



February 2022

COVID-19 Federal Efforts to Provide Vaccines to Racial and Ethnic Groups

Accessible Version

GAO Highlight

Highlights of [GAO-22-105079](#), a report to congressional committees

Why GAO Did This Study

COVID-19 continues to have devastating effects on public health, serious economic repercussions, and has disproportionately affected some racial and ethnic groups. Ensuring all racial and ethnic groups have fair access to the COVID-19 vaccine is critical to reducing severe COVID-19 health outcomes and saving lives.

The CARES Act includes a provision for GAO to report on its ongoing oversight efforts related to the COVID-19 pandemic. This report describes, among other things, the actions CDC, HRSA, and FEMA have taken through their programs to provide COVID-19 vaccines to underserved and historically marginalized racial and ethnic groups, and the extent to which these programs vaccinated various racial and ethnic groups.

GAO analyzed CDC, HRSA, and FEMA vaccine administration data through September 2021; interviewed agency officials and reviewed agency documentation on COVID-19 vaccine programs and published literature on vaccine administration; interviewed health officials from four selected states and representatives from six selected stakeholder groups based on several criteria, such as states' racial and ethnic population distributions; and compared the agencies' vaccine administration data to 2020 U.S. Census Bureau population counts.

GAO provided a draft of this report to the Department of Health and Human Services (HHS), including CDC and HRSA, and FEMA. HHS and FEMA provided technical comments, which GAO incorporated as appropriate.

View [GAO-22-105079](#). For more information, contact Alyssa M. Hundrup at (202) 512-7114 or HundrupA@gao.gov.

February 2022

COVID-19

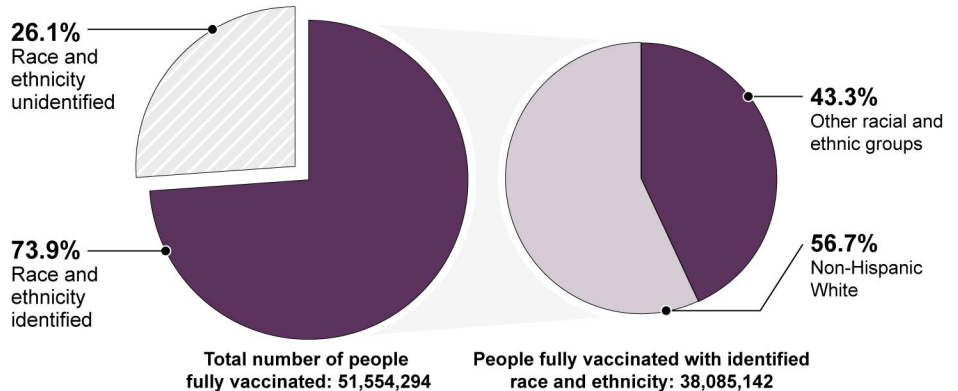
Federal Efforts to Provide Vaccines to Racial and Ethnic Groups

What GAO Found

In February 2021, the Centers for Disease Control and Prevention (CDC), the Health Resources and Services Administration (HRSA), and the Federal Emergency Management Agency (FEMA) each launched COVID-19 vaccine programs to supplement state and jurisdictional vaccination efforts. Through these three programs, the agencies took steps to provide COVID-19 vaccines to underserved and historically marginalized racial and ethnic groups, such as by using population data on race and ethnicity when selecting vaccination sites.

CDC, HRSA, and FEMA data—although limited in completeness—suggest that the agencies' COVID-19 vaccine programs vaccinated varying shares of racial and ethnic groups. GAO's analysis of data from CDC's retail pharmacy program, the largest of the programs, suggests that, among those with identified race and ethnicity, 43 percent of people vaccinated through the program were from racial and ethnic groups other than non-Hispanic White, as of September 4, 2021. (See figure.)

Percentage of People Vaccinated against COVID-19 through CDC's Retail Pharmacy Program by Race and Ethnicity, as of September 4, 2021



Source: GAO analysis of Centers for Disease Control and Prevention (CDC) data. | [GAO-22-105079](#).

Accessible Data Table for Highlight Figure

Race and ethnicity	Percent	Subcategory	Percent
Identified	71.5	People fully vaccinated from other racial and ethnic groups	43.3
		People fully vaccinated who were non-Hispanic White	56.7
Unidentified	28.5		

CDC exceeded its goal to administer at least 40 percent—the approximate percent of the U.S. population comprised of racial and ethnic groups other than non-Hispanic White—of COVID-19 vaccines through its retail pharmacy program to persons from these groups. However, comparisons between program vaccination data and U.S. population percentages suggest that some racial and ethnic groups, such as non-Hispanic Black persons, represented a smaller share of persons vaccinated through each of the three federal vaccine programs relative to their population size. For example, non-Hispanic Black persons make

up roughly 12 percent of the U.S. population, but account for about 9 percent of persons vaccinated through CDC's retail pharmacy program with identified race and ethnicity, as of September 4, 2021. These findings should be interpreted with caution due to the rate of missing race and ethnicity program data, which may account for some, or even all, of the differences in comparisons.

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Abbreviations

CDC	Centers for Disease Control and Prevention
COVID-19	Coronavirus Disease 2019
FEMA	Federal Emergency Management Agency
health center vaccine program	Health Center COVID-19 Vaccine Program
HHS	Department of Health and Human Services
HRSA	Health Resources and Services Administration
retail pharmacy program	Federal Retail Pharmacy Program for COVID-19 Vaccination
SVI	Social Vulnerability Index
vaccination center pilot program	Community Vaccination Center Pilot Site and Mobile Vaccination Program

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February 7, 2022

Congressional Committees

Coronavirus Disease 2019 (COVID-19) continues to have devastating effects on public health and serious economic repercussions. Such effects have been uneven, disproportionately affecting certain racial and ethnic groups, highlighting health disparities—preventable differences in the burden of disease—in the United States.¹ Data from the Centers for Disease Control and Prevention (CDC) suggest that some racial and ethnic groups have experienced worse health outcomes related to COVID-19.² For example, between March 2020 and January 2022, available CDC data indicated that Hispanic or Latino persons and non-Hispanic Black persons were hospitalized due to COVID-19 at a rate 2.4 and 2.5 times more than non-Hispanic White persons, respectively, after adjusting for age.³

Available data on persons vaccinated against COVID-19 also suggest some racial and ethnic disparities in vaccination rates. Nationwide, about 67 percent of the U.S. population eligible for vaccination (those 5 years and older)—about 208 million individuals—had been fully vaccinated as

¹According to CDC, health disparities are preventable differences in the burden of disease, injury, violence, or in opportunities to achieve optimal health experienced by socially disadvantaged racial, ethnic, and other population groups and communities. We previously reported on racial and ethnic health disparities, including for COVID-19. See GAO, *Health Care Capsule: Racial and Ethnic Health Disparities*, [GAO-21-105354](#) (Washington, D.C.: September 23, 2021).

²For more information, see GAO, *COVID-19: Federal Efforts Could Be Strengthened by Timely and Concerted Actions*, [GAO-20-701](#) (Washington, D.C.: September 21, 2020) and *COVID-19: Sustained Federal Action Is Crucial as Pandemic Enters Its Second Year*, [GAO-21-387](#) (Washington, D.C.: March 31, 2021). Research studies have also shown that some racial and ethnic groups have experienced worse health outcomes related to COVID-19. For example, see M. L. Wang, et al., “Addressing Inequities in COVID-19 Morbidity and Mortality: Research and Policy Recommendations,” *Translational Behavioral Medicine* (2020) and Selden T. M. and Berdahl T. A., “COVID-19 and Racial/Ethnic Disparities in Health Risk, Employment, and Household Composition,” *Health Affairs* vol. 39, no. 9 (2020).

³CDC data on COVID-19 hospitalizations are from select counties in 14 states, representing 10 percent of the U.S. population. It includes data from hospitals in select counties in California, Colorado, Connecticut, Georgia, Iowa, Maryland, Michigan, Minnesota, New Mexico, New York, Ohio, Oregon, Tennessee, and Utah.

of January 9, 2022, according to CDC.⁴ However, vaccination rates vary, including for certain racial and ethnic groups. For example, although 22.9 percent of data made available by CDC on fully vaccinated persons were missing race and ethnicity information, CDC data show that across the total U.S. population, 46 percent of non-Hispanic White persons were fully vaccinated against COVID-19, compared with 38 percent of non-Hispanic Black persons as of January 9, 2022.⁵

Given the identified disparities and the importance of COVID-19 vaccines in preventing more severe outcomes such as hospitalizations and deaths, ensuring vaccine equity—when all people have fair access to COVID-19 vaccinations—is critical to saving lives and reducing severe COVID-19 health outcomes for all Americans. Additionally, ensuring vaccine equity continues to be critical as variants emerge, children become eligible for COVID-19 vaccines, and those already vaccinated may need booster shots to sustain sufficient immunity against the virus.⁶

The January 2021 National Strategy for the COVID-19 Response and Pandemic Preparedness and related executive orders call for the federal government to help ensure equity in the response to COVID-19.⁷ To help ensure vaccine equity, in February 2021, the CDC, the Health Resources and Services Administration (HRSA), and the Federal Emergency Management Agency (FEMA) each established a program in part to

⁴Data are from CDC's COVID Data Tracker, https://covid.cdc.gov/covid-data-tracker/#vaccinations_vacc-total-admin-rate-total, accessed January 10, 2022. For the purposes of this report, fully vaccinated persons are persons who received two doses on different days (regardless of time interval) of the two-dose mRNA series (Pfizer or Moderna) or received one dose of a single-dose vaccine (Johnson & Johnson).

⁵As of January 9, 2022, 22.9 percent of data made available by CDC on fully vaccinated persons were missing race and ethnicity information, so there may be limitations with any conclusions that can be drawn with available CDC data. CDC does not make available data on the proportion of eligible persons (which was expanded to include persons aged 5 years and older as of October 29, 2021) who have been vaccinated in each racial and ethnic group.

⁶As of January 2022, the U.S. Food and Drug Administration had authorized the emergency use of the Pfizer-BioNTech COVID-19 vaccine for the prevention of COVID-19 in individuals aged 5 and older. According to CDC, a booster dose is a dose of vaccine administered when the initial sufficient immune response to a primary vaccine series is likely to have waned over time.

⁷The White House, *National Strategy for the COVID-19 Response and Pandemic Preparedness* (Jan. 21, 2021). See also Exec. Order No. 13994, 86 Fed. Reg. 7,189 (Jan. 21, 2021) and Exec. Order No. 13995, 86 Fed. Reg. 7,193 (Jan. 21, 2021).

provide COVID-19 vaccines to underserved and historically marginalized racial and ethnic groups, among other groups. These federal programs are in addition to the vaccines the federal government made available to the 50 states and other jurisdictions to further distribute to health care providers in their jurisdictions.

The CARES Act includes a provision for us to monitor and oversee the authorities and funding provided to address the COVID-19 pandemic and the effect of the pandemic on the health, economy, and public and private institutions of the United States.⁸ This report, which is part of our body of work related to the CARES Act, describes:

1. actions CDC, HRSA, and FEMA have taken through their COVID-19 vaccine programs to provide vaccines to underserved and historically marginalized racial and ethnic groups;
2. the extent to which CDC, HRSA, and FEMA's programs have vaccinated various racial and ethnic groups; and
3. monitoring by CDC, HRSA, and FEMA on the extent to which their programs have vaccinated underserved and historically marginalized racial and ethnic groups.

To conduct this work, we focused our review on three of the agencies' COVID-19 vaccine programs:

- CDC's Federal Retail Pharmacy Program for COVID-19 Vaccination (retail pharmacy program),
- HRSA's Health Center COVID-19 Vaccine Program (health center vaccine program),⁹ and

⁸Pub. L. No. 116-136, § 19010(b), 134 Stat. 281, 580 (2020). We have regularly issued government-wide reports on the federal response to COVID-19. For the latest report, see GAO, *COVID-19: Significant Improvements Are Needed for Overseeing Relief Funds and Leading Responses to Public Health Emergencies*, [GAO-22-105291](#) (Washington, D.C.: January 27, 2022). Our next government-wide report will be issued in April 2022 and will be available on GAO's website at <https://www.gao.gov/coronavirus>. This report also responds, in part, to a request from the Chairman of the House Committee on Homeland Security, which included a specific question for GAO related to FEMA's and HHS's COVID-19 response for racial and ethnic groups.

⁹CDC coordinated with HRSA on the health center vaccine program, but for the purposes of this report, we refer to this program as a HRSA-operated vaccine program since HRSA was the primary agency responsible for implementing the program.

-
- FEMA's Community Vaccination Center Pilot Site and Mobile Vaccination Program (vaccination center pilot program).¹⁰

To describe the actions CDC, HRSA, and FEMA have taken to provide COVID-19 vaccines to underserved and historically marginalized racial and ethnic groups as well as efforts by the agencies to monitor program vaccination rates by race and ethnicity, we reviewed CDC, HRSA, and FEMA guidance and documents, such as monitoring reports and surveys used to collect information on the administration of COVID-19 vaccine doses. We interviewed or received written responses from CDC, HRSA, and FEMA officials about their COVID-19 vaccine programs' efforts to vaccinate various racial and ethnic groups, how they monitored race and ethnicity data, and how, if at all, they used these data to inform program efforts. We also interviewed health officials from four selected states and representatives from six selected stakeholder groups. We selected these states and groups based on several criteria, such as states' racial and ethnic population distributions and groups involved in COVID-19 vaccine administration or representation of a racial or ethnic group. Lastly, we reviewed selected literature published between 2007 and 2021 to summarize examples of factors that have been identified as potentially affecting COVID-19 vaccine administration for various racial and ethnic groups and actions that could advance equity in vaccine administration.

To determine the extent to which CDC, HRSA, and FEMA's COVID-19 vaccine programs have vaccinated various racial and ethnic groups, we obtained and analyzed aggregated data on vaccines administered through each program by race and ethnicity beginning in February 2021. For context, we compared each agency's vaccine administration data to population data from the U.S. Census Bureau. Specifically, for CDC and HRSA, we analyzed data on the number of persons fully vaccinated through the agencies' vaccine administration programs, by race and ethnicity, along with data on the share of the general U.S. population the racial and ethnic groups represent. For FEMA, we analyzed data on vaccine doses administered through the agency's vaccine administration program by race and ethnicity, along with data on the size of these racial

¹⁰CDC coordinated with FEMA on the vaccination center pilot program, but for the purposes of this report, we refer to this program as a FEMA-operated vaccine program since FEMA was the primary agency responsible for implementing the program.

and ethnic groups across the 39 counties with FEMA pilot sites.¹¹ We compared FEMA vaccination data to population data only from the counties with FEMA pilot sites because, relative to the CDC and HRSA data, there were fewer FEMA pilot sites, and these sites were located in areas with population demographics that were less similar to the aggregate U.S. population. We analyzed FEMA vaccination data cumulatively by race and ethnicity from the beginning of program administration through June 20, 2021, when FEMA's program ended. Additionally, we analyzed the FEMA vaccination data cumulatively by race and ethnicity and by FEMA site type: hubs (large stationary vaccination sites) and spokes (smaller sites that also include mobile vaccination units). The population data we used reflect the population of all ages.¹² As of the date of our analysis of program data, only persons aged 12 and older were eligible for vaccination.¹³

To assess the reliability of the CDC, HRSA and FEMA data sources, we interviewed agency officials and reviewed related agency documentation. We also checked the data for obvious errors, and took steps to ensure consistency in race and ethnicity categories across data sources. Race and ethnicity information were missing for 22.9 percent of CDC's national data on people vaccinated, 26.1 percent of CDC's retail pharmacy vaccine program data, 13.6 percent of HRSA's health center vaccine program data, and 18.6 percent of FEMA's vaccination center pilot program data. According to CDC, some groups may have a higher

¹¹Data represent vaccine doses administered, and may reflect one dose of a two-dose COVID-19 vaccine series or one dose of the single-shot Johnson & Johnson COVID-19 vaccine. FEMA stated the agency collects data on vaccine doses administered rather than persons vaccinated in an effort to leave out personally identifiable information. Comparisons between the distribution of FEMA administered vaccine doses and the population by race and ethnicity should be interpreted with caution as there could be variation in the extent to which racial and ethnic groups received a two-dose or one-dose vaccine.

¹²The U.S. Census Bureau does not provide population estimates by race and ethnicity for the specific population subgroup aged 12 and older in the 2020 Decennial Census data files. Since there may be differences in the distribution of age groups across various racial and ethnic groups (i.e., some groups may have larger numbers of children under 12, who at the time of analysis were not eligible for COVID-19 vaccines), we conducted additional analyses to assess the extent to which the lack of data on subgroups age 12 or older affected our analysis of program data. We compared program data to the total population (of all ages) and to the population 18 and over, based on data availability, and found that there were no differences in our overall findings.

¹³The U.S. Food and Drug Administration expanded the emergency use authorization for the Pfizer-BioNTech COVID-19 vaccine to include adolescents 12 through 15 years of age on May 10, 2021, and on October 29, 2021, it expanded the emergency use authorization for the Pfizer-BioNTech COVID-19 vaccine to include children 5 through 11 years of age.

likelihood of having missing race and ethnicity data, and the percentage of unknown race and ethnicity data may account for some, or even all, of the differences between shares of vaccinations and of the population by race and ethnicity. Therefore, results of our analyses should be interpreted with caution. To assess the reliability of Census Bureau population data, we reviewed documentation related to the relevant data sources and reviewed the data elements for obvious errors, inconsistencies, or missing data. On the basis of these steps, we determined that the data with known race and ethnicity and population data were sufficiently reliable for the purposes of our reporting objectives. See appendix I for more information on our scope and methodology.

We conducted this performance audit from March 2021 to February 2022 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background



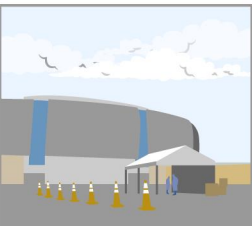
When COVID-19 vaccination began in December 2020, the federal government provided the majority of available vaccine doses to the 50 states and other jurisdictions to distribute to health care providers located in their jurisdictions.¹⁴ In February 2021, CDC, HRSA, and FEMA initiated specific programs to supplement states' and jurisdictions' vaccination efforts, in part, to focus on vaccinating higher-risk populations who might experience worse health outcomes associated with COVID-19, according to federal officials. CDC's retail pharmacy program goal was to expand access to vaccines for people living in socially vulnerable areas; HRSA's health center vaccine program goal was to help ensure underserved communities and those disproportionately affected by COVID-19 are

¹⁴A total of 62 jurisdictions—including all 50 states, the District of Columbia, three major cities (Chicago, New York City, and Philadelphia), and eight territories (American Samoa, Guam, the Marshall Islands, the Federated States of Micronesia, the Northern Mariana Islands, Palau, Puerto Rico, and the U.S. Virgin Islands)—received weekly allocations of COVID-19 vaccine doses. Although there are 64 jurisdictions implementing COVID-19 vaccination and receiving federal funding for these efforts, allocations of vaccine doses were made to 62 jurisdictions because two major cities considered jurisdictions—Houston and San Antonio—had their allocations consolidated with Texas.

equitably vaccinated; and FEMA's vaccination center pilot program goal was to promote equitable access to COVID-19 vaccines to underserved and historically marginalized groups. In our prior work we found that as of August 2021, the majority of vaccine doses were being distributed nationwide through CDC's retail pharmacy program.¹⁵ See figure 1.

¹⁵For more information, see GAO, *COVID-19 HHS Agencies' Planned Reviews of Vaccine Distribution and Communication Efforts Should Include Stakeholder Perspectives*, [GAO-22-104457](#) (Washington, D.C.: November 4, 2021). For example, between April and July 2021, the proportion of vaccine doses distributed through states and other jurisdictions decreased from 62 percent in early April 2021, to 6 percent in mid-July 2021. During that same time, the proportion of vaccine doses distributed through CDC's retail pharmacy program increased from 29 percent to 92 percent, according to our analysis.

Figure 1: Selected CDC, HRSA, and FEMA COVID-19 Vaccine Programs

Federal program	Description
<p data-bbox="126 541 316 594">CDC’s retail pharmacy program</p> 	<p data-bbox="383 541 686 564">Vaccination site: Pharmacies</p> <p data-bbox="383 579 1445 632">Description: CDC partnered with 21 national pharmacy and independent pharmacy networks to distribute vaccine doses to 39,473 pharmacies, using vaccine doses directly allocated from the federal government.</p> <p data-bbox="383 646 1372 726">Target population: Initial pharmacy partners were selected based on several factors, including the number of stores and the ability to reach populations at risk of severe illness (e.g., elderly, socially vulnerable communities).^a</p> <p data-bbox="383 741 786 766">Dates active: February 2021 – Ongoing</p> <p data-bbox="383 781 1224 806">Number of vaccine doses administered as of October 6, 2021: About 133 million</p>
<p data-bbox="115 842 328 894">HRSA’s health center vaccine program</p> 	<p data-bbox="383 842 915 867">Vaccination site: Federally supported health centers</p> <p data-bbox="383 882 1510 989">Description: HRSA distributed vaccine doses to 866 participating federally supported health centers for 2,362 sites, as of September 15, 2021, using vaccine doses directly allocated from the federal government. Participating health centers could use mobile vans, pop-up clinics, or school-based clinics to administer vaccines at community-based events.</p> <p data-bbox="383 1003 1459 1083">Target population: Initial health centers were selected based on their service to disproportionately affected populations, such as migrant and seasonal agricultural workers. All federally supported health centers serve patients in medically underserved communities.^b</p> <p data-bbox="383 1098 786 1123">Dates active: February 2021 – Ongoing</p> <p data-bbox="383 1138 1195 1163">Number of vaccine doses administered as of September 15, 2021: 6.4 million</p>
<p data-bbox="120 1199 324 1251">FEMA’s vaccination center pilot program</p> 	<p data-bbox="383 1199 1268 1224">Vaccination site: Pilot community vaccination centers, including mass vaccination sites^c</p> <p data-bbox="383 1239 1505 1377">Description: FEMA partnered with states to support 39 pilot community vaccination centers and 225 satellite sites across 27 states, using vaccine doses directly allocated to the states from the federal government. These pilot community vaccination centers were managed and operated by FEMA personnel and a host of Federal Interagency Partners in coordination with States, Tribes and Territories. The satellite sites bring vaccine doses to the community through mobile sites or pop-up clinics.</p> <p data-bbox="383 1392 1198 1417">Target population: Sites were selected to reach socially vulnerable communities.</p> <p data-bbox="383 1432 805 1457">Dates active: February 2021 – June 2021</p> <p data-bbox="383 1472 1094 1497">Number of vaccine doses administered by program end: 5.7 million</p>

Source: GAO analysis of data and information from the Centers for Disease Control and Prevention (CDC), the Health Resources and Services Administration (HRSA), and the Federal Emergency Management Agency (FEMA). | GAO-22-105079

Accessible Data Table for Figure 1

Federal Program	Description
CDC's retail pharmacy program	<p>Vaccination site: Pharmacies</p> <p>Description: CDC partnered with 21 national pharmacy and independent pharmacy networks to distribute vaccine doses to 39,473 pharmacies, using vaccine doses directly allocated from the federal government.</p> <p>Target population: Initial pharmacy partners were selected based on several factors, including the number of stores and the ability to reach populations at risk of severe illness (e.g., elderly, socially vulnerable communities).•</p> <p>Dates active: February 2021 - Ongoing</p> <p>Number of vaccine doses administered as of October 6, 2021: About 133 million</p>
HRSA's health center vaccine program	<p>Vaccination site: Federally supported health centers</p> <p>Description: HRSA distributed vaccine doses to 866 participating federally supported health centers for 2,362 sites, as of September 15, 2021, using vaccine doses directly allocated from the federal government. Participating health centers could use mobile vans, pop-up clinics, or school-based clinics to administer vaccines at community-based events.</p> <p>Target population: Initial health centers were selected based on their service to disproportionately affected populations, such as migrant and seasonal agricultural workers. All federally supported health centers serve patients in medically underserved communities.b</p> <p>Dates active: February 2021 - Ongoing</p> <p>Number of vaccine doses administered as of September 15, 2021: 6.4 million</p>

Federal Program	Description
FEMA's vaccination center pilot program	<p>Vaccination site: Pilot community vaccination centers, including mass vaccination sites^c</p> <p>Description: FEMA partnered with states to support 39 pilot community vaccination centers and 225 satellite sites across 27 states, using vaccine doses directly allocated to the states from the federal government. These pilot community vaccination centers were managed and operated by FEMA personnel and a host of Federal Interagency Partners in coordination with States, Tribes and Territories. The satellite sites bring vaccine doses to the community through mobile sites or pop-up clinics.</p> <p>Target population: Sites were selected to reach socially vulnerable communities.</p> <p>Dates active: February 2021 - June 2021</p> <p>Number of vaccine doses administered by program end: 5.7 million</p>

Notes: In December 2020, the federal government also initiated CDC's Pharmacy Partnership for Long-Term Care Program. Under this program, CDC worked with selected pharmacy partners to vaccinate residents and staff at participating nursing homes and other long-term care facilities. CDC coordinated with HRSA on the health center program and with FEMA on the vaccination center pilot program, but for the purposes of this report, we refer to these programs as HRSA- and FEMA-operated vaccine distribution programs since these agencies were the primary agencies responsible for implementing these programs. The federal government allocated and distributed vaccine doses to five federal entities (the Bureau of Prisons, Department of Defense, Department of State, Indian Health Service, and the Veterans Health Administration). The federal government also allocated vaccine doses to the Department of Health and Human Services/National Institutes of Health for a small program managing doses allocated to federal departments and agencies for administration to critical infrastructure personnel and made a one-time allocation of vaccine doses to the Federal Dialysis Center Program to distribute to participating dialysis centers to administer vaccines to patients and health care personnel.

^aAccording to CDC, social vulnerability refers to the potential negative effects on communities caused by external stresses on human health, such as natural or human-caused disasters or disease outbreaks.

^bFederally supported health centers generally receive Health Center Program grants from HRSA under section 330 of the Public Health Service Act (42 U.S.C § 254b) and provide primary care services in medically underserved areas. Some health centers meet all program requirements but do not receive federal grant funding through the section 330 program. However, these centers, which are known as "look-alikes," receive other benefits, such as higher reimbursement rates from the Medicare and Medicaid programs and may receive grants through other federal programs. The term "federally supported health centers" in this report refers to both "look-alikes" and those health centers that receive grants under section 330 of the Public Health Service Act.

^cAlthough FEMA's vaccination center pilot program ended June 20, 2021, the agency continued to support community vaccination centers managed and operated by states and other jurisdictions (using doses allocated to states and jurisdictions) by providing federal personnel, funding, and material, such as medical equipment and supplies, according to agency officials.

Data Availability on COVID-19 Vaccination by Race and Ethnicity

As the nation's health protection agency, CDC collects and makes national data available on COVID-19 vaccinations, including by race and ethnicity.¹⁶ These data are collected from a variety of sources, such as health care providers, pharmacies, and state and jurisdictional health departments, and include data from the CDC, HRSA, and FEMA COVID-19 vaccine programs.

Our prior work has highlighted gaps in race and ethnicity data reported to CDC on COVID-19 vaccinations.¹⁷ We reported that as of March 8, 2021, data collected from states and jurisdictions on race and ethnicity for COVID-19 vaccine recipients were missing for almost half (46.7 percent) of recipients who received at least one vaccine dose. We recommended that CDC take steps to help ensure more complete reporting of race and ethnicity information for recipients of COVID-19 vaccines. CDC neither agreed nor disagreed with our recommendation, but officials stated that they are taking steps to implement this recommendation, such as requiring providers that participate in CDC's COVID-19 Vaccination Program to report the race and ethnicity of vaccine recipients.¹⁸ For additional information on data availability and racial and ethnic disparities for COVID-19 indicators, see appendix II.

As of January 9, 2022, according to national data reported to CDC from states and jurisdictions, 207,662,071 people were fully vaccinated against COVID-19, including 66.5 percent of those eligible for vaccination (i.e., aged 5 and older) as of the same date. Race and ethnicity information were available for approximately 77.1 percent of fully vaccinated people. Our analysis of CDC's national data shows that among those with known race and ethnicity data, 42.8 percent of fully vaccinated people belonged to racial and ethnic groups other than non-Hispanic White.¹⁹ When

¹⁶For more information, see <https://covid.cdc.gov/covid-data-tracker/>.

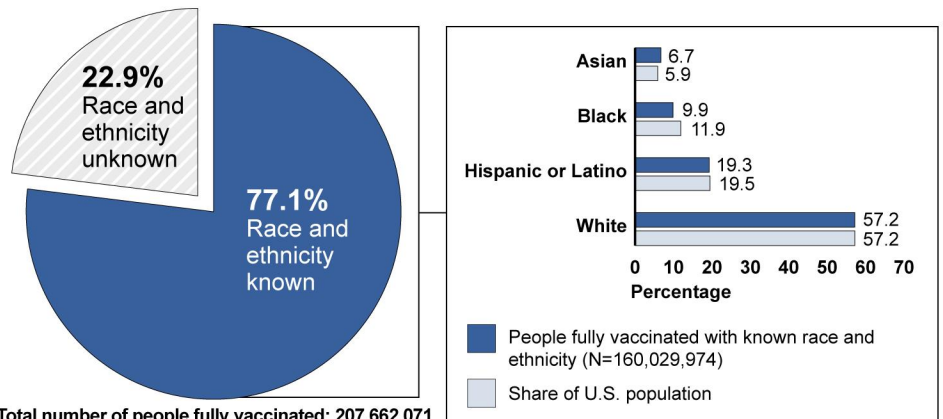
¹⁷[GAO-21-387](#).

¹⁸[GAO-21-387](#).

¹⁹Racial and ethnic groups other than non-Hispanic White include non-Hispanic American Indian/Alaska Native, non-Hispanic Asian, non-Hispanic Black, Hispanic or Latino, non-Hispanic Multiracial/Other, and non-Hispanic Native Hawaiian or Other Pacific Islander persons.

compared to the U.S. population, our analysis suggests some racial and ethnic disparities in vaccination rates. For example, when compared to their respective shares of the U.S. population, a greater share of non-Hispanic Asian persons were fully vaccinated against COVID-19, while a disproportionately smaller share of non-Hispanic Black persons were fully vaccinated against COVID-19.²⁰ However, results should be interpreted with caution because the percentage of unknown race and ethnicity data may account for some, or even all, of the differences in vaccination rates. See figure 2.

Figure 2: Percentage of People Fully Vaccinated Against COVID-19 by Race and Ethnicity, Compared to Share of U.S. Population, as of January 9, 2022



Total number of people fully vaccinated: 207,662,071

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) and U.S. Census Bureau data. | GAO-22-105079

Accessible Data Table for Figure 2

Race and ethnicity	People fully vaccinated with known race and ethnicity (N=160,029,974)	U.S. population
Asian	6.7	5.9
Black	9.9	11.9
Hispanic or Latino	19.3	19.5
White	57.2	57.2

Notes: Data represent the percentage of fully vaccinated people (who have received the second dose in a two-dose COVID-19 vaccine series or one dose of the single-shot Johnson & Johnson COVID-19 vaccine) by race and ethnicity. Asian, Black, and White persons were non-Hispanic. Hispanic or Latino persons may be of any race. Data for racial and ethnic groups that represented less than 6

²⁰Disparities in persons vaccinated by race and ethnicity may also be observed at the state or jurisdictional level. For example, see Centers for Disease Control and Prevention, "COVID-19 Vaccine Administration, by Race and Ethnicity — North Carolina, December 14, 2020–April 6, 2021," *Morbidity and Mortality Weekly Report*, vol. 70, no. 28 (July 16, 2021).

percent of vaccinated persons are not shown and therefore, percentages may not add to 100. We calculated population distributions using the 2020 Decennial Census population counts by race and ethnicity for the United States and Puerto Rico and applied the race and ethnicity distributions from the 2010 Decennial Census to Census' International Database 2021 population projections for Guam, Commonwealth of the Northern Mariana Islands, American Samoa, and United States Virgin Islands. Comparisons between agency and U.S. Census Bureau percentages should be interpreted with caution due to missing race and ethnicity data for vaccinations (22.9 percent), which may account for some, or even all, of the differences in comparisons. At the time of this analysis, only those aged 5 and older were eligible for vaccination, although population data reflect the population of all ages. Vaccination data reflect a combination of all vaccinations administered in the United States including federal, state, and local efforts. CDC noted that these vaccination data represent the geographic areas that contributed data and therefore may not be representative of the entire vaccinated population in the U.S. In addition, the jurisdictions reporting data may vary in terms of populations prioritized for vaccination over time; thus, the aggregated national estimates are not generalizable to the entire U.S. population.






Factors That Could Affect Vaccination Rates

We previously reported that unvaccinated persons may include people who desire to be vaccinated but face access barriers, such as lacking transportation to a vaccination site.²¹ Others may be uncertain or reluctant to be vaccinated (sometimes referred to as vaccine hesitancy) for different reasons, such as having concerns about the safety of COVID-19 vaccines or believing vaccination is unnecessary because COVID-19 is not a serious threat to their health.²² Factors such as limited access to health care and COVID-19 vaccine registration challenges could affect vaccination administration for various racial and ethnic groups, according to selected literature we reviewed and selected state officials and stakeholder groups we interviewed. See figure 3.

²¹[GAO-22-104457](#).

²²While different models exist for categorizing attitudes toward vaccination, a common conception is that these attitudes run along a continuum that ranges from full acceptance of vaccines on one end to full opposition to vaccines on the other. The term “vaccine hesitancy” has been used to refer to a delay in acceptance of vaccines, including the COVID-19 vaccine, despite the availability of vaccination services. An individual’s level of vaccine hesitancy can vary by vaccine and over time. See National Academies of Sciences, Engineering, and Medicine, *The Critical Public Health Value of Vaccines: Tackling Issues of Access and Hesitancy: Proceedings of a Workshop* (Washington, D.C.: 2021).

Figure 3: Factors That Could Affect COVID-19 Vaccination Rates for Various Racial and Ethnic Groups

Factor	Examples from selected literature, state health officials, and stakeholder groups
 <p>Limited access to health care</p>	<p>Persons belonging to certain racial and ethnic groups may be less likely to have an established primary care physician or medical care team, which may be an important tool to promote vaccination.</p> <p>Chain pharmacies and large health care systems are less prevalent in some racial and ethnic communities making it difficult for persons living in these communities to access vaccines.</p>
 <p>COVID-19 vaccine registration challenges</p>	<p>Technology barriers, such as a lack of access to computers and/or smart phones and limited or no internet access, can limit persons belonging to certain racial and ethnic groups from registering for vaccines through online appointment registration portals as well as not receiving information about when and where vaccines were available.</p>
 <p>Accessibility of vaccination sites</p>	<p>Some vaccination sites are located in areas that are not easily accessible using public transportation, and people belonging to certain racial and ethnic groups may be less likely to own a personal vehicle.</p> <p>Many vaccination sites do not operate outside of traditional business hours (i.e., 9:00 am to 5:00 pm). Persons belonging to some racial and ethnic groups may work in jobs without paid leave or schedule flexibility, making it difficult to get vaccinated during the work day.</p>
 <p>Lack of trust in government, medical institutions, and/or vaccine providers</p>	<p>Some racial and ethnic groups have experienced racism and discrimination within the health care system, which may contribute to mistrust and skepticism toward vaccines, vaccine providers, federal vaccination efforts, and entities reviewing vaccine safety.</p> <p>A lack of racial and ethnic representation among physicians, health care professionals, and in COVID-19 vaccine trials may decrease vaccine uptake among historically marginalized populations.</p>
 <p>Language or cultural barriers</p>	<p>Universal vaccination messaging may not be culturally appropriate or linguistically accessible for all racial and ethnic groups, and could benefit from tailoring to better reach these communities.</p>
 <p>Concerns about documentation or immigration status</p>	<p>Persons belonging to certain racial and ethnic groups may not seek vaccination at federal vaccination sites due to National Guard presence. These individuals may fear being questioned about their immigration status.</p> <p>Having to present state- or government-issued identification to receive a COVID-19 vaccine may be a barrier for people without legal status or families with mixed status, people experiencing homelessness, or for individuals who do not have state- or government-issued identification.</p>
 <p>Financial barriers</p>	<p>Financial barriers may affect vaccination rates among some racial and ethnic groups who cannot afford to travel to a vaccination site or may not know there is no out-of-pocket cost associated with the vaccine.</p> <p>Persons belonging to certain racial and ethnic groups may not have paid sick leave and would not be paid if they take time off work to get a COVID-19 vaccine.</p>

Source: GAO analysis of literature and interviews with selected states and selected stakeholders. | GAO-22-105079

Accessible Data Table for Figure 3

Factor	Examples from selected literature, state health officials, and stakeholder groups
Limited access to health care	<p>Persons belonging to certain racial and ethnic groups may be less likely to have an established primary care physician or medical care team, which may be an important tool to promote vaccination .</p> <p>Chain pharmacies and large health care systems are less prevalent in some racial and ethnic communities making it difficult for persons living in these communities to access vaccines.</p>
COVID-19 vaccine registration challenges	<p>Technology barriers, such as a lack of access to computers and/or smart phones and limited or no internet access, can limit persons belonging to certain racial and ethnic groups from registering for vaccines through online appointment registration portals as well as not receiving information about when and where vaccines were available.</p>
Accessibility of vaccination sites	<p>Some vaccination sites are located in areas that are not easily accessible using public transportation, and people belonging to certain racial and ethnic groups may be less likely to own a personal vehicle.</p> <p>Many vaccination sites do not operate outside of traditional business hours (i.e., 9:00 am to 5:00 pm). Persons belonging to some racial and ethnic groups may work in jobs without paid leave or schedule flexibility, making it difficult to get vaccinated during the work day.</p>
Lack of trust in government, medical institutions, and/or vaccine providers	<p>Some racial and ethnic groups have experienced racism and discrimination within the health care system, which may contribute to mistrust and skepticism toward vaccines, vaccine providers, federal vaccination efforts, and entities reviewing vaccine safety.</p> <p>A lack of racial and ethnic representation among physicians, health care professionals, and in COVID-19 vaccine trials may decrease vaccine uptake among historically marginalized populations.</p>
Language or cultural barriers	<p>Universal vaccination messaging may not be culturally appropriate or linguistically accessible for all racial and ethnic groups, and could benefit from tailoring to better reach these communities.</p>

Factor	Examples from selected literature, state health officials, and stakeholder groups
Concerns about documentation or immigration status	<p>Persons belonging to certain racial and ethnic groups may not seek vaccination at federal vaccination sites due to National Guard presence. These individuals may fear being questioned about their immigration status.</p> <p>Having to present state- or government-issued identification to receive a COVID-19 vaccine may</p> <p>be a barrier for people without legal status or families with mixed status, people experiencing homelessness, or for individuals who do not have state- or government-issued identification.</p>
Financial barriers	<p>Financial barriers may affect vaccination rates among some racial and ethnic groups who cannot afford to travel to a vaccination site or may not know there is no out-of-pocket cost associated with the vaccine.</p> <p>Persons belonging to certain racial and ethnic groups may not have paid sick leave and would not be paid if they take time off work to get a COVID-19 vaccine.</p>

Note: We interviewed state health officials from four selected states and representatives from six selected stakeholder groups based on several criteria, including their representation of entities involved in COVID-19 vaccine administration or representation of a racial or ethnic group. We also conducted a review of selected literature published from 2007 to 2021 to identify factors that can affect COVID-19 vaccine administration for various racial and ethnic groups.

Actions CDC, HRSA, and FEMA Took to Provide COVID-19 Vaccines to Underserved and Historically Marginalized Racial and Ethnic Groups

Through interviews with agency officials and our review of agency documentation, we found that CDC, HRSA, and FEMA took several actions to provide COVID-19 vaccines to underserved and historically marginalized racial and ethnic groups in implementing their COVID-19 vaccine programs beginning in February 2021. Below are examples of actions taken by these agencies to help ensure equity in the administration of COVID-19 vaccines through their programs. See appendix III for examples of additional efforts that the Department of

Health and Human Services (HHS) and FEMA have taken to help ensure equity in the administration of COVID-19 vaccines.

CDC, HRSA, and FEMA used population data on race and ethnicity when selecting vaccination sites. CDC, HRSA, and FEMA considered population data on communities' racial and ethnic makeup when deciding on the location of program vaccination sites. Using data on race and ethnicity can help inform decisions to allocate vaccines to certain communities, such as those disproportionately affected by the pandemic, according to literature we reviewed and interviews with selected state health officials and stakeholder groups.²³

- *CDC Retail Pharmacy Program.* According to CDC officials, CDC worked with states, jurisdictions, and territories at the launch of the retail pharmacy program in February 2021 to identify initial pharmacy partners to start the program in their communities based on a number of factors, including the ability to reach socially vulnerable communities. CDC officials told us that retail pharmacy partners used criteria including CDC's Social Vulnerability Index (SVI)—which takes into account an area's racial and ethnic composition and factors such as poverty, transportation, and housing—when selecting retail locations to receive and administer vaccines.²⁴ According to CDC officials, during the start of the program when vaccine supply was limited, pharmacy partners considered SVI when deciding on additional store locations to administer vaccines. Additionally, our review of agency documentation shows that in April 2021, CDC conducted a gap analysis using SVI data to identify vulnerable areas where a large share of the population does not reside within a 5-mile radius of a vaccination site. CDC then worked with FEMA and jurisdictions to increase access in these areas, for example, by working to engage existing local pharmacies not yet providing

²³For example, see Thoumi, A., H. Tewarson, and K. Johnson. "Prioritizing Equity in COVID-19 Vaccinations: Promising Practices from States to Reduce Racial and Ethnic Disparities." Washington, DC: Duke-Margolis Center for Health Policy and National Governors Association Center for Best Practices (2021).

²⁴CDC's SVI takes into account various factors including socioeconomic status, household composition, racial and ethnic group status, and housing type/transportation for each U.S. county and Census tract. According to CDC, socially vulnerable populations are especially at risk during public health emergencies due to these types of factors. SVI is generated for each U.S. county and Census tract as a percentile rank, with higher percentiles indicating greater vulnerability. CDC and retail pharmacy partners used CDC's Equitable Distribution Index, which approximates SVI at the ZIP code level (SVI is calculated at the census tract and county levels) to allow for more granular assessment of an area's socioeconomic conditions.

vaccines in vaccine administration. According to CDC officials, approximately 50 percent of retail pharmacy program sites were located in areas with high social vulnerability as of September 8, 2021. According to CDC officials, pharmacy partners also considered SVI when planning weekly vaccine allocations across pharmacy locations. According to CDC, as the retail pharmacy program expanded and vaccine supply became more readily available, pharmacy partners increased the number of vaccines available in areas with higher social vulnerability.

- *HRSA Health Center Vaccine Program.* In February 2021, HRSA used internal data from 2019 to identify health centers that serve high proportions of low-income patients and patients from racial and ethnic groups other than non-Hispanic White to participate in the health center vaccine program.²⁵ According to HRSA, when vaccine supply was limited, HRSA also prioritized health centers that serve a large volume of public housing residents, migrant or seasonal agricultural workers, patients with limited English proficiency, individuals experiencing homelessness, and individuals with low income, which may disproportionately reflect racial and ethnic groups other than non-Hispanic White. In March 2021, HRSA also invited health centers operating Tribal/Urban Indian Health Programs serving American Indian/Alaska Native persons to participate in the program. According to the agency's website, as vaccine supply increased, HRSA expanded its program to invite all of its nearly 1,500 health centers nationwide, which includes both Health Center Program awardees and look-alike health centers, to participate beginning in April 2021.
- *FEMA Vaccination Center Pilot Program.* According to FEMA officials, the agency determined vaccination center pilot program site locations and sizes in partnership with state, jurisdiction, and local officials as well as its Civil Rights Advisory Group. To make these determinations, FEMA officials told us they took U.S. county population size and SVI into consideration to target populations most in need. FEMA officials stated that they considered counties with SVI in the top half of ranked

²⁵There are three provider types recognized by Centers for Medicare & Medicaid Services as Federally Qualified Health Centers: those that receive Health Center Program funding, look-alike health centers that do not receive Health Center Program funding, and outpatient health programs or facilities operated by a tribe or tribal/Indian organizations. HRSA Health Center Program awardees receive federal funding to improve the health of underserved and vulnerable populations in areas where economic, geographic, or cultural barriers limit access to affordable health care. Each year, HRSA Health Center Program awardees and look-alikes are required to report a core set of information, including data on patient characteristics, as part of a standardized reporting system.

counties. However, agency officials stated that they preferred placing sites in counties with higher SVI (top third), for example, those with higher poverty or less access to transportation. Our analysis of vaccination center pilot program site locations in relation to SVI found that nearly all (92.3 percent) vaccination centers were located in counties in the top half in social vulnerability rankings, and a majority (66.7 percent) were located in counties in the top third.²⁶

CDC, HRSA, and FEMA conducted community outreach and offered translation services. According to CDC, HRSA, and FEMA, these agencies and their program partners targeted communications about COVID-19 vaccines to various racial and ethnic groups through outreach to trusted community partners and offered translation services for those with limited English proficiency. According to literature we reviewed and interviews with selected state health officials and stakeholder groups, partnering with trusted local, community-based, and faith-based organizations, such as historically Black colleges and universities, can increase vaccine administration in some communities.²⁷ Additionally, selected state health officials and stakeholder groups told us that preparing culturally competent and accessible communication materials that are translated in applicable languages can help ensure factual information about vaccines reaches targeted communities.²⁸

- *CDC Retail Pharmacy Program.* CDC officials stated that from the beginning of the retail pharmacy program, participating pharmacy partners conducted outreach to community and national organizations, faith groups, and community centers to promote vaccine administration to different racial and ethnic groups. CDC officials also noted that pharmacy partners in the retail pharmacy program translated materials into multiple languages to help provide educational information about the COVID-19 vaccine to persons with limited English proficiency.

²⁶We analyzed FEMA vaccination center pilot program locations in relation to SVI because FEMA considered SVI when placing vaccination sites. We did not similarly analyze CDC and HRSA sites in this manner because these agencies did not use a specific SVI threshold for their site selection.

²⁷For example, see National Academies of Sciences, Engineering, and Medicine. “*Critical Findings on COVID-19.*” (March 2021).

²⁸See also U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases, *A Guide for Community Partners: Increasing COVID-19 Vaccine Uptake Among Members of Racial and Ethnic Minority Communities* (April 6, 2021).

- *HRSA Health Center Vaccine Program.* HRSA officials told us they partnered with other federal government agencies to promote vaccine administration for various racial and ethnic groups. For example, in May 2021, HRSA partnered with the Department of Housing and Urban Development to conduct outreach to promote COVID-19 vaccination among Department of Housing and Urban Development-assisted households, which are disproportionately Black. According to HRSA, beginning in May 2021, HRSA also worked with CDC and the Food and Drug Administration, as well as with its National Training and Technical Assistance Partners, to conduct outreach to migratory and seasonal agricultural workers to increase vaccinations for these populations, which are disproportionately Hispanic or Latino.²⁹
- *FEMA Vaccination Center Pilot Program.* According to FEMA, beginning in February 2021, FEMA's Office of Equal Rights deployed civil rights advisors to all its regions to assist vaccination center pilot program sites in ensuring equity in the administration of COVID-19 vaccines.³⁰ Civil rights advisors collaborated with community and faith-based organizations by conducting and participating in roundtable events and state equity task forces. FEMA's Office of Equal Rights also developed and published a checklist of civil rights considerations for COVID-19 vaccination center pilot program sites at the start of the program in February 2021. The checklist included items on promoting effective communication and language access as well as developing outreach mechanisms to engage with community organizations that serve persons with limited English proficiency and persons from various racial and ethnic groups. Additionally, FEMA officials told us that they provided language translation services at vaccination center pilot program sites, as well as translations of outreach and public awareness information related to COVID-19. See figure 4.

²⁹HRSA's National Health Center Training and Technical Assistance Partners are national organizations that provide training and technical assistance to health centers to help increase access to high quality, comprehensive primary care services for special and underserved populations.

³⁰Civil rights advisors, led by FEMA's Office of Equal Rights, are assigned to FEMA regional offices to provide guidance, technical assistance, compliance, and enforcement regarding FEMA's civil rights obligations. FEMA stated that staff from the Office of Equal Rights visited 90 percent of COVID-19 vaccination center pilot program sites and met with state emergency management and public health officials to offer recommendations to enhance accessibility and equitable administration of COVID-19 vaccines.

Figure 4: Example of Spanish Language Interpreter Assisting at a FEMA Vaccination Center Pilot Program Site



A Spanish language interpreter assists Department of Defense staff at a pilot community vaccination center in Los Angeles, California.

Source: Federal Emergency Management Agency (FEMA). | GAO-22-105079

CDC, HRSA, and FEMA extended vaccination hours and used pop up clinics and mobile sites to administer vaccines. CDC, HRSA, and FEMA also took actions to help certain populations, including various racial and ethnic groups, access COVID-19 vaccines, such as extending the hours of vaccination sites and using mobile vaccination sites. According to literature we reviewed, some racial and ethnic groups may experience systemic inequalities, such as not having transportation options to reach COVID-19 vaccination sites. As suggested by literature we reviewed and selected state health officials and stakeholder groups we interviewed, mobile or pop up COVID-19 vaccination sites can supplement mass COVID-19 vaccination sites to better serve people who do not have access to transportation.³¹

³¹For example, Thoumi, A., H. Tewarson, and K. Johnson. "Prioritizing Equity in COVID-19 Vaccinations: Promising Practices from States to Reduce Racial and Ethnic Disparities." Duke-Margolis Center for Health Policy and National Governors Association Center for Best Practices (Washington, DC; 2021).

- **CDC Retail Pharmacy Program.** According to CDC officials, participating pharmacies in the retail pharmacy program extended their appointment times after 6 p.m. and on the weekends and established walk-in hours to improve vaccine accessibility. CDC officials also stated that they hold biweekly calls with participating pharmacies to monitor their community-based efforts, including pharmacies' pop-up or mobile vaccine clinics held outside of traditional pharmacy stores. See figure 5. CDC stated that pharmacy partners also provided on site vaccinations in places such as churches in order to help vaccinate members of certain racial and ethnic groups. According to CDC officials, as of August 22, 2021, participating pharmacies have cumulatively administered 3,203,104 vaccine doses at 11,449 mobile clinics across the country.

Figure 5: Example of Pop-up Retail Pharmacy Vaccination Event



A pharmacy partner participating in CDC's retail pharmacy program held a pop-up mass vaccination event in Pittsburgh, Pennsylvania.

Source: Centers for Disease Control and Prevention (CDC). | GAO-22-105079

- **HRSA Health Center Vaccine Program.** According to HRSA, the agency invited health centers that were using mobile vans to deliver services to participate in the health center vaccine program in March 2021, when vaccine supply was still limited, to help provide vaccines to underserved communities and those disproportionately impacted by COVID-19. Some federally supported health centers also held pop-up

vaccination sites, such as at churches, to administer vaccines to various racial and ethnic groups. See figure 6. From May 14 through September 24, 2021, health centers reported administering vaccines at 8,565 mobile van clinics, 18,451 pop-up clinics, and 3,660 school-based clinics to enhance access to vaccination sites.³² Additionally, we previously reported that health centers participating in HRSA's program were able to schedule vaccination appointment times on weekends or evenings to provide more equitable access to vaccination sites.³³

Figure 6: HRSA-Funded Health Center Staff Administer Vaccines at a Church



A HRSA-funded health center held a vaccination clinic at a church in Honolulu, Hawaii, to reach immigrant and refugee communities.

Source: Health Resources and Services Administration (HRSA). | GAO-22-105079

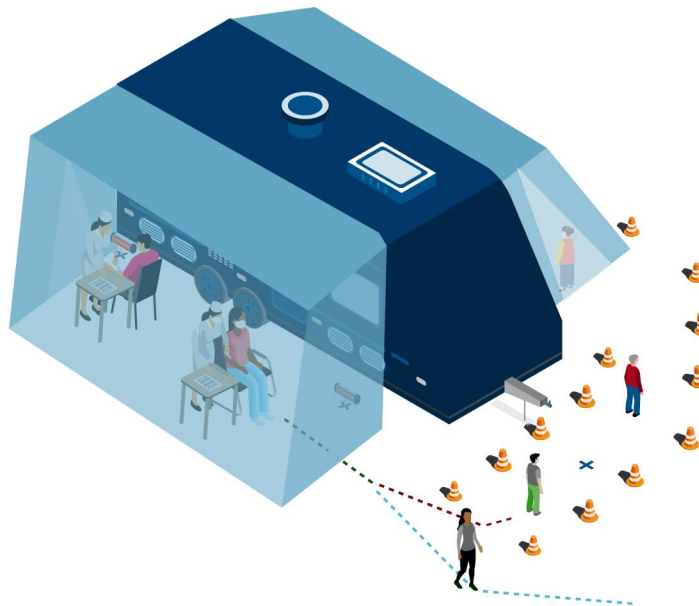
- **FEMA Vaccination Center Pilot Program.** FEMA officials told us vaccination center pilot program sites included smaller satellite sites and mobile clinics, known as spokes. According to officials, FEMA used spoke sites to bring vaccines closer to people by addressing factors including work schedules and lack of transportation that may

³²HRSA began collecting data on community-based vaccination events, including mobile van clinics, pop-up sites, and school-based clinics, on May 14, 2021.

³³[GAO-22-104457](#).

make it difficult for high-risk populations, including certain racial and ethnic groups and essential workers, to access vaccines. Some of these sites were on wheels (for example, inside of a trailer) while others were pop-up sites that could easily be set up and taken down (for example, in community and faith-based centers). See figure 7. As of the close of FEMA’s vaccination center pilot program on June 20, 2021, FEMA reported that 449,763 vaccine doses had been administered at its spoke sites. According to agency officials, FEMA also advised vaccination center pilot program sites to expand their hours of operation to ensure that underserved communities had access to vaccines. We previously reported that some vaccination center pilot program sites extended their hours to include early mornings, evenings, and Saturdays, allowing them to administer additional vaccines.³⁴

Figure 7: Example of FEMA Vaccination Center Pilot Program Mobile Site



Example of mobile trailer unit with tents set up on both sides for vaccine administration.
Source: Federal Emergency Management Agency (FEMA). | GAO-22-105079

³⁴[GAO-22-104457](#).

CDC, HRSA, and FEMA Program Vaccination Among Various Racial and Ethnic Groups, and Comparison to Shares of Population

Although available data are limited, our analysis of CDC, HRSA, and FEMA COVID-19 vaccine program data suggest that the percentage of people vaccinated through these programs by race and ethnicity varied.³⁵ Our analysis suggests that while the programs vaccinated a greater share of some racial and ethnic groups compared to their shares of the population, disparities exist for other racial and ethnic groups, such as non-Hispanic Black persons. However, according to CDC, some groups may have a higher likelihood of having missing race and ethnicity data, and the percentage of unknown race and ethnicity data may account for some, or even all, of the differences observed in comparing vaccinations among various racial and ethnic groups to their shares of the U.S. population.³⁶

CDC Retail Pharmacy Program. Our analysis of CDC retail pharmacy program data found that participating pharmacies fully vaccinated 51,554,294 people from February 11, 2021, through September 4, 2021.³⁷ However, we found that 26.1 percent of people fully vaccinated through CDC's program as of those dates were missing race and ethnicity information. Our analysis suggests that, among people fully vaccinated with known race and ethnicity, 43.3 percent (16,484,240 out of 38,085,142 people) were from racial and ethnic groups other than non-Hispanic White, though vaccinations varied by racial and ethnic group.³⁸

³⁵For the purposes of this report, fully vaccinated persons are persons who received two doses on different days (regardless of time interval) of the two-dose mRNA series (Pfizer or Moderna) or received one dose of a single-dose vaccine (Johnson & Johnson).

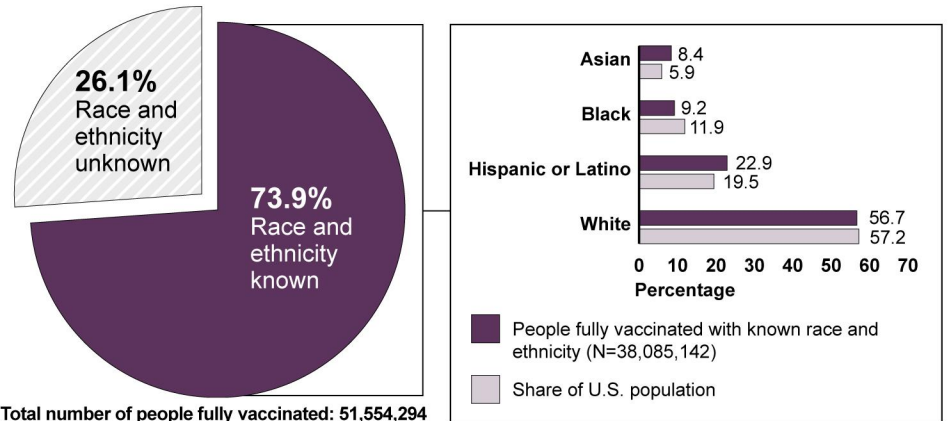
³⁶Missing race and ethnicity data may include unreported data, as well as data for persons who declined to provide their race and ethnicity.

³⁷Data provided by CDC on persons vaccinated through the retail pharmacy program includes all persons vaccinated at pharmacies, and may contain persons vaccinated using doses distributed through states and other jurisdictions, in addition to CDC's retail pharmacy program.

³⁸Racial and ethnic groups other than non-Hispanic White include non-Hispanic American Indian/Alaska Native, non-Hispanic Asian, non-Hispanic Black, Hispanic or Latino, non-Hispanic Multiracial, non-Hispanic Native Hawaiian or Other Pacific Islander, and non-Hispanic Other persons.

Though comparisons between CDC data and U.S. population percentages should be interpreted with caution due to the rate of missing race and ethnicity data for vaccinated persons, our analysis suggests that the retail pharmacy program fully vaccinated a greater share of non-Hispanic Asian and Hispanic or Latino persons compared to their shares of the U.S. population. In contrast, our analysis suggests that non-Hispanic Black and non-Hispanic White persons represented a smaller share of persons fully vaccinated through the retail pharmacy program relative to their population shares. See figure 8.

Figure 8: Percentage of People Fully Vaccinated against COVID-19 through CDC’s Retail Pharmacy Program by Race and Ethnicity, Compared to Share of U.S. Population, as of September 4, 2021



Total number of people fully vaccinated: 51,554,294

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) and U.S. Census Bureau data. | GAO-22-105079

Accessible Data Table for Figure 8

Race and ethnicity	People fully vaccinated with known race and ethnicity (N=38,085,142)	U.S. population
Asian	8.4	5.9
Black	9.2	11.9
Hispanic or Latino	22.9	19.5
White	56.7	57.2

Notes: Data represent the percentage of fully vaccinated people (who have received the second dose in a two-dose COVID-19 vaccine series or one dose of the single-shot Johnson & Johnson COVID-19 vaccine) by race and ethnicity. Asian, Black, and White persons were non-Hispanic. Hispanic or Latino persons may be of any race. Data for racial and ethnic groups that represented less than 5 percent of vaccinated persons are not shown and therefore, percentages may not add to 100. We calculated population distributions using the 2020 Decennial Census population counts by race and ethnicity for the United States and Puerto Rico and applied the race and ethnicity distributions from the 2010 Decennial Census to Census’ International Database 2021 population projections for Guam, Commonwealth of the Northern Mariana Islands, American Samoa, and United States Virgin Islands. Comparisons between CDC and U.S. Census Bureau percentages should be interpreted with caution due to missing race and ethnicity data for vaccinations (26.1 percent), which may account for some,

or even all, of the differences in comparisons. At the time of this analysis, only those aged 12 and older were eligible for vaccination, although population data reflect the population of all ages. Because there may be differences in the age distributions for different racial and ethnic groups, we conducted additional analyses using population data for those aged 18 and older, based on data availability, and found that these did not affect identified differences.

CDC established a program target to administer 40 percent of COVID-19 vaccines through the retail pharmacy program to persons from racial and ethnic groups other than non-Hispanic White combined because approximately 40 percent of the total U.S. population comprises racial and ethnic groups other than non-Hispanic White. CDC officials noted that while 40 percent is the minimum threshold, the agency aimed to achieve at least 50 percent of vaccine doses administered through the retail pharmacy program to persons from racial and ethnic groups other than non-Hispanic White. According to CDC, the retail pharmacy program surpassed the 40 percent threshold in mid-April 2021.

HRSA Health Center Vaccine Program. Our analysis of HRSA health center vaccine program data collected through HRSA's biweekly COVID-19 survey of health centers found that the program fully vaccinated 3,238,100 people as of August 27, 2021. We found that 13.6 percent of people fully vaccinated as reported through health center survey data were missing race and ethnicity data as of August 27, 2021.³⁹ Our analysis suggests that, among people fully vaccinated with known race and ethnicity, 73.6 percent (2,058,030 out of 2,797,714 people) belonged to racial and ethnic groups other than non-Hispanic White, though vaccinations varied by racial and ethnic group.⁴⁰

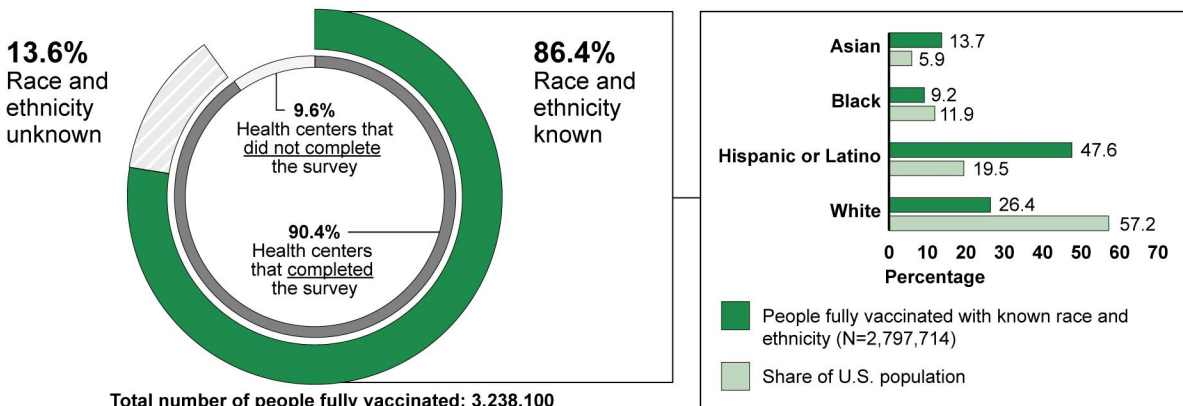
Though comparisons between HRSA data and U.S. population percentages should be interpreted with caution due to the rate of missing race and ethnicity data for vaccinated persons, our analysis suggests that the health center vaccine program fully vaccinated a greater share of non-Hispanic Asian and Hispanic or Latino persons, among those with known race and ethnicity, compared to their shares of the U.S. population. In contrast, our analysis suggests that the program fully vaccinated a disproportionately smaller share of non-Hispanic Black and non-Hispanic

³⁹Participating health centers are required to respond to an addendum to the survey that requests the race and ethnicity of vaccine recipients as a condition of program participation. HRSA stated the average response rate for the survey addendum capturing participating health center data from the start of the health center vaccine program through August 27, 2021, was 90.4 percent.

⁴⁰Racial and ethnic groups other than non-Hispanic White include non-Hispanic American Indian/Alaska Native, non-Hispanic Asian, non-Hispanic Black, Hispanic or Latino, non-Hispanic Multiracial, and non-Hispanic Native Hawaiian or Other Pacific Islander persons.

White persons compared to their shares of the U.S. population.⁴¹ See figure 9.

Figure 9: Percentage of People Fully Vaccinated against COVID-19 through HRSA’s Health Center Vaccine Program by Race and Ethnicity Reported through Survey Data, Compared to Share of U.S. Population, as of August 27, 2021



Source: GAO analysis of Health Resources and Services Administration (HRSA) and U.S. Census Bureau data. | GAO-22-105079

Accessible Data Table for Figure 9

Race and ethnicity	People fully vaccinated through HRSA’s health center vaccine program with known race and ethnicity (N=2,797,714)	U.S. population
Asian	13.7	5.9
Black	9.2	11.9
Hispanic or Latino	47.6	19.5
White	26.4	57.2

Notes: Data represent the percentage of fully vaccinated people (who have received the second dose in a two-dose COVID-19 vaccine series or one dose of the single-shot Johnson & Johnson COVID-19 vaccine) by race and ethnicity. Asian, Black, and White persons were non-Hispanic. Hispanic or Latino persons may be of any race. Data for racial and ethnic groups that represented less than 5 percent of vaccinated persons are not shown and therefore, percentages may not add to 100. According to HRSA, vaccination data are from HRSA’s biweekly COVID-19 survey of health centers. Participating health centers are required to respond to an addendum to the survey that requests the race and ethnicity of vaccine recipients as a condition of program participation. HRSA stated the average response rate for the survey addendum capturing participating health center data from the start of the health center vaccine program through August 27, 2021 was 90.4 percent. We calculated population distributions using the 2020 Decennial Census population counts by race and ethnicity for the United States and Puerto Rico and applied the race and ethnicity distributions from the 2010

⁴¹According to HRSA, nearly 63 percent of patients served by HRSA-funded health centers belong to racial or ethnic groups other than non-Hispanic White, which may explain the relatively low vaccination rate among non-Hispanic White persons compared to their share of the U.S. population.

Decennial Census to Census' International Database 2021 population estimates for Guam, Commonwealth of the Northern Mariana Islands, American Samoa, and United States Virgin Islands. Comparisons between HRSA and U.S. Census Bureau percentages should be interpreted with caution due to missing race and ethnicity data for vaccinations (13.6 percent), which may account for some, or even all, of the differences in comparisons. At the time of this analysis, only those aged 12 and older were eligible for vaccination, although population data reflect the population of all ages. Because there may be differences in the age distributions for different racial and ethnic groups, we conducted additional analyses using population data for those aged 18 and older, based on data availability, and found that these did not affect identified differences.

FEMA Vaccination Center Pilot Program. Our analysis of FEMA vaccination center pilot program data found that the program administered 5,651,094 vaccine doses as of the end of the program on June 20, 2021.⁴² However, we found that 18.6 percent of vaccine doses administered were missing race and ethnicity data. Among doses with available race and ethnicity data, our analysis shows that 58.1 percent of doses administered through the program (2,674,224 of 4,602,689 doses) were to people belonging to racial and ethnic groups other than non-Hispanic White, though vaccinations varied by racial and ethnic group.⁴³

Comparisons between FEMA data and population percentages should be interpreted with caution due to the rate of missing race and ethnicity data for vaccinations and because FEMA data represent vaccine doses administered and not persons vaccinated. Among doses administered to people with known race and ethnicity, the vaccination center pilot program administered vaccine doses to a larger share of non-Hispanic Asian persons and non-Hispanic White persons compared to their shares of the population across counties with pilot sites.⁴⁴ However, our analysis suggests that non-Hispanic Black persons received fewer vaccine doses compared to their share of the population across these counties, among doses administered to people with known race and ethnicity as of the end of the program. Additionally, Hispanic or Latino persons received fewer

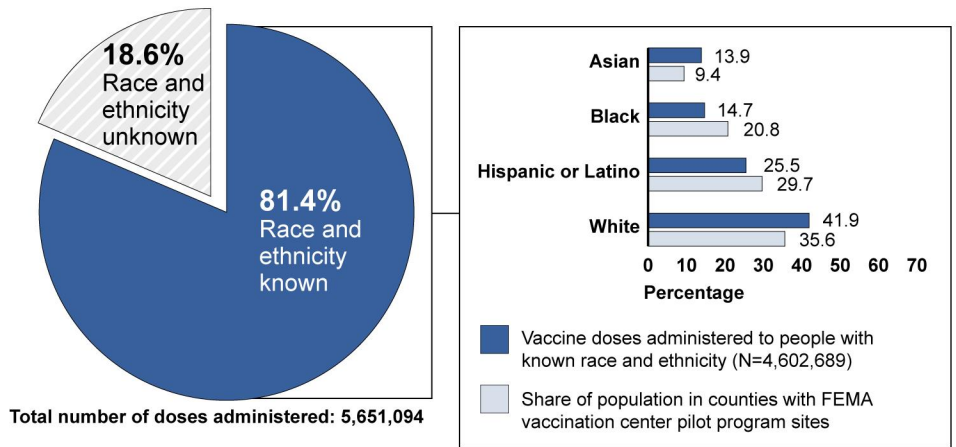
⁴²Data represent vaccine doses administered, and may reflect one dose of a two-dose COVID-19 vaccine series or one dose of the single-shot Johnson & Johnson COVID-19 vaccine. FEMA stated the agency collects data on vaccine doses administered rather than persons vaccinated in an effort to leave out personally identifiable information.

⁴³Racial and ethnic groups other than non-Hispanic White include non-Hispanic American Indian/Alaska Native, non-Hispanic Asian, non-Hispanic Black, Hispanic or Latino, non-Hispanic Multiracial, non-Hispanic Native Hawaiian or Other Pacific Islander, and non-Hispanic Other persons. We calculated the total number of doses administered to people with known race and ethnicity as the sum of the number of doses administered to each racial and ethnic group.

⁴⁴We compared FEMA vaccination data to population data only from the counties with FEMA pilot sites because, relative to the CDC and HRSA data, there were fewer FEMA pilot sites, and these sites were located in areas with population demographics that are less similar to the aggregate U.S. population. Pilot sites may provide doses to populations in multiple surrounding counties.

vaccine doses compared to their share of the population across these counties. See figure 10.

Figure 10: Percentage of COVID-19 Vaccine Doses Administered through FEMA's Vaccination Center Pilot Program by Race and Ethnicity, Compared to Share of County Population, as of June 20, 2021



Source: GAO analysis of Federal Emergency Management Agency (FEMA) and U.S. Census Bureau data. | GAO-22-105079

Accessible Data Table for Figure 10

Race and ethnicity	Vaccine doses administered through FEMA's vaccination center pilot program to people with known race and ethnicity (N=4,602,689)	Population in counties with FEMA vaccination center pilot program sites
Asian	13.9	9.4
Black	14.7	20.8
Hispanic or Latino	25.5	29.7
White	41.9	35.6

Notes: Data represent vaccine doses administered, and may reflect one dose of a two-dose COVID-19 vaccine series or one dose of the single-shot Johnson & Johnson COVID-19 vaccine. Asian, Black, and White persons were non-Hispanic. Hispanic or Latino persons may be of any race. Data for racial and ethnic groups that represented less than 5 percent of vaccinated persons are not shown and therefore, percentages may not add to 100. We calculated the total number of doses administered to people with known race and ethnicity as the sum of the number of doses administered to each racial and ethnic group. We compared FEMA's vaccination center pilot program data to population data from counties with FEMA pilot sites, using the 2020 Decennial Census population counts by race and ethnicity, as there are relatively few pilot sites and the surrounding population is not necessarily representative of the U.S. population. Pilot sites may provide doses to populations in multiple surrounding counties. Comparisons between FEMA and U.S. Census Bureau percentages should be interpreted with caution due to missing race and ethnicity data for vaccinations (18.6 percent), which may account for some, or even all, of the differences in comparisons. At the time of this analysis, only those aged 12 and older were eligible for vaccination, although population data reflect the population of all ages. Because there may be differences in the age distributions for different racial and ethnic groups, we conducted additional analyses using

population data for those aged 18 and older, based on data availability, and found that these did not affect identified differences. FEMA's vaccination center pilot program ended on June 20, 2021.

FEMA also used spoke vaccination center pilot program sites, including mobile and pop-up sites, in addition to its mass vaccination centers to bring vaccines closer to populations for whom transportation or proximity to a site may be a barrier to vaccination, including various racial and ethnic groups. Our analysis of FEMA vaccination center pilot program data suggests that spokes administered a higher percentage of doses to Hispanic or Latino persons (39.1 percent), among doses administered to people with known race and ethnicity, than FEMA's larger vaccination centers (24.2 percent) through the end of the program.

CDC, HRSA, and FEMA Collected and Monitored Data to Inform Program Efforts to Vaccinate Racial and Ethnic Groups

Our review of agency documentation and interviews with agency officials found that CDC, HRSA, and FEMA collected and monitored data on the race and ethnicity of individuals vaccinated through their programs. The agencies did this to adjust operations as needed to meet agency goals to vaccinate underserved and historically marginalized groups, including various racial and ethnic groups.

CDC Retail Pharmacy Program. CDC officials stated the agency collected and maintained data on COVID-19 vaccine recipients by race and ethnicity for the retail pharmacy program. CDC developed weekly monitoring reports to assess the percentage of COVID-19 vaccines administered by race and ethnicity, among other things. Officials said they used these reports to assess the extent to which COVID-19 vaccines were administered in higher risk communities, such as those with higher percentages of people from various racial and ethnic groups, as well as missing race and ethnicity data.⁴⁵ Officials said they closely monitored race and ethnicity information to help inform how the retail pharmacy program could better administer vaccines to various racial and ethnic groups, such as by encouraging pharmacy collaboration with community-based organizations to advertise vaccine appointment locations within communities and assist with appointment scheduling. CDC officials stated

⁴⁵CDC and retail pharmacy partners used CDC's Equitable Distribution Index, which approximates SVI at the ZIP code level to allow for more granular assessment of an area's socioeconomic conditions, to identify high risk communities.

they also worked with pharmacy partners when reviewing race and ethnicity data to understand any reporting difficulties or challenges reaching various racial and ethnic groups in their communities.

HRSA Health Center Vaccine Program. HRSA officials told us that since February 2021, the agency has conducted a biweekly survey of health centers participating in the health center vaccine program to track any challenges and successes for the program. Participating health centers are required to respond to the survey as a condition of program participation, which captures data on program vaccine administration by race and ethnicity, among other things.⁴⁶ HRSA stated the response rate for the survey capturing participating health center vaccine administration data is generally above 90 percent.⁴⁷

HRSA stated that the agency regularly reviewed the biweekly survey data, which includes the number of vaccinations administered biweekly by race and ethnicity, to monitor health center capacity and the effect of COVID-19 on health center operations, patients and staff, as well as to better understand training and technical assistance, funding, and other health center resource needs. HRSA officials told us they developed a public dashboard to provide information on COVID-19 vaccinations by race and ethnicity through the health center vaccine program.⁴⁸ HRSA shared the dashboard with federal and non-federal partners to inform vaccination planning and technical assistance activities for vaccinating racial and ethnic groups other than non-Hispanic White. Additionally, HRSA officials stated they worked with CDC to analyze vaccine administration data to assess the program's effect and to evaluate the program to inform future vaccination efforts.

FEMA Vaccination Center Pilot Program. Prior to the program ending in June 2021, FEMA collected race and ethnicity data for vaccine doses administered through its vaccination center pilot program. FEMA's

⁴⁶As a condition of participation in this program, health centers identified for participation in the Health Center COVID-19 Vaccine Program are required to complete both the Health Center COVID-19 Biweekly Survey and additional questions outlined in an addendum to the survey. Prior to July 2, 2021, the survey was conducted weekly.

⁴⁷Survey response rates may differ from week to week. Between February 26 and August 27, 2021, the Health Center COVID-19 Survey addendum response rate ranged from 86 to 96 percent.

⁴⁸See HRSA's Health Center COVID-19 Vaccination Dashboard at <https://data.hrsa.gov/topics/health-centers/covid-vaccination>, accessed November 16, 2021.

vaccination center pilot program sites requested that each jurisdiction where sites were located gather data on the following five key data elements: race, ethnicity, age, sex, and disability status. To help ensure FEMA vaccinated socially vulnerable communities, FEMA officials told us that staff analyzed the collected data, regularly communicated findings with jurisdictions, and when necessary, FEMA worked with jurisdictions to make alterations to their vaccination plans. For example, officials said that at one vaccination center pilot program site, FEMA's data showed that the majority of people vaccinated at the site during the first few days of operation were non-Hispanic White rather than the Black population that the site was intended to serve. After reviewing this data, FEMA staff told us they adapted their approach to reach the non-Hispanic Black community by adjusting the hours of site operation and the requirements for a vaccination appointment as well as partnering with local community organizations. Following the end of the vaccination center pilot program, FEMA officials told us that they could no longer track the same level of demographic data for sites that continued to operate under state or jurisdictional leadership.⁴⁹

Although CDC, HRSA, and FEMA have taken these efforts to collect and monitor data on race and ethnicity for COVID-19 vaccine programs, gaps remain in data on vaccine administration by race and ethnicity across all three programs.⁵⁰ Specifically, race and ethnicity information is incomplete in national vaccination data as well as data from the three agency programs, as described above. As noted, all vaccine administration data—including data from these three programs—are reported to CDC. CDC told us that it is working to ensure more complete reporting of race and ethnicity information for recipients of COVID-19 vaccinations, such as by requiring providers to report the race and ethnicity of vaccine recipients, and reaching out to states and jurisdictions to improve demographic data completeness. Having more complete data will help federal agencies identify any disparities in vaccination rates among various racial and ethnic groups, monitor the extent to which their

⁴⁹Community vaccination centers managed and operated by states and other jurisdictions continue to operate as COVID-19 vaccination sites and are overseen by state or jurisdictional officials.

⁵⁰In our prior work, CDC stated that information on race and ethnicity for COVID-19 vaccine recipients is missing for a variety of reasons, including a lack of consistent collection and reporting of this information by physicians and pharmacists and challenges with transmitting data to CDC. Additionally, we reported that it can be challenging to collect this information when administering COVID-19 vaccinations because recipients may refuse to provide their race and ethnicity at the time of vaccination, among other things. See [GAO-21-387](#).

COVID-19 vaccine programs have helped to reduce these disparities, and adjust program operations as needed to meet program goals.

Agency Comments

We provided a copy of this draft report to HHS, including CDC and HRSA, and FEMA. HHS and FEMA provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Administrator of FEMA and the Secretary of HHS, and other interested parties. The report is also available at no charge on GAO's website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at 202-512-7114 or HundrupA@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.



Alyssa M. Hundrup
Director, Health Care

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Appendix I: Scope and Methodology

This appendix provides additional details regarding our data analysis of national COVID-19 vaccination by race and ethnicity. We also provide information on the methodologies used to select health officials and stakeholder groups for interviews and for reviewing research on COVID-19 vaccine equity. To provide background information on potential disparities for various racial and ethnic groups, we compared national COVID-19 vaccination data to the race and ethnicity distribution using population data from the U.S. Census Bureau.¹ To assess the reliability of the CDC vaccine administration data, we reviewed agency documents, interviewed agency officials from CDC, and tested the data we received from CDC for missing data and obvious outliers and errors. Although a notable share of these vaccination data were missing information on race and ethnicity, we determined the data with known race and ethnicity were sufficiently reliable for the purposes of generally describing vaccination trends in the United States and comparing to U.S. population data to identify potential disparities.

To provide additional information on all of our objectives, we interviewed state health officials from four states that we selected based on criteria, such as selecting states from different Census regions and whether states report race and ethnicity data for COVID-19 vaccine recipients on their state public health websites as of October 2021. We also interviewed representatives from the National Medical Association, National Hispanic Medical Association, National Indian Health Board, Association of State and Territorial Health Officials, National Association of County and City Health Officials, and National Association of Community Health Centers. In selecting these stakeholders, we considered several criteria, including their representation of entities involved in COVID-19 vaccine administration or representation of a racial or ethnic group, to capture a variety of perspectives.

¹We calculated population distributions using the 2020 Decennial Census population counts by race and ethnicity for the United States and Puerto Rico and applied the race and ethnicity distributions from the 2010 Decennial Census to Census' International Database 2021 population estimates for Guam, Commonwealth of the Northern Mariana Islands, American Samoa, and United States Virgin Islands.

To identify examples of actions that could potentially advance equity in vaccine administration during pandemics and factors that can affect COVID-19 vaccine administration for various racial and ethnic groups, we conducted a review of selected research articles published between 2007 and 2021, in addition to information gathered from state health officials and stakeholder interviews. Our review of the research on COVID-19 vaccines included peer-reviewed articles, government reports, books, and publications from associations, nonprofit organizations, and think tanks.

Appendix II: Coronavirus Disease 2019 Indicators by Race and Ethnicity

The Centers for Disease Control and Prevention (CDC) plays a key role in collecting and making available nationwide data on indicators of Coronavirus Disease 2019 (COVID-19) burden, including testing positivity rates, cases, hospitalizations, and deaths. While race and ethnicity information is incomplete for some of these reported data and thus should be interpreted with caution, available data suggest racial and ethnic disparities in COVID-19 indicators. This appendix discusses data availability and suggested disparities in these COVID-19 indicators.

CDC data on race and ethnicity continue to be limited. In our prior work on COVID-19, we found that gaps exist in data on COVID-19 indicators by race and ethnicity.¹ While the proportions of cases, hospitalizations, and deaths with known race and ethnicity have increased since we first reported on this issue in September 2020, available data on COVID-19 indicators by race and ethnicity continue to be limited. See table 1.

Table 1: Race and Ethnicity Data Completeness for Indicators of COVID-19 Burden, as Reported by GAO

COVID-19 indicator	Percentage missing race and ethnicity data ^a	As of date	Percentage missing race and ethnicity data	As of date
Testing	N/A ^b		67.2 ^c	January 19, 2022
Cases ^{d,e}				
Case report forms	52.6	July 31, 2020	33.8	January 9, 2022
Total cases	63.8	July 31, 2020	47.9	January 9, 2022

¹Our prior work highlighted gaps in race and ethnicity data reported to CDC on COVID-19 indicators including test positivity rates, cases, hospitalizations, deaths, and vaccination rates. We made five recommendations to CDC such as taking steps to help ensure more complete reporting of race and ethnicity information for COVID-19 indicators. For more information, see GAO, *COVID-19: Federal Efforts Could Be Strengthened by Timely and Concerted Actions*, [GAO-20-701](#) (Washington, D.C.: September 21, 2020); *COVID-19: Urgent Actions Needed to Better Ensure an Effective Federal Response*, [GAO-21-191](#) (Washington, D.C.: November 30, 2020); and *COVID-19: Sustained Federal Action Is Crucial as Pandemic Enters Its Second Year*, [GAO-21-387](#) (Washington, D.C.: March 31, 2021).

**Appendix II: Coronavirus Disease 2019
Indicators by Race and Ethnicity**

COVID-19 indicator	Percentage missing race and ethnicity data^a	As of date	Percentage missing race and ethnicity data	As of date
Hospitalizations ^f	6.4	August 1, 2020	1.5	January 8, 2022
Deaths ^{d,g}				
Case report forms	16.6	July 13, 2020	14.6	January 9, 2022
Total deaths	35.4	July 31, 2020	27.1	January 9, 2022
Death certificate reporting ^h	<1.0	August 7, 2020	<1.0	January 6, 2022

Source: GAO analysis of Centers for Disease Control and Prevention (CDC) data. | GAO-22-105079

^aFor more information, see GAO, *COVID-19: Federal Efforts Could Be Strengthened by Timely and Concerted Actions*, GAO-20-701 (Washington, D.C.: September 21, 2020).

^bCDC did not publicly report data on COVID-19 test results by race and ethnicity when we first reported on COVID-19 disparities in September 2020.

^cFor more information, see Department of Health and Human Services, Centers for Disease Control and Prevention, *Report to Congress on Paycheck Protection Program and Health Care Enhancement Act Disaggregated Data on U.S. Coronavirus Disease 2019 (COVID-19) Testing, 20th 30-Day Update* (January 2022).

^dFor more information, see CDC's COVID Data Tracker (<https://covid.cdc.gov/covid-data-tracker/#demographics>).

^eCDC officials reported that the number of cases with case report forms received by CDC is less than the total number of reported cases because there is generally a 2-week lag from when total cases are reported by state and jurisdictional health departments to when CDC receives the case report forms. Total cases reported by CDC include both probable and confirmed cases as reported by states or jurisdictions. A probable case does not have confirmatory laboratory evidence, but meets certain other criteria, such as clinical symptoms and epidemiological linkage (i.e., exposure).

^fCDC's COVID-19-Associated Hospitalization Surveillance Network (COVID-NET) (<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covid-net/purpose-methods.html>) collects data on COVID-19 hospitalizations that are confirmed by laboratory testing from select counties in 14 states, representing 10 percent of the U.S. population. It includes data from hospitals in select counties in California, Colorado, Connecticut, Georgia, Iowa, Maryland, Michigan, Minnesota, New Mexico, New York, Ohio, Oregon, Tennessee, and Utah. In addition to COVID-NET, HHS also collects national hospitalization data through its HHS Protect Public Data Hub, <https://protect-public.hhs.gov/>, accessed December 8, 2021; however, HHS does not make data available on COVID-19 hospitalizations by race and ethnicity through this website.

^gCDC officials noted that the number of deaths with case report forms it has received is less than the total number of reported deaths through case reporting because there is generally a 2-week lag from when total deaths are reported by state and jurisdictional health departments to when CDC receives case report forms noting deaths.

^hCDC also makes data available on COVID-19 deaths from death certificate data through its National Center for Health Statistics' National Vital Statistics System (<https://www.cdc.gov/nchs/nvss/covid-19.htm>).

CDC data, though incomplete, continue to show disparities by race and ethnicity. We have previously reported that certain racial and ethnic groups have been disproportionately affected by the pandemic. Though limited, available data from CDC continues to suggest racial and ethnic disparities in COVID-19 indicators.

- **Testing.** As of January 19, 2022, 246,844,030 COVID-19 diagnostic test results reported to CDC from laboratories in the United States had available race and ethnicity information, representing 32.8

percent of total test results. The percent of tests that were positive for each racial and ethnic group was: 12.4 percent for Hispanic or Latino persons, 11.9 percent for non-Hispanic American Indian/Alaska Native persons, 11.6 percent for non-Hispanic Black persons, 10.9 percent for non-Hispanic Native Hawaiian or Other Pacific Islander persons, compared to 10.3 percent for non-Hispanic White persons and 9.1 percent among all persons tested for COVID-19.²

- **Cases.** CDC race and ethnicity data on COVID-19 cases, while incomplete, demonstrate that certain racial and ethnic groups have been disproportionately affected. Among the 31,032,445 cases with known race and ethnicity reported to CDC through case reporting as of January 9, 2022 (representing 52.1 percent of total cases):
 - 1.0 percent were among non-Hispanic American Indian/Alaska Native persons (compared to 0.7 percent of the U.S. population),
 - 3.3 percent were among non-Hispanic Asian persons (compared to 5.9 percent of the U.S. population),
 - 12.1 percent were among non-Hispanic Black persons (compared to 11.9 percent of the U.S. population),
 - 24.0 percent of cases were among Hispanic or Latino persons (compared to 19.5 percent of the U.S. population),
 - 0.3 percent were among non-Hispanic Native Hawaiian or Other Pacific Islander persons (compared to 0.2 percent of the U.S. population), and
 - 55.3 percent were among non-Hispanic White persons (compared to 57.2 percent of the U.S. population).

Available data suggest that racial and ethnic disparities in COVID-19 cases have decreased over time. For example, among those with known race and ethnicity, the proportion of cases representing non-Hispanic Black persons has decreased from 19.8 percent as of July 31, 2020 to 12.1 percent as of January 9, 2022. Additionally, the proportion of cases

²Department of Health and Human Services, Centers for Disease Control and Prevention. *Report to Congress on Paycheck Protection Program and Health Care Enhancement Act Disaggregated Data on U.S. Coronavirus Disease 2019 (COVID-19) Testing, 20th 30-Day Update* (January 2022). CDC data represent viral COVID-19 laboratory test results from laboratories in the United States, including commercial and reference laboratories, public health laboratories, hospital laboratories, and other testing locations from all jurisdictions. The data represent total laboratory tests, not individual people, and exclude antibody and antigen tests. We did not compare these testing data to previously reported data, as CDC did not publicly report data on COVID-19 test results by race and ethnicity when we first reported on COVID-19 disparities in September 2020.

representing Hispanic or Latino persons has decreased from 31.9 percent to 24.0 percent as of the same dates.

- *Hospitalizations.* CDC data indicate that certain racial and ethnic groups are disproportionately hospitalized with COVID-19 in the selected hospitals included in CDC's COVID-19 hospitalization surveillance system. According to CDC's analysis of these data, between March 1, 2020 and January 8, 2022, when adjusting for age:
 - non-Hispanic American Indian/Alaska Native persons were hospitalized with COVID-19 at a rate 3.2 times that of non-Hispanic White persons,
 - non-Hispanic Black persons were hospitalized with COVID-19 at a rate 2.5 times higher than non-Hispanic White persons,
 - and Hispanic or Latino persons were hospitalized at a rate 2.4 times higher than non-Hispanic White persons.

COVID-19-associated hospitalization rates among these racial and ethnic groups have decreased relative to the hospitalization rate among non-Hispanic White persons since we first reported these data in September 2020, suggesting a reduction in disparities.³

- *Deaths.* As of November 15, 2021, National Center for Health Statistics data show that non-Hispanic American Indian/Alaska Native persons died of COVID-19 at a rate 2.2 times higher than non-Hispanic White persons, when adjusting for age. Non-Hispanic Black persons died of COVID-19 at a rate 1.9 times higher than non-Hispanic White persons, and Hispanic or Latino persons died at a rate 2.1 times higher than non-Hispanic White persons, when adjusting for age.⁴

³We previously reported that between March 1, 2020, and August 1, 2020, non-Hispanic American Indian/Alaska Native persons were hospitalized with COVID-19 at a rate 5.2 times that of non-Hispanic White persons (compared to 3.2 times as of January 8, 2022), and non-Hispanic Black and Hispanic or Latino persons were hospitalized at a rate 4.7 times that of non-Hispanic White persons (compared to 2.5 times and 2.4 times, respectively, as of January 8, 2022) when adjusting for age.

⁴We did not compare these data on COVID-19-related deaths to previously reported data, as the data we reported in September 2020 reflected deaths per 100,000 population rather than age-adjusted rate ratios as provided in this report.

Appendix III: Additional Efforts That HHS and FEMA Have Taken to Provide COVID-19 Vaccines to Underserved and Historically Marginalized Racial and Ethnic Groups

Throughout the pandemic, the Department of Health and Human Services (HHS) and its operating divisions and the Federal Emergency Management Agency's (FEMA) took additional actions aside from its Coronavirus Disease 2019 (COVID-19) vaccine programs to provide COVID-19 vaccines to underserved and historically marginalized racial and ethnic groups.¹ Below are examples of additional actions that HHS and FEMA took as of November 2021 to help ensure COVID-19 vaccine equity for various racial and ethnic groups. We identified these examples through interviews with agency officials, a review of agency documentation, and information obtained through HHS and FEMA websites.

Department of Health and Human Services. In April 2021, the U.S. Department of Health and Human Services (HHS) announced additional measures to encourage vaccinations and increase vaccine confidence as part of the next phase of its COVID-19 public education campaign. These include the launch of the COVID-19 Community Corps—a nationwide, grassroots network of local voices and trusted community leaders to encourage vaccinations. This effort mobilized health professionals, scientists, community organizations, faith leaders, businesses, rural stakeholders, civil rights organizations, sports leagues and athletes, and Americans from all walks of life to become leaders within their own communities to help get friends, family, and neighbors vaccinated. The

¹HHS's operating divisions include the Administration for Children and Families, Administration for Community Living, Agency for Healthcare Research and Quality, Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention, Centers for Medicare & Medicaid Services, Food and Drug Administration, Health Resources and Services Administration, Indian Health Service, National Institutes of Health, and Substance Abuse and Mental Health Services Administration.

Appendix III: Additional Efforts That HHS and FEMA Have Taken to Provide COVID-19 Vaccines to Underserved and Historically Marginalized Racial and Ethnic Groups

program provides resources and fact-based public health information through HHS in partnership with CDC.

Additionally, HHS aired both English and Spanish language TV advertisements across the country to encourage vaccination among key groups currently eligible to receive vaccinations. In addition to general market broadcast and cable advertising, HHS has also made multi-million dollar ad buys in Black and Spanish-language media, as well as in outlets that reach Asian American and Pacific Islanders and Tribal populations, to add an additional layer of outreach and messaging to hard-hit communities.

HHS's Office of Minority Health partnered with CDC to launch the Minority Health SVI. The Minority Health SVI is an extension of the CDC SVI that combines the 15 social factors included in the original CDC SVI with additional factors known to be associated with COVID-19 outcomes. These factors were developed using 5-year estimates of demographic data from the U.S. Census Bureau's American Community Survey, and are organized into six themes: 1) socioeconomic status; 2) household composition and disability; 3) minority status and language; 4) housing type and transportation; 5) health care infrastructure and access; and 6) medical vulnerability. The Minority Health SVI can be used to apply a health equity lens to research, strategic planning, program design, and evaluation related to response and recovery for COVID-19 and other public health emergencies. Among other things, the Minority Health SVI databases and dashboard can be used to plan targeted and equitable COVID-19 testing, vaccine and treatment distribution, and vaccine administration efforts.

In June 2020, the Office of Minority Health also launched the National Infrastructure for Mitigating the Impact of COVID-19 within Racial and Ethnic Minority Communities, a 3-year project designed to work with community-based organizations across the nation to deliver education and information on resources to help fight the pandemic. As part of this program, the Office of Minority Health awarded \$40 million to the Morehouse School of Medicine to coordinate a strategic network of national, state, territorial, tribal, and local organizations to deliver COVID-19-related information such as testing and vaccinations to communities hardest hit by the pandemic, including certain racial and ethnic groups and socially vulnerable communities.

Centers for Disease Control and Prevention. The Centers for Disease Control and Prevention (CDC) developed a COVID-19 Data Tracker

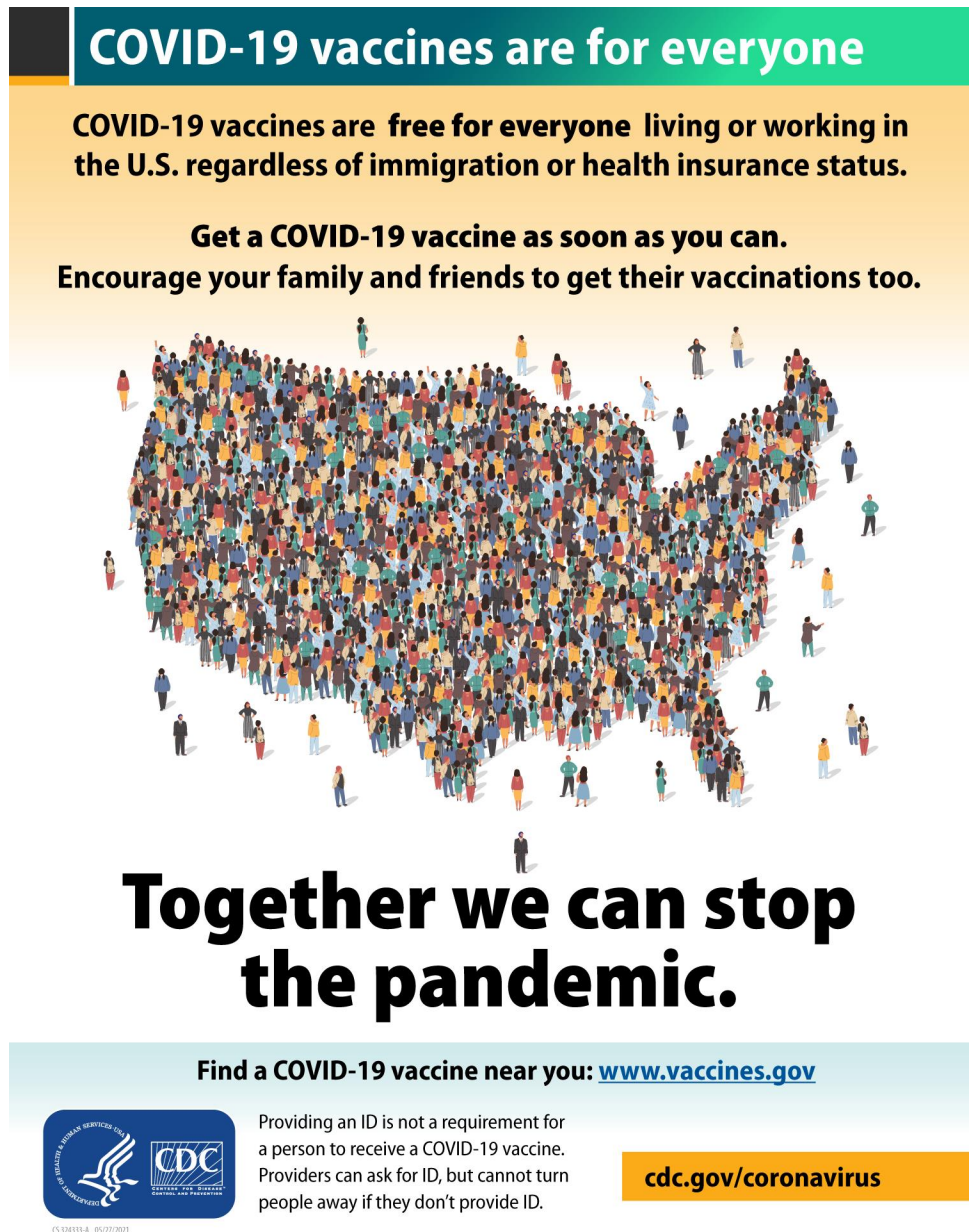
Appendix III: Additional Efforts That HHS and FEMA Have Taken to Provide COVID-19 Vaccines to Underserved and Historically Marginalized Racial and Ethnic Groups

Health Equity Landing Page that catalogs current equity-related data on COVID-19 indicators, such as vaccinations, by race and ethnicity.² As part of the COVID-19 Data Tracker, CDC has a COVID-19 Vaccine Equity web page that provides county-level vaccination coverage and SVI.³ CDC also developed a web page on COVID-19 vaccine equity for racial and ethnic groups that includes culturally specific communication and educational resources to build vaccine confidence and raise awareness about the benefits of the COVID-19 vaccine. Some of the resources include a guide for community organizations to increase vaccine uptake for certain racial and ethnic groups and a COVID-19 prevention and vaccine communication toolkit that includes messaging for public health professionals, health care providers, and community organizations to reach communities that speak languages other than English. See Figure 11.

²For more information, see *COVID-19 Vaccine Equity for Racial and Ethnic Minority Groups*.

³For more information, see *CDC COVID Data Tracker*.

Figure 11: Example of a CDC Communication Toolkit Poster about COVID-19 Vaccines



Source: Centers for Disease Control and Prevention (CDC). | GAO-22-105079

Additionally, CDC worked with national, state, tribal, territorial, local, and community partners to promote COVID-19 vaccination among Black and Hispanic or Latino people. To support these partnerships, CDC provided

funding for organizations that reach certain racial and ethnic groups. For example, in April 2021, CDC awarded \$3 billion to 64 jurisdictions to support local health departments and community-based organizations in launching new programs and initiatives to increase vaccine access, acceptance, and uptake in communities disproportionately affected by COVID-19.

CDC officials also told us they conducted community outreach efforts to increase vaccine uptake among various racial and ethnic groups. For example, in June 2021, CDC hosted a webinar titled “Motivate to Vaccinate: National Month of Action for COVID-19 Vaccinations” to increase the number of vaccinated persons in non-Hispanic Black and Hispanic or Latino communities. The webinar included organizations such as the Black Coalition against COVID-19, Latinx COVID-19 Task Force, and the National Resource for Refugees, Immigrants, and Migrants. These organizations provided information on successes, challenges, and strategies used to increase vaccine education, awareness, and uptake. In September 2020, CDC began a series of listening sessions to hear concerns from different partners and organizations serving communities that have been disproportionately affected by COVID-19. CDC stated that the goal of these listening sessions was to collect qualitative data to expand CDC’s communication, outreach, and partnership efforts to ensure minority groups and rural populations receive accurate, timely, and culturally responsive COVID-19 outreach messages and resources for prevention and control.

Food and Drug Administration. To better understand and address the needs of various racial and ethnic communities, the Food and Drug Administration conducted several efforts to boost vaccine confidence, such as:

- holding listening sessions with diverse health professional organizations and other stakeholders to learn more about the gaps and needs of various racial and ethnic communities and to share information on COVID-19 activities;
- building awareness about clinical trial diversity (clinical trials are how medical products like vaccines get to the market);
- supporting the development and translation of information for the COVID-19 Multilingual Resources web page that features a growing collection of educational materials in more than 20 languages including Spanish, simplified Chinese, Korean, and Vietnamese. These educational materials provide information and details on

Appendix III: Additional Efforts That HHS and FEMA Have Taken to Provide COVID-19 Vaccines to Underserved and Historically Marginalized Racial and Ethnic Groups

pertinent COVID-19 topics such as social distancing, diagnostic testing, vaccine development;

- launching a COVID-19 Bilingual (English/Spanish) Social Media Toolkit. This toolkit allows stakeholders to have ready to use messages that can be shared with their community to ensure accurate and consistent messaging;
- releasing videos in English and Spanish that talk about the importance of getting vaccinated; and
- hosting a webinar on the vaccine approval process aimed at reaching various racial and ethnic groups.

Health Resources and Services Administration. In June 2021, the Health Resources and Services Administration (HRSA) awarded \$125 million in American Rescue Plan Act of 2021 funding to 14 non-profit private or public organizations to reach underserved communities in all 50 states and the District of Columbia, Puerto Rico, Guam, and the Freely Associated States to develop and support a community-based workforce that will engage in locally tailored efforts to build vaccine confidence and bolster COVID-19 vaccinations.⁴ For example, organizations supported with this funding will answer individual questions, help make vaccine appointments, and assist with transportation and other needs. In July 2021, an additional \$121 million was awarded to 127 organizations to support trusted voices in local communities in sharing information about vaccines, building vaccine confidence, and addressing barriers to vaccination for individuals in underserved communities.

Indian Health Service. The Indian Health Service provides health services, including COVID-19 vaccinations, to American Indians and Alaska Natives. According to Indian Health Service officials, facilities operated by the Indian Health Service, tribal health programs, and urban Indian organizations have distributed COVID-19 vaccine doses to over 350 facilities in 36 states. The Indian Health Service also developed educational materials to provide information and address concerns regarding COVID-19 vaccines that reflect diverse environments where American Indian and Alaska Native people live. In November 2020, the Indian Health Service released its COVID-19 Pandemic Vaccine Plan that detailed how its health care system prepares for and operationalizes COVID-19 vaccine distribution. This plan provides important guidance for all Indian Health Service Direct Service facilities and Tribal health programs and Urban Indian Organizations that choose to receive COVID-

⁴See Pub. L. No. 117-2, § 2501, 135 Stat. 4, 42.

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19 vaccine coordinated through the Indian Health Service. In September 2020, Indian Health Service approved a COVID-19 Vaccine Task Force to lead the Agency's COVID-19 vaccine activities and distribution efforts.⁵ In April through May 2021, the Indian Health Service partnered with FEMA to provide mobile COVID-19 vaccination services to 13 communities in North Dakota and South Dakota. The mobile vaccination sites were able to provide up to 250 shots a day and did not require preregistration.

National Institutes of Health. The National Institutes of Health developed the COVID-19 Prevention Network that enrolled thousands of volunteers in large-scale clinical trials to test a variety of investigational vaccines and monoclonal antibodies intended to protect people from COVID-19. Through stakeholder and community engagement, the COVID-19 Prevention Network engages the participation of priority populations, such as racial and ethnic groups that have been hardest hit by the pandemic.

In September 2020, the National Institutes of Health developed the Community Engagement Alliance Against COVID-19 Disparities.⁶ The Community Engagement Alliance Against COVID-19 Disparities provides trustworthy, science-based information through active community engagement and outreach to the people hardest-hit by the COVID-19 pandemic. The goal is to build long-lasting partnerships as well as improve diversity and inclusion in the National Institutes of Health's research response to COVID-19.

Federal Emergency Management Agency. Funding under FEMA's Public Assistance program included community engagement and information dissemination to promote vaccination availability, scheduling, and accessibility, as well as reimbursement for activities to increase public confidence in and uptake of COVID-19 vaccines. This funding was available to state, local, tribal, and territorial governments and eligible private and non-profit medical facilities carrying out vaccination administration activities. Eligible expenses included communication and outreach (advertising campaigns and public service announcements); vaccination information sharing (call centers, websites); accessible

⁵The Indian Health Service Vaccine Task Force is comprised of broad clinical federal employee representation and is established in accordance with the Federal Advisory Committee Act.

⁶For more information, see [Community Engagement Alliance \(CEAL\) Against COVID-19 Disparities | Community Engagement Alliance](#).

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communication (translation and interpretation services; the provision of auxiliary aid); and transportation.⁷

FEMA analyzed community demographics to determine communication needs and to mobilize translation and interpretation services. FEMA worked to provide translations of outreach and public awareness information related to COVID-19 response including vaccinations. Additionally, FEMA provided interpretation and language services at federally supported vaccine centers.

⁷Under the direction of the current administration, FEMA funded 100 percent of eligible costs associated with COVID-19 response efforts through December 31, 2021, which included funding for COVID-19 booster shots. Additionally, FEMA was also directed to fund 100 percent of eligible National Guard costs under Title 32 authorities for COVID response efforts, including the cost for COVID-19 booster shots, through December 31, 2021.

Appendix IV: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

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