Vaccine Hesitancy: Improving COVID-19 outcomes among vulnerable populations in the US

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At a glance

Partners/Client:
- US Digital Health Company
- Right Triangle (Systems Integrator)
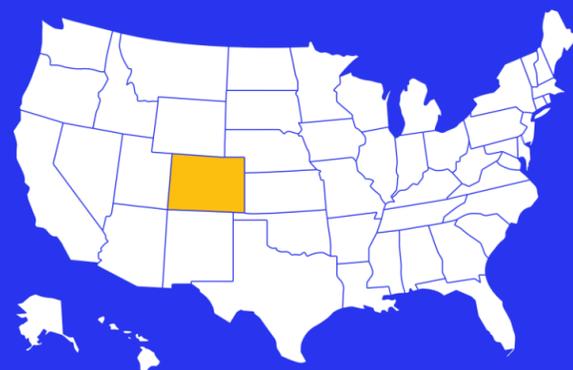
Technology:
- Vantage Population Health Equity Solution
- Vantage Community Outreach Solution

Technology Partners
- Microsoft

Location
- Colorado, USA

The Challenge

COVID-19 vaccination rates lagged in the state while infection rates continued to rise in Colorado. Given the constant evolution of the COVID-19 landscape and the escalating urgency, a US COVID-19 response organization needed to improve vaccination rates among vulnerable communities through targeted communication.

A US- based digital health company tasked with helping to deliver culturally appropriate communication to maximize impact, was supported by Vantage Health Technologies to identify vulnerable communities with a low vaccination drive outreach. The challenge was to devise a data-driven methodology that could guide the state to target their efforts on these areas of greatest need. Effort needed to be focused at various geo-levels: state, county, census tract and the more commercially used zip codes.

Who was involved

- Digital Health Company- designing and executing campaigns to address vaccine hesitancy and to improve vaccine adoption.

- Vantage Health Technologies- AI-driven insight engine used by WHO, CDC, USAID etc. to recommend next best actions for public health programs.

- US COVID-19 Response organization- responsible for addressing vaccine adoption among vulnerable populations.

- Right Triangle, Vantage Systems Integrator providing analysis to define and configure the metrics, visualizations, and data-pipeline.
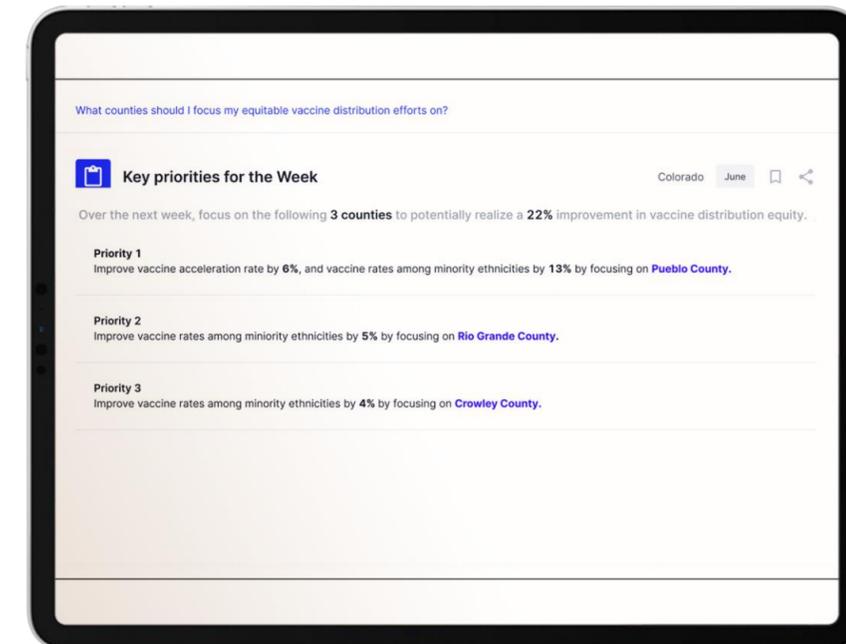
The Solution

The Vantage Population Health Equity Solution and Community Outreach Solution used in conjunction helps identify vulnerable populations, drivers of vaccine hesitancy and enables public health entities to perform outreach to address drivers of vaccine hesitancy.

The solutioning team comprising of Right Triangle and Vantage Health Technologies, approached this challenge through an agile methodology that allowed the solution to be built in weekly increments. This agility allowed for a more efficient and effective approach to the rapidly changing environment and increased availability of new data.

The Vantage Community Outreach solution first segmented the current population into key geographic cohorts to deliver custom, targeted communication through the mobile campaigns to drive vaccination efforts aimed at eliminating vaccine hesitancy across Colorado's vulnerable communities.

Our segmentation framework referenced various sources of data which were being updated at different time-intervals to recommend the next best action that could be taken to improve vaccination rates among state residents. Some examples of these data sources include:

- Multiple sources of publicly available data hosted by various organizations in different formats and granularity
- Integration of existing and proven public health related indices and models such as the COVID-19 Community Vulnerability Index (CCVI) and COVID-19 Hospital Impact Model for Epidemics (CHIME)
- Custom-built indices that joined available clinical and health outcome data with race, ethnic, social, economic, environmental, and behavioral factors contributing to poor vaccination rates
  - An example of such an input was the communication partner's COVID Community Need Index (CCNI)

What counties should I focus my equitable vaccine distribution efforts on?

Key priorities for the Week Colorado June

Over the next week, focus on the following **3 counties** to potentially realize a **22%** improvement in vaccine distribution equity.

Priority 1
Improve vaccine acceleration rate by **6%**, and vaccine rates among minority ethnicities by **13%** by focusing on **Pueblo County.**

Priority 2
Improve vaccine rates among minority ethnicities by **5%** by focusing on **Rio Grande County.**

Priority 3
Improve vaccine rates among minority ethnicities by **4%** by focusing on **Crowley County.**

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The Outcome

The AI-driven solution by Vantage provided next best actions to the state team and digital health company that were central to making decisions. The insights allowed the stakeholders to easily tune in to vulnerable, under-represented and disadvantaged populations and take appropriate actions. Some of the actions taken were:

- Determining the need for and magnitude of vaccine acceleration week-over-week

- Identifying where new mass vaccination sites needed to be set up

- Creating guided communication efforts to create awareness

- Creating targeted canvassing efforts for on-the-ground staff to focus on areas that had a high vaccine disparity owing to vaccine hesitancy and poor vaccination rates

The Vantage Community Outreach solution proved that data is essential for making effective, targeted decisions. The prevailing perception was that maximum impact would be achieved by focusing in the urban areas to realize greater vaccination volumes quickly. However, the Vantage solution revealed that a rural community, Pueblo county with a large minority population had poor COVID-19 outcomes. Vantage then guided the organization to focus on rural areas with lower income levels and higher minority populations. Using the insights from Vantage, the organization was able to canvass Pueblo county to improve vaccine rates and hesitancy.

Key Takeouts

- Data insight can rapidly improve State's ability to focus on truly impactful interventions rather than relying on intuition to plan life saving intervention.

- It is essential to employ an agile system to support real-time, informed decisions making and recommended actions in an every-changing, constantly evolving data environment.

- Providing front line staff with next best actions is more impactful than making them look at a dashboard to figure out their next steps individually.

Tablet display: "What are the key drivers of vaccine rates in Pueblo County?" — Drivers of Poor Vaccine Rates, Pueblo County, May. Bar chart comparing White Population and Latinx Population across Non-Clinical Drivers (Poor Health Literacy: 7% higher for Latinx; Poor Access: 42% higher for Latinx). VIEW IN ANALYTICS.