Briefing Paper on Open Data for Racial Equity in Healthcare

April 1, 2022

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Introduction

The Center for Open Data Enterprise (CODE) is partnering with the IBM Center for the Business of Government, with additional support from the population health management company ZeOmega, to hold a Roundtable on Open Data for Racial Equity in Healthcare on April 6 and 7, 2022. For this project CODE and IBM will co-host a public Webinar, hold a virtual Roundtable with 70-80 experts using CODE’s established methodology, and produce a Report for publication by the IBM Center for the Business of Government.

The COVID-19 pandemic has underscored the fact that people of color, Black Americans in particular, are at higher risk of adverse health outcomes. Existing health disparities in the U.S. are heavily influenced by the conditions in which people are born, grow, live, work, and age, known as the social determinants of health (SDOH). SDOH data can be an important tool to understand and address issues of racial equity in healthcare. There may also be other data-driven approaches to understanding and reducing overall bias in the healthcare system. By addressing data – especially open data – that relates to health risk, healthcare access and bias in healthcare, this Roundtable will analyze and develop recommendations on how data can support racial equity in healthcare from diverse perspectives.

The upcoming Roundtable builds on several related projects that CODE has conducted with data leaders at the U.S. Department of Health and Human Services (HHS). Material on those events can be found here. This Briefing Paper provides additional background information for Roundtable participants with a focus on four topic areas for small-group discussions in breakout sessions.

Stakeholders attending the Roundtable

The upcoming Roundtable will include representatives of many different groups with a stake in improving healthcare equity. A full listing of participating organizations is included at the end of this Briefing Paper.

Academic and research stakeholders are focused on developing the models and aggregating the data that can help policymakers, the private sector, and the public better understand and address health disparities. They may also study the cumulative impacts of health risks and how other factors like climate change or environmental hazards may lead to adverse health outcomes. Some academic researchers at the Roundtable are also carrying out studies on emerging technologies like the use of AI in healthcare and studying the digital divide.

Civil society participants come from organizations that are evaluating the impact of COVID-19 and other health conditions on racial and ethnic minorities or directly working with communities to ensure that they are receiving the services they need. This group also includes data journalists,
non-academic researchers, and representatives of philanthropic organizations addressing health disparities.

**Federal government** participants come mostly from many offices and agencies within the U.S. Department of Health and Human Services, which are addressing health disparities in a number of ways. They also include representatives of other Federal offices and departments, including the U.S. Department of Veterans Affairs and the White House Office of Management and Budget, that bring additional perspectives to this issue.

**State and Local Government** officials may manage local departments of public health that directly aim to address racial disparities in health outcomes through targeted initiatives that leverage the social determinants of health or other data. These groups lead local-level COVID responses and may aim to support certain communities through local-level interventions around the social determinants of health. Lastly, state and local government may be able to more directly address environmental issues that are leading to adverse health outcomes.

**Healthcare organizations** play a variety of roles in the U.S. healthcare system. They include organizations that provide primary health care, provide health insurance, or contribute to healthcare infrastructure in other ways.

**Private sector** participants from non-healthcare organizations represent a variety of groups, from population health companies to companies developing “smart” products that can better track key health indicators like fever. These companies may develop products that map the potential risk counties face by combining clinical data with relevant social determinants of health data. Private sector stakeholders may also drive the development of healthcare algorithms and other emerging technologies, provide COVID-related information, or provide data on climate risk that can help understand the cumulative impacts of climate change.

### Breakout session topics and discussion questions

**Breakout Topic 1: Addressing racial disparities shown by COVID-19 risk, diagnosis, and treatment**

**Objective:** To identify important lessons from the COVID-19 pandemic to better apply data to address racial inequities across disease risk, diagnosis, and treatment.

The COVID-19 pandemic has highlighted how Black Americans and other people of color are at higher risk of adverse health outcomes, including much higher than average rates of severe COVID-19 infection and death. Official CDC statistics show that Hispanic Americans are dying at four times the rate of their non-Hispanic white counterparts, while Black Americans are dying at similarly high rates. The CDC has noted that there are no underlying genetic or biological factors
that make BIPOC individuals (Black, Indigenous, and people of color) more likely to die of COVID than any other demographic group. The pandemic has made clear the need to improve racial equity in healthcare preparedness and response for other infections, learning from COVID as a high-impact use case.

At this stage of the pandemic, researchers and public health officials are continuing to address the urgent needs of vulnerable populations, while simultaneously ramping up research on the disease and possible treatments. That effort will need to include research on vaccination rates and the effectiveness of communication and outreach strategies; efforts to improve treatments and access to treatment for vulnerable populations; and clinical trials engaging diverse populations to research the effectiveness of COVID treatments in both vaccinated and unvaccinated populations. More broadly, it will include analysis of data that can shed light on disparities in healthcare preparedness, response, and health outcomes. Breakout sessions on this topic will identify the range of issues that led to more African Americans dying in the pandemic, review lessons learned, especially related to the use of data, and action-oriented opportunities to address these issues for future infectious disease outbreaks.

While the risk of COVID may be influenced by underlying health conditions that are more common in some demographic groups, research has focused increasingly on the impact of social determinants of health (SDOH). A growing body of evidence shows that the SDOH have a major influence on an individual's health status — perhaps as much as, or even more than, the standard epidemiological measures that have been the basis of many COVID-19 models. These factors can help give insight into the different risks COVID-19 pose to different communities, especially Black and Hispanic communities.

A recent CODE project with the U.S. Department of Health and Human Services described how an understanding of SDOH factors can help explain and ultimately reduce the high risk of COVID-19 that Black and Brown Americans face. Epidemiologists and public health researchers can use SDOH data to determine how social and environmental factors affect the spread and severity of the disease, while state and local public health departments can use SDOH data to design interventions and allocate the use of healthcare resources for COVID-19. In its earlier report, CODE summarized research on many ways that different social determinants may impact the risk of COVID-19 infection and its severity in communities of color:

- Lack of access to health care affects the ability to prevent severe illness and death from COVID-19. Communities of color are more likely to encounter barriers to getting care, for example through lack of health insurance or sick pay. Poor health care can also contribute to underlying health conditions, such as obesity, hypertension, and chronic kidney disease, that increase the risk of serious COVID infection.
- Crowded living conditions and unstable housing contribute to greater infectious disease transmission and may prevent communities from getting treatment. Asian, Hispanic, and Black Americans are more likely to live in multi-generational homes and crowded homes than white Americans.
Working conditions contribute to greater risk of infection, with many people of color holding essential jobs that limit sick time, jobs that can't be done remotely, and jobs that require personal interaction. Nearly 25% of employed Hispanic and Black Americans work in the service industry, compared with 16% of non-Hispanic white workers.

Modes of transportation contribute to greater risk of infection/transmission of COVID-19 with Americans who are Black or Hispanic, immigrants, or low-income more likely to use public transportation on a regular basis.

Racism can impact the quality of care, and the stress associated with racism can increase disparities in physical/mental health, increasing the likelihood of severe COVID infection.

In addition to the risk of acute infection, a recent report raised concerns that Black Americans may also be at greater risk related to long COVID. In particular, Black Americans may have less access to long COVID trials, treatment programs, and registries.

**Discussion Questions**

- What factors have been most important in contributing to the high COVID risk for people of color in America? What factors do we need to pay the most attention to as we address the ongoing risks of the pandemic and long COVID? What are the factors where more or better data could be most useful - and what kinds of data do we need?
- What were some of the lessons learned during the COVID-19 pandemic about using data to understand disease risk, improve data for diagnosis and disease surveillance, and support treatment and prevention in BIPOC communities?
- What kinds of recommendations do you have for improving data that will help us address some of the lessons learned during the pandemic? These may include technical or technological recommendations, public policy recommendations, or community-based initiatives.

**Breakout Topic 2: Using social determinants of health (SDOH) data to improve racial equity**

**Objective:** To explore how data on the social determinants of health can be more effectively applied to improve racial equity.

Health disparities in the U.S. are heavily influenced by the SDOH - the conditions in which people are born, grow, live, work, and age. SDOH data enables policymakers to understand health inequities and analyze healthcare disparities across communities. Factors like a poor neighborhood environment, substandard housing, poor access to healthy food, and other social determinants are closely intertwined with poor access to high-quality healthcare. The diagram below is CODE’s summary of SDOH factors, which is being published in a new CODE report and which builds on the Kaiser Family Foundation's framework.
Figure 1
Social Determinants of Health

<table>
<thead>
<tr>
<th>Economic Stability</th>
<th>Neighborhood and Physical Environment</th>
<th>Education</th>
<th>Food</th>
<th>Community and Social Context</th>
<th>Health Care System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>Housing</td>
<td>Literacy</td>
<td>Hunger</td>
<td>Social integration</td>
<td>Health coverage</td>
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<tr>
<td>Income</td>
<td>Transportation</td>
<td>Language</td>
<td>Access to healthy options</td>
<td>Support systems</td>
<td></td>
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<td>Safety</td>
<td>Early childhood education</td>
<td>Social integration</td>
<td>Community availability</td>
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<td>Parks</td>
<td>education</td>
<td>Support systems</td>
<td>Provider availability</td>
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<td>Playgrounds</td>
<td>Vocational training</td>
<td>Community engagement</td>
<td>Provider linguistic and cultural competency</td>
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<tr>
<td>Support</td>
<td>Walkability</td>
<td>Higher education</td>
<td>Discrimination</td>
<td>Quality of care</td>
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<td></td>
<td>Zip code / geography</td>
<td></td>
<td>Stress</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Health Outcomes
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

While the SDOH apply to Americans of all races and ethnicities, SDOH data can be an especially important tool to understand and address issues of racial equity in health. In particular, SDOH data can help identify factors that interfere with healthcare access and their relation to race. Access to healthcare is both an important determinant of health in its own right, and a necessary means to addressing other SDOH factors through coordination with public services. The SDOH factors that impact healthcare access range from income and education to structural factors like poor public transportation and lack of healthcare facilities, which may disproportionately affect minority communities.

SDOH data are produced by the government, collected by the private sector, or aggregated and shared through third parties like research and civil society organizations. The rise of interest in the SDOH has been complemented by increasing access to this kind of data. This data is increasingly being used to develop public health strategies, support health research, and target social services.

Addressing the various aspects of the social determinants of health, which could also be described as the social determinants of well-being, can help predict and improve overall health outcomes and well-being of individuals and communities, particularly those that are most at risk. The use of SDOH data has the ability to catalyze predictive analytics through improved location-based data about at-risk communities. This data can be collected directly from a patient in a clinical setting, and can be used in combination with an individual’s electronic health records to better understand the possible risks they face. It can also be collected at the population level from a wide range of sources including federal, state, and local government agencies. Population-level SDOH data can be leveraged to develop an understanding of risks shared by groups of individuals in the same community or who share other characteristics.

There are many gaps in the availability of good SDOH data, as CODE described in the report from its previous Roundtable on Leveraging Data on the Social Determinants of Health, which was co-hosted by HHS. That report identified the need to better define and standardize SDOH data, including the use of open source assessment tools and improved data governance; to create a sustainable infrastructure for SDOH data, including the involvement of community-based organizations (CBOs); and to support local and state-based decision-makers using SDOH data.

Discussion Questions

- What kinds of use cases have applied SDOH data to understand unequal health outcomes? Are there any kinds of SDOH data that are underutilized but may be useful in addressing racial inequities in health?
- What kinds of new or emerging SDOH or general health data can be valuable in addressing racial equity? Should we expand our definition of the SDOH to include new factors?
- What are some of the major gaps in SDOH data as they relate to understanding racial inequities in healthcare?
• Where do we have the best racially disaggregated data that can shed light on the social determinants of health and their relation to healthcare disparities? What can we learn from this data and how can we use it to improve health equity? Where do we need better disaggregated data?
• What kinds of issues or challenges should we consider in using these datasets, such as privacy, accessibility, interoperability, public vs. private data, or other issues?

Breakout Topic 3: Using emerging technologies to improve health outcomes and remedy bias in healthcare

Objective: To promote effective strategies and solutions that leverage emerging technologies to improve health outcomes and reduce bias in healthcare.

Emerging technologies have the potential to overcome bias and help ensure more equitable medical treatment. For example, connected heart monitors that transmit signals for computer analysis can detect problems and trigger necessary interventions based on the data, regardless of a patient’s race. At the same time, new AI applications for clinical decision support may draw on data that contributes to bias that disadvantages minorities, an issue that the Agency for Healthcare Research and Quality has investigated. Their Systematic Review suggested a set of actions and steps that healthcare providers should take to reduce the bias and improve the effectiveness of healthcare algorithms. In addition to addressing algorithmic bias, there is a growing awareness and need to address the digital divide in healthcare, including gaps in digital literacy, access to health technologies, and broadband access in communities of color around the country.

Breakout sessions on this topic will explore the appropriate use of emerging technologies to help improve service and reduce bias in healthcare. They will cover two issues that may particularly impact communities of color: disparities in access to technology, and potential bias in data and data analysis.

The impact of technology access on health is starting to become evident, with some recent research showing a high correlation between poor broadband access and COVID risk. Broadband is a critical gateway to health information, healthcare services, and telemedicine, and research has shown differences in broadband access by race and ethnicity. A 2015 study showed that 83% of Asians and 81% of white Americans had home-internet access, compared to 72% of American Indian/Alaska Natives, 70% of Hispanics, and 68% of Black Americans. The disparities may be related to the racial wealth gap: In this study, less than half of households with annual family incomes less than $20,000 had home-internet access. A more recent analysis of the digital divide by Census tract has shown a similar relationship between internet access and race.

The issue of algorithmic bias has become a concern as artificial intelligence (AI) and machine learning are increasingly being incorporated into healthcare decision tools for better healthcare delivery, including clinical guideline development, clinical decision support programs in electronic
health records, and healthcare operational systems. **Algorithms** are defined as mathematical formulas and models that combine different variables or factors to inform a calculation or an estimate, often for risk. In healthcare specifically, algorithms are being leveraged to support healthcare screening, risk prediction for medical events, diagnosis, prognosis, treatment planning, and allocation of resources.

**Race and ethnicity** are increasingly being used as input variables in healthcare algorithms and influence both clinical decision-making and patient outcomes. These factors are included in algorithms to increase diagnostic or predictive accuracy. However, some researchers have argued that including race and ethnicity in this way can be misleading, since they are largely **social constructs** rather than biological factors. Including race and ethnicity in healthcare algorithms can lead to **unknown or unwanted** effects, like restricting access to care, and even exacerbate or perpetuate health and healthcare disparities.

In recent years, several studies have shown that healthcare algorithms can lead to BIPOC patients **receiving less high-quality care** than white patients. One study, for example, found that algorithms used previous healthcare spending to determine future risk and need for additional care, which is misleading because Black people tend to spend **less on healthcare**. Some insurance companies misuse personal information such as **race and income** in risk-prediction algorithms to raise premiums in ways that may disadvantage people of color.

As the table below from the Agency for Healthcare Research and Quality shows, biases can be introduced at any step in the algorithm development-to-implementation process, including the conception of the algorithm, the applied training data, or the team used to review the algorithmic outputs.

**Figure 2: Examples of biases that can be introduced during machine learning and conventional statistical model development**
A number of approaches are now being explored to reduce the risk of algorithmic bias. These include adopting a more collaborative, patient-centered approach; developing specific processes for evaluating and addressing bias; developing a regulatory framework for algorithmic transparency and accountability; and applying ethical principles for AI, such as those developed by IBM.

**Discussion Questions:**

- Where are some of the greatest opportunities to use digital technologies to improve health and healthcare for people of color?
- How has the digital divide manifested in BIPOC communities? How much of a barrier is it to using these new technologies, and in what ways?
- How could we overcome some of these obstacles - for example, through policies to improve broadband access, or in other ways?
- How could AI and machine learning be used to positively address racial inequities and improve healthcare? How have these algorithms harmed BIPOC communities in their use or lead to worse health outcomes?
- How can data used for these algorithms be unfairly biased, and how do we correct those biases? How can the analysis itself be biased, and how can we correct for that?
- How can novel approaches, such as algorithmic impact assessments or IBM’s ethical principles around AI, be applied in the healthcare sector towards BIPOC communities?
Breakout Session 4: Using data to address the impact of climate change and environmental injustice on health equity

**Objective:** To develop data-driven practices and strategies in order to understand the impact of climate change and environmental hazards on health outcomes.

The growing national focus on environmental justice is adding new urgency to addressing environmental and climate impacts on health. Multiple studies have documented how communities of color are disproportionately impacted by air and water pollution, including lead in the water supply, and other negative environmental consequences of the built environment. For example, industrial plants are more likely to be located in communities of color, and concentrated animal feeding operations (CAFOs) have a negative impact as well.

Recent efforts to advance environmental justice have drawn attention to the connection between race and the risk of environmental hazards. Recently, the Council on Environmental Quality released the Climate and Environmental Justice Screening Tool (CEJST) as a tool to help direct funds to disadvantaged areas under the Justice 40 program. The CEJST did not consider race as a factor, and was criticized on that basis. However, an independent analysis showed that the results of the tool would have been similar if race had been included, showing that race is highly correlated with other factors related to environmental risk.

Climate hazards may have an especially dangerous impact on communities of color as well. A recent CODE Roundtable, co-hosted with the National Oceanic and Atmospheric Administration (NOAA), studied the use of data to assess climate risk in vulnerable communities. NOAA is now increasing its efforts to help address climate risk on a community level, focusing on extreme heat, drought, wildfires, flood, and coastal risks.

Beyond these immediate impacts, climate change is a threat multiplier that can worsen the impact of a wide range of social determinants of health. The diagram below, reprinted in a CODE report on the social determinants of health, shows an HHS analysis of near-term and long-term impacts of climate change on the SDOH.

**Image 1: Climate Change as a Threat Multiplier for the SDOH**
Discussion Questions:

- What is the current status of environmental screening tools - like EJ Screen, the CEJST, and CalEnviroScreen - and what do we know about their strengths and weaknesses? How should these tools be used to improve health in an equitable way?
- Beyond the existing screening tools, what would be the most useful kinds of data to help address environmental health through the lens of racial equity?
- What kinds of data do we need to address environmental risks more effectively?
- What are some ways in which climate hazards may particularly impact the health of communities of color?
- How can climate change impact health indirectly - for example, by impacting the social determinants of health?
- What new approaches do we need to analyze climate risks as a basis for action?
Participating organizations

Academia

**Alabama A&M University** is a public, historically black, land-grant university located in Normal, a neighborhood of Huntsville, Alabama, United States.

**Dell Medical School** is the graduate medical school of The University of Texas at Austin in Austin, Texas. The school opened to the inaugural class of 50 students in the summer of 2016 as the newest of 18 colleges and schools on the UT Austin campus.

**Duke’s Margolis Center for Health Policy**’s leading capabilities including interdisciplinary academic research and capacity for education and engagement, to inform policy making and implementation for better health and health care.

**Harvard Medical School** is committed to convening and nurturing a diverse community of individuals dedicated to promoting excellence and leadership in medicine and science through education, research, clinical care and service.

**Mailman School of Public Health** at Columbia University is the public health graduate school of Columbia University. Located on the Columbia University Medical Center campus in the Washington Heights neighborhood of Manhattan, New York City, the school is recognized by the Council on Education for Public Health.

**North Carolina State University** is a public land-grant research university in Raleigh, North Carolina. Founded in 1887 and part of the University of North Carolina system, it is the largest university in the Carolinas

**The University of California, Berkeley** is a public land-grant research university in Berkeley, California. Established in 1868 as the University of California, it is the state’s first land-grant university and the first campus of the University of California system.

**The University California San Diego (UCSD)** is one of the world’s leading public research universities, located in La Jolla, California. The University has a Center for Community Health that works to promote optimal health in all populations through interventions that target chronic disease and obesity prevention.

**The Center for Digital Health Innovation at UC San Francisco** has a vision to make better health accessible to everyone, everywhere. The Center employs design thinking, lean product management, and agile development to incubate solutions for scale across UCSF and to other healthcare institutions through licensing and/or commercialization partnerships.
University of Wisconsin-Madison is a public land-grant research university in Madison, Wisconsin. Founded when Wisconsin achieved statehood in 1848, UW–Madison is the official state university of Wisconsin and the flagship campus of the University of Wisconsin System.

Civil Society

Academy Health is a nonpartisan, nonprofit professional organization dedicated to advancing the fields of health services research and health policy.

ACT | The App Association represents more than 5,000 app makers and connected device companies in the mobile economy, a $1.7 trillion ecosystem. Organization members leverage the connectivity of smart devices to create innovative solutions that make our lives better.

Catalyst Miami’s mission is to identify and collectively solve issues adversely affecting low-wealth communities throughout Miami-Dade County. The organization’s vision is a just and equitable society in which all communities thrive.

The Center for African American Health is committed to improving the health and well-being of the African American community by offering community-based, evidenced-based, disease prevention and disease management programs, events, and services.

Civitas Networks for Health is a mission- and member-driven organization dedicated to using health information exchange, health data, and multi-stakeholder, cross-sector approaches to improve health.

Corporation for Supportive Housing is a national leader in supportive housing, focusing it on person-centered growth, recovery and success that contributes to the health and wellbeing of the entire community.

Data Foundation is a non-profit think tank based in Washington, D.C. that seeks to improve government and society by using data to inform public policymaking.

Data.org is a platform for partnerships to build the field of data science for social impact. Data.org works with organizations from all over the world to increase the use of data science in order to improve the lives of millions of people.

Health Equity Solutions’ mission is to promote policies, programs, and practices that result in equitable health care access, delivery, and outcomes for all people in Connecticut

KB Stack Consulting is an independent consultant helping government and non-profit organizations develop creative strategies for using data, evidence, and innovation to improve the impact of government social programs.

Martha’s Table operates nationally accredited education programs, pairing healthy food access with physical and mental health services, and promoting family success by investing in family leaders.
Minnesota Community Measurement delivers data to health care payer and provider members to illustrate performance on quality and cost measures. Members use these data to understand gaps and inform improvement efforts. These data include comparisons to the statewide results and to peers in the market.

National League of Cities is an organization comprised of city, town and village leaders that are focused on improving the quality of life for their current and future constituents.

National Minority Quality Forum is a research and educational organization dedicated to ensuring that high-risk racial and ethnic populations and communities receive optimal health care. This nonprofit, nonpartisan organization integrates data and expertise in support of initiatives to eliminate health disparities.

The National Patient Advocate Foundation is dedicated to advancing person-centered care for everyone facing a serious illness. The Foundation advocates for accessible, high quality, affordable health care.

National Quality Forum (NQF) is a not-for-profit, nonpartisan, membership-based organization that works to catalyze improvements in healthcare. NQF measures and standards serve as a critically important foundation for initiatives to enhance healthcare value, make patient care safer, and achieve better outcomes.

The Patient Advocate Foundation provides patient services, eliminating obstacles in access to quality healthcare. The Foundation believes in empowering patients with the skills to navigate their healthcare and advocate for their prescribed care.

The Patient-Centered Outcomes Research Institute works to improve the quality and relevance of evidence available to help patients, caregivers, clinicians, employers, insurers, and policy makers make better-informed health decisions.

Federal Government

U.S. Department of Health and Human Services is a cabinet-level department of the U.S. federal government with the goal of protecting the health of all Americans and providing essential human services.

The Centers for Disease Control and Prevention Center (CDC) works to protect America from health, safety and security threats, both foreign and in the U.S. Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate attack, CDC fights disease and supports communities and citizens to do the same.

The Centers for Medicare & Medicaid Services Innovation Center develops and tests new healthcare payment and service delivery models to improve patient care, lower costs, and better align payment systems to promote patient-centered practices.
The Assistant Secretary for Planning and Evaluation is the principal advisor to the Secretary of the U.S. Department of Health and Human Services on policy development, and is responsible for major activities in policy coordination, legislation development, strategic planning, policy research, evaluation, and economic analysis.

The National Institutes of Health seeks fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.

The Office of Minority Health within the Centers for Medicare and Medicaid Services offers a comprehensive source of information on eliminating health disparities and improving the health of all minority populations, people with disabilities, members of the lesbian, gay, bisexual, and transgender community, individuals with limited English proficiency, and rural populations.

The Office of the Assistant Secretary for Health oversees the Department’s key public health offices and programs, a number of Presidential and Secretarial advisory committees, 10 regional health offices across the nation, and the Office of the Surgeon General and the U.S. Public Health Service Commissioned Corps.

HHS emPOWER Program is a mission-critical partnership between the Office of the Assistant Secretary for Preparedness and Response (ASPR) and the Centers for Medicare and Medicaid Services (CMS).

The Office of the National Coordinator for Health Information Technology (ONC) works to improve the health and well-being of individuals and communities through the use of technology and health information that is accessible when and where it matters most.

U.S. Department of Veterans Affairs seeks to provide veterans the world-class benefits and services they have earned - and to do so by adhering to the highest standards of compassion, commitment, excellence, professionalism, integrity, accountability, and stewardship.

The White House Office of Management and Budget oversees the implementation of the President’s vision across the Executive Branch. OMB carries out its mission through.

State and Local Government

The District of Columbia Department of Health’s mission is to promote and protect the health, safety and quality of life of residents, visitors and those doing business in Washington, DC.

The Institute for Excellence in Government provides objective, non-partisan consulting, research, writing and training support to government and non-profit agencies.

Maryland Health and Health Disparities’ mission is to address the social determinants of health and eliminate health disparities by leveraging the Department’s resources, providing health equity consultation, impacting external communications, guiding policy decisions and influencing strategic direction on behalf of the Secretary of Health.
Maryland Primary Care is a one-stop clinic for all those patients who need effective primary and urgent care. It’s a full service medical care clinic which offers an array of services including urgent care, immunization, vaccination, blood tests, travel consulting etc.

Healthcare Organizations

Anthem Blue Cross Blue Shield is an independent licensee of the Blue Cross and Blue Shield Association. Anthem is dedicated to delivering better care to our members, providing greater value to our customers and helping improve the health of our communities.

Circulo Health develops innovative approaches to primary health care, insurance plans, and independent living facilities.

CVS Health/Aetna plans combine the health coverage of Aetna®, a CVS Health company, with local care at CVS Pharmacy®, MinuteClinic® and CVS® HealthHUB™ locations to deliver a quality, affordable health care experience.

Digital Bridge invests in companies that provide infrastructure solutions focused on next-generation mobile and internet connectivity, delivering a converged network experience for a growing digital world.

HealthBegins is a national mission-driven consulting and technology firm dedicated to improving care and the social and structural drivers of health equity.

Humana is a for-profit American health insurance company based in Louisville, Kentucky, that works to improve healthcare and make it more accessible.

ProMedica is a mission-based, not-for-profit health and well-being organization headquartered in Toledo, Ohio. The organization offers acute and ambulatory care, an insurance company with a dental plan, and post-acute and academic business lines.

Private Sector

AbbVie focuses on discovering and delivering transformational medicines and products in several key therapeutic areas: immunology, oncology, neuroscience, eye care, virology, and women's health, as well as through its Allergan Aesthetics portfolio.

BrightHive is an impact-driven data technology company using data trusts to transform the way social services providers, government agencies, and funders share data, make decisions, and affect the outcomes of beneficiaries.

Epic was founded in 1979 and develops software to help people get well, help people stay well, and help future generations be healthier. More than 250 million patients have a current electronic record in Epic.
**IBM** sells IT services, cloud and cognitive offerings, and enterprise systems and software. The Global Technology Services segment is IBM's biggest revenue source, but Cloud & Cognitive Software is the most profitable. IBM strives to be a leading provider in the hybrid cloud and AI.

**IBM Research** incorporates scientific thinking into everything it does, and utilizes accelerated discovery to uncover breakthroughs that will affect daily life, industry innovation, and government policymaking.

**Kaizen Health** enables patients from the low-income, aging, disabled and veteran communities to maintain independent living by increasing access to healthcare through connecting them with the transportation that they need to get to and from their medical appointments.

**LTS** collaborates with companies worldwide to deliver unique and diverse software development services like Startup Accelerator, UI/UX Development, Product Engineering, Solution Engineering, Mobility Services, Cyber Security Services and IoT Development.

**The Maximizer Group** is an independent advisory firm primarily advising corporations, investors and startup companies.

**RightSite Health** helps patients with urgent-but-non-emergency situations navigate away from the emergency room to more appropriate and lower-cost in-network providers.

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**About the co-hosting organizations**

The **Center for Open Data Enterprise** is an independent nonprofit organization based in Washington, D.C. CODE’s mission is to maximize the value of open and shared data for the public good, by working with government agencies, businesses, nonprofits, and researchers who are both data providers and data users. Since it was founded in January 2015, CODE has held almost 30 Roundtables and Workshops with the White House and Federal agencies on topics including medical research and health care, energy and the environment, and Federal data strategy. CODE has also developed informational materials and recommendations to promote the use of government data and public-private collaboration around data sharing and application.

The **IBM Center for The Business of Government** connects research to practice, applying scholarship to real world issues and decisions for government. The Center stimulates research and facilitates discussion of new approaches to improving the effectiveness of government at the federal, state, local, and international levels. The Center’s publications focus on major management issues facing governments today, including the use of technology and social media, financial management, human capital, performance and results, risk management, innovation, collaboration, and transformation. The Center’s intent is to spark creativity in addressing pressing public sector challenges—crafting new ways of improving government by identifying trends, ideas, and best practices in public management that can help government leaders respond more effectively to their mission and management priorities.

CODE also thanks **ZeOmega** for providing additional support for this Roundtable. ZeOmega was founded in 2001 to empower health plans and other risk-bearing organizations with
industry-leading technology for delivering integrated, whole-person health management. ZeOmega supports more than 30 million lives with utilization management, case management, disease management, population health, and analytics capabilities across its Jiva platform.