Infrastructures of Trust

The Case for Investing in Vaccine Demand

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School of Public Health
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Executive Summary

The United States began the Covid-19 vaccination efforts as a global leader, having invested significantly in the development, production and distribution of vaccines, yielding access to millions of doses by early 2021. Yet as the year unfolded, a grim reality emerged: Insufficient consideration of and planning for vaccine demand resulted in more than 300,000 Americans dying from a vaccine-preventable disease. Millions more suffered illness and continued economic loss, and schools and businesses remained disrupted.

As vaccination and booster rates have remained low in 2022, the nation struggles to emerge more resilient from the grip of the Covid-19 pandemic. Breakdowns in communication and trust are frequently cited as main reasons for the failure to vaccinate more Americans, attributed variably to a culture focused on individual over collective action, misinformation, politicization, historic and current structural racism and other factors. Ineffective approaches to increase vaccinations, such as blaming people for making bad choices and applying top-down communications campaigns to 'educate' Americans about the value of vaccines, continue to miss underlying drivers and challenges.

More than 20 months into the largest vaccination rollout in U.S. history, it is clear that the challenges reach far beyond vaccine development, production and distribution, and urge investigation into why current models for delivering and building confidence in life-saving public health measures are failing to reach and protect all Americans equally. Already, political and public support for non-Covid vaccines is disrupted in several states, and support for other major public health protections is at risk.

In this report, we provide an analysis of the intersecting factors that have led to these outcomes, and chart a path forward. Based on our work with communities, researchers, public health

ILLUSTRATION BY PAWEL MILDNER

authorities, and a review of available evidence, we find that unvaccinated and undervaccinated Americans are not a monolith, but instead diverse individuals with unique histories, identities and lived experiences. We find concerns about Covid-19 vaccines among people of all races and ethnicities, faith groups, education and income levels, political leanings and affinity groups — but not the same concerns. We also find significant vaccination barriers outside of people's control, such as lack of information, the impact of misinformation, lack of access to basic health care, and the conditions created by structural racism.

By over-focusing on an inadequate "vaccine hesitancy" framework that places the onus of motivation and of accessing the vaccine on the individual, U.S. vaccination efforts have missed many opportunities to address institutional and structural failures and responsibilities alongside individual-level drivers *(Chapter 1)*.

Moving past this framework, we describe intersecting information, behavioral/social, and structural factors as key drivers of vaccination outcomes, and suggest vaccine demand as a concept that allows connecting and addressing

these intersecting drivers comprehensively in vaccination work *(Chapter 2)*. We provide a primer on what everyone in public health, policy and community work needs to know about these drivers and how they interact *(Chapter 3)*; and we share key strategies, promising practices and policy recommendations for increasing vaccine demand *(Chapter 4)*.

Recognizing the intersecting information, behavioral/social and structural barriers confronted by vulnerable people and addressing them comprehensively, community organizations around the nation over the past year have delivered a blueprint for how to carry out essential vaccine demand work. Community-led activities – such as hosting listening sessions, providing free masks and free testing, connecting people with resources such as food and housing, bringing vaccination events to where people are, and sharing hyper-local messages designed to speak to specific concerns and groups – are able to meet people where they are at and build trust, including trust in vaccines, in the process.

This work has had a measurable impact: While national vaccination rates have stalled, vaccination rates for Black, Indigenous, Hispanic/Latinx, and Native Hawaiian or Pacific Islander communities have continued a slow but steady increase, and are beginning to mitigate the disproportionate burden the pandemic has had on these communities. This is a considerable win given the continued devastating impact of structural racism on health outcomes for people of color overall.

These efforts led by community organizations, carried out with support from federal, state and local authorities as well as philanthropy, illustrate that vaccine demand work can overcome some of the complex barriers to providing access and building confidence in life-saving public health measures. At a time when many are ready to all but give up on widespread vaccinations, the question for policy makers, public health practitioners, authorities and advocates is this:

What price will we pay – in lost lives, economic damages , inequities and social disruption – for not investing in the infrastructures required to generate and maintain demand for vaccines? Without adequate vaccine demand, how will the health of Americans fare in the face of waning protection from first generation Covid-19 vaccines, and protections from other critical vaccines that are losing support, including those against measles, mumps, rubella and polio?

Over the past century, vaccines have saved hundreds of millions of lives around the world. Vaccines are a great equalizer – where available, they have consistently led to improvements in life expectancy, economic stability and upward mobility.

In a world with rising pandemic threats from novel diseases and dramatically expanded capacities to develop, manufacture and deliver vaccines, resilience will increasingly depend on the ability of governments, experts, institutions and community leaders to build and maintain vaccine demand.

As an all-of-society challenge, vaccine demand work requires significant investment in people and programs, adjustments in policies and regulations, and a commitment to building infrastructures of trust, increasing health equity, and meeting the information needs of diverse communities.

This report provides a fresh look at the challenges, an improved framework for response efforts as the second generation of Covid-19 vaccines becomes available, concrete tips for vaccine demand work, promising practice examples, and an early set of recommendations for policy makers and funders.

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Covid-19 Vaccines: The Miracle That Fell Short

In early 2021, in a nation battered by a devastating pandemic, the prognosis was suddenly upbeat: science had delivered a miracle.

Not just one, but several effective vaccines against the novel coronavirus SARS-CoV-2 were produced, tested and approved in record time. Vaccinations, history has shown, save lives. They can make lockdowns, masks, physical distancing and other pandemic response measures unnecessary. Within days of availability, Americans started lining up to get vaccinated and move forward.

FIGURE 1 **Share of people who completed the initial Covid-19 vaccination protocol**

Total number of people who received all doses prescribed by the initial vaccination protocol, divided by the total population of the country.
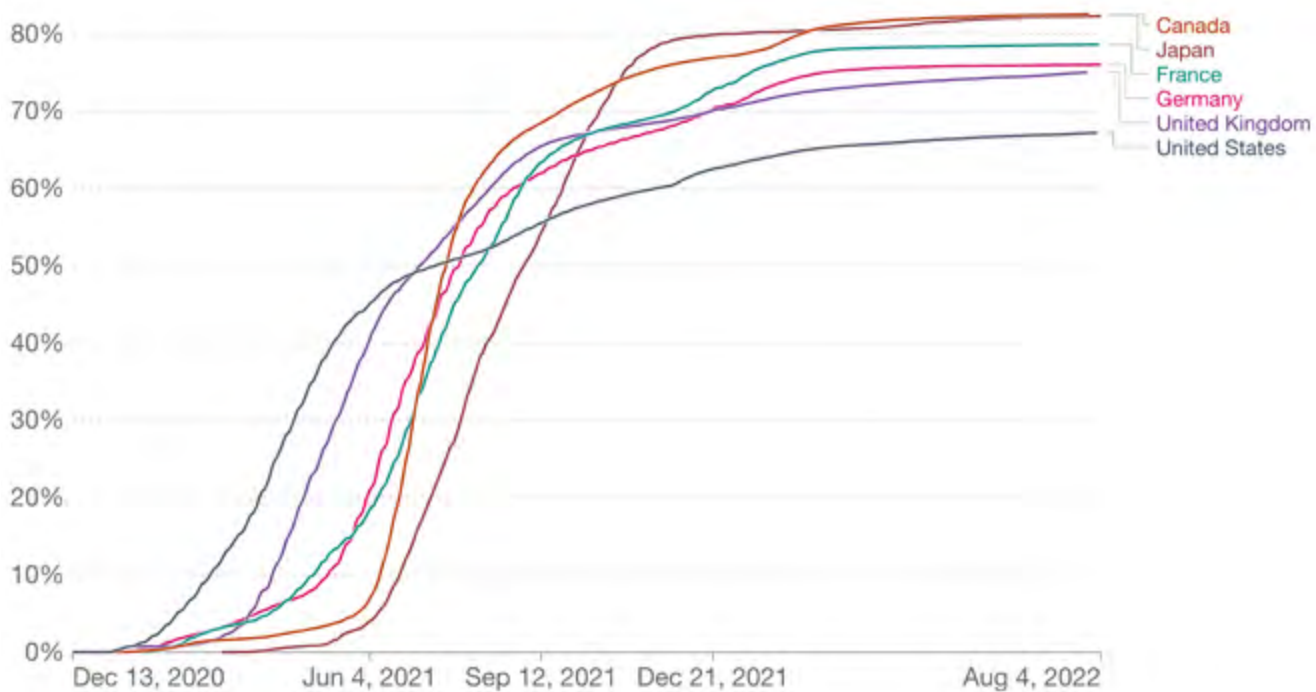
Source: Official data collated by Our World in Data

More than 18 months later, this optimism has vanished. Millions of Americans got vaccinated and boosted, but too many did not. The United States, a nation that had access to the most vaccine doses the earliest, quickly fell behind other Western democracies in vaccination rates. Meanwhile, more contagious variants continue to emerge, leading to new surges of cases, hospitalizations and deaths.

In 2020—year one of the Covid-19 pandemic—thousands of Americans died every day from a novel disease that scientists knew little about and healthcare workers had few tools to treat or prevent.

In 2021—year two of the pandemic—thousands of Americans still died every day from what by then had become largely preventable complications from Covid-19—in one of the richest nations in the world, despite unprecedented federal, state, city and community efforts to inoculate people against it.

At least 318,000 Covid-19 deaths could have been prevented between January 1, 2021 and April 30, 2022, according to modeling research by our team at Brown University in collaboration with Microsoft AI for Health. The number of vaccine-preventable deaths keeps climbing as severe illness and death from the disease are predominantly affecting unvaccinated and undervaccinated Americans who are not up to date on their vaccines.

It is a tragedy beyond what many thought possible in the United States, a nation that scores highly on pandemic preparedness and global security indexes. The U.S. vaccination rollout is at once a remarkable public health success and a striking public health failure. It reveals challenges far beyond vaccinations, and urges investigation into why current models for delivering and building confidence in life-saving public health measures are failing to reach and protect all Americans equally.

1a. What shapes people's vaccine decisions?

In his March 2022 State of the Union address, President Joe Biden vowed, "We will never give up on vaccinating more Americans." The reality, however, is that this is an uphill battle: vaccination rates have stalled, and with each new booster, fewer people are eager to get shots. While incentives, community clinics and mandates once made a difference, the number of people seeking vaccines, whether it is their first or fourth, has sharply declined. Health workers, community workers and volunteers tasked with vaccinating the remaining around 50 million Americans over 5 years old who haven't received a single shot, and millions more who are not up to date on their Covid-19 vaccines, are overworked, underappreciated and underfunded. With the depletion of federal funding and congressional reluctance to renew funding, vaccination efforts may be even worse off during future waves.

At this critical junction, the nation is torn between those who want to focus on individual risks and choices, and those who want to dismantle systemic healthcare inequities. Vaccinations have become about ideologies, politics, inequalities and misinformation – and about who advances and who is left behind.

In our work at the Brown University School of Public Health, we focus on how complex, intersecting factors — behavioral and social drivers, information and structural factors — come together to shape people's decision making about vaccinations. Alongside other researchers in this space, we find that unvaccinated and undervaccinated Americans are not a monolith, but instead diverse individuals with unique histories, identities and lived experiences — and more remain open to vaccination than public discourse may suggest, even among those who say they will not get vaccinated.

Taking a closer look at those not yet vaccinated, we find concerns about Covid-19 vaccines among people of all races and ethnicities, faith groups,

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FIGURE 2 **Daily share of American population receiving a Covid-19 vaccine dose**

7-day rolling average. All doses, including boosters, are counted individually.

*Source: Official data collated by Our World in Data*

education and income levels, political leanings and affinity groups — but not the same concerns. We find people who never had or have lost trust in government and public health authorities, people who never had or no longer have any trusted messengers, and people for whom Covid-19 is just one of many threats to their health, safety and wellbeing, and by far not the worst. Some have more questions, some ask for more time for this important decision, some feel alienated, some are being misled, some don't believe that Covid-19 is real.

1b. Understanding vaccine demand

Meeting the unvaccinated and undervaccinated where they are reveals how response efforts have overfocused on an inadequate "vaccine hesitancy" framework that places the onus of motivation and of accessing the vaccine on the individual. Instead, we need to broaden our understanding and invest significantly in *vaccine demand,* a concept – explained in more depth in chapter 2 – that inherently acknowledges and addresses institutional and structural failures and responsibilities alongside individual-level drivers of vaccination.
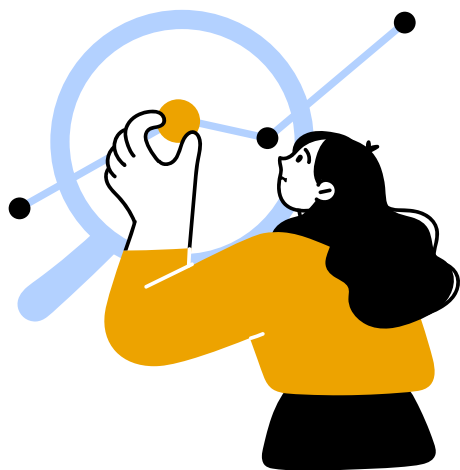
The struggle to generate vaccine demand is not unique to the U.S., and is increasingly challenging vaccine efforts around the world as countries try to reach beyond those who were eager to be vaccinated. In February 2022, John Nkengasong, Director of the Africa Centres for Disease Control and Prevention, ordered vaccine donations for the continent paused because challenges with logistics and vaccine confidence are preventing people from accessing Covid-19 vaccines before they expire. At the same time, political will to invest in global vaccination is in decline.

In a world with dramatically increased capacities to develop, manufacture and distribute vaccines, pandemic resilience will increasingly depend on the ability of governments, experts, institutions and community leaders to equitably build and maintain demand in those vaccines.

Working to improve health equity, meet the massive information needs of diverse communities, and build trust in the process are required for people to embrace vaccines and other public health measures as the life-saving tools they can be.

In this report, we provide an evidence-based roadmap through key frameworks and promising practices that practitioners and policy makers should consider when assessing and planning their vaccine demand strategies.

1c. Historic failures, then and now

Drawing from our work as a Research and Learning Partner in the Equity-First Vaccination Initiative (EVI), this report also provides a specific focus on the information needs, access and other barriers confronted by communities of color.

Many communities of color cope with disproportionate challenges in this pandemic, with Covid-19 cases, hospitalizations and death rates close to two times higher in Black, Hispanic and Indigenous people than in white Americans. Structural barriers to vaccination, including systemic racism, discrimination and historic exploitation, are an everyday experience and contribute to poor health outcomes for many, far beyond the impact of Covid-19. With higher numbers of low-wage workers, communities of color have also carried a larger burden of the economic fallout from the pandemic.

"We have twice as many deaths so we need to vaccinate twice as many people."

Noha Aboelata, M.D., CEO and Cofounder of Roots Community Health Center

Federal and state leaders have to prevent a repetition of past failures to protect communities of color, but the path to improving health equity in this pandemic has been rocky. Chapter 4 of this report, *Promising Practices and Policy Recommendations to Increase Vaccine Demand*, includes general recommendations and lessons learned as well as novel approaches piloted by community organizations and their partners in EVI communities that can be applied both in the U.S. and globally.

2

The Importance of Vaccine Demand
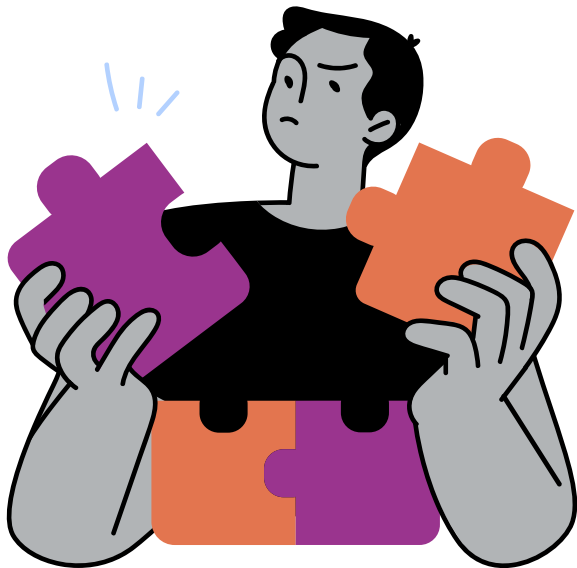
Vaccines don't save lives.
Vaccinations do.

It's an old saying in public health that vaccines don't save lives, vaccinations do. To get from the development of effective vaccines all the way to shots in arms, vaccine demand efforts need to be as funded and supported as vaccine supply efforts, and both need to be in lockstep – not separate activities. Learn more in this chapter.

FIGURE 3 **The Path from Vaccine to Vaccination**

DEVELOPING SUPPLY

BUILDING DEMAND

DEVELOPMENT

Invent vaccines that work

TRUSTED COMMUNITY PARTNERS

Collaborate with local voices
Co-design information strategies

PRODUCTION

Make lots of doses

ACCURATE, AVAILABLE INFORMATION

Deliver everywhere consistently.
Tailored, culturally relevant

DISTRIBUTION AT SCALE

Bring doses to every state and town

NO COST, CONVENIENT ACCESS

Make vaccination as easy as a haircut

DELIVERY CLOSE TO HOME

Provide shots where people are

SUPPORTS FOR LOW-WAGE AND UNDERSERVED COMMUNITIES

Understand and remove
structural barriers

ADMINISTRATION BY TRAINED WORKFORCE

Skilled staff give shots

TRUSTED MESSENGERS

Community leaders get the word out

During the Covid-19 vaccine rollout, action steps that fall into the category of vaccine **supply** — development, production, details such as working out the logistics of shipping shots that need to be kept at a stable temperature – have received appropriate attention, collaborative effort and financial support since the first pandemic warnings appeared in January 2020, leading to the speedy arrival of highly effective vaccines in pharmacies around the country. Steps such as having a trained workforce to deliver vaccines and making them free were ramped up once vaccines became available in early 2021, though challenges remain. Efforts on steps such as equal access, information creation and trust building — which are key drivers of **vaccine demand** – have been inconsistent, deprioritized, underestimated and underfunded.

2a. The Path from Vaccine to Vaccination

As depicted on the previous page, successful vaccination campaigns connect supply and demand efforts from the start.

Developing Supply While Building Demand

▶ As vaccines are developed, so are relationships with trusted community partners.

▶ As vaccines are produced, so is accurate, accessible information about the process and the utility of vaccines, and this information is shared widely.

▶ As vaccines are distributed at scale, they are made available in convenient, culturally relevant ways (e.g. mobile clinics, no cost) – and so is the information about vaccines.

▶ As a trained workforce becomes available to administer the vaccines, so is a workforce of trusted messengers.

"Let's be clear that vaccines are only vaccines until they get in people's arms. The process through which we get vaccines into people's arms — the messaging that's used, the planning that's used, the framework that's used — is incredibly significant."

Dr. Marjorie Innocent, director of learning and impact, National Association for the Advancement of Colored People (NAACP)

In spite of early warnings that many Americans may not rush to get vaccinated, it wasn't until March 2021, for example, that funds to build vaccine confidence through communications efforts were made available by the U.S. government, and at about $3 billion to $5 billion, the investments at the time didn't match the challenge. By comparison, U.S. government spending on vaccine development, manufacturing and distribution at the time already exceeded at least $40 billion to $50 billion.

To be sure, robust supply and distribution efforts are essential in the fight against a deadly virus; running efficient mass vaccination sites and bringing

Covid-19 vaccines within five miles of almost every American are remarkable achievements of the U.S. response.

But the focus on vaccine supply and distribution downplays the importance of vaccine demand. In the fight against a deadly virus, demand for the 'weapon' that can end the pandemic — vaccines — is fluid and complex, requiring a playbook, hard work, and devoted attention and resources.

2b. What is Vaccine Demand?

Economists use the term demand to refer to a consumer's desire to purchase goods and services at given prices at a given time. Changing the features or placement of a product might increase or decrease demand. If all other factors are constant, an increase in price will decrease demand.

Adapting the concept to public health, vaccine demand refers to people's intent to get a specific shot (such as a Covid-19, flu or shingles vaccine), and their willingness and ability to do so given the vaccine's features, availability, reputation and price. For example, some people might be more eager to get a vaccine via a nasal spray instead of an injection. Some people might want the vaccine if it is delivered close to home. Some people might seek a shot if a family member recommends it. Some people might get a shot because they recently got health insurance, or found a doctor they trust.

In economic frameworks, **supply** and **demand** are deeply intertwined. Companies have a keen understanding of how changes to the design of a product or its delivery time might impact demand.

THE THREE MAIN DRIVERS OF VACCINE DEMAND

Based on our work with communities, researchers and public health practitioners, we categorize three main drivers of vaccine demand:

Information: What information people have access to, and in what ways this information meets their media consumption habits, literacy levels and learning profiles. What misinformation people are exposed to, and in what ways this misinformation targets their emotions, identities and lived experiences.
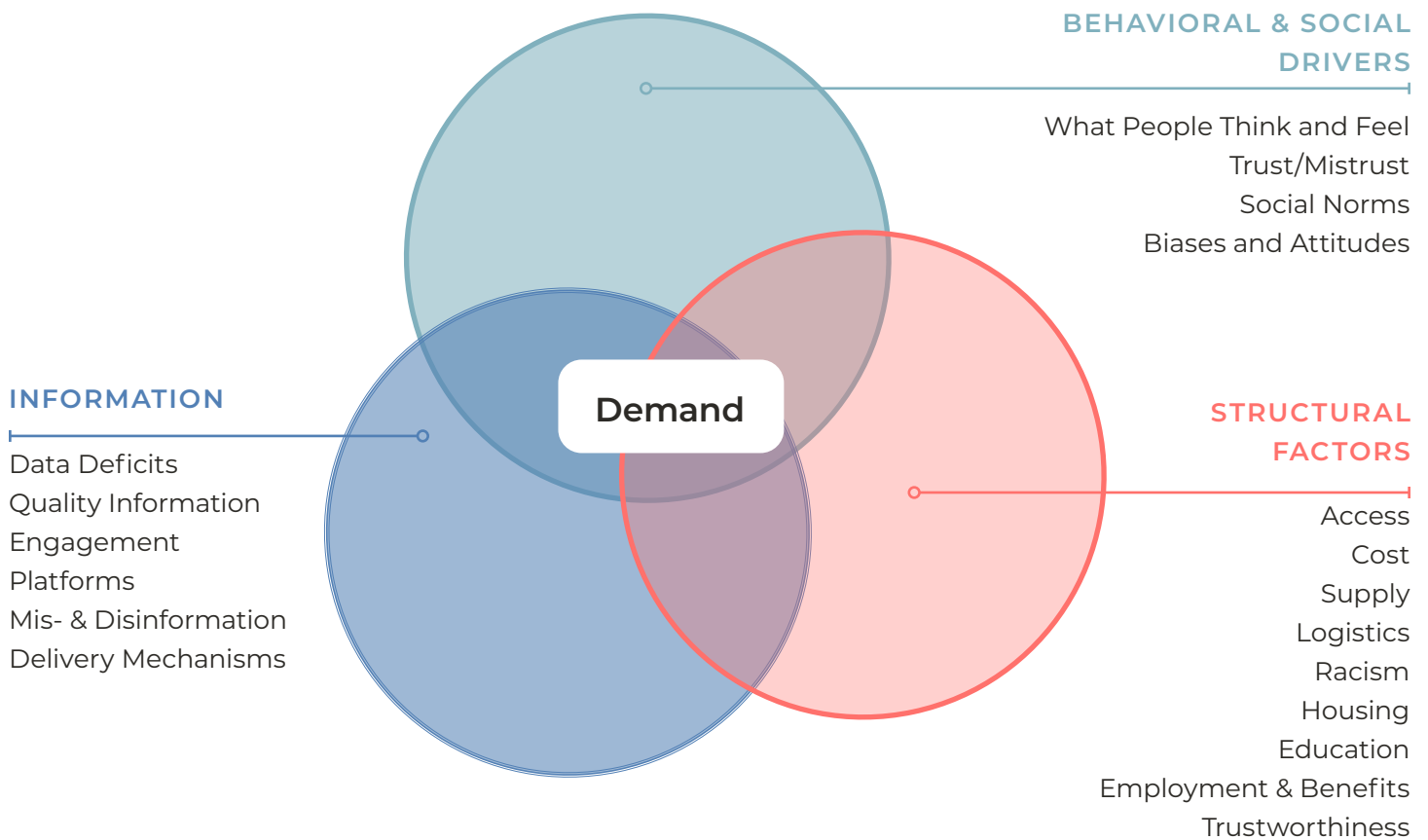
Social & Behavioral Factors: What people think, feel and do about vaccinations based on factors such as lived experiences, biases, attitudes, identities and social norms.

Structures: What stands in the way, literally and figuratively, of vaccination, from lack of supplies to lack of transportation to having to work multiple jobs to discrimination to lack of access to healthcare to institutions acting in untrustworthy ways.

A recent CDC field guide similarly describes structural, behavioral and information barriers to vaccination.

In public health, supply and demand are often disconnected from each other.

FIGURE 4 **Driving Vaccine Demand**

BEHAVIORAL & SOCIAL DRIVERS

What People Think and Feel
Trust/Mistrust
Social Norms
Biases and Attitudes

INFORMATION

Data Deficits
Quality Information
Engagement
Platforms
Mis- & Disinformation
Delivery Mechanisms

Demand

STRUCTURAL FACTORS

Access
Cost
Supply
Logistics
Racism
Housing
Education
Employment & Benefits
Trustworthiness

The conversations, funding streams and literature on issues such as setting up distribution through pharmacies (the supply) are largely separate from those on issues such as who has access to healthcare or what motivates people to get vaccinated (demand). Recognizing the importance of trust in vaccine demand, and the role of physicians, nurses and other healthcare workers as trusted sources of health information, for example, could have led to an earlier investment in enlisting primary care providers in the vaccination effort.

Moreover, a **vaccine demand** framework honors the agency and dignity of unvaccinated and undervaccinated Americans at a time when they are often dismissed, degraded and disempowered.

It acknowledges that people's choices are shaped by complex psychological, social, structural and other interacting factors.

As a concept in public health, **vaccine demand** incorporates all drivers that contribute to a person getting vaccinated. These include everything from low-quality information and misinformation, to what people think and feel about vaccines due to social factors such as politics and social norms, to structural issues such as transportation, timing, and access to healthcare. The "price" to be paid for the shot includes financial, social and other costs — lost wages due to missed work because of side effects, or a rift with loved ones who are distrustful of authorities and the vaccines they promote.

> **"If you look at the landscape, and the specific communications that are needed and the trusted individuals on the ground within those communities, that's a mammoth undertaking to make sure that we're reaching all communities."**

Judy Monroe, M.D., President and CEO, CDC Foundation

The key to understanding vaccine demand is that diverse behavioral and social, information and structural drivers overlap and interact. Decisions about our health, not unlike major purchasing decisions, involve a complex web of incentives, availability, knowledge, attitudes, biases, friction, tradeoffs and complexities based on lived realities.

For some Americans, vaccination is also closely connected to individual, collective and intergenerational memory: the experiences of Black, Indigenous, Hispanic/Latinx, Asian and other people of color with healthcare and other social institutions are different from those of white Americans. Instead of being offered life-saving vaccines or treatments, Black Americans have been coerced into serving as test subjects in medical experiments. To this day, we see stark disparities in the quality of health services offered and delivered by race, as chapter 3.c will explain in more detail. Institutions and individuals in medicine and public health have urgent work to do better and earn the trust of these communities.

Addressing these and other barriers to vaccine demand is essential to America's ability to move past the current vaccination crisis; it is equally essential in efforts to vaccinate the world.

2c. Why Demand Matters More

Today, thanks to vaccines, many of the deadliest infectious diseases are preventable. The availability of effective vaccines has also led to dramatic increases in life expectancy. At the same time, paradoxically, as the threat of infectious disease has become much less apparent, there is a rise in citizen concerns about the purpose and safety of vaccines. To understand the value and importance of vaccinations, people need to understand both the risks of being unvaccinated and the safety and efficacy of vaccinations. The fewer deadly infectious diseases that circulate, the harder it can become to communicate the value of vaccinations.

Key factors in vaccine demand generation — such as how people receive information, how they make sense of the world, and who they trust — have also been affected by dramatic changes driven by both technological and cultural transformations. This has made it harder for people to assess the risks of being unvaccinated or the safety and efficacy of vaccines.

2d. Missed Opportunities to Generate Vaccine Demand

When the Covid-19 pandemic hit, few mechanisms to generate vaccine demand were built into pandemic preparedness and response plans. Vaccine marketing, communications and community mobilization models were outdated and underfunded. And for most experts and public health officials, the volume and intensity of misinformation unleashed by the pandemic – and its impact on vaccine demand – came as a surprise.

Amid the rapid pace and competing tasks and priorities of the pandemic response, understaffed and overwhelmed authorities and nonprofit institutions have struggled to meet the massive information needs of American communities. There was simply no playbook for anticipating and combating how factors such as the rapidly evolving political climate and deep disparities in the healthcare and social systems affect vaccine demand.

As a result, key opportunities to encourage demand were missed, and continue to be overlooked. For example, without clear explanations of staggered vaccine priority, younger Americans were told early on that they didn't need vaccines as urgently as older people, only to then be suddenly asked to get vaccinated immediately. Some did so happily, others reluctantly, but too many young Americans ended up confused and remain unvaccinated and unconvinced that they need a Covid-19 vaccine.

Similarly, underserved Americans were told the vaccines would be distributed equitably. But then vaccinations were initially not available in ways that fit their needs – for example, without support for sick days or childcare, or translated into their language – confirming for these communities that authorities might not really understand — or worse, not care about — them; which in turn contributes to a lack of confidence in authorities and vaccines.

In the absence of more proactive and effective vaccine communications, in each new information cycle in this pandemic, information spaces are crowded with contradictory, inaccurate, polluted and highly emotionalized information rather than clarifying, accurate, compelling information. This leaves millions of Americans confused about important concepts such as vaccine technology, development and efficacy. And it leaves people mistrustful, feeling unsafe, and vulnerable to the manipulative tactics of mis- and disinformation, profiteering and politicization. It's a phenomenon that transcends vaccines and applies to other

key response measures such as therapeutics and non-pharmaceutical interventions. In spring 2022, for example, Ivermectin — an antiparasitic drug that is ineffective against Covid-19 but has been widely publicized by disinformation agents as a cure — was well known and driving policy, while Evusheld — an effective antiviral that prevents infection and can save the lives of unvaccinated or immunocompromised people — was hardly known by both doctors and patients.

"Most experts struggle with a simple truth about human communication: A story doesn't have to be true to change minds and it doesn't have to be accurate to change behaviors."

L.J. Tan, Ph.D., chief strategy officer, Immunization Action Coalition

Recognizing such shortcomings, the U.S. government and philanthropic organizations started investing in Summer and Fall 2021 in efforts to apply insights from community and faith leaders, behavioral scientists, communications and misinformation researchers, equity experts and others to support efforts to increase vaccine access and demand. Such interventions have now shown how vaccine demand work can overcome the barriers described above and lead to increased vaccine uptake and better outcomes especially for vulnerable populations. It is why demand work needs to be a cornerstone of vaccination efforts – from the start.

>>SEE ALSO CHAPTER 4

3

Key Drivers of Vaccine Demand

IN THIS CHAPTER:

a. Information Challenges: Vaccines in the Age of Engagement

b. Understanding Behavioral and Social Drivers: What People Think, Feel and Do

c. Structural Barriers: The Role of Systems and Institutions

To design more effective approaches, we must first explore the roles and interactions of the three key drivers of vaccine demand — which we will do in this chapter. In chapter 4, we will then share key strategies, promising practices and policy recommendations based on an improved understanding of the major influences on vaccine demand.

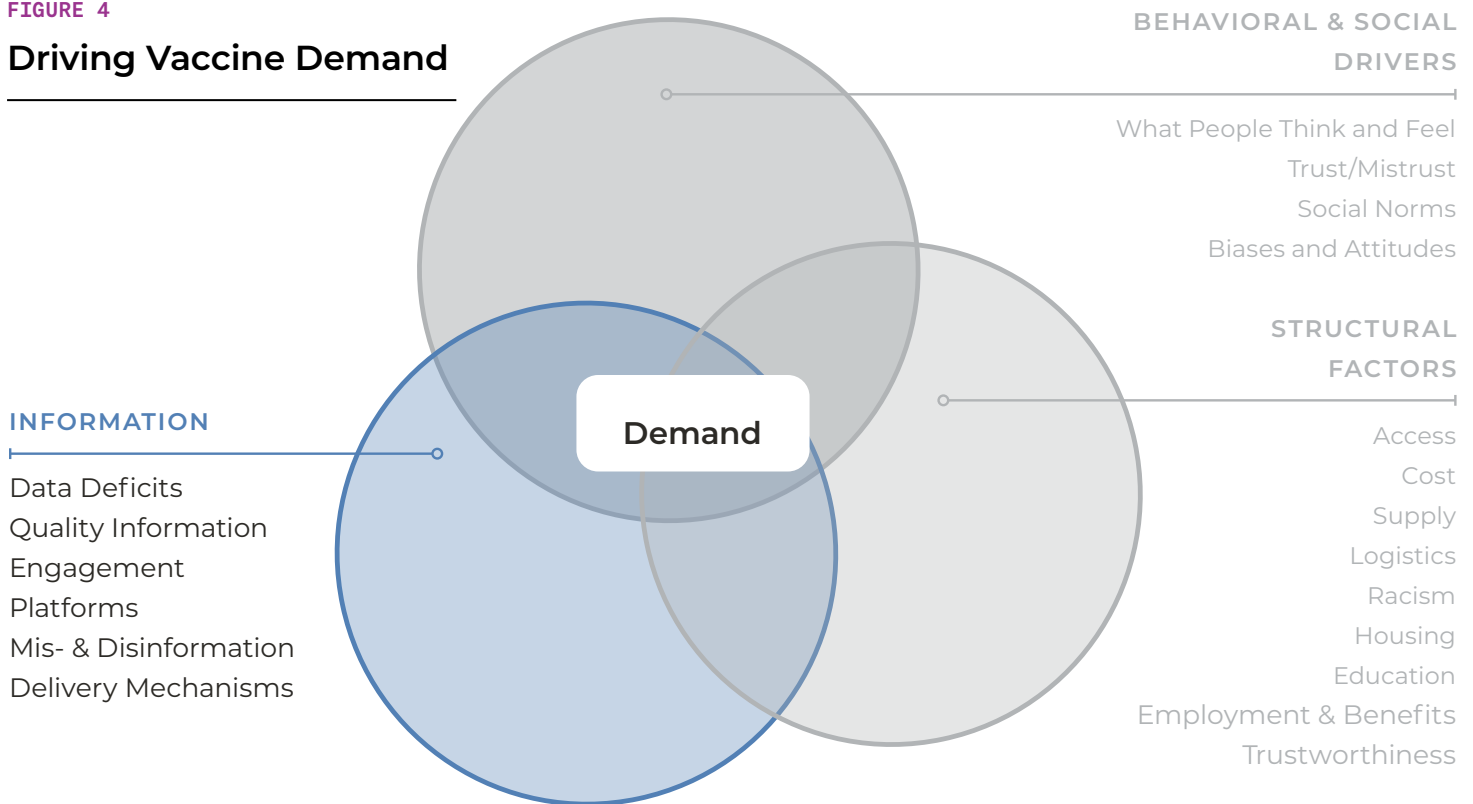## 3a. Information Challenges: Vaccines in the Age of Engagement

This section, we **provide an overview of key information challenges** that are undermining vaccine demand and impair knowledge about, trust in, and uptake of vaccines — and public health measures more broadly.

IN THIS SECTION:

▶ **The democratization of information**

▶ **From digital divides to disparities**

▶ **Recognizing bad information**

▶ **The disruptors: Networked ideological groups**

▶ **Structural racism, information and health inequities**

▶ **Data Deficits make us vulnerable**

FIGURE 4

Driving Vaccine Demand

BEHAVIORAL & SOCIAL DRIVERS

What People Think and Feel
Trust/Mistrust
Social Norms
Biases and Attitudes

STRUCTURAL FACTORS

Access
Cost
Supply
Logistics
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Housing
Education
Employment & Benefits
Trustworthiness

INFORMATION

Data Deficits
Quality Information
Engagement
Platforms
Mis- & Disinformation
Delivery Mechanisms

Demand

The impact of the democratization of information

It's not news that the information ecosystem has fundamentally changed over the past 20 years because of near-universal internet access and network capacities. What's important to understand about this shift is that for many previous decades, information of public significance was shared and validated by trusted gatekeepers, including journalists and — in public health emergencies — public health authorities. By democratizing the production and dissemination of information, the internet and the platforms it hosts have enabled two important shifts:

▶ New and previously marginalized voices can now be heard, with immense consequences. For example, the documentation and dissemination of instances of police violence have compelled an

unprecedented reckoning with law enforcement and racism that would have been impossible without cellphone videos shared on social media.

▶ Manipulative and confusing information can now be shared rapidly, without filter, to millions around the world. The internet creates unprecedented opportunities to disseminate inaccurate or misleading information.

These opportunities are due to the sheer scale of information being created, downloaded, shared and consumed on the internet, as well as our increasing reliance on it for work, play and social connection. Internet use has steadily increased year on year, but the pandemic intensified this trend. Beginning with the early lockdown in March 2020 and the social isolation that followed, the pandemic made the internet even more central to our lives — a situation that persists to this day, with many Americans who previously worked in offices continuing to work from home.
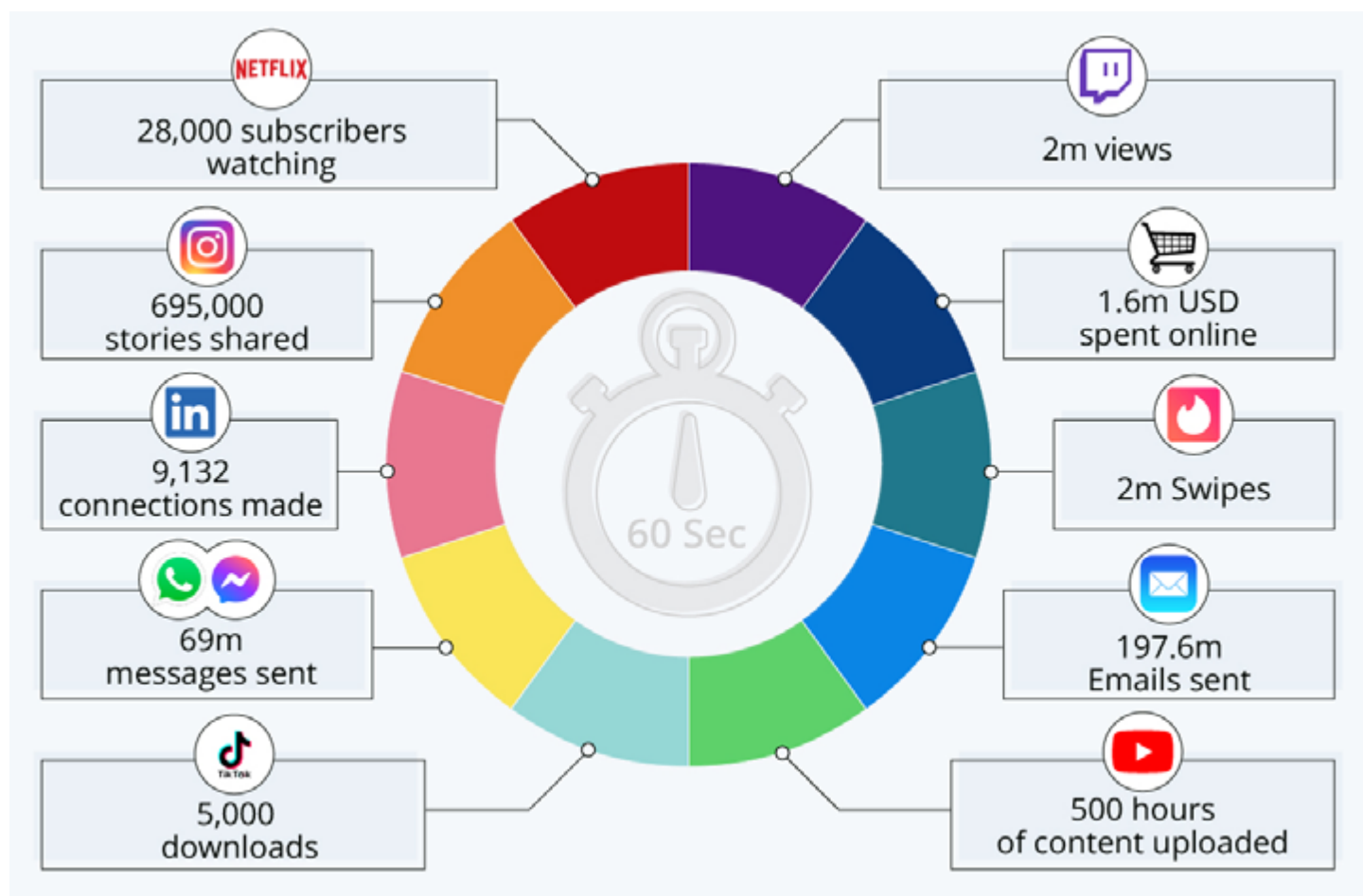
The internet's democratization of information has clear benefits, but flattening information hierarchies also makes it harder to discern trustworthy from dangerously false information. The design of the internet, and social media in particular, often gives equal footing to information from very different sources. Vaccine information from traditional information gatekeepers with rigorous and responsible fact checking, such as journalists and public health authorities, may have little prominence over anyone with a computer or smartphone, including conspiracy theorists, hoaxers and ill-informed social media "influencers."

Authoritative sources are often less accessible or appealing than social media due to closure of local and community newspapers, paywalled national and local news sites, and newsrooms that fail to represent the diversity of their target audiences. In the gap left by these authoritative sources, communities turn to social media, as well as to local leaders and, in diaspora communities, information from their home countries.

Users can now seek out vaccine information from thousands of sources, rather than passively receiving information from authoritative sources.

FIGURE 5 **A Minute on the Internet in 2021**

Estimated amount of data created on the internet in one minute

NETFLIX 28,000 subscribers watching

695,000 stories shared

9,132 connections made

69m messages sent

5,000 downloads

60 Sec

2m views

1.6m USD spent online

2m Swipes

197.6m Emails sent

500 hours of content uploaded

Source: Official data collated by Statista

But the results of googling something can be overwhelming, making it difficult to distinguish between accurate, misleading and false results, as well as feeding our tendency to reaffirm our existing worldviews or beliefs.

Digital Divides turn digital-only solutions into disparities

In the pandemic, good internet access became even more important, but not all Americans have broadband access, and there are major racial disparities. A 2021 Pew study found that while 80% of white respondents said they had broadband at home, only 67% of Hispanic and 69% of Black respondents did. In households with an income below $30,000 per year, roughly a quarter (24%) say they don't own a smartphone. In addition, 43% of adults with lower incomes do not have home broadband services and 41% do not own a desktop or laptop computer. Access to the internet in public spaces such as libraries was also closed down early in the pandemic.

Broadband internet is essential for remote schooling and working from home, but it is also critical for health, including accessing the latest public health guidance and information, attending telemedicine appointments, and, crucially, booking vaccine appointments. Particularly in the early days of the vaccine rollout, securing appointments required repeatedly refreshing web pages, and those without broadband access and experience in navigating online portals were seriously affected and remained vulnerable. Broadband access is also essential for children to be able to attend remote school, which in turn is important in a pandemic for social connection, retention of learning, and mental health.

**>>SEE ALSO CHAPTER 3.C: STRUCTURAL BARRIERS**

The digital divide predated the pandemic, but the health consequences were greatly amplified.

UNDERSTANDING INFORMATION NEEDS: AN EXAMPLE FROM NEWARK

A September 2020 report by the Collaborative Journalism initiative at Montclair University investigated information gaps and needs in **Newark, N.J.**, and highlighted three types of information needs:

▶ **Widespread**: an information gap experienced by the most low-income and underserved people in a given area. How to find safe and affordable housing might be an example of a widespread information gap.

▶ **Severe:** an information gap leading to a severe outcome, even if this outcome is exclusive to a small subpopulation of the low-income community. An example of this might be reliable information about Covid-19.

▶ **Atypical:** an information gap that exists in one place at an unusual rate, relative to everywhere else. Issues with immigration enforcement along a geographic border is an example of this type of need.
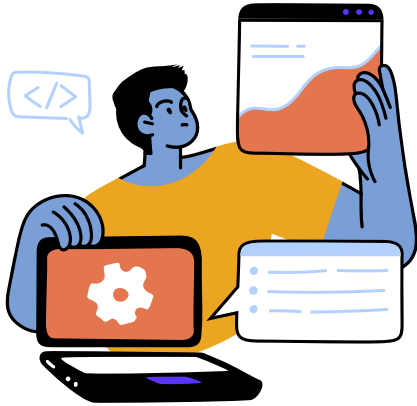
Recognizing the types and tactics of bad information

Given the new information ecosystem's vulnerabilities, it is important to understand the types of problematic information available on the internet, and the tactics applied by those spreading it.

Disinformation

Disinformation is false or misleading content created and shared deliberately for profit, influence or mischief. Disinformation actors appeal to powerful emotions such as fear and anger to prompt people to share posts without analyzing them. The number of disinformation sources is relatively limited, but they can function as "superspreaders," creating false content and then amplifying it through widespread dissemination on social media and elsewhere.

Disinformation typically focuses on visual content — photos, memes or videos — that has an immediate and often emotional impact. Rather than point to links to more information or substantive analysis, disinformation content leverages the superficial and argumentative engagement of social media, encouraging users to continue engaging and scrolling.

Disinformation posts also often take advantage of heuristics—the mental shortcuts people use to help quickly make sense of information — to appear more authoritative.
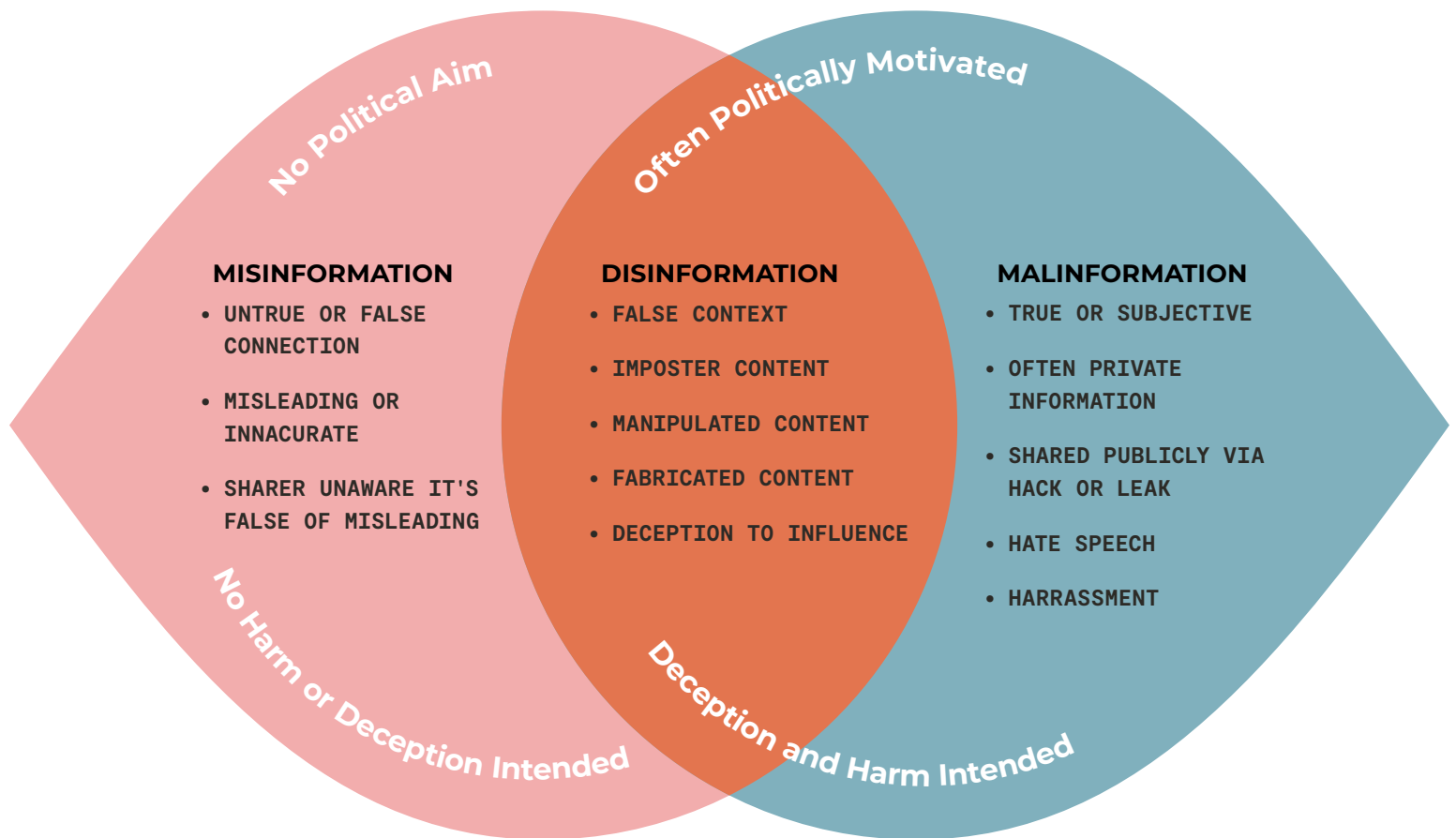
Examples include:

► Using Photoshop to add the CDC or CNN logo to a post

► Using visual cues, like someone wearing a white coat or holding a stethoscope

► Suggesting unique insight: "My brother works for the government and has inside knowledge. He just told me that…" or "My sister is a nurse and just called me from the ICU to tell me…"

► Creating content that looks like a first-person experience. It is very difficult to fact check someone saying, "This happened to me," even if it is all made up

► Creating a professional-looking website to suggest trustworthiness

► Using unique or rare terms to raise their content's prominence in related searches.

Malinformation

Malinformation is accurate information shared knowing that it could cause harm. Examples include private information shared deliberately, such as "doxxing" or sharing a person's religion or sexual identity or gender identity for the purpose of encouraging bullying behavior or hate speech against them. It is a tactic used often in this pandemic by those hoping to bend preliminary evidence about the virus, treatments or vaccines toward their beliefs or goals.

Vaccine malinformation is usually presented in a misleading way or without the context necessary to understand it. For example, a small group of non-pediatric, non-cardiologist physicians exaggerated the risks of myocarditis associated with mRNA vaccines while downplaying the potential benefits of the vaccines for adolescents and children. While researchers were still studying the true

FIGURE 6 **Mapping Bad Information**

No Political Aim

Often Politically Motivated

MISINFORMATION
- UNTRUE OR FALSE CONNECTION
- MISLEADING OR INNACURATE
- SHARER UNAWARE IT'S FALSE OF MISLEADING

DISINFORMATION
- FALSE CONTEXT
- IMPOSTER CONTENT
- MANIPULATED CONTENT
- FABRICATED CONTENT
- DECEPTION TO INFLUENCE

MALINFORMATION
- TRUE OR SUBJECTIVE
- OFTEN PRIVATE INFORMATION
- SHARED PUBLICLY VIA HACK OR LEAK
- HATE SPEECH
- HARRASSMENT

No Harm or Deception Intended

Deception and Harm Intended

Source: NovelScience.Substack.com

rates of myocarditis and pericarditis from mRNA vaccinations in adolescent males, this group of physicians took the highest available estimates and included those in their op-eds without noting the lower estimates, the limitations of the study they cited, or ongoing research.

Some of these same physicians published a preprint paper with estimates of post-vaccination myocarditis/pericarditis incidence collected from the Vaccine Adverse Event Reporting System (VAERS) without noting the substantial limitations of VAERS, a passive surveillance system that provides no denominator for data and cannot be used to estimate incidence of an adverse event (or even whether the adverse event is actually causally related to the vaccination). Several other

physicians described the problem with the preprint at the time, but misuse of the VAERS database is a common malinformation tactic. The data in the database include genuine reports of adverse events, though unverified by the U.S. Department of Health and Human Services, but without context and responsible presentation it is malinformation — misleading and deceptive.

Misinformation

Misinformation is information that is false or misleading according to the best available evidence at the time. Health misinformation has a long history, including in the HIV epidemic and the 2014 Ebola outbreak in west Africa, reflecting the human urge to seek out information, even of

dubious accuracy, to try and understand a new and frightening disease. During the Covid-19 pandemic, however, the growing power of social media platforms to amplify rumors and conspiracy theories helped elevate misinformation that might have previously been contained within smaller peer circles and geographically bounded communities to national attention.

Why people share (mis)information

People share information for pragmatic reasons — to understand confusing events and keep our loved ones safe during a pandemic, for example — but also to create and maintain a sense of identity, community and connection. And we share misinformation for the same reasons.

The World Health Organization termed the challenges posed by the torrent of information about Covid-19 — including false or misleading information — an "infodemic." The major social media companies have responded with stricter policies limiting false information about Covid-19 or the vaccines, but the sheer scale of misinformation on different platforms, in different countries and in different languages has made these interventions largely unsuccessful.

The seriousness of the misinformation problem was recognized by the U.S. Surgeon General's Confronting Health Misinformation report published in July 2021. Methodological and other challenges make it difficult to estimate the degree to which

vaccine misinformation has prevented people from getting vaccinated, but physicians around the country have reported patients repeating dangerous rumors and conspiracies as justifications for behaviors connected to Covid-19, including requests for off-label treatments such as ivermectin, that can result in negative health outcomes, and unwillingness to get vaccinated.

Networked ideological groups disrupt traditional communication approaches

In this pandemic, authorities have struggled to understand why tried and true top-down communications techniques no longer work. Relatively niche conspiracies have been able to jump borders, for example, connecting people who might have otherwise been more amenable to broad public health communications.

In the new information ecosystem, the fragmentation of media makes it harder to reach people with broad announcements, and it emboldens communities that are deeply connected via online networks. People find one another on Facebook Groups, via Instagram hashtags, YouTube comments, live streaming services such as Twitch, forums such as Reddit and Discord, or closed messaging apps such as WhatsApp, Facebook Messenger and Telegram.

Their networked communities are full of engaged people who validate one another and share a purpose, seeking and finding affirmation from their online communities. They are often largely invisible to public health and other authorities as they exist in closed Facebook groups or chat apps, making it harder to counter rumors or to understand how certain communities are being specifically targeted with disinformation.

Networked groups now also cross international borders, as the same content and rumors jump

from anti-vax groups in the U.S. to western Europe to Australia to Africa. During the measles outbreak in Samoa in 2019, for example, there was a great deal of evidence that U.S.-based anti-vaxxers were pushing dangerous misinformation into the island nation, having serious consequences. During the Covid-19 pandemic, BIPOC communities in the United States are being targeted by white anti-vaxxers, as are countries in Africa and other parts of the world.

Structural racism, health inequity and information

These information challenges are made worse by systemic racism and longstanding health inequities in America. In a study on the the role of misinformation in Black communities, researcher Kaylin Dodson writes:

"Narratives that seem easily generalizable across all populations become much more intricate and multilayered when looked at through the context of Black communities. For example, the idea that the vaccines are experimental, rushed and unsafe is common among anti-vaxxers of all communities. Yet the narrative becomes more complicated and potent when we consider the history of medical experimentation on Black people and how current concerns reflect this history."

But, while lower rates of vaccination among Black communities are often reduced to explanations of vaccine hesitancy or vaccine misinformation,
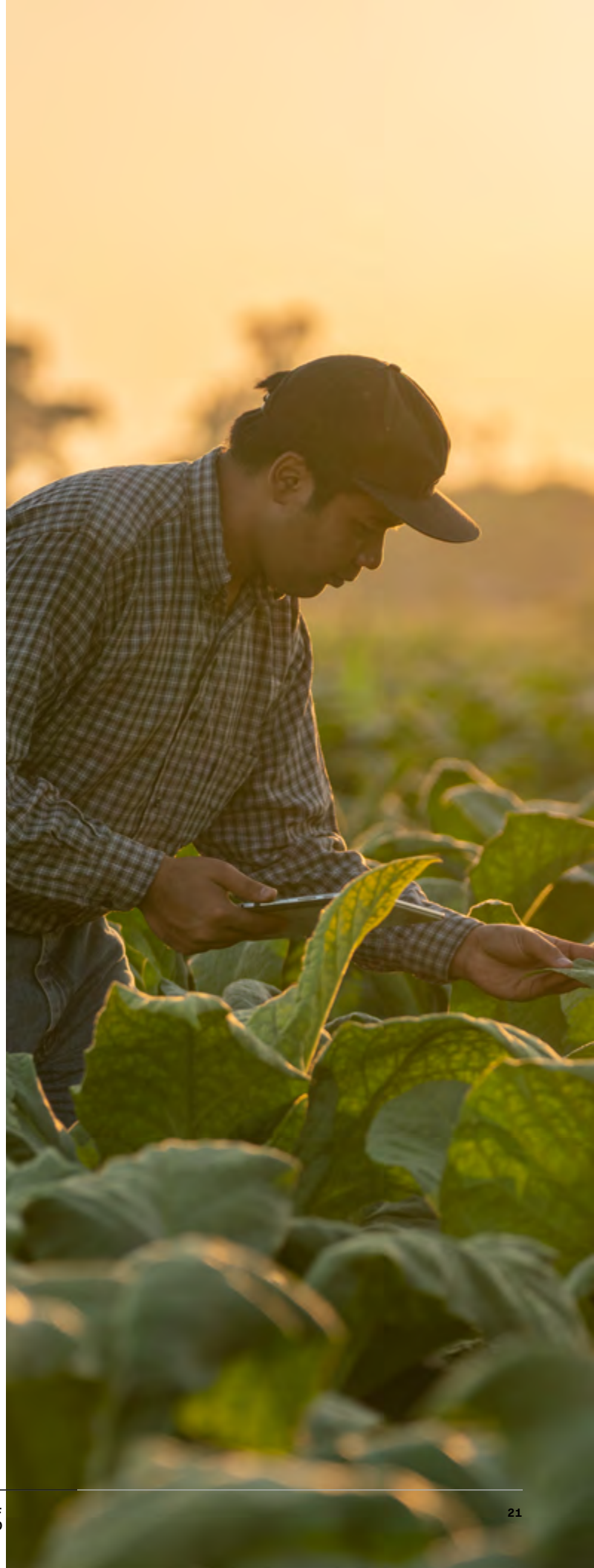
the reality is that there are Black people who are hesitant to take the vaccine and there are Black people who can't get vaccinated because of a lack of resources in their communities.

"Not every Black person is genuine in their invocation of Tuskegee, Henrietta Lacks or Jim Crow stories. These histories have not only been weaponized by anti-vaccine members of Black communities but also by non-Black anti-vaccine activists as ways to prey on or even coerce Black communities into rejecting the Covid-19 vaccines. For example, both Black and white conservative pundits have used Jim Crow language and references as a way to condemn the use of vaccine passports."

>>SEE CHAPTER 3.C. FOR MORE ON HOW HEALTH INEQUITIES IMPACT VACCINE DEMAND

Data Deficits make people susceptible to misinformation

Information alone is insufficient to support vaccine demand, but without adequate information, the "information supply chain" fails and makes us more vulnerable to misinformation. When people's unique questions haven't been adequately answered in public health communications, people are drawn to conspiracy theories or stumble upon them and dig in.

Because of the urgency of the pandemic, Covid-19 vaccines were rolled out while research into their efficacy and side effects was ongoing, with some questions not fully resolved. Public health authorities sometimes struggled to address these ongoing questions clearly and strongly, so that people seeking answers found either no answers,

poor-quality or confusing answers, or so much information that they did not know where to start.

These "data deficits" occur when research is ongoing or data incomplete, and strong, coherent public health messaging is difficult to produce. This leaves vacuums that are strategically filled by conspiracists and bad actors looking to take advantage of people's fears and concerns.

The nonprofit First Draft identifies five qualitative indicators that help identify data deficits as they emerge, and can be used to support the development of clear messaging strategies to bolster vaccine demand:

Novelty

With new or esoteric subjects, quality information might not exist or have been disseminated in a compelling and accessible manner, while compelling misinformation can be produced quickly and easily and therefore benefit from "first mover" advantage.

Technical complexity

For subject matter that is technical, complex or specialized, easily accessible information may be particularly difficult to produce, while messages that simplify the topic in a misleading manner and incorporate it within already-popular narratives are likely to resonate with receptive audiences.

Alignment with pre-existing narratives

If the subject can fit into pre-existing, long-standing disinformation narratives, it may be easy to instrumentalize these topics as part of wider misleading messages aimed at exploiting fears, eroding trust and increasing polarization. For example, anti-vaccine activists have used novel vaccine technologies to stoke fears about the safety of vaccines, and thereby bolster narratives portraying all vaccines as untrustworthy.

Political saliency

Similarly, if the data deficit aligns with existing political cleavages it may be exploited by those seeking political advantage.

Legitimate questioning

When the subject includes areas of legitimate inquiry and ongoing research, misleading explanations that address natural concerns may appeal to mainstream communities and thus reach a larger audience. For example, social media posts containing interrogative phrases such as "is this true?" "really?" and "what?" in a particular content area may indicate a data deficit.

Data deficits are a key challenge when it comes to people's susceptibility to misinformation, but it is important to understand that the opposite — the availability of quality information — doesn't automatically translate into behavior change.

Decisions about health and behavior are driven by a wide range of factors beyond what we know about a specific risk. In the next chapter, we explain why informing people about the risks of a disease, the benefits of a vaccine, the likelihood of side effects, or how a vaccine works, is important but on its own not sufficient to motivate people to get vaccinated, or to motivate them to stop believing in mis- and disinformation.

3b. Understanding Behavioral and Social Drivers: What People Think, Feel and Do

In this section, we provide a primer on what practitioners need to know **about human behavior** and how to **bring insights from social and behavioral science** to vaccine demand work.
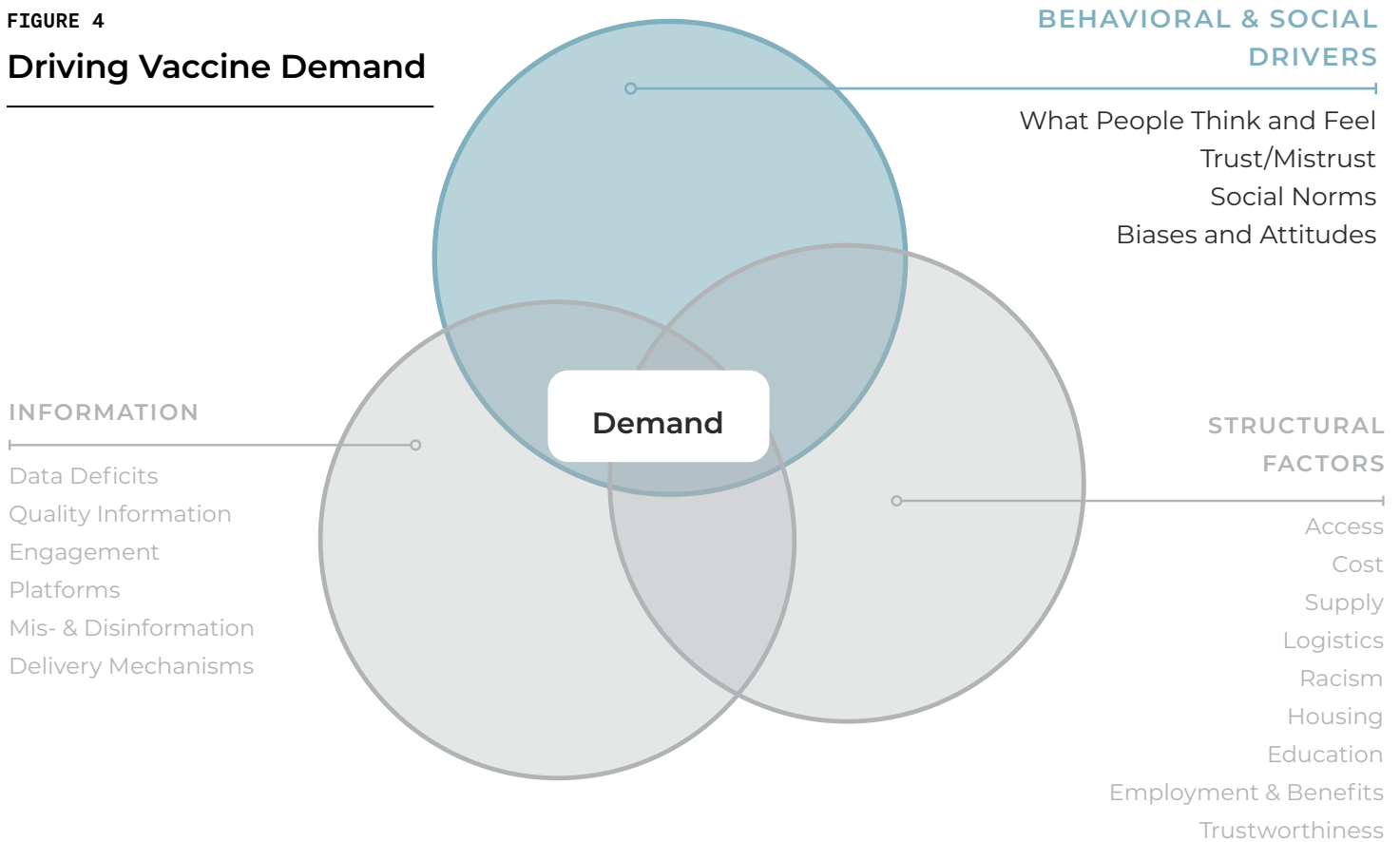
IN THIS SECTION:

▶ **It starts with risks and benefits**

▶ **Deciphering behavior change models**

▶ **Connecting theory to practice**

▶ **Why people may reject evidence**

▶ **Moving past binary interpretations**

▶ **The role of moral values**

▶ **How peers impact choices**

FIGURE 4

Driving Vaccine Demand

BEHAVIORAL & SOCIAL DRIVERS

What People Think and Feel
Trust/Mistrust
Social Norms
Biases and Attitudes

INFORMATION

Data Deficits
Quality Information
Engagement
Platforms
Mis- & Disinformation
Delivery Mechanisms

Demand

STRUCTURAL FACTORS

Access
Cost
Supply
Logistics
Racism
Housing
Education
Employment & Benefits
Trustworthiness

It starts with our perception of risks and benefits

Whether a person accepts a measure designed to improve their health, or changes their behavior to increase their likelihood of a good health outcome, is strongly influenced by their perception of the tradeoff between risks and benefits. As such, efforts to change people's perceptions of the relative risks and benefits of a behavior are a common first step in getting people to act in ways that improve their health.

Identifying the factors that enter a person's risk-benefit calculus to accept an intervention or modify their behavior can help practitioners tailor behavior change interventions to the specific modifiable factors that are most relevant to an individual or group's particular circumstances.

In practical terms, understanding these factors might involve considering specific questions about people's vaccine confidence and circumstances. For example, are people wondering about common short-term side effects or very rare serious adverse events? Are they concerned about experiencing infertility—as false misinformation campaigns want them to believe? Is the disease seen as a big enough threat to motivate people seeking protection through a vaccine? Or are people so preoccupied with more imminent risks and challenges (e.g, food insecurity, crisis of a family member, neighborhood violence) that they are not focused on vaccines? **>> SEE CHAPTER 3.C FOR MORE**

The list of these questions could be endless, so it helps to break down the categories of factors that influence behavior in ways that help us make sense of them.
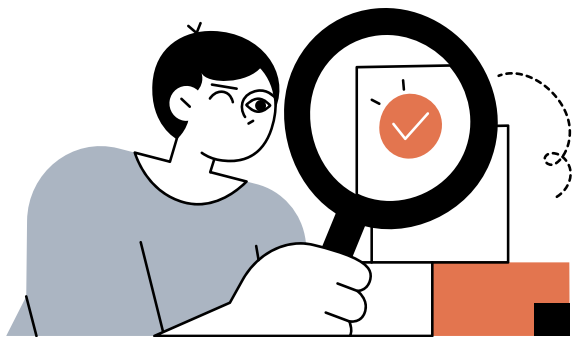
Deciphering behavior change models

Given that there are more than 80 theories of the factors that drive behavior change, it is often hard for practitioners to know where to start. There is rarely a single "right" model, but research and practice agree that theory matters in providing a structure to understand the factors underlying one's behavior, and to map strategies to these factors to design more effective behavior change interventions.

Before we illustrate how to do this, we need to call out one specific model that is attractive because it is simple and intuitive but is **profoundly inadequate**: the **Deficit Model** of behavior change. The Deficit Model of behavior change proposes that health decisions are driven by information, and that deciding to not get vaccinated for example, is the result of information deficits. Unfortunately, this model still dominates a substantial proportion of science and health communication, especially from experts or authorities who are less familiar with communications and behavioral science research and practice.

The deficit model is convenient for its simplicity in designing policy – suggesting that all that's needed is a straightforward public information campaign. As a result, planning influenced by this model is a key contributor to the consistent underestimation and underfunding of vaccine demand work.

The key insight to keep in mind is this: decisions about health and behavior are driven by a wide range of factors beyond just gathering and interpreting information.

Informing people in a timely and understandable fashion about the risks of a disease, the benefits of a vaccine to prevent a disease, and the likelihood of side effects, is important to build a knowledge base, fill information voids and prime people against misinformation - but it is usually not adequate on its own to motivate a person to get vaccinated.

Fortunately, there are newer, more comprehensive models to draw from. In this report, we highlight three models that are particularly useful in vaccine demand work:

## Behavioral and Social Drivers (BeSD) of Vaccination Model

The Behavioral and Social drivers (BeSD) of vaccination model, developed by an expert WHO working group, builds upon the COM-B model but also the Social Ecological Model and Brewer et al.'s Increasing Vaccination Model, among others. A benefit of this model is that it focuses on vaccination specifically and maps to tools to measure constructs within the model to provide information to immunization programs (e.g., quantitative survey tools, qualitative interview guides). The model measures four main domains that influence vaccine uptake:

- ▶ what people think and feel about vaccines;
- ▶ social processes that drive or inhibit vaccination;
- ▶ individual motivations (or hesitancy) to seek vaccination;
- ▶ practical factors involved in seeking and receiving vaccination.

Assessing all domains can enable more comprehensive planning and evaluation.

COM-B Model

The COM-B model serves as a helpful framework for understanding behavior change. It synthesizes decades of theories to allow for straightforward application. In the COM-B model, **(B)ehavior** is understood to be driven by three main categories: **(C)apability, (O)pportunity,** and **(M)otivation**. Behavior change occurs by modifying one or more of these factors and these factors are able to influence each other as well as one's behavior.
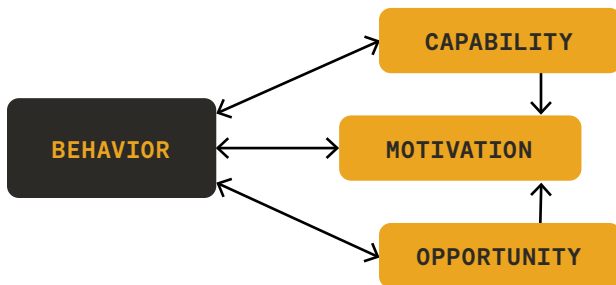
Capability

Capability refers to an indivduals' psychological and physical ability to perform a behavior. Having knowledge to perform a behavior would fall under capability but so would having the appropriate skills, mental state, and physical strength as applicable.

Opportunity

Opportunity refers to external factors that make a behavior possible which may include physical opportunities provided by the environment (e.g., accessible transportation to a vaccine site) and social opportunities (e.g., an understanding boss that allows you time off work to get vaccinated).

Motivation

Motivation refers to the internal cognitive processes that guide behavior. These can include rational reflective processes as well as automatic impulsive processes.

Psycho-Behavioral Model

Finally, a recent model (or more of an approach) has been introduced to tackle Covid-19 vaccination specifically. Building off research in Pakistan, Burkina Faso, Cote d'Ivoire and Kenya, researchers have advocated using a 'psycho-behavioral' approach to understanding and addressing hesitancy to vaccinate against Covid-19. As above, the model recognizes the importance of understanding and addressing the social, structural, economic, and psychological factors that may contribute to Covid-19 vaccine confidence and uptake. The model particularly emphasizes the need for understanding how these factors may interact to create different vaccine beliefs and behaviors among different segments of the population. The model organizes factors needed to segment the population into 3 overlapping factors:

Covid-19 context

Covid-19 context refers to one's **external conditions** that may influence decisions (e.g., health concerns, economic hardships, and social disruption).

Emotional appraisal

Emotional appraisal represents the **cognitive and affective processes** people experience related to the decision about a Covid-19 vaccine (e.g., how they feel about the decision and anticipate and evaluate consequences of the decision).

Mental models

Finally, 'mental models' refer to people's **biases and heuristics** used to process decisions (described in more depth below).

We urge anyone thinking about improving vaccine uptake, to commit to grounding their work in one or more theories or frameworks. The best, most effective interventions draw on the work of those who came before. Using a theory helps to organize vaccination planning, and helps identify what to measure. It also makes sure that programs

pay attention to motivation; to structural barriers; and to the difference between intention and action. A number of good overview resources are available, such as this scoping review and this summary of key models and their role in public health interventions.

Learning from theory and making useful connections to Vaccine Demand planning

To effectively implement any model for health behavior interventions, it is helpful to understand key cognitive and psychological processes and functions that are foundational to the theories we've outlined. To illustrate how this can be helpful, let's take a closer look at a selection of insights from behavioral sciences research and models that are important to vaccination decisions.

Biases and heuristics: the shortcuts that keep our brains operational

Cognitive shortcuts known as "heuristics" play a key role in shaping behavior. Every day, people encounter millions of stimuli that play a role in the thousands of decisions they make. It would be impossible for the brain to manage making all these decisions consciously, so humans have evolved to rely on heuristics that let people skip the process of receiving, interpreting, analyzing, assessing, and acting on every stimulus they're exposed to. While heuristics are essential to functioning in the world, they can also lead to cognitive biases that can distort and skew perceptions and knowledge. There are many such biases, so we will focus on a few examples relevant to vaccination.

Confirmation bias

Confirmation bias refers to our underlying tendency to focus on and give more credence to information that confirms our existing beliefs. Those who seek out information about vaccines will find a great deal of information of varying accuracy, but those who already have concerns about vaccines will use search terms that are more likely to pull up articles questioning vaccines' safety, and they are more likely to read and pay attention to anti-vaccine information.

Optimism bias

Optimism bias, also known as unrealistic optimism, is responsible for the feeling of invincibility that people, particularly younger people, sometimes have. It's the "it won't happen to me" bias—the belief that they are less likely to experience a negative event (such as Covid infection) or the most negative effects of that event (hospitalization, death, long Covid, etc.). Optimism bias has been linked to greater risk-taking behaviors and has been observed in perceptions of risk of Covid infection. It is also closely related to illusory superiority bias—the belief that they are better at a behavior, such as safe driving or avoiding places where Covid transmission is likely, than others are.

Status quo bias

Status quo bias refers to people's preference for the current state of things and the subsequent resistance to change. Status quo bias can lead us to make decisions on unsound reasoning since sticking with the default option might cause us to miss out on opportunities that would be beneficial to us. It is similar to the concepts of loss aversion and regret aversion and is especially salient in situations of uncertainty or feeling overwhelmed by the number of options available. Research has linked status quo bias to unhealthy behaviors like physical inactivity.

Availability bias

Availability bias is one of the strongest biases affecting people's perceptions of vaccine risks relative to benefits. People tend to focus more on recent, dramatic, and often rare events rather than on larger, more common risks. For example, someone who hears about the harm of a vaccine, whether it's true or not, might focus on this risk from the vaccine (however small) rather than on the relatively larger risk from the disease.

These and other biases can distort individuals' comparative assessment of risk (vaccine vs. disease) and other perceptions in ways that can work to diminish vaccine confidence. For example, extensive media coverage of vaccine safety and side effects can lead individuals to greatly overestimate the likelihood or severity of side effects compared to the risk of disease. This is particularly true because of the tendency to exaggerate the consequences of individual action (getting vaccinated, with the risk of side effects) over the risks of inaction (disease).

It is also a good example of where information drivers and behavioral drivers interact: Occasional stories hyping an isolated adverse reaction to a vaccine speak to our fears and emotions, so we are eager to click on a headline and find out more, thus driving up traffic, influence and income for those who post or share the story. In contrast, millions of people falling ill and dying on an ongoing basis is a catastrophe almost too enormous to absorb and process, so it often receives less media coverage – and less attention from audiences when it does get covered.

Another important concept in this category of biases and heuristics is what scientists call the **affect heuristic** – the reliance on feelings rather than on rational thinking or logic to make a decision. It is because of affect heuristic that stories can have such a powerful effect on people's perceptions and decision-making, particularly relative to factual information. Similarly, an evocative image will have a greater impact than a written story. The benefit to the power of the affect heuristic is that it can be used effectively in promoting vaccination as well.

>> FOR MORE RECOMMENDATIONS, SEE CHAPTER 4.A.

Research has shown that heightened levels of emotions influence motivation and willingness to engage in preventive health behaviors and may increase susceptibility to and endorsement of misinformation. Feelings of fear over Covid-19 vaccine side effects, safety, and its rapid development for example have been identified as barriers to vaccination. Feelings of being afraid of getting sick or dying from Covid-19 have been identified as motivators to get vaccinated.

Root identities and attitudes: why people may reject evidence

Several models used to understand health behavior predict that people prefer to act in ways that fit their concept of self or identity. These identities provide a meaning-making lens through which the world and the people around us are understood. They are tied to unique social norms, attitudes, beliefs and behaviors. Research shows how identities are predictive of health decisions and behaviors such as physical activity and smoking.

The close association between a person's attitudes toward vaccination and attitudes toward themselves, or their identity, also presents a greater challenge in countering misinformation about vaccines without appearing to attack a person's identity. Understanding different perceptions of identities can help avoid that pitfall.

One of the most robust models for understanding the different identities associated with vaccine attitudes comes from a pre-pandemic 24-nation investigation that changes the usual question of "Why would people reject the evidence about vaccinations?" into "Why would people *want* to reject the evidence about vaccinations"? The researchers found that anti-vaccine attitudes are more commonly present for example in people who have more conspiratorial beliefs, in people with a fear of blood and needles, and in people who tend to resist "influence and incursions on their freedom" – the proud nonconformists. They also found that education and gender were not at all correlated with anti-vaccine attitudes, and age (greater skepticism among younger people) and political

Key attitude roots that are associated with anti-vaccine attitudes:

▶ Having more conspiratorial beliefs

▶ Fear of blood and needles

▶ An individualistic worldview (favoring self-reliance, independence, and freedom)

▶ A belief in a "just and orderly world," in which people receive the rewards and punishments they deserve

▶ Vested interests, where people hold an attitude because they or the group they are a part of gain benefits from that attitude

▶ Personal identity expression, where people use an attitude to communicate their preferred self-image

▶ Social identity needs, where people assimilate to the beliefs and attitudes of their group

leanings (more conservative) were only slightly linked to anti-vaccine attitudes.

The authors rely on a helpful metaphor: vaccine attitudes can be understood like a tree in which the leaves and branches are an individual's "surface attitudes," including beliefs, myths, and concerns, about vaccines. The roots are what's "most important: the underlying fears, identity issues, and worldviews that motivate people to embrace the surface attitudes." These "attitude roots" lend the surface attitudes power (in the sense of holding the beliefs strongly), and stability (in that they allow the attitudes to survive in the face of contradictory evidence).

Attitude roots, such as a person's worldviews, work through a cognitive process known as **motivated reasoning** – the psychological term for "moving the goalposts." People's existing emotional biases lead them to justify their decision based on what they already believe or want to believe rather than on the evidence, and they will subsequently develop new justifications as each prior one is dismantled. Motivated reasoning occurs when someone experiences cognitive dissonance, the phenomenon in which someone notices an inconsistency in their logic or belief and therefore actively seeks ways to reduce the inconsistency or avoid it.

Building on these findings, there are some strategies to overcome such motivated rejection of science, and propose a "model of persuasion that places emphasis on creating change by aligning with (rather than competing with) attitude roots." In other words: Don't get into an argument about someone's worldviews, hear them out and learn about their attitude roots.

Social identity needs, for example, are at play when a person's individual well-being is dependent on group membership (which supplies both material and non-material benefits), so people are motivated to evaluate information in ways that affirms the beliefs of the groups they identify with.

The "white male effect" for example refers to the tendency for white men to perceive risks, like infectious diseases, as less dangerous than women or people of color.

This reflects the skepticism of risks white males display when activities integral to their cultural identities and worldviews of hierarchy and individualism – such as the freedom not to wear a mask – are challenged as harmful. This also works the other way around: Since white men perceive risks differently, they are also less concerned than women about the risk posed by vaccines, and it has been shown that white men are more likely to report accepting the vaccine than Black women.

Moving past party affiliation and other binary interpretations of anti-vaccine sentiments

Importantly, understanding root identities and attitudes allows us to go deeper on oversimplified, often misleading narratives in the current vaccination debate. For example, since spring 2021, narratives about a political divide have intensified, supported by polling showing that more Republicans than Democrats remain unvaccinated.

This framing reduces the complex factors at play to an artificial binary, and prevents a more granular and actionable understanding of people's root attitudes. Being against vaccines and identifying as Republican for example may stem from the same root attitudes – or not. As mentioned above, people who are oriented toward social dominance and see the world as a competition with a hierarchy of winners and losers perceive risk differently – a perception shown to decrease concern for Covid-19 infection and separately increase opposition to social welfare policies.

The binary political framing also frequently alienates unvaccinated Black Democratic Americans who don't fit the partisan divide pattern and struggle to be heard and seen as they strive to elevate important barriers to vaccination.

>> ALSO SEE CHAPTER 3.C, STRUCTURAL BARRIERS.

To be clear, going granular on individual drivers of behavior does not absolve politicians and public figures of their responsibility to lead by example and share accurate information that promotes health.

Political affiliations are one type of social identity group, and evidence shows that people often follow cues from their party's elites and ignore, or do the opposite of, cues from the other party's elites. A recent study replicated this finding in regards to vaccination, showing that unvaccinated people who identify as Republican, after being exposed to an endorsement from a Republican elite, reported 7% higher vaccination intentions than those who viewed a Democratic elite endorsement. Another recent study found that a brief YouTube advertisement featuring former president Trump endorsing vaccines in a conversation with a Fox news host was able to increase vaccine uptake in over 1,000 undervaccinated counties with a strong Trump vote share.

Moral values: how people evaluate 'proper behavior'

Examining a person's morals and values is another important tool for understanding perception and attitudes towards vaccination. Namely, **Moral Foundations Theory (MFT)**, examines how people make judgments about proper behavior and "right versus wrong", predicated on the idea that people form judgments about morality intuitively. MFT proposes six central moral foundations along which proper behavior is intuitively evaluated against: caring, fairness, loyalty, authority, purity, and liberty (the most recently added and less studied foundation). Research has found that the moral foundations against which people innately evaluate "proper behaviors" predict behavioral outcomes. For example, people who place greater value on the purity foundation are more hesitant to use vaccines for children.

Understanding the moral foundations that are associated with an action or judgment can benefit vaccine demand efforts as communications need to be framed around relevant moral foundations. For example, promoting vaccines using messages stressing caring, fairness, and sanctity can increase vaccine uptake.

In-group bias: How peers may impact our choices

Research on in-group bias has shown that individuals are heavily influenced by their peers and social network and may feel pressured to think in ways that conform to their existing group identities. Typically, we tend to adopt the beliefs common to the members of our "in-groups", known as in-group bias, while rejecting beliefs of "out-groups", perceiving those information sources as less knowledgeable and trustworthy.

Determining someone's in-group is rarely simple since people belong to numerous groups or networks - their ethnicity, their job, their religion, their neighborhood - each serving as a reference.

(Twitter bios can be good examples of this, as people identify with listicles such as "CEO, mother, marathon runner" or "Civil Rights Lawyer, Advocate, Musician. Cats rule". One such identity "reference" may be more influential than others.)

Especially when individual well-being is tied to group membership, individuals judge information in a way that reinforces beliefs associated with belonging to that group as a means of protecting themselves.

Social norming can promote vaccine demand

Social norming interventions can promote vaccine demand by fostering the perception that others, particularly in our own communities and subcultures, are getting vaccinated. A study of "vaccination selfies" found that people posting photos of themselves getting vaccinated had a

positive impact within their own social networks if they were politically liberal, but that kind of peer pressure was less successful in conservative networks in which social norms opposed vaccination.

As practitioners consider these and other insights from behavioral sciences research and practice to design interventions to increase vaccine demand, efforts need to be similarly informed by significant information barriers (see previous chapter) and structural barriers (see next chapter) that impede vaccine demand efforts, and that require changes in policies and institutional behaviors and practice

>> SEE CHAPTER 4.C. FOR MORE

3c. Structural Barriers: The Role of Systems and Institutions

This section provides essential background information on how **structural factors** impact vaccine demand, and why **authorities and institutions must consider their legacy and actions** when working to increase vaccine demand as well as trust in public health overall.

IN THIS SECTION:

▶ **Who experiences structural barriers?**

▶ **Economic stability & Covid-19 outcomes**

▶ **The role of neighborhoods**

▶ **The importance of housing**

▶ **Covid-19 & healthcare inequities**

▶ **How education impacts health**

▶ **Information is a social determinant of health**

▶ **Policing, incarceration & Covid-19**

FIGURE 4

Driving Vaccine Demand

BEHAVIORAL & SOCIAL DRIVERS

What People Think and Feel
Trust/Mistrust
Social Norms
Biases and Attitudes

INFORMATION

Data Deficits
Quality Information
Engagement
Platforms
Mis- & Disinformation
Delivery Mechanisms

Demand

STRUCTURAL FACTORS

Access
Cost
Supply
Logistics
Racism
Housing
Education
Employment & Benefits
Trustworthiness
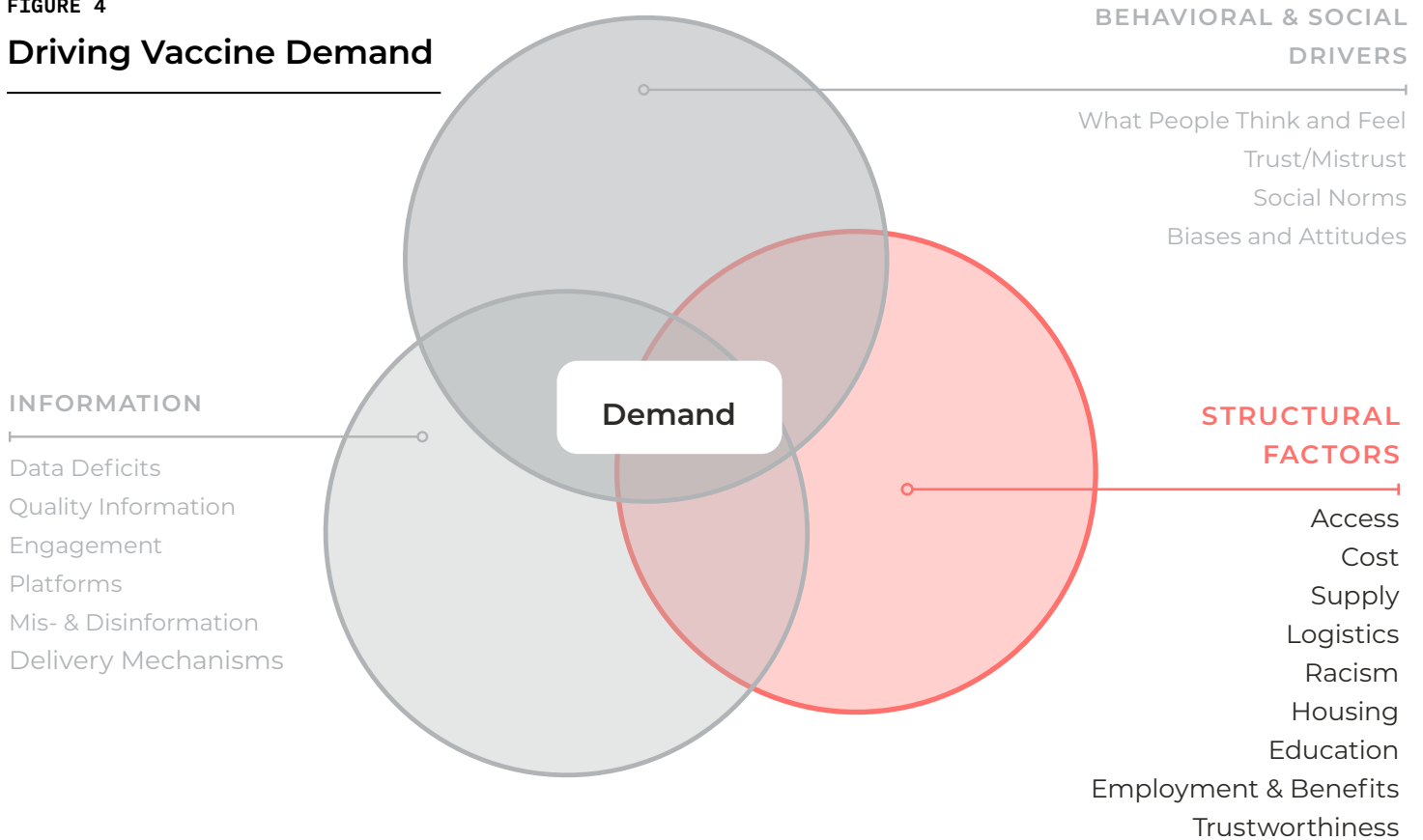
For some Americans, protecting themselves or their family during the pandemic means for example forgoing Covid-19 vaccination to ensure a paycheck rather than risk taking unpaid time off because of side effects. Communications campaigns or behavioral interventions can't adequately address such a barrier – it requires directfinancial support in case work days are missed due to side effects, or a policy change mandating paid sick time (which then needs to be effectively communicated and enforced.)

The hidden cost of getting vaccinated – such as taking time off, paying for childcare, and having transportation to a vaccination site – are just one of many structural factors that impact vaccine demand.

Failures to understand and address such structural barriers have led to misguided interventions and contributed to significant inequities and vaccination struggles in this pandemic. When vaccination efforts include consideration of structural factors alongside information and social/behavioral factors, however, they often lead to improved outcomes.

>>FOR EXAMPLES, ALSO SEE CHAPTER 4.B

Structural barriers don't affect all Americans equally

In the U.S., structural racism and economic discrimination have enabled systems that determine who is most affected by structural barriers: People of color and low income people.

The data on this has been unequivocal for decades – people of color and poor people have consistently lived sicker and shorter lives than white or wealthy Americans. According to the most recent data, white Americans on average live almost four years longer than Black people and close to six years longer than Indigenous people. This pattern is also reflected in the gaps between income groups – today, the richest American men live 15 years longer than the poorest men, while the richest American women live 10 years longer than the poorest women.

Notably, this data reflects the period immediately preceding the Covid-19 pandemic; disparities will now likely be larger as the same communities that have had worse health outcomes before the pandemic have endured higher rates of infection, hospitalization, and death in this pandemic. While life expectancy dropped for all races in 2020, for example, it dropped by 1.2 years to 77.6 years for whites but by 3.0 years to 78.8 years for Hispanic/Latinx and by 2.9 to 71.8 years for Black people.

This is because of the impact of what experts call the Social Determinants of Health: "The conditions where people live, learn, work, and play affect a wide range of health and quality-of-life risks and outcomes," states the CDC.

In a nutshell, the concept of Social Determinants of Health (SDoH) acknowledges that promoting health equity and wellness for all requires more than medical care – it requires providing economic stability, education, safe neighborhoods, food security and other enablers.

"We aren't aware of how traumatized we were from that year. There hasn't been an acknowledgement. There hasn't been a memorial. There hasn't been a recognition of all the Black lives that have passed."

Candace Fortin, political organizer

Some of these SDoH are well understood, particularly those tied to economic poverty. Others - such as access to and quality of information - are only partially understood.

In the United States, structural racism and economic discrimination are intersecting drivers of negative health outcomes due to social determinants.

Let's take a closer look at how these structural factors have played out in the pandemic and continue to influence vaccine demand.

Structural factors: from vaccine supply to social determinants of health

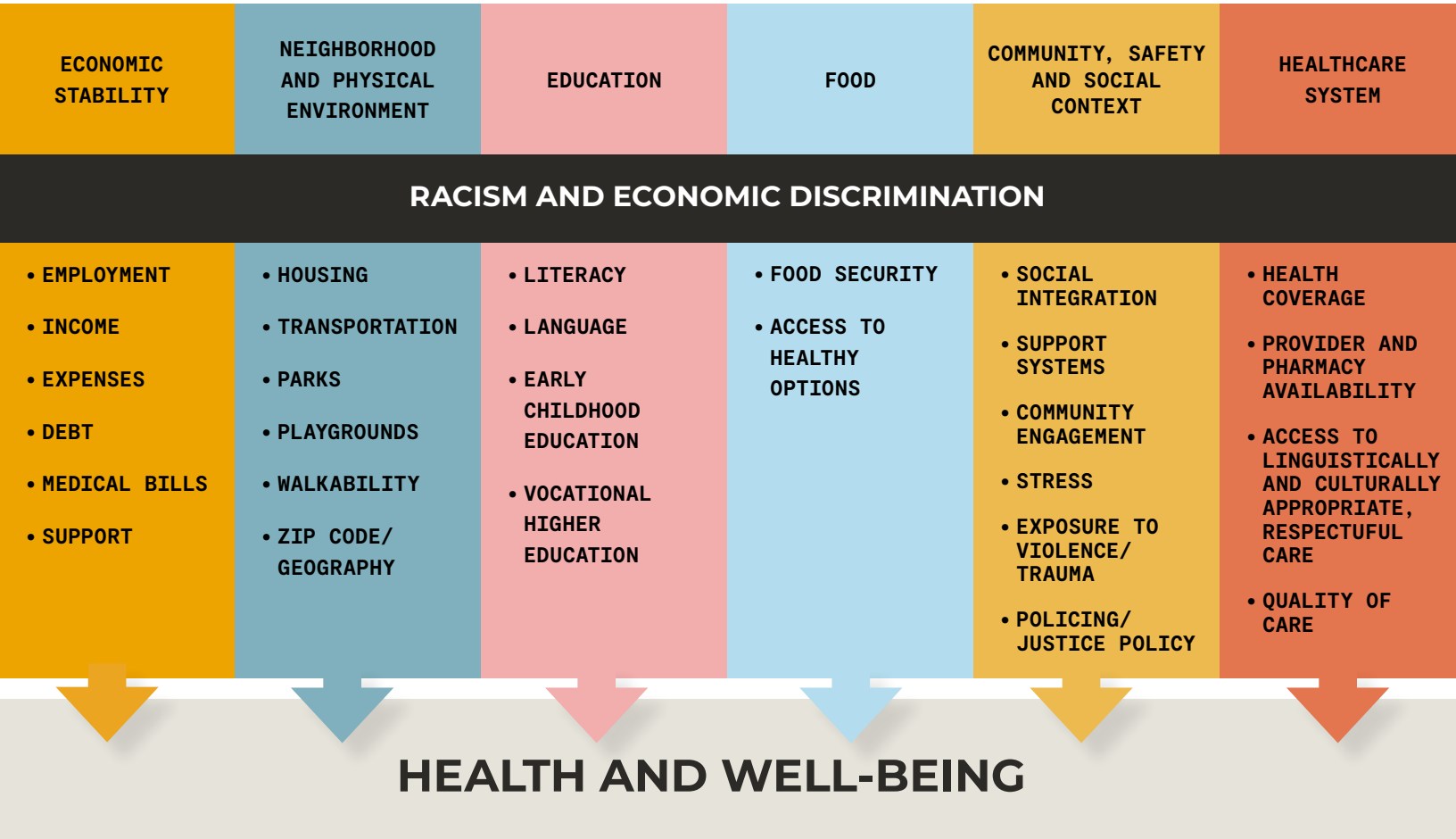There are two types of structural factors that influence vaccine demand:

Direct structural factors, such as how vaccines are developed, produced, distributed and administered. These are usually considered in vaccine demand efforts, and addressed to varying degrees. They are initiated and executed by authorities and institutions during a pandemic, and often fall into the category of Vaccine Supply.

Indirect structural factors, such as how housing, jobs, healthcare systems, food security, safe neighborhoods and the effects of structural racism impact people's health. These are often overlooked or considered too complex to address through a single measure such as a vaccination campaign. They are shaped by policies and actions taken by authorities and institutions since long before the pandemic, and are often described as the Social Determinants of Health.

Direct structural factors play out in ways that are deeply shaped by indirect structural factors. Immediate needs for physical safety and daily meals, for example, often supersede abstract

FIGURE 7 **Health disparities are driven by social and economic inequities**

ECONOMIC STABILITY	NEIGHBORHOOD AND PHYSICAL ENVIRONMENT	EDUCATION	FOOD	COMMUNITY, SAFETY AND SOCIAL CONTEXT	HEALTHCARE SYSTEM
RACISM AND ECONOMIC DISCRIMINATION					
• EMPLOYMENT • INCOME • EXPENSES • DEBT • MEDICAL BILLS • SUPPORT	• HOUSING • TRANSPORTATION • PARKS • PLAYGROUNDS • WALKABILITY • ZIP CODE/ GEOGRAPHY	• LITERACY • LANGUAGE • EARLY CHILDHOOD EDUCATION • VOCATIONAL HIGHER EDUCATION	• FOOD SECURITY • ACCESS TO HEALTHY OPTIONS	• SOCIAL INTEGRATION • SUPPORT SYSTEMS • COMMUNITY ENGAGEMENT • STRESS • EXPOSURE TO VIOLENCE/ TRAUMA • POLICING/ JUSTICE POLICY	• HEALTH COVERAGE • PROVIDER AND PHARMACY AVAILABILITY • ACCESS TO LINGUISTICALLY AND CULTURALLY APPROPRIATE, RESPECTFUL CARE • QUALITY OF CARE

HEALTH AND WELL-BEING

needs such as safety from a novel disease; to reach people who live with food or housing insecurities, vaccination efforts need to provide support with such essentials first.

"Even if [vulnerable communities] know that Covid could kill them, their number one focus is going to be what is my child eating for breakfast, lunch, and dinner. If you're not addressing the economic realities that people are living in, you cannot even start to have a conversation about them reaching out to their doctor to schedule a vaccination."

Ifeoma Ozoma, Founder and Principal, Earthseed

Why economic opportunity & stability matter

Grocery store clerks, bus drivers, teachers, nurses, farm workers - these are just a few of the positions that make up the fifty million US workers deemed "essential" and "frontline" who have shouldered the pandemic's greatest burdens. Often paid low wages but required to stay on the job, they face significantly increased risk of infection, little support if they or a family member gets sick, and the greatest chance of losing their job.

Low wages are a risk factor for Covid-19. Low-income workers often have little financial cushion, making it challenging to take time off work and thus forcing people and by extension their families

to risk workplace exposure. Only 35% of low-wage workers have paid sick leave, while 95% of high-wage workers do. Moreover, the national increase in unemployment during the pandemic has overwhelmingly affected low-wage workers. In 2020, low-wage jobs were lost at about eight times the rate of high-wage ones.

A recent study in California found that mortality increased by 60% for essential workers during the pandemic compared with previous years. Workers in the food and agriculture sector faced the highest excess mortality.

Denied paid time off to cope with potential side effects, health insurance to protect against surprise bills, or ability to pay for child care or transportation, people in these positions have been left behind in the vaccine rollout. By June 2022, only 37.5% of workers ages 18 and older making $25,000 dollars or less had received two doses of two-shot series or a single dose vaccine.

People of color account for 24% of the US population but represent the majority of low-wage, "essential" workers, increasing their risk of Covid-19 infection. For instance meat processing plants are disproportionately staffed by workers of color, who made up 87% of Covid-19 cases in these sites.

The pandemic's disproportionate damage to workers of color continues the nation's legacy of racialized exploitation, occupational segregation, and racial economic inequity. Black and Hispanic/Latinx people are concentrated in low wage positions because of systemic factors including racial discrimination in hiring, unstable employment and community disinvestment.

As a result, there are significant racial economic disparities. For instance, the typical white family has

PUTTING KNOWLEDGE INTO ACTION

In response to the substantial risk and instability inflicted on low-wage workers during the pandemic, a number of local governments around the country have stepped up their programs to protect workers and support their rights and well-being during the pandemic.

For instance, more than two dozen local governments in California and Washington state passed laws requiring hourly hazard pay bonuses of typically $4 or $5 per hour for grocery store workers, drugstore employees, and food delivery gig workers and the city of Philadelphia partnered with the National Domestic Workers Alliance to transport workers to vaccination sites, where city officials were also available to answer questions and concerns about paid sick leave laws.

eight times the wealth of the typical Black family and five times the wealth of the typical Latinx or Hispanic family.

"We have to think about how these systems fit together and how we remove some of the barriers that keep people out, keep their children out, and continue to perpetuate what we have here locally."

Sarah Lockricge-Steckel, CEO and Founder, The Collective Blueprint

By shaping the resources at our disposal, the disease risks we are exposed to, and our ability to mitigate these risks, economic instability simultaneously shapes health as an independent variable and through other SDoH that are described below. Unpredictable employment and work schedules, little or no benefits, and wages too low to achieve financial security lead to the greater likelihood of disease and premature death. The most recent research indicates that the gap in life expectancy between the richest 1% and poorest 1% of Americans is 14.6 years.

These underlying structural factors explain how economic instability and inequity undermine vaccination efforts. Nationwide, by October 2021, counties with lower vaccination rates had lower median annual household incomes, one study found. In 8 of the 10 largest cities in the U.S., undervaccination was associated with poverty, enrollment in Medicaid, or being uninsured.

The role of neighborhoods in wellbeing

The neighborhoods we live in have been a central marker for Covid infection and vaccination rates. At the pandemic's start, poor urban areas saw the majority of infections and death but by fall of 2020, rural poor counties led the nation in cases. In particular, it is highly diverse counties and highly segregated rural counties that have struggled most. A February 2021 analysis for example showed that by that time, highly rural diverse counties had experienced a 60% higher death rate than less diverse counties.

Vaccine distribution has been just as unequal. The initial rollout focused on urban areas and hospitals, academic medical centers and later expanded to clinics and pharmacies, which are less accessible to poor rural communities, creating "vaccine deserts". Close to 9 million Americans live further than 10 miles from the closest vaccination site.

In early 2022, the vaccination rate in urban counties had reached 75%, while the vaccination rate in rural counties was about 59%.

Poverty is greater in rural areas (14%) compared to urban areas (10%) and poor rural Americans face numerous economic barriers to vaccination as explained in the previous section. There is also a severe shortage of hospitals, clinics, and health care providers in rural areas and large chain pharmacies have fewer locations in rural areas. People of color are the most economically marginalized in rural areas. More than 30% of Black people, 29.6% of Indigenous people and 21.7% of Hispanic/Latinx people who live in rural areas live at or below the federal poverty line ($27,750 for a family/household of 4) compared to 13.3% of rural white Americans.

These place-based disparities in Covid risk, infection, death, and vaccination follow a dependable link between neighborhoods and health outcomes. Your neighborhood determines the economic opportunity available to you, the quality of your housing, access to healthcare and a safe and strong social network, which all shape health. Health may also be adversely affected by neighborhood characteristics such as poor air and water quality,

proximity to hazardous substances, substandard housing, and lack of access to nutritious foods and safe places to exercise or play.

A long history of racist strategic disinvestment in minority neighborhoods determines why some places are worse for health than others; and who lives there. This history includes segregationist policies like discriminatory zoning rules, redlining, and land dispossession of Indigenous people. As a result, people of color are more likely to live in areas of concentrated poverty, while whites are more likely to live in areas of concentrated wealth.

The importance of housing

For millions of Americans, home is a place shared with more than immediate family. The number of Americans who are sharing homes and living in congregate spaces to deal with growing economic pressure and housing insecurity is increasing, data shows. Currently, approximately 20% of U.S. households are shared housing (using the most expansive definition of shared housing), 7% of households are shared by more than 1 family, and 20% of households are multigenerational. However, with more people in one house, it is harder to socially distance or isolate someone who is infected, increasing the risk of spreading Covid. For example, in 2019, before the pandemic, 31% of multiperson homes with an individual 65 years or older did not have at least two full bathrooms.

People without homes or stable housing face a significant risk for Covid infection, hospitalization and death. People living on the streets, in their cars, or in shelters are more likely to have a compromised immune system, suffer from chronic, underlying physical and mental conditions, and have trouble maintaining personal hygiene without access to a restroom or laundry facilities. People experiencing homelessness who have work (as many do) are often in low-wage jobs, facing the challenges described previously.

The shortage of affordable, safe housing limits the choices people have about where they live, and can force lower-income families into overcrowded neighborhoods that may be unsafe due to higher rates of poverty and fewer resources for health promotion (e.g., parks). The quality or condition of a home affects health: a home can be cold or hard to heat, contain hazards such as fall risks or faulty wiring, be damp and moldy, or be overcrowded. Unsafe and low quality housing conditions contribute to infectious and chronic diseases, injuries, poor childhood development and mental and psychological challenges.

The effects of housing on Covid-19 risk and outcomes are disproportionately shouldered by people of color.

One analysis found that in California, 18.4% of Latinx families live in overcrowded housing compared to 2.4% of white households; the same study found that home overcrowding is correlated with a higher death rate from Covid-19.

Requiring early in the pandemic that most Americans "stay at home, work and learn from home" – initially without instructions for those in congregate living settings – also revealed how much authorities and some experts were out of touch with the lived realities of many Americans, including those who chose to live in shared or multigenerational housing. Shared housing isn't the same as overcrowded housing and sharing a home has social and other advantages; for some, especially in communities of color, it is an essential way of life. Trust was lost as these communities needed additional guidance on how to protect themselves at home but struggled to find it.

The consequences of healthcare inequities

For millions of Americans, healthcare is neither accessible nor affordable. **In a pandemic, lack of healthcare for example means:**

▶ People do not have an existing, trusted physician or healthcare worker to ask for advice about vaccines or when they fall ill.

▶ People are likely to have encountered high healthcare costs when they needed treatment, and may have been subject to surprise billing, factors that can increase distrust that vaccines, treatments or tests can truly be free.

▶ People haven't been able to do routine visits and preventive care, which puts them at higher risk for negative outcomes should they get Covid-19.

One of the most central factors in inequitable access to care is health insurance inequities. The latest data shows that 9.7% of Americans are uninsured and an additional 21.3% were underinsured. People who are "underinsured" have high health plan deductibles and out-of-pocket medical expenses relative to their income and are more likely to struggle paying medical bills.

> **"People of color are more likely to be uninsured. People who are uninsured are also less likely to have an existing relationship with a healthcare provider. They're not necessarily going to have someone that they can go to to discuss and receive the vaccine."**

Tina Hoff, Senior Vice President and Director of Social Impact Media Program, Kaiser Family

People can be uninsured because their employer does not provide coverage, they can't afford private insurance, they live in a state that did not expand Medicaid or they remain ineligible for financial assistance for coverage. Additionally, undocumented immigrants are ineligible for Medicaid or Marketplace coverage. Being uninsured or underinsured often leads to negative and upsetting interactions with the healthcare system or in many instances, no interaction at all. Without adequate insurance, many people delay seeking care, or forgo it entirely.

The same people who are most likely to be underinsured or uninsured also shoulder the largest burden of low-quality health care. Decades of research have shown that Black, Latinx/Hispanic, Asian, and Indigenous people receive lower-quality care than the majority white population. Some of this can be explained by disparities in insurance coverage and hospital segregation but disparities still exist when controlling for economic factors. Shortages of primary care physicians are 67% more likely in majority Black zip codes, and more is spent on healthcare for white Americans than Black Americans, particularly outpatient care, which includes vaccination.

Studies have generally found that when compared with white people, people of color report lower-quality interactions with their physicians. This is particularly true when people of color are seen by white providers.

The consequences of a racially biased patient provider interaction can be fateful. For example, under the care of white physicians, Black newborns experience triple the in-hospital mortality rate of white infants and when under the care of Black physicians rather than white physicians, the mortality rate for Black infants is 58% lower.

The damage of racially biased care is compounded by the significant lack of diversity in the healthcare workforce. Today, 56% of physicians are white while 5.8% are Latinx/Hispanic and 5.0% are Black.

Generations of economically marginalized people and Black, Indigenous, Latinx/Hispanic and other people of color have had their trust and faith eroded by a system that is persistently unreliable and exclusionary. Medical mistrust is associated with underutilization of health care, particularly for Black people, and with lack of vaccine confidence.

To mitigate the effect that insurance status has on vaccination and to maximize engagement with communities, vaccination distribution efforts around the country are integrating health insurance enrollment into their outreach. For example, Washtenaw County Health Department in Michigan focused on supporting the area's Latinx community and worked with Mexiquenses en Michigan and other community partners to host Latinx- targeted pop-up clinics where community members could get vaccinated and enroll in health insurance.

People-led mutual aid efforts have also played a major role in successfully mitigating some of the inequities described in this section – from lack of access to healthcare to food and housing insecurities. Started at a grassroots level in a crisis to connect those in need with resources, funds and services, organizers activate solidarity and collective support from within the community to meet community members' needs while opening pathways for autonomy and for people to support each other.

How education impacts health

The link between education and health has been studied for decades but the Covid-19 pandemic has shed new light on how complex and pervasive the relationship is.

Just like income and household size, lower levels of education are associated with increased case and death rates. An analysis of demographic county data found that Americans with a high school diploma or less are substantially more likely to be infected and die from Covid-19.

Similarly, a cohort study including 25 million working-age Californians found that compared with the general population, Covid-19 deaths were higher among those with lower education – individuals with a high school education or less composed 36% of the study population but 69% of Covid-19 deaths.

Another study of the 413,196 Covid-19 deaths between January 1, 2020 and January 31, 2021 found that people with less than a high school education were more than five times more likely to die from Covid than those with a college or post graduate degree.

People with lower levels of education make up the majority of low-wage but "essential" workers. Research shows that only 22% of workers with a high school diploma or less were able to transition to telework compared to almost 65% of workers with a bachelor's degree or higher, placing them at a disproportionately high risk for Covid infection and death, as discussed in the section above.

Simultaneously, people with lower levels of education have been excessively vulnerable to the serious economic consequences of the pandemic.

Between February and May 2020, the unemployment rate for those with a high school diploma or less rose by more than 12%, compared to 5.5% for those with a bachelor's degree or higher.

Education is a fundamental factor in health and well-being because it determines access to a multitude of material and non-material resources such as economic stability, safe neighborhoods, social connections or health care. Unemployment rates decrease with greater educational attainment and study after study has found workers with postsecondary degrees earn more than those without. Access to quality education in early childhood, adolescence, and early adulthood helps secure higher paying work with fewer safety risks, better employer-offered insurance, and financial resources to access care.

Thus, education is strongly associated with life expectancy, morbidity, and health behaviors. Adults with higher educational attainment live healthier and longer lives compared to their less educated peers. Less educated adults report worse general health, more chronic conditions and more functional limitations and disability.

Today, more than 20 million people in the U.S. have less than a high school education. Another 62 million have just their high school diploma, meaning that almost 20 percent, or every fifth American is affected by these disparities. Again, however, this burden is not equally shared across groups: Black, Indigenous, and Hispanic/Latinx people experience worse academic outcomes compared to whites and some Asian American groups.

Racial gaps in academic achievements emerge as the U.S. education system too often deprives students of color of educational resources, ignores culturally relevant curriculum and pedagogies, and criminalizes students through exclusionary

discipline practices. Schools that predominantly serve students of color have been found to have drastically poorer resources (such as textbooks or computers), more unqualified teachers, and less adequate facilities than majority white schools.

Expectedly, vaccination rates follow the education gradient - folks with the least education are less likely to be vaccinated compared to those with college or graduate degrees. One study of vaccination coverage for more than 49.2 million Americans in 49 states found that disparities in coverage were largest by education level.
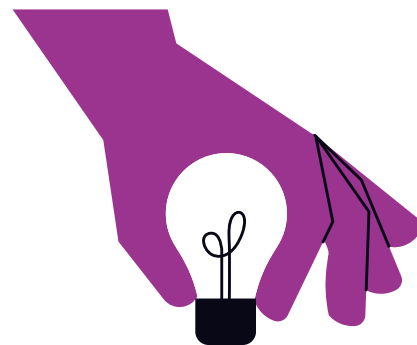
Information as a Social Determinant of Health

The original framework for the social determinants of health was developed in 1991, before the world wide web, the global expansion of internet access and the widespread use of personal computers. Alongside other public health experts, we think it is time to update the SDoH framework for the current information age, and include information as a social determinant. The quality of health information available, how we access that information, and how we make sense of it, are central to health and well-being. Researchers and practitioners can work together to better understand and document how information ecosystems, mis- and disinformation, information voids and other factors central to information impact people's health.

>>ALSO SEE SECTION 3.A.

By triggering widespread, extended social isolation, for example, the pandemic heightened a profound reliance on digital communication and the broadband internet access it requires. Americans' access to broadband internet is extremely uneven, however – a digital divide impacts both rural communities and neglected urban neighborhoods. Today, it is estimated that 42 million Americans live in areas without access to high-speed internet and those least likely to have high-speed internet are households of color, rural households, and low-income households.

Without good internet access, community members cannot access telehealth or use digital resources to learn how to protect themselves, and connect their children to continued learning as schools operate remotely. For people in households and communities without consistent internet access it is also often harder to find and reserve scarce vaccination appointments, access vaccine information or follow up on a rumor they heard, particularly when digital obstacles are compounded by language barriers. Research by the FCC found in 2017 that preventable hospitalizations were 1.5 times higher in the least connected counties compared to other counties.

This and other factors described in section 3a can leave individuals in a particularly disorienting information void. As they lack accessible, tailored, quality information, people have to navigate the pandemic without answers to questions that are personal and socially relevant to them, such as: "*What is the actual risk for other young Hispanic men, like me?*" "*How many people in my community are vaccinated?*"

Information voids often become an ideal space for mis- and disinformation to spread. Early in the pandemic, for example, Black leaders found themselves responding to false narratives that 'Black people can't get it' [where the 'it' is Covid] – a recycled false trope that was also heavily used in the early days of the HIV/AIDS crisis.

The pandemic has also revealed how significant gaps in Covid-19 data about and for communities of color can prevent visibility into the burden carried by these populations, and subsequent allocation of resources. Almost three years into the pandemic, crucial data on the racial and ethnic distribution of cases, hospitalizations, deaths and vaccinations remains missing, and so is racial/ethnic disaggregation of this data by age or sex/gender.

This is called **data invisibility**. In many analyses of Covid-19 infection and mortality rates, for example, Indigenous Peoples (CDC uses 'AI/AN') are labeled an asterisk, lumped into the "other" category or are racially misclassified and recorded incorrectly as part of another non-white racial classification. This erases and excludes Indigenous people from Covid-19 data.

Indigenous people have the highest Covid death rate of any group and the latest research from the CDC suggests the true mortality rate for this group could be around 34% higher than official reports.

The omission of Indigenous people has a long history, and one recent study found for example that hospital inpatient discharge records have a nearly 50% rate of racial misclassification for Indigenous individuals.

Data brings crucial evidence to decisions about resource allocations and priorities in a crisis. In the absence of this information, these groups are further marginalized, their experiences are flattened, and diverse groups are treated as monoliths, inhibiting a meaningful understanding of their concerns and needs and making them invisible in public health dialogue.

How policing & incarceration practices affect health

The criminal justice system is a significant but often overlooked driver of negative health outcomes, including education as well as pandemic and vaccination inequities – for those who are incarcerated as well as their families and communities.

People who are incarcerated in jails, prisons, immigration centers, and other places of detention are at significantly higher risk for Covid infection and death while violent policing practices erode the trust and relationship central to vaccinating marginalized communities.

The United States has the highest incarceration rate in the world with 5% of the world's population, but 25% of the world's prisoners. More than half of the people in the nation's prisons are serving time for drug offenses, and most of them are not high-level actors in the drug-trade and many have no prior criminal record. Since 1980, the number of people in prison for drug offenses has almost tripled.

About every fourth inmate is presumptively innocent, awaiting trial, or confined solely because they can't afford to buy their release. In addition to the 2 million Americans currently incarcerated, another 4.5 million are under government control through probation and parole "supervision".

"If you can't trust the criminal legal system then you're going to be also less likely to trust the healthcare system as well."

Uché Blackstock, M.D., founder and CEO. Advancing Halth Equity

A majority of the largest, single-site outbreaks since the beginning of the pandemic have been in jails and prisons. As a result, people who are incarcerated are five times more likely to be infected and are three times more likely to die from Covid compared to the general population.

Vaccination efforts in prisons and jails have been slow and inadequate.

The Covid Prison Project estimates that only 544,307 or about 28% of people who are incarcerated have been vaccinated.

Prisons and jails increase the spread of infectious diseases like Covid because of overcrowding and unsanitary living conditions. Incarcerated people do not have the agency to protect themselves with precautions like social distancing. Because of harsh sentencing practices the prison population is aging, with 11% of the population ages 55 and older, and age is another risk factor for Covid-19. People in jails and prisons generally are of poorer health, have higher rates of medical conditions that make them more vulnerable to severe illness and death, and if they do get sick, they don't have the same access to prompt, effective medical care as people outside of prison do.

Once released, tens of millions of Americans are dealing with the comprehensive consequences of incarceration - many of which directly harm health and well-being, put them at greater risk for Covid-19, and make it more difficult to access vaccines. Former inmates often have no housing, employment, and family support, and face discrimination in finding jobs and housing.

The nation's system of punishment is deeply racialized. Black men are six times as likely to be incarcerated as white men and Latinos are 2.5 times as likely. For Black men in their thirties, about 1 in every 12 is in prison or jail on any given day.

PUTTING KNOWLEDGE INTO ACTION

Recognizing the inequities and structural barriers described in this chapter, the Chicagoland Vaccine Partnership was started in 2021 to enable and amplify "hyper-local, community-led, culturally responsive strategies for equitable distribution of the Covid-19 vaccines, providing a more just way of ensuring health across Chicagoland."

Bringing together over 160 organizations from across the health and civic society sectors, the CVP uses tools such as micro-granting, weekly virtual community meetings, and Vaccine Ambassador programs to:

► Mobilize trusted community leaders to share quality information about Covid vaccination in the communities hit hardest by Covid.

► Educate community members about the latest Covid science and opportunities to grow their public health skills.

► Elevate coordination between community-based organizations, government, health care, and philanthropy to improve vaccination efforts and public health workforce development.

From historical slave patrols and the enforcement of Black Codes and Jim Crow laws to the more recent War on Drugs and "tough on crime" policies, it is clear that structural racism is embedded in "law enforcement" and that explicit and implicit racial bias is widespread in the public safety workforce such as police officers. Black people are 2.9 times more likely than white people to be killed by police. Police violence can also affect health through acute injury, effects on mental health, and as a contributing factor to chronic conditions. One study found that Black female youth in California between the ages of 10 and 14 were 6.7 more likely to sustain injuries from law enforcement compared to their white peers.

People of color, particularly Black people, regularly experience violence and brutality at the hands of the organizations allegedly entrusted with public safety and justice. These real-life experiences are a key driver of the Black public's reluctance to trust public officials on questions such as "*Is the Covid-19 vaccine safe?*"

Research has found racism in the criminal justice system can drive mistrust in medicine and vaccines (especially given the U.S. government role in the Covid-19 vaccine's development). One study found

"that individuals who had negative encounters with the police, even if they perceived these encounters to be necessary, had higher levels of medical mistrust compared to those with no negative police encounters."

Chicago, one of the EVI's five pilot cities, embodies this. The Chicago Police Department (CPD) is the second largest police force in the United States with a history of racial bias and police brutality. 47.7% of the city is white and 29.2% are Black yet are Black people are disproportionately stopped by CPD and more likely to face a use of force. Between 2010 and 2015, about four out of every five people shot by police in the city were Black males. Unsurprisingly, only 61% of Black Chicagoans have received at least one dose of the vaccine compared to 75% of white Chicagoans.

Acknowledging and working to mitigate structural barriers is a key element of making vaccination efforts both effective and equitable. While not all systemic challenges can be solved at once, it is essential to acknowledge and address these intersecting challenges alongside information and social/behavioral barriers. The next chapter explains how to do so.
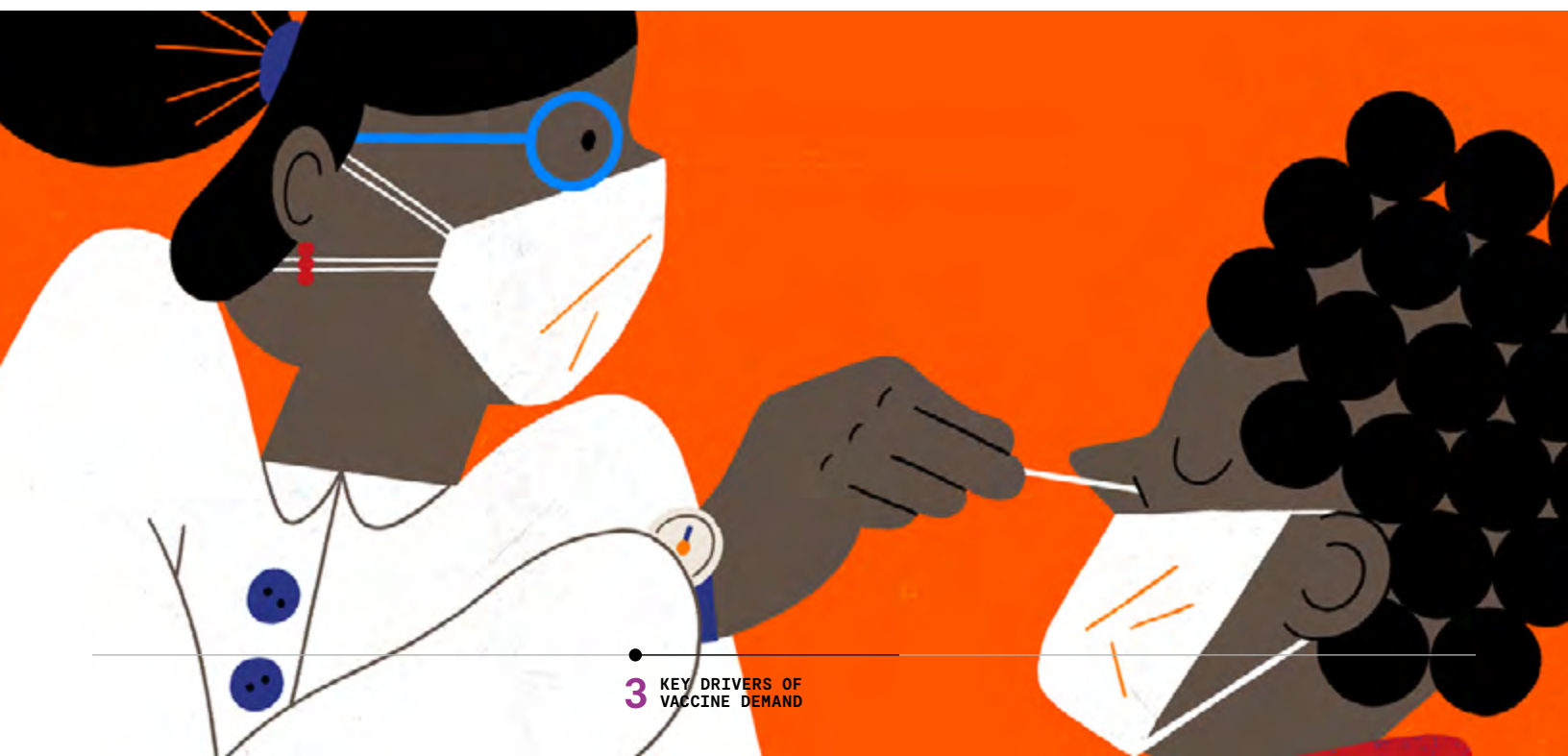
4

Promising Practices and Policy Recommendations to Increase Vaccine Demand

In this chapter, we discuss the central role of trust in vaccine demand, share recommendations as well as promising practice examples for practitioners strengthening vaccine communications and building community trust, and provide key policy recommendations for systems-level changes needed to support vaccine demand activities.

4a. The Role of Trust in Vaccine Demand

Trust is the single most important determinant of attitudes towards vaccination - trust in the vaccine itself, trust in the system developing and delivering the vaccines, trust in those sharing information about the vaccine – but also, trust in government and institutions, trust in local leaders and community, trust in healthcare, and trust in each other.

"To really be able to get people comfortable enough to get vaccinated, what needs to happen is something that we can't rush or speed and that is basically trust, which comes with time and which comes with information sharing and transparency."

Marjorie Innocent, Director of Learning and Impact, National Association for the Advancement of Colored People (NAACP)

The medical historian Maya Goldenberg explains how the common mischaracterization of vaccine hesitancy as ignorance or misunderstanding of science has led to ineffective interventions that rely on the deficit model – where authorities think people just need to be told the facts rather than on building trust in order to lay the foundation for effective communication and vaccine demand strategies.

"The pervasive and reinforcing assumption that the public only hesitates because it is ignorant shields science and government institutions from examining their own practices with respect to earning and

"Closing the gap between the vaccinated and the unvaccinated must be rooted in how we give time, use time, and create time."

Ifeoma Ika, Founder & Equity Weaver, Pink Cornrows

maintaining the public trust," Goldenberg writes in *Vaccine Hesitancy: Public Trust, Expertise, and the War on Science.*

Trust is an understudied facet of vaccine confidence, though that is changing, with one recent study showing higher trust in government regarding Covid-19 led to higher adoption of health behaviors across 23 nations.

In our work, we find that distrust is emerging as a common current across political, racial, economic and information divides in unvaccinated Americans, with the harms inflicted by institutions, politicization, and mis- and disinformation functioning as fueling forces. Since before the pandemic, Americans have known and been concerned about the increase in distrust in society.

There are many reasons for distrust, some rooted in lived experiences today, some rooted in past experiences and intergenerational memory, some rooted in ideologies, and some rooted in a combination of these or other reasons. Trust and distrust require careful study and consideration, as vaccine demand strategies depend heavily on our collective ability to build or rebuild trust. Accountability is essential in this process: Without recognition from and change in the leaders and institutions that have and are causing harm, healing and trust can not be built. Recognizing this, wes can also begin to see that investing in vaccine demand, and other Covid protections, is an important opportunity to build trust as the pandemic rages on, and to improve health outcomes more broadly.

The Equity-First Vaccination Initiative partners have showcased how to do this essential work. They demonstrate how activities organized by community

organizations such as hosting listening sessions, organizing vaccination events, handing out free masks, providing free testing, connecting folks with resources such as food and housing, and sharing hyper-local, engaging messages designed to speak to very specific groups, are all part of trust-building – and that investment in trust-building as a long-term strategy, including pushing institutions and government leaders to demonstrate trustworthiness, is a pathway to pandemic resilience.

"We must not create equity for communities, but _with_ communities."

Byron Young, M.D., Psychiatrist, DoingitWell.org

A concrete example for the urgent need to expand the concept of trust in vaccine demand work is national polls that ask people about their trusted sources. The results often show that people trust local government more than national government, experts more than politicians, and people more than institutions. Healthcare providers often emerge from these polls as the <u>most trusted source</u> for vaccine information. For people who have an established relationship with a physician, for example, <u>trust in their personal doctor</u> is greater than in any other single source of vaccine information, including <u>Covid vaccine information</u>. This is important for decisions about vaccine distribution strategies.

"The community doesn't trust doctors, and rightfully so because of what's happened in the Latino community."

John Zayas, senior pastor, Grace and Peace Church, Chicago

But there is a caveat: All of this depends heavily on the population, down to neighborhoods, demographics and identity groups. Underserved communities, for example, often don't have access to healthcare providers, so doctors are not on top of their list of trusted sources. In some U.S. states, more than a quarter of children don't have access to regular pediatric care, so parents don't have familiar nurses or doctors to approach with questions about Covid-19 vaccines for children.

FIGURE 8 **"Who are your trusted messengers?"**

According to data collected from our partner organizations in five major American cities, surveyed **vaccinated individuals reported more trusted messengers** than those who remained unvaccinated.

■ UNVACCINATED ■ VACCINATED

MESSENGERS

Messenger categories (x-axis): SOCIAL MEDIA, FEDERAL GOVERNMENT, NEWS MEDIA, STATE AND LOCAL GOVERNMENT, CBOS AND NONPROFITS, CDC, PHARMACISTS, SCIENTISTS, RELIGIOUS LEADERS, FRIENDS AND FAMILY, DOCTOR OR HEALTHCARE PROVIDER

Cities (panels): BALTIMORE, CHICAGO, HOUSTON, NEWARK, OAKLAND
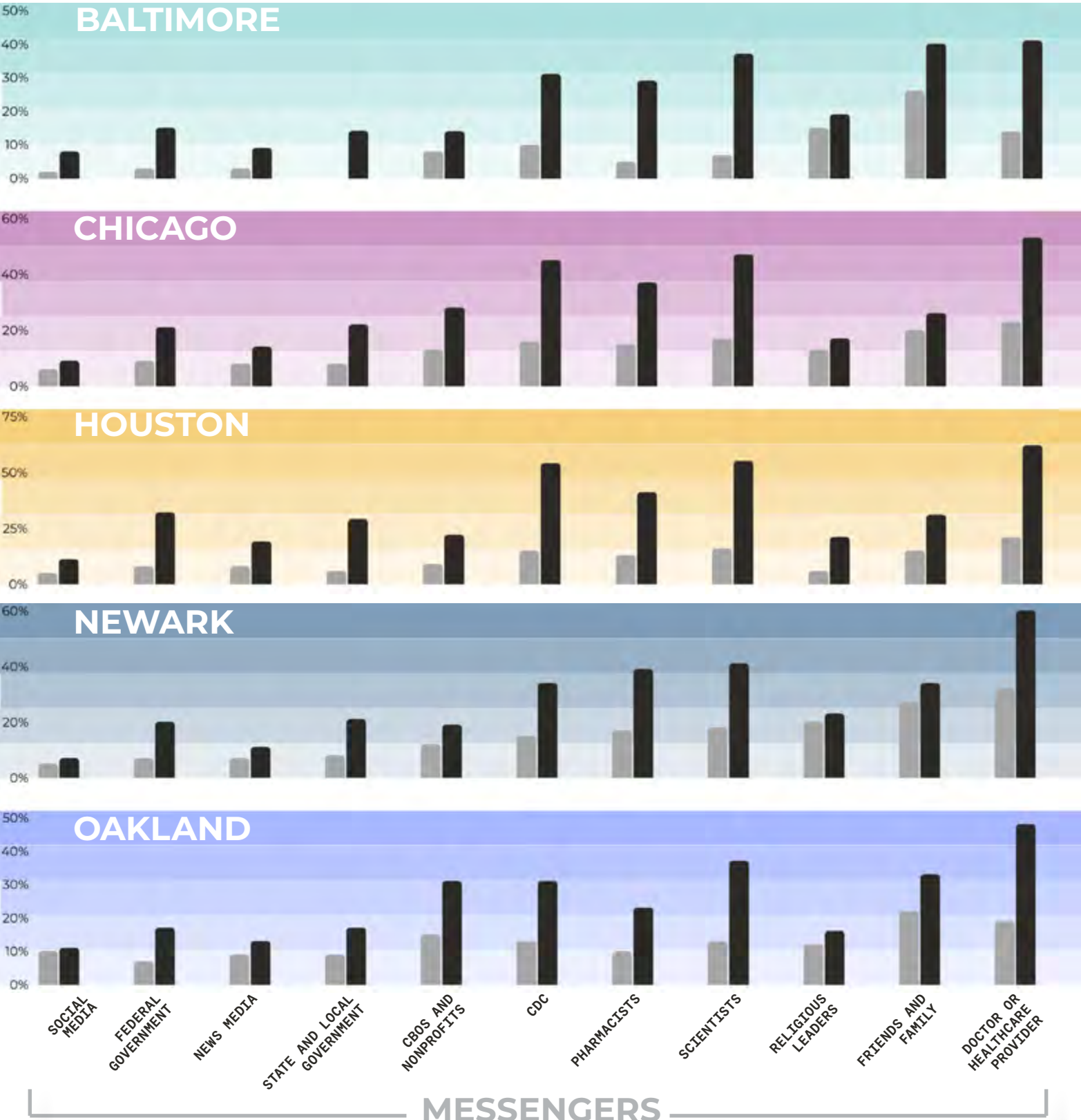
In addition, negative experiences with the healthcare system, from bias in care to lack of access to health insurance to surprise billing, often contribute to a deep distrust in healthcare providers. And trust is further eroded as Black, Hispanic and Native Americans continue to confront the disproportionate impact of the pandemic on their families, friends and communities, caused by long standing inequities and systemic racism

>>SEE CHAPTER 3.C. FOR MORE

There is also the impact of mis- and disinformation efforts on trust in healthcare providers. For example, profiteers, politicians and media sources that drive conspiracy theories – such as a "government-medical complex" selling vaccines for profit – tend to be effective with people who are already primed on believing in conspiracy theories, and who are ready to dismiss the expertise of physicians and experts.

Unsurprisingly, a key finding from the Equity-First Vaccination Initiative is that unvaccinated Americans in low-wage communities sometimes have *no trusted messengers*, which aligns with the research by Goldenberg, our team, and others. Similarly, recent research shows that while vaccine endorsements from Republican leaders are effective in reaching conservative Americans – even endorsements from Donald Trump no longer work with the most ardent Trump supporters.

Sophisticated messaging alone can't fix such significant rifts – vaccine demand strategies need to anticipate trust challenges, and enlist diverse tools, messengers and community partners from the start.

Ohio County, Indiana, which voted 75 percent for Trump in the 2020 election, for example managed to become the highest vaccinated county in Indiana by August 2021 by taking politics out of the equation and making vaccinations about the community.

More recent efforts to reach Americans who remain unvaccinated and undervaccinated have been successful when built on trust and strong local connections. As national daily vaccinations consistently decreased in early 2022, EVI communities for example were able to increase their impact and vaccine uptake.

4b. Key Strategies and Promising Practices to Increase Vaccine Demand

In this section we dive in to practical tips to get more people vaccinated. Building trust and working collaboratively with the community can increase vaccine demand, making a big impact.

IN THIS SECTION:

▸ **Empower communities to lead**

▸ **Build relationships**

▸ **Listen, and do it often**

▸ **Build an evidence clarification muscle**

▸ **Tailor your messaging strategies to what you know about each audience**

▸ **Communicate the "I don't knows"**

▸ **Tell stories**

▸ **Utilize the power of visuals**

▸ **Engage with people wherever they are. All the time.**

▸ **Trust trusted messengers**

▸ **Build information resilience**

▸ **Draw on strategies of harm reduction**

Empower communities to lead

As this report has illuminated, the "'The unvaccinated' are not a monolith of defectors" but extremely diverse, and a one-size-fits-all solution will continue to leave people behind. Effective vaccine demand strategies require hyperlocal efforts, operating at the neighborhood or zip code level and across affinity groups.

Groups and advocates working in specific neighborhoods or zip codes are the most knowledgeable about how to support their communities because wherever people face challenges, they are always already working to deal with those challenges. Local organizations who are in relationship with residents and neighbors have a deep knowledge of common concerns, questions, challenges and communication preferences; they know the history of their community and how people have interacted with local systems and institutions, from the local police to local policy makers. They know peoples' aspirations, how they care for each other, and what it looks like to be in solidarity with them, which makes local organizations experts in building and sustaining the trust central to vaccination.

This goes beyond the typical model of working with communities, which usually includes consultation of community organizations, advocates, and members to obtain knowledge and experience while interventions are ultimately led by external groups or funders. **Instead, vaccine demand strategies need to empower local organizations to ensure community members can act as leaders and designers in initiatives.**

Vaccine demand efforts need to allow communities to lead. Rather than asking how to ensure community participation in top-down vaccination efforts, they should focus on amplifying, supporting, and leveraging existing community based strategies.

This means funding or supporting community-defined projects or preexisting community initiatives, and asking what is the most useful way to strengthen the work. It also means adequately compensating organizations for their leadership and participation. CBOs are often under-resourced and under-staffed and require additional funding to build capacity to take on vaccination efforts, including hiring mental health support for staff and technical assistance to teams.

Build relationships

To center trust and trustworthiness in vaccination demand efforts, building relationships must also be at the center.

When relationships cultivate a shared sense of mutuality, care, and trust, people rely on those connections to meet their needs and find support amid challenges. They give each other rides, feed each other's children, watch out for each other on the street, check in on each other when someone is sick and follow each other's guidance on vaccines.

"The burden is on leaders to walk among the people and to build relationships."

Thomas J. Bickerton, resident bishop, American United Methodist Church, New York Area

Many Americans don't have these kinds of meaningful relationships with the structures, systems, and organizations that are leading vaccination efforts. In turn, it's a struggle to reach, engage, and communicate with them.

First, build relationships by:

▶ Sharing power - respect the knowledge and expertise of individuals gained through lived experience, engage them as collaborators, and support their autonomy.

▶ Demonstrating care - listen deeply to community members, encourage and commend them for their achievements.

▶ Providing support - help folks navigate through what might be a hard and confusing journey to vaccination, help them build their confidence to take charge of their health, and advocate for them.

▶ Being reliable - relationships and trust are built over many interactions. Do what you say you will do. Show people that they can depend on you.

▶ Creating environments for vulnerability and authenticity - Allowing individuals to express their concerns, apprehensions and conspiracies in a non-judgmental environment shows that you can be trusted.

Relationship building shouldn't be seen as a task to be operationalized and completed, or an objective on a timeline. **Building authentic relationships, particularly with disinvested communities, is an ongoing activity.**

Listen, and do it often

Top-down communications often assume that a deficit of factual information is behind ambivalence towards vaccination, and that people only need to be told the facts to change their behavior. Experts and authorities then get frustrated that people don't "accept" the facts.

As explained in Chapters 2 and 3 of this report, people's lives and decision-making processes are complex, and knowledge is only one of many factors that influence behavior. Listening and staying connected with individuals and their communities is an effective way to ensure that vaccine demand approaches are aware of and responsive to people's realities, rather than driven by the needs and goals of authorities. Listening makes people who have been disenfranchised and undervalued feel heard, and builds trust. It also provides insights on what misinformation narratives resonate with people.

To be effective, listening activities need to be a core, recurring activity rather than ad-hoc pursuits.

In practice, listening includes activities such as:

▶ Hosting community listening sessions

▶ Running focus groups with specific audiences

▶ Providing opportunities for 1:1 conversations with community members

▶ Social media listening

▶ Misinformation listening

Effective listening sessions create empathetic and collaborative interactions that are centered on the community or individual. They draw on strategies of deep listening and motivational interviewing to unearth the experiences, values, principles, beliefs, core identities, and social norms that guide the decision to get vaccinated.

"I realize that communication is cyclical. For each new authorization of vaccines for a different age group, we need to start with listening again."

Communications specialist, community organization in Houston

Facilitators ask open ended questions such as:

▶ Why do you feel that way?

▶ Can you share what matters most to you in this decision?

▶ What are you or your family's health needs or concerns?

▶ What concerns or fears do you have about the vaccine?

▶ Where do you find information about the vaccine you can trust?

▶ What would it take for you to get vaccinated?

▶ What goals do you have for your children as they go back to school?

Facilitators of listening sessions try to gather stories about what has motivated a person's past health decisions, what their concerns are, and future aspirations.

Misinformation narratives often show up in listening sessions, and provide important insight into which falsehoods need immediate attention. National misinformation narratives may or may not be what drives concern or confusion in specific groups – granular, hyperlocal assessments are essential.

Social media listening allows further insights into what communities are talking about, where their concerns are, and which misinformation narratives they are exposed to and might be inadvertently perpetuating.

Listening is a continuous process as the information needs, social and behavioral drivers, and the structural barriers of a community shift and update along with the shifting and evolving pandemic situation.

Build an evidence clarification muscle

Staying on top of evolving evidence, and being able to clarify what is known and not known at different points in the pandemic is another key part of an effective vaccine demand strategy. Like listening, this step informs all other aspects of the strategy, from messaging and campaign choices to decisions about where to host vaccination clinics.

Too often in this pandemic, experts with little or no communications experience have struggled to communicate effectively, while communications specialists have struggled to understand and accurately represent the evidence. It is important to build a network of experts (including someone who knows behavioral science), communicators, community leaders and Covid-19 response teams – at the federal, state or community level – that can quickly contextualize emerging evidence, answer specific questions about individual studies, complicated data, and uncertainties, and incorporate this clarity about the evidence into vaccine demand strategies, including messages, campaigns, and events.

"[It's important to] create an ecosystem where researchers are informing public health communicators on what they know works or what they've actually done research on. And then the public health communicators work with community organizers to get the information shared.

This is a model that has been implemented politically with 'get out the vote' campaigns, and can be used effectively with public health campaigns"

Ifeoma Ozoma, founder and principal, Earthseed

PUTTING KNOWLEDGE INTO ACTION

From late April to July of 2021, Houston in Action facilitated seven listening sessions with community members, focusing on those living in predominantly Black and Latinx neighborhoods where vaccination rates are low, refugee & immigrant communities, as well as people from these communities in low-income households, young adults, and people whose primary language is Spanish. In their Safer Together report, HIA shares the unique insights revealed by the listening sessions including:

▶ People are motivated by their relationships and love for family.

▶ Simply providing more written information that is translated for a specific group isn't enough. Those for whom English is not their dominant language also want to be in conversation with trusted sources (such as health care workers).

▶ Non-government affiliated medical professionals, faith leaders, and employers emerged as strong messengers for evidence-based information and vaccination education.

Tailor your messaging strategies to what you know about each audience

Effective vaccine demand communication matches the understanding gained from listening sessions and evidence clarification with insights from behavioral and information sciences, as well as overall knowledge of the community, to develop specific messaging and outreach strategies for each audience.

Practitioners should identify the main goal for their messaging and their vaccine demand strategy more broadly, and adapt approaches accordingly. For example, a campaign could mainly be focused on sharing facts and building people's knowledge, or it could target other parts of the behavior change continuum, such as trying to change beliefs about whether it is socially acceptable to get a vaccine, or being clear about how and where to access it.

As outlined earlier in this report, insights from behavioral sciences – such as how peoples' biases, values and root attitudes affect knowledge and behavior – can be applied to craft tailored messaging. Practitioners should draw from one or more models of behavior change

>> SEE CHAPTER 3B. FOR MORE

STAY UP TO DATE ON YOUR COVID-19 VACCINES.

Everyone ages 12 and older should get a booster.

MANTÉNGASE AL DÍA CON SUS VACUNAS CONTRA EL COVID-19.

Todas las personas mayores de 12 años deben recibir la dosis de refuerzo.

PUTTING KNOWLEDGE INTO ACTION

As part of the Equity-First Vaccination Initiative, a *MegaComms* team of national organizations with expertise in public health, misinformation, and behavioral sciences and communications best practices was formed. The team provided communications capacity to participating community organizations – including evidence clarification and talking points responding to information needs at key pandemic moments. Weekly newsletters shared evidence-based information about topics of the week in accessible English as well as Spanish, offered messaging suggestions, and listed key misinformation narratives and ideas for how to respond to them. Topics included for example "Tackling fears around vaccines and infertility", "How to get at home rapid tests for free" and "Why boosters remain crucial."

Help mitigate the misperceptions created by cognitive biases:

▶ Provide concrete examples and tangible metrics to help people comprehend (often confusing) health information or guidance, making perceptions or comparisons more realistic. "The booster shot is 90% effective. This means that 9 out 10 people who got a booster shot did not have to go to the hospital after getting infected."

▶ Focus on trends and patterns. Often people rely on outlier events or statistics that are more recent or dramatic. Encourage people to base their decisions on larger trends and patterns and see rare events as just that - rare- and not necessarily instructive. "Across nearly 250,000,000 million patients studied on three continents, the risk of myocarditis associated with the vaccine is between 0.002% and 0.004%. That's about 40 to 90 people in the entire city of Houston. Of the people that did have myocarditis, most had mild to moderate cases."

▶ Find ways to frame the decision to not vaccinate as more of an action than the decision to get vaccinated. Make it the default to "opt-in" with more action or implications to "opt-out".

▶ Some people might give greater weight to the risks of getting vaccinated rather than the potential gains and maybe inclined to maintain the status quo - in this case, unvaccinated. Emphasize the personal benefits of getting vaccinated and the benefits to the larger community while framing the default option or maintaining the status quo as a loss.

▶ Support self-efficacy. Self efficacy is a person's belief or confidence they can succeed at something. You can encourage them to make small, realistic goals and celebrate those little successes. For instance, CBOs in Houston and Newark included the number of people that made a vaccination appointment as a metric for success.

Clergy United for the Transformation of Sandtown in Baltimore (a non-profit organization of twelve faith institutions located on the West Side of Baltimore focused on community development) specifically addresses status quo bias in their Covid 19 resources online. They point out that maintaining the status quo embedded in the myth "we should let the virus run its course naturally" would mean hundreds of millions of Covid infections that would have to occur to reach herd immunity. Instead they call on uniting as a community and getting vaccinated to bring the pandemic to an end.

Appeal to individuals' morals and values

Messages and interactions should harmonize with insights about morals, values, beliefs and principles gathered from the community. Messaging can be tailored in a way that activates and engages these factors and could reveal opportunities for collaboration that is built upon common goals.

▶ For instance, in a listening session, unvaccinated women might share their concerns about possible infertility caused by the vaccine. At a deeper level, they are also signaling that they want to protect their reproductive health or their future opportunity to raise a family. Rather than focusing exclusively on correcting the myth that the Covid vaccine causes infertility, reframe vaccination as an opportunity to protect their health including their reproductive health and the possibility of a future family.

▶ Acknowledge and celebrate the parts of someone's perspective that are in support of others and the community. For example, fear of long-term side effects in children expressed by parents could be re-interpreted as their desire to raise a healthy and happy child. Before sharing

information on the side-effects, acknowledge this. "It's great to hear how committed you are to your child's health."

▶ Similarly, when working with conservative Christians, including cues to religious identity such as mentioning faith can help build vaccine confidence and trust in medical experts.

Appeal to social norms and in-group bias.

People tend to share the same opinions and beliefs of members of their own social group and/or people they identify with.

▶ Avoid messaging that focuses on what people "should do" and socially disapproved behaviors. Social norms are most influential when they describe what most people actually do, signaling social approval. "50% of black men your age have been vaccinated"

▶ Target specific group identities and social norms using micro (10,000-50,000 followers) or nano-influencers (100-10,000 followers) and provide them with messaging that appeals to the group's values and attitudes.

▶ Social norms are also most powerful when messages refer to people who the targeted audience identifies with. This can mean more than just one part of their identity. For example, messages targeted toward Hispanic women will be different than those targeted to Hispanic men.

"Our idea was to think about the vaccine decision as a journey. It is really helpful because you start to think that the journey is different for different people – where are the touch points, where are the pain points, how do you think about targeting and tailoring different interventions for different people at different points in time?"

Alison Buttenheim, PhD, MBA, associate professor of nursing and health policy, University of Pennsylvania School of Medicine and Nursing School

Real Men Get Vaccinated: Phalanx Family Services' Black Male Covid Vaccination Campaign

In January 2022, Phalanx Family Services in Chicago, whose mission is to "assist economically disadvantaged youth and families in the pursuit of self-sufficiency through employment centered programs, mentoring, advocacy, and workforce development solutions", launched the "Real Men Get Vaccinated" campaign.

The campaign aimed to spread awareness of the low vaccination rate of Black men in the city of Chicago. The campaign harnessed a number of the strategies recommended in this report:

▶ It was micro targeted - focusing on Black males.

▶ It appealed to morals and principles e.g. generosity and community leadership- "Do you want to help your community?" "Become a vaccine influencer"

▶ It harnessed in-group biases and social norms about masculinity and men as protectors e.g. "Protect yourself. Protect your family. Protect your community."

▶ It built trust by acknowledging the importance of Black men in society (who are frequently deemed expendable by other systems e.g. criminal justice) and framing vaccination as one aspect of protecting Black men.

▶ Importantly, the campaign also pushed back against the racist myth of the Black "absentee father".

Communicate the "I don't knows"

Covid-19 is still a new virus and scientists are learning new details about its behavior every day. This means that CBOs frequently have to communicate the latest changes in information in ways that maintain trust and make sense to people.

What community members need and want is honesty about what is uncertain and what is unclear. People respond to transparency about uncertainty with trust -- because they know it's true -- while they respond to certainty that later turns out to be partially wrong with increased mistrust. As one partner from Oakland shared, "When we're honest about what we don't know, our community sees us as more authentic and more trustworthy."

Communicators can combine both what they know - "these are the facts" - with how they feel - "I'm confused too" - because it reinforces their position as trusted, credible messengers who are authentic and dedicated to meeting people where they are at.

Tell stories

One highly effective way to connect with people is storytelling. Those who design disinformation campaigns know this, which is why storytelling is one of the most common tactics in mis- and disinformation efforts. Stories are the backbone of all human learning, starting with the stories parents tell their children and the stories in faith communities used to teach morals, values, and beliefs. Stories tap into our identities and engage us emotionally, cognitively and socially.

Stories strengthen relationships by giving people a window into how others see and experience the world and make complex, abstract problems relevant to our own lives. They provide context on the "why", anchoring facts and data to personal experiences and helping us make sense of abstract figures and statistics.

CHALLENGE

Communicating the "I don't knows"

Each new scientific development throws those on the front lines of the vaccination efforts for a loop as they have to answer questions long before even preliminary evidence has come in.

ACKNOWLEDGING THE CHALLENGES

Key Takeaways from the EVI Insights newsletter, Volume 2
This visual campaign aids community partners by using matching design to pair problems with recommended solutions.

TAKEAWAY

Be honest

Be honest about what is uncertain and what is unclear. People respond to transparency about uncertainty with trust—because they know it's true—while they respond to certainty that later turns out to be partially wrong with increased mistrust.

Communicators can combine both what they know - "these are the facts" - with how they feel - "I'm confused too."

TELLING PERSONAL STORIES

Baltimore's **#BMoreVaxxed campaign** centered the stories from Baltimore residents, sharing their answers to "How I knew I wanted to get the vaccine". For example, James shared how after a family member was in critical condition after contracting Covid, that's when he knew he wanted to get vaccinated.

Personal stories can be the most effective because they:

1. Signify authenticity and intimacy
2. Allow the listener to learn about the narrator's values, morals, and beliefs which signal their trustworthiness
3. Appeal to emotions, particularly empathy
4. Can help people overcome mistrust.

Research has shown how the use of personal stories can motivate people to action.

Note that stories are most meaningful when the story's main character is from the same group as the listener or audience – to tap into the social norms that are at play when people consider their health decisions. This is why vaccine ambassador programs in Chicago, Baltimore and elsewhere—which recruit community members to knock on doors or otherwise engage with peers—are successful.

Utilize the power of visuals

One way in which misinformation often supersedes accurate information is by being produced in images, GIFs (especially memes) and videos. Images travel fast as screenshots shared on closed messaging apps. YouTube is the most used media platform in the world, as News consumption habits have changed dramatically, with people of all backgrounds consuming more and more information visually as opposed to in written formats.

In vaccine demand work, we need to understand and execute on the power of visuals, and invest in video and graphic design to translate complicated guidance at each point in time, and to tell stories with images. This still includes billboards, which visually speak to people while they are out and about. On the next page are a few examples.

FIGURE 3 The Power of Visuals

Iterate on memes.

Baltimore's #BMoreVaxxed campaign consistently harnessed visuals and used the types of visuals most attention grabbing to their young audience - memes. For example, the campaign posted well known memes with witty one-liners about Covid-19.
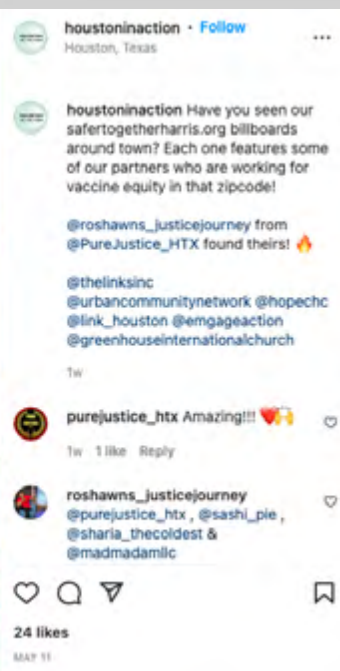
Let humor shine.

The Johns Hopkins School of Public Health's Instagram presence meshes vaccination information with memes, unafraid to use comedy and pop culture references to reach various audiences.

Elevate local voices.

By working with trusted local messengers, understanding the need to engage with people in multiple ways and wherever they are, Houston in Action's Safer Together campaign combines visuals-based online and offline outreach.

Engage with people wherever they are. All the time

We have discussed the many barriers that make the decision to get vaccinated difficult, including the additional pain brought on by the pandemic – mourning those who were lost, unemployment, a rise in violence, increased child care responsibilities, and disproportionate risk caused by racism.

To overcome these and other barriers and connect with people, vaccine efforts should provide opportunities to engage and learn no matter where people are, both physically and in their journey to getting vaccinated.

Successful approaches design their communication and engagement less like a checklist of unconnected, one-off activities (a one time vaccine event, a single webinar) and more like an integrated constellation of interactions, in the spaces already built into day-to-day life, that compound to build relationships, trust, access and incentives.

Change doesn't happen overnight or in some linear progression. It's essential that opportunities to learn and engage – what's called 'touchpoints' in marketing and user design – are ubiquitous and part of the community fabric. This is true for all communities, regardless of income, political leanings, education levels or racial makeup.

Ask "Where does the vaccine fit into your life?"

EVI partners in Chicago, Baltimore and other cities have shared the importance of understanding and working with where the vaccine fits into the day-to-day priorities unique to each individual. For some, the virus may not be the biggest threat to their health amid concerns such as gun violence, homelessness or food insecurity. For others, the vaccine might be one more thing on a long list of competing concerns and responsibilities. EVI partners have found it is critical to ask community members "where does the vaccine fit into your life?" And then supporting

people wherever they are, helping them address their needs - securing rental assistance, providing school supplies to students, addressing other health concerns, or getting vaccinated- in whatever order makes sense to them.

Meet people in the spaces where they feel comfortable and use the language of their community

The best engagement happens when people have a reason to be present, and want to engage. This is why vaccine conversations at town fairs, churches, dances and other community events for example can be effective ways to increase vaccine confidence and uptake.

PUTTING KNOWLEDGE INTO ACTION

Since November 2020 Allen Temple Baptist Church has been live streaming Sunday services, weekly bible study and other virtual events on Facebook live. Facebook is the platform their congregation uses compared to others - with more than 4,400 followers on Facebook to just over 900 on Instagram.

The church leveraged this following and their community's familiarity with Facebook live to host a number of webinars on Covid for their community, covering vaccine science, the disproportionate impact on communities of color and boosters. The videos range from 300-500 views each with hundreds of comments from congregation members with questions for speakers and discussion about Covid in their community.

Moreover, webinars about other challenges facing the community were hosted, creating an accessible, culturally congruent, body of knowledge for Allen Temple's audience about multiple topics they cared about.

This also includes strategies such as meeting Fox News audiences where they are – for example on Fox News' and similar channels. In October 2021, researchers created an advertisement that included different clips of Donald Trump and Melania Trump in interviews with Fox News hosts, each encouraging supporters to get vaccinated. The researchers then placed the ad on more than 100,000 YouTube channels, including Fox News' YouTube channel, where it was paired with segments hosted by lead anchors such as Laura Ingraham, Tucker Carlson and Sean Hannity. The ad was able to increase vaccinations in target counties, as opposed to the control group – and the more ads a county received and the more the viewers engaged, the larger the increase in vaccinations.

Set up interpersonal conversations for success

A lot of vaccine confidence and trust building work happens in one-on-one conversations, and here, too, meeting people where they are with their concerns, understanding and attitudes about vaccines is key. Motivational interviewing is a way to engage people where they are at. It means listening to and affirming people, for example by saying "You are right, the vaccine was developed in record time" or "You have thought about this a lot" or "You value your freedom" or "You are right, the U.S. government has mistreated Black people and there's still so much to fix." Facts and arguments only harden people's positions, and few people change their mind about a health decision in just one sitting.

Evidence-based strategies for talking with community members, friends and family about Covid-19 vaccination

▶ Pick your battles, start by talking to those who are on the fence rather than committed refusers.

▶ Understand a person's doubts and validate their emotions associated with those doubts.

▶ Don't get bogged down in a detailed debate; keep it simple.

- Don't focus too much on the science; if your conversation partners asks about science, consider how to message facts based on what you learned about them in your conversation (see above) If unsure, ask more questions. For example, talk about safety and emphasize how many millions of people who have safely received the vaccine (and the immense amounts of safety data we have as a result).

- Don't blame or shame.
- Use humor as appropriate and relevant.
- Understand the source of the person's mistrust.
- Be open to discussing religion if a person's faith plays a role in their unease.
- Share a personal story.
- Be patient; individual vaccination journeys take time.

Trust trusted messengers

Trusted Messenger research from the Ad Council shows that in order to shift perceptions and influence behavior, it takes both experts and amplifiers (those more traditionally identified as messengers like public health officials and celebrities) and the individuals people are personally connected to, "... those whom they deem most trustworthy—honest, credible, unbiased—and typically familiar, such as family, friends, accredited experts, and local business and community leaders".

To be successful, vaccine demand strategies should employ but also look past the messengers who are easily identifiable and whose message can be easily controlled, such as a state medical director or healthcare leader. "Trusted messengers" can be found everywhere: The individuals or organizations that people trust for information about their health may not be "official" or an "expert". Public health organizations should let go of requiring expertise and widen the circle of who they trust as a trusted messenger, while providing the tools and resources for messengers to be knowledgeable communicators to their neighbors, in their own way,

empowering folks to "speak from the heart and with authority".

Anchor community organizations in the EVI applied this insight intuitively. As they took the lead in identifying community partners, for example, they each independently settled on working with a wide net of organizations.

As a result, only about 14% of the nearly 90 organizations involved in the EVI are part of the traditional healthcare or public health sectors.
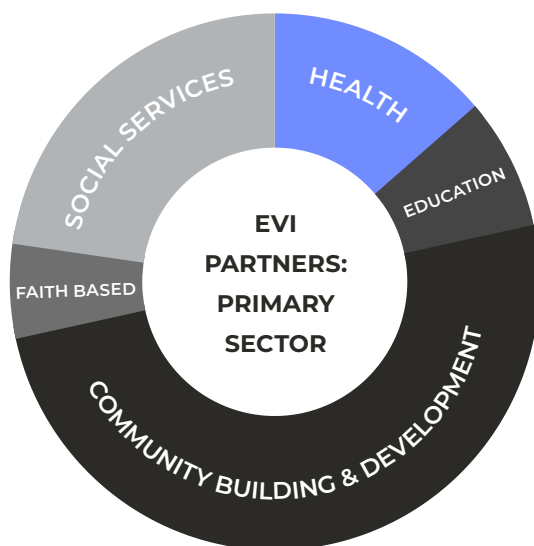
Similarly, only 26% of EVI partners' mission statements mentioned "health" or "well-being"
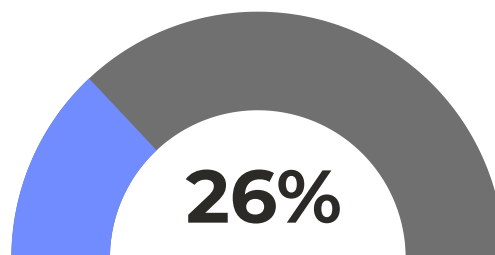
Vaccinations, just like health and wellness overall, are an all-of-society job.

To be successful, public health authorities also need to be ready to let go of control of message uniformity and need to let communities lead with their customized messaging, framing, and needs.

In May 2021, the Chicago Department of Public Health partnered with the City Colleges of Chicago to launch the Malcolm X College vaccine ambassador course to empower community members to become trusted vaccine educators who are able to provide high quality information to their neighbors.

The course, which is open to anyone and everyone, is a free, two-hour online training available in both English and Spanish. It uses a variety of videos, surveys, quizzes and interviews with healthcare providers to teach participants about the background on Covid-19 and U.S. healthcare system, the answers to common Covid-19 questions and concerns, the history of medical mistrust and causes of vaccine hesitancy and how to approach difficult conversations.

Chicagoans who complete the course receive a certificate of completion and are recognized as trusted messengers of Covid-19 vaccine education. Upon completion, Partners In Health provides trusted messengers access to an online learning community where they can connect with other Vaccine Ambassadors and receive support through additional training, and stay involved in community health activities.

Within just two weeks of the course launching close to 1,300 people had signed up to become ambassadors.

Build Information Resilience

There's no silver bullet to combatting mis- or disinformation directly in vaccine demand work but there are several interventions that can help prevent it or curb its potential damage.

## Simply warning people that they might be misinformed can limit later reliance on misinformation.

Even general warnings ("the media sometimes does not check facts before publishing information that turns out to be inaccurate") can make people more receptive to later corrections. Specific warnings that content may be false have been shown to reduce the likelihood that people will share the information online.

Inoculate people against the influence of mis- and disinformation.

No one likes to be manipulated, and letting people know about the tactics and tools disinformation efforts use to try to influence them has shown to be effective in building resilience against such tactics. There are many ways to inoculate people against bad information, including games such as "Go Viral!" or this First Draft's text message course that texts people one lesson per day.

If you can't prevent it, debunk it.

Research finds that direct corrections are effective in reducing — although frequently not eliminating — reliance on misinformation in someone's reasoning. For debunking to be influential, it is essential to give a detailed counterargument that clearly explains (1) why it is now clear that the information is false and (2) what is true instead.
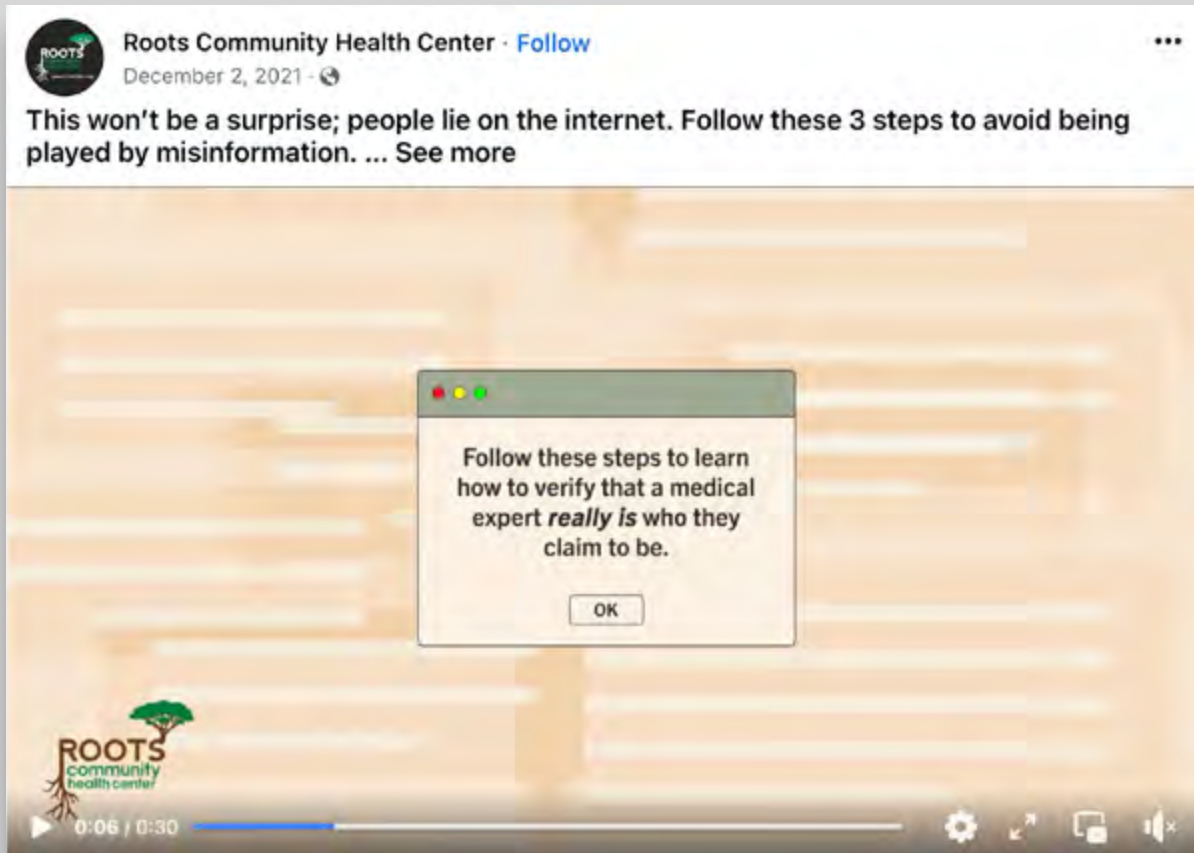
Building Information Resilience in Oakland

In fall 2021, staff at the Roots Community Health Center in Oakland noticed a disinformation campaign circulating in closed social media groups that included ambiguous statements about not "ignoring our deadly history" and how people shouldn't "let them vaccinate you, with their history of treachery through medication…"

The false messages intended to drive Black Americans away from vaccinations, by appealing to their identity as a community who have been mistreated and neglected by the medical system for centuries. Community members were affected by the manipulative content. The Roots team wondered: How can a Health Center respond, and prevent further erosion of trust caused by such harmful misinformation?
Like many other community-oriented centers

across the country, Roots didn't have a communications team before the pandemic. Recognizing that Covid-19 information challenges were increasingly interfering with the Center's ability to provide access to health and health care, Roots had started to build communications capacity in 2020.

With the support of the EVI communications partners, the Roots team decided to develop an education campaign that informs community members about some of the tactics of misinformation – including identifying manipulative messages and how to spot a fake doctor on social media.
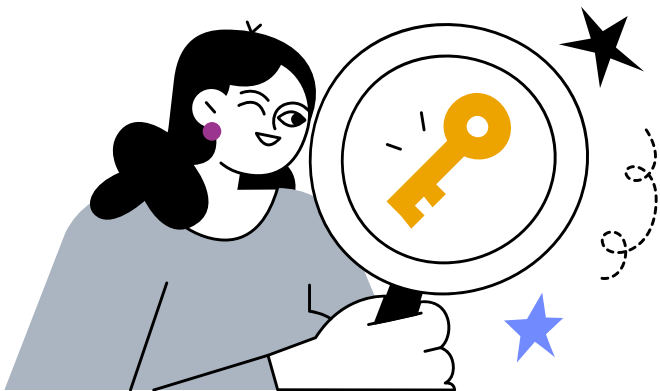
Draw on strategies of harm reduction

People need the time and space to initiate their vaccination on their own terms. Often people need many interactions to get answers to their questions and feel assured before getting their shot. EVI partners emphasize the importance of leaning on strategies rooted in harm reduction to keep unvaccinated people safe -- by taking care of community members while they decide.

Harm reduction—most familiar as a philosophy and set of practical strategies aimed at reducing negative consequences associated with drug use—offers several helpful principles for (re)building the trust central to increasing vaccination.

Harm reduction is grounded in justice and empathy and the principle of advising individuals how to mitigate risk, while acknowledging the real world conditions that may lead individuals to take some risks, and that people should be met "where they are" with dignity and respect (National Harm Reduction Coalition, 2022). Below are established harm reduction principles translated for vaccine communications:

Unvaccinated individuals still deserve support (rather than isolation or condemnation) in mitigating the risks of Covid-19 infection, hospitalization, and death.

For example, CASA of Baltimore, whose mission is to provide court appointed special advocates to support abused and neglected children involved in Baltimore's juvenile court system, distributed Personal Protective Equipment, such as masks, to over 4,900 residents.

Orient vaccination efforts around strengthening quality of life and well-being - not just vaccination - as the criteria for success.

Allen Temple Baptist Church in Oakland has been hosting backpack distribution events and Community Learning Forums - a health series co created by the church and Samuel Merritt University - for years. Strategically, they have hosted their vaccination events on the same days so that residents can get vaccinated alongside getting school supplies and getting concerns and questions about their health answered.

Maintain a non-judgmental, non-coercive approach to interactions.

For instance, when someone shares a belief in a vaccine conspiracy theory rather than saying, "That doesn't make any sense" shift to "Can you help me understand this better?"

Ensure that the voices of people who are not yet vaccinated are used to design and develop the programs meant to reach them.

For example, a Q & A about vaccines should answer questions that have been collected from community members.

Recognize that the realities of poverty, racism, classism, and other structures of oppression significantly impact people's capacity for getting vaccinated.

Strategies that integrate these harm reduction principles indicate to communities that the systems and organizations established to serve them are genuinely dedicated to improving their health and well-being – and are a key pathway to building long-term trust.

One of the central goals of the Newark Equitable Vaccine Initiative is to ensure that Newark residents have access to accurate information about the vaccines. To achieve this, inoculation efforts were included as a central component of the communication and outreach strategies that were developed in partnership with participating CBOs.

Specifically, the resources provided to CBO's explained how communities of color are targeted directly by mis- and disinformation, co-opting the Black community's vaccination concerns and histories of medical exploitation to further anti-vaccination efforts. The resources also shared guidance on how to go about addressing misinformation.

Residents could also get clarity on misleading information on NEVI's website which provided well-crafted refutations to common Covid myths.

4c. Policy Recommendations to Increase Vaccine Demand

Vaccine Demand is an all of society challenge and **needs support and solutions at all levels of society.** These policy recommendations provide an overview of key reforms needed to improve vaccine demand generation.

IN THIS SECTION:

▶ **Include vaccine demand planning from the start**

▶ **Fund vaccine demand**

▶ **Make vaccine demand work iterative**

▶ **Build engagement infrastructures**

▶ **Be in solidarity with communities**

▶ **Make public health communications everyone's job**

▶ **Move past broad labels**

▶ **Stop politicizing vaccines**

▶ **Distribute resources based on needs**

▶ **Recognize vaccine demand is about health equity**

Fund vaccine demand, and keep funding flexible to accommodate changing needs

Many aspects of the overall response impact vaccine demand. Federal funding for testing in schools for example was restricted to testing teams. By the time vaccines for teenagers and children over 5 years old became available, states relying on this funding were unable to repurpose the testing teams – who had already built trust and relationships – for in-school vaccination drives, and instead needed to put time into a new round of funding applications, planning and hiring.

To bridge the gulf between where quality information is available and where people most in need of quality information seek it, vaccine demand assessments and planning also need to include significant funding for and updates to public health communications departments at the community, local, state, and federal levels.

This funding has not been forthcoming. Asked in early 2021 what was needed to design and run an effective engagement campaign for Covid-19 vaccination, a team in one U.S. state calculated it would cost around $7 million. The team was awarded $900,000, and the state continues to lag in vaccinations. (This information was shared confidentially with our team.)

Make Vaccine Demand a cornerstone of response planning - from the start

Vaccine demand assessments and strategic planning must be part of pandemic preparedness and resilience efforts at all levels of government, industry, and the nonprofit sector – from the start. The current practice of focusing government efforts and funding further downstream, on top-down communications and behavior change efforts that happen once vaccines are ready for distribution, has led to many missed opportunities. How vaccines are being distributed, where and by whom, and through which mechanisms, for example, all have significant impact on vaccine demand. Supply and demand teams need to work closely together from day one. There are also communications deserts – migrants and marginalized people who remain unreached by current efforts.

"The goal isn't to assume that I have the information, or the advisory board, or folks that I'm associated with have the information. The goal is to connect our communities with folks within our communities that do have the information and the insight to kind of bridge that gap so that folks get the information that they need from a trustworthy source."

Jessica Ann Mitchell Aiwujor, founder, National Black Cultural Information Trust

Strategic communications that deeply engage with the public need to be adequately staffed and part of the preparedness and response leadership structure. While building readiness to provide clear guidance and key health literacy through these efforts, authorities also need to become comfortable with letting go of control of message uniformity and letting communities lead with their customized messaging, framing, and needs.

Make Vaccine Demand work iterative

Too often, vaccination interventions are set up in a static way, with no ability to adapt to changes. Just as in other supply and demand work, approaches need to be iterative and able to learn and pivot quickly. Assessments of progress and barriers need to be part of the management structure, and stakeholders need to be included early in the process so that managers and stakeholders make decisions in real-time.

[In migrant populations] there is a lack of trust in the current government with all these anti-immigrant feelings. There is fear about whether these things that they are being injected into their body will be something to get rid of them. It doesn't help that there is a lot of misinformation.

Nelly Salgado de Snyder, Ph.D., professor of medical sciences and senior researcher, National Institute of Public Health of Mexico and University of Texas Austin

Build an infrastructure for engagement and trust building

Like all other aspects of preparedness, a communications infrastructure needs to be in place at all times so that trusted communications in a crisis is a continuation of trusted communications in regular times. For example, if a city or state hasn't built sizable social media audiences and isn't directly and consistently in conversation with the public on the platforms people frequent, in creative and engaging ways, crisis efforts start with a familiarity and trust deficit.

Leaving it to others to interpret press conferences for modern communications platforms smiliarly has shown to have devastating consequences in this pandemic. The traditional model of journalists interpreting information shared by authorities – and applying a set of principles such as verification, and ethical standards such as putting information in context – is being disrupted: Misinformation actors who have a direct line to the public after having built large online audiences have been able to dominate vaccine narratives, turning official information and announcements into misinformation and clickbait for their gain. Government agencies and leaders need to invest in building their own audiences, and in working with organizations who are trusted by communities.

If mechanisms to fund and equip community organizations to run crucial on-the-ground efforts are spotty and unclear, demand generation will lag as CBOs lack adequate and timely support to build capacity and engage community members. A key lesson learned from the pandemic is the need to build stronger ties between community organizations and local and state officials as part of pandemic resilience and vaccine demand efforts.

In Illinois, for example, the Chicago Community Trust utilized some of its unrestricted Rockefeller Foundation funding in 2021 to better understand what it takes to support and build up small organizations serving diverse communities. CCT works with the state to clarify funding requirements, certifications and other barriers.

> **"We need to look beyond the Covid-19 vaccination campaign as a one-off public health intervention and think about how to build a legacy in terms of local public health governance.**
>
> **How to build to have a lasting transformation in the relationship that communities of color have with authorities and institutions whose mission is to protect public health and safety and engender collective wellness.**
>
> **So it's both the immediate needs of vaccine uptake, but also sort of a longer term institutional legacy of strengthening and continuing a two way trusting relationships between communities and governmental public health and medical institutions."**

Monica Schoch-Spana, PhD, senior scholar and senior scientist, Johns Hopkins University Center for Health Security and Bloomberg School of Public Health

Be in solidarity with the community

Elements of vaccination efforts that aim to align with the priorities, needs, and values of the community can make it easier for individuals to see how the vaccine fits into their life and frame vaccination as a decision that makes sense. When folks can see that the "systems" that shape their health and their lives care about them beyond a shot of vaccine, they may be more trustworthy.

PUTTING KNOWLEDGE INTO ACTION

Baltimore Health Corps (BHC) was created to address the parallel economic and public health crises brought on by Covid-19. BHC aimed to generate sustainable, long-term career trajectories for individuals who lost work during this pandemic while simultaneously addressing the city's emergency response. By September of 2021, BHC hads hired more than 300 local Baltimore residents, initially concentrating on contract tracing and then, with the arrival of vaccines, support vaccination in the city, with the focus on the city's hardest to reach populations. Moreover, for the applicants who weren't initially hired into BHC, were provided job placement assistance to roles supporting vaccination by the Mayor's Office of Employment Development. This model demonstrates solidarity - supporting the urgent health needs of residents, leveraging the power of local knowledge and networks, while also improving supporting the other determinants of health like income and economic mobility.

Make public health communications everyone's job

The many inputs that construct vaccination attitudes and perceptions are formed by all sorts of signals and cues given to individuals by the systems, structures, and processes present in day to day life. For example, a dismissive or stressed physician signals (unintentionally) to their patient that they don't really care about their situation. Pharmacists are not trained to respond to a customer who starts sharing misinformation about vaccines with people waiting in line to get vaccinated. Federal and state agencies as well as the healthcare and other industries need to invest in the development of updated training programs and support systems.

Move past broad labels that drive divisions

Resolving the vaccine demand crisis will also require a shift away from the current overfocus on "vaccine hesitancy" as well as an overfocus on the role of political leanings in people's vaccination decisions.

"Vaccine hesitancy" is a term used by scientists in a specific context. In the broader public conversation, it has become a catch all that mostly alienates diverse Americans who are unvaccinated or undervaccinated . By placing the attention solely on the individual, regardless of structural and information barriers to vaccination, the "vaccine hesitant" label can also lead to mistargeted interventions.

Similarly, interpreting vaccination decisions predominantly through the lens of political leanings and suggesting that individuals are not accessing vaccines because of their political leanings, as opposed to in correlation with these political leanings, contributes to the creation of divisions and politically-charged vaccine identities. It also overlooks the nuances and complexities explained

in this report. For example, Black Democratic voters who don't fit the expected partisan pattern struggle to be heard and seen as they explain their important reasons to be wary of vaccine clinics and public health interventions.

Stop politicizing vaccines

Vaccination has been politicized in ways that are harmful for all Americans. Billions of people around the world have been safely vaccinated, and vaccines remain highly effective in preventing hospitalizations and deaths. Significant undervaccination in the U.S. is contributing substantially to prolonging the pandemic.

Narratives about a political divide in vaccinations have intensified in the nation since spring 2021 – more so than almost anywhere else in the world – supported by polls emphasizing that more Republicans than Democrats remain unvaccinated. As explained in chapter 3, this framing reduces the complex factors at play to an artificial binary, and prevents a more granular and actionable understanding of people's root attitudes, lived experiences, and information and structural barriers. Being against vaccines and identifying as Republican for example may stem from the same underlying attitudes – or not. Being against vaccines and a Black Democrat stems from an entirely different set of attitudes, experiences and circumstances, and people who don't fit the partisan divide pattern often struggle to be heard and seen.

Leaders of the Lancet Commission on Vaccine Refusal, Acceptance, and Demand in the USA call the politicization of vaccines "a problem of unprecedented scope", and ask for systematic monitoring of the phenomenon to develop solutions. The group recommends policy makers and professional organizations examine available legal, regulatory, and private sector options to reduce the impact of well-financed organizations spreading misinformation.

Politicians and public figures have the responsibility to lead by example and share accurate information that promotes health. Evidence shows that people often follow cues from their party's elites and ignore, or do the opposite of, cues from the other party's elites. A recent study replicated this finding, showing that unvaccinated people who identify as Republican, after being exposed to an endorsement from a Republican elite, reported 7% higher vaccination intentions than those who viewed a Democratic elite endorsement. Similarly, a conservative county in Ohio saw high vaccine uptake in 2021 by "making it unpolitical from beginning."

Stop relying on the vaccination rates and vaccination experiences of white Americans as normative. Start distributing resources based on needs.

Evaluations of disparities typically use the vaccination rates of white Americans as the comparative standard. However the experiences that influence vaccination of white Americans are different from the experiences and knowledge shared among unvaccinated people, such as historically oppressed groups. For example, Black Americans are approximately 1.5 times more likely to be uninsured than white people.

Using vaccination rates of white Americans as the norm reveals that equity is not at the core of vaccination efforts. Equity means distributing resources based on needs of the recipients. Considering the significantly higher rates of Covid-19 infection, hospitalization, and death in marginalized groups, this means these groups require correspondingly higher investment in vaccination efforts.

Recognize Vaccine Demand efforts as an essential component of health equity.

As laid out in this report, vaccine demand challenges are deeply tied to intersecting systemic inequalities. Americans who are not yet vaccinated are more likely to be poor, more likely to have lower education levels, more likely to get most of their information from social media, more likely to have had negative encounters with the healthcare system and more likely to have no or substandard health insurance. They are also more likely to be Black or brown relative to their share of the population. While these inequities won't be fixed overnight, it is important to recognize the true cost of these practices and systems for both affected individuals and the nation as a whole.

"We need an investment in resources in black communities and other communities of color, because what we're seeing in terms of racialized health and equities is a result of decades of disinvestment."

Uché Blackstock, M.D., founder and CEO, Advancing Health Equity

While not all systemic challenges can be solved at once, not understanding and beginning to address the intersections of these challenges results in failed efforts.

For some Americans, protecting themselves or their family during the pandemic means forgoing vaccination to ensure a paycheck rather than risk taking time off because of side effects. A strong sense of belonging to a group that constantly speaks out against vaccines can supersede concerns about one's health. The most well-executed communications campaign alone cannot overcome historic mistrust deeply rooted in decades of experience – or the impact of years of consuming toxic information on an individual's identity, worldview, and related behaviors.

To strengthen vaccine demand, agencies and institutions should work to be i**n dialogue with people** about how they want to protect themselves, and open the framework to all protective measures – vaccines, tests, and therapeutics. The three drivers – informational, behavioral science, and structural interventions – should go hand in hand in the design of cohesive and comprehensive strategies to build vaccine demand.

An excellent example of a more holistic approach that puts communities at the center of the vaccination rollout is CommuniVax, a national alliance of social scientists, public health experts, and community advocates who work together on strengthening local and national vaccination efforts by putting communities of color at the center of their efforts. Communivax focuses on strategies like hiring Community Health Workers to work together with community-based and faith-based organizations to build the human capital necessary to align vaccination implementers and community members' worlds, increasing greater access to and acceptability of Covid-19 vaccines.

In Prince George's County, Maryland, for example, the local CommuniVax team administered out of the University of Maryland's Center for Health Equity utilized their preexisting Health Advocates In-Reach and Research (HAIR) program as a key platform for their community engagement and ethnographic research in connection with the coalition. The HAIR program leverages area barbershops and hair salons as "culturally relevant portals for health education and delivery of public health and medical services in the community,"10 and relies upon collaboration between the university, local business, and local health systems.

As the pandemic progressed, the team developed additional partnerships to facilitate this work with organizations including the Black Coalition Against Covid and companies like SheaMoisture. They have also worked directly with the Biden administration as part of the White House-supported "Shots in the Shop" initiative.11 Their efforts with HAIR are now no longer local—the program is expanding to barbershops, hair salons, and health systems nationwide to improve Covid-19 vaccine coverage in African American/Black communities.

5

Credits and Acknowledgments

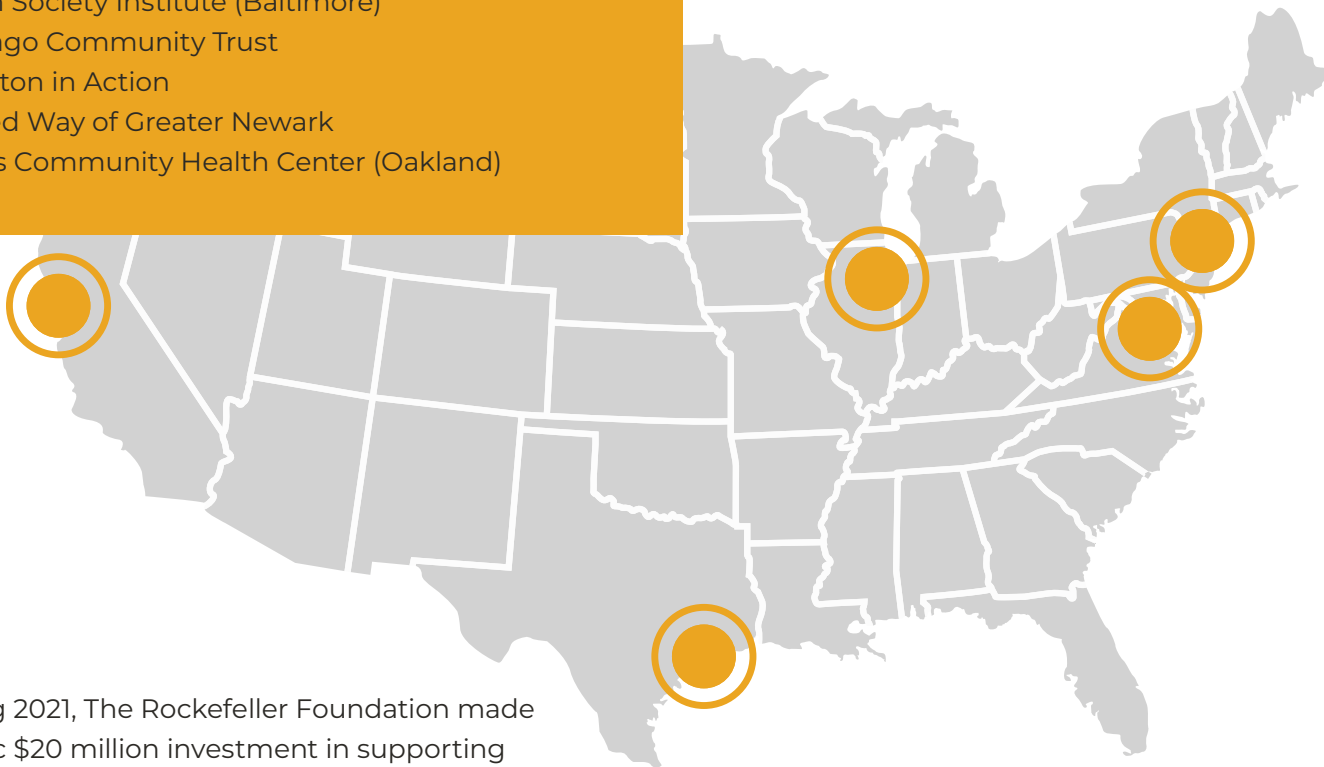Learn more about the Equity-First Vaccination Initiative and this report.

About the Equity-First Vaccination Initiative

In Spring 2021, The Rockefeller Foundation made a historic $20 million investment in supporting local, community-driven leadership in the effort to vaccinate communities of color. For one year, the foundation's Equity-First Vaccination Initiative (EVI) supported nearly 100 community organizations in five pilot cities in the U.S.: Baltimore, Chicago, Houston, Newark, Oakland.

The EVI also connected participating community-based organizations (CBOs) with national organizations serving as capacity building, research and learning partners. These partners provided communications along with data, technical, advocacy and equity support, and they continue their collaborations with community organizations to capture insights and promising practices developed by CBOs.

Each city has one or two anchor organizations that contract and work with CBOs across the city.

EVI KEY LEARNING AND SUPPORT PARTNERS

Pink Cornrows
The Public Good Projects
First Draft News
Mathematica
Rand Corp.
Brown University School of Public Health

RELATED EVI READOUTS

Relational Playbook (Pink Cornrows)
Early Insights Report (Rand Corp.)

About this Report

Methodology

For this report, we conducted a scan of over 250 articles in media, practitioner, government-issued and scientific (peer-reviewed) literature relevant to the U.S. vaccine rollout, including information published from government agencies and nonprofits as well as research on vaccine confidence, health behavior, information science, economic sciences, communications, social determinants of health, disparities in health outcomes, and structural racism. We interviewed leaders from across the nation working on vaccination campaigns in government, academia, foundations, the nonprofit sector, communications agencies, religious institutions, and community organizations to understand what these leaders identified as effective strategies for and barriers to Covid-19 vaccine uptake.

As a partner in the Equity-First Vaccination Initiative, we are also conducting mixed-methods participatory research involving elements of intervention design, delivery, and evaluation (with CBOs serving both as recipients and co-producers in our learning process) and qualitative evaluations and quantitative text analyses of partners' perceptions, experiences, and learnings from this process (e.g. information is obtained from community partner meetings, office hours, participant observation, the projects CBOs developed and their reflections on them as expressed in monthly meetings, focus groups, and in-depth conversations.) This research is ongoing and the report shares insights from the first year of analysis.

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