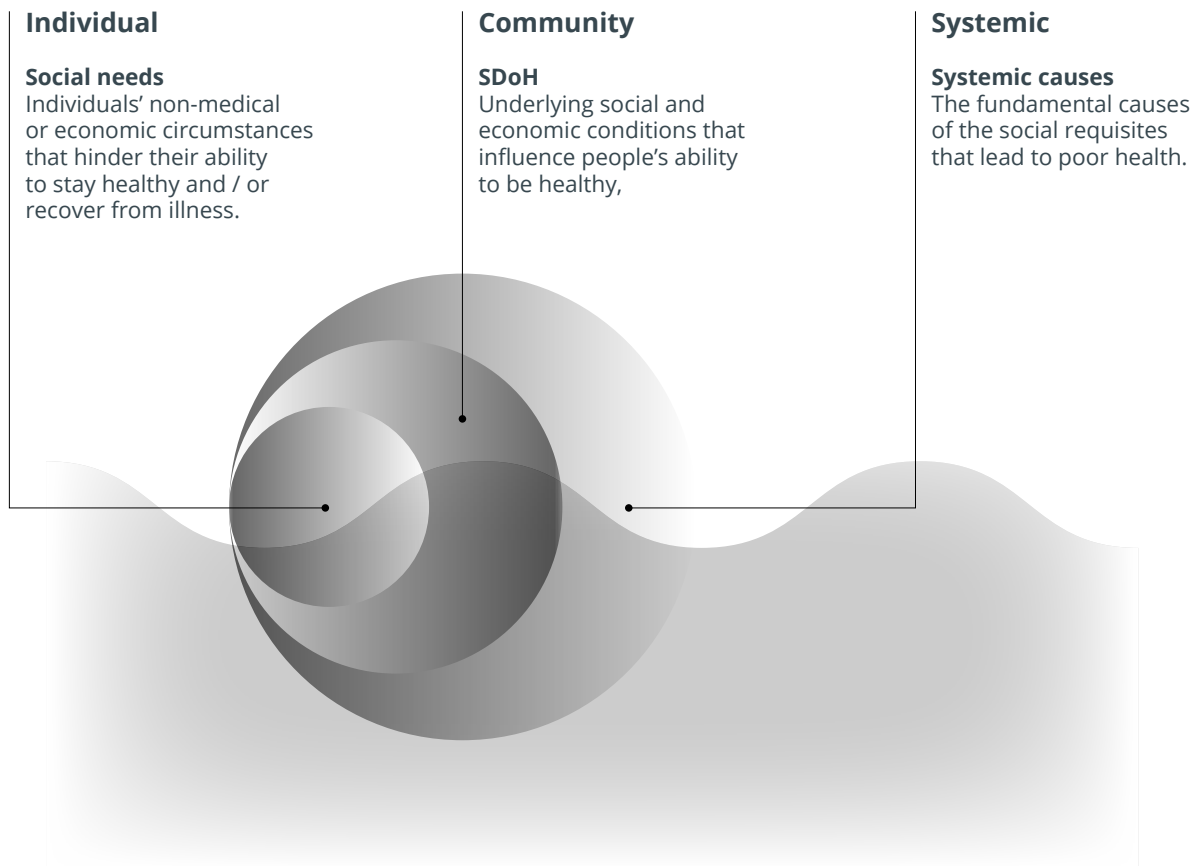
Context:
The health equity ecosystem

Diversity, Equity, and Inclusion and social determinants of health are components of the health equity ecosystem.

The CDC defines health equity as a state in which "every person has the opportunity to attain their full health potential, and no one is disadvantaged from achieving this potential because of social position or other socially determined circumstances. Health inequities are reflected in differences in length of life; quality of life; rates of disease, disability, and death; severity of disease; and access to treatment."[4]

Reducing health inequities requires direct action on the five SDoH categories:[5]

1 Economic Stability
2 Education Access and Quality
3 Healthcare Access and Quality
4 Neighborhood and Built Environment
5 Social and Community Context

Powell explains: "People living in a health-promoting environment with ample areas to exercise and easy access to nutritious foods have lower than average health expenditures, while people living in a health-damaging environment with limited opportunities for exercise and healthy eating have higher than average health expenditures."

Individual

Social needs
Individuals' non-medical or economic circumstances that hinder their ability to stay healthy and / or recover from illness.

Community

SDoH
Underlying social and economic conditions that influence people's ability to be healthy,

Systemic

Systemic causes
The fundamental causes of the social requisites that lead to poor health.

Opportunity:
You can't change what you don't measure

Using SDoH data to understand health inequities

Understanding SDoH data can help payers and employers better understand potential risk factors for worse health outcomes, according to Matthew S. Pantell, MD, MS, Assistant Professor at the University of San Francisco's Center for Health and Community, the Social Interventions Research and Evaluation Network, and the Philip R. Lee Institute for Health Policy Studies.

Pantell shares that understanding SDoH "helps them know when to invest in solutions that address social needs, such as transportation benefits; stress-reduction programs; and support for child care. By investing in these solutions, payers and employers have the potential to improve patient and client health and well-being."

Some businesses are already gathering and analyzing data. Almost one-third (32%) of employers in the WTW survey are examining utilization by key conditions, and 37% are planning or considering doing so in the next few years.

Pantell continues, "If an employer knows that 25% of its workforce is socially isolated, they could promote social activities—COVID social distancing guidelines permitting. If a payer knows that 5% of its patients experience unstable housing, they could invest in rental assistance. Alternatively, employers and payers can invest in social care resources, such as social workers (case managers), to help tackle a variety of social needs."

Low cost, low burden support

Measuring real-world behaviors such as social app usage, time spent at home or other places, and physical activity, or environmental factors such as ambient noise, gives clinicians a more complete, continuous, and objective picture of each patient's circumstances.

A recent Verily study suggests that sensors and active tasks recorded by smartphones provide a low-burden, low-cost, and broadly deployable way to capture real-world, objective patient data that could augment clinical decision-making and support evidence-based measures to promote population-level mental health.

"There's now an opportunity to fill in the data gap between the times you walk into an office, and that's going to be incredible because people spend most of their lives outside of healthcare," says Erich Huang, MD, PhD, Chief Innovation and Science Officer at Onduo.

Opportunity:
Improving access to care

Sufficient access to health services is a linchpin to improving outcomes and equity. Digital health solutions are important tools for removing barriers to care. These tools can provide needed support in between doctor's visits, empowering members to take control of their health, shifting to preventive instead of reactive care. Telehealth options can also support members facing barriers to care including stigma, lack of access to specialty services, and lack of childcare.

Access to screening and preventive services

Businesses understand that investing in preventive services improves individual health and lowers the cost of care. One Oregon study found that every $1 invested in primary care ultimately saved $13 in downstream costs.[6]

Data from the Agency for Healthcare Research and Quality indicates that people in the U.S. use preventive services at about half the recommended rate. It also verifies inequities in access and utilization of this kind of care across racial and ethnic groups, and for individuals with mental health conditions. Additionally, screenings for cardiovascular disease and cervical, breast, and colon cancer risk vary widely depending on poverty level and insurance status. Screenings are also an important way to identify mental health issues, and to support evidence-based measures to promote population-level mental health.

Onduo makes it easier for members to receive ongoing health assessments, complete routine biometric monitoring, and participate in preventive activities to stay healthy.

Primary and specialty care utilization

Even when a person has healthcare coverage from an employer, they may not be able to (or cannot afford to) take time off or arrange for childcare coverage for doctor's visits. Virtual care overcomes these impediments so people can see a primary care physician or a specialist that may not be practicing in their communities. Telehealth is particularly important in communities where chronic disease prevalence is high and physician access is low. According to FCC data, the situation is particularly acute in the Western States, where some counties experience a "double burden" of broadband access below 50% and physician shortages above the national average.[8]

Onduo's telehealth model facilitates communication with endocrinologists and certified diabetes educators. Research has shown better access to specialist care positively impacts self-management behaviors and improves health outcomes.[9]

Improving access to mental and behavioral health services

According to the CDC, more than 50% of people living in the U.S. will be diagnosed with a mental illness or disorder at some point in their lifetime. Across the U.S. economy, serious mental illness causes $193.2 billion in lost earnings each year. Additionally, people with depression have a 40% higher risk of developing cardiovascular and metabolic diseases than the general population. Some populations are more likely to experience emotional and mental health issues:

- The COVID-19 pandemic has greatly affected the mental health of front-line health care workers and first responders.
- The stigma facing LGBTQ+ people often causes feelings of anxiety, depression, and isolation.
- Violence against and harassment of non-white people impacts Black, Indigenous, and other people of color differently than their white counterparts.
- Loneliness and social isolation put older adults at higher risk of depression, anxiety, suicide, and premature death from all causes.

When we can't access mental and behavioral health services, says Angela Neal-Barnett, PhD, Professor of Psychological Sciences and Director of The Program for Research on Anxiety Disorders among African Americans at Kent State University, "the disorders are more chronic and the symptoms are intensified— and then it becomes even more challenging to get the right help."

Telehealth enables individuals to more readily access mental health services. According to the U.S. Census Bureau, when it came to mental health services, 8.7% of Black and 8.8% of Hispanic adults received mental health services compared to 18.6% of white adults. The 46 million Americans that live in rural areas often lack access to specialty mental healthcare services, while mental health concerns, including suicide rates, are higher in rural America than urban America.

"To the extent that [virtual care] reduces unaddressed mental illness, [it] has the potential to reduce costs related to absenteeism, presenteeism, and physical illness exacerbated by mental illness," says Adam C. Powell of the Payer+Provider Syndicate.

Impediments to adherence and compliance

Research shows that approximately 10% of a person's health status is influenced by the direct care they receive.[20] The rest is attributable to key SDoH factors, including housing status, local employment rates, food insecurity, or transportation challenges. Digital health allows providers to craft solutions that fit the individual's real life. "By encouraging people to engage in physical activity, eat more nutritiously, and sleep an adequate number of hours, mobile technologies are potentially lessening the impact of adverse social determinants of health," Powell notes.

Accessibility and language barriers

Getting and understanding medical care is more difficult in the presence of obstacles that deter communication and comprehension, such as:

Hearing loss. Approximately 15% of American adults over age 18 report some trouble hearing.[21] The Centers for Medicare and Medicaid Services (CMS) acknowledges that people who are hard-of-hearing, and especially those using sign language, experience a higher risk of poor health knowledge and inequitable access to medical and behavioral care. These factors lead to inadequate assessment, reduced access to treatment, insufficient follow-up, and poorer outcomes overall.[22] Onduo is developing options to make its content more accessible to people with hearing impairments.

Vision impairments. About 12 million people 40 years and over have impaired vision, including blindness.[23] According to the CMS, barriers to written communication are ultimately associated with lower quality of care and poor health outcomes.[24] Google and Alphabet websites, including Onduo.com, are compatible with multiple screen readers. *Learn more about Google's commitment to accessibility.*

Language barriers. Census data show that 22% of people living in America speak a language other than English,[25] which creates a formidable hurdle to accessing and understanding care. Eliminating language barriers for people with low-English proficiency (LEP) is a "key component" to promote better access to coverage and care. Onduo has bilingual speakers on the team in both English and Spanish. For non-English or Spanish-speaking members, our coaching, escalated clinical, and telemedicine solutions are delivered through language line services in 44 languages as well as through telephonic audio interpreting in 250 languages.

Health information access. According to a 2019 study, while 3 in 4 U.S. adults look for health information online, the majority experience frustration with accessing that information, especially among diverse populations. Healthcare organizations can help address these issues and make health information more readily accessible. For example, Google's recent rollout of new search tools gives consumers the ability to filter health-related searches by factors like insurance coverage or preferred language.

Onduo uses its app, portal, and devices to deliver automated reminders and check-ins, coaching on healthy habits, and personalized recommendations such as tailored food choices or more cost-effective medications based on individual needs.

Want to improve health? Consider paying for broadband access.

The promise of digital health is limited only by the availability and affordability of internet access. FCC data from 2019 shows that while 99% of urban housing units have broadband access, rural households have significantly less access.[28] For example, only 65% of housing units on American Indian and Alaska Native lands have the same level of access.[29]

This digital divide is created by:

- Insufficient high-speed internet (hot spots, mobile devices, broadband, etc.) in neighborhoods and the built environment
- Excessive cost of mobile data plans that makes content delivery and video-based visits economically unfeasible

The insufficient infrastructure keeps some from benefiting from digital health solutions. For example, though the use of virtual visits increased during the pandemic, adoption wasn't uniform. One study of electronic health records (EHR) and administrative data showed that people who identified as over 65, Black, Hispanic, Spanish-speaking, or from areas with low broadband access were less likely to use video visits.[30]

In an attempt to bridge the gap, the FCC launched the $3.2 billion Emergency Broadband Benefit, which provides a discount of up to $50 a month toward broadband service for eligible households and up to $75 per month for families living on qualifying Tribal lands.

Also, within the extended Alphabet family, Google is engaging in partnerships with local and state governments to improve connectivity. In 2020, it collaborated with the State of California to connect 100,000 rural households to high-speed internet and provide mobile hotspots.[31]

Culturally competent care

"Digital health solutions are useful tools only when they are culturally competent," Angela Neal-Barnett of Kent State University says. "I cannot stress that enough—they have to be culturally competent."

The CDC's National Prevention Information Network defines cultural competence as "a set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals that enables effective work in cross-cultural situations. 'Culture' refers to integrated patterns of human behavior that include the language, thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, religious, or social groups.

'Competence' implies having the capacity to function effectively as an individual and an organization within the context of the cultural beliefs, behaviors, and needs presented by consumers and their communities."[32]

"Providers, developers, and others do not have to be Black or of a particular background to develop culturally competent care," Neal-Barnett notes. It is however imperative to include members of the community in creating training and programs, according to Erik Valera, a Public Health Researcher and COO of El Centro Hispano.

"You not only need representatives of the community in the room," Valera asserts, "but they must have the power to say no." Centering community voices in such training and programming is the best way to ensure cultural competency.

20% Social and environmental factors

40% Individual behaviors

30% Genetics

10% Healthcare
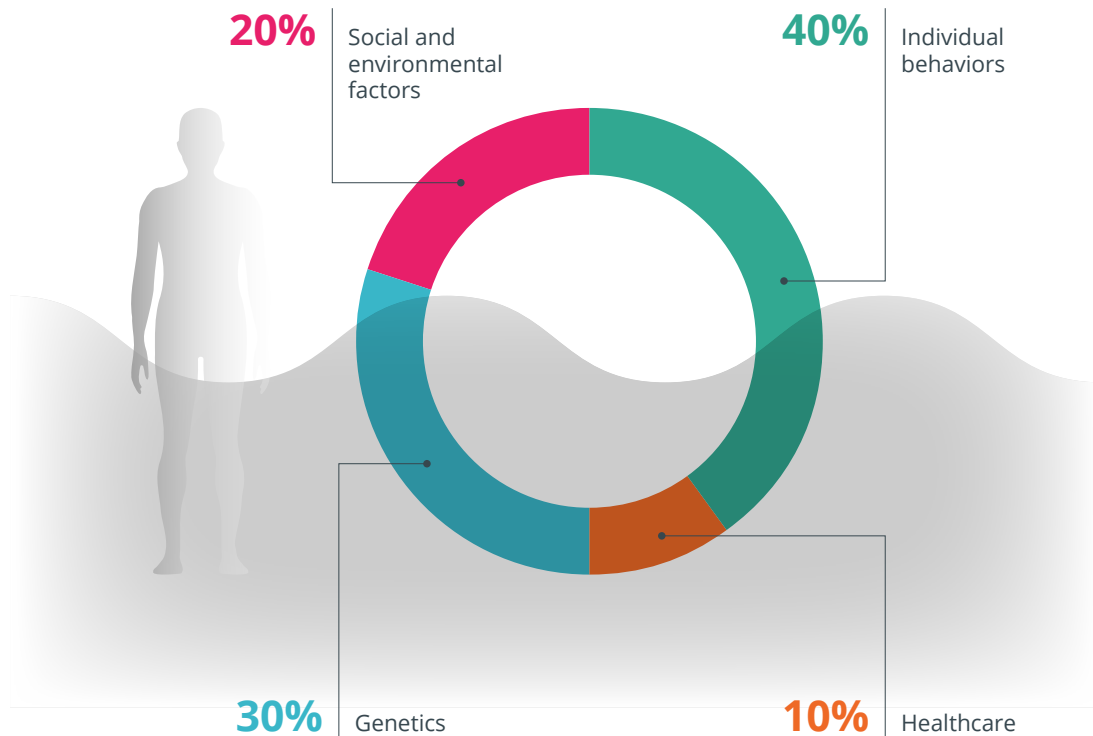
Whole-person data model

Onduo's Chief Innovation and Science Officer, Erich Huang, MD, PhD, stresses the importance of centering data around the person. According to Huang, "One thing that I think about every day is: how do we build data models that better represent a person, that do better justice to who that person is? That's something we need to build so that we can serve our patients as well as we possibly can.

The contextualization of social challenges, food challenges, and housing challenges are all highly relevant, and are things that we're incorporating into our data so that we can start thinking about how to make progress on those. Are there indicators that, in partnership with employers, we can address those challenges and clean up the mess that exists?"

Huang's approach to building a patient-centered data infrastructure looks at data as the intervention. With that, we must carefully consider the potential risks, and implement proper monitoring.

Matthew Pantell of the University of San Francisco's Center for Health and Community says the key is assuring the ethical use of social data and "guard[ing] against unintended consequences. Patient and client awareness of the context surrounding why and how their social data is being used is crucial."
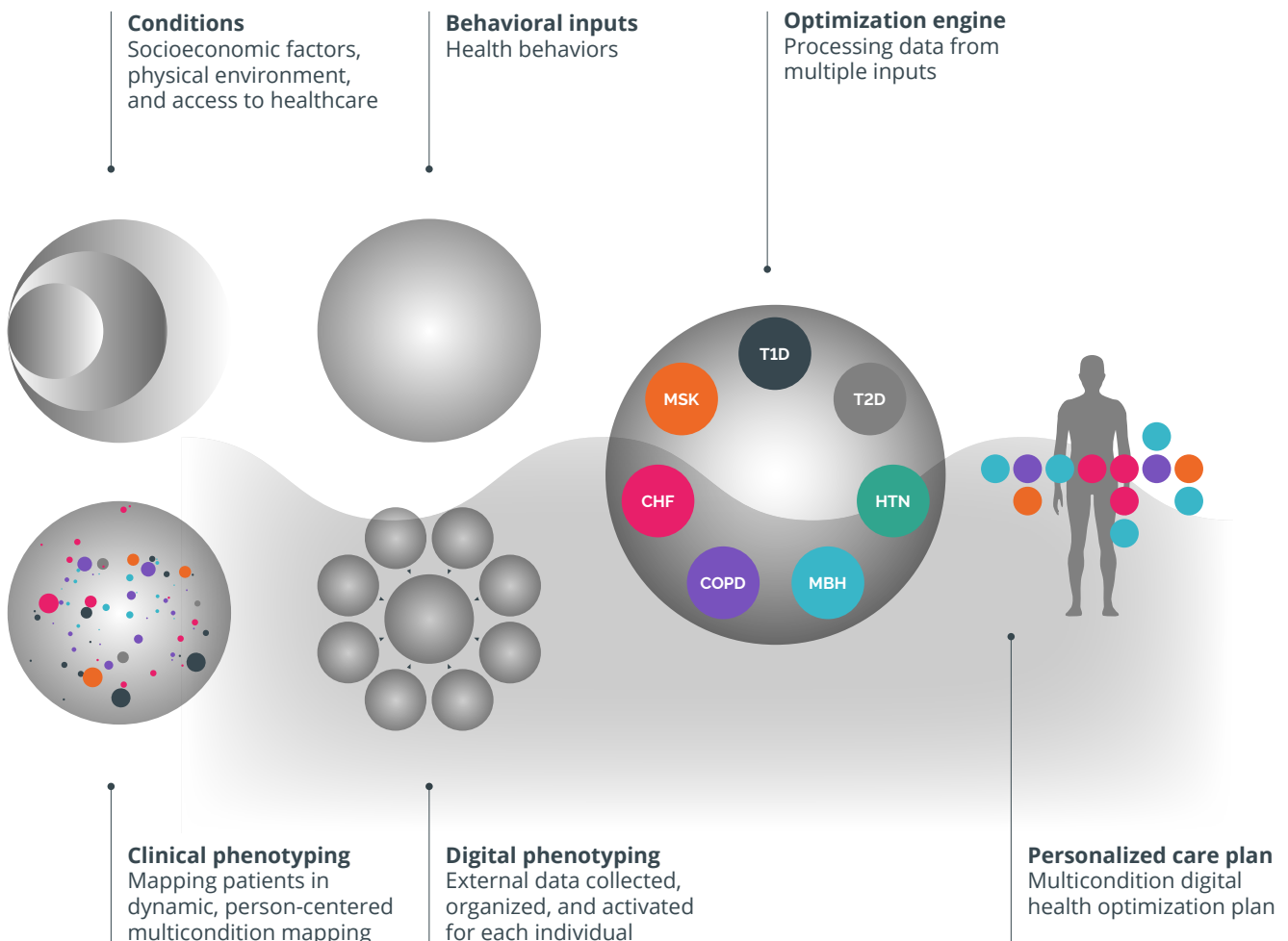
Huang concurs. "Data is sort of like the active ingredients of drugs—there can be side effects. We need to monitor the side effects of everything we build with data, whether it's a machine learning algorithm or a user experience."

How Onduo leverages whole-person data

Onduo's Care Team is grounded in a relationship-based care model, committed to partnering with members by listening to their needs, priorities, and goals. By combining this human connection with technology, the Care Team can identify the most impactful next step for each member. Onduo uses the science of "digital phenotyping" to understand an individual's needs, conditions, characteristics, and drivers.

Through continuous, longitudinal measurement, the app can surface data-driven insights that adapt to the member's preferences—matching the right care to the right person at the right time to improve quality of life. Including SDoH data, engagement preferences, and cultural barriers and beliefs, this data is centered around the member, painting a more robust picture of what they're experiencing in their daily lives. Onduo's commitment to health equity starts with this foundation of cultural humility, listening, and personalization.

Conditions
Socioeconomic factors, physical environment, and access to healthcare

Behavioral inputs
Health behaviors

Optimization engine
Processing data from multiple inputs

Clinical phenotyping
Mapping patients in dynamic, person-centered multicondition mapping

Digital phenotyping
External data collected, organized, and activated for each individual

Personalized care plan
Multicondition digital health optimization plan

Using SDoH data to inform engagement and intervention

"At Onduo, we leverage SDoH information throughout the member lifecycle," says Yugang Jia, PhD MPH, the Head of Data Science at Onduo. Jia notes, "We continuously evaluate the enrollment and engagement performance across different social determinants to make sure we reduce health disparity through digital technology, not increase it."

During the enrollment and market outreach process, SDoH data is used to tailor marketing materials that will resonate with members. "Emphasizing increased virtual care access, for example, has improved the response rate among those who live in areas with limited care/pharmacy access," Jia explains.

Once the member is enrolled, the Onduo coaching and clinical service team will personalize the care plan based on the member's goals, clinical target, and available community and partner resources. For example, coaches can tailor food recommendations to be culturally appropriate and financially feasible and Onduo pharmacists will work with members to find the most clinically appropriate and affordable medication possible.

Blending machine learning and SDoH to predict cardiovascular events

A recent study from New York University's School of Global Public Health and Tandon School of Engineering found that including SDoH in machine learning models improved the ability to predict cardiovascular outcomes like readmission, heart failure, and stroke—particularly for vulnerable groups.[33]

"Including social determinants of health in machine learning models can help us to disentangle where disparities are rooted and bring attention to where in the risk structure we should intervene," explained the study's senior author Rumi Chunara, PhD, Associate Professor of Biostatistics at NYU's School of Global Public Health, and Computer Science and Engineering at NYU's Tandon School of Engineering. "For example, it can improve clinical practice by helping health professionals identify patients in need of referral to community resources like housing services and broadly reinforces the intricate synergy between the health of individuals and our environmental resources."

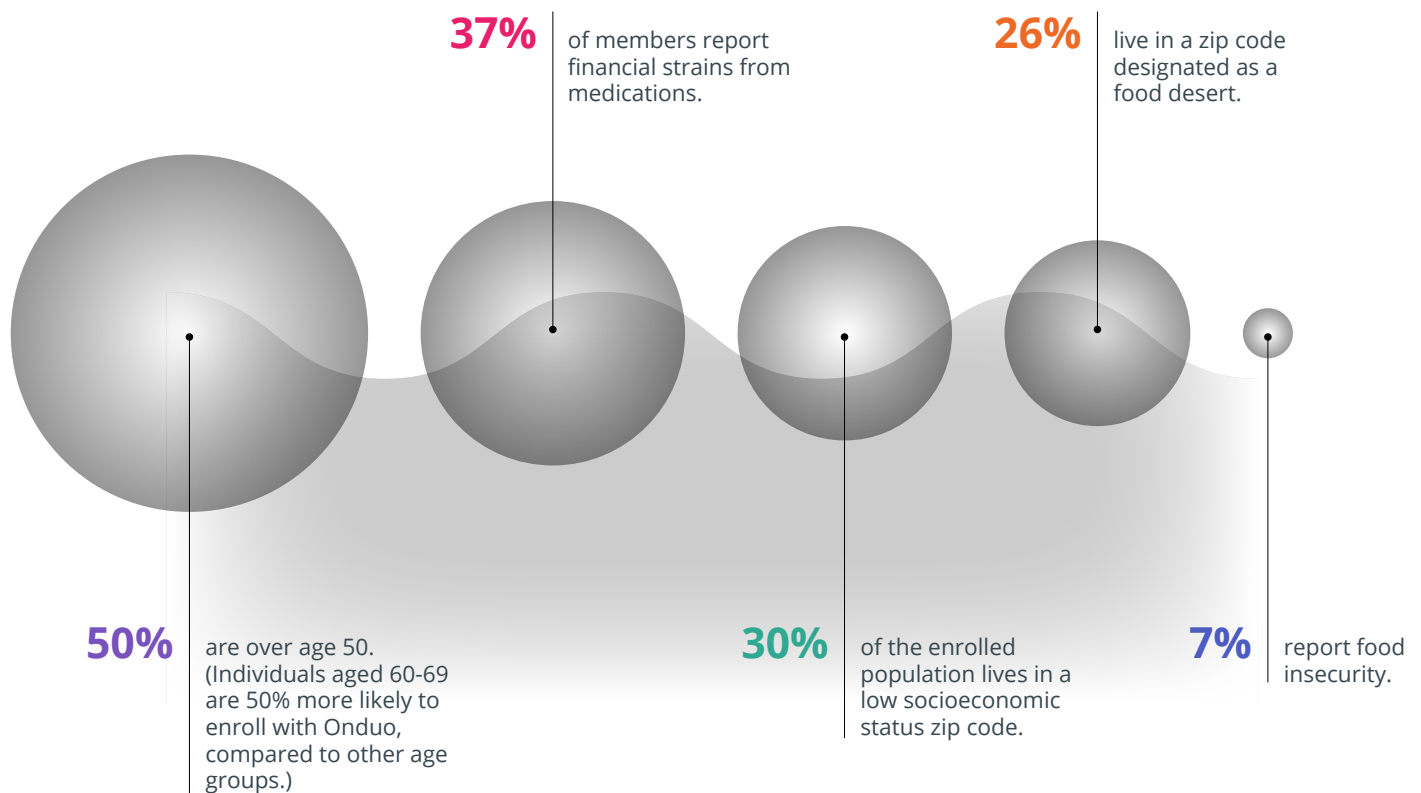# Opportunity:
Partner to make progress

Solving health inequities requires collaboration between payers, employers, and digital health companies. Onduo is uniquely positioned to be your partner in addressing SDoH and lessening health disparities.

A legacy of innovation. Onduo has access to resources at our parent company, Verily, an Alphabet company focused on life sciences and healthcare with a mission to make the world's health data useful so that people enjoy healthier lives. Verily develops tools and devices to collect, organize, and activate health data as well as creates interventions to prevent and manage disease.

As part of the Alphabet ecosystem, we can access resources from and create partnerships with sister companies like *Google Cloud for healthcare and life sciences* and *CityBlock.*

Inroads with communities of need. A large percentage of people using Onduo's virtual care app are in communities of need. It's crucial that we deliver similar outcomes for individuals experiencing negative SDoH.

"Health technology companies like Onduo not only have the responsibility to improve healthcare access and care quality, but also reduce health disparity," Jia asserts.

37% of members report financial strains from medications.

26% live in a zip code designated as a food desert.

50% are over age 50. (Individuals aged 60-69 are 50% more likely to enroll with Onduo, compared to other age groups.)

30% of the enrolled population lives in a low socioeconomic status zip code.

7% report food insecurity.

Our mission is to make healthy easier for all. That means mitigating negative SDoH impacts and increasing health equity aren't nice-to-have goals for us. They are at the core of what we do every day.

Contact us to get started.

"When you meet a member where they're at—you come alongside them, you put yourself in their shoes in a non-judgemental, understanding way— that's how we deliver care."

Marti Fernandes, Onduo Care Lead
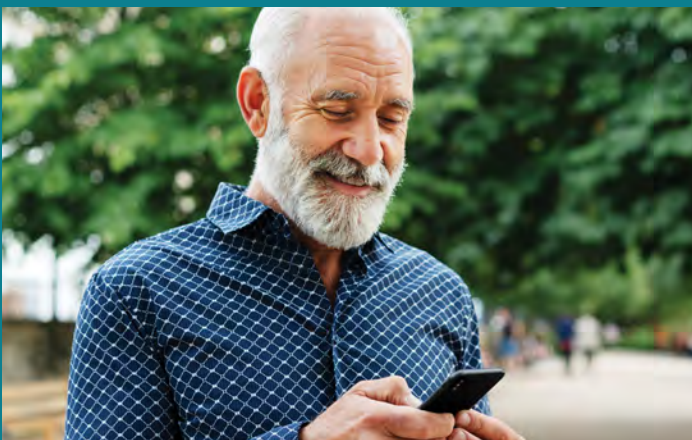
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