



## **2022 Undergraduate Sustainability Case Competition** **The Business Response to Vaccination Inequality**

*Note: this case was written for this case competition and although the company described (“Pharma Solutions Inc.”) is not real, the core challenge of vaccine inequality is very real. The challenge facing Pharma is a compilation of current events and one faced by nearly every community in the United States. Please do not share this case with those not registered for the competition unless they are a team advisor or coach (e.g. a faculty member). However, the case will be made publicly available on our website after the competition has concluded.*

Pharma Solutions Inc. is a U.S. pharmaceutical and biotechnology company with \$1 billion in annual revenue that ranks 64th in the Fortune 500. It has a long history and reputation in developing and producing drugs and drug-related products.

In December 2019 a deadly infectious disease caused by a Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2; “COVID-19”) was reported. Three months later the World Health Organization (WHO) declared the virus outbreak a global health emergency.

Soon after the outbreak of COVID-19, Pharma started the study and development of a new vaccine. After a nationwide test and clinical trials and within 8 months after the outbreak, Pharma introduced the newly developed vaccine as 95% effective against the virus. As soon as the U.S. Food and Drug Administration (FDA) approved Pharma’s vaccine, the government mobilized efforts to establish new public-private partnerships (PPPs) to drive further research and development, procurement, and distribution processes. The government has contracted with several manufacturers for over \$10 billion to support large-scale manufacturing, distribution, and vaccine dose purchase.

As the COVID-19 response continues, so does the rapidly expanding effort to protect the public with vaccinations, including the role of public-private partnerships (PPPs) in accelerating vaccine development with an emphasis on the development of novel delivery and action mechanisms for equitable allocation. These efforts are particularly important to reach vulnerable communities that are underserved due to often historic inequalities and multiple socio-economic barriers, and to ensure vaccination services have adequate capacity to deliver COVID-19 vaccines, including a skilled and trained workforce, medical and protective equipment, secure supply chain and transport and storage capacity.

### **Data on Vaccination Rates by Race/Ethnicity**

Reaching vulnerable communities that are underserved will require (1) a sound understanding of the current data on vaccination rates among targeted populations and (2) a process for tracking and measuring vaccination rates in order to assess the effectiveness of Pharma’s program. Data availability is improving but still limited. At the federal level, race/ethnicity remains unknown for about a quarter of vaccinations. At the state level, the Centers for Disease Control (CDC) does not report vaccination data by race/ethnicity and its racial/ethnic data for booster dose recipients is limited to those ages 65 and older.

### *Federal Data on Vaccination Inequity*

The CDC reports demographic characteristics, including race/ethnicity, of people receiving COVID-19 vaccinations at the national level, including both people who have received one dose and people who have been recently vaccinated. As of January 10, 2022, according to the Kaiser Family Foundation<sup>1</sup>, CDC reported that race/ethnicity was known for 74% of people who had received at least one dose of the vaccine. Among this group, 56% were White, 10% were Black, 20% were Hispanic, 7% were Asian, 1% were American Indian or Alaska Native (AIAN), and <1% were Native Hawaiian or Other Pacific Islander (NHOPI), while 6% reported multiple or another race. A smaller share of Black people has received at least one dose of the vaccine (10%) compared to their total population (12%). Hispanic people make up a larger share of vaccinated people (20%) and people who recently received a vaccination (27%) compared to their share of the total population (17%). The share of vaccinated people who are Asian is similar to their share of the total population (7%, and 6%, respectively), while they make up a higher share (10%) of people getting a vaccination.

The CDC reports the race/ethnicity of people who have received an additional/ booster vaccine dose at the federal level for those ages 65 and older. Among this group, three-quarters of booster recipients were White (73%), 8% were Black, 8% were Hispanic, 4% were Asian, and AIAN and NHOPI made up less than 1% of recipients (0.5% and 0.1%, respectively). White people make up a slightly larger share of booster dose recipients age 65 and older as their share of fully vaccinated people age 65 and up (73% vs. 71%), Hispanic people make up a slightly smaller share (8% vs. 10%), and the shares are similar for Black people (both 8%). The data also show an uptick in the shares of recent booster doses going to Black and Hispanic people, with the shares of recent booster doses going to Black (10%) and Hispanic people (13%) ages 65 and older exceeding their shares of fully vaccinated people ages 65 and older (8%, and 10%, respectively).

### *State-Level Data on Vaccine Inequity*

As stated above, the Centers for Disease Control (CDC) does not report vaccination data at the state-level by race/ethnicity and its racial/ethnic data for booster dose recipients is limited to those ages 65 and older.

As of January 10, 2022, 47 states and Washington D.C. were reporting vaccination data by race/ethnicity, including 45 states that reported race/ethnicity of people who received at least one dose of the vaccine. Data across 42 of these states indicates that 60% percent of White and Hispanic people had received at least one COVID-19 vaccine dose, higher than the rate for Black people (54%). White people had a vaccination rate that was similar or higher than the rate for Hispanic people in 25 states, while it was lower in 17 states. White people had a higher rate than Black people in most reporting states, except Oregon, West Virginia, Utah, Pennsylvania, Alaska, Washington, Louisiana, Mississippi, and Alabama. The size of these differences varied widely across states, and they have been narrowing over time. The overall vaccination rate across states for Asian people was higher compared to White people (81% vs. 60%), which is consistent with the pattern in most reporting states. However, Asian people had lower vaccination rates than White people in four states (Pennsylvania, Colorado, North Dakota, and South Dakota).

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<sup>1</sup> Ndugga, Nambi; Hill, Latoya; Artiga, Samantha; Haldar, Sweter “Latest Data on COVID-19 Vaccinations by Race/Ethnicity” Kaiser Family Foundation. 2022. <https://www.kff.org/coronavirus-covid-19/issue-brief/latest-data-on-covid-19-vaccinations-by-race-ethnicity/>

As of January 10, 2022, only 12 states reported race/ethnicity of people receiving booster/additional doses. These states included: Alaska, California, Delaware, the District of Columbia, Iowa, Illinois, Michigan, Mississippi, New Jersey, Ohio, Oregon, and Virginia. Although limited, these data raise concerns about potential disparities in the uptake of booster doses. In most of these states, the percent of fully vaccinated people who had received a booster dose was highest for White people, while rates were lower for Hispanic people. It is difficult to make strong conclusions about disparities in booster shots due to the lack of data and inconsistency across data where it is available.

Finally, according to data available, disproportionately affected populations and medically underserved communities are:

- Public housing residents,
- Migrant/seasonal agricultural workers,
- Patients with limited English proficiency, or
- Individuals experiencing homelessness

### *The Reality of Vaccine Inequity*

The key lesson from reviewing federal and available state data is clear: the ongoing disparities in vaccination rates highlight the importance of continued efforts to increase vaccination rates and to address gaps in vaccination both geographically and across racial/ethnic groups. Moreover, it will be important to prevent disparities in the uptake of booster shots.

Despite a range of efforts to increase vaccine access and promote equity in vaccine distribution, substantial racial and ethnic disparities remain. States and vaccination partners are working to ensure that Black, Indigenous, and people of color (BIPOC) populations, which have been disproportionately impacted by the pandemic, receive equitable access to vaccines. The available data shows consistent evidence of disparities in vaccine access and uptake for Black and Hispanic Americans compared to their shares of both COVID-19 cases and deaths as well as the total population. BIPOC communities also may face additional challenges to vaccine access related to transportation, language barriers and lack of translation services, lack of flexibility in employment or childcare, proximity to healthcare providers, insurance status, or stigma within the medical system. These access challenges may be shared or compounded for rural, low-income, elderly, homebound, or disabled populations.

Coordination among public, private, and community stakeholders is critical to ensure that vaccine allocations and clinic sites are targeted at high-need areas, vaccination sites and outreach efforts are conducted by organizations with trust and knowledge of the community, and that potential barriers to access are adequately addressed. Private sector companies can play unique roles in ensuring that vaccine outreach efforts effectively engage with and connect to communities that have been disproportionately impacted by COVID-19. Health care stakeholders including pharmacists, community clinics, and health plans, can leverage robust data and analytics systems and trusted provider relationships to identify and engage individuals that may be most at risk of COVID-19. Promoting equity and engaging higher-risk populations must include supply increases, targeted and culturally-appropriate outreach efforts and community-based approaches to reach people who have not yet been vaccinated and those who may face barriers to access.

### **Pharma's Commitment to Vaccine Equity**

Pharma is committed to increasing equity in vaccination rates among underserved communities through outreach and education, reducing access and logistical barriers to vaccination, and gathering better demographic data. This increased interest is also attributed to the rapid spread of the Omicron variant

and increases in vaccinations among younger adults and adolescents who include higher shares of people of color compared to other adults.

Pharma intends to collaborate with health care providers, government, and local communities to support and expand access to the COVID-19 vaccinations.

### Barriers to Vaccine Equity

Any effective strategy for getting COVID-19 vaccines to vulnerable communities that are underserved will need to address several barriers: vaccine hesitancy, ineffective communications, poor data availability and lack of access due to logistics and distribution limitations.

#### *Vaccine Hesitancy*

Vaccine hesitancy continues to undermine the necessary vaccine uptake to herd immunity levels. Public opinion surveys have found that many unvaccinated essential workers report not having enough information about COVID-19 vaccination. Levels of vaccine reluctance remain among certain groups, with about one third of non-health care essential workers reporting that they will “definitely not” get vaccinated or will “only get it if required.” To augment vaccination, promotion campaigns strategies require a region-based adaptation to fit local contexts.

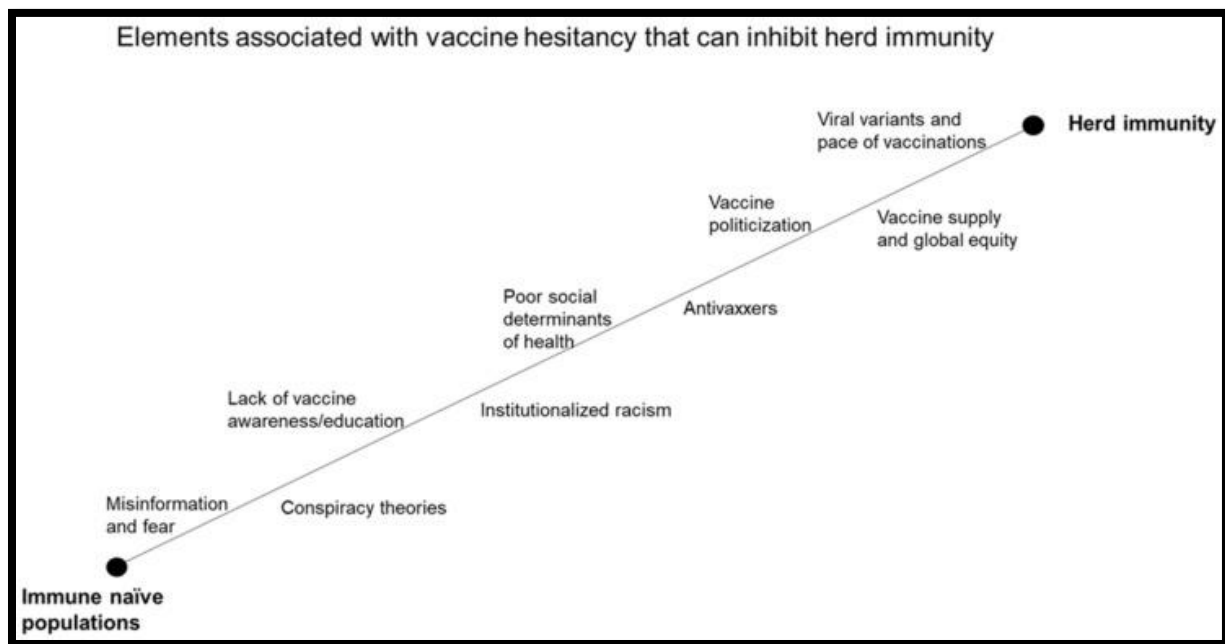


Figure 1: Elements associated with vaccine hesitancy (Alcendor and Hildreth, 2021)<sup>2</sup>

#### *Ineffective Communication and Information Access*

Despite centralized vaccine locator and registration or pre-registration systems, eligible individuals attempting to obtain vaccine appointments often must navigate multiple providers' registration systems that lack necessary and desired functionality. The challenge of navigating or accessing these

<sup>2</sup> Hildreth JEK, Alcendor DJ. Targeting COVID-19 Vaccine Hesitancy in Minority Populations in the US: Implications for Herd Immunity. *Vaccines (Basel)*. 2021;9(5):489. Published 2021 May 11. doi:10.3390/vaccines9050489

Disconnected systems create unnecessary frustration for the public and create barriers for people without Wi-Fi, computer access, or comfort with this technology. To make matters worse, communications and COVID-19 information is too often not sensitive to language and cultural differences and preferences.

Supplemental strategies are needed to address these challenges and guard against exacerbating the digital divide. Better communication helps identify people at higher risk of poor outcomes in areas with inequitable vaccination rates and contact them to answer their questions, assist with registration and scheduling, and coordinate services to facilitate vaccination.

#### *Poor Data Availability*

Comprehensive standardized data are vital to monitor and ensure equitable access to and uptake of the vaccine. Without improvements in data reporting, it will not be possible to identify disparities in vaccination uptake among recipients. Identifying potential disparities in vaccination uptake among these groups will be particularly important as recent trends show reemerging disparities in COVID-19 infections amid the current surge in cases.

Significant gaps in data remain to help understand who is and is not getting vaccinated. To date, CDC is not publicly reporting state-level data on the racial/ethnic composition of people vaccinated. Moreover, CDC racial and ethnic data for booster dose recipients is limited to those ages 65 and older.

#### *Lack of Access Due to Logistics and Distribution Limitations*

While vaccination capacity has steadily increased, projections suggest that the pace of vaccination needs to increase even more to keep pace with supply and vaccinate every adult in the U.S. by the end of 2022. Accomplishing this goal will require unprecedented efforts and coordination of traditional stakeholders including community-based organizations while also leveraging additional private sector expertise and innovation.

Individuals may face additional logistical barriers to vaccination, including lack of or limited access to transportation, mobility issues, language barriers, limited internet or computer access, lack of paid time off, availability during daytime hours, childcare, or distrust of public health authorities.

A tailored outreach to diverse population is needed to facilitate vaccine access for higher-risk and medically underserved communities who continue to face barriers, such as the homebound, people who are disabled, and historically marginalized populations.

#### **Your Consulting Team's Assignment**

Pharma is considering partnering with local communities, government, non-profits and other businesses to help boost vaccination among the underserved communities. You have been contacted by a team composed of the Director of Sales and Logistics, the Vice President of Communications, the Vice President of Diversity and Inclusion, and the Chief Financial Officer to propose a strategy that will guarantee vaccination level to above 98% among your community of choice by the end of 2022.

Draft a strategy on how to improve vaccine acceptance among your community of choice.

## Recommended steps

- 1) Select your community of choice (see guidance below “Guidance on Selecting Your Community of Choice”)
- 2) Determine what kind of solution your team will focus on. We do not expect each team to address every barrier to vaccine equity but instead to focus on one, while not losing sight of the others.
  - Improving Outreach and Communication
  - Improving Access Through More Effective Logistics and Distribution
  - Improving Data Availability and Reporting
- 3) Develop your proposed solution that you would present to the Pharma executive team.
- 4) Ensure your solution meets the “Success Criteria for Proposed Solutions” below.

## Guidance on Selecting Your Community of Choice

First, let’s define what we are referring to. This case places your team as the consultant for Pharma Solutions Inc. but it does not determine the specific geographic setting, nor does it determine the specific targeted population(s) that your team will focus on. Because we have teams participating from a wide range of locations, we leave that up to you.

Therefore a “community of choice” is defined as *the specific geographic setting plus the specific targeted underserved population(s) your consulting team will be focused on*. For example, a team might focus on a specific neighborhood they know well in Pittsburgh or Baltimore and within that neighborhood a particular racial/ethnic group(s) such as the Latinx, Indigenous or African-American community.

Your own campus or institution could be a partner in the solution but the main focus should be on a geographic setting and population beyond your campus.

Advice on selecting your “community of choice”:

- *Be specific and don’t bite off more than you can chew* – we do NOT recommend you choose an entire state or region or city; be specific and focus on a particular area
- *Be realistic and make sure it is a place your team knows well* – we recommend you select a geographic location that your team is familiar with and can access information about
- *Focus but don’t lose sight of replicability* – Pharma recognizes that solutions often need to be tailored to particular locations, however as a large company with operations and sales across the United States, Pharma is also looking for solutions that are transferable and replicable in other communities

In sum, select a “community of choice” that you know well, is specific and where you can model solutions that can be shared nationally.

## Success Criteria for Proposed Solutions for Pharma

- **Financials** – What is the total cost of your proposed solution? Over how much time? Where will the funding come from to pay for it?
- **Social Impact** – How does the solution measurably improve the lives of underserved populations by increasing vaccination rates? How many people are likely to be positively impacted?
- **Feasibility** – Your analysis and recommendations are data-driven and supported with your teams research. What are the recommended steps for implementation and are they realistic and feasible? Provide evidence of a well-thought-out implementation plan.
- **Innovation & Partnerships** – Is your solution original and ambitious, featuring new kinds of partnerships? Pharma recognizes it cannot address vaccine inequity alone. It must partner effectively with nonprofits, churches, healthcare centers, universities and others. How does your solution leverage the power of partnerships?
- **Risks & Mitigation** - What are the risks associated with your solution and what mitigation steps can be put in place? In other words, what might go wrong in your solution? What are possible unintended consequences? Identify these risks and how they can be avoided or at least mitigated.

## Deliverables

### Round 1 Deliverables

1. **Executive Summary** (no more than a page in length 12 pt. Times New Roman font, single-spaced with normal margins) **Due 12:00pm Eastern Standard Time (EST) March 4<sup>th</sup> Late submissions will not be reviewed.**
2. **PowerPoint for a 15-Minute Presentation, your team also must submit a PDF version of the Powerpoint:**
  - The review process is anonymous; DO NOT include team member names or photos in the Executive Summary or in the PowerPoint
  - The PowerPoint is the version your team will use to present if chosen as a finalist and the PDF version is to take into effect any potential transitions or animations, and to share with the judges (again, IF your team is chosen as a finalist)
  - Intro Slide: Contains Team Name (not team member names, just the overall team name)
  - There is no required number of slides; it is up to your team to determine the appropriate number of slides for a 15-minute presentation
  - Slide Page Numbers
  - Appendix (additional data, graphs, analysis, etc.)
  - Strongly recommend your team makes full use of the “Curated and Highly Recommended Resources for Competing Teams” on the last page

### Finals Deliverables (if your team is chosen as a finalist)

1. **15 Minute Live Presentation** (Expectation is Every Group Member Must Present)
2. **Prepared for 15 Minutes of Q&A with Judges**

If you have questions, please contact us at [smealsustainability@psu.edu](mailto:smealsustainability@psu.edu)