

2022 COVID-19 EQUITY EVIDENCE ACADEMY:

COVID-19 Testing Equity Through Messaging Accuracy and Accessibility



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2022 COVID-19 EQUITY EVIDENCE ACADEMY: COVID-19 Testing Equity Through Messaging Accuracy and Accessibility

Executive Summary

Over a period of nearly three years, as we continue to manage the COVID-19 pandemic, a set of global truths has emerged. We know that the virus is not likely to go away completely. We also know that testing, vaccines and boosters, and other mitigating strategies are our best defense against hospitalization and death. We have learned that accurate, accessible, and timely information saves lives. In the United States, we have learned that to reduce the burden of this virus, our health and healthcare systems must work with local communities to understand and address the social and environmental determinants of health, particularly in communities experiencing the greatest impact.

The pandemic has shown us how the right messages at the right time can help save lives and, conversely, how misinformation, disinformation, and threats to fact-based decision-making can cost lives. As such, the communication of accurate messages from reliable and credible sources has never been more important. Trustworthiness remains a key factor in accepting and acting on



information. Roughly two-thirds of Americans use social media, but up to a quarter of the COVID-19 information shared on Twitter is misinformation, with 63 million posts coming from fake accounts intentionally spreading false information. (See more [here](#).) One of the most urgent questions we now face, both for this pandemic and beyond, is how to work together to develop strategies to equip people with the skills to discern accurate information and

reliable sources and channels to best navigate their healthcare decision-making.

This Data Profile and the COVID-19 Equity Evidence Academy are intended to highlight the current evidence related to COVID-19 testing, including in populations most impacted, and to provide a forum to discuss the messaging of information and offer a path toward a healthier future for all. *COVID-19 Testing Equity Through Messaging Accuracy and*

Accessibility represents the focus of the third Evidence Academy sponsored by the National Institutes of Health (NIH) Rapid Acceleration of Diagnostics—Underserved Populations (RADx-UP) initiative. This Data Profile, which complements the COVID-19 Equity Evidence Academy, explores messaging through six themes identified from a review of the scientific literature:



Social Media Messaging: Highlights the impact of social media on COVID-19 messaging, as well as strategies to make social media an ally in addressing COVID-19 disparities.



Policies Through a Communications Lens: Looks at the way that messaging around COVID-19 risk is communicated and the factors that affect whether people follow COVID-19 safety policies.



Data Visualizations: Examines how infographics, dashboards, comics, and other visual tactics communicate valuable public health information, combat misinformation, and address health disparities.



The Infodemic and Mental Health: Explores the effects of the COVID-19 infodemic on mental health and the role mental health plays in how people access and use information, as well as strategies to navigate COVID-19 information without becoming overwhelmed.



Health Literacy and Information Interpretation: Discusses how health literacy affects access to, and understanding and use of, information about COVID-19 and how, in turn, that influences people's attitudes and behaviors related to COVID-19 prevention strategies.



Information Accessibility: Explains how the digital divide affects access to health information and health care, and thereby influences health outcomes, during the COVID-19 pandemic.

About Rapid Acceleration of Diagnostics– Underserved Populations (RADx-UP)

RADx-UP is an NIH-supported initiative aimed at ensuring that all residents of the United States have access to COVID-19 testing, with a focus on communities most affected by the pandemic. RADx-UP is developing strategies to reduce disparities in COVID-19 testing by supporting

180* community-engaged projects across all US states and territories. These projects are seeking to understand and remove barriers to COVID-19 testing in their communities. They are studying COVID-19 testing patterns and disparities in infection rates, disease progression, and outcomes.



Terms: CDE, common data element; EHR, electronic health record; SEBI, social, ethical, and behavioral implications.

127 total RADx-UP projects: Phase I (69), Phase II (37), Supplemental (21)

Enrolled participants source: CDE data

COVID-19 tests conducted source: CDE data

Territories include sites in Guam, American Samoa, Northern Mariana Islands, US Virgin Islands, and Puerto Rico

* This number includes the NIH-funded projects, the Coordination and Data Collection Center, as well as the projects supported by the RADx-UP CDCC through the Community Collaboration Mini-Grant Program and Rapid Research Pilot Program projects. [Learn more here](#). Data updated July 6, 2022.

RADx-UP Working Groups

RADx-UP Working Groups provide a space for project teams to come together to share ideas, collaborate, and provide feedback to the Coordination and Data Collection Center (CDCC) and NIH. Brief descriptions of the Working Groups are below. Learn more about Working Groups (and request to join one) here on RADx-UP.org.

- [Building Community Capacity and Impact](#)—Building the capacity of community-based organizations to improve COVID-19 communications and outreach and more.
- [Child Health](#)—Furthering knowledge and developing tools to improve child health during and after the COVID-19 pandemic.
- [Understanding Social Determinants of COVID-19](#)—Developing and disseminating community-informed shared models of access to COVID-19 testing and vaccination.
- [Engaging Black/African Americans](#)—Sharing experiences, challenges, and best practices in COVID-19 communication and outreach to Black/African Americans.
- [Engaging Hispanic/Latino/Latinx Populations](#)—Sharing experiences, challenges, and best practices in COVID-19 communication and outreach to Hispanic/Latino/Latinx populations.
- [SEBI: Social, Ethical, and Behavioral Implications](#) — Bringing together RADx-UP projects and community partners interested in empirical research on the social, ethical and behavioral implications.

RADx-UP is part of a larger NIH initiative to help speed innovation in the development and implementation of COVID-19 testing. There are three other RADx programs: [RADxSM Tech](#), [RADxSM Advanced Technology Platforms \(RADx-ATP\)](#), and [RADxSM Radical \(RADx-rad\)](#).

Speaker Map

This geographic map shows the RADx-UP COVID-19 Equity Evidence Academy event presenters, including keynote speakers, breakout session speakers, Advancing Community Academic Partnerships (ACAP) Presentation Series oral presenters, ACAP poster presenters, and In Context Perspective interviewees. Scroll down for a full list of all presenters listed by type of contribution. [Explore here.](#)

Interactive Map

This interactive map shows the breadth of Phase I and II RADx-UP projects, their geographic distribution, as well as the communities and settings served. [Explore here.](#)

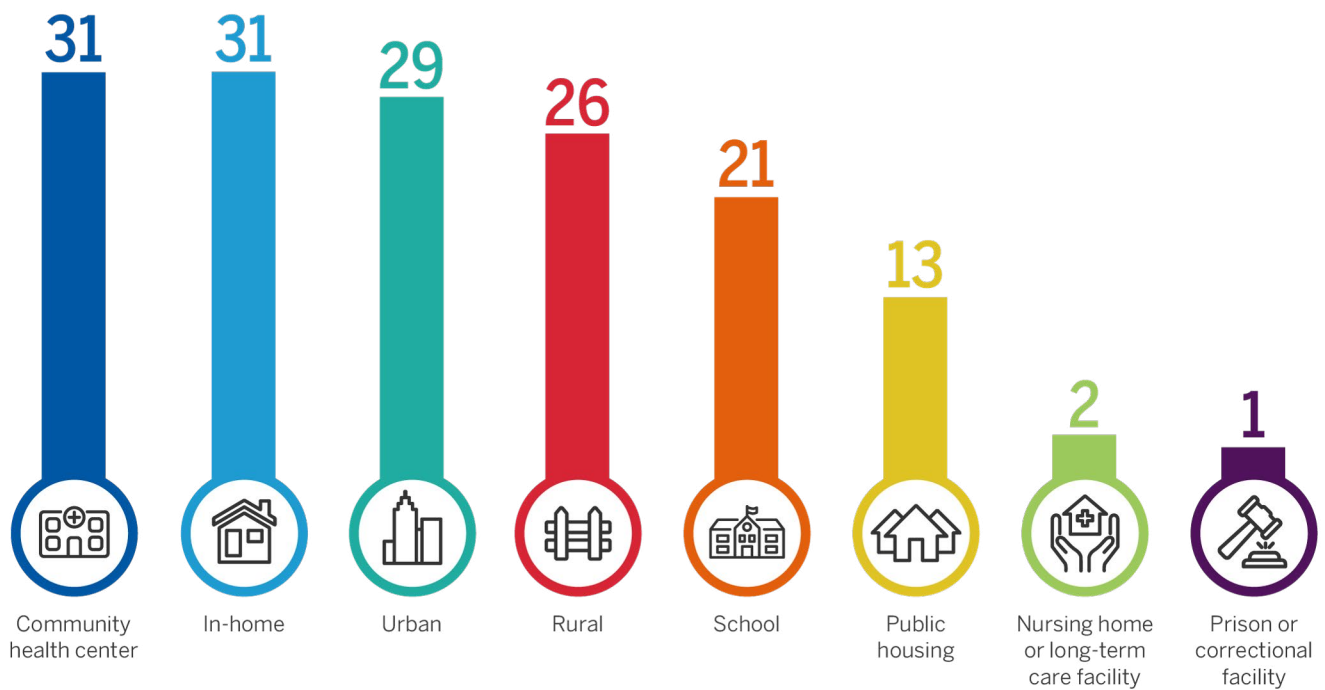
Figure 1: Communities Served by RADx-UP Projects*

NUMBER OF PROJECTS



Figure 2: Settings Served by RADx-UP Projects

NUMBER OF PROJECT SETTINGS



* These graphics use data from NIH-funded RADx-UP projects (Phase I and Phase II) as well as supplements. Note that “Children” refers to projects working with only pediatric populations. Many projects work with both adult and pediatric populations.

Thematic Summaries Related to COVID-19 Testing Equity and Messaging Accuracy and Accessibility



SOCIAL MEDIA MESSAGING DURING THE COVID-19 PANDEMIC

This summary will help you understand how social media can be both an ally and a threat to addressing a public health issue like COVID-19.

Why Social Media Matters

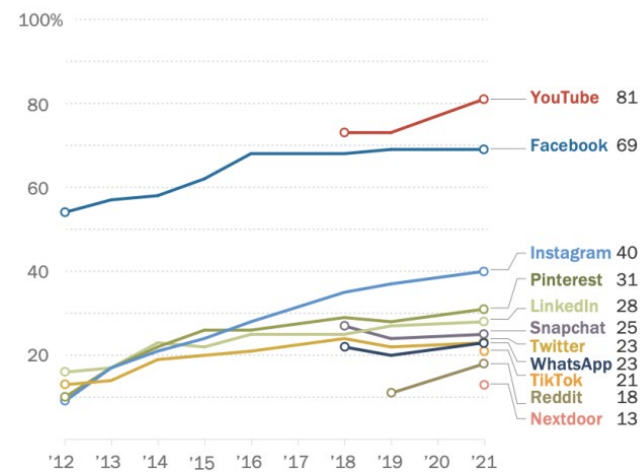
Use of social media in the US has increased during the past decade, with about [70 percent of American adults using at least one social media platform](#) (see [Figure 1-1](#)).



Figure 1-1: Percent of US Adults Using Each Social Media Platform

Growing share of Americans say they use YouTube; Facebook remains one of the most widely used online platforms among U.S. adults

% of U.S. adults who say they ever use ...



Note: Respondents who did not give an answer are not shown. Pre-2018 telephone poll data is not available for YouTube, Snapchat and WhatsApp; pre-2019 telephone poll data is not available for Reddit. Pre-2021 telephone poll data is not available for TikTok. Trend data is not available for Nextdoor.
Source: Survey of U.S. adults conducted Jan. 25-Feb. 8, 2021.
"Social Media Use in 2021"

PEW RESEARCH CENTER

Since the start of the COVID-19 pandemic, Americans have [increasingly used social media to find and share](#) COVID-19 information. In 2020, 72 percent of Americans reported using an online news source for COVID-19 information in the last week, with [47 percent reporting that the source was social media](#).

With social media widely available to the public, it can be used to [share important information and updates](#). If used responsibly and thoughtfully, social media can be an ally during a public health crisis and can help reduce the spread and impact of COVID-19. For example, social media has been used to [predict COVID-19 waves](#) and to [monitor attitudes toward the pandemic](#).

What is misinformation?

False or misleading information that is presented as fact, regardless of an intent to mislead.



What is disinformation?

False information that is deliberately shared to mislead people, often to influence public opinion or hide the truth.

What is a conspiracy theory?

A way to explain an event or set of circumstances as the result of a secret plot, generally carried out by those in power.

On the other hand, social media can also be a threat to public health if it is used irresponsibly.

Some may misuse social media to share misinformation and disinformation. Conspiracy theories and rumors—which are examples of disinformation—[can spread quickly and widely](#) through online platforms like [YouTube and Twitter](#). Recent research found:

- In a study sample of COVID-19 tweets, [25 percent included misinformation and 17 percent contained unverifiable information](#).
- 43 million COVID-19–related tweets showed that “bots,” or automated Twitter accounts, were [pushing conspiracy theories and retweeting links from news sites](#) that identify with one political party.

Social Media Affects People’s Awareness and Attitudes about COVID-19

In general, digital information tends to originate from a small number of highly active social media accounts, with content then [quickly reposted online](#). Inaccurate or negative information is shared at a faster rate than information that is more accurate. People often [share misinformation and false claims](#) without examining the content’s accuracy. For example:

- Videos provided by academic and public health institutions tend to share more accurate, actionable, and easy-to-understand information. Nevertheless, [videos shared by less credible sources tend to be shared and viewed more often](#).

Those with more scientific knowledge, and those who think more critically about content, are better able to [discern accurate and inaccurate information](#).

- Conspiracy theories and [inaccurate, emotionally charged, and negative information](#) are reposted more often and spread widely at a faster rate than accurate, and less negative or emotionally charged, information.
- Though rumors and conspiracy theories seem far-fetched to some, others take them seriously and make (or don’t make) health decisions because of them. Healthcare professionals share stories of individuals dying of COVID-19 while denying the disease’s existence.

Social media is also an important contributor to the polarization of COVID-related attitudes. This is in part because social media uses algorithms to share posts that [confirm and reinforce a person's existing beliefs and biases](#). This is also known as creating “[echo chambers](#).” COVID-19 echo chambers are more likely to have negative emotional content and lead to increased feelings of [fear, anxiety, panic, and depression](#).

Strategies for Using Social Media to Help Address COVID-19 Disparities

Social media can help address COVID-19 disparities. It is a way to share information quickly and broadly because people view it often and pay attention to what they read. By teaching social media users how to distinguish between trusted and unreliable sources, [the misinformation echo-chamber can be broken](#).

Such education may also help reduce the impact of the infodemic that has

[Infodemic](#): Increase in mental distress brought on by the overwhelming amount of COVID-19 information and misinformation.

resulted from the COVID-19 pandemic (see [The Infodemic and Mental Health](#)). Other strategies include:

- **Working with trusted community partners to share accurate information on social media.** People are more likely to trust information from community partners and members that they know and believe have their best interest in mind.
- **Partnering with community health workers to develop and share social media myth busters.** Community health workers are among the most trusted individuals in the community. They can help identify social media misinformation and disinformation that may be circulating in the community—and then help dispel myths or rumors with accurate information.
- **Judging online information and diversifying sources of information.** When viewing social media, users should be mindful of misinformation and disinformation made to grab their attention. Users should learn to [assess whether the information is trustworthy and credible](#). Media literacy (see [Health Literacy and Information Interpretation During an Infodemic](#)) educational interventions can directly improve people's abilities to critically assess information



and detect COVID-19–related misinformation. Improved media literacy can help social media users learn what questions to ask; identify information from credible, unbiased sources; and consider if there is evidence to support a statement. Considering multiple sources of information that share different, balanced perspectives can help people [protect themselves from misinformation and disinformation](#).

- **Increasing health, digital health, and media literacies.** [Social media can be a powerful tool to increase health literacy](#). People with high levels of health literacy and other related literacy types are more likely to believe in and adopt COVID-19 prevention strategies like [vaccines](#), [social distancing](#), and [handwashing](#) (see Health Literacy and Information Interpretation During an Infodemic). By increasing health literacy, social media users can better distinguish between credible information and misinformation or disinformation. Using plain language and visuals that help tell a story are easy ways to increase health literacy. Additionally, media literacy interventions like education and the use of media fact checkers can also help reduce acceptance of false messages.

[TikTok and the Misuse of COVID-19 Home Tests](#)

A trend on TikTok showed (now unavailable) clips of people using home COVID-19 tests incorrectly, such as running them under hot water to get a false positive. One post was viewed over 14 million times and “liked” by 250,000 viewers. These posts not only result in waste, but also lead people to unnecessarily question the accuracy of home tests kits, which, when used properly, are quite accurate.



Moving Forward Together in Action

Through RADx-UP, leaders in research, communities, and government are developing and sharing their experiences, ideas, and recommendations to overcome COVID-19 testing disparities in the communities most impacted by the virus. Social media can be an effective strategy to communicate accurate information and counter misinformation that can contribute to disparities. Consider these questions as you explore how social media can help address COVID-19 disparities in your community:

- What are effective strategies for communicating accurate COVID-19 information to populations most affected by the virus?
- In what ways do social media platform algorithms influence the information a person consumes about COVID-19?
- How do certain cultural or community norms affect susceptibility to misinformation spread online?
- In what ways can social media be used to address misinformation?

A Facebook Case Study

In 2019, internal Facebook researchers created two test accounts to study how the platform's technology pushed content to users. These test accounts were designed to represent two women, Carol and Karen, both 41 years old and living in North Carolina. The women shared similar interests such as young children and parenting, Christianity, volunteering, and community involvement. However, they had some differences:

- Carol described herself as a politically conservative mother. Her account followed a few of her favorite brands, including Fox News and President Donald Trump and members of his family.
- Karen liked politics and news. She liked Senators Bernie Sanders and Elizabeth Warren, and disliked President Trump. She followed a local news site, pages about North Carolina, and the liberal advocacy group MoveOn.

Both researcher-created accounts exclusively followed and viewed content recommended by Facebook's algorithms.

- Within two days, conservative Carol's feed guided her toward QAnon conspiracy theories, despite her never expressing interest in conspiracy theories. Carol didn't follow the recommended QAnon groups, but Facebook still pushed her content about QAnon groups.
- Within a week of creating the accounts, Carol's feed was full of groups and pages that had violated Facebook's own rules, including rules against hate speech and disinformation.
- Within a week, liberal Karen's feed directed her to crude anti-Trump messages.



POLICIES THROUGH A COMMUNICATIONS LENS DURING THE COVID-19 PANDEMIC

This summary will help you understand the role of COVID-19 risk communication messages and factors that affect whether people follow COVID-19 policies. Factors include mindsets, political beliefs, race and ethnicity, and economic conditions.

Why Messages About Policies to Prevent the Spread of COVID-19 Matter

Policies were implemented across the US to help prevent the spread of COVID-19. Many states, cities, and counties issued stay-at-home orders to prevent COVID-19 from spreading further. However, orders were not always able to reduce the spread of the virus. States also implemented social distancing policies to minimize spread. As a result, schools were closed in many states and many employers transitioned their employees to remote work. This was not an option for many essential workers given their occupations and economic circumstances. In the absence of a vaccine, public health officials and state and local governments [set guidelines to help avoid infection or hospitalization](#): stay home or quarantine voluntarily, avoid large gatherings, and stay 6 feet apart in public spaces.

Risk communication can increase the number of people who follow policies. Health communication is considered effective when it is clear, honest, and relevant. As policies were enforced to prevent the spread of COVID-19, many in the public were not in

complete agreement because the [communication was not clear for everyone](#). Researchers attributed this to inadequate risk communication and planning. When communicated effectively, people are more likely to take the desired action to reduce health risk, which may reduce and manage the spread of disease.

What is risk communication?

Communication intended to supply audience members with the information they need to make informed, independent judgements about risks to health, safety, and the environment.



Additionally, guidelines issued by the Centers for Disease Control and Prevention (CDC) concerning social distancing and respirator use were confusing to both the public and the medical community. The president of the American Medical Association issued a [rare statement](#) in early 2022 sharing his concern that recently released guidelines were confusing and posed further risk in spreading the virus.



Political Party Affiliation Affects Whether People Follow COVID-19 Policies

[Non-liberal political party affiliation](#), being part of a minoritized [racial or ethnic group](#), and [income insecurity](#) are associated with low adherence to COVID-19 policies and orders. The [Kaiser Family Foundation COVID-19 Vaccine Monitor](#) research project tracks attitudes and behaviors toward COVID-19 vaccines and safety guidelines. It also discusses people's reported impacts on mental and physical health, finances, education, and employment. Researchers found an association between political views and the likelihood of following COVID-19 guidelines. People with views not aligned with liberal perspectives [are less likely to believe in scientific research](#) that challenges their values or beliefs. Research that contradicts or disagrees with their beliefs can lead to distrust of the scientific community and government officials. People with views more closely aligned with liberal perspectives were more willing to accept scientific research and follow COVID-19 guidelines. One study found that, overall, counties with mostly Democratic voters were more likely to follow stay-at-home and social distancing recommendations compared to counties with mostly Republican voters. Counties



that supported former President Trump's beliefs about the pandemic were [less likely to engage in COVID-19 self-protective behaviors](#) and follow public health policies and guidelines. They also experienced higher death rates from COVID-19.

The Effects of Trust and Economic Autonomy on Adherence to Policies

Historical policy decisions have affected the way that communities interact with the policies of today. People who are part of minoritized racial and ethnic groups may have caution toward the scientific community, as well as unequal access to economic security that affects their ability to follow COVID-19 policies. [Distrust](#) made it hard for many to choose vaccination and to follow social distancing policies. In addition, many economic factors made it difficult for some populations to follow COVID-19 policies. This resulted in high hospital admission and death rates within communities of color. Economic factors included:

- *Essential occupations:* People who are part of historically underrepresented racial and ethnic groups are more likely to have essential jobs, which made it harder to quarantine. Many essential workers were hesitant to leave their jobs, even in states that provided financial support to those who needed to quit to avoid increased exposure. Most workers were concerned about their ability to get jobs in the future or get jobs that paid just as well or higher.

- *Income insecurity:* People with lower incomes, or those who do not feel certain about their future income, were more likely to get COVID-19.
- *Access to testing:* People with lower income are more likely to live in communities where testing may not be readily available.
- *Housing and health insurance:* People with lower income may not have stable housing or adequate health insurance.

Tailored Messages and Community-based Partnerships Can Increase the Number of People Who Follow Policies

Tailoring messages about policies based on community-specific barriers may improve people's acceptance and adoption of policies. Guiding principles for tailoring messages can be found in a recent report published by the Rockefeller Foundation and the Duke Margolis Center for Health Policy: [Hyperlocal COVID-19 Testing and Vaccination Strategies to Reach Communities With Low Vaccine Uptake](#) (see page 4, Table 1).



Strategies to Develop and Deliver Messages That Increase the Number of People Who Follow Policies

There are several strategies to develop and deliver messages that will be well-received by the intended audiences and help increase their adherence to policies.

- **Messages on policies to protect the public's health must be tailored for the audience and culturally appropriate.** To increase the number of people who follow policies, messages must reflect people's demographics (e.g., race, ethnicity, sex, income), be culturally appropriate, and speak to their beliefs and mindsets. [Tailoring messages to reflect people's personal beliefs and mindsets](#) influences behavior and eventually drives policy adherence. Understanding mindsets, or how a person thinks, was critical during the pandemic. For example, [one study found that](#) some people are responsive to leaders or people who hold positions of authority while others are not. People who are not responsive to authority figures were least likely to follow social distancing policies, and people who believed they were at risk of infection were more likely to follow social distancing policies.
- **Community-based partnerships, with trusted messengers, help to communicate messages about policies.** One study examined how [partnerships between researchers and community-based organizations and community leaders](#) were developed to communicate messages about COVID-19 risks to under-resourced communities. Community leaders were viewed as trusted and respected sources of information because of their work in communities before the pandemic. As a result, messages from community leaders were more effective at increasing adherence to policies and

addressing misinformation and risk perception. The power of trusted messengers was captured in a [comic](#) (see [Data Visualizations During the COVID-19 Pandemic](#)) developed by a journalist to tell a story about increasing COVID-19 vaccination rates among Black and Latino members of the LGBTQ+ community in Chicago. The [comic](#) portrayed trusted messengers from the Black LGBTQ+ community to talk about the reasons for low vaccination rates (including the African American community's mistrust of medical researchers due to past ethical violations and vaccine misinformation; see [The Infodemic and Mental Health](#)), the importance of getting vaccinated, and how to do so safely. Community leaders can also help make sure that messages are culturally appropriate for the intended audiences.

- **Consistent, clear messaging may reduce confusion surrounding policies and guidelines and increase adherence.** Messages about COVID-19 guidelines and related issues should be clear and concise to avoid confusion. Increased collaboration across healthcare and public health entities may support creation of this type of effective messaging.



Moving Forward Together in Action

Through RADx-UP, leaders in research, communities, and government are developing and sharing their experiences, ideas, and recommendations to overcome COVID-19 testing disparities in the communities most impacted by the virus. Tailored risk communication messages can be an effective strategy to increase the number of people who follow policies that help prevent or reduce the spread of COVID-19.

Well-translated messages that are reviewed for cultural and linguistic competency are known to improve health guidance adherence. Health-related policies should be translated and reviewed by community members/leaders to ensure the





language is accurate and easy to understand so the intended audiences will understand how to adhere to the policies. Translations should also be reviewed by community members/leaders to ensure they are culturally appropriate.

Consider these questions as you explore the use of risk communication messages to increase policy adherence and address COVID-19 disparities in your community:

- How does the way in which data are collected and reported affect individuals' ability to make fully informed decisions regarding vaccines and testing?
- How are policies received and adhered to by populations with historical trauma?
- What communications strategies may make certain communities find health policies more acceptable and easier to follow?



DATA VISUALIZATIONS DURING THE COVID-19 PANDEMIC

This summary will help readers to understand when to use data visualizations to clearly communicate health data and information to the public, and to counter misinformation that may contribute to health disparities. The summary will also cover when to consider other interventions to address disparities in the community.



Why Data Visualization Matters

Using graphs to represent data can enhance [recognition](#), [recall](#), and [comprehension](#) of information. It can also reduce the [time needed to understand information](#). Visuals play a critical role in telling a compelling story that can [engage and persuade](#) your audience. During the pandemic, COVID-19–related data visualizations like charts, dashboards, and infographics have been shared online more than ever before. Visual representations of health-related data can help people [better understand complex data and related concepts](#). Data visualization has also helped translate data from complex math models into visual patterns the public can understand.

The amount of misinformation and mistrust of information during the COVID-19 pandemic is concerning. Visualization can help counter misinformation. Communicating correct health information in an effective and engaging manner is critical to increase testing and vaccination rates. Information must be read and understood accurately to help reduce the impacts of the pandemic.

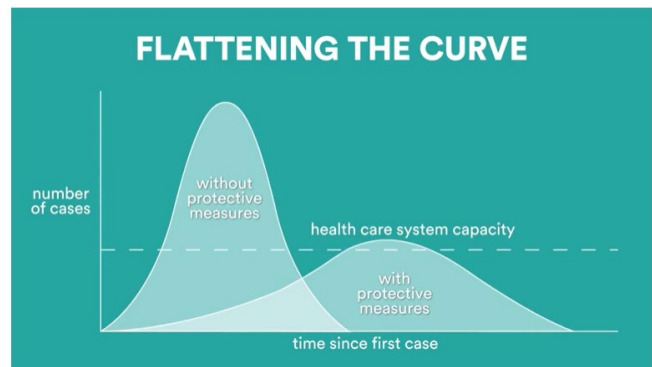
Data Visualization Can Help Address COVID-19 Disparities

Below are descriptions and examples of five types of data visualizations used to communicate COVID-19 data and information to a variety of audiences, including the public and healthcare workers. Some data visualizations were also used to counter misinformation about COVID-19 and to help address disparities in testing, vaccination rates, and health outcomes.

1. Charts

Charts are graphical representations of data used to uncover patterns, trends, and relationships in data. There are many different types of charts, such as bar charts, line charts, pie charts, scatter plots, and epidemic curves. The type of chart to use will depend on the message. For example, epidemic curves can be used to convey patterns of health data over time. One popular epidemic curve shows the number of people sick both with and without COVID-19 protective measures (Figure 3-1). This chart became a viral public health meme and call to action on social media: “[flatten the curve.](#)”

Figure 3-1: Example of a Flattening the Curve Graphic



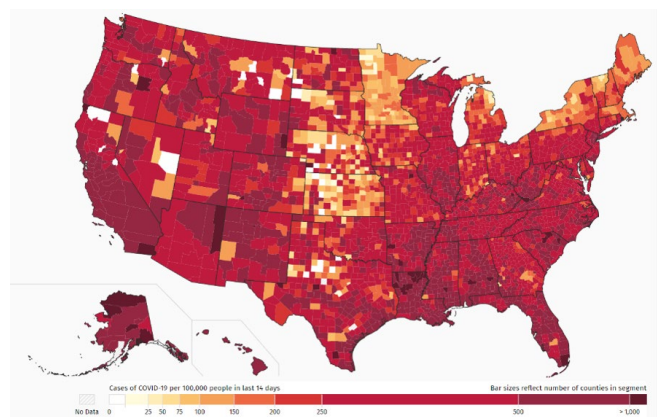
Source: Carl Bergstrom, UW & Esther Kim

The graphic appeared in a Stat news article on March 11, 2020.

2. Maps

Maps are used to show geographic data. [Geographic Information Systems](#) (GIS) is a tool commonly used to visualize patterns across geographies. Maps were used during the COVID-19 pandemic to show cases or deaths in different regions (Figure 3-2). One RADx-UP project team used GIS to map the relationship among race, rurality, food insecurity, and [COVID-19 testing in West Virginia](#). They found that rural areas with higher proportions of Black people and food insecurity had significantly lower testing rates.

Figure 3-2: [Cases of COVID-19 per 100,000 People](#)



Source: COVID-19 Case Mapper developed by Big Local News and Pitch Interactive with support from Google News Initiative.

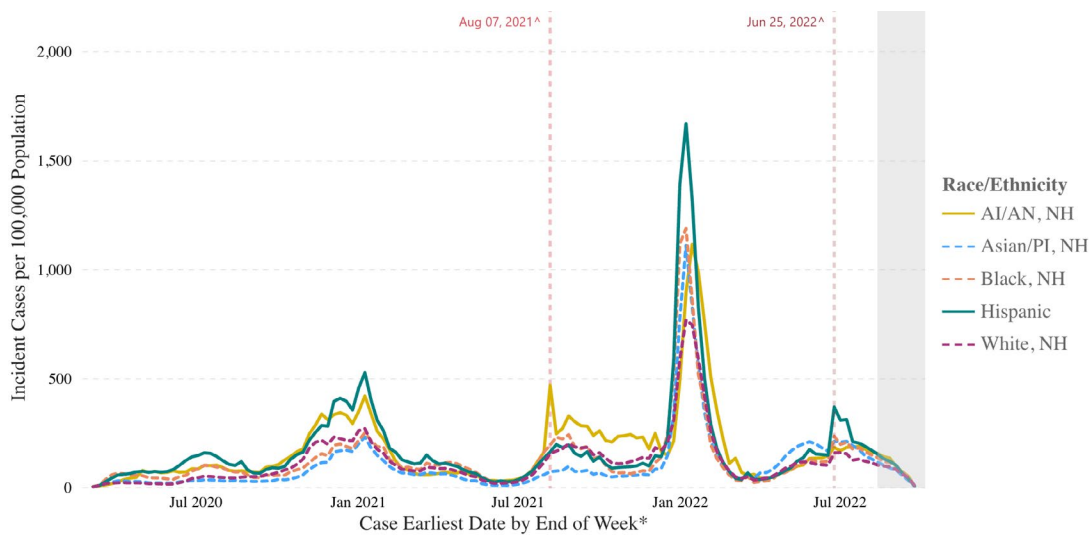
3. Dashboards

Dashboards weave together a collection of individual displays—like charts, graphics, maps, and tables—to tell a broader story. They provide users access to a collection of related graphics in one view. Dashboards that collect and display information about COVID-19 became more common during the pandemic. [Dashboards](#) frequently track infection and death rates, testing and vaccination rates, and related socioeconomic data. Journalists, policy-makers, public health leaders and decision-makers, and community members can all access

and use data through dashboards like those housed at [John Hopkins Coronavirus Resource Center](#) and the [Centers for Disease Control and Prevention](#) (Figure 3-3).

There are also new approaches to dashboards. Researchers at Harvard School of Public Health combined COVID-19 case and death rates into a single animated visualization to show the relationship between cases and deaths. The animation made the [time difference](#) between cases and deaths more apparent and informed expectations for death rates in the United States.

Figure 3-3: COVID-19 Weekly Cases per 100,000 by Race/Ethnicity, United States



Source: Centers for Disease Control and Prevention. COVID Data Tracker. Atlanta, GA: US Department of Health and Human Services, CDC.

4. Infographics

Infographics are a collection of data visualizations, illustrations, text, and images. They help make data easier to read and understand. [Infographics can help deliver abstract, complex messages.](#) When designed properly, scientific infographics can [illustrate concepts, clarify data patterns,](#) and [engage different audiences.](#) They are widely used in traditional and social media because they [clearly and efficiently summarize details.](#) Infographics, which are available to a wide range of audiences, are important tools in public health communication.

Infographics have been used during the COVID-19 pandemic in various forms. One study found that the number of COVID-19 vaccine recipients returning for a second shot grew after [COVID-19 vaccine infographics were distributed to first-time vaccine recipients](#) (Figure 3-4). Another study found that people are more likely to believe messages about COVID-19 vaccines when [infographics are used to further explain scientific jargon.](#)

Figure 3-4: Infographic Used at a Vaccine Center in Los Angeles



Source: Crutcher M, Seidler PM. Maximizing completion of the two-dose COVID-19 vaccine series with aid from infographics. *Vaccines*. 2021;9:1229. <https://doi.org/10.3390/vaccines9111229>.

Infographics may reduce communication barriers by [simplifying messages and avoiding jargon.](#) Infographics use different approaches. One study found that decision trees [helped people decide whether to self-isolate due to COVID-19 exposure](#) and that an online planning tool helped adults under age 40 increase their confidence about coping with self-isolation.

5. Comics

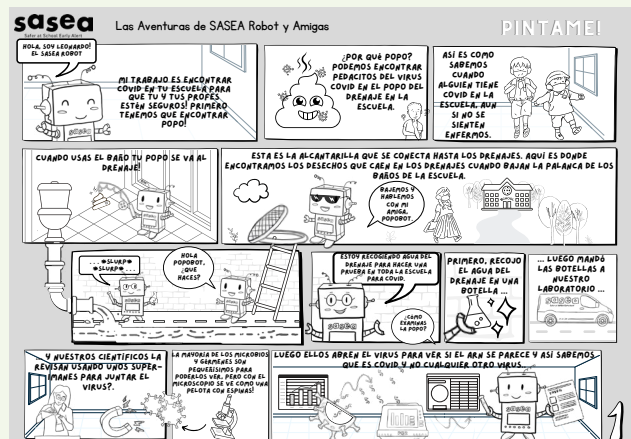
While not necessarily a *visualization of data*, public health organizations have used comics to convey complex COVID-19 information in a relatable way. Comics can [show multiple perspectives](#) and capture the emotions associated with [behaviors, social norms, and social relationships](#). Comics have been effective across a wide range of medical and public health issues because they can address difficult and sensitive topics, sometimes in funny ways. Some current COVID-19–related comics are designed to educate both healthcare workers and the public (Figure 3-5). There is now a large number of COVID-19–related comics across all forms of print and digital media. Recently, the National Science Foundation funded a research project to [develop comics](#) that can effectively improve understanding of the COVID-19 pandemic among America's youth.

Figure 3-5: Example of a COVID-19 Testing Cartoon Aid



Source: Gray NA, Back AL. Covid-19 communication aids. *BMJ*. 2020;369:m2255.

A RADx-UP project, Safer at School Early Alert (SASEA), partnered with their University of California San Diego Health Communications Team to develop a comic book to educate students about using wastewater to monitor the presence of COVID-19 at schools. The comic book, which can also be used as a coloring book, is available in [English](#) and [Spanish](#).





Moving Forward Together in Action

Through RADx-UP, leaders in research, communities, and government are developing and sharing their experiences, ideas, and recommendations to overcome COVID-19 testing disparities in the communities most impacted by the virus. Data visualization can be an effective strategy to clearly communicate complex data and information to the public. It can also help counter misinformation that can contribute to disparities. To [identify](#) which type of visualization will be most effective for the intended audiences, researchers

and health educators should partner with instructional designers to conduct an information needs assessment and develop learning objectives.

Consider these questions as you explore how data visualizations can help address COVID-19 disparities in your community:

- What is the visualization's message and purpose (for example, inform, persuade, monitor/update, explore data, call to action)?
- Who is the intended audience of the data visualization?
- What is the format (for example, postcard, newsletter, social media, interactive dashboard)?
- How can data visualizations be designed so the intended audience can understand them easily?
- Could data visualizations, like charts, be easily and correctly interpreted by a layperson?
- In what ways can data visualizations intentionally or unintentionally lead to belief of misinformation?





THE INFODEMIC AND MENTAL HEALTH

This summary will help you understand: 1) how an infodemic occurred during the COVID-19 pandemic and its negative impacts on COVID-19 behaviors; 2) the effects of the infodemic on mental health and the role mental health plays in how people access and use information; and 3) strategies to decrease information overload and increase openness to accurate information.

What is misinformation?

False or misleading information that is presented as fact, regardless of an intent to mislead.



What is disinformation?

False information that is deliberately shared to mislead people, often to influence public opinion or hid the truth.

What is an infodemic?

Too much information, including false or misleading information, during a disease outbreak such as the COVID-19 pandemic.

[Read more here.](#)

Why an Infodemic Matters

Many people reported being confused and overwhelmed by the amount of information about COVID-19 available online. This was very common [during the initial phase of the pandemic when stay-at-home orders were in place](#) and people were [more likely to use the internet to find information about COVID-19](#). The amount of information available on social media and traditional news resources (e.g., television, radio, newspapers) made it hard for people to keep up and determine what information was accurate. For example:

- The term “COVID-19” was mentioned [more than 690 million times](#) in digital and social media messages globally between January and May 2020.
- About [4.75 million](#) COVID-19–related messages were disseminated daily.

In addition to information overload, there was a lot of misinformation and disinformation about COVID-19 that spread quickly online.

[Information overload and misinformation](#) (i.e., false or misleading information) about COVID-19 contributed to an “infodemic” and an increase in public anxiety.

The COVID-19 infodemic had and continues to have broad-reaching effects. Information overload created confusion, which led to distrust of information from public health leaders. This led to people engaging in behaviors that can increase their risk of getting COVID-19. Ultimately, an infodemic can [make a pandemic worse](#). A pandemic may last longer, or the impact may be more severe, because people do not know what information to trust.



The Infodemic Increased Mental Distress

The COVID-19 pandemic—and related uncertainties—affected people’s mental health all over the world. More adults in the US experienced [anxiety](#) and symptoms of [depression](#) during the pandemic compared to before the pandemic. The mental health of people who have experienced systemic racism has been particularly affected. Rates of depression, anxiety, post-traumatic stress, substance use disorders, and suicide have [increased among non-White youth](#) since the pandemic began.

Many people coped with their anxiety—and the uncertainty of the pandemic—by seeking out information, particularly online information available through social media. As news about the pandemic spread, people spent more time looking at traditional news sources and social media for COVID-19 updates. [Research has shown that mental health distress](#), including feeling nervous, anxious, or depressed, may increase the more a person explores traditional news sources and social media. As a result, the COVID-19 infodemic has been referred to as an “[invisible disaster](#)” due to its serious and far-reaching mental health effects.

People experiencing mental distress may be more vulnerable to misinformation about COVID-19. [A nationwide survey of US adults](#) found that those who experienced moderate or greater depressive symptoms on an initial survey were more likely to support at least one of four possible



false statements about COVID-19 vaccination. These adults were half as likely to be vaccinated. Two months later, these same adults were twice as likely to support an increasing number of false statements.

Additionally, people who experienced mental distress were less trusting of information and interventions from credible sources, including the government. For example:

- Adults experiencing anxiety during the pandemic were [less confident about the government’s response](#) to COVID-19.
- Young adults who experienced a higher number of distressing mental health symptoms were [less likely to trust the protective measures](#) put in place by the government.

Strategies to Reduce the Effects of the Infodemic

There are several strategies to reduce information overload and increase access and openness to accurate information, particularly for those experiencing mental distress during a pandemic.

What is fact-based, person-centered communication?

Communication that provides facts that matter to people, including numbers or statistics, that have not been framed to support personal views or ulterior motives.



Strategies include:

- **Prioritize information from credible sources.** Help people [prioritize information from credible sources](#) such as:
 - [World Health Organization](#)
 - Local, state, and federal public health organizations, including:
 - County public health departments*
 - Community health workers*
- **Focus on actionable information that emphasizes preventive measures.** Encourage people, particularly those who may be experiencing mental distress, to focus on information about behaviors or actions that they can control and that will help them stay safe. For example, information about how to prevent the spread of COVID-19, such as wearing a mask

or gathering outside, may encourage people to carry out their “normal” daily activities so they still feel connected to family and friends.

- **Advocate for and develop fact-based, person-centered communications.** Media professionals, health experts, and government officials can advocate for and develop a fact-based, [person-centered](#) COVID-19 crisis communication strategy. This strategy should provide relevant, accurate, and timely information to the public. Personal stories—both positive and negative—can be a form of person-centered communication that may encourage behavior change.
- **Use social media to engage in activities that emphasize social support.** Research suggests that [positive social interactions on social networking sites](#) (e.g., Facebook, Twitter, Instagram) can support well-being. Feelings of well-being can help to reduce anxiety and depression. [Using social media to engage with family and friends](#) can help foster social connections, which is particularly important when social distancing policies are in place.



Moving Forward Together in Action

Through RADx-UP, leaders in research, communities, and government are developing and sharing their experiences, ideas, and recommendations to overcome COVID-19 testing disparities in the communities most impacted by the virus. The COVID-19 infodemic increased people's mental distress and contributed to mistrust of information and interventions to

prevent the spread of COVID-19. However, there are strategies to help decrease information overload and help people be more receptive to accurate information. Consider these questions as you explore how to reduce the effects of the infodemic on people's mental health and address COVID-19 disparities in your community:

- What strategies can minimize information overload and mistrust in your community?
- How can you work with community health workers to share the most relevant information?
- How does regular exposure to misinformation affect mental health?
- How does mental health affect the way an individual seeks out information and their susceptibility to misinformation?





HEALTH LITERACY AND INFORMATION INTERPRETATION DURING AN INFODEMIC

This summary will help you understand how health literacy: 1) affects how people access, understand, and use information about COVID-19; and 2) influences people’s attitudes and behaviors about COVID-19 prevention strategies.

Why Health Literacy Matters

[Health literacy can help prevent and manage health problems and protect people’s health](#), especially during a pandemic. Health literacy has been referred to as a “[social vaccine](#)” during the COVID-19 pandemic because it enables people to understand and use information to prevent the spread of the virus. However, many adults experience limited or low health literacy.

About [80 million](#) US adults have limited or low health literacy. This means that about one-quarter of the US population may not understand, have access to, or know how to use health information to make decisions or evaluate behaviors that impact their health.

What is [health literacy](#)?

The ability to access, understand, and use health information to inform health-related decisions and behaviors.



Some populations are at higher risk for low health literacy. These includes non-native English speakers, older adults, people with limited education, people with lower income, and people with chronic conditions. Those with low health literacy [may not be able to read or understand health-related materials](#) (e.g., prescription



bottles, appointment slips) or complete forms at a provider’s office. People who are more likely to engage in information avoidance are [less likely to engage in protective health behaviors](#). A [recent study](#) found that those with lower health literacy are more likely to avoid information about COVID-19.

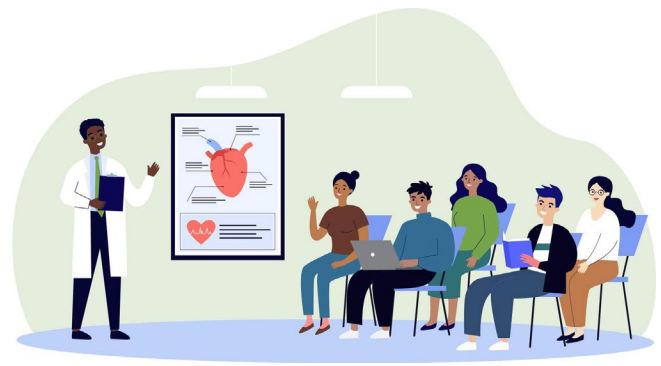
The ability to access, understand, and use accurate COVID-19 information is critical to keep people safe during the pandemic. However, information about how to prevent and treat COVID-19 is often overly technical and hard to access. [Studies found that:](#)

- Less than 2 percent of COVID-19–related articles were written at the recommended sixth grade reading level.
- Less than 18 percent of webpages include universally accessible content that all people—regardless of their abilities—can use.

Public health and government organizations often provide more readable information, whereas information from purely digital media sources may be [less readable](#).

Health Literacy Affects People’s Awareness of COVID-19 and Attitudes About COVID-19 Prevention and Behaviors

Health literacy has played a critical role in people’s awareness of COVID-19 and adherence to preventive behaviors during the pandemic. For example, people with higher health literacy, compared to those with lower health literacy, are [more likely to believe and adopt COVID-19 prevention strategies](#), like vaccines, social distancing, and handwashing. Studies suggest people with higher health literacy are more open to changing their behavior. Individuals with higher health literacy were [more realistic about their risk of contracting COVID-19](#) and [more likely to receive a COVID-19 vaccination when it became available](#).



Digital Health Literacy and Media Literacy Are Closely Related to Health Literacy and Similarly Affect COVID-19–Related Awareness and Attitudes

People’s media literacy and digital health literacy levels are often closely aligned with their level of health literacy. Varying levels of literacy types may create new or deepen existing health disparities for communities impacted by social determinants of health, especially with the growing popularity of online news sources for COVID-19 information (see [Social Media Messaging During the COVID-19 Pandemic](#)). [One study found that](#) people of color with low media literacy skills were more susceptible to misinformation and disinformation related to the pandemic. Lower digital literacy, which is most common in [older adults](#) and [people with lower incomes](#), can prevent [even those with high health literacy levels](#) from effectively finding and understanding health-related information online.

Low media, digital and health literacy have been identified as direct contributors to the spread of COVID-19 misinformation. However, existing digital health and media literacy interventions show that education and skill building can improve people’s literacy levels and ability to critically assess health information, detect misinformation in messages, and reduce misinformation spread online.

What is [digital health literacy](#)?

An individual’s ability to seek, access, and understand information from electronic sources.

What is [digital literacy](#)?

The ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.

What is [media literacy](#)?

The skills and knowledge that news consumers need to navigate their information environment in a mindful and critical way.





Strategies to Increase Health Literacy and Address COVID-19 Disparities

Strategies to tailor information can help people, particularly those with low health literacy, better understand and use information about COVID-19. These strategies, briefly described below, may help reduce information avoidance and help people make informed decisions about preventive behaviors.

- **Know your audience.** Before developing any information, it is critical to think about your audience—who are they, what do they know, and what do you want them to know? It is also important to identify any special considerations, including health literacy and cultural differences, and needs related to accessing information (e.g., visual or hearing impairments).

- **Communicate in plain language.** Verbal and written communications should use plain language. Plain language is [clear, concise, and organized](#). It can help your audience find, understand, and use information. Ideally, it should be free of jargon, including medical and research terms, especially if intended for the public.
- **Communicate with visualizations to tell a story that your audience can relate to.** Choose and design appropriate data visualizations for your audience (see [Data Visualizations During the COVID-19 Pandemic](#)). Graphical representations of data, also known as data visualizations, can help audiences understand and recall information. They can also help counter misinformation. To identify which type of visualization will be most effective for your audience, researchers and health educators should partner with instructional designers to [conduct an information needs assessment and develop learning objectives](#).
- **Know your communities' media and digital health literacy skills.** Educating and building skills in these areas may result in overall improved health literacy and increase an audience's ability to receive and understand an intended message.



- **Work with community-based organizations to develop and share tailored messages and information.** Researchers have called for the [inclusion of local organizations](#), and the use of [culturally specific messaging](#), to help under-resourced populations better respond to the pandemic. For example, people with less education, people who are unemployed, and Hispanic and non-Hispanic Blacks [may have less knowledge about COVID-19](#). This is not surprising given that certain communities and populations are not well represented in COVID-19 materials.



Moving Forward Together in Action

Through RADx-UP, leaders in research, communities, and government are developing and sharing their experiences, ideas, and recommendations to overcome COVID-19 testing disparities in the communities most impacted by the virus. Health literacy affects how people access, understand, and use information about COVID-19. It also affects their attitudes and beliefs about COVID-19 prevention strategies. Tailoring information can help people better understand the risks of COVID-19 and make informed decisions about their behaviors. Consider these questions as you explore how to tailor information and design interventions to address COVID-19 disparities in your community:

- Are materials presented in language and at a literacy level that people can understand?
- How does the tone of accurate health messaging compare to the tone of misinformation?
- How might information be misinterpreted if not tailored to the population receiving it?
- How might accurate information that is interpreted in different languages lead to misinformation?



INFORMATION ACCESSIBILITY DURING THE COVID-19 PANDEMIC

This summary will help you understand how technology affects people’s access to health information, health care, and health outcomes during the COVID-19 pandemic.

What is the digital divide?

A difference in access to technology between different populations.



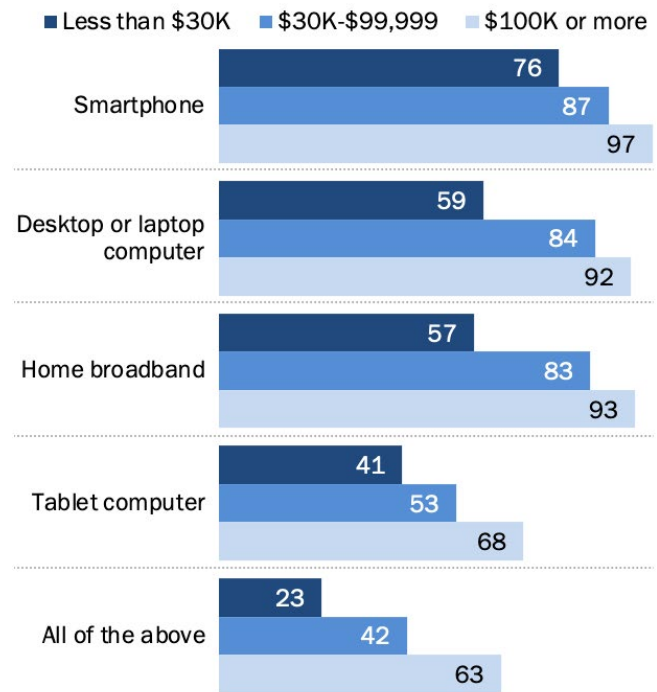
Why Information Accessibility Matters

Access to timely and accurate information is critical during a highly infectious and fast-moving pandemic. However, not everyone in the US has the same access to, and ability to effectively use, technology and digital information. This makes it difficult for some people to access information and care, especially when testing locations, appointment scheduling, and up-to-date health information are often only accessible through websites. There is a [digital divide](#) that affects some of the most under-resourced populations in the US, including people with lower incomes. Although internet use, broadband internet adoption, and smartphone ownership have all rapidly increased among Americans over the past 20 years, [household income](#) still affects how individuals own and use technology. Compared to people with higher incomes, people with lower incomes have fewer smartphones, computers, and tablets, and less broadband access (Figure 6-1).

Figure 6-1: Use of Technology by Income Level

Americans with lower incomes have lower levels of technology adoption

% of U.S. adults who say they have each of the following, by household income



Note: Respondents who did not give an answer are not shown. Source: Survey of U.S. adults conducted Jan. 25-Feb. 8, 2021.

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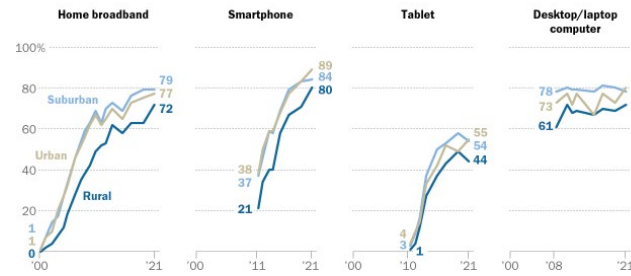
Income is not the only factor that affects access to and use of technology. Other factors include geographic setting (e.g., rural, urban) and race and ethnicity.

- **Geographic Setting:** People living in [rural areas also have less access to technology and connectivity](#) (e.g., broadband, high-speed internet) (Figure 6-2) because the infrastructure (such as fiber-optic cables and cell phone antennas) is lacking.

Figure 6-2: Technology Ownership by Rural/Urban Area

Despite growth, rural Americans have consistently lower levels of technology ownership than urbanites and lower broadband adoption than suburbanites

% of U.S. adults who say they have or own the following



Source: Survey conducted Jan. 25-Feb. 8, 2021.

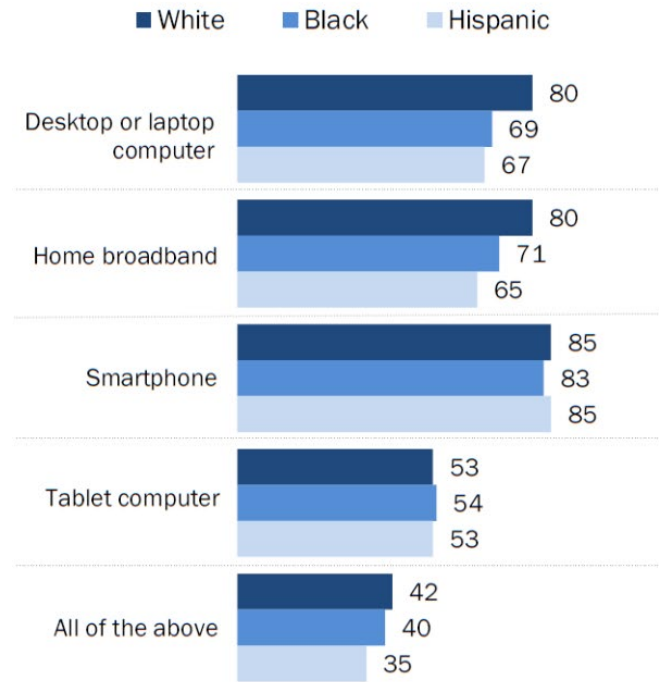
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- **Race and Ethnicity:** Some groups, including Blacks and Hispanics, are [less likely to have a computer](#) or home Wi-Fi (Figure 6-3). As internet access tends to be most prevalent in affluent communities, groups that have been historically disadvantaged in property ownership experience are [less able to access areas with high connectivity](#).

Figure 6-3: Computer Ownership and Home Broadband by Race and Ethnicity

Black and Hispanic adults in U.S. are less likely than White adults to have a traditional computer, home broadband

% of U.S. adults who say they have the following



Note: Respondents who did not give an answer are not shown. White and Black adults include those who report being only one race and are not Hispanic. Hispanics are of any race.

Source: Survey of U.S. adults conducted Jan. 25-Feb. 8, 2021.

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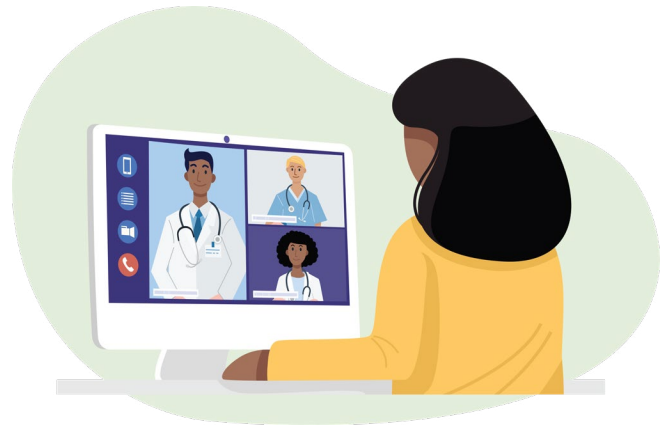
Technology Plays a Critical Role in Access to Health Care, Health Information, and Health Outcomes

The COVID-19 pandemic and associated preventive measures (e.g., social distancing, office closures) have increased our need for technology in daily life and for health-related activities. However, certain populations continue to be affected by the digital divide.

Telehealth, or telemedicine, has become increasingly important, but has not been equally available to or used by everyone during the pandemic.

- [Telemedicine was used less](#) by cancer patients of Hispanic or Asian descent, patients who spoke Spanish primarily, as well as patients who have low incomes and those who are covered by Medicaid when compared to other cancer patient groups.
- [Undocumented immigrants](#) also had trouble accessing telemedicine during the pandemic.

During the pandemic, people have relied on the internet to seek out health information, schedule vaccines, order groceries, and complete other daily tasks such as remote work and school.



However, some people, including men, older adults, and people with impairments, may have a harder time using online resources.

[Socioeconomic status](#) is another key factor in using technology to access health information. People with lower incomes use online health resources less than people with higher incomes.

Access to technology also affects health outcomes. COVID-19 infection rates are [higher in ZIP codes with lower telemedicine use](#). Lack of internet access is also associated with COVID-19–related mortality (death). Across the country, areas with [limited internet access had higher COVID-19 mortality](#) rates, [particularly in urban areas](#).



Strategies to Expand Access to Technology and Information

Strategies to expand access to technology and, ultimately, information about COVID-19 can be grouped into two types: strategies to increase technology use by individuals and strategies to improve the quality and relevance of messages and how messages are disseminated. Partnerships between public and private organizations—and the communities affected by and responding to the pandemic—are essential to successfully implement these strategies and mitigate the impact of the digital divide.



Moving Forward Together in Action

Through RADx-UP, leaders in research, communities, and government are developing and sharing their experiences, ideas, and recommendations to overcome COVID-19 testing disparities in the communities most impacted by the virus. The digital divide, which affects some of the most under-resourced populations in the US, has affected how people access health care and health information during the COVID-19 pandemic. It has also contributed to disparities in COVID-19 health outcomes.

Consider these questions as you explore how access to technology and information can help address COVID-19–related disparities in your community:

- How does information accessibility (e.g., broadband access) create disparities among populations?
- How can information be made widely accessible to under-resourced populations?



Glossary

A glossary is available through the interactive version of this report [here](#).

Acknowledgments

Acknowledgements is available through the interactive version of this report [here](#).

SUGGESTED CITATION

Fox C, Guest G, Taylor M, Bailey L, Wilson H, Idiagbonya E, Cook J, Ortega Hinojosa A, Johnson K, Chingwe J, Bilheimer A, Leverty R, Carter-Edwards L. COVID-19 Testing Equity Through Messaging Accuracy and Accessibility—COVID-19 Equity Evidence Academy Data Profile. RADx-Underserved Populations Coordination and Data Collection Center; September 12, 2022.

