

## CASE STUDY

### Rapid Community Assessment:

#### A Tool for Understanding Immunization Behavior in Long Beach, CA Residents

#### Introduction

Vaccine hesitancy is as old as the first vaccine created in 1796 to prevent Smallpox infection (Gakkegos et al., 2022). Despite this, vaccines continue to be at the top of the list for public health interventions that save millions of lives every year (Kumar et al., 2016). Since the creation of vaccines, deadly viruses like smallpox and polio have been eradicated and eliminated from four World Health Organization (WHO) regions, respectively. Despite vaccines' crucial role in preventing deaths from infectious diseases, some individuals have opted out of immunization by choice, as opposed to an issue of access. Kumar et al. (2016) illustrates that "waning confidence" in vaccines worldwide presents a significant challenge and concern for public health.

In 2019 the World Health Organization (WHO) deemed vaccine hesitancy among the top ten global health threats (WHO, 2019). Despite the first vaccine being successfully created in the late 1700s and immunization being one of the most effective public health measures, some individuals still view vaccines as unsafe and unnecessary (Nuwarda et al., 2022). During the COVID-19 pandemic, these concerns were amplified (Reece et al., 2023).

Azarpanah et al. (2021) explains that vaccine hesitancy is a looming health threat due to the potential to cause a resurgence in previously eliminated (or newly emerging) vaccine-preventable diseases. The CDC estimates that nearly 4 million deaths are prevented each year thanks to routine childhood immunizations (CDC, 2023). Additionally, researchers estimate that as of 2022, the COVID-19 vaccine prevented over 3 million deaths in the United States (Payne, 2022). Both routine and COVID-19 vaccines play an integral role in controlling and preventing infectious diseases from causing severe disease and even death. Ackerson et al. (n.d.) reveals that even a small dip in routine immunization coverage (such as 2%-5%) can lead to vaccine-preventable disease (VPD) outbreaks, such as the most recent measles outbreak in California in 2019 (CDPH, 2020).

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The COVID-19 pandemic led to nearly 25 million children worldwide missing one or more routine immunizations (WHO, 2022). One contributing factor to the decline in vaccine rates is the "global service disruptions" during the pandemic (UNICEF, 2021). Although the rate at which children are being vaccinated has since increased from its steep decline during the COVID-19 pandemic, uptake for certain vaccines is still "substantially reduced, so the population of unvaccinated children is continuing to grow" (Ackerson et al., n.d., para. 5). Machado et al. (2021) demonstrates that the COVID-19 pandemic has reinforced "faulty" beliefs surrounding immunization, thus leading to vaccine hesitancy.

The Strategic Advisory Group of Experts (SAGE) on Immunizations defines *vaccine hesitancy* as "[a] delay in acceptance or refusal of vaccines despite availability of vaccination services" (MacDonald & SAGE, 2015). Catherine Russel of United Nations International Childrens Fund (UNICEF) explains that vaccine hesitancy is a "victim" of the COVID-19 pandemic (UNICEF, 2023). Russel further warns that this hesitancy could lead to the next wave of deaths among children from other VPDs such as diphtheria or measles (UNICEF, 2023).

In 2021, the United States (U.S.) saw the largest drop in childhood immunization since 2019 (Balch, 2022). From 2019 to 2021, kindergarten immunization rates decreased by 1%. In 2021, nearly 211,000 kindergarten students missed out on one or more routine vaccines, compared to 201,000 in 2019 (Balch, 2022). The number of kindergarten students missing one or more routine vaccines in 2021 is likely understated, as enrollment was down by nearly 10% that same year. Declining immunization rates allow for the opportunity for a VPD resurgence.

For instance, in 2022, the United States saw its first case of polio since 1979 in an unvaccinated man in Rockland County, New York (Children's Hospital of Philadelphia, 2023). This case of paralytic polio for the first time in over 40 years is a prime example of the impact vaccine hesitancy can cause: the resurgence of preventable diseases that have not been seen in decades. The United States has seen an increase in other VPDs since the pandemic, such as influenza, measles, and mumps (Vaccinate Your Family, 2022). Investigating factors contributing to vaccine hesitancy is crucial to ensure communities remain protected against VPDs that can cause severe disease and death.

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Rockland County residents have low Polio vaccination rates, with only about 60% of residents vaccinated (New York State Department of health, 2022). Rockland County is just one example of a community in the US where vaccine hesitancy exists. Vaccine hesitancy is prevalent in communities throughout the entire US. In Los Angeles (LA) County (specifically Northern LA County), there are communities with meager childhood immunization rates, with some schools having less than 50% of their student population vaccinated. The same holds true in other California regions, such as San Diego County and certain areas within Northern California.

Similarly, the City of Long Beach has communities with sub-par immunization rates. When looking at COVID-19 and routine immunization data in Long Beach, specific zip codes such as 90805 and 90813 appear to have higher rates of vaccine hesitancy compared to the rest of the city (determined through lower rates of routine and COVID-19 immunizations and the utilization of personal belief and medical exemptions). In November of 2022, the City of Long Beach received \$100,000 from the National Association of County and City Officials (NACCHO) to address vaccine hesitancy. The grant opportunity was intended to help the Long Beach Department of Health and Human Services (Health Department) better understand the community's "why" behind vaccine hesitancy and develop new approaches and interventions for increasing immunization rates. To understand the "why" behind this behavior, the Health Department utilized the CDC's Rapid Community Assessment (RCA) to achieve the following:

- Identify communities at risk for low immunization uptake,
- Gain an understanding of what specific communities think/feel about the COVID-19 vaccine (as well as other routine immunizations),
- Identify trusted community partners and messengers, and
- Create interventions for increasing immunization rates among at-risk communities and groups in Long Beach.

The Health Department values feedback from all Long Beach community members. However, the RCA team was particularly interested in feedback from community members living in zip codes 90813

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and 90805 due to their low vaccine rates, as well as Long Beach parents. The CDC's RCA focused primarily on COVID-19 immunizations, with some questions regarding routine immunizations.

### Method

#### Participants and Procedures

Four hundred fifteen Long Beach, California residents participated in this research study. The participant's average age is 43. Female participants account for 72% of the survey responses ( $n=301$ ). Males accounted for 24% of research participants ( $n= 101$ ). Non-binary individuals account for 1% of participants ( $n= 4$ ), and 2% ( $n= 9$ ) preferred not to state their gender. 12% of respondents live in zip code 90802 ( $n= 50$ ), 9% in 90803 ( $n= 37$ ), 11% in 90804 ( $n= 47$ ), 13% in 90805 ( $n= 55$ ), 10% in 90806 ( $n= 43$ ), 7% in 90807 ( $n= 31$ ), 3% in 90810 ( $n= 13$ ), 21% in 90813 ( $n= 87$ ), 3% in 90814 ( $n= 14$ ), and 10% residing in 90815 ( $n= 41$ ). Figure 1 represents the COVID-19 vaccination status of Long Beach residents who completed the survey. Values for those residing in 90805 and 90813 are highlighted, as these are two communities of interest. When looking at the unvaccinated rates, 9% ( $n = 62$ ) of Long Beach residents who completed the survey are unvaccinated, with 7% ( $n = 4$ ) in 90805, and 21% ( $n =18$ ) in 90813.

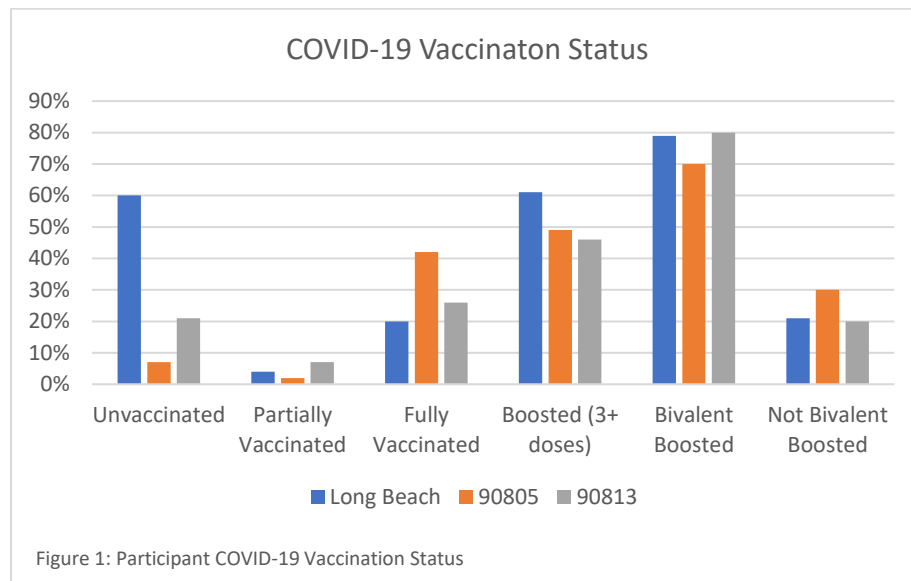
**Table 1: Study Participant Demographics (N=415)**

Characteristic	<i>M</i>	<i>n</i>	%
Age	43		
<b>Gender</b>			
Female		301	72%
Male		101	24%
Non-Binary		4	1%
Prefer not to say		9	2%
<b>Race/Ethnicity</b>			
American Indian or Alaska Native		1	0%
Asian		114	27%
Black or African American		35	8%
Hispanic or Latino		110	26%
Native Hawaiian or Other Pacific Islander		2	0%
White		122	29%
Multi-racial		15	4%
American		1	0%
Prefer not to say		18	4%

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### Zip Code

90802	50	12%
90803	37	9%
90804	47	11%
<b>90805</b>	55	13%
90806	43	10%
90807	31	7%
90810	13	3%
<b>90813</b>	87	21%
90814	14	3%
90815	41	10%



### Sampling

The Health Department collected data utilizing the CDC's RCA survey to collect data from Long Beach community members with the goal of gaining an understanding of barriers and beliefs surrounding immunization. The CDC's RCA "is a process for quickly collecting community insights about a public health issue in order to inform program design" (CDC, 2022, para. 1). The Health Department utilized the survey portion for data collection.

The Health Department identified areas of interest for conducting the RCA by examining vaccination (COVID-19 and routine), personal belief, and medical exemption rates throughout the city.

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The RCA team utilized open-source data made available by California Department of Public Health (CDPH). Through this process, the RCA team identified three groups of interest: residents living in zip codes 90805 and 90813 and Long Beach parents.

The RCA survey was disseminated both online and in person by the Health Department and in conjunction with several Community-Based Organizations (CBOs). The Health Department partnered with the following organizations for data collection: Centro CHA, Northpointe, United Cambodian Community (UCC), and Long Beach Unified School District's (LBUSD) Early Childhood Development (ECE) programs. For in-person questionnaire completion, \$10 incentives (Target and Starbucks gift cards) were given to participants. Centro Cha, Northpointe, and UCC offered the survey and incentives to community members when they visited the CBOs for various in-person services and events.

The RCA survey was also disseminated online. The Health Department did not provide incentives for online survey completion. The Health Department posted the survey on social media and sent it to other groups, such as the city's Long Beach Medical Reserve Corps (MRC) and Skilled Nursing Facilities (SNFs). LBUSD ECE program disseminated the RCA survey online to parents utilizing the "peach jar" service, a communication tool the district uses to disseminate flyers and important information to parents of students.

The Health Department attended one in-person event, "A Shot at Health," a health fair that provided COVID-19 vaccine information, routine health screenings, and COVID-19 vaccines. The RCA survey was also given out to interested respondents who completed the survey. The Health Department provided \$10 Starbucks gift cards to respondents.

### **Notable Findings and Analysis**

The RCA survey was helpful for the Health Department to learn about the thoughts, beliefs, and barriers that may exist when it comes to routine and COVID-19 immunizations among Long Beach residents, especially among parents and those in high-priority areas like 90805 and 90813.

### **Reason Unvaccinated**

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Religion, personal choice, uncertainty about long-term side effects, and a lack of trust in the vaccine and government were commonly reported as reasons for not getting vaccinated among residents in the 90805 and 90813 zip codes. A lack of trust in the government/medical authorities, personal choice, and unknown long-term circumstances was also commonly reported when looking at city-wide data.

<b>Table 3: Reason Unvaccinated</b>	Long Beach	90805	90813
I did not qualify to receive the vaccine at the time of interest	0%	0%	0%
I can't find the time to go or the lines are too long	1%	2%	0%
I don't like any of the vaccine options available to me	7%	8%	8%
I will not take it due to religious reasons	7%	17%	8%
I believe that I have a medical condition that bars me from taking it	6%	8%	4%
I do not trust the government/medical authorities	12%	8%	10%
I do not trust the vaccine (not safe, developed too quickly, do not know what is in it)	23%	17%	27%
I believe it is a choice and I choose not to	20%	25%	15%
I am not sure about long-term side effects of the vaccine	20%	17%	23%
It is not mandatory for my work	3%	0%	6%
NA	1%	0%	0%

### Initial Vaccine Hesitancy

More than half of respondents in 90805 reported having some initial vaccine hesitancy toward the COVID-19 vaccine, with 51% of those in 90813 experiencing some hesitancy. Both zip codes have higher percentages of COVID-19 vaccine hesitancy compared to city-wide data.

<b>Table 4: Initially Hesitant</b>	Long Beach	90805	90813
Yes/ To some extent	40%	61%	51%
No	60%	39%	49%

### If You Were Hesitant, What Changed Your Mind

Speaking with one's doctor, doing personal research, and consulting with family/friends were the most common reasons for getting vaccinated after initially being hesitant towards the COVID-19 vaccine (Table 5). Fear of infection was also commonly reported as a reason for getting vaccinated in 90813.

However, this does not hold true for 90805. Forty-two percent of individuals in 90805 who were initially

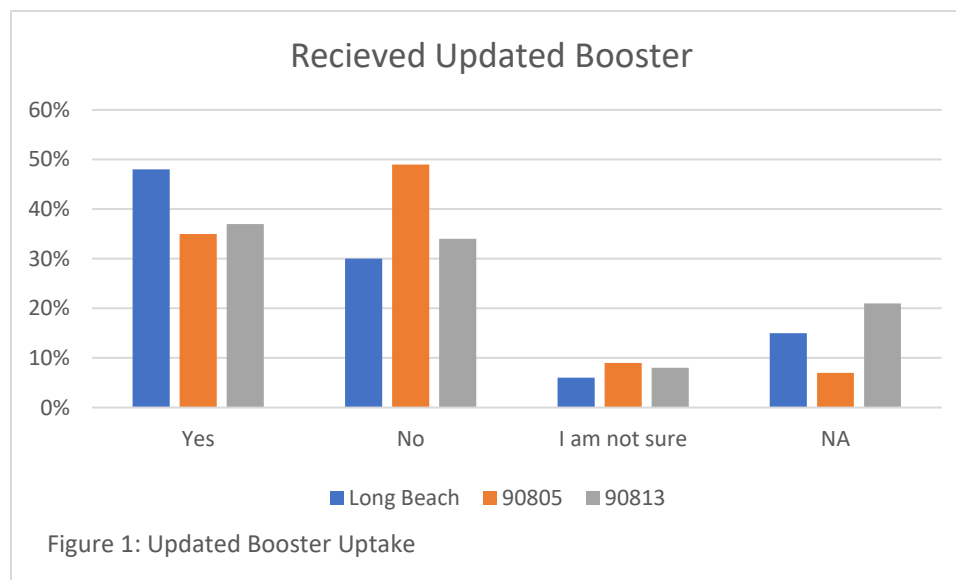
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vaccinated appear to have received the COVID-19 vaccine due to being mandated by their employer instead of personally making the decision. A smaller percentage of individuals in 90813 reported being mandated by their employer (26% compared to 42% in 90805).

<b>Table 5: Initially Hesitant, Mind Changed</b>	Long Beach	90805	90813
I spoke to my doctor	5%	13%	10%
I did more research	20%	13%	10%
I consulted family and friends	8%	16%	16%
My spiritual/religious leaders advised me to do it	1%	3%	0%
I was persuaded by government/public health authorities	6%	3%	0%
I noticed that a personality (public or otherwise) took it	0%	0%	0%
I was forced by my employer/family members or felt like I did not have a choice	2%	42%	26%
I felt more comfortable because several people took it before me	12%	3%	13%
I was worried about the increased infections/deaths	11%	6%	16%
My circumstances changed (such as being pregnant or any other medical or personal factor)	3%	0%	6%
Not relevant I was never hesitant	1%	0%	3%

### Received Updated Booster

Updated booster rates were similar among 90805 and 90813. However, both zip codes were lower compared to looking at the city (35%, 37%, and 48%, respectively).





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### Reason Not Boosted

The top three reasons for not getting the updated COVID-19 booster in 90813 are belief in having strong protection against COVID-19 infection (22%) belief the vaccines are no longer effective (18%), and not wanting to experience vaccine side effects (18%). The top three reasons for not taking the updated booster in 90805 are belief in still having strong protection (32%), not wanting to experience side effects (15%), and belief they still have strong protection against severe COVID-19 due to being previously infected (14%).

<b>Table 6: Reason to not Get Updated Booster</b>	Long Beach	90805	90813
I believe I still have strong protection against COVID-19 infection	22%	32%	22%
I didn't know the new booster was available	6%	0%	7%
I believe I still have strong protection against severe illness due to COVID-19	13%	14%	9%
I don't know if the new formula is safe	9%	8%	7%
I believe the vaccines are not effective anymore	13%	8%	18%
It's too much effort to get the booster shot	2%	0%	0%
I didn't know if I was eligible for the new booster	3%	5%	2%
I don't know if the new formula is effective	7%	5%	11%
I couldn't take time off work to get the vaccine or recover afterwards	5%	5%	2%
I didn't want to experience vaccine side effects	15%	15%	18%
I am not concerned about getting COVID-19	0%	0%	0%
I believe I am currently ineligible for the updated booster	1%	3%	2%
I personally don't wish to be vaccinated with the updated booster dose	2%	3%	2%
I am planning to get it	0%	0%	0%

### Primary Source of Information

47% of participants in 90805 reported they turn to Government/Official sources, compared to 32% in 90813. In 90805, 9% of residents reported private/personal medical sources are where they turn to for COVID-19 vaccine information, compared to 13% in 90813. These rates are comparable to the observed rate of 12% among all Long Beach zip codes. Local radio/TV/newspapers were also frequently reported as sources of information among 90805 and 90813.

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<b>Table 7: Primary Source of Information</b>	Long Beach	90805	90813
Government/Official sources	50%	47%	32%
Private/personal medical sources	12%	9%	13%
Social Media	8%	9%	8%
Personal Internet Research	9%	9%	13%
Local radio/television/newspapers	11%	13%	18%
Information from family and friends	4%	9%	6%
Religious or spiritual organizations	2%	0%	3%
NA	2%	2%	2%
All of the above	0%	1%	1%
Community Members	0%	1%	1%
Life/Work Experience	0%	1%	1%

### COVID-19 Vaccine Positive Influences

Fifteen percent of respondents in 90805 and nineteen in 90813 reported their healthcare provider as a "positive" influence for vaccinating. Family, friends, and employers were also reported as a "positive" COVID-19 vaccine influence among 90805 (17%, 12%, and 15%, respectively) and 90813 (19%, 17%, and 13%, respectively). Family, friends, and healthcare provider percentages as a positive influence were slightly higher in 90813 compared to 90805.

<b>Table 8: COVID-19 Vaccine Positive Influences</b>	Long Beach	90805	90813
Family	17%	17%	19%
Friends	12%	12%	17%
Employer	14%	15%	13%
Coworkers	6%	5%	5%
Schools	6%	10%	8%
Celebrities, influencers, news, or social media	5%	5%	5%
Religious leaders	2%	2%	2%
Doctors or healthcare providers	18%	15%	19%
Government officials	14%	12%	9%
Myself	0%	2%	1%
Community Members	0%	0%	0%
Non-Profits	0%	0%	0%
None of these	3%	3%	3%
NA	0%	0%	0%

### Parents and Childhood Immunization

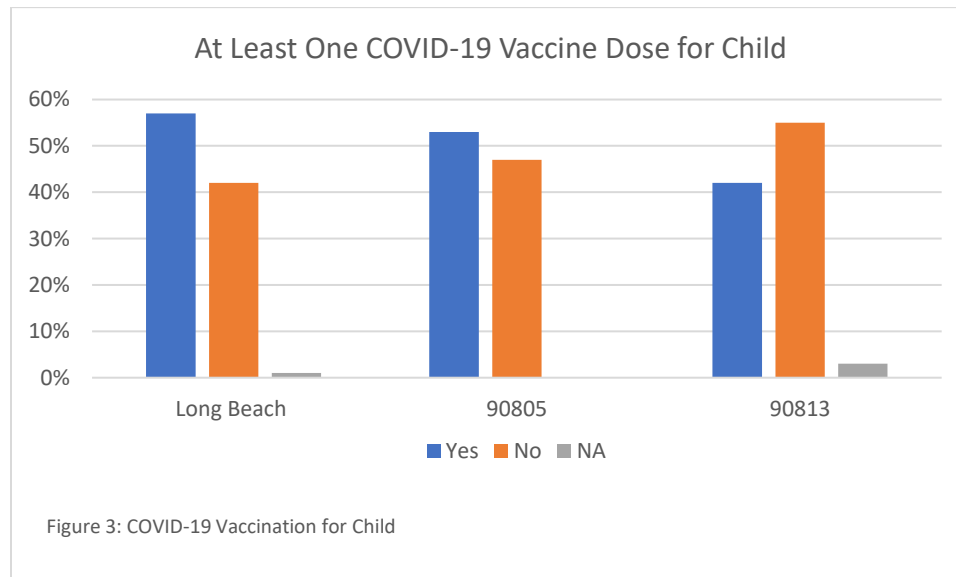
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53% of parents in 90805 "very strongly agree" that childhood immunizations are essential for their child's health. This percentage is consistent with Long Beach as a whole. However, only 36% of parents in 90813 feel routine vaccines are important for their child's health.

	Long Beach	90805	90813
Do not agree	6%	7%	6%
Somewhat agree	18%	27%	21%
Strongly agree	23%	13%	36%
Very strongly agree	53%	53%	36%

### Children COVID-19 Vaccination Status

Over 50% of children in 90813 have not received a single dose of the COVID-19 vaccine. This rate is slightly higher than children in 90805, where 47% of parents have not vaccinated their child against COVID-19.



### Reasons for Parent Not Vaccinating Child Against COVID-19

In 90813, the top reasons parents opted out of vaccinating their children are a lack of government trust (27%), believing their children are too young to be vaccinated (21%), personal choice (24%), and doing their own research (15%). Parents in 90805 reported a mistrust of government/medical authority (13%), believe their child is too young (13%) and that vaccinating their child is against their religion

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	Long Beach	90805	90813
I think they are too young to be vaccinated	15%	13%	21%
It's against my religion to have my children vaccinated	3%	7%	0%
I don't like the vaccine option available to my children	7%	0%	6%
I believe that my children have a medical condition	1%	0%	0%
I do not trust the government/medical authorities with respect to my children's health	16%	13%	27%
My own research tells me that it is not a good idea	12%	0%	15%
I believe it is a choice and I choose not to	15%	7%	24%
No reason really, I just won't let them take it	2%	0%	6%
Not relevant, I am not hesitant to vaccinate my children	48%	53%	33%
My fellow parent does not want them to be vaccinated	0%	0%	0%
I prefer to space out my children's vaccinations	0%	0%	0%
My children are not at risk or in danger due to being unvaccinated	3%	0%	0%
NA	10%	7%	15%

(7%). In 90813, 33% of parents reported not being hesitant to vaccinate their child against COVID-19, compared to 53% in 90805.

### Intervention/Proposed Solution

It is crucial that the Health Department actively works toward building trust in the communities it serves. Mistrust in government/medical authorities was a common theme for individuals not vaccinating themselves nor their children. Unfortunately, scarce data exists examining how local health agencies can increase community trust. One study by Nandyal et al. (2021) explains that building partnerships with trusted community agencies is a "crucial component" for building trust with community members.

The Health Department maintains strong partnerships with CBOs that have the trust of the communities they serve. The Health Department will continue to build on relations with these trusted CBOs by attending events and being present in the community to gain community trust. Anecdotally, community partners have expressed the importance of Health Department members being present at community events. One such partner, Centro CHA, has shared that Health Department employees must be physically present at events they host to help gain the trust of community members. Centro CHA also shared that having consistent support from the same group of individuals will help provide a sense of familiarity and trust between the community and the Health Department. The Health Department is

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partnering with Centro CHA for three back-to-school vaccine clinics this summer. This is just one of the many events the Health Department and Centro CHA will host as they approach vaccine hesitancy in the community, collectively.

The Health Department is also partnering with LBUSD to provide additional back-to-school vaccine clinics for students. This is an opportunity for parents to ask clinical staff about questions/concerns they have surrounding immunization, as well as a chance for Health Department staff to interact with and get to know community members. The trust of the community is foundational for building vaccine confidence and vaccine uptake.

Speaking with a healthcare provider was another common theme identified among individuals who were initially hesitant and later got vaccinated against COVID-19. The Health Department will conduct provider outreach and training to Long Beach providers, sharing their crucial role in their patients' decision to get vaccinated. Providers will also be informed about the reported thoughts and beliefs surrounding immunization of parents in their communities. Providers must have important conversations about immunization (both COVID-19 and routine) with their patients to increase vaccine uptake and confidence. Fisher et al. (2022) describes how "brief but explicit physician recommendation may reduce vaccine hesitancy among individuals who are unsure or do not intend to get vaccinated" (p. 1., para. 17).

Another common theme for not getting vaccinated or boosted among 90805 and 90813 residents is concern regarding the long-term side effects of the COVID-19 vaccine. One possible explanation for this fear is a lack of health literacy. In a study by Kricorian et al. (2022), researchers found that vaccine-hesitant individuals also had a more challenging time understanding scientific information, were more likely to believe vaccine misinformation or disinformation, and felt overwhelmed by complicated language or scientific jargon. To address the fear of long-term side effects, the Health Department will create and implement specific, easy-to-understand vaccine safety information to disseminate to the community. This information will be posted on social media, in high-traffic areas in the community and shared with CBOs for further dissemination to their communities. All correspondence will be translated

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into the four threshold languages (English, Spanish, Khmer, and Tagalog) to ensure adequate language access.

### **Conclusion**

Government mistrust, fear of unknown long-term side effects of vaccines, and belief that vaccines, including COVID-19, are unsafe are all common themes as to why Long Beach residents, specifically parents and those residing in 90805 and 90813 zip codes, are vaccine hesitant. The Health Department must continue to work with trusted CBOs to build community trust. Once trust with communities impacted by vaccine hesitancy is established, the Health Department believes community members will be more receptive to additional interventions to increase vaccine confidence and uptake.

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## CASE STUDY: VACCINE HESITANCY IN LONG BEACH

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<https://www.who.int/news-room/spotlight/history-of-vaccination/a-brief-history-of-vaccination#:~:text=Dr%20Edward%20Jenner%20created%20the,cowpox%20were%20immune%20to%20smallpox.&text=In%20May%201796%2C%20English%20physician,the%20hand%20of%20a%20milkmaid.>