/// Case Studies

The California

Office of Digital Innovation (ODI)

The California Office of Digital Innovation (ODI) uses digital tools and human-centered design to reimagine and deliver more equitable, effective services to Californians.

BACKGROUND

The California Office of Digital Innovation (ODI) uses digital tools and human-centered design to reimagine and deliver more equitable, effective services to all Californians. ODI's goal is to bring the voices and experiences of Californians into policy and decision-making. As COVID-19 vaccines became available in late 2020, California launched its *Vaccinate All 58* campaign to promote safe and equitable distribution of the vaccines to as many residents as possible. ODI assumed a pivotal role in providing insights into vaccine hesitancy and digital engagement, with a focus on promoting equity within the campaign.

ODI worked with digital behavior and big data experts Syntasa to collect data about vaccine sentiment to inform vaccine distribution and persuasion efforts. To do this, ODI placed a digital survey on 12 highly trafficked ca.gov websites to get insight into people's attitudes, concerns, needs, and actions. The survey contained both unstructured and structured questions to gauge vaccine willingness and hesitancy and provide an opportunity for Californians to share concerns or other comments.

Ultimately, ODI and Syntasa combined the data from this survey with a variety of other available data sources to create a scalable, shareable, and constantly updating data product that internal and external stakeholders used to directly inform vaccine allocation, advertising, partnerships with local community-based organizations, as well as other vaccine-related responses. This data gave the state of California a more comprehensive understanding of vaccine resistance and hesitancy at a local level, in order to help remove barriers to vaccination and increase vaccination rates, particularly in less advantaged communities in the state.

Key Points

- *Vaccinate All 58* campaign promoted safe and equitable vaccine distribution
- ODI placed surveys on 12 highly trafficked websites across ca.gov domains
- ODI and Syntasa created a scalable, shareable, and constantly updating data product for internal and external stakeholders

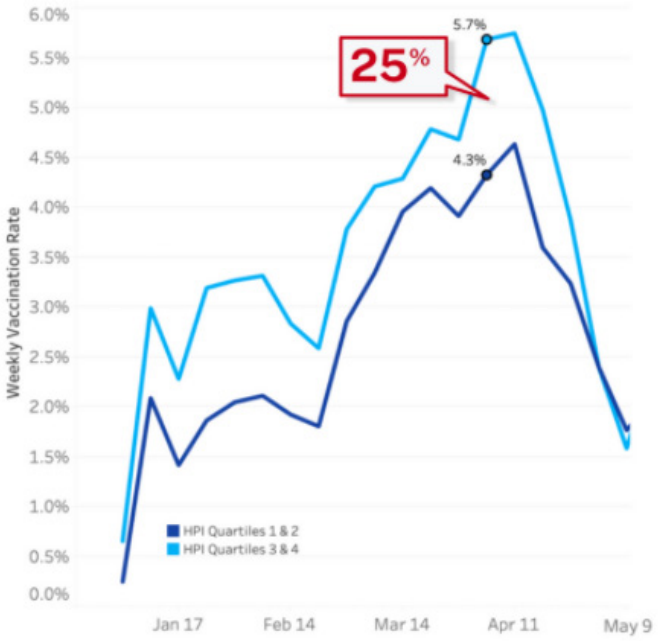
SYNTASA

CHALLENGE

California is the most populous state in the country, with over 39.5 million residents, 58 counties, and over 1700 zip codes. Vaccine hesitancy and willingness vary greatly across different populations and areas of the state. ODI's goal — and more broadly, the state of California's goal — was to increase COVID-19 vaccination rates, particularly among underserved communities. The focus was two-fold: first, identify individual zip codes with low rates of hesitancy and low vaccination rates, and work to remove barriers to access there; and second, identify zip codes with higher rates of hesitancy and low vaccination rates, and target persuasion campaigns in those areas.

Main Challenges

- Least-advantaged Californians vaccination rates 25% below most-advantaged
- Existing data sources unable to identify locations with low hesitancy and vaccination
- Vaccination effort needed to shift from logistics-driven to a needs-based approach



ODI data from the first half of 2021 showed a clear equity gap in vaccination rates. Between January and May 2021, the least advantaged Californians were being vaccinated at a rate 25 percent lower than the most advantaged Californians — in spite of the fact that the state had strategically placed mass vaccination sites in less advantaged areas. California's Healthy Places Index, or HPI, which provides insight into local factors predicting life expectancy and comparing community conditions across the state, was used to determine the least and most advantaged zip codes in the state.

The traditional government approach to service delivery has been application-based: "build it and they will come." This data made clear that, in order to increase equity and improve vaccination rates among less advantaged Californians, a new paradigm was needed. ODI saw an important opportunity to use data and AI to shift to a proactive, needs-based approach in order to meet Californians where they are.

SOLUTION

Nearly 10 million people visit ca.gov properties every week on average. ODI placed an ongoing digital survey on 12 of the most trafficked sites, including the main ca.gov website, the DMV site, and the California Parks Department site. The survey, which is opt-in and contains both structured (multiple-choice) and unstructured (free response) questions, asks Californians directly about their feelings and attitudes toward the COVID-19 vaccine. By late 2021, there had been over 90,000 quantitative and 80,000 qualitative responses to the survey, allowing ODI to gather sentiment data about the vaccine at scale to inform the state's vaccine response.

ODI engaged Syntasa to bring their expertise in digital behavior and big data processing to analyze and productize the data from the survey. First, Syntasa applied rigorous methodology to ensure the survey was representative of the target population. Syntasa corrected for selection bias across age, gender, race, ethnicity, and income; for example, they found that younger age groups showed less participation than older age groups. In addition to correcting for these demographic biases, Syntasa also identified latent selection biases, comparing people who completed the survey on the 12 ca.gov sites with the broader population. For example, they determined that visitors to California's Covid Response website showed much higher vaccine willingness than those visiting the DMV website, and ultimately omitted survey responses from this particular site as it skewed the overall data.

One of the more challenging — and important — aspects of the survey analysis involved quantifying the unstructured data from the survey responses. Syntasa used Natural Language

Processing (NLP), sentiment analysis, and topic modelling tools to analyze free-form responses and identify what topics were top-of-mind for residents across the state and track how sentiment around these topics changed over time. With the help of this ongoing analysis, ODI continues to provide insight to external and internal stakeholders about barriers to increased vaccination rates and potential reasons the effort might be slowing down at a given time.

For example, at one point, it became apparent that the access to vaccination facilities was a major barrier for many constituents, which then became an important area of focus for the state.

Historically, polling has been the most common way for government to gather sentiment data. However, this method is not only very expensive, but it also is limited to one snapshot point in time, and does not provide the ability to understand sentiment on a local level. In contrast, the vast volume of data generated by this survey enabled Syntasa and ODI to conduct, at a much lower cost, a zip-code-level analysis of the responses. This in turn has enabled much more continuous, targeted, impactful, and efficient resource allocation.

Similar surveys continue to run on ca.gov sites, and continue to collect data on an ongoing basis. Because making data actionable is one of ODI's core principles. ODI worked with Syntasa to productize the survey data, creating a dashboard that is updated regularly and constantly available to a variety of different stakeholders, including advertising agencies, community development organizations, universities, local health jurisdictions, and more.

Solution Components

- Digital behavior contained vital information about vaccine hesitancy and community needs
- Millions of Californians visit state websites every day creating massive opportunity for analysis and actionable insights
- Advanced analytics techniques yielded new insights into areas of hesitancy

RESULT

California's *Vaccinate All 58* campaign is a massive effort to increase vaccination rates throughout the state in the most equitable manner possible. Sentiment data is one of myriad components of this campaign. Advertising campaigns, word of mouth, efforts by community development organizations in the state, and increased fear of variants like Delta all played a role in increasing vaccination rates in the state.

However, according to the data, it is clear that ODI and Syntasa's work around sentiment data was another key driver of these results. Once sentiment scoring began to be used in May 2021, the state began prioritizing pop-up and mobile distribution sites in those neighborhoods the data indicated would be the most receptive. From that point on, seventy percent of vaccinations in HPI Quartile 1 or 2 occurred at these mobile and pop-up clinics — a clear indication that the sentiment data had uncovered a vast and previously unmet need for vaccine services in those areas.

In addition, as noted earlier, between January and May 2021, the least advantaged state residents had vaccination rates 25 percent lower than the most advantaged residents. Between May and August, as sentiment began to be used, this gap in vaccination rates reversed. By August, the least advantaged residents (i.e., those residing in HPI Quartile 1 and 2) were being vaccinated at a rate 57 percent higher than the most advantaged residents.