

What are the impacts of COVID-19 on low-income communities in Sonoma County?

A Study by Sonoma State University Students

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Introduction

COVID-19 is an infectious disease that causes many negative outcomes to occur in various different communities. One community that was affected more than others is the low-income community of Sonoma county. With COVID-19 causing stay at home orders and social distancing, many people/businesses of Sonoma county were affected. Impacts like these can have very large effects on low-income families and individuals. Putting people out of work, due to laying off workers, is critical to the decline of the wellbeing of low-income families. We are interested in looking at impacts that COVID-19 has had on Sonoma County. These impacts may include the sick leave/housing crisis, COVID-19 testing/vaccines, health/nutrition/vitamins, and market prices/inflation.

We will present what factors have been detrimental to this population and what resources have been created to present aid to low-income communities in Sonoma County during the pandemic. Included in this paper are interviews, sources, outside research, and other related information that show how COVID-19 has impacted low-income populations in Sonoma County. The reasoning behind this chosen topic is that we have all been/ or know people who have been affected by COVID-19. Since we wanted to focus on a specific population within Sonoma County, we all agreed that the low-income population is a community that has been affected more than others. We chose areas in which we believed were of significant impact on this population from the Pandemic. This study will show our reasoning, methods, data, and analysis of the impacts that COVID-19 has had on low-income communities within Sonoma County. Low-income populations are defined as people who are living at 150 % of the national poverty

level, or are on programs such as medical and CalFresh, or were unemployed without benefits during covid (2022 Federal Poverty Line).

Methods & Methodology

Our research question, “What are the impacts of COVID-19 on low-income communities in Sonoma County?”, was formulated by each of our interests in low-income communities. We added "how COVID-19 has impacted them" because we have been living in a global pandemic for about three years and wanted to gather data on the impacts of COVID-19 on these communities. When brainstorming about the topic question, our team realized that low-income families might have been impacted more severely by COVID-19 than others. Choosing this topic question was also affected by the roles some of our team members have in the community and their observations. We conducted twenty interviews in total that consisted of intense interviewing with professionals and non-professionals in the fields of health and community service providers. The methods used in our research were snowball sampling. Our first step toward our interview research was to help one another in the group find sources for our interviews. Once we found our individuals for the interviews, we gathered our questions so we could begin interviewing. The interviews included sixteen questions for professionals and fifteen for non-professionals. We focused on questions that would give us insight into how covid has impacted the lives of underserved communities. These questions furthered our understanding of how low-income communities were impacted by COVID-19. It led us to understanding more about sick leave/housing crisis, COVID-19 testing/vaccines, health/nutrition/vitamins, and market prices/inflation.

Literature Review

Sick Leave /Rental Assistance in Low-Income Populations

Some of the similarities with the data highlighted that there is indeed a current issue of mental health and economic struggle for low-income populations. A portion of these sources looked into the health and mental outcomes from the COVID-19 pandemic. These articles showed how many more people struggled with mental health and *also how healthy their bodies became*. For low-income communities, this pandemic really affected their ability to buy adequate food that sustains them as the data showed the rise of food prices and medicine at such high levels. **Delete or document** Expenses like food and rent really forced families to make the choice of not being able to go to the doctors because of their financial instability.

One of the articles that highlight the inequality and issues that communities in need face are *Lahound, Raymond. "Do the Families First Coronavirus Response Act (FFCRA) and Coronavirus Aid, Relief, and Economic Security (CARES) Act Apply to Immigrant Employees?" The National Law Review, Apr. 2020.* This article showed how our government has taken some steps in the right direction to help the low-income groups, which a portion of that population also reside in Sonoma County. The issue is that again services for mental health, sick leave, and paid leave are not offered to these people and low-income communities don't have these resources available quickly to all. This creates an inequality gap that the pandemic has made even greater in scope. It's clear to say from these various sources showing us these low-income groups truly needed help.

Poverty and Nutrition

Poverty is heavily linked to insufficient nutritional intake. Nutrition has a clear link to the survival rate for people who have COVID-19. This means that low-income communities could be at higher risk for Covid fatality because they do not have adequate nutrition. Studies have shown that certain vitamins help fight against the Covid virus. There are limited anti-viral drugs for Covid-19 therefore one of the best ways to support patients is to boost their immune system by providing appropriate nutrition. Because of this many people during the Covid-19 pandemic started to eat healthier and be more health aware. However, low-income communities do not always have the ability to practice these healthy behaviors because of economic pressures and other factors such as work vs leisure time, and lack of medical care (Ngan et al, 2021; Akoy 2020; Alves,2021).

Nutrition and Supplementation in Low-Income Populations

Our aim is to find out if low-income populations are disproportionately more likely to suffer worse outcomes of COVID-19 as a result of nutritional/dietary insufficiencies. A report based on a meta-analysis of 134 studies claimed “The hospitalization rates for COVID-19 positive subjects among Native and Latin Americans are higher than that of White Americans which could be attributed to malnutrition” (Frontier 2021). Nutritional Impact and Its Potential Consequences on COVID-19 Severity. They surmise that “A suboptimal diet may significantly affect the susceptibility to COVID-19 infection as well as the downstream consequences

including severity, recovery and the potential for re-infection in different patient populations” (Frontier 2021).

In addition an NIH (National Institutes of Health) study stated “Your immune system needs certain vitamins and minerals to work properly. These include vitamin C, vitamin D, and zinc. Herbal supplements, probiotics, and other dietary supplement ingredients might also affect immunity and inflammation” (Dietary Supplements November 2021).

The following supplements have been shown to support immune health during the Covid-19 pandemic, although most sources say more testing is needed. These studies show a strong correlation between improved immunity, as well as better outcomes of Covid-19 infection; with a healthy diet, good nutrition and supplementation. Experts seem to agree it is best to get nutritional needs met through food but given the depletion of nutrients from soils, along with increased cost of food, and food shortages during the Covid-19 pandemic it is proving especially difficult for those with a lower income.

NAC (N-Acetyl - Cysteine)

A retrospective, two-center cohort study of 82 patients found that patients treated with 1200 mg/d of oral NAC presented significantly lower 14- and 28-day mortality as compared to control groups. Their conclusion: “Oral NAC administration (1200 mg/d) in patients with COVID-19 pneumonia reduces the risk for mechanical ventilation and mortality. However, the report also stated that findings need to be confirmed by properly designed prospective clinical trials” (NAC June 2021).

An additional report by the NIH (National Institutes of Health) stated: “ NAC

might help reduce the symptoms of bronchitis, chronic obstructive pulmonary disease, and similar disorders that affect breathing” (Dietary Supplements November 2021). Also one of the authors cautioned taking NAC with nitroglycerine as it might cause low blood pressure and severe headaches. It is recommended to consult a physician before adding any dietary supplements.

Supplementation may be difficult in the United States as the federal government has responded to the success of NAC in Covid-19 by requiring it to be pulled from over the counter shelves as they plan to make it an FDA approved drug, available by prescription only. However, some natural pharmacies such as Pharmaca Pharmacy will likely continue carrying it for some time as their supply comes from Canada.

The aforementioned evidence supports the short term use of NAC. Other sources report benefits of using NAC for Covid-19 symptoms and duration, however it is not commonly presented in mainstream media, especially in non-English media. Sources tend to be scholarly reports resulting in limited exposure in low-income populations.

L-GLUTAMINE

A study of 60 Covid-19 patients of similar age, gender and clinical status were split into 2 groups; the first 30 were supplemented with L-Glutamine while the second 30 were not. The study found that hospitalization time was 10.4 ± 1.9 days in Covid-19 without L-Glutamine group and 8.9 ± 1.8 days in Covid-19 with L-Glutamine group. Only one mortality was observed, in the group without the L-Glutamine.

Additionally, In the Covid-19 group which did not get supplementation of L-glutamine, four patients required ICU treatment, though no one in the other group did. Their conclusion:

L-Glutamine boosts the immune system especially by inhibition of inflammatory responses, and that “adding L-glutamine to the normal nutrition in the early period of Covid-19 infection may lead to a shortened hospital stay and lead to less need for ICU” (Dietary Supplements November 2021).”

L-glutamine supplementation could be a support to the body during time if Covid-19 infection, and beyond as it has other supportive benefits for the immune system. L-glutamine is more readily available, and more affordable than some other therapies. However, L-glutamine, like NAC, is not common knowledge among low-income populations as it is not a standard of care regime physicians follow and also not often discussed on mainstream media. However information on uses and dosage is readily available online in credible scholarly reviewed sites such as the National Institutes of Health and PubChem.

VITAMIN D & DISPARITIES AMONG POPULATIONS

An observational study titled: “Study suggests high vitamin D levels may protect against COVID-19, especially for Black people” found that “black individuals who had levels of 30 to 40 ng/ml had a 2.64 times higher risk of testing positive for COVID-19 than people with levels of 40 ng/ml or greater. Statistically significant associations of vitamin D levels with COVID-19 risk were not found in white people” (Frontier July 2021).

These findings seem to be supported by a meta-analysis (An examination of data collected from numerous studies to correlate common findings) of epidemiological studies used to track diseases and preventions, which reported: “ An inhibitory and antiviral activity of vitamin D in human nasal epithelial cells infected with SARS-CoV-2S has been reported and the regions with the highest rates of COVID-19 mortality in the United States are those with a high

prevalence of vitamin D deficiency. Furthermore “In Chicago, more than half of COVID-19 related deaths occurred in African-American individuals known to have vitamin D deficiency (Frontier July 2021).

A separate study recently found that more than 80% of patients diagnosed with COVID-19 were vitamin D deficient”. The report went on to say that “Vitamin D can be obtained through diet or supplements, or produced by the body in response to exposure of the skin to sunlight but most individuals, especially people with darker skin, have lower levels of vitamin D” (Frontier/Meltzer, Jan 2022).

Another study on Vitamin D reported “Vitamin D deficiency (defined as a serum concentration of 25-hydroxyvitamin D ≤ 20 ng/mL) is common in the United States, particularly among persons of Hispanic ethnicity and Black race. These groups are also overrepresented among cases of COVID-19 in the United States” (Vit D study #2, April 2021).

Vitamin D is one of the most studied nutrients (actually a hormone) in relation to Covid-19. A report published by the NIH (National Institutes of Health) seems to support supplementation of vitamin D stating: “Vitamin D might help protect against some respiratory tract infections, especially in people with low vitamin D” (Vit D study #2, April 2021).

Interestingly, a genetics study done in November 2021 used single-cell RNA-sequencing to examine gene expression patterns showing that individuals of European ancestry had an increase in type I interferon pathway activity during early influenza infection. Luis Barreiro, PhD, Associate Professor of Medicine at University of Chicago reported that “In COVID-19, for example Increased pathway activation was correlated with a greater capacity to hinder virus replication and limit viral replication... and Inducing a strong type I interferon pathway response

early upon infection stops the virus from replicating and may therefore have a direct impact on the body's ability to control the virus" (Genetics November 2021).

Furthermore " difference in immune pathway activation could contribute to disparities in influenza outcomes between different racial groups; Non-Hispanic Black Americans are more likely to be hospitalized due to the flu than any other racial group". The researchers suggested environmental and lifestyle factors could play a part in the difference between racial groups which could be influencing gene expression and immune response. "There's a strong relationship between the interferon response and the proportion of the genome that is of African ancestry, which might make you think it's genetic, but it's not that simple," said Barreiro. "Genetic ancestry also correlates with environmental differences. A lot of what we're capturing could be the result of other disparities in our society, such as systemic racism and healthcare inequities. Although some of the differences we show in the paper can be linked to specific genetic variation, showing that genetics do play some role, such genetic differences are not enough to fully explain the differences in the interferon response." (Genetics Nov 2021).

So how much Vitamin D should one take? A randomized controlled trial of ICU admission and death for 76 people with and without in-hospital vitamin D supplementation reported that patients not treated with vitamin D had 33.3 times the risk of ICU admission compared to patients treated with vitamin D. As reported by Dr Peter Attia, multi degree holder and co-founder / President of NuSI, the Nutrition Science Initiative (Vitamin D, January 2021)

Attia also had the following to say: "...supplemental vitamin D and naturally-derived vitamin D from the sun are not the same thing. Humans are designed to receive their vitamin D from cutaneous synthesis and it may be the preferred method of obtaining vitamin D. So supplementing doesn't mean giving up on grabbing a few rays of sunshine if you can. More

concretely, there is virtually no risk to supplementing, say, 5,000 IU/day” (Vitamin D, January 2021)

This seems to be a useful report as sun exposure is free and easily attained by most. If daily sun exposure is unattainable then Vitamin D supplements are commonly available at drugstores, and even grocery stores for a reasonable price. In some cases a physician can write a prescription for Vitamin D as it is standard of care for those with low vitamin D levels, and easily correctable with supplementation. In addition, if one has limited funds, low - income state insurance in California, such as medical and Partnership of California will often cover it.

QUERCETIN & ZINC

Doctor Rhonda Patrick, cell biologist and researcher stated quercetin has been reported to block the entry of SARS-CoV-2, the virus that caused the original SARS outbreak in host cells in a Petri dish. “The literature is pretty supportive of quercetin having antiviral capacities when it's cultured with targeted cells and a broad spectrum of pathogens, including rhinoviruses, adenoviruses, and coronaviruses” (Zinc/Quercetin, August 2020).

Also reported was an additional in-vitro study with cultured cells that showed quercetin does seem to have zinc ionophore activity. She went on to say that “polyphenols such as quercetin can transport zinc cations across the plasma membrane independently of plasma membrane zinc transporters and ...the limited amount of literature showing it does have antiviral activity, particularly has been shown to have antiviral activity against the SARS-CoV-1 virus”. (Zinc/Quercetin, August 2020).

Also reported by the NIH seems to support Patrick’s hypothesis stating: “some studies have used doses of 400 to 600 mg/day of quercetin for several weeks, and suggest that quercetin

might reduce the severity of disease and help patients recover somewhat quicker, but more research is needed (Dietary Supplements, November 2021). It has been noted that quercetin is better used by the body when taken with a fat source like a meal.

ZINC

Zinc may be helpful for the covid-19 virus based on some studies which have shown that the zinc status is a critical factor that can influence immunity against viral infections. In one report patients infected with torque teno virus (TTV) were given an injection of high dose zinc which showed it enhances the immune response. Also low-dose supplementation of zinc given with selenium improved the humoral immune response to influenza vaccine and increased antibody titres (Frontiers Study, July 2021). This seems to support that Zinc could be beneficial in supporting the efficacy of Covid-19 vaccination.

Also reported was that zinc inhibits SARS-CoV-2. Zinc may suppress ACE2 activity and regulate improved antiviral activity, zinc also has an anti-inflammatory role and modulates regulatory T-cell functions. “This combination of actions may be important in sequencing the cytokine storm present in subjects with COVID-19” (Frontiers Study, July 2021). The cytokine storm has been a main cause of complications in Covid-19 infection so supporting the body’s immune response and zinc may be beneficial for that.

VITAMIN C

A meta-analysis report of 134 studies found that “Vitamin C promotes the repair of the damaged tissues and high-dose intravenous vitamin C has a beneficial effect in patients with virus-induced ARDS which results from severe lung damage. Since ARDS is evident in many

subjects with severe COVID-19 it supports the concept that vitamin C may be useful in the treatment of COVID-19” (Frontiers Study, July 2021).

Vitamin C is a commonly studied nutrient, reports of benefits are common in print, online as well as in television; especially in relation to immune function. Vitamin C can be obtained from a healthy diet yet it is a water soluble vitamin thus it can be depleted quickly. If unable to get the proper vitamin C levels through diet, low cost supplementation is readily available although adding several supplements to one's nutritional plan may be somewhat difficult to sustain over a long period of time for low income populations.

CBD

CBD can be helpful in the Covid-19 pandemic. Aside from its common use as an anti-anxiety, which many could benefit from at this time, it has indications for immune health. The University of Chicago has found evidence that cannabidiol (CBD), a product of the cannabis plant, can inhibit infection by SARS-CoV-2 in human cells and in mice. They report that CBD has anti-inflammatory effects, so we thought that maybe it would stop the second phase of COVID infection involving the immune system, the so-called ‘cytokine storm’ (CBD, January 2022; Marsha Rosner, PhD, Charles B. Huggins).

The study showed that CBD did not affect the ability of SARS-CoV-2 to enter the cell. Instead, CBD was effective at blocking replication early in the infection cycle and six hours after the virus had already infected the cell. They go on to report that “high concentrations of CBD almost completely eradicated the expression of viral RNAs”. Also reported was that real world data shows patients taking CBD test positive for COVID-19 at lower rates: (CBD, January 2022).

This proposed therapy, as promising as it may seem, also has its limitations. Among them is the lack of a good standardized product; including factors such as quality control and strain types as well as inconsistencies in dosing recommendations. Other limitations include issues of availability and the stigma which may be associated with using CBD. It is likely these things will be lesser issues for some more experimental types yet cost is a serious consideration.

If one aimed to have all nutritional tools including healthy food and supplements research shows benefit from during the pandemic the estimated cost of supplements would start around \$150 a month per person; in addition to about \$200/ month for food. The data shows an inability to budget for that in low-income households, reflecting a greater negative impact of Covid-19 on this population. However, some well studied supplements such as Vitamin C and Vitamin D can be acquired for pennies a day if food sources of these nutrients are unattainable.

Sick Leave /Rental Assistance in Low-Income Populations

The impacts of COVID-19 have been devastating to low-income communities, specifically one of the groups most affected were the Latinx population. What we see within this population is the economic and social struggle these people face, one of the major issues that affect these people is the topic of paid medical and family leave. These people work so many hours and do jobs that many people don't want in this country as these range from being a janitor, a gardener, or a field worker. In the article *Racial and Ethnic Disparities in Access to and Use of Paid Family and Medical Leave: Evidence from Four Nationally Representative Datasets*, (2019)The U.S. Department of Labor details how lacking and flawed our paid leave system is. They explain how “ Overall, we uncover evidence of paid-leave disparities by race and ethnicity, although this heterogeneity is often at least partly explained by differences in other demographic

characteristics. Across the various types of leave considered, the most consistent finding is that Hispanic workers have lower rates of paid-leave access than their White non-Hispanic counterparts. These differentials—in access to any paid family or medical leave, as well as to specific types of leave, such as paid parental leave and paid leave to care for a sick family member, for one’s own illness, and for eldercare—are sizable in the raw data”(U.S. Department of Labor).

The Hispanic/LatinX population as explained in this data are shown to have the least amount of opportunities for any type of paid or sick leave, this means they have to work in sick conditions. COVID-19 directly affected the Latinx population because it showed the flawed system that is in place, with this disease many of these workers didn't have any opportunities to have days off because due to medical reasons

Now that we have an understanding of the data we can focus on seeing if due to the pandemic we have seen any resources being allocated to low income communities?. The article “Do the *Families First Coronavirus Response Act (FFCRA)* and *Coronavirus Aid, Relief, and Economic Security (CARES) Act Apply to Immigrant Employees?*”

The National Law Review states that “ Eligibility for benefits under both the FFCRA and CARES Act are applicable, in most circumstances, to all employees, including those who are not citizens or lawful permanent residents of the United States. These protections extend to immigrant employees in the United States through the sponsorship of a U.S. employer, as well as those who may or may not have lawful authorization to work in the United States”(Lahound). This definitely shows that low-income workers who are of legal and nonlegal status receive some form of assistance from the government. This definitely is something that can be taken in the right direction but more work needs to be done. Many of these people still struggle with the

aftermath of the pandemic and need assistance in knowing they have rights when it comes to their job and their medical/health benefits.

Many low income populations face health and medical issues because of the lack of paid sick leave or medical benefits from their employers. Looking at the Latinx population in the United States, it's shown that this racial group has been exploited for its labor and the work they do in America. The problem is that employers know they can especially target those who are not legal and do as they please. As generations of Latin X have lived in the United States and specifically here with a larger population in Sonoma County, it's clear to say that the pandemic really showed how much these people are living on a day-to-day basis. The article *Latinos Face Disproportionate Health and Economic Impacts from Covid-19 (2020)* by the Center for American Progress explains how “ It is hard to say with certainty when the economy will regain a sense of normalcy. This means that workers—especially Latino workers and other workers of color—will continue to face obstacles to maintaining both physical and financial security. Since Latinos have been disproportionately negatively affected in the U.S. labor market with respect to earnings, as well as in terms of COVID-19 deaths”(Zamarripa and Roque 2021).

This work here proves that among these low-income populations, the Latin x community is the ones who face much of the hardships. These people work so hard and with this pandemic, we see how upper income people were able to become more healthy, while on the other hand so many of these low-income families struggle on a daily basis to survive and provide for their families. If not dealt with this then it will fuel the cycle of poverty and affect these families for the future.

COVID-19 has been hard on many families during these past few years. Many families have not received enough help during these times and by help we mean sick leave. People

working 9 to 5 jobs are offered a sick leave but other people who have second jobs. for example, they don't receive as much sick leave as they should if someone is sick, but they have two jobs they are forced to go to work because they cannot risk not receiving money because that means that they will not have enough money to provide for their family or pay for the rent. It's not only about sick leave but it's also about the domino effect that this causes if someone doesn't receive sick pay for being sick they are forced to work under circumstances that can make other people sick. They are being forced to work in a condition that they shouldn't have to be receiving pay for this. Farmworkers are seldom able to receive sick leave and are being forced to work for the bare minimum and because if they don't work they are unable to provide for their families. Like mentioned before a domino effect occurs, no work means no pay no pay means no food on the table or no money to pay for rent then this causes extreme cases of homelessness.

Inflation during COVID-19 Pandemic

Market prices are affecting everyone since the numbers began to skyrocket at the starting of the pandemic. Inflation, a general increase in prices and fall in the purchasing value of money, was already a factor in the economy prior to the pandemic. Due to the stay at home orders, many businesses had to shut down or increase prices to stay in business. This had an effect on the amount of money people had to spend on groceries and other necessities needed by people. Low-income community members in Sonoma County were affected heavily due to this. In one of our interviews conducted with one of the members of the low - income community, the participant was asked about their experience with inflation during this pandemic. The participant mentioned how the rising market prices made it harder for them to get affordable meals. They

were not able to purchase fresh produce and had to eat cheap frozen meals. This transition is resulting in negative life satisfaction for people in the low_income community. Although prices for food are high, local organizations within the community and government aid are helping the low income community by supplying food and supplies. One of our participants mentioned how they were being supplied meals by their local church.

Increased food/retail prices are one part of the total impacts on the community since the pandemic hit. Another factor playing a part is supply shortages and supply/demand.

Supply and Demand & Shortages

The information obtained from the articles on shortages and inflation have shown that this has been an issue worldwide and that the United States has not been the only country suffering from the results of the pandemic.

According to the World Poverty Clock (Kharas 2020), poverty after COVID-19 came into effect, increased drastically. As a result, there have been issues with many facets of people's lives. There has been an increase in needs and thus a need for financial assistance from the local and federal government.

We have seen how community programs have been created to help aid low-income populations, but we have also seen a decrease in people working to achieve this goal. According to an article written by Greta Mart for Norcal Public media, Greta spoke with Sonoma County spokesperson Paul Gullixson regarding the topic of staffing shortages. "Gullixson reiterated that the biggest obstacle right now is having enough healthy people to work...and that's also true at the county's hospitals." (Mart 2022).

A large population affected by COVID-19 is impoverished latino people in Sonoma County. According to Sonoma County's health officer Dr. Sundari Mase (Espinoza 2020) "The data points to the structural inequities across our county that communities of color experience, such as lower incomes, lack of access to health care, inadequate, crowded housing conditions, including having multiple families in one home due to the high cost of living." The need for more housing options for low-income people has been an issue that arose before the pandemic but has become more noticeable with the recent surge due to COVID-19. We see more and more homeless people in Sonoma County each day which raises the question, why is this happening and what can we do to create more opportunity and affordable housing?

Vaccines and Tests

Information obtained about COVID-19 Test and Vaccine Access were obtained from articles and interviews conducted in Sonoma County. These articles and interviews helped shine a light on the low-income communities' challenges. Challenges that many others would not see nor have.

One individual interviewed was Amanda Hernandez, a community worker with La Plaza and Proyecto CURA. "Access to information and resources were limited and not being equitably distributed. Throughout the pandemic underserved communities have continued to bear the brunt of the impact. Community members working in the service industry, fields, domestic workers and day laborers have been those most impacted, having to work in unsafe conditions without proper PPE or being forced to work when they are sick with COVID due to their employers making them or not having any sick pay to take time off." Amanda's perspective on COVID-19

in low-income communities is very important. She has been able to see the challenges these community members have faced day to day.

Amanda continues by stating “Getting access to free tests has also had a significant impact as well as getting people access to vaccines while not requiring them to leave work.” Amanda was also asked what CURA has done to help underserved families with the impacts they are facing during this pandemic. Her response was, “CURA(Community Urgent Response and Aid) came into existence due to the pandemic and a need for an organization to bring together other community based organizations and specifically work to provide information and resources to the community as well as emergency financial assistance. Due to the need CURA was created in October 2020. Since then CURA has evolved based on what the needs of the community have been. In the beginning it was very much an emergency response and supporting people financially if they were sick with COVID. It has evolved to provide information and connections to testing and vaccines as well as other community resources. A lot of the work has been getting community resources out into the community in working with our partners, but it has also been a lot of advocacy in making sure the needs of the community are put at the forefront of those making decisions.

From October 2020 to March 2022 we have been able to distribute \$8,421,600 directly into the hands of 4,638 community members.” CURA has been able to do so much in such little time for the entire county of Sonoma. This organization has been able to reach over 19,000 individuals with information regarding COVID-19, testing and vaccines. Furthermore, according to organizations like CURA and La Familia Sana since the beginning of the pandemic there has been a lack of vaccine and testing information. Community and community based organizations (CBO’s) have been the ones advocating for information and better accessibility.

The majority of the time it has been CBO's taking this on in order to get the information out the the communities they serve to ensure they are able to be healthy and safe. Mayra Arreguin, a Senior Outreach Advocate at La Familia Sana stated "La Familia Sana has helped well over 1,000 people, with COVID-19 vaccines and tests. We have done Outreach all over Cloverdale and Geyserville, especially in low-income communities." La Familia Sana has hosted over 10 vaccination clinics in Northern Sonoma County where a large number of underserved individuals such as low-income communities have been able to get vaccinated. In total, according to Mayra, La Familia Sana has helped vaccinate over 1,000 people, many of which were low-income individuals.

In late 2021, Cloverdale, CA which is at the county line with Mendocino County, COVID-19 testing services were just beginning. According to the article "Getting COVID-19 testing, vaccination resources can be a struggle in Cloverdale" it took a whole village to get testing in Cloverdale. Journalist Cavazos states, "For Cloverdale, located at the northernmost tip of Sonoma County, access to COVID-19-related resources like readily available testing has been difficult. Slowly but surely, community leaders are working to make strides to make both testing and vaccination more accessible, but say that there's still more work to do." The article features La Familia Sana, CUSD School District, Cloverdale Senior Center, and a handful of other partners. Together all these individuals were able to work with the Office of Equity in Sonoma County to bring testing to this very underserved town.

All this information helped reveal that low-income communities in Sonoma County, especially the North end suffered lack of information about COVID-19, tests, and vaccines. However, it was also revealed that community workers and advocates have been able to provide a lot of these communities with information and resources.

What are the impacts of COVID-19 on low-income communities in Sonoma County?

Results of Interviewers

The interviews consisted of a lot of the same data between our interviewees. In one interview, there was a question regarding how this individual's organization has contributed to making COVID-19 resource information more accessible to underserved communities. They responded with, "Housing resources offered from the City of Santa Rosa can be applied for online and with assistance from staff if community members need help accessing. For outreach efforts, please check with the City's Communications team." There are quite a few resources for assistance to these low-income communities in Sonoma County. These organizations do everything they can to support anyone and everyone in this community.

Another question that was in an interview asked if the interviewee had seen a rise or decline in low-income community programs in Sonoma County during the pandemic. They responded, "Since the on-set of COVID-19, there has been an increase in programs and resources available to the community." The gathered data explains that organizations are doing what they can to support low-income communities; sometimes, resources may be too hard for some individuals to find.

In an interview with a dietician, information gathered stated that there was an increase in help being given to low-income communities. The dietician explained, "I imagine there are a lot of programs being put into place. We do the COVID vaccinations and testing here for well, that

testing only for our patients but vaccinations for the community. You know that with patients, if I'm worried that they're not getting enough good nutrition from their diet for whatever reason, then we offer some. I try to keep healthy food here at the clinic for them. There's a grant. Grant with the food bank. I go pick it up." This quote dramatically explains how health organizations try to support individuals who don't have access to a good nutritional diet. This data also explains that this organization has access to vaccinations for everyone in the community.

In an interview with a non-professional interviewee, they explained that they hadn't received much support from their community during the pandemic. They stated, "Everyone is going through the same ups and downs." They also explained that they want to see their community get better by having more businesses come back and for people to get their jobs and livelihoods back. If this individual knew more about the organizations that are out there in his community, he would go to them for support. Another non-professional interviewee explained that he worked in fast food and was in between jobs; he stated that his church supported him a lot during COVID and offered meals to them when they couldn't afford it.

This individual also stated their work encouraged them to get vaccinated and gave them information on where to go for it. This data gathered that individuals from low-income communities do have the resources for help, and some organizations might need to make their support more known so that everyone can seek the support they need. In an interview with a non-professional, the data showed that a big issue in low-income communities during COVID was that many people were losing their jobs. The interviewee stated, "A lot of people lost their jobs and got laid off. Not everyone could get unemployment. At my job, we would go through extremely high spikes, and then the COVID cases would decline, and then a new variant would

come out. Then they would spike again, and it was just really a constant opening of businesses and then kind of closing back down or limiting services. I have noticed there are people who are struggling more financially out in the world, or did struggle during COVID." This data explains that people lost their jobs, and this was due to a staggering line of cases.

Through this method of interviewing, our team was able to find very consistent data. We found that many of the answers received through the interviews conducted had a lot of similarities. From low-income individuals to professionals in the health and community fields, their responses were consistent with one another. We found that the impact of COVID-19 on these low-income communities was tremendous. Something that gave the team hope was that we saw that organizations in Sonoma County are doing everything they can to help these low-income families.

Conclusion

The findings from the various research highlight how over the course of the pandemic low-income families struggled the most in their economic and mental state as seen in Sonoma county. It is clearly shown through the sources and data found that these groups are being pushed away from the help that the government is not responding with. During the COVID-19 pandemic it was shown that upper class populations who had access to a variety of nutritional food and vitamins were much better with dealing with the virus compared to low income populations. Due to these viruses not having a direct cure many of these low income populations dealt with this pandemic much more harshly as they couldn't afford the variety of vitamins and adequate food needed to be constantly healthy.

With sick leave/rental assistance it became extremely stressful for the low income populations to have to deal with their jobs not having paid sick and family leave. This meant that these people had to go to work in sick conditions as they did not want to risk their jobs being taken away from them, this is extremely unfair and unacceptable.

Supply and demand with shortages made it extremely difficult for this population. An increase in needs, meaning a need for financial assistance from the local and federal government. These high conditioned demands are leaving people homeless and making it difficult for anyone to live a healthy life. Information on vaccines and tests were not equitably given to low income communities. How they weren't given the choices to stay home from work they were forced to work even when sick with COVID. They didn't have the access to the information nor the health access for the vaccine and tests. Making it difficult for low-income populations to focus on their health and get the help they deserve.

Information about vaccines and tests were not distributed equally to low income populations as many of these individuals did not have access to COVID-19 testing. Many of these members of the low income population did not have resources or information distributed to them which lead to this gap of knowledge of the virus but also not having the opportunity to know if testing and vaccination sites were open to them.

Overall, these are individuals who are hardworking and want to provide a good path for their families. They work paycheck to paycheck all day long. It's important that communities find the supplies and offer help that these low-income populations need. Though there are organizations who work hard to support low-income individuals as much as they can, more can still be done. Due to all these obstacles, the low-income populations of Sonoma county continue to struggle.

Bliss Edwards, Ariele Dwyer, Luis Ferreyra, Neidi Calvillo, Valentino Battaglini, Gabbi Cozzolino, Cristal Garcia, and Axel Garcia Ayala are students at Sonoma State University doing research in Investigative Sociology class Soc 336 under professor Peter Phillips.

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INTERVIEW GUIDES

Interview Guide for Low Income Community Members

- 1.) Can you tell me about yourself?
- 2.) Are there any changes to your household that you've noticed during COVID-19?
- 3.) How has your community supported you and your family during this time?
- 4.) What kind of information on vaccines and tests have you gathered for yourself?
- 5.) Have you personally felt challenged in any aspect of your life during the pandemic? If so, how?
- 6.) Have your eating habits changed during the pandemic? If so, how?
- 7.) Do you use any food stamp or pantry food bank during the pandemic?
- 8.) What are the major challenges you have witnessed in underserved communities during this pandemic?
- 9.) What do you think about the equity during the pandemic?
Do you have anyone else who has been affected by outcomes of COVID-19 ?
- 10.) What possible solutions would you like to see happen in your community?
- 11.) Is money a barrier for adequate food nutrition vitamins Etc or was it?
- 12.) Are you a homeowner or do you rent? What is your primary source of income and are you head of household?

- 13.) Do you feel that the pandemic has affected your mental health? Why or why not?
- 14.) Has raising market prices directly affected you during the covid pandemic if so how?
- 15.) Is there a story you would like to share revolving around covid-19?

Interview Guide for Professionals

- 1.) Can you tell me about yourself and briefly describe your background?
- 2.) What have been the greatest changes to low income people of Sonoma County during the pandemic that you have noticed over the past two years?
- 3.) Do you find that there was an increase of socio-economic help being given to families during this time?
- 4.) Have people reported facing barriers in preventing or treating Covid due to insufficient income?
- 5.) What are the major challenges you have witnessed underserved communities face during the pandemic?
- 6.) Have you noticed a lack of equity in Vaccination Clinics and Testing Sites?
- 7.) Do you find that low income populations are more likely to have pre-existing conditions due to nutritional deficiencies?
- 8.) How have you or your organization contributed to making COVID-19 Resource information more accessible to underserved communities?
- 9.) What information have you yourself gained on COVID-19 tests or vaccines?
- 10.) Have more jobs offered sick leave for low income communities since the start of the pandemic?

- 11.) How has rental assistance helped families who have been affected by the pandemic?
- 12.) Have more low income communities asked for help with sick leave during the pandemic than in the past?
- 13.) Have you seen a rise or decline in low income community programs offered in Sonoma County during the pandemic? Please explain.
- 14.) Do you think there will be long term financial effects of the pandemic on individuals in Sonoma County?
- 15.) Do you think that there is an increase in the homeless population of Sonoma County during the pandemic?
- 16.) Do you feel that homeless is a direct reflection of the lack of low income housing offered for these individuals?