

REPORT TO

*GTMRx National Task Force:
Building Vaccine Confidence in the Medical Neighborhood*

Background and Resources to Build Vaccine Confidence in the Health Neighborhood

MARCH 2021



Prepared by Helaine E. Resnick, PhD, MPH, Resnick, Chodorow & Associates

This report is sponsored by 

Contents

- Executive Summary 1
- Vaccine Hesitancy in the United States: Historical Context 5
- Distinctive Features of COVID-19 Vaccine Hesitancy..... 6
- Social Marketing and Vaccine Confidence 8
- Summary of Selected Resources Addressing COVID-19 Vaccine Confidence..... 10
- Non-Profit and Federal Research 17
- Professional Societies 27
- The Business Community 31
- Literature Cited 35

GTMRx National Task Force: Building Vaccine Confidence in the Medical Neighborhood

The GTMRx Institute has convened a national task force to identify key issues and offer guidance designed to build vaccine confidence in local communities. The goal of the task force is to inform the strategies to engage teams at the community level to work collaboratively and communicate effectively about vaccination during current and future pandemics.

1. Engaging care teams in the local community
2. Coordinating with schools, religious organizations, employers
3. Collaborating with local, state and federal agencies
4. Communicating to ensure effective, efficient and engaged community response

We believe that the health neighborhood, and the broader health neighborhood, is essential and fundamental when implementing programs designed to build vaccine confidence.

This document has been prepared to offer a “level-setting” tool for the GTMRx National Task Force as they begin crafting recommendations helpful to overcoming barriers and build vaccine confidence in local communities today and in the future.

Task Force Leadership

CO-LEAD: Paul Abramowitz, Pharm.D., ScD (Hon), FASHP, Chief Executive Officer, American Society of Health-System Pharmacists (ASHP)

CO-LEAD: Georges Benjamin, MD, Executive Director, American Public Health Association (APHA)

CO-LEAD: Susan Dentzer, Senior Policy Fellow, Robert J. Margolis Center for Health Policy, Duke University

STAFF OFFICER: Katherine Herring Capps, Executive Director and Co-Founder, GTMRx Institute

Task Force Participants

Kate Berry, Senior Vice President, Clinical Affairs & Strategic Partnerships, America's Health Insurance Plans (AHIP)

Ernest Grant, Ph.D., RN, FAAN, President, American Nurses Association (ANA)

Ann Greiner, President & Chief Executive Officer, Primary Care Collaborative (PCC)

Paul Grundy, MD, MPH, FACOEM, FACPM, Chief Transformation Officer, Innovaccer; President, GTMRx Institute

Doug Henley, MD, FAAFP, Executive Vice President & Chief Executive Officer Emeritus, American Academy of Family Physicians (AAFP)

Connie Hwang, MD, MPH, Chief Medical Officer & Director of Clinical Innovation, Alliance of Community Health Plans (ACHP)

Punam A. Keller, Ph.D., MBA, Senior Associate Dean, Innovation & Growth, Charles Henry Jones Third Century Professor of Management, Tuck School of Business, Dartmouth University

Mike Maddux, Pharm.D., DHL (hon), Executive Director, American College of Clinical Pharmacy (ACCP)

Darilyn Moyer, MD, FACP, FRCP, FIDSA, Executive Vice President & Chief Executive Officer, American College of Physicians (ACP)

Debra Ness, MS, President, National Partnership for Women & Families

Anand Parekh, MD, MPH, Chief Medical Advisor, Bipartisan Policy Center (BPC)

Kathleen Pawlicki, BPharm, MS, RPh, FASHP, Immediate Past President, American Society of Health-System Pharmacists (ASHP)

Marcus Plescia, MD, MPH, Chief Medical Officer, Association of State and Territorial Health Officials (ASTHO)

Chris Queram, MA, Interim Chief Executive Officer, National Quality Forum (NQF)

Chet Robson, DO, MHCDS, FAAFP, Chief Clinical Officer, Office of Clinical Integrity, Walgreens

Julia Skapik, MD, MPH, Medical Director, National Association of Community Health Centers (NACHC)

Richard Stone, MD, Acting Under Secretary for Health, Veterans Health Administration (VHA)

Mike Thompson, President and Chief Executive Officer, National Alliance of Healthcare Purchaser Coalitions (NAHPC)

Toyin Tofade, MS, Pharm.D., BCPS, CPCC, FFIP, Dean & Tenured Professor, Howard University

Antonia Villarruel, Ph.D., RN, FAAN, Professor & Dean of Nursing, University of Pennsylvania; Past-President & Founding Member, National Coalition of Ethnic Minority Nursing Associations; Past-President, National Association of Hispanic Nurses

Susan Winckler, RPh, Esq., Chief Executive Officer, Reagan-Udall Foundation for the Food and Drug Administration

Task Force Support

Meredith Allen, DrPH, MS, Vice President, Health Security, Association of State and Territorial Health Officials (ASTHO)

Poonam Bal, MHSA, Director, Quality Innovation, National Quality Forum (NQF)

Julie Balter, JD, Vice President, Health Justice, National Partnership for Women & Families

Regina Davis, Ph.D., MPH, MCHES, Associate Executive Director, Health Policy and Practice, American Public Health Association (APHA)

Anna Dopp, Pharm.D., Senior Director, Clinical Guidelines & Quality Improvement, American Society of Health-System Pharmacists (ASHP)

Sinsi Hernández-Cancio, JD, Vice President, Health Justice, National Partnership for Women & Families

Angela McGowan, JD, MPH, Senior Director, Alliance for Disease Prevention and Response, American Public Health Association (APHA)

Kathy Pham, Pharm.D., BCPPS, Director, Policy and Professional Affairs, American College of Clinical Pharmacy (ACCP)

Susan Polan, Ph.D., Associate Executive Director, Public Affairs and Advocacy, American Public Health Association (APHA)

Helaine E. Resnick, Ph.D., MPH, Co-Founder, Resnick, Chodorow & Associates

Izzy Serji, MPH, Operations Manager, GTMRx Institute

Kasey Thompson, Pharm.D., MS, MBA, Chief Operating Officer & Senior Vice President, American Society of Health-System Pharmacists (ASHP)

Executive Summary

Vaccine hesitancy—delay in acceptance or refusal of vaccination despite availability of vaccination services—is a public health issue that has risen to new prominence in the COVID-19 pandemic. The widespread morbidity and mortality of COVID-19, along with several issues that are unique to COVID-19 vaccines, have created an urgent need to address the issue.

Never has it been more urgent to build confidence in vaccines, and the role of the “medical neighborhood”—the hospitals, health care professionals and others who provide services in communities around the country—in doing so is critically important. Those that work or live in the broader “health neighborhood” are also essential.

As part of a new GTMRx-lead initiative to build vaccine confidence, this document

- Provides historical context on vaccine hesitancy in the United States;
- Highlights distinctive features of vaccine hesitancy in the COVID-19 era;
- Describes social marketing approaches in the context of vaccine hesitancy;
- Offers useful statistics on COVID-19 vaccine hesitancy; and
- Summarizes resources, data and evidence-based strategies to address COVID-19 vaccine hesitancy from several organizational categories:
 - The federal government and non-profit organizations
 - Professional societies
 - The business community

Vaccine opposition has been present in the United States since at least 1879, and three main objections to vaccination have been in play since the late 1960s: government intrusion on religious and philosophical beliefs, distrust of medical science and infringement on personal liberty. Many factors have caused these objections to gain steam in recent years. Some of these factors include an increase in the number of recommended childhood vaccinations and regulations requiring them; a widely publicized, albeit debunked, scientific report that raised doubts about the safety of childhood vaccines; declining trust in government and the scientific establishment; ongoing concerns about social justice and equity and the rise of social media and accompanying spread of misinformation about vaccines.

Against this historical backdrop, COVID-19 vaccines have ushered in a new era of vaccine hesitancy. COVID-19 vaccines were developed rapidly and to date have been approved for use by the U.S. Food and Drug Administration under emergency use authorization, rather than through the complete regulatory product approval process. Uncertainties about safety and efficacy appear to have fueled hesitancy among Black Americans in particular and played into longstanding distrust of the medical system. Many health care workers, including front line workers in long-term care facilities, have also resisted vaccination. And, as discussed further below, the largest single divide among Americans in terms of support for vaccination now falls along political lines, with polls in mid-March 2021 showing a three-fold difference in vaccine hesitancy depending on party registration or orientation.

In addition, COVID-19 vaccines are currently approved only for adults, so any short-term efforts to develop programs for vaccine-hesitant parents will not benefit from the “successful roll out” that many parents want to see before they are comfortable deciding whether a vaccine is safe for their children. Religious opposition stemming from fetal cell lines used in the development in one of the vaccines also presents a novel aspect of vaccine hesitancy.

Likewise, the role of social media in spreading vaccine misinformation and the prevailing political climate toward undocumented individuals are two additional aspects of vaccine hesitancy that are relatively new. There has also been pronounced COVID-19 vaccine hesitancy and skepticism within U.S. military forces. And conservative Republican skepticism can be linked to the belief that the danger of the pandemic has been overstated and that mitigation measures such as mask wearing are unnecessary.

Factors that drive vaccine hesitancy on the individual and population levels vary considerably, and this heterogeneity needs to be carefully examined before interventions to promote vaccine confidence can be expected to change behavior. A model for behavior change, social marketing applies traditional marketing principles to target and drive specific behavior changes in target populations. Social marketing principles call for messaging that is *tailored for*, and *meaningful to* specific population segments. Most of the COVID-19 vaccine hesitancy strategies that are summarized in this report include one or more social marketing principles or practices.

A robust peer-reviewed literature on vaccine hesitancy was available before the COVID-19 era and includes work on social marketing in the context of immunization. That literature, along with research that has been conducted during the pandemic, have informed the recommendations that reputable groups have offered to address vaccine hesitancy. Research and recommendations on vaccine hesitancy from the following organizations are included in this report:

- Non-Profit and Federal Government
 - Kaiser Family Foundation
 - National Academy of Sciences
 - U.S. Census Bureau
 - Centers for Disease Control and Prevention
 - Johns Hopkins Center for Health Security
 - World Health Organization
 - Sabin-Aspen Vaccine Science & Policy Group
 - de Beaumont Foundation
- Professional Societies
 - American Medical Association
 - American Academy of Pediatrics
 - American College of Physicians
 - American Society of Health System Pharmacists
- The Business Community
 - CVS Health
 - U.S. Chamber of Commerce Foundation
 - National Alliance of Healthcare Purchaser Coalitions
 - Health Action Alliance

Despite considerable variation in the nature and missions of these organizations, they arrived at strikingly similar conclusions about vaccine hesitancy and what should be done to address this issue. Concerning **who** is vaccine hesitant, there is general agreement that the following groups are currently overrepresented among people reporting vaccine hesitancy:

- Minority communities
- People in rural areas
- People with Republican or conservative political leanings
- Many parents (when asked about vaccinating their children in the future)

Several organizations have deployed multiple surveys on vaccine hesitancy, and as expected, results shift over time in response to information that the public is receiving about ongoing vaccination efforts. Although most data show a reduction in vaccine hesitancy between late 2020 and February 2021, minorities, rural adults and people with conservative political leanings are still overrepresented among people who remain hesitant. Over time, sampling frames that provide data on vaccine hesitancy may become “enriched” by people with higher levels of vaccine hesitancy as the share of people who are vaccinated or comfortable with vaccination increases. Therefore, it is important for people who design programs that address vaccine hesitancy to understand the methodology behind data sources that are tracking the evolution of vaccine hesitancy.

Concerning **why** people are vaccine hesitant, there is general agreement that many reasons drive vaccine hesitancy, with the following reported most often:

- Concern about side effects
- Concern about safety
- A desire to “wait and see” if it is safe
- Lack of trust in government
- Lack of trust in the scientific establishment
- Concern that vaccines are being developed too quickly

Concerning **how to communicate** about vaccine hesitancy, there is agreement about the value of several strategies that are generally consistent with social marketing principles:

- “Meet people where they are”—that is, discern their values, needs, emotions and level of knowledge and understanding while connecting with them in a way that is effective *for them*
- Tailor messages to specific audiences
- Adapt messaging as circumstances change
- Identify trusted messengers to deliver messages
- Leverage trusted vaccine endorsers
- Emphasize support for vaccination instead of focusing on naysayers
- Avoid repeating false claims
- Don’t try to persuade everyone

The last point warrants emphasis: Experts agree that allocation of resources to promote COVID-19 vaccine uptake among vaccine hesitant people should focus on those who are open to new information and have the potential to become comfortable with vaccination. By contrast, resources should not be directed to people who are “absolute refusers” because they are unlikely to change their minds about vaccination.

Experts also agree that programs to build vaccine confidence will need to be designed and delivered on the local level.

Concerning **how to engage** with communities to promote vaccine uptake, there is general agreement that the following strategies should be used:

- Form partnerships with community organizations
- Engage with and optimize the voices and perspectives of trusted messengers who have roots in the community
- Engage across multiple, accessible channels

- Begin or continue working toward racial equity—acknowledge broader shortcomings in health equity in society, and frame the COVID-19 vaccines as tools that can help advance equity in communities most affected by the pandemic
- Allow and encourage public ownership of COVID-19 vaccination programs

Once again, many aspects of these community engagement strategies are consistent with social marketing principles.

The materials that are summarized in this report indicate agreement on another important point: There is no one-size-fits-all approach to promote vaccine confidence, but successful programs can be designed and deployed based on a deep understanding of individual and local concerns, beliefs and needs. This understanding is most likely to come from the knowledge and experience of trusted members of the community who, working in close collaboration with health care providers, pharmacies, the business community and health officials at all levels of government, can deliver tailored messages to promote COVID-19 vaccine uptake.

Vaccine Hesitancy in the United States: Historical Context

Two themes have characterized opposition to vaccination in the United States for more than 100 years. The first theme, according to vaccine opponents, is that for both individuals and society, vaccines cause more harm than the conditions they aim to prevent. The second theme involves the distinction between promoting vaccines and having policies that make them mandatory.¹ These concerns—as well as additional ones that are specific to the COVID-19 era—aptly describe vaccine hesitancy today.

Vaccine opposition has a long history in the United States. Established in 1879, the Anti-Vaccination Society of America appealed to people with a wide range of religious, socioeconomic and ethnic backgrounds.² Concerns of late 19th century vaccination opponents found their way into the court system by the early 20th century. The 1905 Supreme Court Case *Jacobson v. Massachusetts* upheld the right of the states to enforce mandatory vaccination laws, and subsequent cases allowed schools to link attendance to vaccination, with some exceptions based on religious or philosophical practice.³

As science progressed during the 20th century, so too did vaccine development and expansion of immunization schedules, especially for children. By the late 1960s, vaccination opponents cited three main objections to immunization: government intrusion on religious beliefs, distrust of medical science and infringement on personal liberty.⁴ For many Americans, these concerns are still top of mind today.

In minority communities, additional considerations influence comfort with vaccination. These involve the enduring effect of unethical, federally funded research and health-related activities in minority communities. For example, the Tuskegee “study” did much to erode trust in the government’s role in research and medical care in the Black community. Programs to address vaccine hesitancy in minority communities must acknowledge these important historical events. Although many reforms have been put in place since Tuskegee, other concerns in minority communities are likely to impact COVID-19 vaccine hesitancy. For example, fear of arrest and deportation among undocumented persons is likely to play a role in vaccine hesitancy in the LatinX population in particular.

Historically, childhood vaccines targeted life-threatening and highly disabling childhood infections such as polio and whooping cough that were spread through casual contact in schools, and vaccination for these conditions was easily understood and largely embraced by parents. By 1995, a chicken pox vaccine had been developed and approved. Although the virus that causes chicken pox resulted in considerable morbidity for children and inconvenience for parents, the virus caused only about 100–150 deaths each year.⁵ The contrast between chicken pox and other childhood diseases for which immunization was recommended raised questions about the rationale for adding chicken pox to an already crowded immunization schedule. The chicken pox debate was overshadowed by the 1998 publication and subsequent refutation of a report linking the measles/mumps/rubella vaccination to autism. This debacle provided fuel for vaccine-hesitant parents who continue to question the safety of the combined measles, mumps and rubella vaccine, as well as other childhood vaccines, despite decades of evidence supporting their overwhelming safety.⁶

In 2006, vaccine hesitancy evolved to include moral concerns when vaccination for human papillomavirus (HPV)—a sexually transmitted infection—was approved for adolescents in the United States. The recommendation for HPV immunization was challenging for some families who believed that the implications of HPV vaccination were inconsistent with their values.⁷ Moral concerns about HPV vaccination were a forerunner of those raised by one religious group that prohibited vaccination with a specific COVID-19 product because it was developed using fetal tissue.⁸

By the time the COVID-19 pandemic began, vaccine hesitancy was already a longstanding and highly nuanced characteristic among segments of the American public. As summarized in the next section, however, unique aspects of COVID-19 vaccines and the COVID-19 vaccination environment present additional challenges for those who seek to develop programs promoting vaccine confidence.

Distinctive Features of COVID-19 Vaccine Hesitancy

In considering what public health interventions may be effective in addressing COVID-19 vaccine hesitancy, it is useful to highlight the following distinctive features of vaccines and vaccination efforts in the COVID-19 era:

- Public trust in the scientific/medical establishment began to decline before COVID-19, and it is considerably lower now than in the past. This lack of trust includes diminished trust in vaccination.⁹
- Although the different platforms on which COVID-19 vaccines were developed are at least several years to multiple decades old, the process from sequencing the SARS-CoV-2 virus and isolating its spike protein to generating the vaccines and obtaining regulatory approval, took less than a year. The pace of development was much faster overall than the 10- to 15-year development period of many earlier vaccines.¹⁰ The rapid product development has driven safety concerns, despite the fact that the rate of adverse events to date is low and in line with historical vaccine norms.
- COVID-19 vaccines have been approved under emergency use authorization (EUA).
 - Most vaccines are not developed during a public health emergency like COVID-19, so they have not been subject to EUAs but rather to the full FDA review and approval process.
 - Some observers have unfavorable perceptions of COVID-related EUAs, especially considering the FDA's rapid issuance and later revocation of an EUA for the use of hydroxychloroquine in prevention and treatment of COVID-19. As a December 2020 op-ed put it, "Too many COVID-19 EUAs enhance the politicization of medical science and pollute the water for future research to get long-term answers."¹¹
 - Others warn that EUAs exacerbate the deterioration of the public's confidence in science. Another op-ed argues, "Public trust in vaccines is already in decline. The FDA should proceed with caution."¹²
 - EUAs essentially halt ongoing trials once the drug is approved, thereby, inhibiting access to additional trial results that would have been available absent the EUA. However, all developers of COVID-19 vaccines continue to study them through newly constituted trials, such as those now testing some of the vaccines on children.
- COVID-19 vaccines are currently approved only for adults.
 - Much of the historical debate on vaccination has focused on childhood immunization.
 - Several manufacturers are enrolling U.S. adolescents aged 12–15, with results expected in summer 2021, and on March 16, 2021, the vaccine manufacturer Moderna announced it had begun testing its vaccine on children ages six months to 12 years.
- Some segments of the population view COVID-19 vaccine development and distribution in a political, rather than a public health context.
- Religious objections have been raised to the fact that at least several COVID-19 vaccine developers employed fetal tissue in vaccine testing, development and production. This aspect of vaccine hesitation was not of widespread concern in the past.⁸
- The positive and negative effects of social media and the ease with which both high- and low-quality health information can be accessed have affected public perception and decision making in ways that did not exist in the past.¹³

- Among some minority communities, persistent dissatisfaction and fear linked to the federal government's historical role in unethical research and related activities continue to fuel unfavorable perceptions of vaccines and vaccination efforts.
- Concern among non-citizens and undocumented individuals about arrest and deportation linked to receipt of public services—including vaccination—is a relatively new public health consideration that will need to be addressed in the COVID-19 era.¹⁴
- Much of the highly politicized nature of the vaccine hesitancy in 2021 appears to be a relatively new development lined to the clash between partisanship and science during the pandemic.
- The public is more aware of different COVID-19 vaccine products than, for example, different seasonal flu vaccine products, and this awareness may need to be addressed in vaccine promotion programs.
 - This awareness includes preferences for one shot or two shot vaccines—the availability of vaccine products that differ in this way does not exist for other common vaccines.

The unique features of the COVID-19 vaccine development process and vaccination environment impact the behavior (i.e. seeking vaccination or avoiding it) of vaccine hesitant individuals. However, some people's behavior is influenced by only one of the distinctive features listed above, but for others, multiple features may drive vaccine hesitancy. For those who seek to promote vaccine confidence, this heterogeneity means that strategies to encourage a vaccine hesitant individual to embrace vaccination will need to first identify which feature(s) of COVID-19 vaccination drive the individual's hesitant behavior and then deliver messaging that addresses those concerns in a manner that drives vaccine seeking behavior.

The vaccine hesitancy resources described below are designed to influence vaccination behavior. The research and practices that support many of these resources can be traced back to the application of social marketing principles on public health and immunization programs. Because these principles play a large role in the material that is presented in this report, we provide a summary of social marketing and how it applies to COVID-19 vaccine hesitancy.

Social Marketing and Vaccine Confidence

A 2015 report¹⁵ offers an excellent overview of how social marketing emerged from “traditional” marketing and how it can be used to address vaccine hesitancy. The authors explain the distinction between social marketing and traditional marketing and provide a framework in which social marketing can be used to drive behavior change:

Marketing is based on the notion that products and services are most likely to be successful—i.e. purchased or taken up—if they are focused on identifying, addressing and satisfying the needs of current and potential customers... Social marketing represents the extension of this thinking to the “selling” of ideas, attitudes and behaviors... Social marketing provides a framework for doing this as it focuses on creating, communicating, delivering and exchanging offerings that have a positive value for the segmented, targeted audiences and partners within the constraints of available resources.

Earlier, we describe unique aspects of the COVID-19 era that drive vaccine hesitancy, emphasizing that an individual's hesitancy may be driven by only one of these distinctive factors or by many. The heterogeneity that characterizes vaccine hesitancy on the individual and population levels underscores the need to recognize these various factors before effective vaccine confidence programs can be deployed. These principles are reflected in social marketing, which advocates for behavior change strategies based on messaging that is *tailored for*, and *meaningful* to specific segments of the population:

Social marketing also introduces tactical segmentation of the population going beyond mere background characteristics, by drawing on consumer market research and analysis to consider demographic and psychographic characteristics, population members' subjective experiences with immunization, their intention to perform the advocated behavior, their medical histories, cultures and environments....Social marketing therefore, seeks/encourages an enhanced understanding of how different subgroups in the targeted population are likely to be persuaded given that hesitancy varies and is not uniform across the population, and the factors influencing hesitation are not the same across the subgroups.

Another concept that appears often in the vaccine hesitancy material covered in this report is the critical importance of “trusted messengers.” Social marketing recognizes the importance of these messengers and advocates for programs that identify and optimize them to change vaccine-related beliefs and behaviors:

Social marketing also involves the determination/identification of the key influencers, gate keepers and agents of change within the population as information provision alone does not determine behavior—it also matters who is providing vaccination-related information and how it is provided.

Another report¹⁶ on the application of social marketing to childhood immunization pointed to successes that were achieved with these strategies when they were directed at changing parents' behaviors. The authors offered several observations about their social marketing efforts that are relevant to vaccine confidence programs in the COVID-19 era:

- Although supporting data and a rational argument are important, they are not sufficient. Also needed are:
 - A trusted messenger
 - A message that resonates with the audience's emotions
- The most effective messenger is one the audience likes and trusts and who is working toward the same goals as those in the audience.

- Successful communication strategies recognize that for messages to make an impact on the audience, they must be capable of getting their attention and engaging their minds in a way that leads to action.
 - An emotional element is essential to both functions.
- Carefully selected vaccination spokespeople should be supplemented by trusted people on the local level.

Social marketing is not new, nor is its application to immunization programs. It is for these reasons that social marketing principles are frequently “built into” strategies that are recommended to address COVID-19 vaccine hesitancy.

The rest of this report summarizes resources and recommendations that a selection of reputable organizations have offered to address vaccine hesitancy in the COVID-19 era. The organizations that have offered these resources are divided into multiple groups: Governmental organizations (including U.S. federal agencies), nonprofit and educational organizations; professional societies; and the business community. Although space constraints preclude covering all vaccine hesitancy materials that are available in these three organizational categories, the similarity across organizations in recommended strategies suggests that the most widely supported recommendations are represented in this report.

The next section provides tabular summary of the vaccine hesitancy material that was reviewed for this report, including links to web-based resources.

Summary of Selected Resources Addressing COVID-19 Vaccine Confidence

The peer-reviewed literature on COVID-19-specific strategies for addressing vaccine hesitancy is limited because the pandemic in the United States began just over a year ago, and vaccines have been authorized for only a short period of time. However, there is a robust pre-COVID-19 literature on vaccine hesitancy—including the research on social marketing described above—that informed the work of reputable organizations in their efforts to develop data collection initiatives, guidance and other resources to address COVID-19 vaccine hesitancy.

Table 1 summarizes the work of some of these organizations.

Table 1. *Reputable Data, Tools and Resources for Addressing COVID-19 Vaccine Hesitancy*

Source	Specific to COVID-19?	Data, Tools, Resources
<i>Non-Profit and Federal Research</i>		
KFF Vaccine Monitor ¹⁷ KFF Vaccine Monitor Archives ¹⁸	Yes	<ul style="list-style-type: none"> • Vaccine hesitancy by demographic strata • Intention to get vaccinated, by demographic strata • Detailed data on target groups • Information on messaging and myths that increase/decrease likelihood of vaccine hesitancy • Data on where vaccine-hesitant individuals get information on COVID-19 vaccination • Information about public perception of vaccine distribution/access • Historical reports and trends over time

Source	Specific to COVID-19?	Data, Tools, Resources
National Academy of Sciences¹⁹	Yes	<p><i>Five Principles for Effective Risk Communication</i></p> <ul style="list-style-type: none"> • Do not wait • Be credible • Be clear • Express empathy and show respect • Acknowledge uncertainty and manage expectations <p><i>Six Strategies for Engaging Communities to Combat Mistrust and Build Public Confidence in COVID-19 Vaccines</i></p> <ul style="list-style-type: none"> • Form partnerships with community organizations • Engage with and use the voices and perspectives of trusted messengers who have roots in the community • Engage across multiple, accessible channels • Begin or continue working toward racial equity—acknowledge broader shortcomings in health equity, and frame the COVID-19 vaccines as one of several tools that can help advance equity in communities most affected by the pandemic • Allow and encourage public ownership of COVID-19 vaccination • Measure and communicate inequities in vaccine distribution <p><i>Nine Communication Strategies for Ensuring Demand for and Promoting Acceptance of COVID-19 Vaccines</i></p> <ul style="list-style-type: none"> • Meet people where they are, and don't try to persuade everyone • Avoid repeating false claims • Tailor messages to specific audiences • Adapt messaging as circumstances change • Respond to adverse events in a transparent, timely manner • Identify trusted messengers to deliver messages • Emphasize support for vaccination instead of focusing on naysayers • Leverage trusted vaccine endorsers • Pay attention to delivery details that also convey information

Source	Specific to COVID-19?	Data, Tools, Resources
U.S. Census Bureau ²⁰	Yes	<p><i>Household Pulse Survey bi-weekly data releases that include reasons for not receiving or planning to receive COVID-19 vaccination</i></p> <ul style="list-style-type: none"> • Fear of side effects • Not sure vaccine will work • Don't believe vaccine is needed • Don't like vaccines • Doctor did not recommend vaccine • Plan to wait and see if it is safe • Other people need it more right now • Concerned about cost • Don't trust COVID-19 vaccines • Don't trust the government
Centers for Disease Control and Prevention ²¹	Yes	<p><i>Strategies for health care workers to promote vaccine confidence</i></p> <ul style="list-style-type: none"> • <u>Build Trust</u>: Share clear, complete and accurate messages about COVID-19 vaccines and take visible actions to build trust in the vaccine, the vaccinator and the system in coordination with federal, state and local agencies and partners • <u>Empower health care personnel</u>: Promote confidence among health care personnel in their decisions to get vaccinated and to recommend vaccination to their patients • <u>Engage communities and individuals</u>: Engage communities in a sustainable, equitable and inclusive way—using two-way communication to listen, build trust and increase collaboration
Centers for Disease Control and Prevention ²²	Yes	<p><i>Customizable COVID-19 vaccine content for community-based organizations</i></p> <ul style="list-style-type: none"> • Letters to members • Newsletter content • Key messages • FAQs • Slide deck • Posters/flyers • COVID-19 vaccine fact sheet • Social media content • Stickers • Fotonovela (graphic novellas)

Source	Specific to COVID-19?	Data, Tools, Resources
Johns Hopkins Center for Health Security ²³	Yes	<ul style="list-style-type: none"> • Understand and inform public expectations about vaccine benefits, risks and supply • Earn the public's confidence that vaccine allocation and availability are evenhanded • Make vaccination available in safe, familiar and convenient places • Communicate in meaningful, relevant and personal terms, crowding out misinformation • Establish independent representative bodies to instill public ownership of the vaccination program
WHO Behavioral and Social Drivers (BeSD) Model ²⁴	No	<ul style="list-style-type: none"> • Engage community leaders • Social mobilization tactics • Mass media campaigns • Use of reminder and follow-up systems • Training and education of health care professionals • Nonfinancial incentives • Vaccine mandates • Efforts to make vaccination more convenient • Efforts to increase general knowledge and awareness about vaccines and vaccination
WHO Tailoring Immunization Programs (TIP) ²⁵	No	<ul style="list-style-type: none"> • A structured, adaptable and participatory process for under-vaccinated or hesitant target populations • Based on a behavioral theoretical model linking research, interventions and measurement/evaluation • Undertaken to understand enablers and barriers to vaccination • Define and evaluate evidence-informed interventions to increase coverage
Sabin-Aspen Vaccine Science & Policy Group ²⁶	No	<p><i>Interventions that target direct behavior change</i></p> <ul style="list-style-type: none"> • Reminders and calls • Presumptive health care provider recommendations • Onsite vaccination • Default appointments • Incentives • School and work requirements (mandates) • Sanctions

Source	Specific to COVID-19?	Data, Tools, Resources
de Beaumont Foundation ²⁷	Yes	<p><i>Most effective language to improve COVID-19 vaccine acceptance</i></p> <ul style="list-style-type: none"> Rural Americans have very low confidence in the safety of the vaccine “Returning to normal” is the desired outcome among Black Americans under 50, but for those over 50, “saving lives” is the highest priority The top priority for young Republicans is a “return to normal,” and the next highest priority is to reopen the economy
Professional Societies		
American Medical Association ²⁸	Yes	<ul style="list-style-type: none"> Understand patient’s concerns Ask why patient is hesitant Counter misinformation Doctors are the most trusted information source Tell patients they need to get the vaccine Tailor messaging Prepare staff to answer questions
American Academy of Pediatrics ²⁹	No	<ul style="list-style-type: none"> Listen to and acknowledge parents’ concerns Promote partnerships with parents in decision making and personalize these relationships Clarify and reaffirm parents’ correct beliefs about immunization and modify misconceptions Discuss the benefits of vaccines and the possibility of adverse events Provide parents with vaccine information statements, educational resources and reliable websites Personalize the information provided to parents based on cultural beliefs, vaccine concerns and literacy level Stress the number of lives saved by immunization, as a positive approach, rather than focusing on the number of deaths from not immunizing Discuss state laws for school entry and the rationale for them A majority of parents believe immunization is important and trust pediatricians as the most important source of immunization information

Source	Specific to COVID-19?	Data, Tools, Resources
American College of Physicians ^{30,31}	Yes	<p><i>Strategies for internists to promote COVID-19 vaccine acceptance</i></p> <ul style="list-style-type: none"> • Battle misinformation with aggressive dissemination of accurate information about the realities of COVID-19 and the risks and benefits of vaccination • Acknowledge rather than dismiss people’s concerns about COVID-19 vaccine • Manage the public’s expectations • People who are skeptical of the vaccine’s effectiveness and safety need to be informed that the trials leading to EUA included participants with a range of ages, racial and ethnic backgrounds and comorbidities • Public health messengers need to reflect and be trusted by the populations they seek to reach <p><i>Addressing Mistrust About COVID-19 Vaccines Among Patients of Color</i></p> <ul style="list-style-type: none"> • Lead with listening • Tailor responses to patient concerns • Briefly describe the regulatory and development processes surrounding COVID-19 vaccines using accessible language • Acknowledge uncertainty
American Society of Health System Pharmacists	Yes	<p><i>Principles and strategies for COVID-19 vaccine distribution, allocation and mass immunization:</i></p> <ul style="list-style-type: none"> • Achieve high acceptance and uptake of COVID-19 vaccines by minimizing vaccine hesitancy and misinformation • Gain and maintain trust within the community • Lead public education efforts • Take advantage of all locales to ensure access and convenience
<i>The Business Community</i>		
CVS Health ³²	Yes	<ul style="list-style-type: none"> • Large numbers of people report no plans to be vaccinated, with higher numbers among minority communities • Safety, concerns about side effects and questions about vaccine efficacy drive vaccine hesitancy • Health care workers getting vaccinated convinces others to get vaccinated • There is a lack of knowledge about the vaccination process concerning cost and access
U.S. Chamber of Commerce Foundation	Yes	<p><i>Employer messaging themes:</i></p> <ul style="list-style-type: none"> • Lead by example • Job security • Safe workplaces

Source	Specific to COVID-19?	Data, Tools, Resources
National Alliance of Healthcare Purchaser Coalitions	Yes	<ul style="list-style-type: none"> • Include vaccine coverage in the medical and pharmacy benefits; consider offering incentives upon vaccination completion • Understand and communicate about continued COVID-19 spread and safety measures • Increase vaccine confidence by directly addressing common concerns • Provide trusted tools and resources to assist employees in making informed choices • Share evidence-based resources with employees
Health Action Alliance	Yes	<p><i>Strategies and resources for businesses to prepare for and encourage COVID-19 vaccination</i></p> <ul style="list-style-type: none"> • Establish a COVID-19 vaccination policy and plan • Educate and encourage the workforce • Support and strengthen community vaccine distribution

The following section provides additional detail on the vaccine hesitancy work from the organizations that are listed in Table 1.

Non-Profit and Federal Research

[Kaiser Family Foundation Vaccine Monitor](#)

The KFF COVID-19 Vaccine Monitor employs surveys and qualitative research to track public attitudes and experiences with COVID-19 vaccinations.¹⁴ The Vaccine Monitor is notable because it is an ongoing data collection effort that examines public opinion as vaccine development and distribution evolve over time. The KFF Vaccine Monitor covers the following topics:

- Vaccine confidence and hesitancy
- Trusted messengers and messages
- The public's experiences with vaccination

These factors are examined in relation to the following:

- Age
- Gender
- Race and ethnicity
- Political party
- Rurality

As noted throughout this report, researchers agree that vaccine hesitancy must be addressed on the local level by first understanding the nature of vaccine hesitancy in different communities (e.g., based in concerns about safety, cost, convenience, personal liberty, trust in science), and how these hesitation(s) may differ across various strata of age, gender, race and other factors within a community. Although Vaccine Monitor data are limited to information collected on the national level, multiple waves of data collection are useful to program planners because they provide insight into dynamic changes in public opinion that can be used to tailor programs to the specific needs of diverse communities.

[Kaiser Family Foundation Vaccine Monitor Archives](#)

The KFF COVID-19 Vaccine Monitor Archives contain a wealth of information on vaccine hesitancy issues from the KFF Vaccine Monitor initiative.¹⁵ Reports in the archive include “deep dives” into the following:

- Vaccine confidence, intentions and trends
- Attitudes toward COVID-19 vaccination among Black women and men
- People who want to “wait and see” about COVID-19 vaccination
- Where people are getting COVID-19 information
- Vaccine hesitancy among Hispanic adults
- Vaccine hesitancy in rural America

Understanding these issues on the local level will be central to any effort to promote vaccine confidence in a manner that is closely aligned with local demographics, beliefs and needs. Although KFF and other data show that vaccine hesitancy has decreased over time as COVID-19 vaccination has rolled out, hesitancy persists at considerable levels, but these differ by demographic factors.^{33,34,35}

Before considering the role that demographic and other factors may play in vaccine confidence program design, it is critically important to emphasize the distinction between two groups of people with vaccine hesitancy: those who are definitively/firmly not open to voluntary vaccination (“refusers”) and people with a “wait and see” attitude who are open to information that informs their perceptions and willingness to seek vaccination.

Twenty-two percent of adults are firmly opposed to vaccination. Among people who expressed hesitation about getting vaccinated, there is a substantial sub-group that reports “definitely” not wanting to be vaccinated, or who report they will only get vaccinated if it is “required” (22% of U.S. adults in February 2021, down slightly from 24% in December 2020).³¹ *Experts agree that these groups are not good targets for public health programs aimed at addressing vaccine hesitancy.*

Twenty-two percent of adults have a wait-and-see approach to vaccination. *People who express vaccine hesitancy but are open to new information and the possibility of changing their minds about vaccination are considered by experts to be the best targets for programs that encourage vaccine confidence.* Those who were vaccine hesitant, but who also maintained this “wait and see” approach, constituted 22% of U.S. adults in February 2021, down from 39% in December 2020.³¹ Much of the decrease in the wait-and-see group has been accounted for by increases in people who either got vaccinated between December and February, or who now report wanting to get vaccinated as soon as possible. Shifts in attitude toward vaccination in the wait-and-see group are informed in large part by the availability of media coverage and information on vaccine safety that stems from expanding vaccination efforts nationwide.³⁰ It should be noted that because COVID-19 vaccination has not yet begun in children, parents who have a wait-and-see approach to vaccinating their children in the future will not have the benefit of seeing favorable media coverage and information on vaccine safety in children for many months to come.

Vaccine hesitancy differs by race, political party, rurality, and other factors. Experts stress that vaccine confidence programs must be tailored to the specific needs and concerns of various communities, and that program developers must understand that there is no “one-size-fits-all” program that will fully address vaccine hesitancy across the board. As of February 2021, KFF Vaccine Monitor data show the following:

- **Black and Hispanic** adults are more likely to have a wait-and-see approach than white adults.
- **Republicans** are more likely than Democrats to say they will definitely not get vaccinated, or will only do so if required.
- **Rural** adults are more likely than people in non-rural areas to say they will definitely not get vaccinated, or will only do so if required.
- About one-quarter of adults in the wait-and-see group indicate being more likely to get vaccinated with a **one-dose** vaccine.
- Eighty percent of the wait-and-see group express concerns about **vaccine side effects**.
- Large shares of Black and Hispanic individuals in the wait-and-see group report concerns about the following:
 - **Getting COVID-19 from the vaccine** (despite the fact it is not possible)
 - **Missing work** because of vaccine side effects
 - **Incurring out-of-pocket expenses** to get the vaccines (despite the fact there are no out-of-pocket costs for anyone in the United States)
 - Being unable to **access the vaccines from a trusted source**
 - Large numbers of Black and Hispanic adults believe there has been **inadequate testing** in their racial/ethnic groups.

Social media plays a big role in vaccine messaging. Only 25% of people who said they wanted to be vaccinated as soon as possible reported getting “a lot or a fair amount of information” about the COVID-19 vaccine from social media, but 40% of people who said they would definitely not get the vaccine said they got “a lot or a fair amount of information” on the vaccine from social media. At least one in five adults reported getting COVID-19 vaccination information from Facebook, but more than one-third of adults who said they would definitely not get the vaccine reported getting vaccine information from Facebook. *These data suggest how social media could be used to counter misinformation about COVID-19 vaccination and to promote vaccine acceptance.*

Trusted messengers differ by race/ethnicity. Only 11% of white adults reported they would turn to a religious leader for advice on whether to get the COVID-19 vaccine, but 33% of Black adults and 29% of Hispanic adults reported that they would turn to religious leaders for advice on getting vaccinated. These data suggest how strategies to reach target groups could be tailored by identifying and leveraging trusted messengers that resonate with different segments of local communities.

National Academy of Sciences

Building on its 2020 report on equitable distribution of COVID-19 vaccine,³⁶ a 2021 rapid expert consultation from National Academy of Sciences focused on public engagement strategies to build confidence in COVID-19 vaccines and vaccination efforts.¹⁶ The report came to the following conclusions:

Public engagement and effective communication through clear, transparent messaging will play a central role in building confidence in the COVID-19 vaccines... In general, given the prevalence of local concerns and information needs, it is important to support local communities with the resources needed to engage people and reinforce information coming from the federal and state levels. Strong community engagement aimed at identifying and understanding local concerns will help determine what messaging, delivered by whom, will be most effective. Moreover, it will be essential to provide people who are hesitant, reluctant, distrusting, or otherwise unmotivated with respect to the COVID-19 vaccines with the resources, information, and support they need to make the vaccination decision that is right for them.

The NAS panel recommended three groups of strategies to approach design and implementation of programs to address COVID-19 vaccine hesitancy. Those strategies focus on risk communication, engaging communities and promoting vaccine acceptance.

Five principles for effective risk communication:

1. Do not wait
2. Be credible
3. Be clear
4. Express empathy and show respect
5. Acknowledge uncertainty and manage expectations

Six strategies for engaging communities to combat mistrust and build public confidence in COVID-19 vaccines

1. Form partnerships with community organizations
2. Employ the voices and perspectives of trusted messengers who have roots in the community
3. Engage across multiple, accessible channels
4. Begin or continue working toward racial equity; acknowledge shortcomings in health equity in society, and frame the COVID-19 vaccines as tools that can help advance equity in communities most affected by the pandemic

5. Allow and encourage public ownership of COVID-19 vaccination
6. Measure and communicate inequities in vaccine distribution

Nine communication strategies for ensuring demand for and promoting acceptance of COVID-19 vaccines

1. Meet people where they are, and don't try to persuade everyone
2. Avoid repeating false claims
3. Tailor messages to specific audiences
4. Adapt messaging as circumstances change
5. Respond to adverse events in a transparent, timely manner
6. Identify trusted messengers to deliver messages
7. Emphasize support for vaccination instead of focusing on naysayers
8. Leverage trusted vaccine endorsers
9. Pay attention to delivery details that also convey information: "If exposed to reports of online sign-up portals crashing, dirty clinic sites or long wait times, for example, people may infer that the vaccine itself is also faulty."

Notably, the authors stress that the NAS report, "does not outline a national vaccine marketing strategy." Rather, it "...is intended to assist decision makers in building public confidence in the COVID-19 vaccines and in communicating with the public about the vaccination process and rollout by highlighting strategies for public engagement and message delivery to ensure demand and promote acceptance."

NAS communication strategies for COVID-19 vaccine hesitancy highlight the important role that grassroots, community-based efforts must play in successful program roll-out, and many of these strategies reflect social marketing principles. They include identifying and using trusted messengers, adapting messages to specific audiences, using multiple information delivery channels and changing strategies in response to evolving circumstances. The NAS report's recommendations are highly consistent with data from the KFF Vaccine monitor that show, for example, differences by race/ethnicity in reliance on different types of trusted messengers and that the public gathers information on COVID-19 vaccination from many sources.

United States Census Bureau

The Household Pulse Survey (HPS) is a collaboration among the Census Bureau and other federal agencies to generate data on the social and economic impact of the COVID-19 pandemic.¹⁷ Completed on March 1, 2021, Phase III of the HPS involved bi-weekly data collection and release of raw data on a variety of COVID-19 related topics, including vaccine hesitancy. These data, along with information from the KFF Vaccine Monitor, are notable because they provide a dynamic picture of vaccine hesitancy as it evolves over time. This information may be useful to program planners because they provide the most up-to-date quantitative information on many aspects of vaccine hesitancy.ⁱ

HPS data from February 3–15 indicate that more than 92 million persons (aged 18 and above) in the United States—just under 1 in 3 overall—reported vaccine hesitancy, with 45 million indicating that they are concerned about side effects and 43 million reporting that they will wait to see whether the vaccines were safe. Nearly 27 million adults reported that they would not get a COVID-19 vaccine because others needed it more. About 19 million adults reported that they do not trust COVID-19 vaccines and that they did not know if a vaccine would work. An additional 17 million said they would not pursue vaccination because they do not trust the government.³⁷

ⁱ Unlike other data collection efforts that are spearheaded by the Census Bureau, the HPS is meant to be a rapid-turnaround data collection and dissemination effort. With the rapidity of data dissemination comes certain limitations. For example, although data on vaccine hesitancy that were collected as recently as February 3–15 are available, online data tables present raw numbers but no percentages or confidence intervals (although these can be calculated using available standard errors and technical documentation).

The CDC published a vaccine hesitancy report using the Census Bureau’s HPS data from September and December 2020, arriving at similar conclusions as KFF during the same data collection period. HPS data showed that although vaccination “nonintent” decreased over time, Black adults and people in non-metropolitan areas were more likely to report vaccination nonintent. HPS data also showed that adults with lower educational attainment and incomes and those without insurance were more likely to report vaccination nonintent.³⁸ Among those with lower incomes and no insurance, nonintent to get vaccinated is consistent with KFF data linking vaccine hesitancy and concerns about out-of-pocket costs, despite the fact that vaccination is free. Finally, HPS data are consistent with KFF findings in that they highlight concerns among some segments of the public about trust in the government’s role in vaccination, vaccine side effects and the idea that vaccination could cause COVID-19.

The remarkable consistency across data sources (e.g., KFF, HPS/CDC) about key aspects of COVID-19 vaccine hesitancy suggests that these observations are robust and that the insights they provide should be carefully considered and incorporated into the design and implementation of programs to promote vaccine confidence at the local level. As suggested above, KFF and HPS data should be consulted often during program development because they are ongoing data collection efforts that can offer critical insights on the evolution of vaccine hesitancy, which can inform the need for program adjustments over time.

In addition to reporting how vaccine hesitancy relates to various demographic factors, HPS data also highlight reasons why people were resistant to vaccination (**Table 2**). Like KFF data, these data are important for resource allocation because they suggest which concerns should be prioritized (e.g., *more resources should be allocated toward addressing concerns about vaccine side effects than for addressing concerns about whether COVID-19 is a serious illness for which vaccination is warranted*). Importantly, HPS data show that reasons for vaccine hesitancy have been dynamic over time, and this flux is likely to continue as larger numbers of reluctant individuals are vaccinated.

Ongoing assessment of the dynamic nature of reasons for vaccine hesitancy is critical because the pool of vaccine-resistant persons will get smaller as time goes on, presumably leaving only the most resistant individuals. It is possible that the reasons for vaccine hesitancy among those individuals will be distributed differently than in the larger pool of current vaccine-hesitant individuals, and this information could help program planners make timely and informed adjustments to their programs when these are needed.

Table 2. Main reasons for not intending to get COVID-19 vaccine, United States, December 2020³⁴

Main Reasons	Weighted %
Concern about the side effects and safety of the vaccine	29.8
Plan to wait and see if it is safe and may get it later	14.5
Don’t trust the government	12.5
Concern that the vaccine is being developed too quickly	10.4
Don’t like vaccines	5.4
Plan to use masks/other precautions instead	3.7
Not a member of any group that is at high risk for COVID-19	3.5
Don’t like needles	3.0
The vaccine could give me COVID-19	2.3
Had COVID-19 and should be immune	2.2
Believe COVID-19 is not a serious illness	1.9

Centers for Disease Control and Prevention

The CDC recognizes that data from multiple sources indicate that health care providers are trusted sources of information on COVID-19 vaccination, making these professionals central to building vaccine confidence and promoting vaccine uptake in the community.^{18,19} In educational materials targeting providers, the CDC recommends the following strategies:

- **Build Trust:** Share clear, complete and accurate messages about COVID-19 vaccines and take visible actions to build trust in the vaccine, the vaccinator and the system in coordination with federal, state and local agencies and partners.
- **Empower health care personnel:** Promote confidence among health care personnel in their decision to get vaccinated and to recommend vaccination to their patients.
- **Engage communities and individuals:** Engage communities in a sustainable, equitable and inclusive way—using two-way communication to listen, build trust and increase collaboration.

Like other groups that promote communication strategies to address COVID-19 vaccine hesitancy, the CDC emphasizes the importance of “effective vaccine conversations” that accomplish the following:

- Start from a place of empathy and understanding
- Assume patients will want to be vaccinated, but be prepared for questions
- Give your strong recommendation
- Address misinformation by sharing key facts
- Listen to and respond to patient questions
- Proactively explain side effects
- Address misinformation

In addition to conversations that take place between patients and providers, the CDC recommends a multimodal community-based strategy to promote COVID-19 vaccination, an approach that is consistent with other groups’ recommendations for community engagement . The CDC provides [customizable products and content](#) that can be modified to meet local needs including the following:

- Letters to members
- Newsletter content
- Key messages
- FAQs
- Slide deck
- Posters/flyers
- COVID-19 vaccine fact sheet
- Social media content
- “I got vaccinated” stickers
- Fotonovela (graphic novellas)

Experts agree that efforts to address vaccine hesitancy should optimize existing tools and communication vehicles and adapt them to meet local needs. Although these efforts should recognize the important role that health professionals play as trusted messengers, research shows that they should also leverage the reach and influence of other community-based leaders and institutions as well as the power of social media.

Johns Hopkins Center for Health Security

As COVID-19 vaccines were being developed, a multidisciplinary group led by the Johns Hopkins Center for Health Security recognized that

...some Americans—including those most at risk of COVID-19 impacts—may miss out on, or opt out of, this life-preserving public health measure. Some may worry about whether SARS-CoV-2 vaccines are safe or if they work at all. Some may be mistrustful of vaccine manufacturers, the agencies that regulate the industry and/or the public health authorities recommending the products. For others, the issue may be access.²⁰

Anticipating heterogeneous challenges to vaccine uptake, the group's "cross-cutting" recommendation was to "put people at the center of a revolutionary SARS-CoV-2 vaccine enterprise." Like other groups that have promoted strategies to address vaccine hesitancy, the Hopkins group's overarching recommendation calls for building novel partnerships among state and local health officials; university researchers in social, behavioral and communication sciences; and grassroots groups that operate on the local level. The group writes,

If embedded within the COVID-19 response, rapid social, behavioral and communication science can deliver timely data and empirically based advice to support vaccine delivery strategies and uptake. In the SARS-CoV-2 vaccine enterprise, communities can be active research partners, rather than passive study subjects...human centered design principles (aka "design thinking") can help improve the planning and implementation of the COVID-19 vaccination program.²⁰

The Hopkins report includes the following five recommendations, which are strikingly similar to those promoted by other groups that focus on COVID-19 vaccine hesitancy:

1. Understand and inform public expectations about vaccine benefits, risks and supply.
2. Earn the public's confidence that vaccine allocation and availability are evenhanded.
3. Make vaccination available in safe, familiar and convenient places.
4. Communicate in meaningful, relevant and personal terms, crowding out misinformation.
5. Establish independent representative bodies to instill public ownership of the vaccination program.

When the Hopkins report was published in July 2020, the authors noted that time was on the side of those who were charged with developing vaccine implementation programs, stating, "With the current lag time in vaccine availability, US vaccination planners and implementers can exercise foresight and take proactive steps now to overcome potential hurdles to vaccine uptake." Although this lag has now elapsed, the principles of promoting vaccine uptake that are described in the Hopkins report are empirically informed and highly consistent with recommendations of other reputable organizations.

World Health Organization (WHO) Behavioral and Social Drivers (BeSD) of Vaccination Model

The WHO has maintained a longstanding focus on immunization, especially among children, and it recognizes the many complex and interrelated factors that influence vaccine acceptance. Recently, the WHO formalized an effort to create infrastructure that supports local efforts to understand the behavioral and social factors that drive vaccination and to work with communities to design program that address their specific needs, described as follows:

For countries to receive the full benefit from vaccination, reaching and maintaining high coverage is vital. Addressing under-vaccination requires an understanding of the determinants of the problem, tailored evidence-based strategies to improve uptake, and monitoring and evaluation to determine the impact and sustainability of the interventions. To support programmes and partners' systematic assessment of factors affecting uptake, WHO is developing tools to measure and address reasons for

under-vaccination, and to track consistent and comparable data over time. In November 2018, a global expert group called “Measuring Behavioural and Social Drivers of Vaccination” (BeSD) was established by WHO, in collaboration with core partners, to oversee development of these tools.²¹

Figure 1 shows the conceptual model for this work, which contains an array of familiar elements—including social marketing—that other groups have identified in their work on vaccine hesitancy. These elements include how to address concerns about safety, the role of health care providers and cost. Based on the geographic heterogeneity of many factors that impact vaccine uptake, the WHO framework is meant to be applied locally: the same general strategy for vaccine program development that is recommended by other groups in the COVID-19 era.

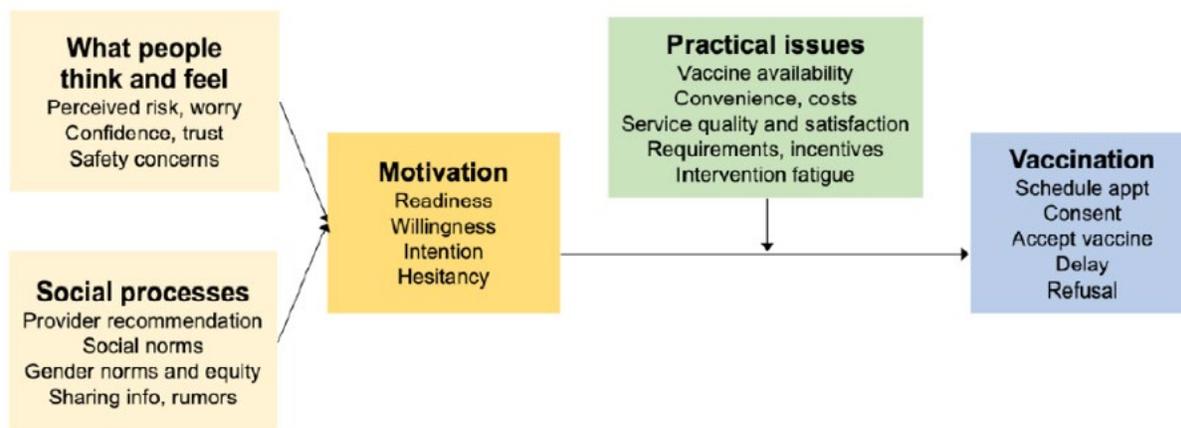


Figure 1. Conceptual factors that underpin the World Health Organization’s Behavioral and Social Drivers of Vaccination Model.²¹

WHO Tailoring Immunization Programmes (TIP)

WHO’s TIP approach to addressing under-vaccinated or hesitant populations focuses heavily on behaviors that are linked to vaccine hesitancy and how to address them. (It appears that the TIP and Behavioral and Social Drivers (BeSD) programs are meant to be complementary efforts). Many of TIP’s central concepts concerning vaccine hesitancy (see **Figure 2**) are familiar and overlap with those of other programs. These overlapping concepts include trust in vaccination and health authorities, whether vaccination is considered necessary and practical issues such as geographic access and cost.

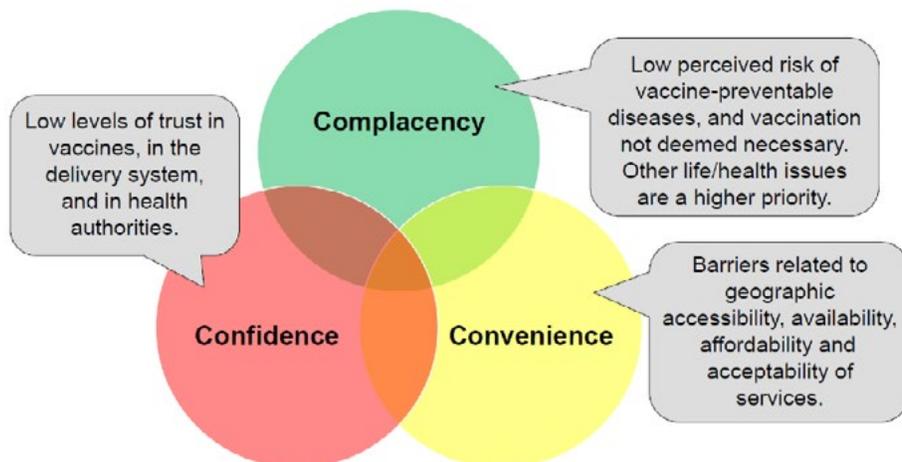


Figure 2. Conceptual model of the World Health Organization’s Tailoring Immunization Programmes (TIP)²²

Sabin-Aspen Vaccine Science & Policy Group

The Sabin-Aspen Vaccine Science & Policy Group consists of a multidisciplinary group of stakeholders who examine a single, vaccine-related topic each year and develop recommendations to promote innovation in vaccine-preventable disease.²³ The group's 2020 report focused on vaccine hesitancy and called for coordinated efforts to strengthen vaccine acceptance and address risks associated with vaccine hesitancy. Like other organizations, the Sabin-Aspen group's recommendations are based on a conceptual model involving the "3 Cs of vaccine hesitancy," shown in **Figure 3**. Note that the Sabin-Aspen conceptual model for vaccine hesitance is identical to the TIP model.

With regard to what works to increase vaccination uptake, the report concluded:

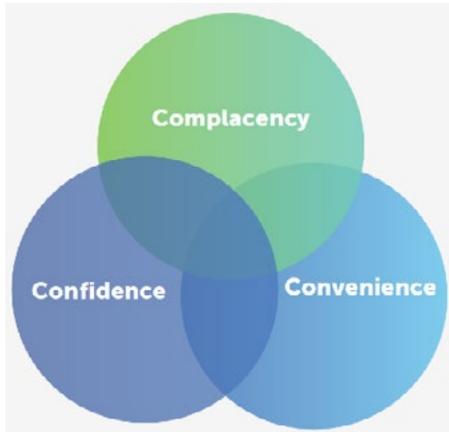


Figure 3. The 3 Cs of vaccine hesitancy: confidence, complacency and convenience.²³

Direct behavior change is clearly the most promising approach to increasing vaccination uptake, and research supports the use of many different techniques.... No single intervention is effective on its own, however, making it necessary to adopt more than one. Insofar as each intervention acts on different parts of the system that provides vaccination, their combination may be truly additive or even multiplicative in its effects. It is also possible that the initial intervention activates the "easy" cases to vaccinate and that additional interventions add little... In contrast, interventions to change what people think and feel are often expensive and hard to sustain, and they may not be especially effective...interventions by providers in clinical settings may be influential if they effectively use communication approaches based on information, persuasion and engaged listening. Interventions targeting social processes are promising insofar as they build on multiple nodes of social networks or happen in clinical settings. In this era of social media and vocal vaccine activism, the conversations about vaccination, both in the public sphere and in private settings, have an outsized influence on programs and policies.²³

Recommendations from the Sabin-Aspen group are consistent with social marketing principles and focus on drivers of behavior change. The group's suggested approaches echo those of other organizations in that they emphasize the importance of multimodal interventions, tailored communication strategies and optimizing the role of health care providers. Importantly, the Sabin-Aspen report included a detailed review and comparison of the impact of various types of interventions aimed at targeting vaccination uptake and recommended using approaches that focus on *direct behavior change* such as those shown at the bottom of **Figure 4** (see next page).

de Beaumont Foundation

Organizations that offer recommendations to promote vaccine confidence emphasize the importance of tailoring language to address the needs and concerns of target populations. Findings from a December 2020 survey from the de Beaumont Foundation yielded recommendations to:²⁷

- Tailor messages for specific audiences
- Explain vaccine benefits, not just consequences of not being vaccinated
- Talk about the people behind the vaccine
- Avoid judgmental language
- Use and repeat the word "every" to explain the vaccine development process (e.g. "every study was reviewed by a safety board")

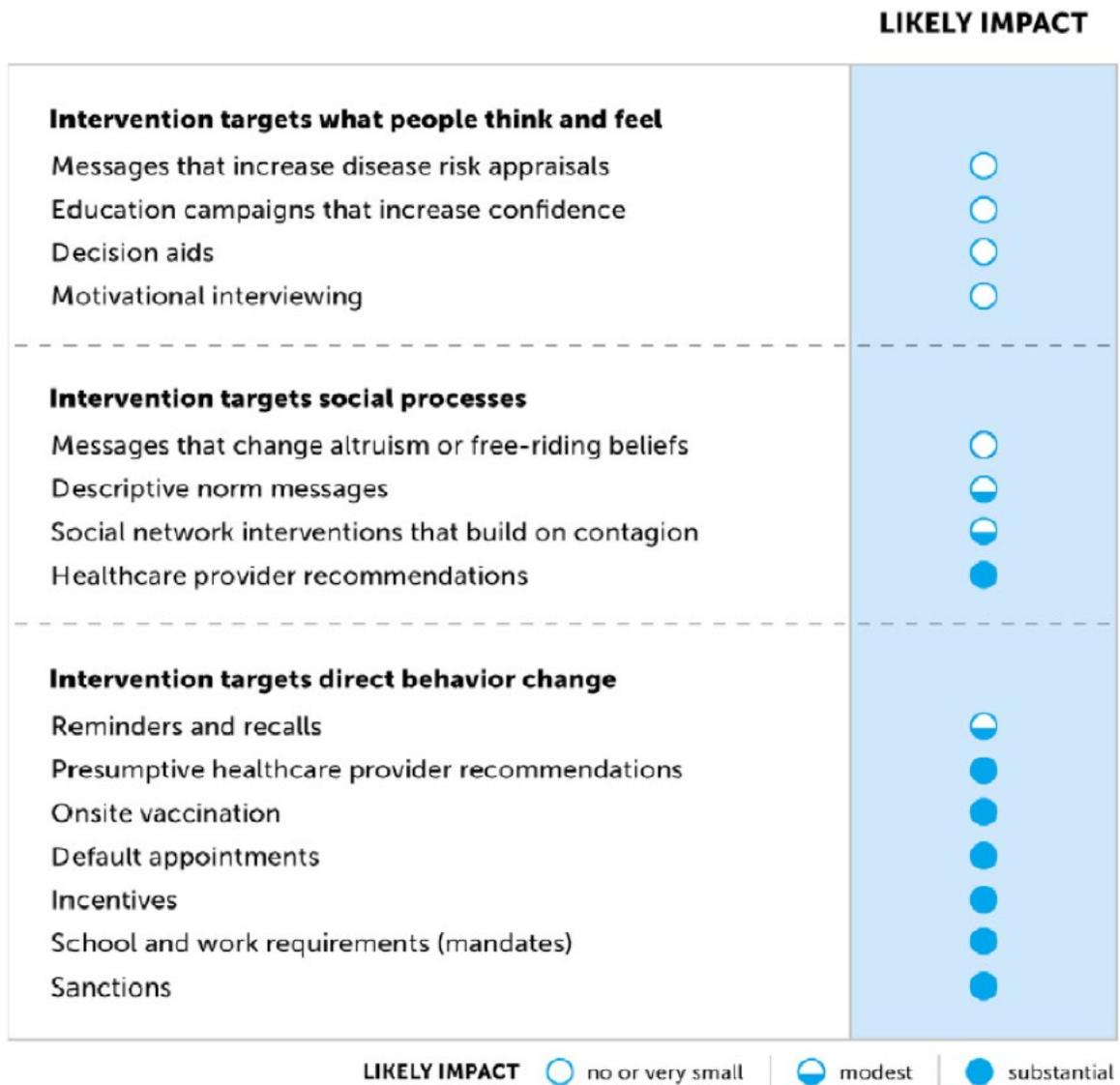


Figure 4. Likely impact of interventions to increase vaccination uptake²³

Although the latter results are generally consistent with other organizations' findings, a distinctive feature of this survey is that it explored different messages to understand which ones resonated the most with different groups of vaccine hesitant Americans:

- Rural Americans have very low confidence in the safety of the vaccine and respond to messaging on this issue.
- A generational divide is pronounced among Black Americans. "Returning to normal" is the desired outcome among Black Americans under 50, but for those over 50, "saving lives" is the highest priority.
- The top priority for young Republicans is a "return to normal," and the next highest priority is to reopen the economy. Messages about personal health/safety are less impactful in this group.
- For young women, the greatest consequence from the pandemic is equally "damage from lockdowns" and the "potential for family/friends to become ill." Stressing how the vaccine will address both concerns at the same time is important for this population segment.

Professional Societies

Many professional organizations have responded to COVID-19 vaccine hesitancy by releasing position statements or organizational principles that support vaccination programs and uptake. These organizations often emphasize the important role that their members play in encouraging vaccination, especially in leading by example. Other organizations have gone further by producing materials that their members can use to encourage their staff to get vaccinated and to educate their patients about the safety and efficacy of COVID-19 vaccination. The vaccine hesitancy resources of several professional societies are summarized in this section.

[American Medical Association](#)

The importance of medical professionals as “trusted messengers” for COVID-19 vaccine uptake is emphasized by numerous entities that offer recommendations for addressing vaccine hesitancy. However, the AMA also acknowledges that even health care workers have expressed vaccine hesitancy, making it difficult for these professionals to act as COVID-19 vaccine ambassadors. In response, the AMA generated educational materials addressing vaccine hesitancy in the health care workforce.³⁹

For development of broader, community-based efforts to address vaccine hesitancy, the AMA encourages providers to follow many of the same communication-focused strategies that have been promoted by other organizations, including the following:

- Understanding patients’ concerns
- Asking why the patient is hesitant
- Countering misinformation
- Understanding that doctors are the most trusted information source
- Telling patients that they need to get the vaccine
- Tailoring messaging
- Preparing staff to answer questions²⁴

Although these strategies are meant to be used during encounters between patients and providers, the ability of physicians to promote vaccine uptake may benefit from coordination with other, community-based strategies that are described elsewhere in this report. For example, physicians’ offices that use email or social media can use these platforms to educate patients about vaccination and encourage update. Communications could include endorsements from local religious or other trusted messengers. When the time comes, physicians can also set up weekend vaccination clinics to promote convenience, and they can make sure that patients know that vaccination is available at no out-of-pocket cost. If implemented, the latter strategies would reflect the types of novel, highly local coordination efforts that many believe are needed to fully address COVID-19 vaccine hesitancy.

[American Academy of Pediatrics](#)

The AAP is experienced with vaccine hesitancy because of its longstanding experience with vaccine-hesitant parents. The organization has published extensive guidance for providers on this issue.⁴⁰ This guidance includes several familiar communication-focused strategies that can be applied in the office setting:

- Listen to and acknowledge parents' concerns
- Promote partnerships with parents in decision making and personalize these relationships
- Clarify and reaffirm parents' correct beliefs about immunization and modify misconceptions
- Discuss the benefits of vaccines and the possibility of adverse events
- Provide parents with vaccine information statements, educational resources and reliable websites
- Personalize the information provided to parents based on cultural beliefs, vaccine concerns and literacy level
- Stress the number of lives saved by immunization, as a positive approach, rather than focusing on the number of deaths from not immunizing
- Discuss state laws for school entry and the rationale for them
- Remember that the majority of parents believe immunization is important and trust pediatricians as the most important source of immunization information.²⁵

In addition to these strategies, the APP drew from the health behavior literature⁴¹ to help pediatricians identify five types of parental immunization attitudes, shown in **Table 3**.

Table 3. *Types of parental immunization attitudes.*

Parent type	Belief about vaccines	Percentage of parents
Immunization advocates	Strongly agree vaccines are necessary and safe	33%
Go along to get along	Agree vaccines are necessary and safe	26%
Health advocates	Agree vaccines are necessary but are less sure about their safety	25%
Fence-sitters	Slightly agree that vaccines are necessary and safe	13%
Worrieds	Slightly disagree that vaccines are necessary and strongly disagree that vaccines are safe	3%

Understanding various types of parental attitudes toward immunization is important for pediatricians in their efforts to tailor messaging to specific families during patient encounters. The AAP notes that “most parents still vaccinate their children, despite concerns.” Nonetheless, it is useful to note that the AAP’s data on categories of parental attitudes toward vaccination are from research that was published in 2005—not in the context of a pandemic in which vaccines were developed and deployed relatively quickly and for which clinical trial data on children are still unavailable. Thus, it is possible that parental immunization attitudes during the COVID-19 era will be different than they were in the past.

This possibility seems to be supported by data from 1,001 parents of K–12 public school children that were collected between January 14 and 19, 2021.⁴² That survey showed that when asked if they would vaccinate their children when a COVID-19 vaccine becomes available for children, 25% of parents reported that they would but “not right away.” 22% said they would not get their children vaccinated, and another 18% reported being uncertain about getting their kids vaccinated. Each of these groups was asked for the reasons behind their views on COVID-19 vaccination for their children, and a selection of those results are shown in **Table 4**.

Table 4. Reasons for not getting children vaccinated for COVID-19, by category of parental hesitancy, February, 2021

Reason for parent's vaccine hesitancy	Parent's vaccine hesitancy category		
	Will get kids vaccinated, but not right away	Won't get kids vaccinated	Uncertain if will get kids vaccinated
I wouldn't trust the vaccine until it has been in use for at least several months	51%	44%	48%
I don't have enough information about the vaccine yet	49%	43%	66%
I'm not sure the vaccine will be safe	46%	59%	54%
I think the vaccine was developed too quickly	41%	59%	45%
I don't trust the information being published about the vaccine	20%	48%	20%

Similar to KFF and HPS data that show differences in the demographics and reasoning among vaccine-hesitant adults when they describe their own plans for vaccination, the data in Table 4 show that parents with different attitudes about vaccinating their children prioritize different concerns. This information could be combined with existing AAP education and communications-related guidance to help pediatricians address even more granular aspects of COVID-19 vaccination hesitancy among parents. These efforts could be accompanied by supplemental guidance from the AAP that helps pediatricians engage with parents about COVID-19 vaccination when it becomes widely available for children.

[American College of Physicians](#)

Like the AMA, the ACP also recognizes the important role that physicians play in promoting vaccine uptake, especially among people who are vaccine hesitant.^{26,27} A February 2021 education program for internists recommended several familiar strategies to promote COVID-19 vaccine confidence:

- Battle misinformation with aggressive dissemination of accurate information about the realities of COVID-19 and the risks and benefits of vaccination
- Acknowledge rather than dismiss people's concerns about the COVID-19 vaccine
- Manage the public's expectations
- Inform people who are skeptical of the vaccine's effectiveness and safety that the trials leading to EUA included participants with a range of ages, racial and ethnic backgrounds and comorbidities
- Reflect on the populations whose vaccine confidence should be enhanced, and seek to earn their trust

The ACP also recognized that mistrust about COVID-19 vaccines among patients of color is a specific aspect of vaccine hesitancy that must be addressed with special care. The organization recommended several additional strategies with these patients:

- Lead with listening
- Tailor responses to patient concerns
- Briefly describe the regulatory and development processes surrounding COVID-19 vaccines using accessible language
- Acknowledge uncertainty

The ACP summarized the role of primary care physicians in addressing vaccine hesitancy in the COVID era as follows:

...clinicians and public health professionals need to anticipate, validate and be prepared to address people's questions and concerns. We must amplify sound information to combat rampant misinformation. Finally, we must demonstrate our own confidence that the benefits of vaccination outweigh the risks by being vaccinated ourselves as soon as the opportunity becomes available. Each person who accepts COVID-19 vaccine becomes an advocate for vaccination in the most unambiguous way possible.²⁶

American Society of Health System Pharmacists

The role that pharmacists play in addressing vaccine hesitation cannot be overstated, and this role is reflected in the ASHP's dissemination of materials that address various issues linked to vaccine hesitancy, including equitable vaccine allocation and misinformation. A recent editorial⁴³ in the *American Journal of Health-System Pharmacy* explored these issues further, emphasizing the role that pharmacists play in building trust on the community level and how vaccine distribution plans need to leverage "all locales" to ensure full access:

A crucial initial step in ensuring vaccination will be countering misinformation and vaccine hesitancy. As discussed in the ASHP principles, gaining and maintaining trust within the community, including among vulnerable groups, through the provision of credible, culturally sensitive, and health literacy-sensitive education programs that provide evidence-based information about the safety and efficacy of the COVID-19 vaccines is imperative. Pharmacists are well positioned and prepared to participate and lead these public education efforts. In addition, access to vaccine administration sites will be critical to ensuring the success of mass vaccination efforts. We must take full advantage of all locales—including physician offices, pharmacies, churches, schools and community centers—to ensure administration of COVID-19 vaccines at times and in locations that are accessible and convenient for the public. There is no place for vaccine deserts in this public health crisis.

The role that pharmacists play in the community offers a glimpse into how vaccine hesitation could be addressed by harnessing the combined knowledge and resources of local professionals and the business community.

The Business Community

CVS Health

Pharmacists serve nearly every community in the United States. Retail pharmacies in chain drug stores such as CVS, Walgreens and Rite Aid; in the nation's large group of independent and community pharmacies; and in Walmart stores and other supermarket chains, are all important players in the COVID-19 vaccine distribution system. Retail pharmacy chains as well as independent pharmacies have been distributing vaccines through the Pharmacy Partnership for Long-Term Care Program since December 2020, and they are positioned to build on their local ties to expand these efforts to other segments of their communities. There are nearly 10,000 CVS pharmacies nationwide, 9,000 Walgreens stores, 2,500 Rite Aid stores, an estimated 23,000 independent pharmacies and thousands of supermarkets with pharmacies as well. These retail establishments are deeply embedded in local communities and in rural areas where shortages of medical personnel are common, community and independent pharmacists play a particularly important role as trusted sources of health information.

Recognizing the important role that pharmacies would play in vaccine distribution, CVS Health conducted two surveys to understand vaccine hesitancy and prepare for the challenges of addressing this issue on the community level.²⁸ CVS Health had the same findings as other groups that collected data on this issue, as follows:

- Large numbers of people report no plans to be vaccinated, with higher numbers among minority communities.
- Safety, concerns about side effects and questions about vaccine efficacy drive vaccine hesitancy.
- Health care workers getting vaccinated persuades others to get vaccinated.
- There is a lack of knowledge about the vaccination process concerning cost and access.

CVS Health emphasized that *all these reasons for vaccine hesitancy can be addressed by educational programs that are tailored to individual communities*. In addition to these observations, CVS offered the following additional suggestions to address vaccine hesitancy, many of which were also consistent with research from other groups:

- To be most effective, outreach should be customized and include engagement by clinicians and public health authorities, as well as community-based organizations and a broad coalition of stakeholders.
- Culturally appropriate awareness campaigns that address each community's specific concerns can help overcome vaccine hesitancy.
- Additional safety and efficacy data on the vaccines, a successful rollout among priority populations and targeted outreach efforts could help convince many who are uncertain.
- "Influencers" who are most likely to impact vaccine hesitancy include doctors and voices from federal agencies.

The CVS white paper also stressed the benefits for vaccine uptake of novel partnerships among CVS pharmacies, provider networks, local faith leaders and other trusted voices. Highly targeted, multifaceted partnerships that create synergies among local health care providers, local leaders and other trusted voices and entities may offer the best strategy to address vaccine hesitancy.

U.S. Chamber of Commerce Foundation

Although the vaccine hesitancy white paper released by CVS Health largely reflects that organization's interest in health care and its role in vaccine delivery, in general, the business community is not replete with research on vaccine hesitancy. However, the U.S. Chamber of Commerce Foundation—the research arm of the U.S. Chamber—recognizes the important role that vaccine hesitancy plays as part of larger efforts to reopen the economy, as well

as the role businesses can play in promoting vaccine uptake. Discussions with a U.S. Chamber official indicated that the Chamber has put considerable thought into how the business community can help address vaccine hesitancy. As a result, the organization promotes the following steps:

- Educating workers about the safety and importance of vaccination.
- Taking active measures to encourage employees to get vaccinated.
- Providing accommodations or paid time off for the time involved in getting vaccinated.
- Providing paid sick time to allow employees to recover from vaccine side effects.
- Encouraging business leaders to “lead by example” by getting vaccinated as soon as possible and promoting this among employees.

The U.S. Chamber Foundation also commissioned research to address vaccine hesitancy.⁴⁴ That research focused on identifying what types of employer-based messaging would be most impactful for various groups of employees and in different sectors of the business community.

Five “messaging themes” were examined: the efficacy of the vaccine; the vaccine’s role in improving the economy and job security; the vaccine’s ability to protect co-workers and other members of the community; the fact that the vaccine is available at no out-of-pocket costs to employees and their families and that employers will help employees access it; and that company leaders would lead by example and get vaccinated in solidarity with the rest of the organization.

Of these themes, the “lead by example” and “economic recovery/job security” themes were the most effective in changing minds about vaccination among vaccine-hesitant people. However, like earlier research demonstrating differences by demographic and other factors in vaccine hesitancy and reasons for hesitancy, the impact of employer messaging to promote vaccine uptake also differed by employee age, geographic region, gender and education.

Discussions with the U.S. Chamber also covered novel approaches to involving businesses as part of community-based plans to address vaccine hesitation. For example, some aspects of vaccine hesitancy are linked to difficulties accessing vaccination sites, the financial impact of taking time off from work and the perception that vaccination is not “free” to employees. If large employers were able to collaborate with pharmacy chains that are distributing vaccine, or if these employers could partner with state or local health officials, large places of employment could become very efficient vaccination centers. This concept is not new: Employers have been offering seasonal flu vaccination for years, and the COVID-19 vaccination could use a similar approach.

A second concept involves optimizing the reach of local chambers of commerce in collaborative efforts to develop the highly local, tailored vaccine confidence programs that will be needed across the country. Local chambers of commerce support countless small businesses and could serve as one of many “trusted messengers” that researchers agree need to be mobilized to promote vaccine uptake. Local chambers of commerce could work with local government and other trusted messengers to develop customized toolkits for small businesses that promote use of high impact messaging (e.g. “lead by example,” “job security”) that appears to resonate with some segments of the workforce.

A role for the business community in addressing vaccine hesitancy was not mentioned in any of the non-profit, government or professional society resources covered in this report, yet employers and chambers of commerce are highly incentivized to promote vaccine uptake. People who are charged with designing and implementing vaccine confidence programs should carefully consider how the business community can contribute to these efforts, particularly on the local level.

[National Alliance of Healthcare Purchaser Coalitions](#)

The U.S. Chamber’s focus on how the business community can help address vaccine hesitation is consistent with the efforts of other employer-focused organizations. The National Alliance of Healthcare Purchaser Coalitions

collaborated with the CDC to develop a COVID-19 immunization [video series](#) featuring patients and health care leaders. These videos are intended to be shared by employers with their employees to support vaccine education address vaccine hesitancy. The National Alliance also produced an [Action Brief](#) with several recommendations to help employers encourage vaccine adoption as follows:

- Include vaccine coverage in organizations' medical and pharmacy benefits; consider offering incentives upon vaccination completion.
- Understand and communicate about continued coronavirus spread and safety measures.
- Increase vaccine confidence by directly addressing common concerns.
- Provide trusted tools and resources to assist employees in making informed choices.
- Share evidence-based resources with employees.

The research described earlier in this report is clearly reflected in the National Alliance's advice to employers in communicating with employees about vaccine hesitancy: "Many factors such as age, ethnicity, political alliance and income and education level affect how people perceive the threat of COVID-19 and the confidence in the vaccine. Meet people where they are."

[Health Action Alliance](#)

The Health Action Alliance's efforts to promote COVID-19 vaccine uptake offers another example of how the business community is mobilizing to address vaccine hesitancy. The Alliance offers a wealth of COVID-19 vaccination resources for businesses, including practical strategies to promote employee vaccine uptake.

- Establish a COVID-19 vaccination policy and plan
 - Designate a coordinator and develop a plan
 - Review state and local plans
 - Proactively engage workforce populations that may have unique needs or concerns
 - Draft a COVID-19 vaccination plan
- Educate and encourage the workforce
 - Designate a communication lead
 - Develop a communication plan
 - Customize communications for workforce populations that may have unique concerns or needs
- Support and strengthen community vaccine distribution
 - Identify ways employers can help
 - Identify a team lead
 - Reach out to state or local public health departments

The [action plan](#) outlined above is supported by extensive online guidance and customizable materials that can be distributed to employees through diverse communications channels, and these materials are highly consistent with the social marketing principle that are summarized earlier in this report (e.g. use trusted messengers, meet people where they are, tailor materials to specific segments of target populations). Importantly, the Alliance also offers [additional resources](#) to help employers understand the special questions and concerns that minority employees may have about the COVID-19 vaccine and specific strategies to help these populations become comfortable with vaccination.

Conclusion

The materials summarized in this report are in fundamental consensus: There is no one-size-fits-all approach to promote vaccine confidence, but successful programs can be designed and deployed based on a deep understanding of individual and local concerns, beliefs and needs. This understanding is most likely to come from the knowledge and experience of trusted members of the community who, working in close collaboration with health care providers, pharmacies, the business community and health officials at all levels of government, can deliver tailored messages to promote COVID-19 vaccine uptake. The role of the health neighborhood, joining forces with the broader health neighborhood, will thus be of paramount importance in building on this knowledge to devise strategies, tactics and tools to enhance vaccine confidence.

Note: Look for the upcoming companion report from the Task Force outlining specific short-term and long-term recommendations, to be released in June, 2021.

Literature Cited

- ¹ Schwartz JL. New media, old messages: themes in the history of vaccine hesitancy and refusal. *Virtual Mentor*. 2012 Jan 1;14(1):50-5.
- ² Wolfe RM, Sharp LK. Anti-vaccinationists past and present. *BMJ*. 2002;325(7361):430-432.
- ³ Mariner WK, Annas GJ, Glantz LH. Jacobson v Massachusetts: it's not your great-great-grandfather's public health law. *Am J Public Health*. 2005;95(4):581-590.
- ⁴ Jackson CL. State laws on compulsory immunization in the United States. *Public Health Rep*. 1969;84(9):787-795.
- ⁵ Centers for Disease Control and Prevention. Chickenpox Vaccination: What Everyone Should Know. Available at: <https://www.cdc.gov/vaccines/vpd/varicella/public/index.html#:~:text=In%20the%20early%201990s%2C%20an,the%20Unit-ed%20States%20in%201995>. Accessed February 28, 2021.
- ⁶ Godlee F, Smith J, Marcovitch H. Wakefield's article linking MMR vaccine and autism was fraudulent *BMJ* 2011; 342 :c7452.
- ⁷ Vamos CA, McDermott RJ, Daley EM. The HPV vaccine: framing the arguments FOR and AGAINST mandatory vaccination of all middle school girls. *J Sch Health*. 2008 Jun;78(6):302-9.
- ⁸ Gjelton T. Some U.S. Faith Leaders Express Moral Concerns About Johnson & Johnson Vaccine. National Public Radio. Available at: <https://www.npr.org/2021/03/03/973486060/church-leaders-say-johnson-johnson-vaccine-should-be-avoided-if-possible>. Accessed March 6, 2021.
- ⁹ National Academies of Sciences, Engineering, and Medicine. 2015. Does the Public Trust Science? Trust and Confidence at the Intersections of the Life Sciences and Society. A Workshop Summary. Washington, DC: The National Academies Press.
- ¹⁰ International Federation of Pharmaceutical Manufacturers & Associations. The complex journey of a vaccine: the steps behind developing a new vaccine. Available at: : https://www.ifpma.org/wp-content/uploads/2019/07/IFPMA-Complex-Journey-2019_FINAL.pdf. Accessed February 28, 2021.
- ¹¹ Tracey KJ, Brennan C. The Scientist. Emergency Use Authorizations Are a Threat to Science. Available at: <https://www.the-scientist.com/news-opinion/opinion-emergency-use-authorizations-are-a-threat-to-science-68220>. Accessed February 28, 2021.
- ¹² Hermes C. MIT Technology Review. Covid-19 vaccines shouldn't get emergency-use authorization. Available at: <https://www.technologyreview.com/2020/11/13/1012098/covid-19-vaccines-fda-emergency-use-authorization-opinion/>. Accessed February 28, 2021.
- ¹³ Dvoskin E. Massive Facebook study on users' doubt in vaccines finds a small group appears to play a big role in pushing the skepticism. Available at: <https://www.washingtonpost.com/technology/2021/03/14/facebook-vaccine-hesitancy-qa-non/>. Accessed March 15, 2021.
- ¹⁴ Artiga S et al. Kaiser Family Foundation. Immigrant Access to COVID-19 Vaccines: Key Issues to Consider. Available at: <https://www.kff.org/racial-equity-and-health-policy/issue-brief/immigrant-access-to-covid-19-vaccines-key-issues-to-consider/>. Accessed February 28, 2021.
- ¹⁵ Nowak GJ et al. Addressing vaccine hesitancy: The potential value of commercial and social marketing principles and practices. *Vaccine*. 2015; 33:4204-4211.
- ¹⁶ Opel DJ et al. Social Marketing as a Strategy to Increase Immunization Rates. *Arch Pediatr Adolesc Med*. 2009;163(5): 432-437.
- ¹⁷ Kaiser Family Foundation. KFF Vaccine Monitor. Available at: https://www.kff.org/coronavirus-covid-19/dashboard/kff-covid-19-vaccine-monitor-dashboard/?utm_source=web&utm_medium=trending&utm_campaign=COVID-19-vaccine-monitor. Accessed March 1, 2021.
- ¹⁸ Kaiser Family Foundation. KFF COVID-19 Vaccine Monitor Archives. Available at: <https://www.kff.org/coronavirus-covid-19/kff-covid-19-vaccine-monitor-archives/>. Accessed March 1, 2021.
- ¹⁹ National Academies of Sciences, Engineering, and Medicine 2021. Strategies for Building Confidence in the COVID-19 Vaccines. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26068>.
- ²⁰ United States Census Bureau. Measuring household experiences during the coronavirus pandemic. Available at: <https://www.census.gov/data/experimental-data-products/household-pulse-survey.html>. Accessed March 3, 2021.

- ²¹ Centers for Disease Control and Prevention. Building confidence in COVID-19 vaccines among your patients. Tips or the healthcare team. Available at : https://www.cdc.gov/vaccines/covid-19/downloads/VaccinateWConfidence-TipsForHCTeams_508.pdf. Accessed March 3, 2021.
- ²² Centers for Disease Control and Prevention. Customizable COVID-19 vaccine content for community-based organizations. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/toolkits/cbo-newsletters.html#intro>. Accessed March 2, 2021.
- ²³ Schoch-Spana M, Brunson E, Long R, Ravi S, Ruth A, Trotochaud M on behalf of the Working Group on Readyng Populations for COVID-19 Vaccine. *The Public's Role in COVID-19 Vaccination: Planning Recommendations Informed by Design Thinking and the Social, Behavioral, and Communication Sciences*. Baltimore, MD: Johns Hopkins Center for Health Security; 2020.
- ²⁴ World Health Organization. Development of tools to measure behavioural and social drivers (BeSD) of vaccination. Progress Report, June 2020. Available at: https://cdn.who.int/media/docs/default-source/immunization/besd_progress_report_june2020.pdf?sfvrsn=10a67e75_3. Accessed March 1, 2021.
- ²⁵ World Health Organization. Tailoring Immunization Programmes (TIP). An introductory overview. Available at: https://cdn.who.int/media/docs/default-source/immunization/demand/global-tip-overview-july2018.pdf?sfvrsn=c1d7b5dd_2. Accessed March 1, 2021.
- ²⁶ The Sabin-Aspen Vaccine Science & Policy Group. Meeting the Challenge of Vaccination Hesitancy. Available at: https://www.sabin.org/sites/sabin.org/files/sabin-aspen-report-2020_meeting_the_challenge_of_vaccine_hesitancy.pdf. Accessed March 1, 2021.
- ²⁷ deBeaumont Foundation. Poll: The Language of Vaccine Acceptance. Available at: <https://debeaumont.org/covid-vaccine-poll/>. Accessed March 16, 2021.
- ²⁸ Henry TA. American Medical Association. COVID-19 vaccine hesitancy: 10 tips for talking with patients. Available at: <https://www.ama-assn.org/delivering-care/public-health/covid-19-vaccine-hesitancy-10-tips-talking-patients>. Accessed March 2, 2021.
- ²⁹ American Academy of Pediatrics. Immunizations: Vaccine hesitant parents. Available at: <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Pages/vaccine-hesitant-parents.aspx>. Accessed March 2, 2021.
- ³⁰ Laine C et al., for the American College of Physicians. COVID-19 Vaccine: Promoting Vaccine Acceptance. Available at: https://www.acpjournals.org/doi/10.7326/M20-8008?_ga=2.25558206.2096402761.1614712048-1469091186.1614712048&_gac=1.156654153.1614712062.Cj0KCQiA4feBBhC9ARIsABp_nbWVdM9EMKWjOY5XC7er6fttjXagZbyD74vdmGjGoSAMxqksUotYslaAlxuEALw_wcB. Accessed March 2, 2021.
- ³¹ Opel D et al. Addressing Mistrust About COVID-19 Vaccines Among Patients of Color. Available at: https://www.acpjournals.org/doi/10.7326/M21-0055?_ga=2.25558206.2096402761.1614712048-1469091186.1614712048&_gac=1.156654153.1614712062.Cj0KCQiA4feBBhC9ARIsABp_nbWVdM9EMKWjOY5XC7er6fttjXagZbyD74vdmGjGoSAMxqksUotYslaAlxuEALw_wcB. Accessed March 2, 2021.
- ³² CVS Health. White Paper: Understanding and Addressing Vaccine Hesitancy: Achieving Control in the U.S. Today. Available at: <https://payorsolutions.cvshealth.com/insights/white-paper-understanding-and-addressing-vaccine-hesitancy>. Accessed March 6, 2021.
- ³³ Hamel L et al. Kaiser Family Foundation. KFF Health Tracking Poll - September 2020: Top Issues in 2020 Election, The Role of Misinformation, and Views on A Potential Coronavirus Vaccine. Available at: <https://www.kff.org/coronavirus-covid-19/report/kff-health-tracking-poll-september-2020/>. Accessed February 28, 2021.
- ³⁴ Hamel L et al. Kaiser Family Foundation. KFF COVID-19 Vaccine Monitor: What Do We Know About Those Who Want to “Wait and See” Before Getting a COVID-19 Vaccine? Available at: <https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-wait-and-see/>. Accessed February 28, 2021.
- ³⁵ Hamel L et al. Kaiser Family Foundation. KFF COVID-19 Vaccine Monitor: February 2021. Available at: <https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-february-2021/>. Accessed February 28, 2021.
- ³⁶ National Academies of Sciences, Engineering, and Medicine. 2020. Framework for equitable allocation of COVID-19 vaccine. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25917>.
- ³⁷ United States Census Bureau. Week 24 Household Pulse Survey: February 3–February 15. Available at: <https://www.census.gov/data/tables/2021/demo/hhp/hhp24.html>. Accessed March 3, 2021.
- ³⁸ Nguyen KH et al. COVID-19 Vaccination Intent, Perceptions, and Reasons for Not Vaccinating Among Groups Prioritized for Early Vaccination—United States, September and December 2020. *MMWR Morb Mortal Wkly Rep*. 2021 Feb 12;70(6):217-222.

- ³⁹ Berg S. American Medical Association. Answering health professionals' COVID-19 vaccination questions. Available at: <https://www.ama-assn.org/delivering-care/public-health/answering-health-professionals-covid-19-vaccination-questions>. Accessed March 4, 2021.
- ⁴⁰ Edwards KM and the Committee on Infectious Diseases, the Committee on Practice and Ambulatory Medicine of the American Academy of Pediatrics. Pediatrics September 2016, 138 (3) e20162146.
- ⁴¹ Gust D, et al. Immunization attitudes and beliefs among parents: beyond a dichotomous perspective. *Am J Health Behav*. 2005 Jan-Feb;29(1):81-92.
- ⁴² Echelon Insights. National Parents Union Survey. Available at: <https://mercuryllc.app.box.com/s/ndrxnws68jcp04mvg057p-mcjdk3nmwhq>. Accessed March 6, 2021.
- ⁴³ Abramowitz PW et al. Transparent, equitable, safe, and effective use of COVID-19 vaccines: A societal imperative, *Amer J Health Syst Pharm*. 2020;77(24): 2021–2022.
- ⁴⁴ Civis Analytics. How Employers Should Talk about the COVID-19 Vaccine. Available at: <https://www.uschamberfoundation.org/sites/default/files/How%20Employers%20Should%20Talk%20About%20the%20COVID19%20Vaccine.pdf>. Accessed March 9, 2021.



Our **VISION** is to enhance life by ensuring appropriate and personalized use of medication and gene therapies.

Our **MISSION** is to bring critical stakeholders together, bound by the urgent need to optimize outcomes and reduce costs by getting the medications right.

ABOUT THE GTMRX INSTITUTE The GTMRx Institute is a catalyst for change that brings critical stakeholders together, bound by the urgent need to get the medications right. We are physicians, pharmacists, caregivers, health IT innovators, drug and diagnostics companies, consumer groups, employers, payers and health systems—aligned to save lives and save money through comprehensive medication management, or CMM. By showcasing evidence and innovation, we motivate practice transformation and push payment and policy reform. Together, we **ACT** to champion appropriate, effective, safe and precise use of medication and gene therapies. Learn more at gtmr.org.