Riverside University HEALTH SYSTEM

Public Health

in affiliation with

HARC

HEALTH ASSESSMENT AND RESEARCH FOR COMMUNITIES

Riverside County Public Health COVID-19 Needs Assessment 2021

Contents

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- Erin Curlee
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- Dianne Leibrandt
- Kevin Meconis
- Ryan Natividad
- Caitlin Storm

This project was supported by Epidemiology and Laboratory Capacity Enhancing Detection funds, which expands upon previous COVID-19 awards and is provided by the Centers for Disease Control and Prevention by way of the Paycheck Protection Program and Health Care Enhancement Act Response Activities for Cross-Cutting Emerging Issues. These funds provide critical resources to local health departments in support of a broad range of COVID-19/SARS-CoV-2 testing and epidemiologic surveillance related activities, including the establishment of modernized public health surveillance systems.

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Two local artists contributed artwork to this report, Consuelo Marquez and Darren Olivares. Learn more about them in Appendix A, Artist Bios.

Finally, HARC would like to thank the Riverside County residents who took the time to respond to the survey. Without you, this knowledge would not have come to fruition.

EXECUTIVE SUMMARY

Introduction

This report summarizes a survey conducted on COVID-19 attitudes towards the virus and vaccination as well as the needs of Riverside County adults. This project was funded by Epidemiology and Laboratory Capacity Enhancing Detection funds, which expands upon previous COVID-19 awards and is provided by the Centers for Disease Control and Prevention. The present report was developed by HARC, Inc. on behalf of Riverside University Health System – Public Health (hereafter referred to as RUHS – Public Health).

Methods

HARC and RUHS – Public Health worked together to create the survey content. Many questions were developed by HARC and RUHS staff, while others were pulled from existing sources and then modified or retained with the original content. HARC conducted a pilot study to test the survey and assess which data collection method would be best able to maximize response rates. Based on the pilot test, the full study was conducted via address-based random sampling. Specifically, paper surveys in English and Spanish were mailed out to 40,000 residential addresses across Riverside County with a $2 pre-incentive, a pre-paid return envelope, and the promise of a $25 Visa card upon completion and return of the survey. Initial invitations were sent out in September 2021, reminders were sent to non-responders in October. Data collection was closed in November. The final sample size was 9,231 participants, or a response rate of approximately 21.5%.

Data was weighted to ensure true representativeness of the adult population of Riverside County. For context, this data was collected during a time when all adults were eligible for vaccines; Delta variant was surging, and Omicron variant had not yet become common.

Results

Demographics

The study demographics, especially after weighting, matched well to the overall demographics of Riverside County in the latest Census. Approximately half of participants were female, and ages ranged from 18 to 98 with a median of 45. About 46% of participants were Hispanic/Latino, 7% of participants identify as Black/African American, 8% identify as Asian, 2% identify as Native American, and 9% identify as multi-racial. The median household income was $72,000, 14% of participants are living below the poverty line while another 17% live between 100% and 200% of the poverty line. Approximately 10% of participants identify as homosexual, bisexual, or questioning. Participants came from across the County and were reflective of where the overall population is located.

COVID-19 Attitudes and Behaviors

Participants were asked to describe their greatest fear related to COVID-19; common themes were fear of dying, getting sick, fear of a loved one getting sick, and fear of hospitalization.

COVID-19 had a large impact on social life and work/school participation, less of an impact of physical health. Common impacts of COVID-19 included worry about friends and family (61%), fear of getting sick (50%), and anxiety (50%). Many participants are still avoiding travel to avoid getting infected. Approximately 42% of participants worked from home at least somewhat during the pandemic. Approximately 12% of participants are still experiencing loss of savings or retirement.

Many participants had to delay healthcare or completely go without it because of the pandemic. For example, 34% of people did not get dental care because of the pandemic; the rate is 28% for medical care and 12% for mental healthcare. Seniors were significantly less likely to delay getting care than younger adults.

COVID-19 Diagnosis and Treatment

About 22% of participants have tested positive for COVID-19. Of these, about 6% had to spend a night in the hospital due to COVID-19, and 51% of those were housed in the ICU. Most who have tested positive have regained their health, although 16% are still recovering. Approximately 60% of those who have recovered took a few weeks (1 to 4 weeks) to recover.

COVID-19 Vaccine

Most participants (56%) believe that the vaccine will protect them “very much” from COVID-19. However, 8% believe it would not protect them at all. About 39% of participants have experienced a COVID-19 vaccine requirement at work or from friends/family. About half of these indicated that the mandate had no impact on their behavior (many because they had already gotten the vaccine), while others said it caused them to get vaccinated, follow COVID-19 protocols, and be less social.

Participants were asked whether variants like the Delta variant influenced their feelings about the COVID-19 vaccine. Most participants (66%) said the rise of variants had no impact on how they felt about the vaccine, 3% said it made them want the vaccine less, and 32% said it made them want the vaccine more.

The majority of participants (83%) were fully vaccinated; 2% were partially vaccinated, 5% were unvaccinated but planned to get the vaccine, and 10% were unvaccinated and had no plans to get vaccinated.

Those who were not vaccinated were asked why they don't plan on getting the vaccine. The most common response was worry about the side effects/allergy concerns (52%), followed by the desire to wait longer and see what reactions others have (44%) and concerns about it being a new type of vaccine (mRNA; 39%). Nearly a third (32%) stated that their reason for not getting vaccinated was that they do not trust the government.

People who have been vaccinated were similarly asked to report on what motivated them to get vaccinated. Most common themes included to protect themselves, to protect family/friends, and to protect others. Most (58%) received the Pfizer vaccine, followed by Moderna (39%). Most people who have been vaccinated (67%) are "extremely likely" to recommend the vaccine to others; at the other end of the spectrum more than 4% are "unlikely" or "extremely unlikely" to recommend it to others. Residents who experienced side effects (2.1%) were significantly ($p < .05$) more likely to report, "extremely unlikely" in recommending the vaccine, compared to those who had no side effects (1.2%).

About half of people who've been vaccinated (52%) experience side-effects/symptoms after their shot; most reported fatigue, pain at the injection site, fever, and headache.

Half of participants (51%) are "very confident" that the vaccine is being distributed fairly; however, 14% don't know and 8% are either "not too confident" or "not at all confident". Those with concerns about fairness were then asked how the process could be improved; many mentioned the importance of making the vaccine available to vulnerable populations and underserved communities.

Disproportionate Impact of COVID-19 on Communities of Color

Most participants "somewhat agree" or "strongly agree" that people of color are facing more of an impact of COVID-19 than Whites—this includes both financial/economic impact and health impact. However, about 12% strongly disagree with this idea.

COVID-19 Information Seeking

The most common source of COVID-19 information is news networks, followed by the internet. The most trusted source of accurate COVID-19 information is also news, followed by medical and health professionals, governmental agencies, and family/friends. Hundreds of respondents indicated that they do not trust information from anyone. When asked how

much they trust information from members of their own community, 47% said "moderately". At the extremes, 15% trust information from their own community "not at all" while 3% trust information from their own community "extremely".

COVID-19 Resources Accessed

About three-quarters of participants (76%) received a stimulus check. Other resources that have been tapped include prescription delivery, unemployment insurance, and food banks/delivered meals.

Knowledge of Public Health Efforts During COVID-19

Most participants were aware that RUHS – Public Health had opened vaccine sites and testing sites. There was less awareness of RUHS – Public Health's other activities; 28% wished they'd known about mask distribution, 20% wished they'd known about information to support small businesses, and 20% wished they'd known about food assistance/Great Plates. When asked what RUHS – Public Health could've done differently, most participants were unsure or stated that RUHS – Public Health did a good job. A few mentioned providing more/better information, more public outreach/education, and enforcing/expanding mask mandates. When asked how much they trust local government such as County Public Health departments, most participants said either "a moderate amount" (48%) or "a lot" (25%). Only 8% said "not at all".

Conclusion

This report provides information to inform future efforts of RUHS – Public Health and others in the pandemic response. For example, future efforts to educate the public and combat misinformation should utilize local news stations; messaging to encourage vaccination should emphasize protection of self and others; there is a need to de-politicize the vaccine so that lack of trust in government is not a barrier to vaccination.

This report is merely the tip of the iceberg; HARC and RUHS – Public Health will also release follow-up pieces that examine various disparities in this data (e.g., geographic differences, differences based on race/ethnicity, etc.), as well as releasing pieces in smaller, more digestible formats designed for the general public (e.g., infographics).

INTRODUCTION

This report summarizes a survey conducted on COVID-19 attitudes towards the virus and vaccination as well as the needs of Riverside County adults. This project was supported by Epidemiology and Laboratory Capacity Enhancing Detection funds, which expands upon previous COVID-19 awards and is provided by the Centers for Disease Control and Prevention by way of the Paycheck Protection Program and Health Care Enhancement Act Response Activities for Cross-Cutting Emerging Issues. The present report was developed by HARC, Inc. on behalf of Riverside University Health System – Public Health (hereafter referred to as RUHS – Public Health).

About RUHS – Public Health

Established in 1926, the Riverside University Health System-Public Health (RUHS-PH) is the local, public agency responsible with ensuring the health and well-being of county residents and visitors. RUHS-PH's values of respect, integrity, service, and excellence are demonstrated through their strong partnerships with community-based organizations, academic institutions, tribal organizations, faith-based organizations, local governmental agencies and community leaders, local business, social service providers, nongovernmental organizations and other relevant partner organizations necessary to improving the health of Riverside County's community.

About HARC

HARC, Inc. (Health Assessment and Research for Communities) is a nonprofit research and evaluation organization based in Riverside County. HARC advances the quality of life by helping community leaders use objective research and analysis to turn data into action. HARC specializes in providing data that helps improve the social determinants of health. Social determinants of health are the conditions where people live, learn, work, and play. This includes factors such as the economy, education, social structures and support, neighborhoods, the built environment, and of course, healthcare. A healthy community provides residents with education, jobs that pay a living wage, safe and affordable housing, social support, accessible and affordable healthcare, safety from discrimination and injustice, and much more. HARC provides data to support these healthy communities in all aspects of health and wellness.

METHODS

Survey Development

After the pilot test (see below), HARC and RUHS – Public Health reviewed the survey to see if any questions were not working well; all were successful and were retained. However, several questions were added to the survey to measure newly emerging themes during 2021, such as COVID-19 variants, among others. A total of 100 questions were on the final survey. The final survey was translated into Spanish by HARC staff; it was offered in English and Spanish to all participants.

See Appendix B for the full survey (in English), as well as endnotes containing references for question sources and modifications.

Pilot Study

HARC found mixed results in the literature regarding which data collection method would generate the highest response rate. As such, before launching the full survey, HARC ran a pilot test to ascertain what would generate the highest response rate. To run the pilot study, HARC and Ace Printing pulled a random selection of 3,000 Riverside County households. HARC then created six survey conditions and sent the customized package to 500 households.

The six conditions were:

- Paper survey – $2 pre-incentive
- Paper survey – $25 promised incentive (Visa gift card)
- Paper survey – $25 promised and $2 pre-incentive
- Go online – $2 pre-incentive
- Go online – $25 promised incentive (Visa gift card)
- Go online – $25 promised (Visa gift card) and $2 pre-incentive included

Invitations went out in July 2021. Residents had between 2 weeks to one month to complete the survey and return it.

See Table 1 for response rates from the pilot portion of this needs assessment.

Table 1. Response Rates for Pilot Study

Survey Condition	Completed Surveys Received	Response Rate
C. Paper survey – $25 promised and $2 pre-incentive	90	18.0%
A. Paper survey – $2 pre-incentive	77	15.4%
F. Go online – $25 promised (Visa gift card) and $2 pre-incentive included	70	14.0%
B. Paper survey – $25 promised incentive (Visa gift card)	65	13.0%
E. Go online – $25 promised incentive (Visa gift card)	46	9.2%
D. Go online – $2 pre-incentive	46	9.2%
Grand Total	**394**	**-**

Full Study

Based on the results of the pilot study, HARC chose to use the paper survey/$2 pre-incentive/$25 post-incentive method for the full study, as this would provide the highest response rate and reduce any potential impact of non-response bias.

As such, Ace Printing purchased a random sample of 40,000 households in Riverside County. HARC and Ace mailed an "invitation package" to all 40,000 households, which included a cover letter (in English and Spanish), a paper survey in English, a paper survey in Spanish, a pre-paid return envelope, and a $2 bill as a pre-incentive. Each survey was printed with a unique identifier code so that each household could only participate once.

Invitation packages were mailed out in eight batches of 5,000 on the following dates:

- Batch 1: 9/15/21
- Batch 2: 9/16/21
- Batch 3: 9/21/21
- Batch 4: 9/22/21
- Batch 5: 9/24/21
- Batch 6: 9/27/21
- Batch 7: 9/29/21
- Batch 8: 9/30/21

Residents were offered a $25 Visa card as a post-incentive; as such, those who returned the survey were sent a $25 Visa card within two weeks of receipt of their paper survey.

Reminder packages were mailed to non-respondents, beginning on 10/15/21. The reminder package included a cover letter (in English and Spanish), a paper survey in English, a paper survey in Spanish, and a pre-paid return envelope. Each survey was printed with the same unique identifier code to continue to track participation.

Residents were given approximately one month before they were categorized as "non-responders" and were sent a reminder package. Reminders went out between 10/15/21 and 10/29/21. Earlier reminders requested that surveys be returned no later than 10/31/21 (with 11/5/21 as the final cut-off for those who wanted a post-incentive); later reminders requested that surveys be returned no later than 11/5/21 (with 11/12/21 as the final cut-off for those who wanted a post-incentive).

HARC processed incoming surveys and entered them into an online database. Data entry was completed on 11/23/21. Each week, HARC sent a list of completers to Ace Printing so that Ace could send out the $25 Visa cards as post-incentives. A few surveys came trickling in after data entry was completed on 11/23/21; however, due to time constraints on the reporting, these were not included in the final dataset or the final report.

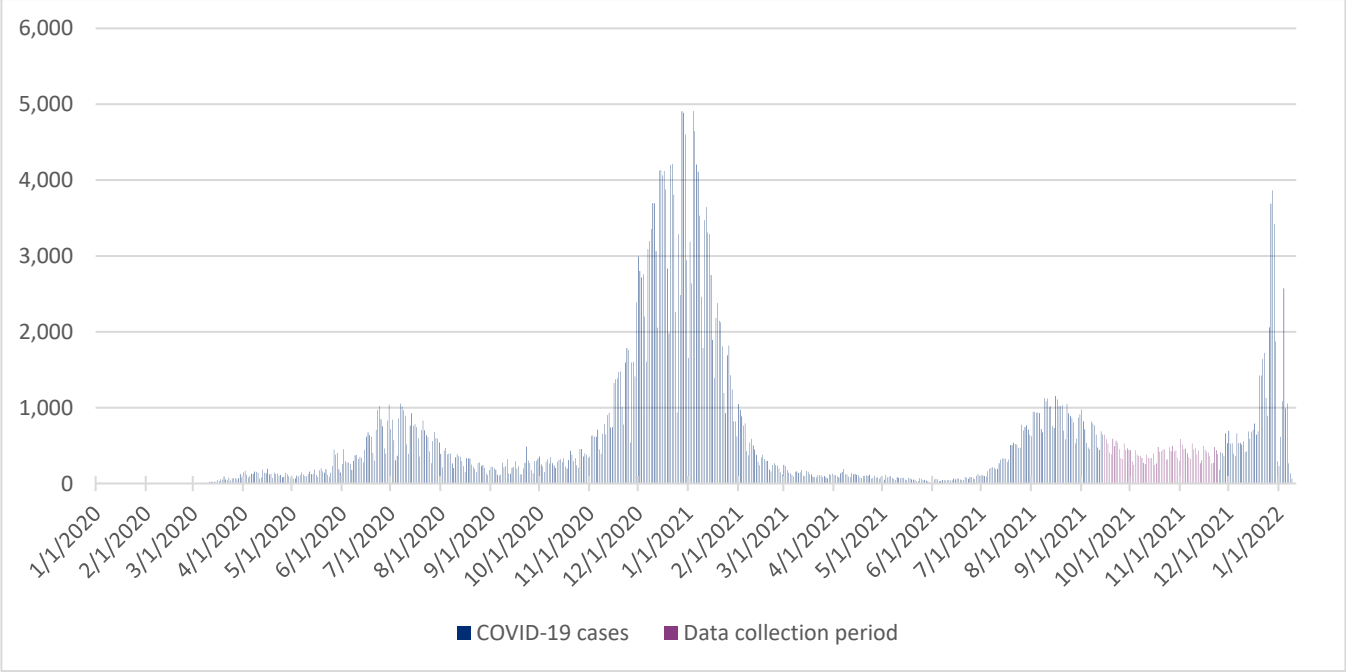
On 11/24/21, the dataset was sent to a statistician for weighting. Weighting is important to ensure that the results of the survey appropriately represent the county. Missing data were imputed using a hot deck method. Iterative proportional fitting was used to ensure marginal distributions for age, sex, race by ethnicity, and household income aligned. Weights were rescaled to the 2020 Census population estimates (1,823,505 adults living in Riverside County). See Appendix C for the details of the weighting methodology.

In the end, combining responses from the pilot study and the full study, the sample size was 9,231. This represents a response rate of approximately 21.5%.

Because of the weighting of the data, the population estimates illustrated in this report are closer to 1,823,505 (the number of adults in Riverside County) rather than 9,231 (the number of completed surveys).

Figure 1 below provides additional context to the data collection timeline. That is, data was being collected right after the detection of the Delta variant and before the detection of the Omicron variant. The purple cases in the figure below indicate the data collection period.

Figure 1. COVID-19 Daily Cases in Riverside County



Note: Data in chart are from RUHS - Public Health.

RESULTS: COVID-19 Needs Assessment

A total of 9,231 surveys from the randomly selected sample of 40,000 Riverside County households were completed and sent back to HARC by the close date of the survey. Because this sampling strategy was designed with the intent of representing Riverside County households, United States Census Bureau data are presented below in comparison to the present study sample to illustrate the extent to which the data matches.

Study Sample Compared to County Demographics

When comparing the household income of the present study sample to Census estimates, there is only a slight deviation of a few percentage points for each household income category. Furthermore, the Census estimates the median household income of Riverside County households at $73,620, and the average household income at $95,564.[1] Comparatively, the present study sample has a similar household median income of $72,000 and a similar average household income of $93,421. In other words, the study sample very closely resembles the household income characteristics of Riverside County.

See Table 2 for additional information.

Table 2. Household Income Census Estimates Compared to Study Sample

Household Income	Census Estimates	Study Sample
Less than $14,999	8.7%	6.8%
$15,000 to $34,999	14.1%	17.0%
$35,000 to $74,999	28.2%	29.0%
$75,000 to $149,999	31.9%	31.6%
$150,000 or more	17.0%	15.6%
Total	**100.0%**	**100.0%**

Note: Census estimates are from the American Community Survey, 2019 one-year estimates.

[1] Census estimates are from the American Community Survey, 2019 one-year estimates.

The age distribution of the present study sample is slightly different from that of Census estimates for Riverside County. Specifically, there was a slight negative skew or greater percentage of higher age groups and fewer percentages of lower age groups in the present study compared to Census estimates. For instance, about 13.9% of Riverside County households include people ages 70s and older according to the Census;[2] however, the current sample has this estimate at 27.5%. Thus, slightly more older individuals were more likely to participate in this survey.

See Table 3 for additional details.

Table 3. Age Categories Census Estimates Compared to Study Sample

Age Categories	Census Estimates	Study Sample
18 to 29	22.3%	5.2%
30s	18.0%	11.0%
40s	16.6%	14.8%
50s	16.0%	17.9%
60s	13.3%	23.6%
70s+	13.9%	27.5%
Total	**100.0%**	**100.0%**

Note: Census estimates are from the American Community Survey, 2019 one-year estimates.

Sex for the population 18 years and older was biased towards females. That is, according to the Census,[3] females represent approximately 50.5% of the Riverside County population, whereas about 62.3% of the study sample was female.

See Table 4 for additional details.

Table 4. Sex Census Estimates Compared to Study Sample

Sex for the population 18 years and older	Census Estimates	Study Sample
Male	49.5%	37.7%
Female	50.5%	62.3%
Total	**100.0%**	**100.0%**

Note: Census estimates are from the American Community Survey, 2019 one-year estimates. For the study sample, this utilizes the question of gender assigned at birth (not current gender identity).

[2] Census estimates are from the American Community Survey, 2019 one-year estimates.
[3] Ibid.

The present study sample had a higher percentage of people identifying as "White alone" (69.1%) compared to the Census estimates of 44.1%.[4] Thus, the White population was more likely to participate in the survey while those identifying as multiracial, and other races [Some other race (SOR) alone, AIAN (American Indian and Alaska Native) alone, NHOPI (Native Hawaiian and Other Pacific Islander) alone] were less likely to participate. However, the percentage of those identifying as Black alone or Asian alone in the study sample matches Census estimates.

See Table 5 for additional information.

Table 5. Race Census Estimates Compared to Study Sample

Race for the population 18 years and older	Census Estimates	Study Sample
White alone	44.1%	69.1%
Black alone	6.5%	6.5%
Asian alone	7.5%	7.2%
Other: Includes Some other race (SOR) alone, AIAN (American Indian and Alaska Native) alone, NHOPI (Native Hawaiian and Other Pacific Islander) alone	26.8%	11.0%
Multiracial	15.1%	6.2%
Total	**100.0%**	**100.0%**

Note: Census estimates are from the 2020 Decennial Census.

Echoing the same themes of race, those identifying as Hispanic/Latino (30.1%) were less likely to participate in the survey as about 45.6% of Riverside County adults identified as Hispanic Latino.

See Table 6 for additional information.

Table 6. Ethnicity Census Estimates Compared to Study Sample

Ethnicity for the Population 18+	Census Estimates	Study Sample
Hispanic/Latino	45.6%	30.1%
Not Hispanic/Latino	54.4%	69.9%
Total	**100.0%**	**100.0%**

Note: Census estimates are from the 2020 Decennial Census.

[4] Census estimates are from the 2020 Decennial Census.

Weighted Data

Considering the preceding demographic results, a fair amount of demographics were approximately similar; however, there were some slight biases towards older and White-identifying individuals. Thus, the survey results were weighted to account for these demographic differences to provide a more representative illustration of the county.

All results that follow were weighted according to the United States Census Bureau, American Community Survey, 1-year estimates (Household Income, Age, and Sex), and the Decennial Census, 2020 (Race, Ethnicity, and Race by Ethnicity). This essentially "corrects" for the skewed data; for example, in the final weighted data, gender is fairly evenly split between men and women, despite the fact that the unweighted data skewed towards more female participants.

While figures/tables may include estimates such as "percentages", "frequencies", "counts", etc., these all refer to weighted estimates and percentages. Furthermore, the survey results contain data for and are weighted for the adult population only. Thus, this report may refer to "residents" a number of times, and these residents are always Riverside County residents who are ages 18 and older.

Demographics

Geography

Residents were sampled from across the various cities and Census Designated Places (CDPs, often smaller unincorporated areas) in Riverside County. The top three cities included the City of Riverside (16.4%), Corona (11.8%), and Moreno Valley (6.6%). See Table 7 for additional details.

Table 7. City of Riverside County Respondents

City	Weighted Percent	Weighted Count
Riverside	16.4%	297,875
Corona	11.8%	214,952
Moreno Valley	6.6%	120,046
Temecula	5.9%	107,763
Hemet	4.8%	87,233
Murrieta	4.8%	86,757
Indio	4.0%	72,292
Menifee	3.9%	71,192
Palm Desert	3.9%	71,109
Perris	3.5%	63,860
Palm Springs	3.5%	63,572
Lake Elsinore	3.4%	62,584
Cathedral City	2.7%	49,624
Eastvale	2.6%	47,846
Beaumont	2.3%	41,568
Jurupa Valley	2.1%	38,505
La Quinta	1.9%	34,234
Desert Hot Springs	1.7%	31,624
San Jacinto	1.6%	28,983
Wildomar	1.6%	28,507
Winchester	1.4%	25,340
Coachella	1.3%	24,482
Banning	1.3%	23,593
Rancho Mirage	1.2%	20,984
Cities with less than 1.0% of the sample	5.7%	104,365
Total	**100.0%**	**1,818,889**

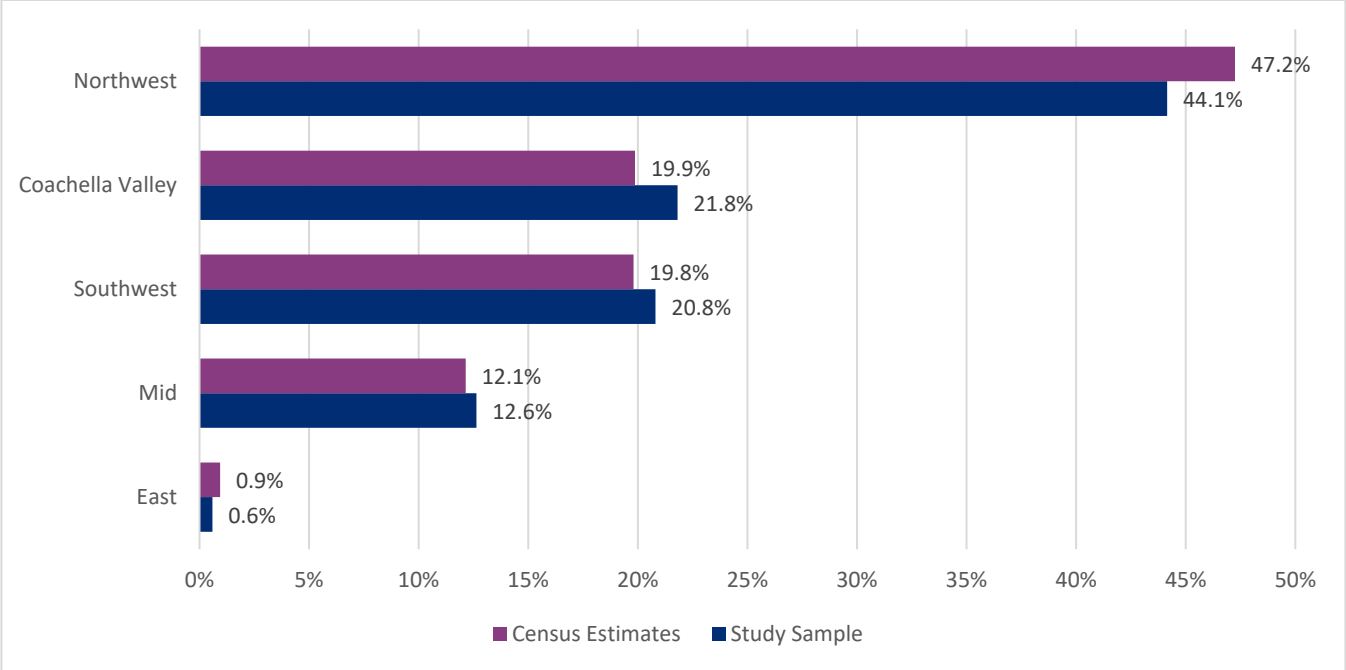
Note: Cities with less than 1.0% include: Norco, Sun City, Blythe, Bermuda Dunes, Calimesa, Canyon Lake, Thousand Palms, Homeland, Indian Wells, Cherry Valley, Mecca, Nuevo, Quail Valley, Mountain Center, Thermal, Aguanga, Anza, Whitewater, Romoland, March Air Reserve Base, Colton, Cabazon, Ripley, Lakeview, and Temescal Valley.

Each city within Riverside County is organized into Public Health Regions, which are mutually exclusive of each other. Nearly half (44.1%) of the sample represents the Northwest region. Note that East only has about 0.6% represented, and that is due to the lower number of cities that comprise the East region (i.e., Blythe, Desert Center, Mesa Verde, Ripley).

For context, the adult population for each Public Health region using the American Community Survey from the U.S. Census Bureau is also presented. Percentages based on Census estimates approximate the sample. This indicates that no individual region of the County was especially over-represented in the final sample; responses were very comparable to the overall population. See Figure 2 for additional details.

See the table on the following page for a list of cities by each Public Health Region.

Figure 2. Public Health Region



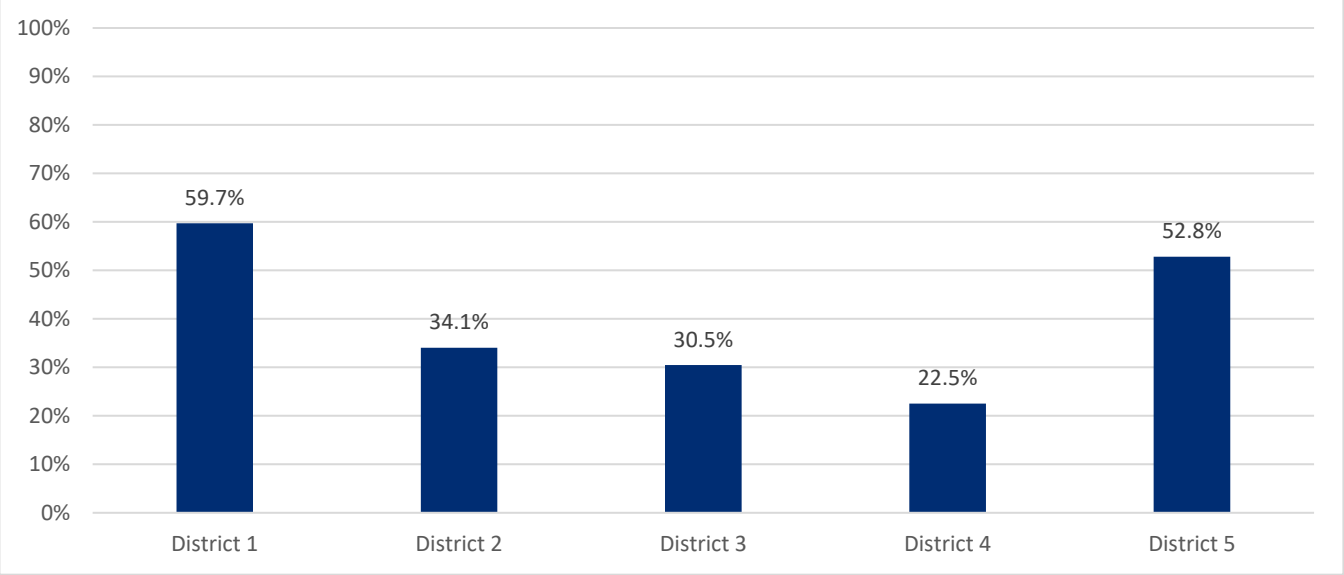
Note: Census estimates based on adult population (18 years and over) American Community Survey – 5-year estimates. *n* = 1,817,639 for study sample.

Table 8. Public Health Region by City

Northwest	Southwest	Mid	Coachella Valley	East
Corona	Canyon Lake	Aguanga	Bermuda Dunes	Blythe
Coronita	French Valley	Anza	Cathedral City	Desert Center
Eastvale	Lake Elsinore	Banning	Coachella	Mesa Verde
El Cerrito	Lakeland Village	Beaumont	Desert Edge	Ripley
El Sobrante	Meadowbrook	Cabazon	Desert Hot Springs	
Good Hope	Menifee	Calimesa	Desert Palms	
Home Gardens	Murrieta	Cherry Valley	Garnet	
Jurupa Valley	Temecula	East Hemet	Indian Wells	
Lakeview	Warm Springs	Green Acres	Indio	
Nuevo	Wildomar	Hemet	Indio Hills	
Lake Mathews		Homeland	La Quinta	
March ARB		Idyllwild-Pine Cove	Mecca	
Mead Valley		Lake Riverside	North Shore	
Moreno Valley		Mountain Center	Oasis	
Norco		San Jacinto	Palm Desert	
Perris		Valle Vista	Palm Springs	
Riverside		Winchester	Rancho Mirage	
Romoland			Sky Valley	
Temescal Valley			Thermal	
Woodcrest			Thousand Palms	
			Vista Santa Rosa	
			Whitewater	

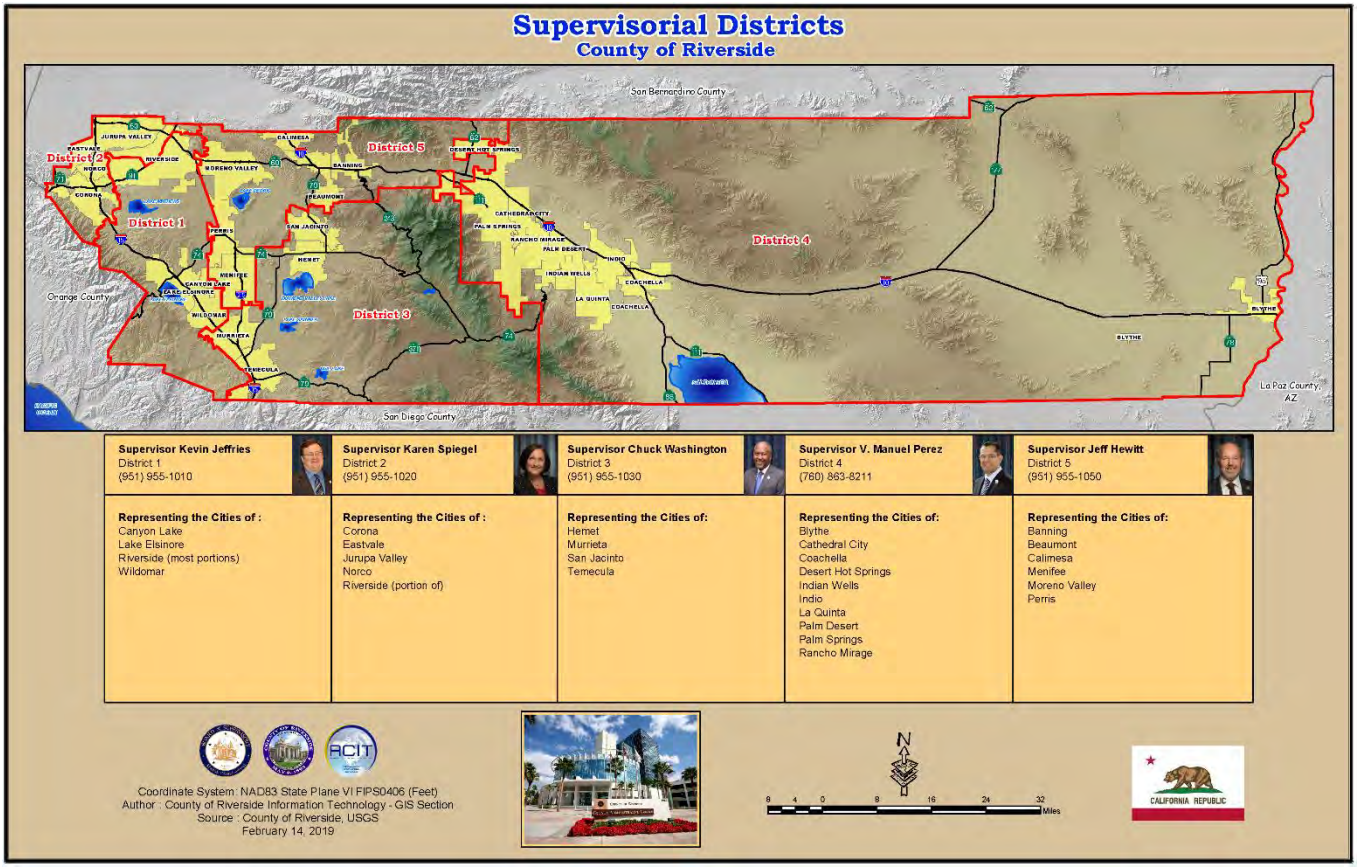
The Supervisorial Districts were also categorized based on city. More than half of the cities in the sample represent District 1 (59.7%) and District 5 (52.8%), as illustrated in Figure 3.

Figure 3. Supervisorial District



Note: *n* = 1,804,439.

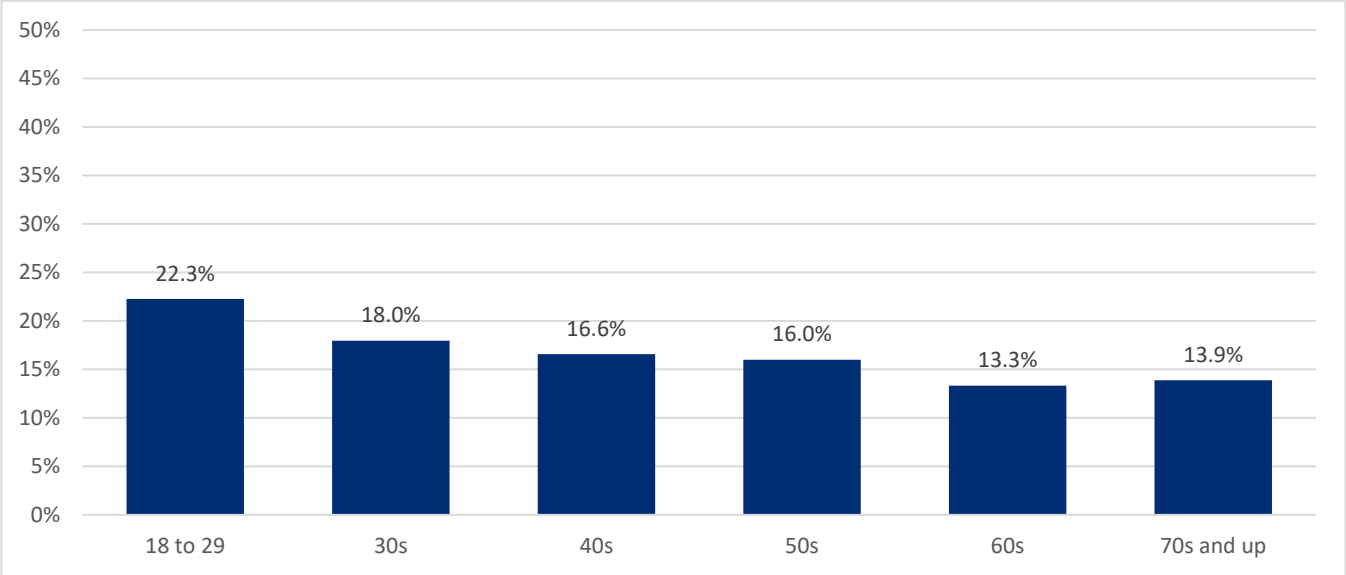
The supervisorial districts at the time of the data collection were as illustrated in the map below:



Age

Residents ranged in age from 18 to 98; the median age of residents was 45 while the average was 47. Thanks to the weighting, the age groups now accurately reflect the age distribution in Riverside County as a whole, as illustrated in Figure 4 below.

Figure 4. Age (Imputed) Categories

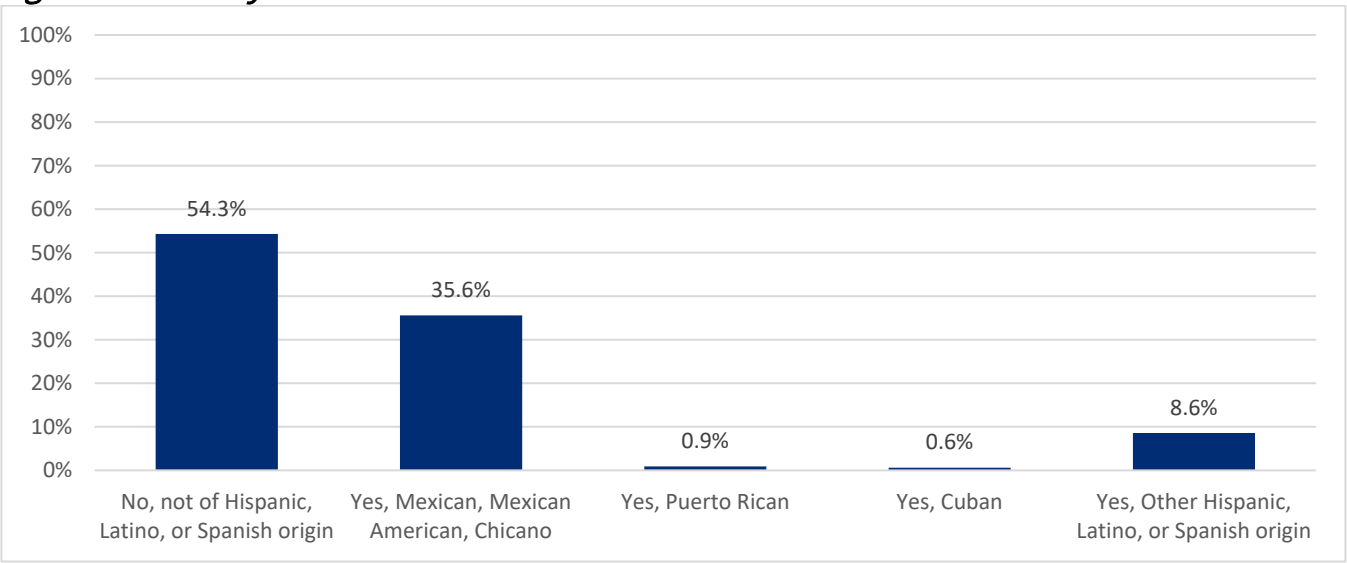


Note: *n* = 1,823,445.

Ethnicity

Slightly less than half of local residents identify as Hispanic/Latino, as illustrated in Figure 5.

Figure 5. Ethnicity



Note: *n* = 1,765,108.

Those who reported another ethnicity (8.6%) were asked to specify the details in an open-ended format.

"Other" ethnicities provided by residents describe origins from all over the world. These responses were grouped into themes post-data-collection. The most common themes were **European/Spanish** (e.g., "Greece", "Portugal") and **Central American** (e.g., "Guatemala", "Columbia").

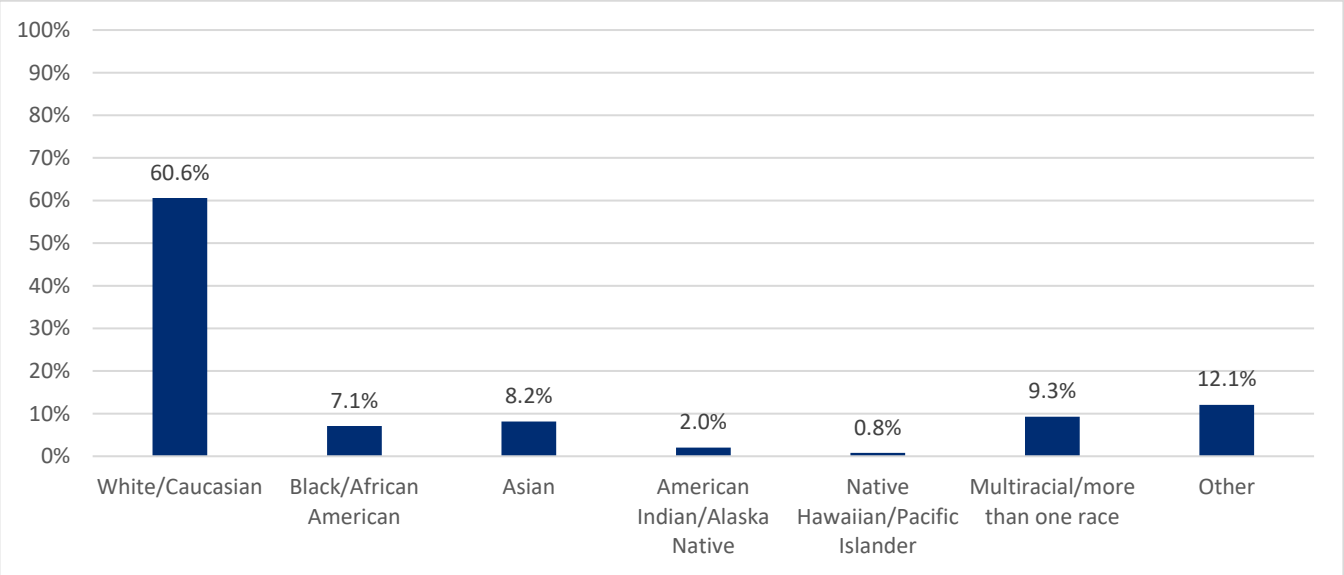
Less common themes included:

- South American
- Hispanic/Mexican
- Caucasian/White
- Asian
- Miscellaneous (e.g., "Egyptian", "Jewish")

Race

When measuring race per the Census Bureau (that is, where Hispanic/Latino is an ethnicity and not a race), the majority of residents (60.6%) identified as White/Caucasian. See Figure 6 below for additional details.

Figure 6. Race



Note: *n* = 1,698,172.

Those who reported "other" race (12.1%) were asked to specify the details in an open-ended format.

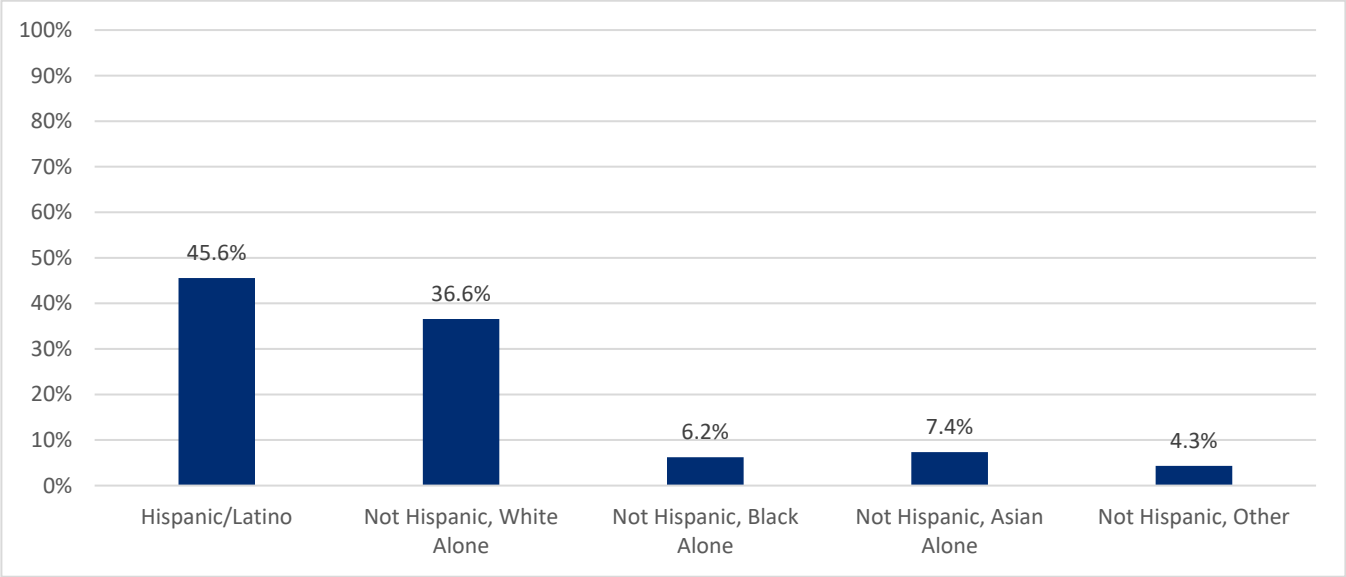
These responses were grouped into themes post-data-collection. The most common theme, by far, was **Mexican/Mexican American/Chicano**—more than a third of the "other" responses fell into this category. Other common themes included **Latino/Latin/Latinx** and **Hispanic**.

Less commonly reported racial themes included the following:

- European (e.g., "Italian," "Irish," "German")
- Other Hispanic (e.g., "Spanish," "Latin American," "Central American")
- Middle Eastern (e.g., "Egyptian," "Afghan," "Iranian/Persian")

Race was also crossed with ethnicity to provide clarity on the number of people identifying as Hispanic (e.g., when asked about race, respondents may choose "other" since Hispanic is not an option). As illustrated in Figure 7 below, when combining race with ethnicity, nearly half of residents are Hispanic/Latino (45.6%), while the second most common race/ethnicity is non-Hispanic, White alone (36.6%).

Figure 7. Race by Ethnicity



Note: *n* = 1,823,445.

Gender Identity

Two questions were utilized to measure gender identity, per best practices established in the field of survey research.[5] Firstly, residents were asked, "What sex were you assigned at birth, on your original birth certificate?" As illustrated in Table 9, post-weighting, sex is nearly evenly divided.

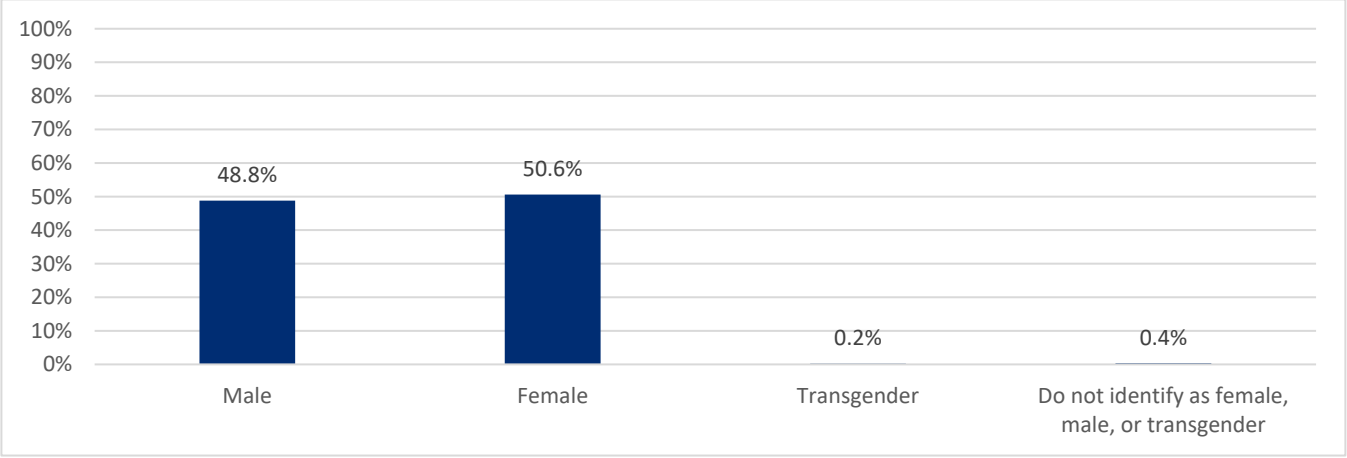
Table 9. Sex Assigned at Birth

Sex Assigned at Birth	Study Sample
Male	49.5%
Female	50.6%
Total	**100.0%**

Note: *n* = 1,794,655.

Next, residents were asked about their current gender identity: "How do you describe yourself?" Residents could indicate male, female, transgender, or "do not identify as female, male, or transgender." Male and female were still approximately evenly divided; however, some identified as transgender (0.2%) or did not identify as female, male, or transgender (0.4%), as illustrated in Figure 8 below. While the latter two categories are relatively small percentages, these equate to 4,165 people who were transgender and another 6,636 people who did not identify as female, male, or transgender.

Figure 8. Gender Identity



Note: *n* = 1,791,125.

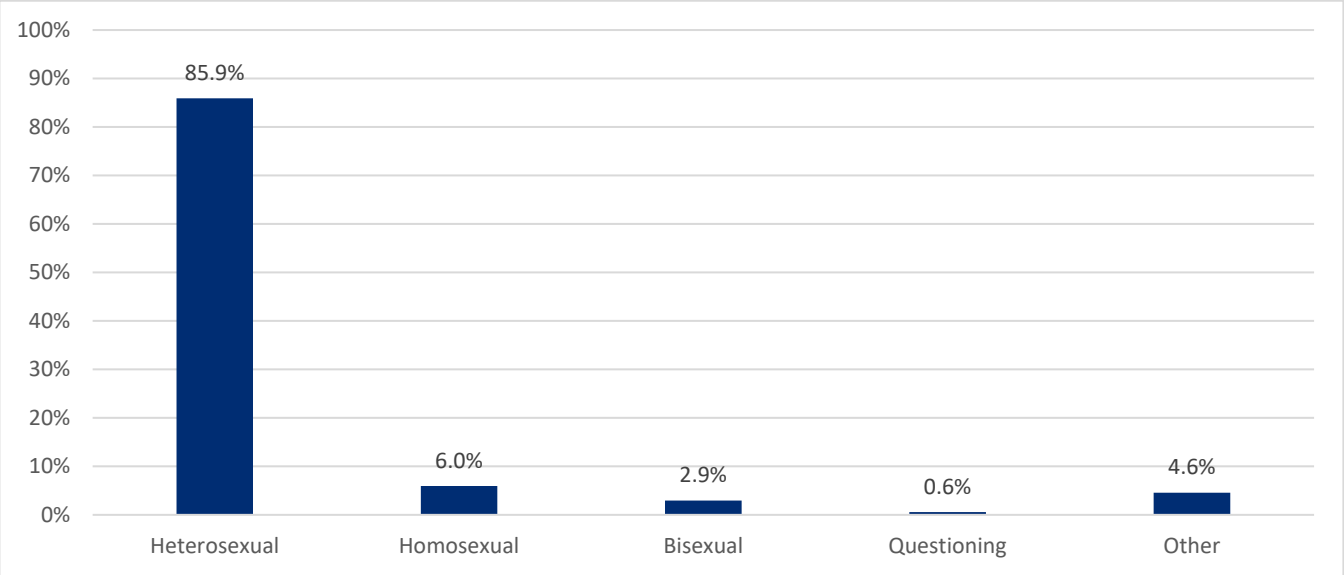
A total of 1.0% or 18,283 residents identified with a gender that does not match their birth certificate (e.g., assigned male at birth but identify as a female now, etc.).

[5] Williams Institute (2009). Best practices for asking questions about sexual orientation on surveys (SMART). Available online at https://williamsinstitute.law.ucla.edu/publications/smart-so-survey/

Sexual Orientation

To measure sexual orientation, participants were asked, "Do you consider yourself to be…" Results showed that the majority of residents (85.9%) identify as heterosexual, as illustrated in Figure 9 below.

Figure 9. Sexual Orientation



Note: *n* = 1,699,634.

Those who reported "another sexual orientation" (4.6%) were asked to specify the details in an open-ended format.

These responses were grouped into themes post-data-collection. The most common themes were **none/not applicable** (e.g., "No," "N/A," "None"), followed by **normal** (e.g., "normal," "ordinary"), **female** (e.g., "feminine," "female," "feminino"), **straight** (e.g., "straight," "straight/family man," "straight/regular"), and **male** (e.g., "masculine," "male," "masculino").

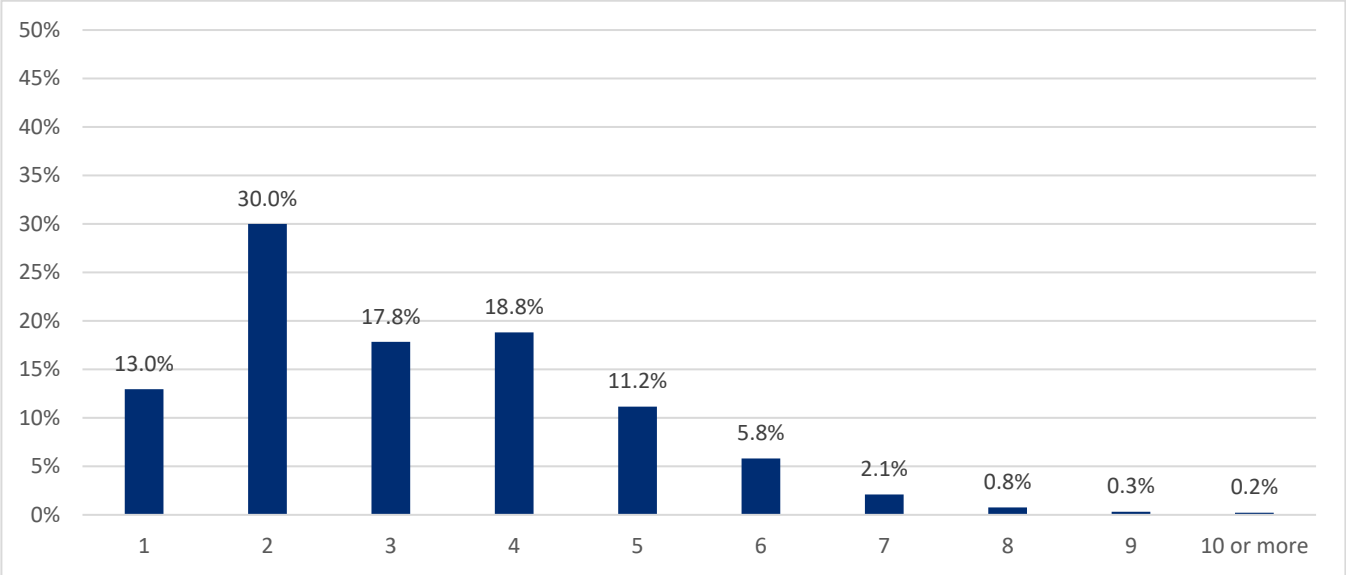
Less commonly reported sexual orientation themes include:

- No
- Decline to respond
- Me/myself
- Asexual
- Pansexual
- Human
- Queer

Household Size

The median household size for Riverside County was two people. As illustrated in the figure below, residents typically reported a household size of two people (30.0%), three people (17.8%), or four people (18.8%). See Figure 10 below for additional details.

Figure 10. Household Size

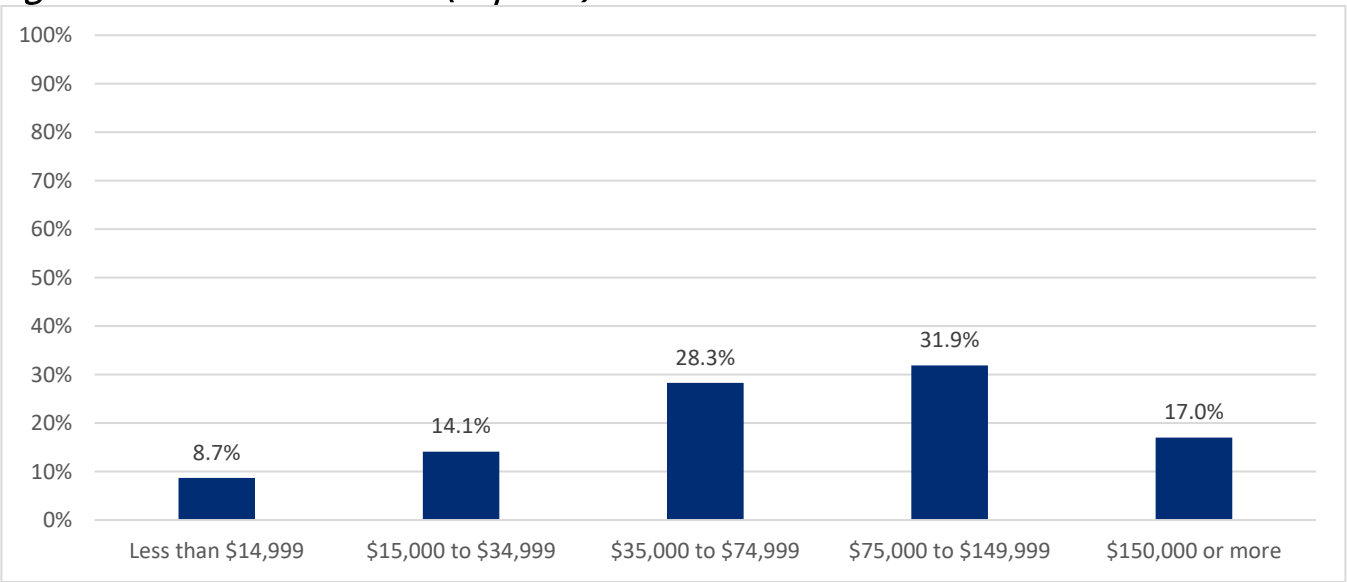


Note: *n* = 1,790,315.

Income and Poverty

Residents were asked, "Last year, what was your household income from all sources before taxes?" The household median income was $72,000, while the average household income was $93,421. As illustrated in Figure 11 below, about a third (31.9%) of households have an annual income of $75,000 to $149,999.

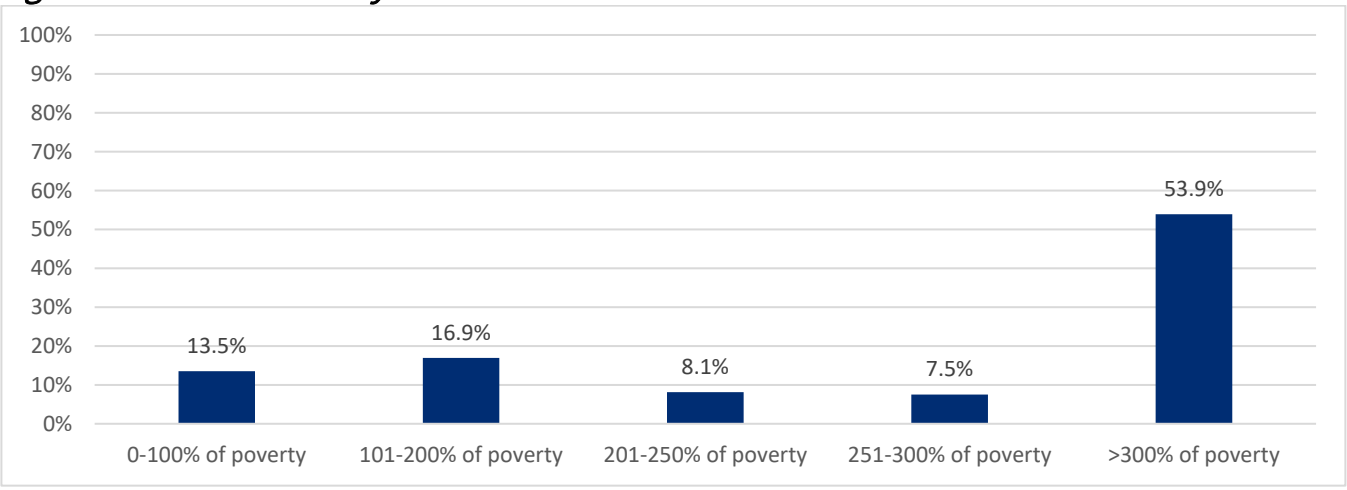
Figure 11. Household Income (Imputed)



Note: *n* = 1,823,445.

Using household income and the number of people within the household, the Federal Poverty Level (FPL) was calculated using the Department of Health and Human Service's guidelines for poverty in 2021. As illustrated in Figure 12 below, 13.5% of Riverside County adults are living below the poverty line, while another 16.9% are also very poor, living below 200% of the poverty line.

Figure 12. Federal Poverty Level

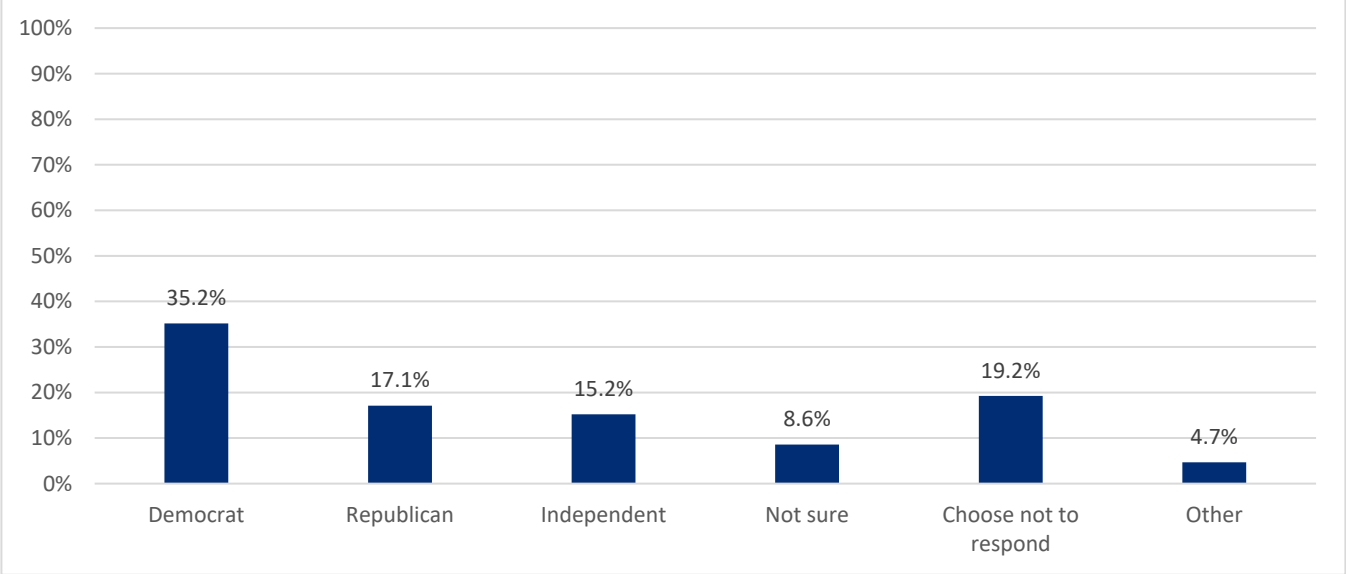


Note: *n* = 1,394,794.

Political Affiliation

As a final demographic question, residents were asked, "Generally speaking, do you think of yourself as a…?" and could then select from a range of options. About a third of residents identified as Democrat (35.2%), while others chose not to respond (19.2%), identified as Republican (17.1%), or identified as Independent (15.2%). See Figure 13 below for additional details.

Figure 13. Political Affiliation



Note: *n* = 1,774,426.

Those who reported an "other" political affiliation (4.7%) were asked to specify the details in an open-ended format. These responses were grouped into themes post-data-collection. The most common theme, by far, was **no affiliation** (e.g., "neutral", "no affiliation", "non-partisan"), followed by **it depends** (e.g., "it depends on the issue", "vote for the best candidate", and "I align with my beliefs and morals"), **Libertarian**, and **Conservative**.

Less commonly reported political themes included:

- Critical thinker/free thinker
- Democrat
- Moderate/in the middle
- Apolitical/don't vote
- Socialist
- Independent
- Progressive
- Liberal
- Green
- Religious
- Not a citizen/can't vote
- Patriot

An additional 33.5% of responses did not fit in the aforementioned categories, such as "used to be a democrat," "I support the U.S. Constitution," and "American."

COVID-19 Attitudes and Behaviors

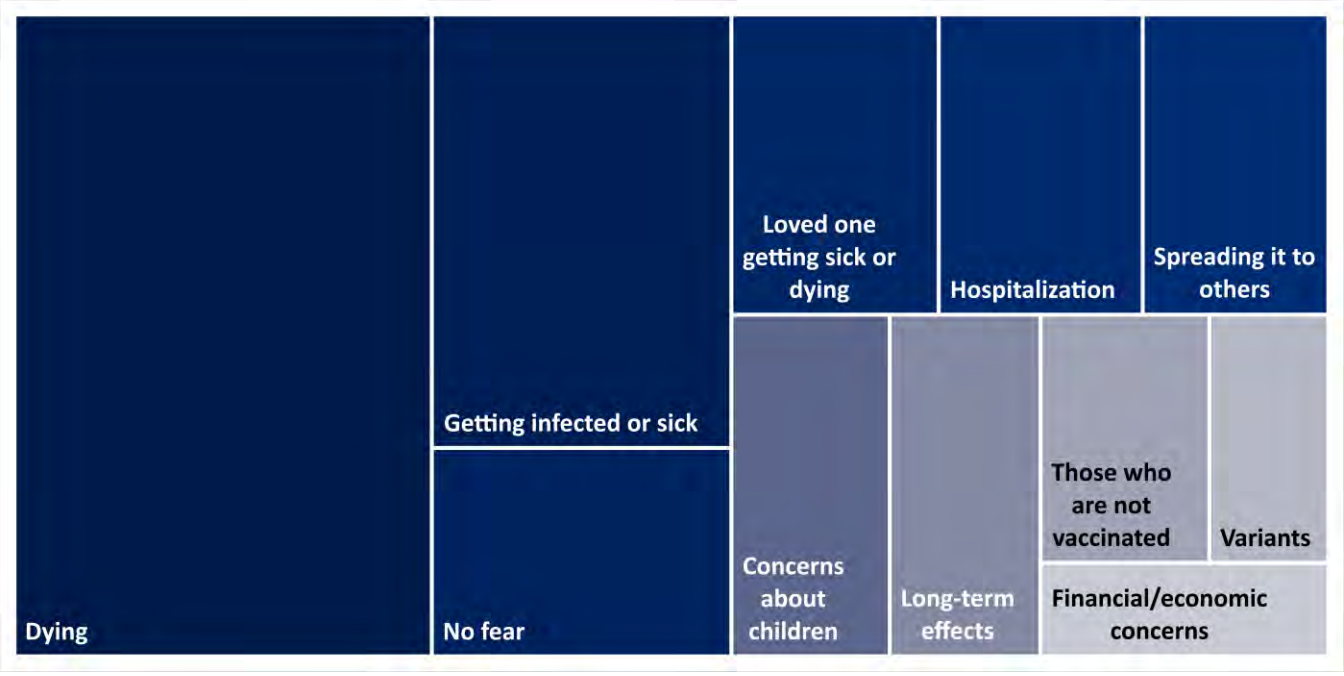
Biggest Fear About COVID-19

All residents were asked to describe their biggest fear of COVID-19 in an open-ended format. Many residents provided more than one answer. These responses were grouped into themes post-data-collection and are illustrated in Figure 14 below.

The most common theme, one experienced by one in four participants, was fear of **dying** (e.g., "not recovering and dying", "it might kill me"). The next most common theme was fear of **getting infected or sick** (e.g., "becoming severely sick", "being infected with the virus"), followed by **fear of a loved one getting sick or dying** (e.g., "the people I love will suffer or die", "losing someone close to me, such as a parent or a friend") and **fear of hospitalization** (e.g., "I don't want to be hospitalized", "getting a severe case requiring hospitalization"). Many residents indicated they had **no fears** (e.g., "I am fully vaccinated so I don't really have much fear about it", "no fear at all").

Other less common themes include spreading it to others, concerns about children, long-term effects, those who are unvaccinated, variants, and financial/economic concerns.

Figure 14. Biggest Fear About COVID-19



Note: Question asked of all participants.

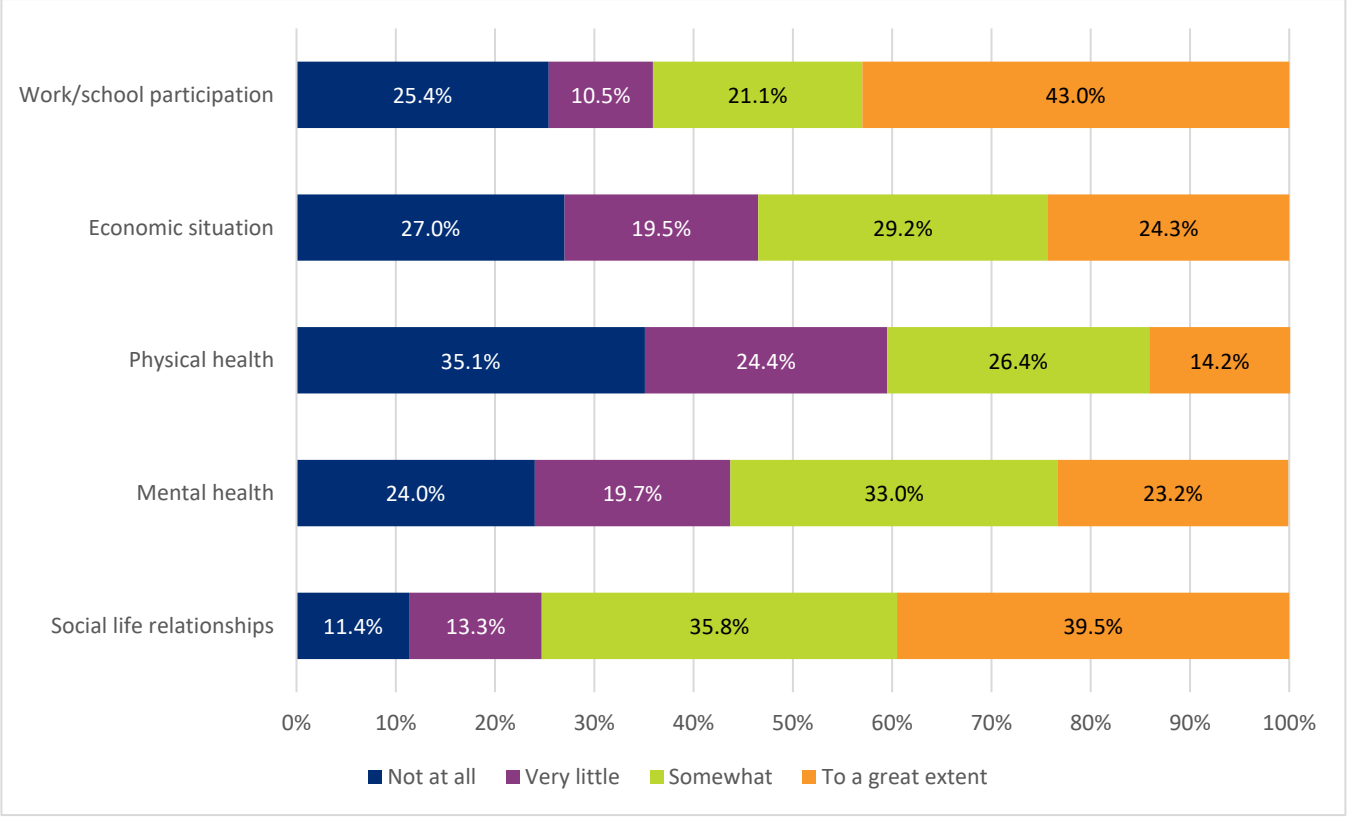
Impact of COVID-19

The world has forever changed since the first case of COVID-19. To understand some areas of impact, residents were asked, "How has the COVID-19 pandemic impacted your personal daily life with regards to:" and were then given a list of options.

The findings demonstrate that the majority of residents were at least "somewhat" impacted or impacted "to a great extent" in their social life relationships (75.3%), work/school participation (64.1%), mental health (56.2%), and economic situation (53.5%). Less than half of residents were at least "somewhat" impacted or impacted "to a great extent" in their physical health (40.6%), as illustrated in Figure 15 below.

When examining the "great extent" impact only, a plurality of residents was impacted to a great extent concerning work/school participation (43.0%) and social life relationships (39.5%). These findings are expected given the 2020 lockdowns during COVID-19. Further, slightly less than a quarter of residents were impacted "to a great extent" in their economic situation (24.3%) or mental health (23.2%). Fewer residents (14.2%) were impacted 'to a great extent" in their physical health.

Figure 15. COVID-19 Impact on Personal Daily Life

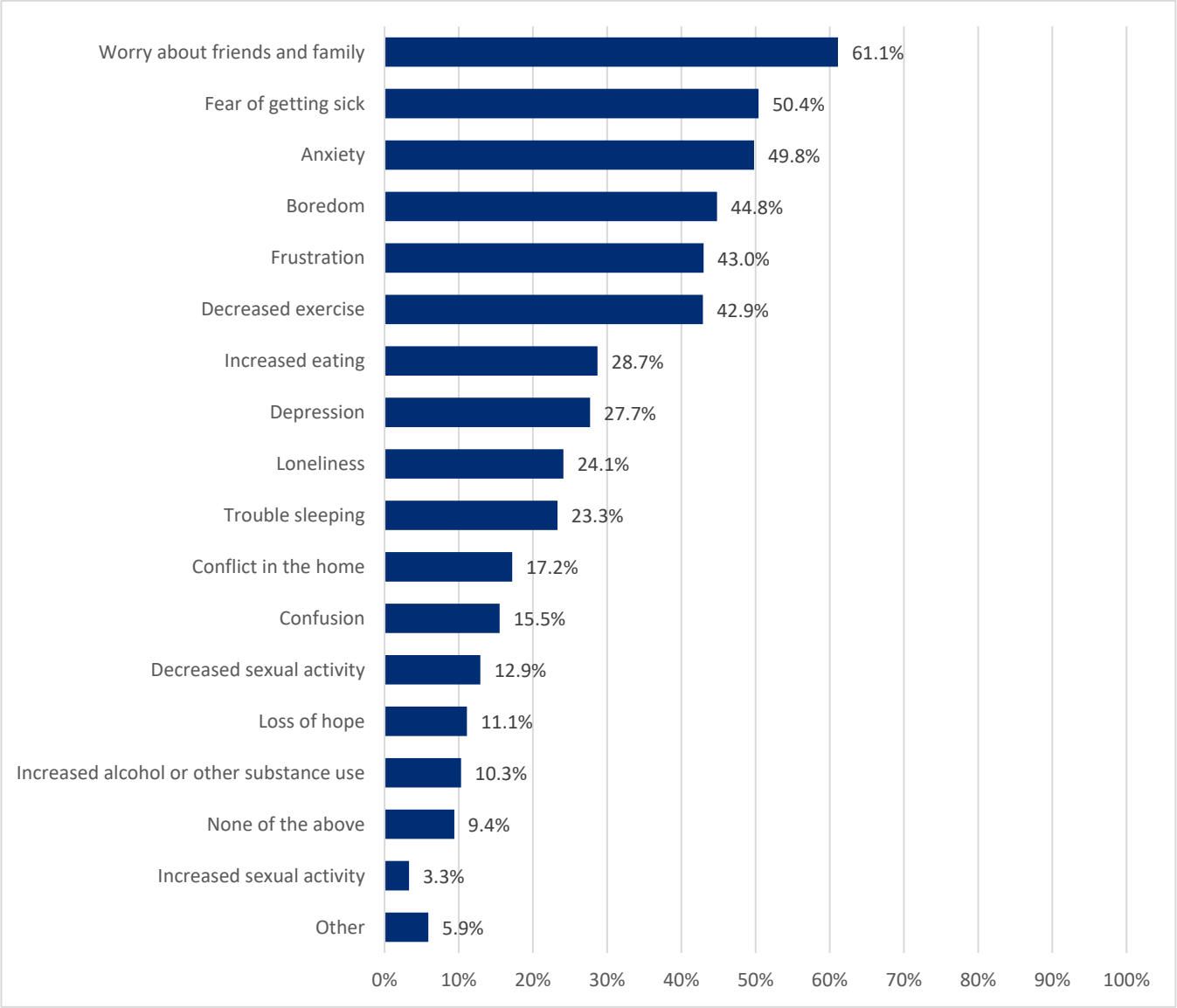


Note: Work/school participation (n = 1,674,272), Economic situation (n = 1,713,027), Physical health (n = 1,706,646), Mental health (n = 1,717,820), Social life or relationships (n = 1,763,714).

Residents were also asked to select from a list of ways in which they were affected by COVID-19. Specifically, "COVID-19 has also affected how people feel and act. Which of the following have you experienced due to COVID-19? Please select all that apply."

As illustrated in Figure 16 below, about half or more than half of residents experienced worry about friends and family (61.1%), fear of getting sick (50.4%), and anxiety (49.8%). Other common negative experiences included experiencing boredom (44.8%), frustration (43.0%), and decreased exercise (42.9%).

Figure 16. Negative COVID-19 Experiences



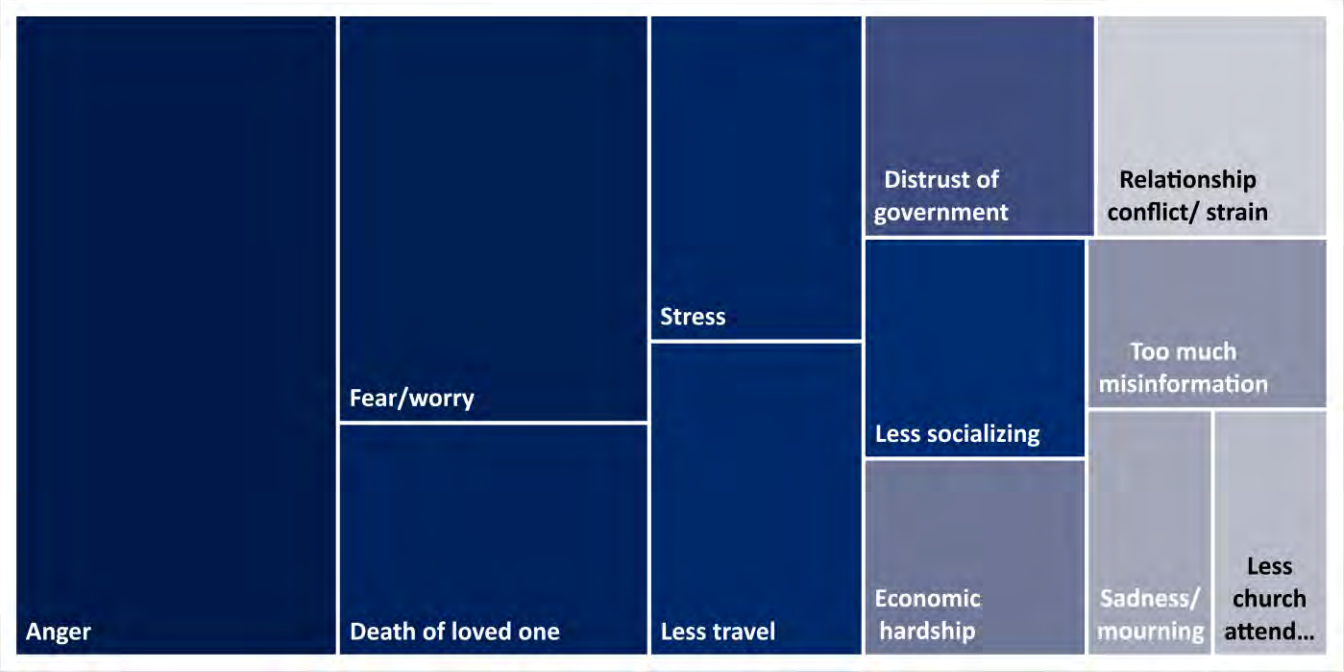
Note: *n* = 1,795,688.

Some residents (5.9%) stated they were impacted in other ways. Those who said "other" were asked to specify in an open-ended format. These responses were grouped into themes post-data-collection and are illustrated in Figure 17 below.

The most commonly identified negative impact theme was **anger** (e.g., "anger about misinformation," "anger at the government"), followed by **fear/worry** (e.g., "fear of going anywhere," "almost everything worries me/Casi todo me preocupa"). **Death of a loved one** was also common (e.g., "death of family," "loss of many friends") as was **stress** (e.g., "overworked exhausted burnout," "work-related stress").

Other less common themes included less travel, relationship conflict/strain, less socializing, economic hardship, distrust of government, too much misinformation, sadness/mourning, and less church attendance.

Figure 17. "Other" Negative COVID-19 Experiences



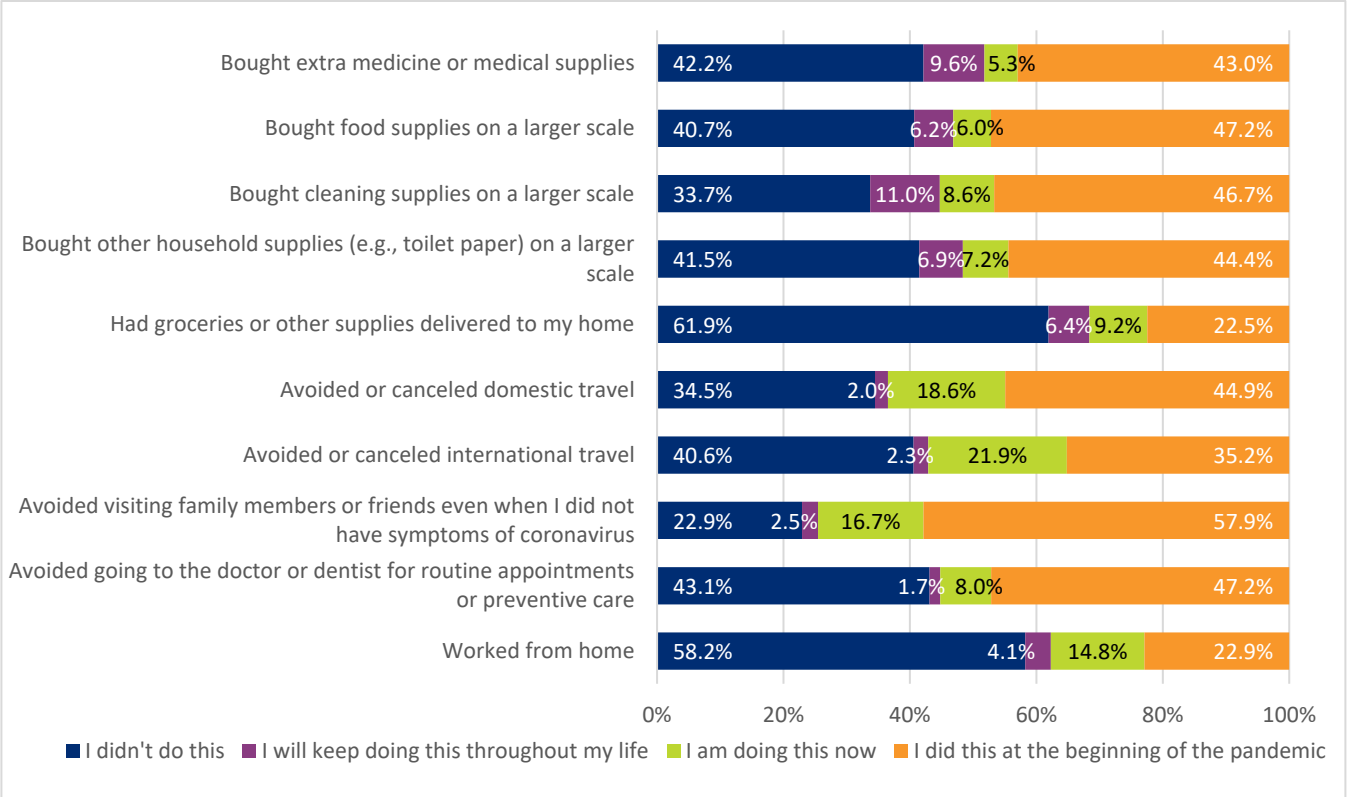
Note: Only includes participants who selected "other, please specify" in response to the question, "COVID-19 has also affected how people feel and act. Which of the following have you experienced due to COVID-19?"

To assess how people have changed as a result of COVID-19, residents were asked, “People have made many types of changes to their lifestyle or daily activities because of COVID-19. Please rate each of the following activities:” and were then given a list of items to rate.

More than half of residents (57.9%) avoided visiting family or friends at the beginning of the pandemic. Additionally, slightly less than half of the residents (47.2%) also bought food supplied on a larger scale, avoided going to the doctor or dentist (47.2%), bought cleaning supplies on a larger scale (46.7%), and avoided or canceled domestic travel (44.9%).

More than one in five residents (21.9%) reported “I am doing this now” with respect to avoiding or canceling international travel. Slightly less (18.6%) were also currently avoiding or canceling domestic travel and avoiding visiting family or friends. See Figure 18 below for additional details.

Figure 18. Lifestyle/Daily Activity Changes due to COVID-19



Note: Bought extra medicine or medical supplies *n* = 1,722,049, Bought food supplies on a larger scale *n* = 1,734,194, Bought cleaning supplies on a larger scale *n* = 1,727,303, Bought other household supplies (e.g., toilet paper) on a larger scale *n* = 1,732,044, Had groceries or other supplies delivered to my home *n* = 1,708,350, Avoided or canceled domestic travel *n* = 1,711,905, Avoided or canceled international travel *n* = 1,683,936, Avoided visiting family members or friends even when I did not have symptoms of coronavirus *n* = 1,731,737, Avoided going to the doctor or dentist for routine appointments or preventive care *n* = 1,739,139, Worked from home *n* = 1,650,203.

Residents were also asked, “Were there any other changes to your lifestyle or daily activities because of COVID-19 you'd like to share?” in an open-ended format. These responses were grouped into themes post-data-collection and are illustrated in Figure 19 below.

The most common theme was that there were **no other changes** to their lives—nearly a third of respondents made comments in this theme (e.g., “I’m retired, so not really”, “my lifestyle did not change”).

Other less common themes include **less socializing** (e.g., “avoided family, friends, neighbors”), **staying home** (e.g., “hardly go places”), **wearing a mask** (e.g., “mask wearing constantly”), **church practices changed** (e.g., “worshipped online”), **greater attention to cleanliness** (e.g., “constant hand washing”, “extreme cleaning”), **mental health struggles** (e.g., “I’m depressed”, “I’m socially scared now”), **children’s lives altered** (e.g., “my son was at home for school”, “my kids schooling from home was the worst… suffered mentally and physically”) and **lost job or less work** (e.g., “I lost my job because the store closed).

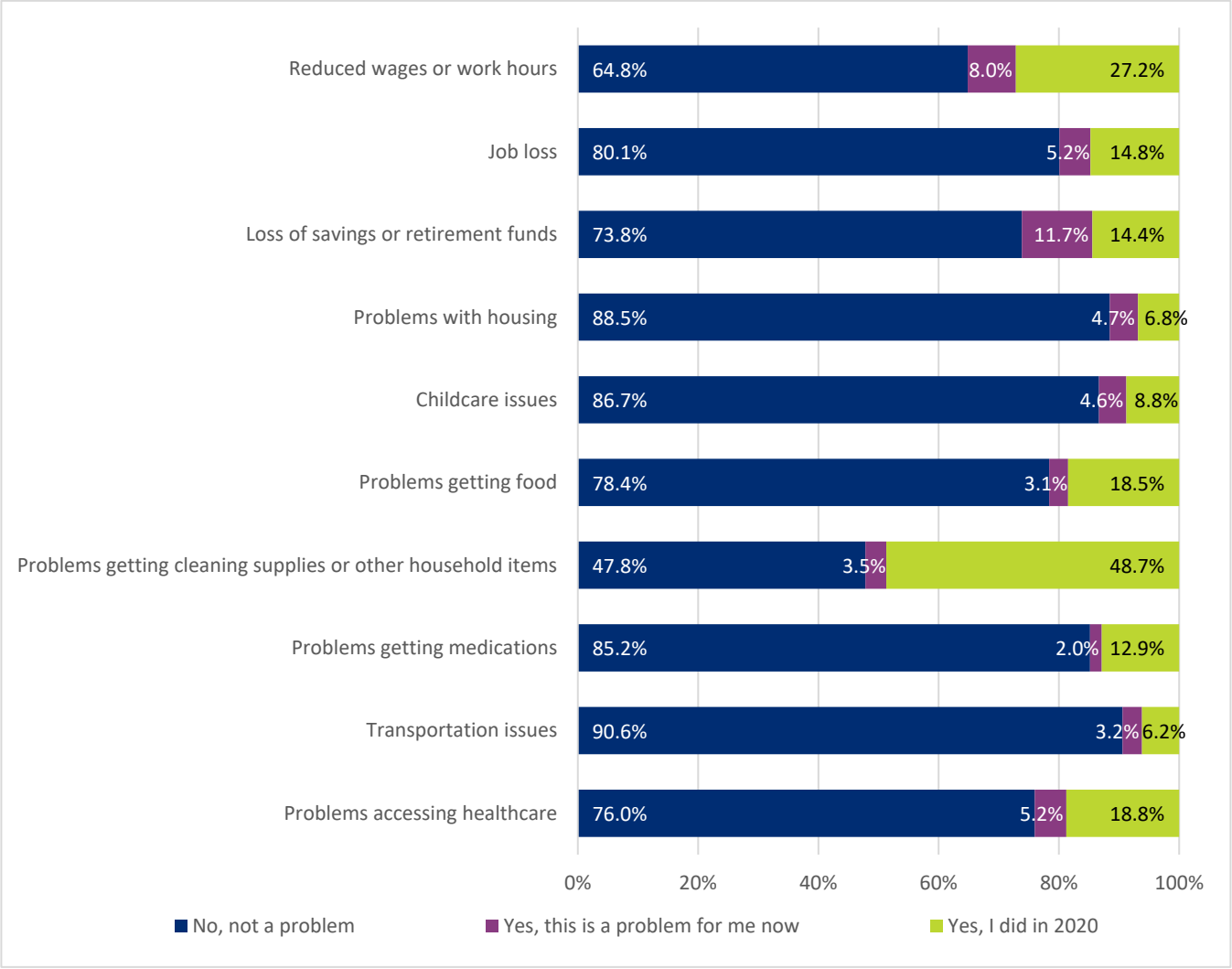
Figure 19. Changes to Lifestyle or Other Daily Activities

Note: Question asked of all participants.

To assess how residents' day-to-day activities have been affected, participants were asked, "COVID-19 has impacted people's day-to-day life in many different ways. Have you experienced any of these difficulties due to COVID-19?" and were then provided with a list of options to choose from.

Nearly half (48.7%) of residents experienced problems with getting cleaning supplies or other household items (48.7%) in 2020. Many residents also experienced reduced wages or work hours (27.2%), problems accessing healthcare (18.8%), and problems getting food (18.5%) in 2020, as illustrated in Figure 20.

Figure 20. Difficult Experiences due to COVID-19



Note: Reduced wages or work hours n = 1,711,544, Job loss n = 1,705,933, Loss of savings or retirement funds n = 1,709,774, Problems with housing n = 1,712,071, Childcare issues n = 1,699,461, Problems getting food n = 1,728,194, Problems getting cleaning supplies or other household items n = 1,748,231, Problems getting medications n = 1,725,191, Transportation issues n = 1,726,069, Problems accessing healthcare n = 1,722,443.

Relative to the year 2020, fewer percentages of residents reported experiencing many of these problems currently (in 2021, at the time of data collection).

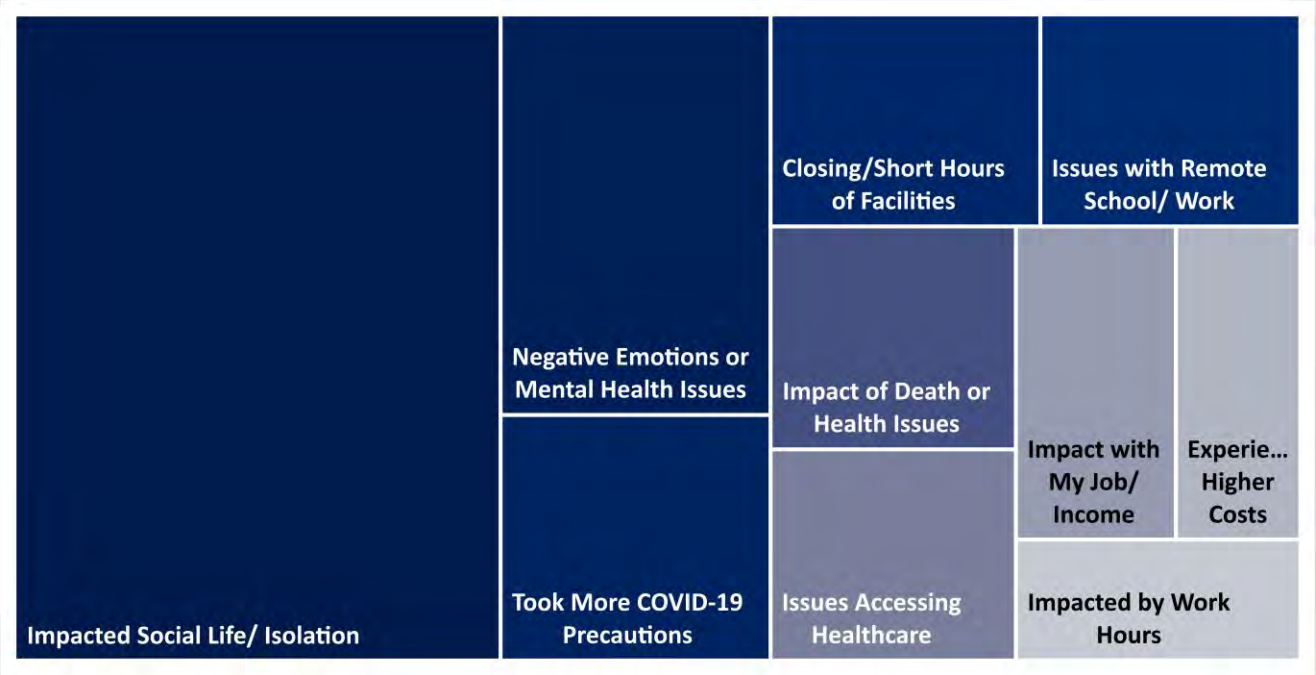
The most common issues that persist in 2021 include loss of saving/retirement (11.7%), reduced wages or work hours (8.0%), job loss (5.2%), problems accessing healthcare (5.2%), problems with housing (4.7%), and childcare issues (4.6%).

Residents were also asked if there were any other ways in which COVID-19 impacted their day-to-day life in an open-ended format. These responses were grouped into themes post-data-collection and are illustrated in Figure 21 below. Most residents who responded to this question (more than 3,000 respondents) said that there were **no other changes** or impact to share (e.g., "none", "no impact"). These are not represented in Figure 21.

Of the residents that *did* share an additional impact on their day-to-day life, the most common theme was an **impact on their social life or experiencing more isolation** (e.g., "stayed home more", "isolation,"). Other common themes that residents experienced are **more negative emotions or mental health issues** (e.g., "depressed me", "anxiety") and **taking more COVID-19 precautions** (e.g., "daily mask wearing," "taking precautions and observing restrictions").

Less common themes included impact of closing/short hours of various facilities, difficulty with remote school, issues accessing healthcare, impact with job/income, impact of death or health issues, experiencing higher costs, and impacted by work hours.

Figure 21. Impact on Day-to-Day Life



Note: Question asked of all participants.

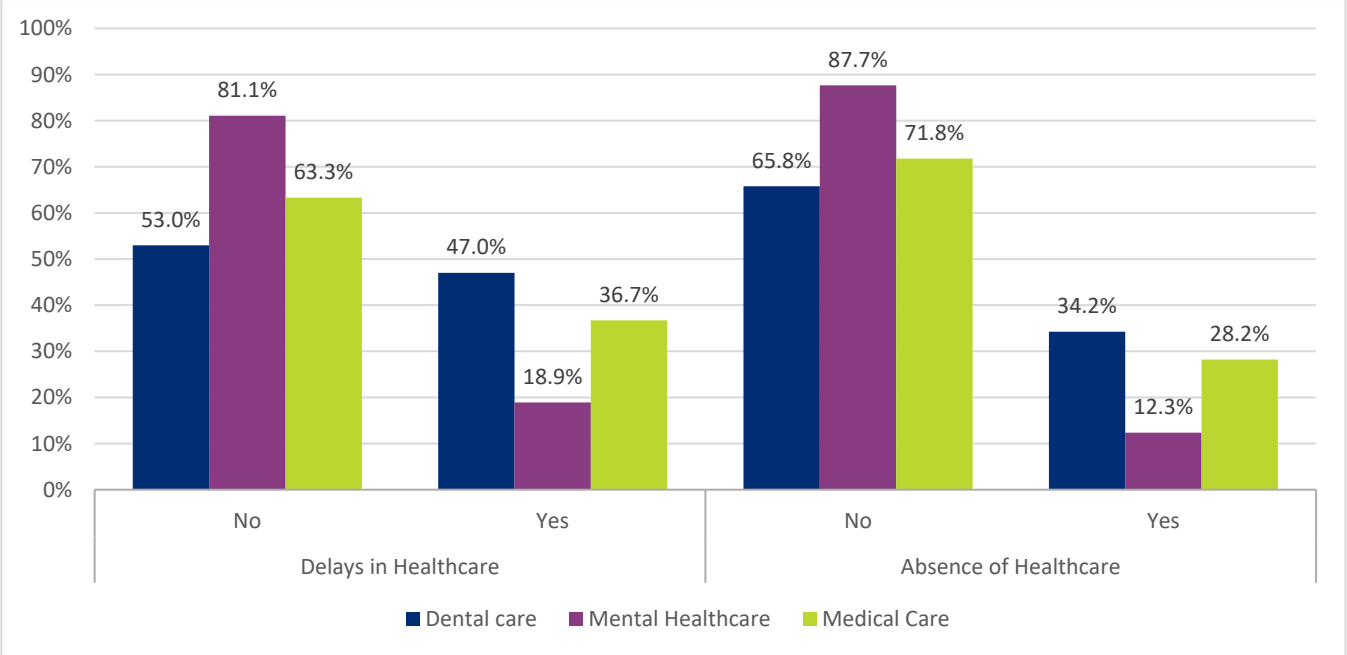
Delay/Absence of Healthcare During COVID-19

Access to regular, affordable healthcare is critical to the overall health and well-being of an individual. However, as a result of COVID-19, many day-to-day activities were either delayed or canceled. Among these activities included access to healthcare, which is dangerous as a disruption in care can increase the risk for life-threatening medical emergencies.[6]

To assess the delay of healthcare, residents were asked, "At any time in the last 12 months, did you DELAY getting _____ because of the coronavirus pandemic?" and could rate several types of care. As illustrated in Figure 22 below, more than a third (36.7%) of residents delayed medical health during COVID-19. Furthermore, nearly half (47.0%) delayed dental care, and 18.9% delayed mental healthcare.

Residents were also asked about not getting healthcare. Specifically, "At any time in the last 12 months, did you need _____ for something other than coronavirus, but DID NOT GET IT because of the coronavirus pandemic?" Over a quarter (28.2%) of residents did not get needed medical care during COVID-19. Further, over a third (34.2%) did not get needed dental care, and 12.3% did not get needed mental healthcare.

Figure 22. Delays/Absence in Healthcare



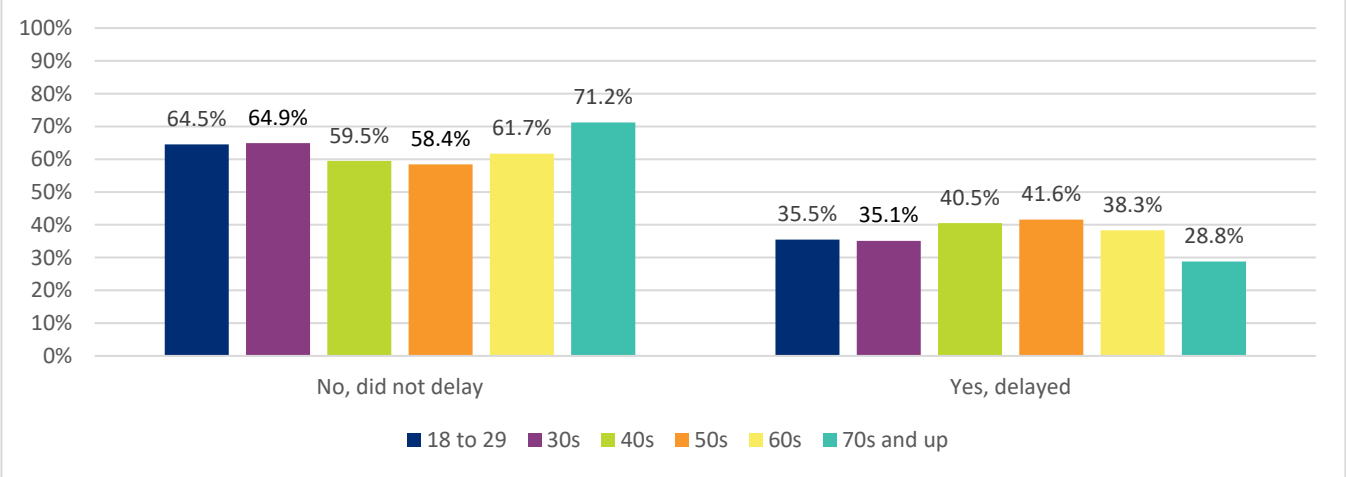
Note: Delays in healthcare: Dental care *n* = 1,772,308, Mental Healthcare *n* = 1,697,231, Medical Care *n* = 1,773,016. Absence in Healthcare: Dental care *n* = 1,770,998, Mental Healthcare *n* = 1,711,996, Medical Care *n* = 1,769,828.

[6] Czeisler MÉ, Marynak K, Clarke KE, et al. Delay or Avoidance of Medical Care Because of COVID-19-Related Concerns – United States, June 2020. MMWR Morb Mortal Wkly Rep 2020;69:1250-1257. DOI: http://dx.doi.org/10.15585/mmwr.mm6936a4external icon

Delay of Healthcare During COVID-19 by Age Group (Imputed)

Age can influence one's ability to obtain healthcare. Delays in healthcare were analyzed by age group. There was a statistically significant relationship between delays in medical care and age group, χ^2 (5, n = 1,773,015) = 31.83, p < .001. Specifically, as illustrated in Figure 23 below, seniors ages 70 and up were significantly less likely to have delayed healthcare than their younger counterparts.

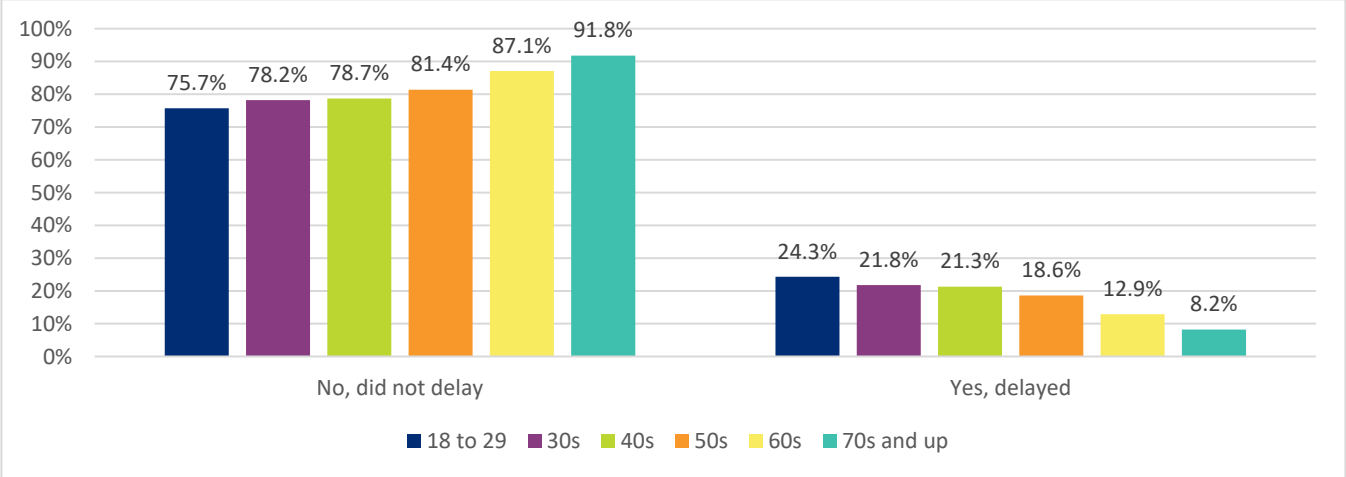
Figure 23. Delay in Medical Care by Age Group



Note: 18 to 29 n = 400,085, 30s n = 322,296, 40s n = 292,437, 50s n = 283,118, 60s n = 234,281, 70s and up n = 240,798.

There was also a statistically significant relationship between delays in mental care and age group, χ^2 (5, n = 1,697,232) = 81.17, p < .001. Similar to the pattern for medical care, seniors ages 70s and up were significantly less likely to have delayed mental healthcare than their younger counterparts, as illustrated in Figure 24 below.

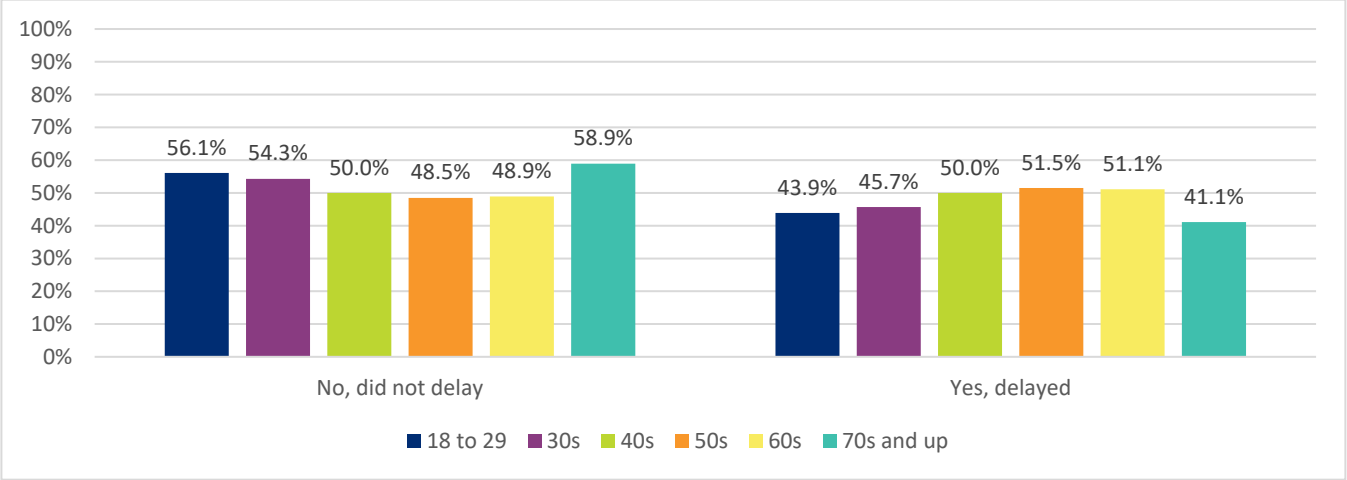
Figure 24. Delay in Mental Care by Age Group



Note: 18 to 29 n = 392,804, 30s n = 318,850, 40s n = 284,224, 50s n = 266,164, 60s n = 219,013, 70s and up n = 216,177.

There was also a statistically significant relationship between delays in dental care and age group, χ^2 (5, n = 1,772,308) = 26.56, p < .001. Seniors ages 70 and up are less likely to have delayed their dental care than their younger counterparts, as illustrated in Figure 25.

Figure 25. Delay in Dental Care by Age Group

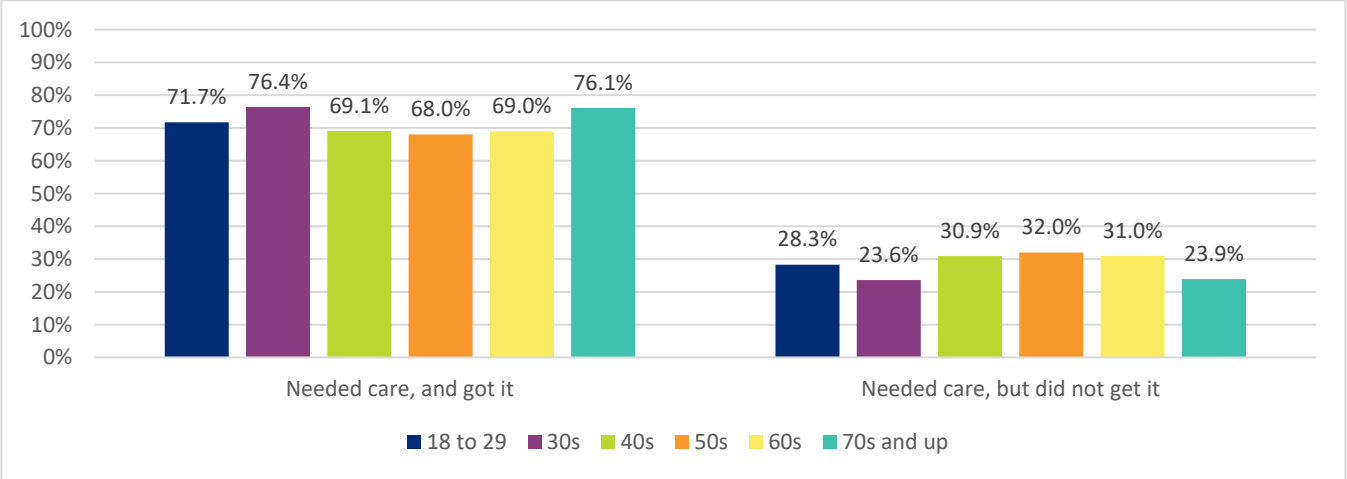


Note: 18 to 29 n = 399,774, 30s n = 322,485, 40s n = 292,918, 50s n = 282,537, 60s n = 234,613, 70s and up n = 239,981.

Absence of Healthcare During COVID-19 by Geography

There was a statistically significant relationship between an absence of medical care and age group, χ^2 (5, n = 1,769,829) = 24.83, p < .001. Specifically, residents in their 40s, 50s, and 60s were significantly more likely to need medical care and not get it when compared to residents in their 30s and their 70s and older, as illustrated in Figure 26.

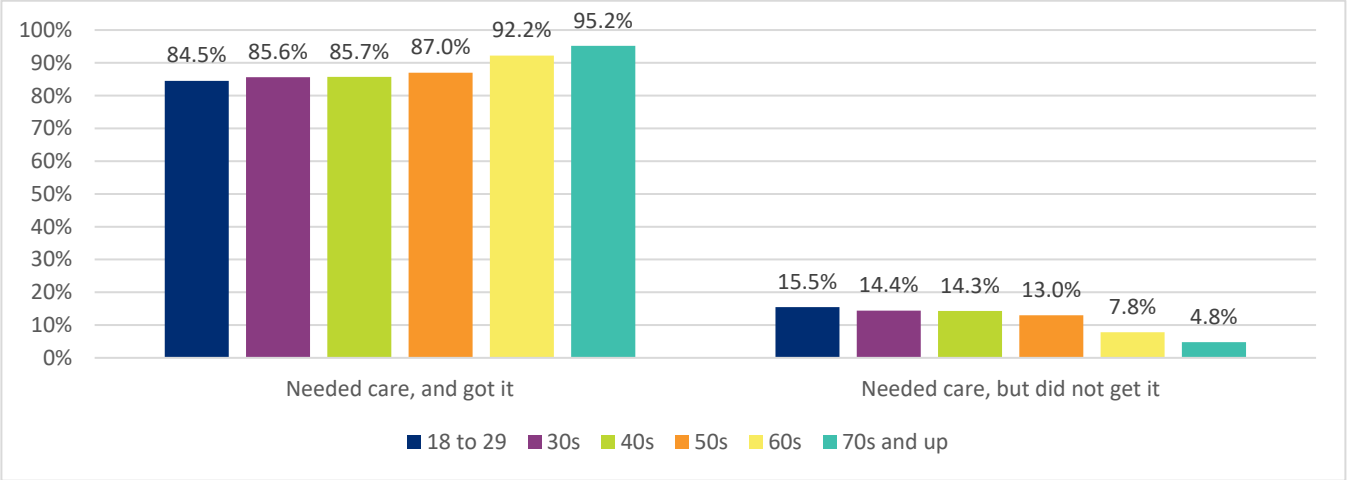
Figure 26. Absence Medical Care by Age Group



Note: 18 to 29 n = 402,075, 30s n = 323,913, 40s n = 292,974, 50s n = 280,736, 60s n = 232,862, 70s and up n = 237,269.

There was a statistically significant relationship between an absence of mental care and age group, χ^2 (5, n = 1,711,995) = 55.53, p < .001. Older residents (those in their 60s and their 70s and up) are significantly less likely to have missed out on mental healthcare than their younger counterparts, as illustrated in Figure 27 below.

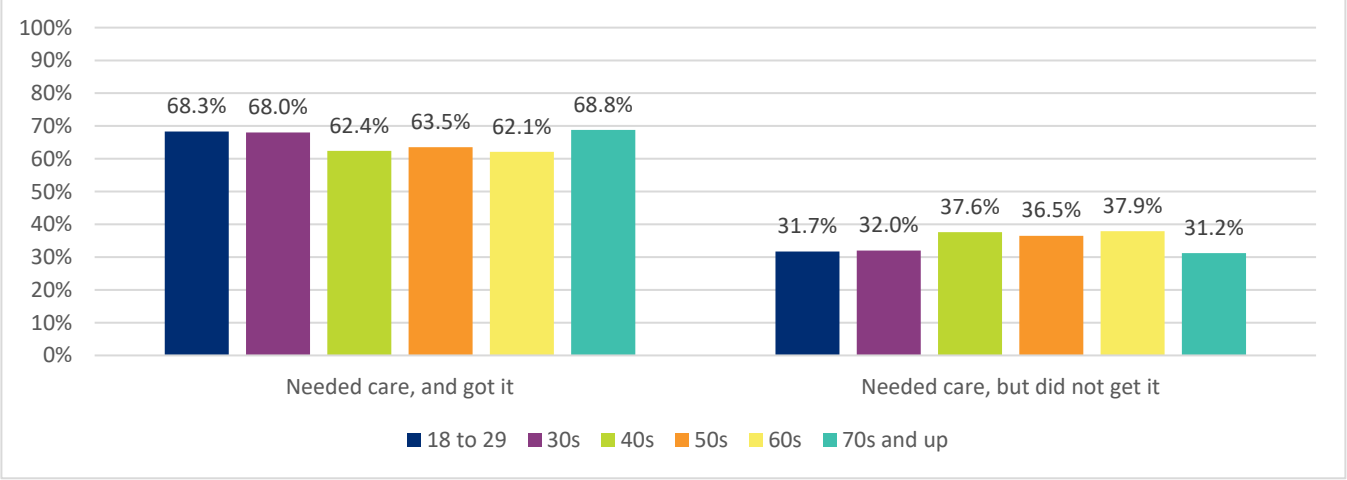
Figure 27. Absence in Mental Care by Age Group



Note: 18 to 29 n = 397,101, 30s n = 320,373, 40s n = 286,730, 50s n = 270,851, 60s n = 219,948, 70s and up n = 216,992.

There was a statistically significant relationship between an absence of dental care and age group, χ^2 (5, n = 1,770,999) = 16.55, p < .01. Similar to the other patterns, older adults (ages 70 and up) were less likely to have missed out on dental care than their younger counterparts, as illustrated in Figure 28 below.

Figure 28. Absence in Dental Care by Age Group



Note: 18 to 29 n = 401,778, 30s n = 324,535, 40s n = 293,920, 50s n = 281,818, 60s n = 232,623, 70s and up n = 236,325.

COVID-19 Diagnosis and Treatment

COVID-19 (Coronavirus disease 2019, SARS-CoV-2) is a contagious respiratory disease that rapidly spread around the world, taking the lives of hundreds of thousands of people in the United States.[7]

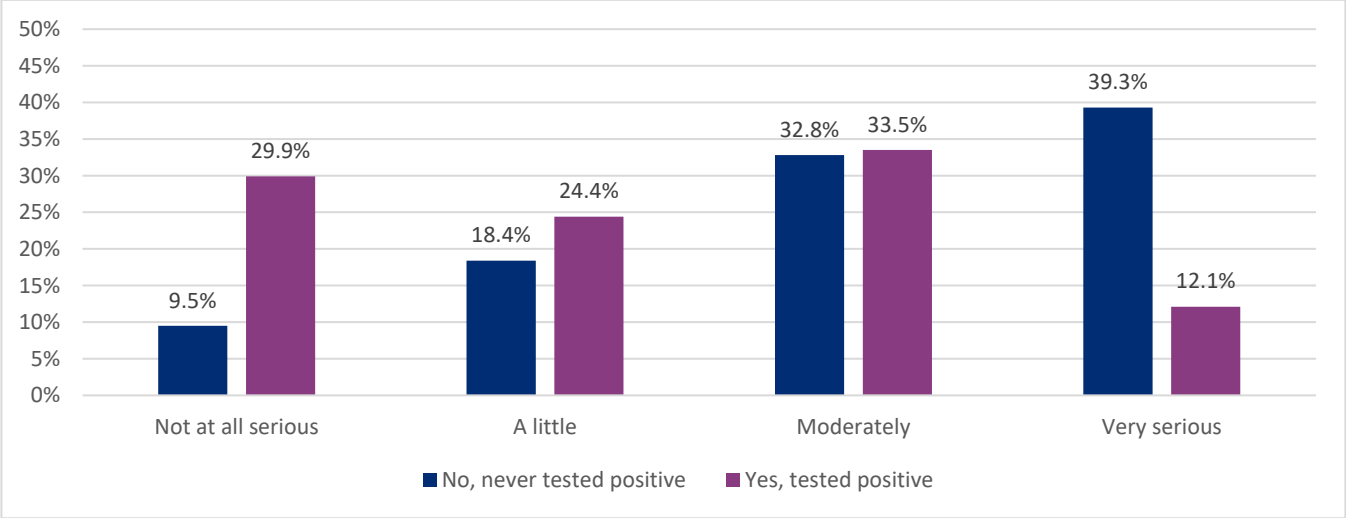
COVID-19 Diagnosis

Residents were asked, "Have you ever tested positive for COVID-19?" A total of 22.3% of the sample reported having tested positive for COVID-19, while 77.7% have not tested positive. This equates to approximately 382,892 people who've tested positive, which is close to the number of confirmed Riverside County COVID-19 cases of 378,296 as of December 2021.[8]

Those who selected "no" were subsequently asked, "How serious do you think it would be if you tested positive for COVID-19?" while those who selected "yes" were subsequently asked, "How serious was it when you tested positive for COVID-19?"

Residents who reported "a little" or "moderately" are approximately similar in their perception of seriousness regardless of whether they contracted COVID-19. However, perceptions of the seriousness for contracting COVID-19 were substantially different for those who have tested positive (very serious rating of 12.1%) compared to those who have never tested positive (very serious rating of 39.3%), as illustrated in Figure 29 below.

Figure 29. Perceived Seriousness of Contracting COVID-19



Note: No, never tested positive *n* = 1,334,792, Yes, tested positive *n* = 371,850.

[7] Basics of COVID-19 (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19/basics-covid-19.html

[8] Coronavirus (n.d.). Riverside University Health System – Public Health. Data pulled on December 3rd, 2021. https://www.rivcoph.org/coronavirus

COVID-19 Treatment

Many people infected with COVID-19 had to seek emergency medical care throughout the pandemic. Typically, when people experienced trouble breathing, persistent pain, confusion, inability to wake, or pale, gray, or blue skin, emergency care was recommended immediately.[9]

Residents who stated they tested positive for COVID-19 were then asked, "Did you have an overnight stay in a hospital for suspected or diagnosed COVID-19?" As illustrated below, about 6.1% of people who had a positive COVID-19 test had an overnight stay in a hospital.

Table 10. Overnight in Hospital Due to COVID-19 - COVID-19 Positive Residents Only

Response	Percentage	Count
No	93.9%	355,947
Yes	6.1%	23,179
Total	**100.0%**	**379,127**

Among the 6.1% who had an overnight stay in a hospital, these residents were asked, "If yes, were you put into the ICU (intensive care unit) because of suspected or diagnosed COVID-19?" A total of 51.0% (10,745 residents) of residents (with a positive COVID-19 test and then an overnight stay in a hospital) were placed in the ICU. The remaining 49.0% (10,307 residents) were not placed in the ICU.

[9] What to do if you are sick? (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/steps-when-sick.html

COVID-19 Recovery

Most people infected with COVID-19 recover quickly (i.e., within weeks); however, some people experience symptoms for a prolonged period (e.g., a month or more).[10]

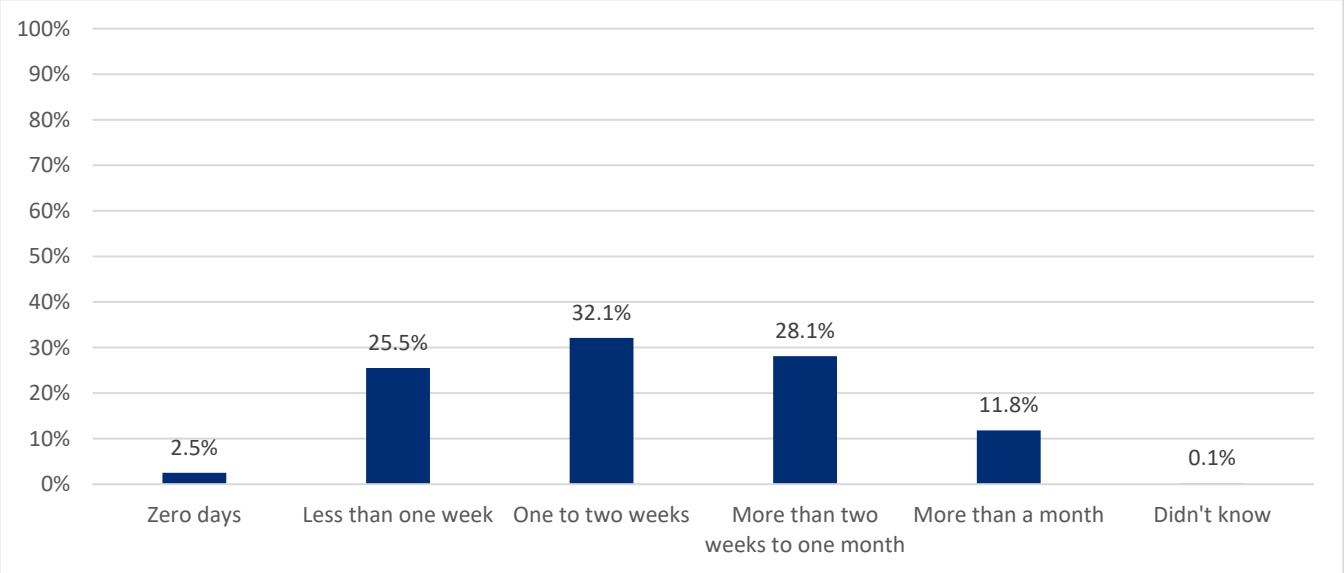
Among those residents who tested positive for COVID-19, they were further asked, "If you know, or believe, that you had COVID-19: have you recovered to your usual state of health?" As illustrated in Table 11, a total of 16.2% reported that "no", they have not recovered to their usual state of health and are still recovering.

Table 11. Recovered to Usual State of Health – Positive COVID-19 Test Residents Only

Response	Percentage	Count
No	16.2%	59,762
Yes	83.8%	309,535
Total	**100.0%**	**369,296**

The 83.8% who have recovered their usual health were then asked to report the number of days it took to recover. In some cases, respondents provided answers such as "months", "weeks", etc., rather than an explicit number of days. Thus, responses were logically categorized and are presented below. Most people who tested positive took a few weeks—but less than a month—to regain their full health, as illustrated in Figure 30 below.

Figure 30. Length of Time to Recover – Residents who Report Having Recovered



Note: *n* = 292,373.

[10] Post-COVID Conditions (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects/index.html

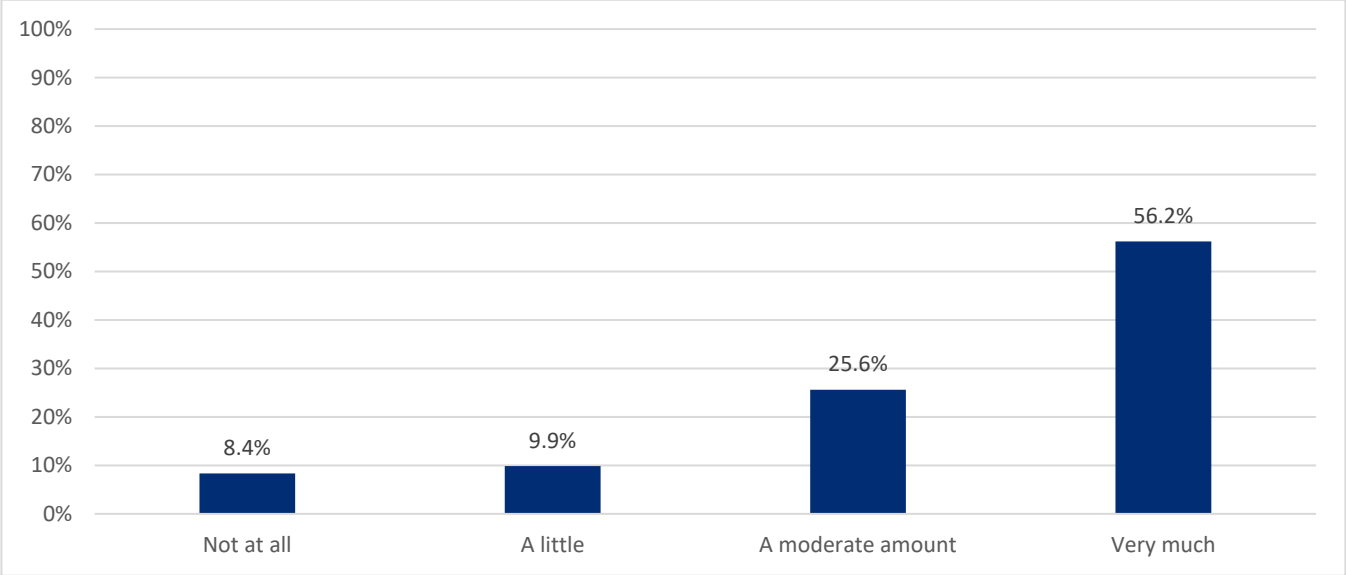
COVID-19 Vaccination

Perceptions of COVID-19 Vaccine

Misinformation regarding the purpose and efficacy of COVID-19 vaccines has been perpetuated throughout the pandemic. This misinformation can affect beliefs/attitudes towards vaccines, as well as the rate of vaccination.[11]

All residents were asked, "In your opinion, how much would the COVID-19 vaccine protect you against getting COVID-19?" More than half (56.2%) believe that the vaccine would protect them "very much", while more than a quarter (25.6%) believe "a moderate amount". Fewer residents stated, "a little" (9.9%) or "not at all" (8.4%), as illustrated in Figure 31.

Figure 31. Perceptions of COVID-19 Vaccine Protection



Note: *n* = 1,798,822.

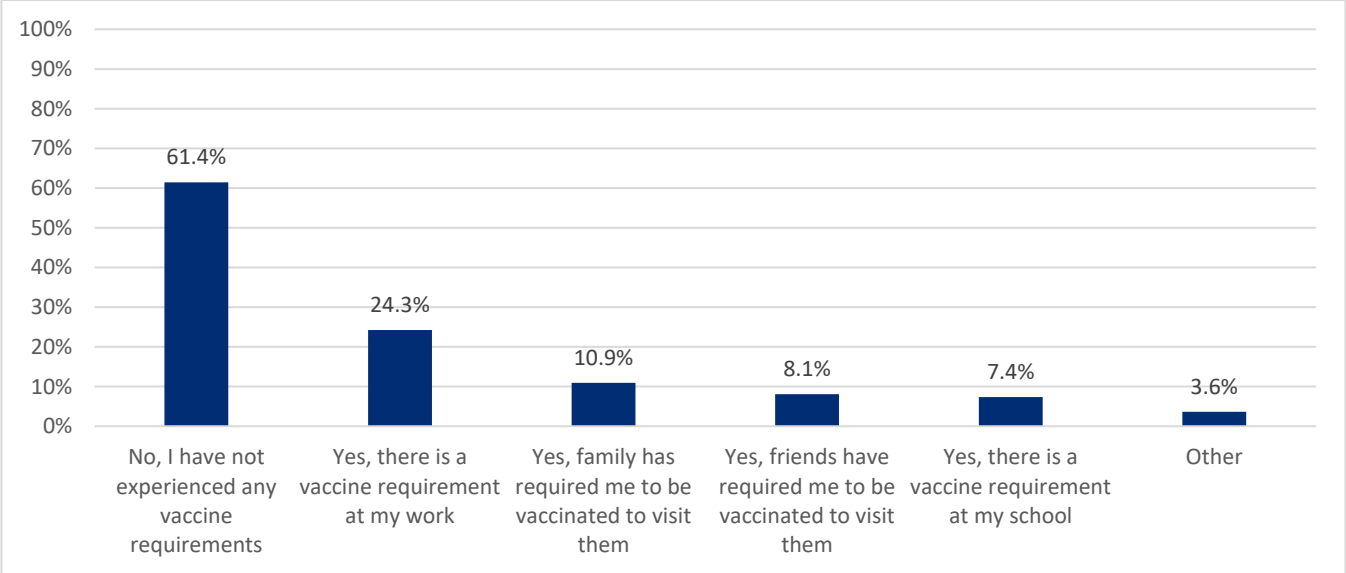
[11] How to Address COVID-19 Vaccine Misinformation (2021). Center for Disease Control and Prevention. https://www.cdc.gov/vaccines/covid-19/health-departments/addressing-vaccine-misinformation.html

COVID-19 Vaccine Mandates

Requirements regarding COVID-19 vaccination and testing have proliferated since the inception of the COVID-19 vaccine. For example, in the latter half of 2021, the State of California required both school staff and students to be vaccinated against COVID-19,[12] the California Department of Public Health required all workers in healthcare facilities to be vaccinated,[13] and even city-level mandates have been issued regarding dining in restaurants.[14]

To assess where residents have experienced vaccine mandates/requirements, residents were asked, "Have you experienced any COVID-19 vaccine requirements?" and were encouraged to select all that apply. Close to two-thirds (61.4%) have not experienced any vaccine requirements. However, others have experienced vaccine requirements at their work (24.3%), with family (10.9%), friends (8.1%), and school (7.4%), as illustrated in Figure 32.

Figure 32. COVID-19 Vaccine Requirement Experiences



Note: *n* = 1,584,565.

[12] California Becomes First State in Nation to Announce COVID-19 Vaccine Requirements for Schools (2021). Office of Governor Gavin Newsom. https://www.gov.ca.gov/2021/10/01/california-becomes-first-state-in-nation-to-announce-covid-19-vaccine-requirements-for-schools/

[13] State Public Health Officer Order of August 5, 2021. California Department of Public Health. (2021). https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Order-of-the-State-Public-Health-Officer-Health-Care-Worker-Vaccine-Requirement.aspx

[14] New Citywide COVID-19 Safety Requirements (2021). City of Palm Springs. https://www.palmspringsca.gov/government/covid-19-updates

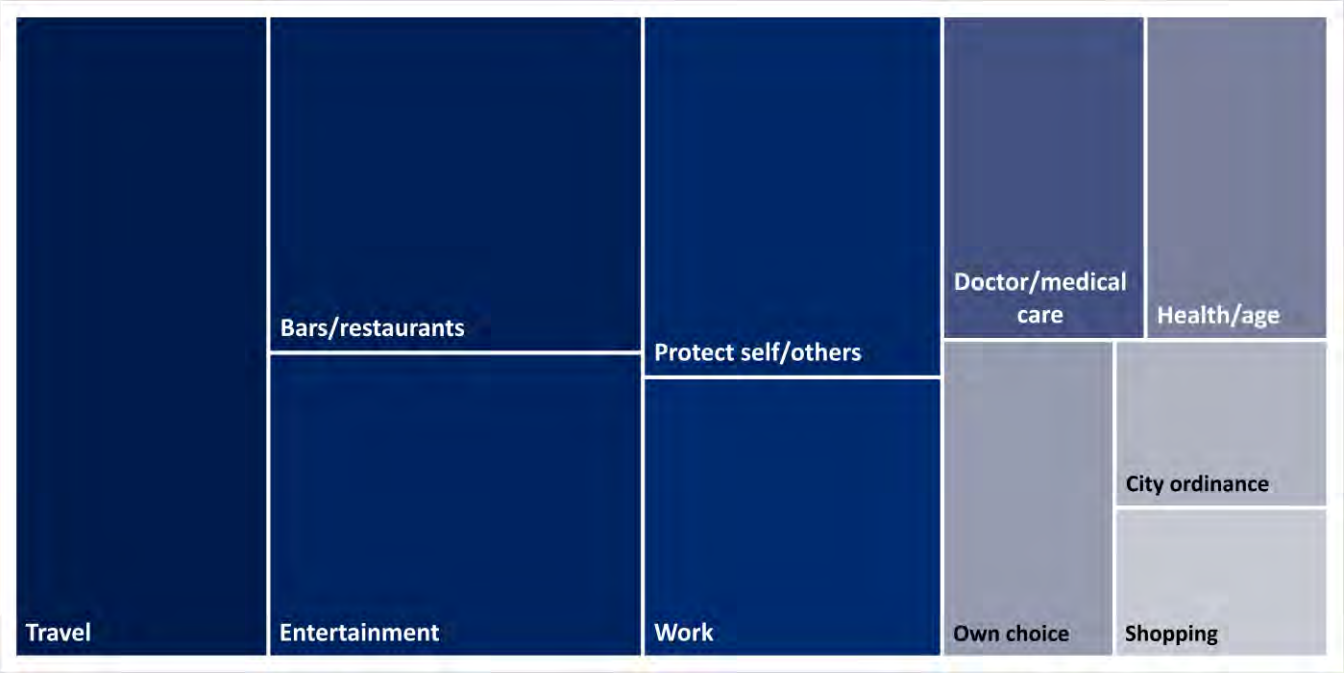
Those who stated "other" vaccine requirements (3.6%) were asked to specify what requirements they experienced in an open-ended format. These responses were then grouped into themes post-data-collection and are illustrated in Figure 33 below.

The most common "other" vaccine requirement was for **travel** (e.g., "travel to Hawaii", "to go on a cruise"), followed by **bars and restaurants** (e.g., "restaurants in Palm Springs", "bars/restaurants"), **entertainment** (e.g., "local live theater", "to attend a concert"), and **to protect oneself and others** (e.g., "to protect my family and friends", "I have autoimmune disease").

A number of other responses were provided, although in smaller proportions, as illustrated in the figure below. These included:

- Work requirements
- Physician recommendations or requirements to receive medical care
- One's health condition or age
- One's own decision or choice
- City ordinances (most of which referred to the City of Palm Springs)
- Shopping/grocery stores

Figure 33. "Other" Vaccine Requirements



Note: Only includes participants who selected "other, please specify" in response to the question, "Have you experienced any COVID-19 vaccine requirements?"

Ways That COVID-19 Mandates Changed Behavior

Residents were asked "If yes to any of the options in #8 [vaccine mandates], how (if at all) did this/these requirement(s) change your behavior?" Results are illustrated in Figure 34.

Over half of residents indicated **No, the requirements did not change their behavior.** Many of these indicated that the requirements did not change participants' behavior because they were already vaccinated or already wanted to be vaccinated (e.g., "Already vaccinated to protect self or family," "Wanted the vaccine regardless of requirements").

About one-fifth of all residents indicated **Yes, the requirements did change their behavior**. Of these, most common changes included the following:

- **Yes, got vaccinated** (e.g., "did not want the vaccine but felt forced to," "got vaccinated for work")
- **Yes, follow COVID-19 protocols** (e.g., "I became more vigilant and aware," "made me more careful")
- **Yes, less social** (e.g., "careful as to whom I encounter in small groups")

Additionally, a small portion reported that the requirements changed how they feel. Some reported **feeling more secure** (e.g., "we feel safer with the vaccine"/ "nos sentimos más seguros con la vacuna," "I feel safer now to work") and others reported **feeling upset/angry** (e.g., "it made me very angry," "just irritating").

Figure 34. Ways That Requirements Changed Behavior

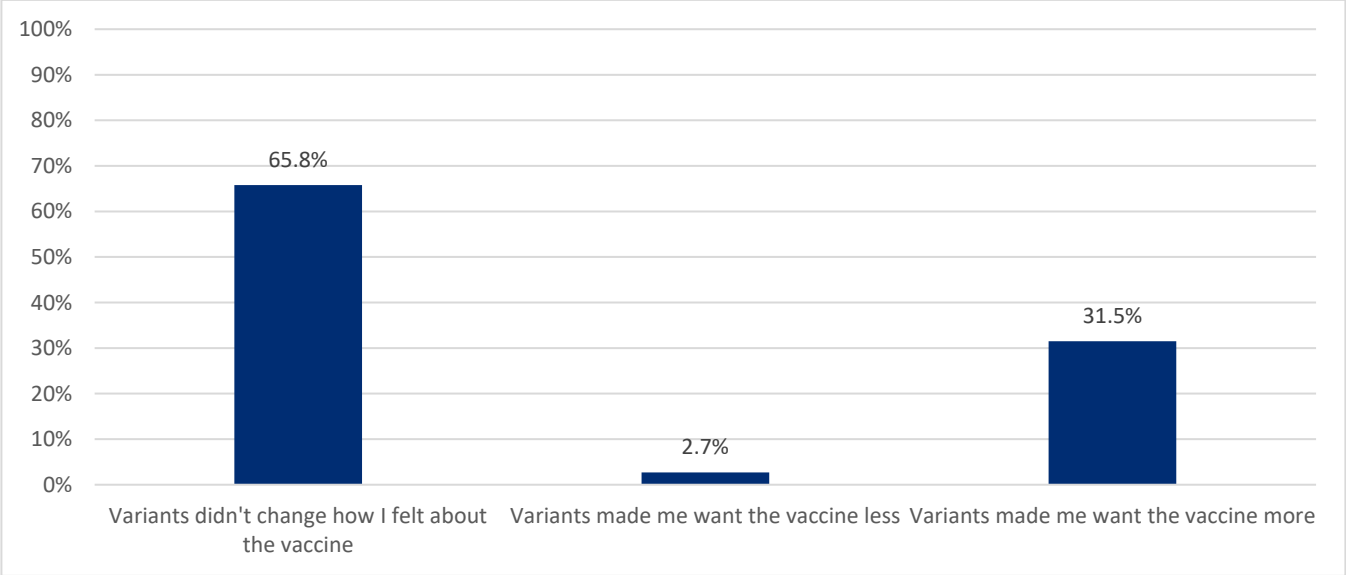
Note: Only includes participants who indicated "Yes" (of any type) in response to the question, "Have you experienced any COVID-19 vaccine requirements?"

How COVID-19 Variants Impact Perception of the Vaccine

COVID-19 was first detected in the United States on January 20th, 2020.[15] However, since the first laboratory-confirmed case, several variants of the original strain have emerged, such as the Delta variant, which was more infectious and contagious than earlier strains.[16]

To assess the influence of variants on vaccine attitudes, all residents were asked, "Did COVID-19 variants (like the Delta variant) change your mind about getting a COVID-19 vaccine?" About two-thirds (65.8%) stated that variants didn't change their mind about how they felt towards the COVID-19 vaccine. The remaining third (31.5%) wanted the vaccine more, while fewer (2.7%) wanted the vaccine less, as illustrated in Figure 35.

Figure 35. COVID-19 Variants - Perception Changes of Vaccination



Note: *n* = 1,679,842.

[15] CDC Museum COVID-19 Timeline (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/museum/timeline/covid19.html#:~:text=January%2020%2C%202020%20CDC,18%20in%20Washington%20state.

[16] What you Need to Know about Variants (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/variants/about-variants.html

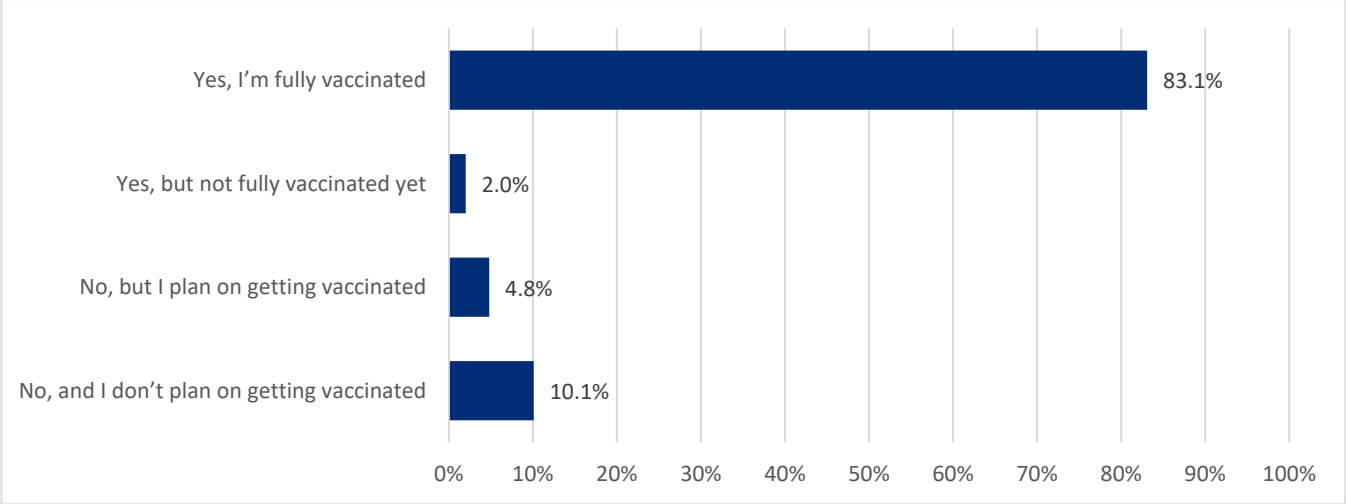
COVID-19 Vaccination Status

In California, the COVID-19 vaccine was distributed in a phased approach to reach populations with the highest risk of acquiring the disease or of the highest risk of developing severe illness. Thus, certain groups such as healthcare workers, staff at skilled nursing facilities and similar settings, essential workers, and people with a higher risk of severe illness, including the elderly, could obtain a vaccine before the general adult population.[17]

At the time of the data collection (September to November 2021), the general adult population was eligible for the COVID-19 vaccine and had been for several months. As such, residents were asked, "Have you had the COVID-19 vaccine?"

Results show that the majority of residents (83.1%) reported that they were fully vaccinated, while another 2.0% were vaccinated (but not fully), and 4.8% plan on getting vaccinated. The remaining 10.1% of residents (approximately 182,125 people) reported that they are not vaccinated and don't plan on getting vaccinated, as illustrated in Figure 36.

Figure 36. COVID-19 Vaccination Status



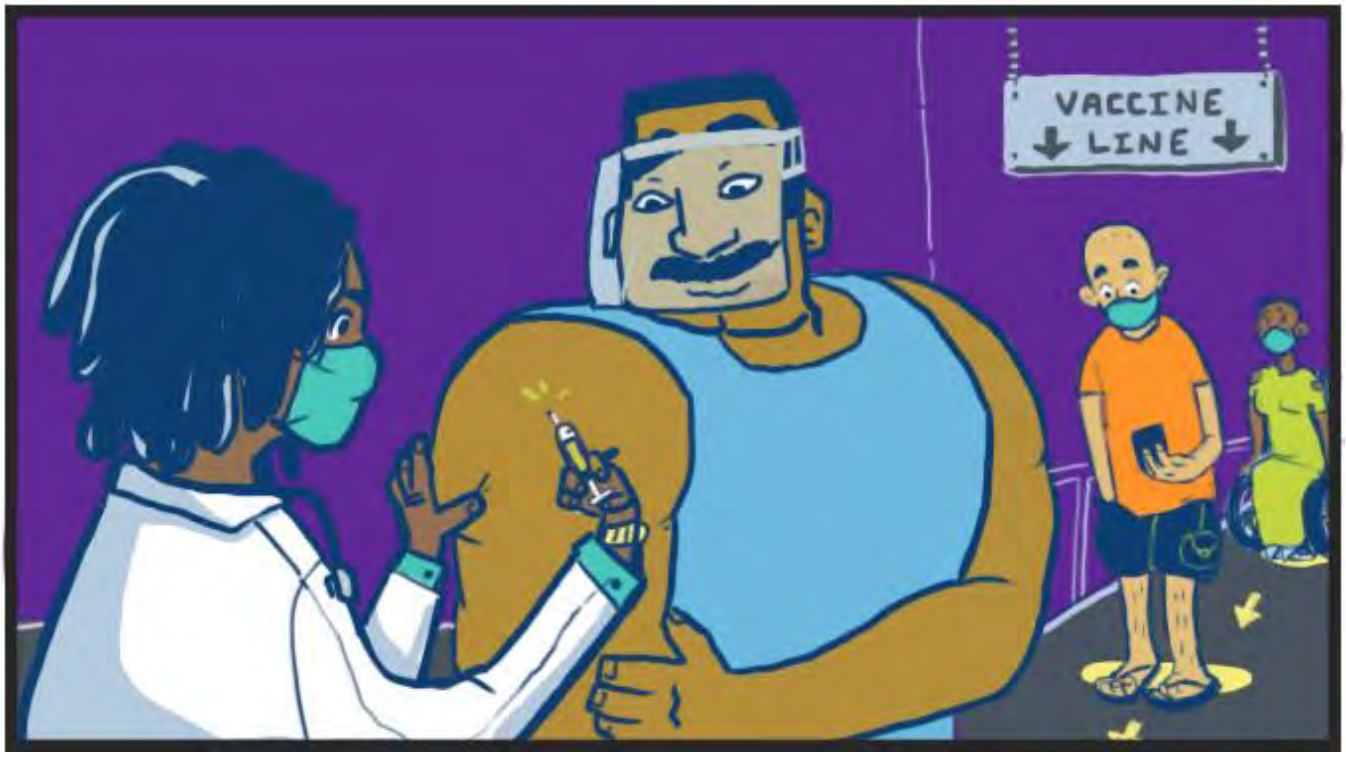
Note: *n* = 1,799,920.

[17] COVID-19 Vaccination Plan (2020). California Department of Public Health. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/COVID-19/COVID-19-Vaccination-Plan-California-Interim-Draft_V1.0.pdf?_cldee=Y2Jha2VyQGNhbGhvc3BpdGFsLm9yZw%3d%3d&recipientid=contact-a44bb655054aea11a812000d3a3b70c9-d3b1f5fdf153475aa1e698a39640f95b&esid=8767241f-2213-eb11-a813-000d3a3abdcf

Reasons Why People Are Unvaccinated

On the pilot version of this question, residents who stated, “No, and I don't plan on getting vaccinated” were asked to explain why in an open-ended question. These themes were analyzed and then used to inform the development of response options for the question in the full implementation of the survey.

The most common reason for not being vaccinated (from the pilot study) described by residents was that they were concerned about vaccine safety, with many noting that the vaccine is new, experimental, and not yet FDA approved (at the time). Other reasons mentioned included don't need/want it, the vaccine is not effective, allergic to the ingredients, don't trust the government, lazy, and personal reasons.

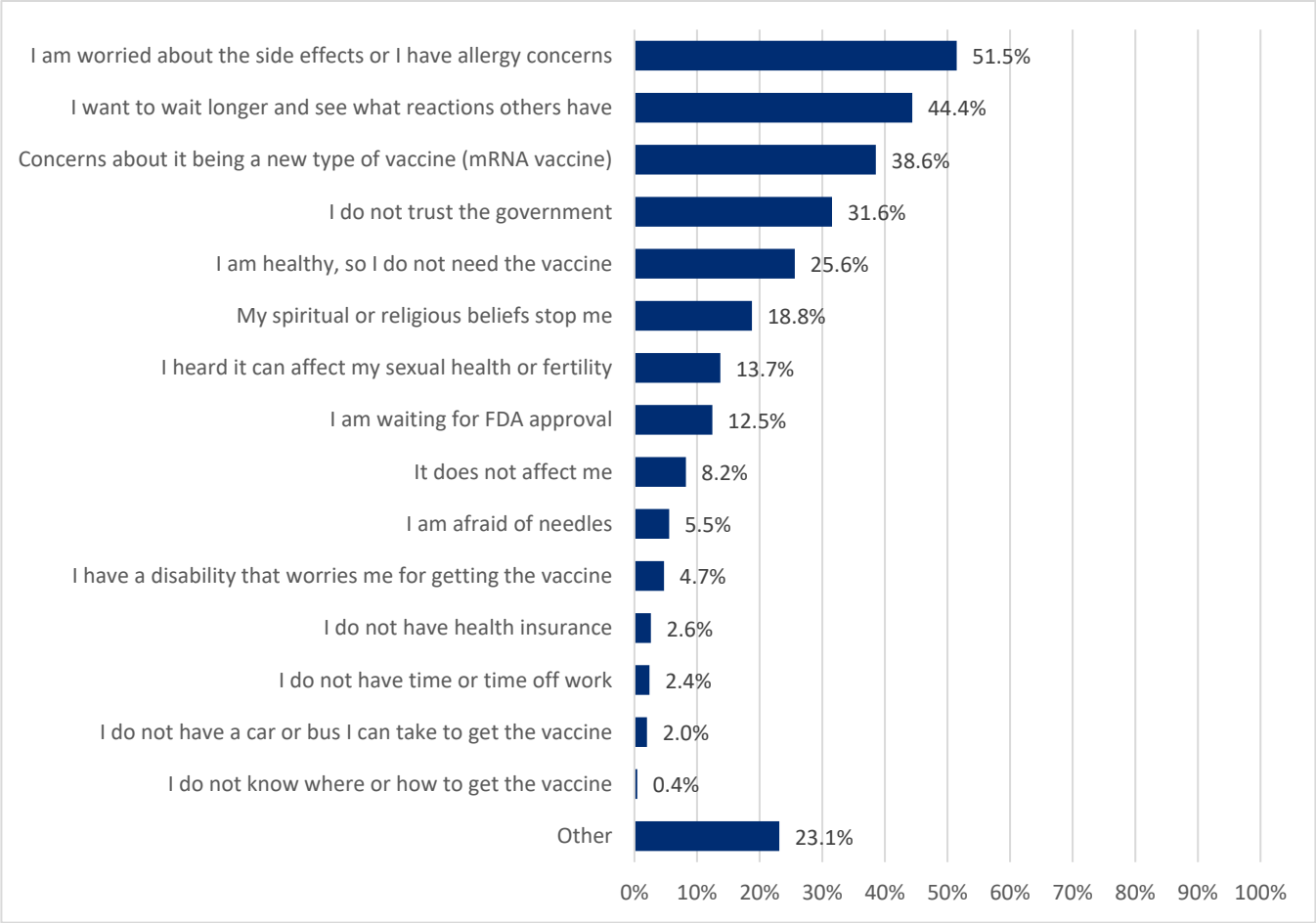


As of December 2021, COVID-19 vaccines are safe and effective in reducing the risk of acquiring and transmitting the virus for the population five years and older.[18] However, there are some who still chose not to receive the COVID-19 vaccine.

Participants who had *not* been vaccinated were then asked, "What is/are the main reason(s) you have not taken the vaccine?" and then encouraged to select all that apply, including an "other, please specify" option.

Results demonstrate that more than half (51.5%) of residents who are not vaccinated report that they are worried about the side effects or that they have allergy concerns, as illustrated in Figure 37 below. Other common reasons include the desire to wait and see reactions in others, concerns about it being a new type of vaccine, and lack of trust in the government.

Figure 37. Reasons for Not Getting the Vaccine – Residents Who Are Unvaccinated



Note: *n* = 249,149.

[18] Benefits of Getting a COVID-19 Vaccine (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/vaccine-benefits.html

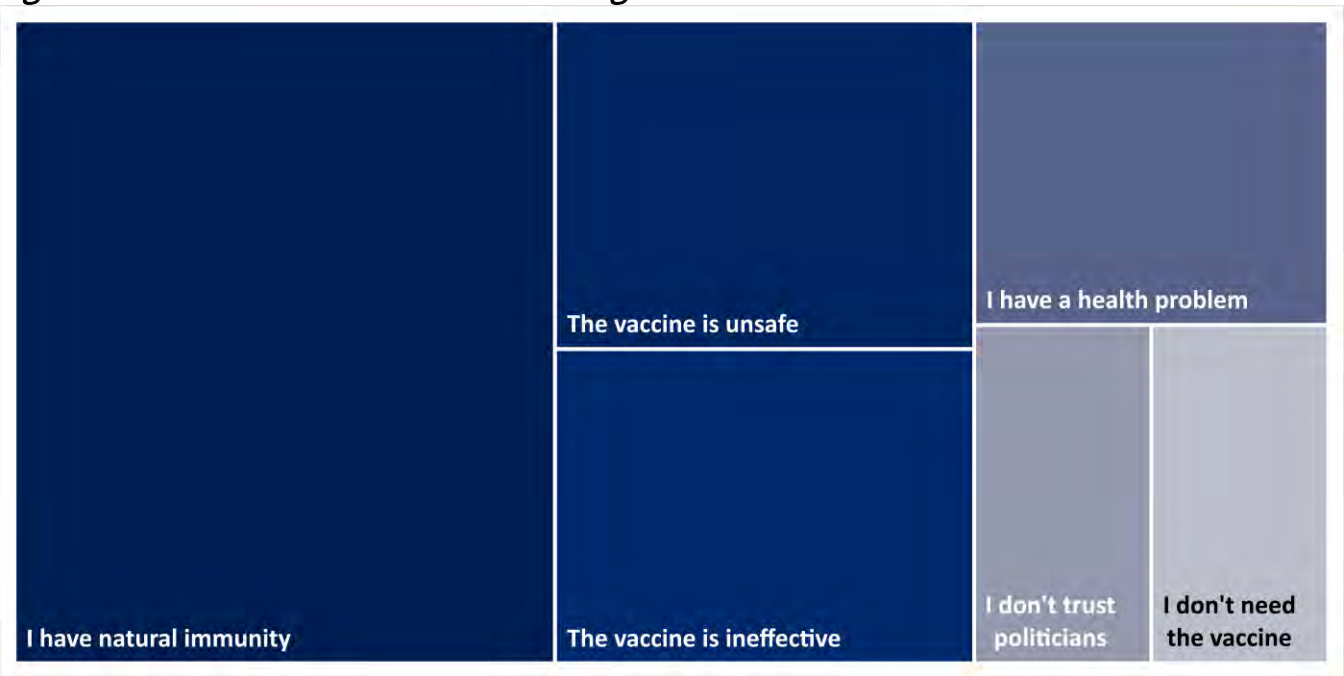
Those who selected "other reason" (23.1%) for not getting the vaccine were asked to specify the reason in an open-ended format. These responses were grouped into themes post-data-collection and are represented in Figure 38 below.

The most common theme was related to having **natural immunity** (e.g., "I have natural immunity after getting COVID," "I already have antibodies"). Other common themes were the belief that the **vaccine is unsafe** (e.g., "too many reported side effects," "not been proven safe"), followed by the belief that the **vaccine is ineffective** (e.g., "does not prevent getting COVID-19," "it won't help").

Less common themes included the following:

- A medical problem or contraindication to the vaccine
- Lack of trust in political figures
- Belief that one does not need the vaccine

Figure 38. "Other" Reasons for Not Getting the Vaccine



Note: Only includes participants who have not received the COVID-19 vaccine and who responded, "Other, please specify" to the question, "What is/are the main reason(s) you have not taken the vaccine?"

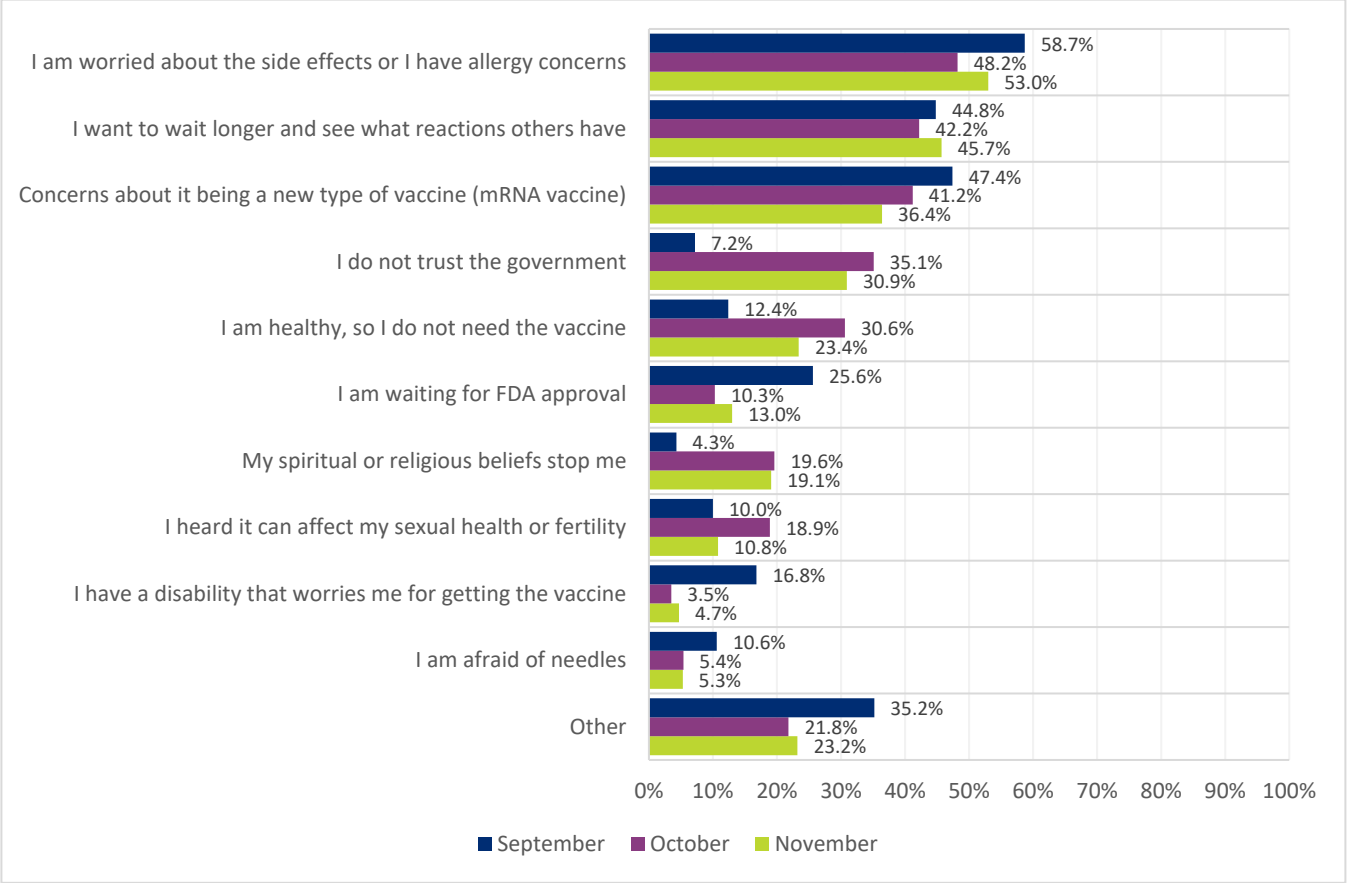
Reasons for Not Being Vaccinated by Time of Survey Completion

Knowledge around COVID-19 has changed throughout the pandemic. Reasons for not being vaccinated were analyzed by the month of survey completion to determine if time was influential on the decision to be vaccinated. For readability, only the 10 most common reasons for not being vaccinated are presented in Figure 39 below.

It is important to note here that "time of completion" may have a lag of a week or two due to data processing. That is, once residents sent their surveys to HARC, the physical copies were then entered into a database. A chi-square analysis could not be performed as more than 20% of the cross-tabulations had expected cell counts less than five, potentially leading to an invalid statistical test.

However, there were some noticeable differences in responses based on the month of completion. For instance, residents reported being worried about side effects/allergy concerns more often in September (58.7%), compared to October (48.2%) and November (53.0%). Similarly, residents reported having concerns about a new type of vaccine in September (47.4%) more often compared to October (41.2%) and November (36.4%).

Figure 39. Reasons for Not Getting the Vaccine by Time of Completion



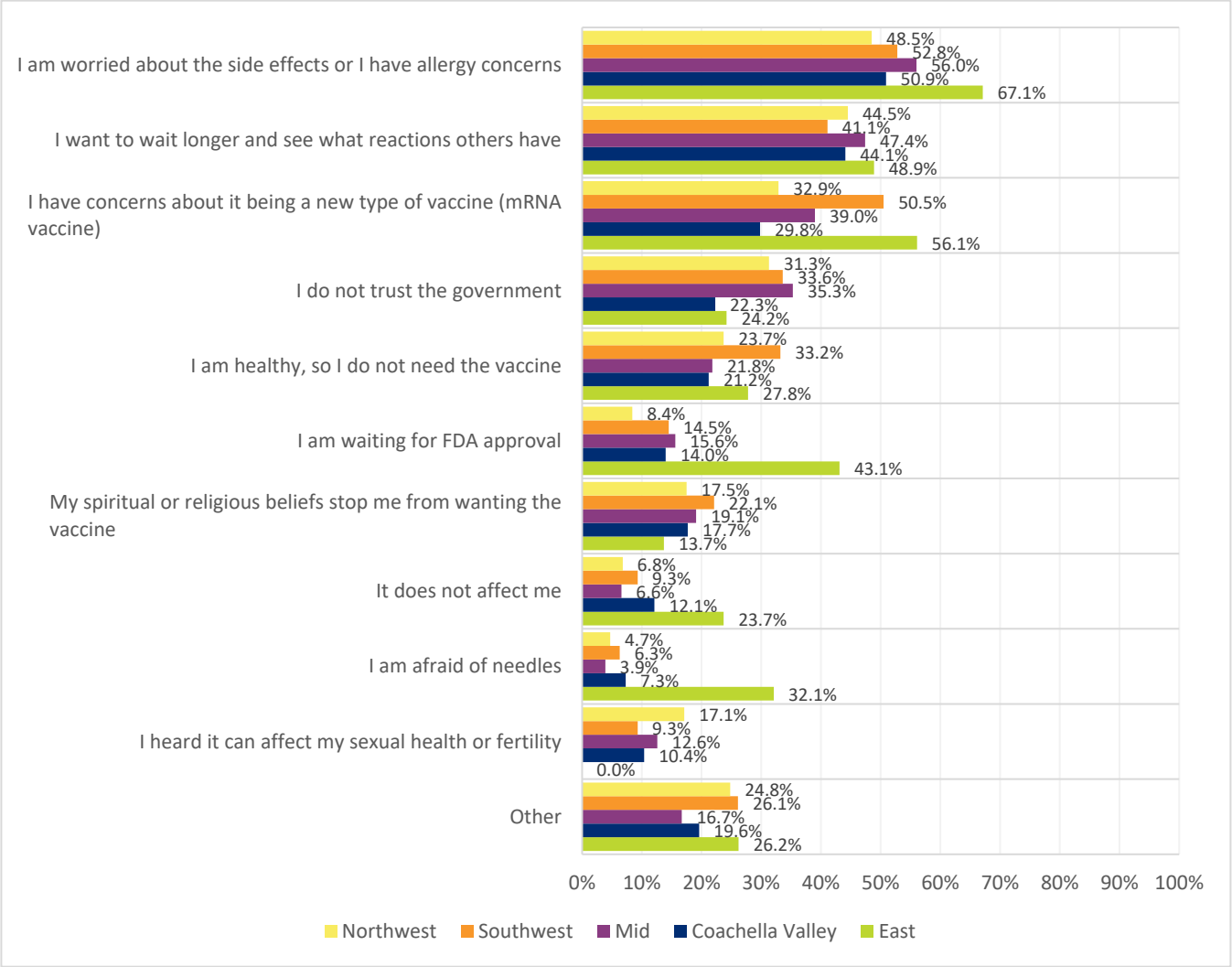
Note: September (*n* = 9,287), October (*n* = 91,040), November (*n* = 148,823).

Reasons for Not Being Vaccinated by Geography

Geography was also a variable of interest. For readability, only the 10 most common reasons for not being vaccinated are presented in Figure 40 below. Chi-Square analysis was performed to determine geographic differences in reasons for not being vaccinated. The overall result of the test was statistically nonsignificant, χ^2 (64, n = 246,756) = 82.03, p = .06.

However, there were still a few statistically significant regional differences at the $p < .05$ level. For instance, the residents in the East region (43.1%) were significantly more likely to report waiting for FDA approval compared to residents in the Northwest region (8.4%). Residents in the Southwest region (50.5%) were also significantly more likely to have concerns about it being a new vaccine compared to residents in the Northwest region (32.9%). Residents in the East region (32.1%) were significantly more likely to be afraid of needles compared to residents in the Northwest region (4.7%) and the Mid-region (3.9%).

Figure 40. Reasons for Not Getting the Vaccine by Public Health Region



Note: Northwest *n* = 113,265, Southwest *n* = 60,718, Mid *n* = 40,607, Coachella Valley *n* = 29,090, East *n* = 3,076.

Reasons Why People Got the COVID-19 Vaccine

Participants who had been vaccinated were then asked, "Why did you choose to get vaccinated?" in an open-ended format. These responses were grouped into themes post-data-collection and are illustrated below in Figure 41.

The most common theme, as illustrated in the figure below, was **to protect oneself** (e.g., "to keep me safe"). The next most common was **to protect family/friends** (e.g., "to protect my family," "For my children"), **to protect others** (e.g., "to help others," "to take care of others"/"cuidar a los demás"), and **age/health risk** (e.g., "I'm over 65 and diabetic," "I'm immunocompromised").

Other less common themes include to prevent death/serious disease, a belief in science/vaccines, for the public good, and work mandate.

Figure 41. Reasons for Getting Vaccinated

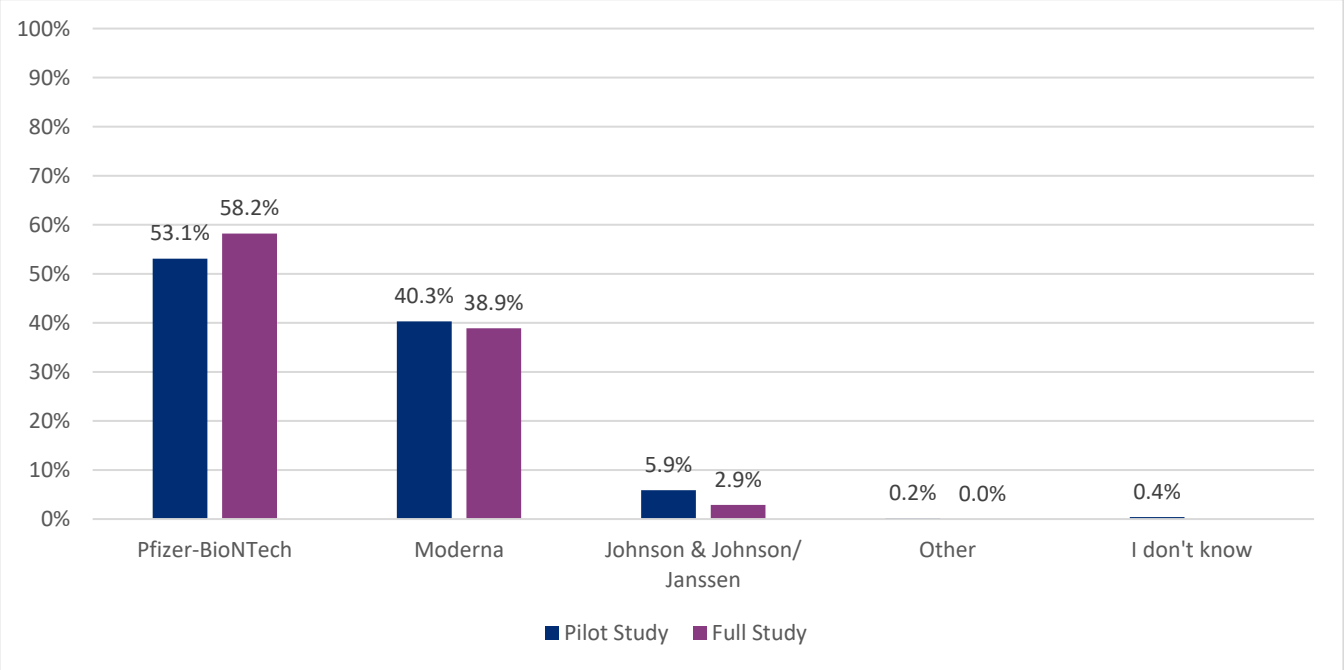
Note: Only includes participants who have been vaccinated for COVID-19.

COVID-19 Vaccine Type

As of December 2021, three vaccines (Pfizer-BioNTech, Moderna, and Johnson & Johnson's Janssen) have been approved and authorized to be administered in the United States.[19] Among residents who were vaccinated, more than half (53.1%) received Pfizer-BioNTech. A large percentage (40.3%) also received Moderna. Fewer residents received the Johnson & Johnson/Janssen vaccine (5.9%). See the figure below for additional details.

In the pilot study, the type of vaccine question was nearly identical; however, residents didn't have the option of stating, "I don't know". The proportions for vaccine type in the pilot study are similar to the proportions from the full implementation study, as illustrated in Figure 42 below.

Figure 42. Type of Vaccine Received



Note: Pilot study *n* = 74,146, full study *n* = 1,446,784.

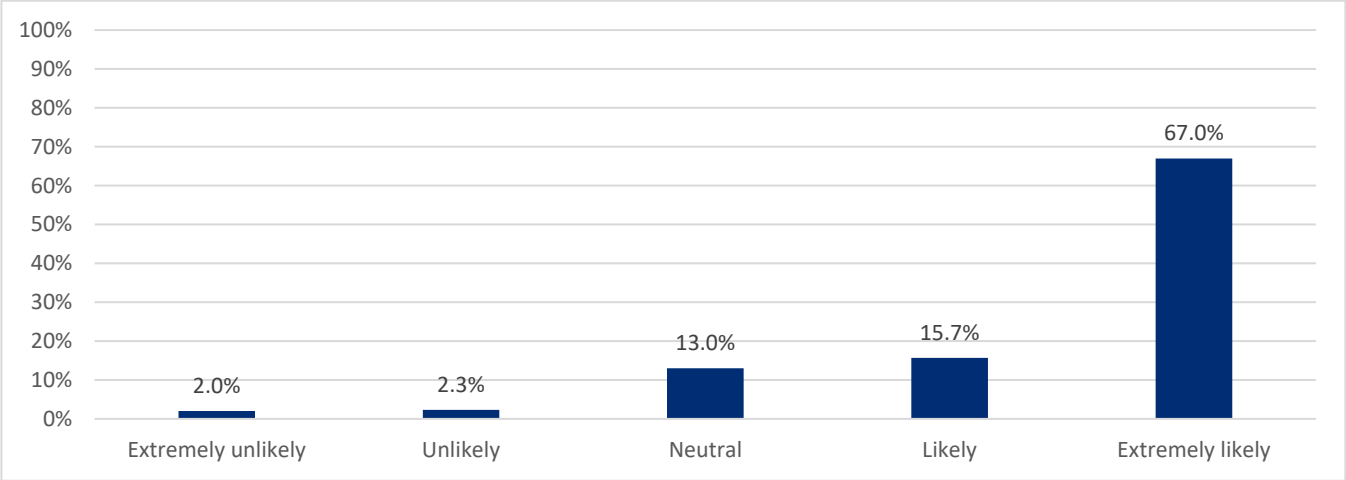
Residents who selected "other" vaccines were asked to specify in an open-ended format. Only a small handful of respondents (*n* = 18) specified "other" vaccines. Most responses referenced booster shots or the vaccines already listed (Pfizer-BioNTech, Moderna, and Johnson & Johnson's Janssen). There were two responses that referenced the AstraZeneca vaccine, and two that referenced the Sinovac vaccine.

[19] Different COVID-19 Vaccines (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines.html

Likelihood of Recommending the COVID-19 Vaccine

Residents who were vaccinated were asked, "How likely are you to recommend the vaccine to someone else?" More than two-thirds (67.0%) were "extremely likely" to recommend the vaccine to others. Fewer residents were "unlikely" (2.3%) or "extremely unlikely" (2.0%), as illustrated in Figure 43 below.

Figure 43. Likelihood of Recommending Vaccine to Others – Vaccinated Residents Only

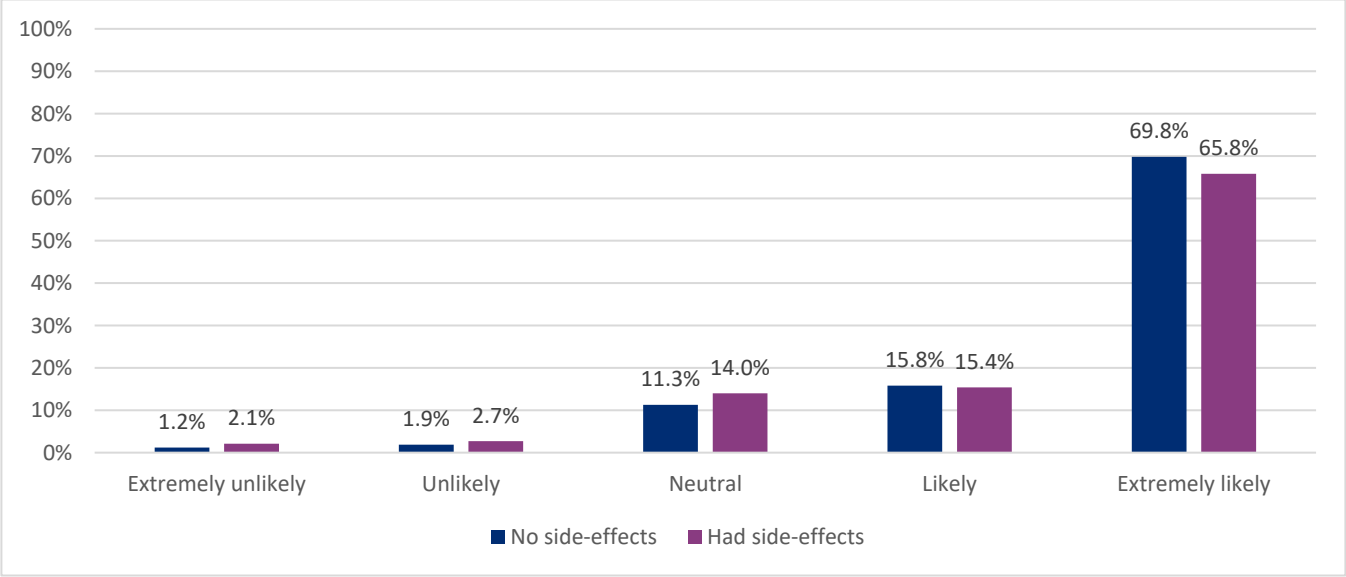


Note: *n* = 1,523,028.

A comparison of side-effects against the likelihood of recommending the vaccine was conducted and revealed vaccine side-effects were influential in the decision to recommend the COVID-19 vaccine to others, χ^2 (8, n = 1,480,799) = 16.086, p < .01.

Specifically, as illustrated in the figure below, residents who experienced side effects (2.1%) were significantly (p < .05) more likely to report, "extremely unlikely" in recommending the vaccine, compared to those who had no side effects (1.2%). Further, residents who did not experience side effects (69.8%) were significantly (p < .05) more likely to report, "extremely likely" in recommending the vaccine, compared to those who did have side effects (65.8%). Lastly, residents who experienced side effects (14.0%) were significantly (p < .05) more likely to report, "neutral" in recommending the vaccine, compared to those who had no side effects (11.3%), as illustrated in Figure 44 below.

Figure 44. Likelihood of Recommending Vaccine to Others by Side-Effects– Vaccinated Residents Only

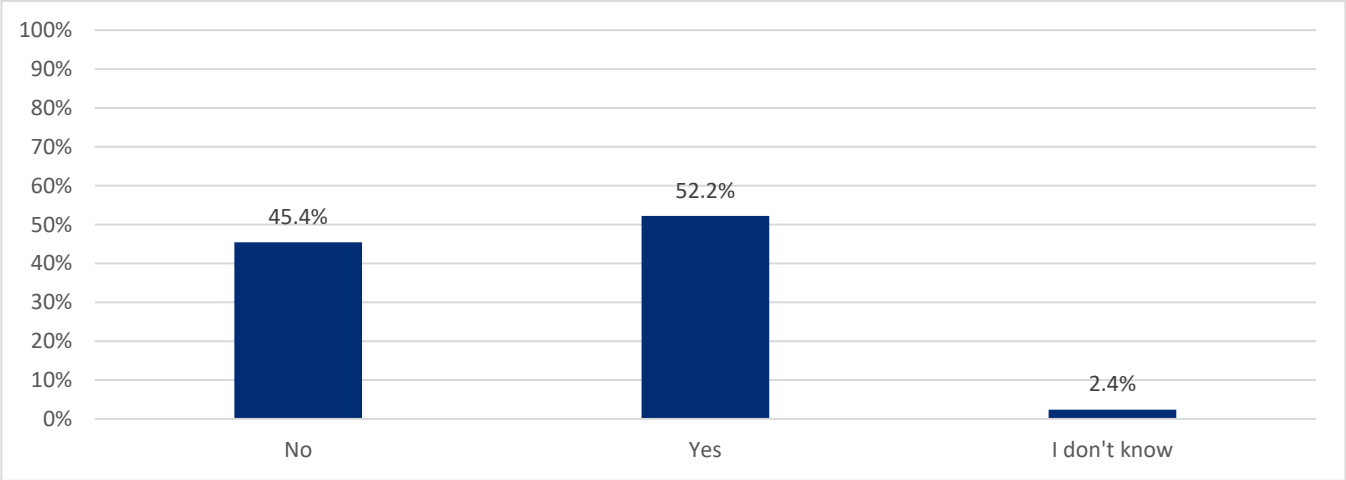


Note: No side-effects, n = 689,675, had side-effects, n = 791,124.

COVID-19 Vaccine Side Effects

Some people experienced side effects from the COVID-19 vaccines, which are common indications that the vaccine is developing protection.[20] Common side-effects of COVID-19 vaccination include tiredness, headaches, muscle pain, chills, fever, and nausea, in addition to pain, redness, and swelling of the arm.[21] Residents who were vaccinated were asked, "Did you have any side effects or symptoms after receiving the COVID-19 vaccination?" Slightly more than half (52.2%) reported having side effects, while others didn't have any symptoms (45.4%), as illustrated in Figure 45 below.

Figure 45. Side Effects/Symptoms of COVID-19 Vaccination



Note: *n* = 1,521,706.

[20] Possible Side Effects After Getting a COVID-19 Vaccine (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/expect/after.html

[21] Possible Side Effects After Getting a COVID-19 Vaccine (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/expect/after.html

Those who experienced side effects were asked to describe their symptoms in an open-ended format. These responses were grouped into themes post-data-collection and are illustrated in Figure 46 below.

As illustrated in the figure below, results demonstrated consistency with the expected and common side-effects: the most common side effect—experienced by nearly a third of those who reported symptoms—was **tiredness/fatigue** (e.g., "lethargic"). The next most common themes were **arm/shoulder pain/swelling** (e.g., "pain at the site"), **fever** (e.g., "little feverish"), **headache** (e.g., "migraine"), **body/muscle aches** (e.g., "soreness"), **chills** (e.g., "body chills"), **flu symptoms** (e.g., "flu-like symptoms), and **nausea** (e.g., "mild nausea").

Figure 46. Side-Effect Symptoms Experienced After COVID-19 Vaccination

Note: Only includes those who have been vaccinated for COVID-19 and who reported experiencing side effects after the vaccination.

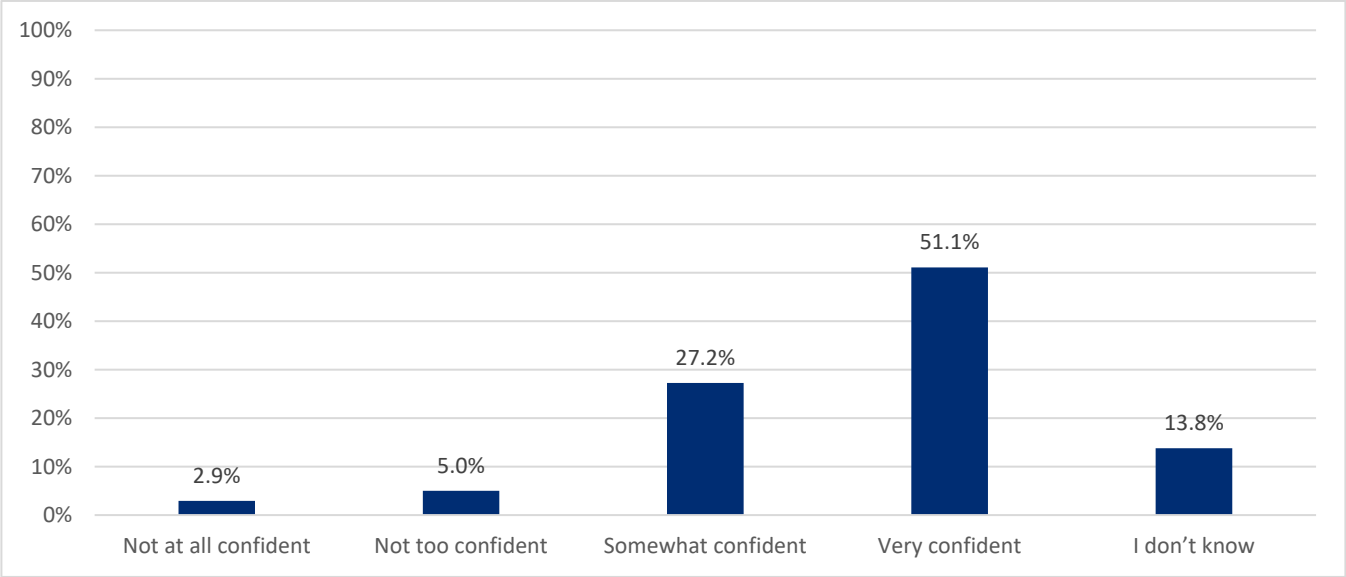
Equity in COVID-19 Vaccine Distribution

Certain factors such as income, education, economic status, healthcare access, racism/discrimination, and transportation/neighborhood conditions can contribute to disparities in access to COVID-19 vaccines.[22]

To assess perceptions of vaccine equity, residents were asked, "How confident are you that the COVID-19 vaccine is being distributed fairly?"

As illustrated in the figure below, slightly more than half (51.1%) report being "very confident" in the fair distribution of the COVID-19 vaccine. Others, however, are "somewhat confident" (27.2%), "not too confident" (5.0%), or "not at all confident" (2.9%), as illustrated in Figure 46 below.

Figure 47. Confidence in Fair Distribution of COVID-19 Vaccine



Note: *n* = 1,793,658.

[22] COVID-19 Vaccine Equity for Racial and Ethnic Minority Groups (2021).Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/vaccine-equity.html

Those who said, “not at all confident” or “not too confident” to confidence in fair distribution of the COVID-19 vaccine were asked, “In your own words, how could the COVID-19 vaccine be distributed more fairly?” The responses to this open-ended question were grouped into themes post-data-collection and is illustrated in Figure 48 below.

The most common theme was that in order to distribute the vaccine more fairly, it **must reach more undeserved, low-income, and minority communities** (e.g., “you need to vaccinate people who has low income and immigrants first, because they don’t have access to health services like us, people with insurance and good income”). Another common response was that **it should be distributed evenly across all states and regions** (e.g., “be available to all ages & all locations”).

Other themes included **making it optional, not mandatory** (e.g., “let people make their own choice”, “stop mandating it”) and to **distribute to other countries** (e.g., “should be distributed to underdeveloped countries”).

Figure 48. Ways to Distribute Vaccine More Fairly

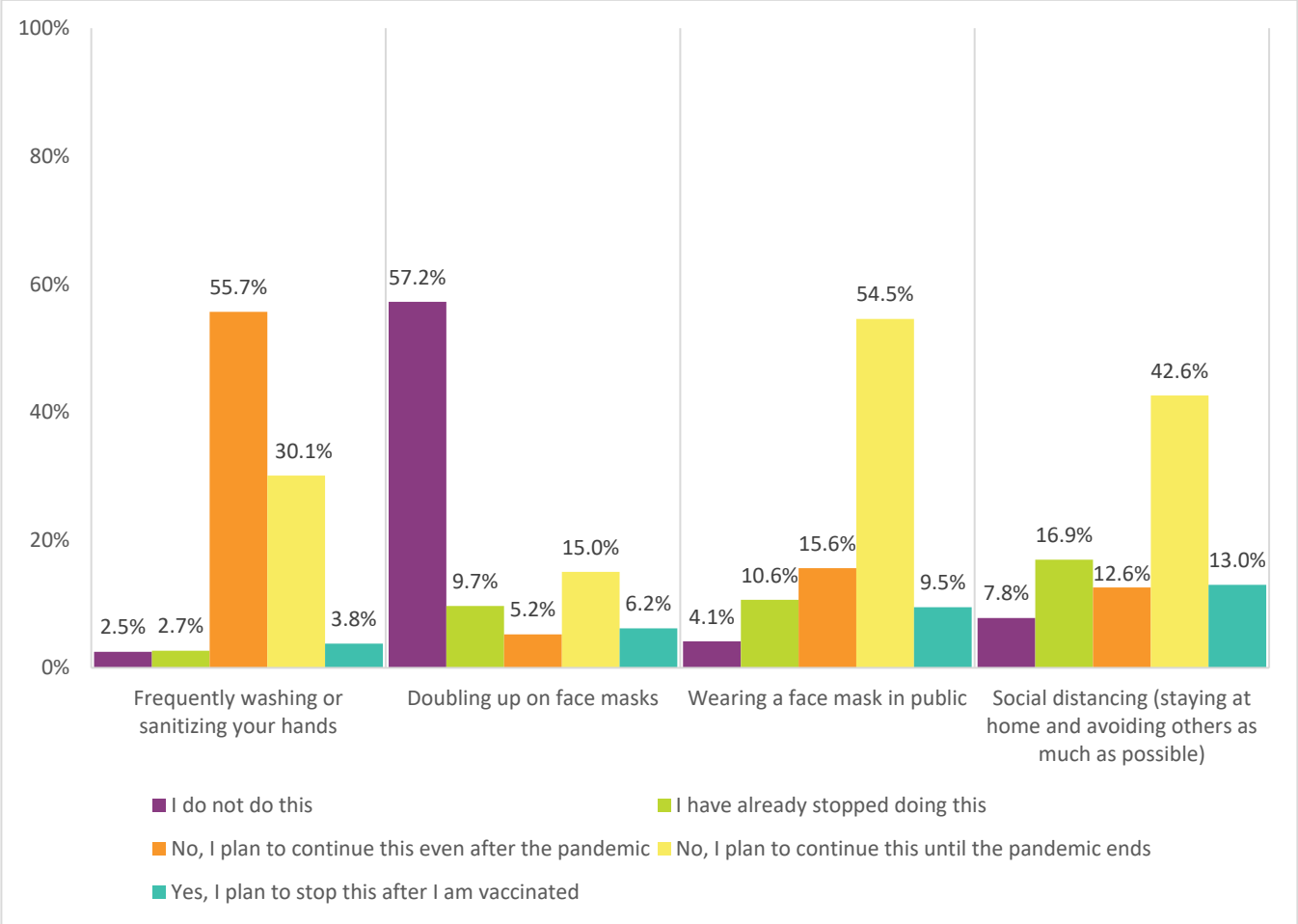
Note: Only includes those who responded, “not too confident” or “not at all confident” in response to the question, “How confident are you that the COVID-19 vaccine is being distributed fairly?”

Post-COVID-19 Vaccination Behaviors

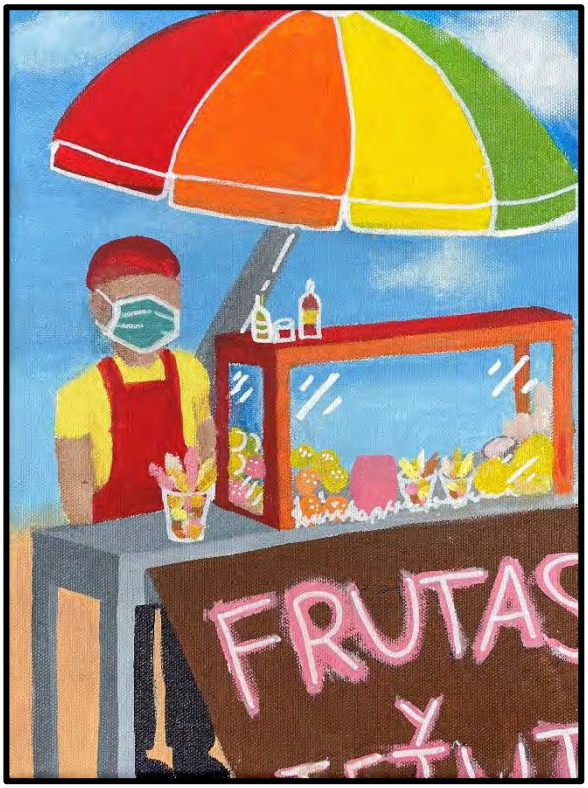
While COVID-19 had immediate impacts on people, the effects are likely to be long-lasting, as are lifestyle decisions. To assess post-COVID-19 vaccination behaviors, residents were asked, "Upon receiving the COVID-19 vaccine (if you have or if you choose to in the future), do you plan to stop…" and were then provided with a list of options to choose from.

As illustrated in Figure 49, most participants (57.2%) never engaged in doubling up on face masks, while the other three prevention activities were something that most people took part of. Most participants (55.7%) plan to continue frequent handwashing even after the pandemic.

Figure 49. Post-COVID-19 Vaccination Behaviors



Note: Frequently washing or sanitizing your hands *n* = 1,662,597, Doubling up on face masks *n* = 1,629,763, Wearing a face mask in public *n* = 1,661,191, Social distancing (staying at home and avoiding others as much as possible) *n* = 1,653,227. Note that those who selected "I do not plan on getting the vaccine" are not represented in this graph; percentages range between 5.3% to 7.2%.



When examining mask-wearing, more than half (54.5%) of residents planned to wear a mask until the pandemic ends, while another 9.5% planned to stop after being vaccinated. Conversely, about 15.6% of residents planned to wear a mask even after the pandemic.

Approximately 42.6% of residents planned to practice social distancing until the pandemic ends, while 13.0% planned to stop this after being vaccinated. About 12.6% planned to continue social distancing even after the pandemic.

More than half (55.7%) of residents planned to continue frequently washing or sanitizing hands even after the pandemic, while another 30.1% planned to continue this until the pandemic ends.

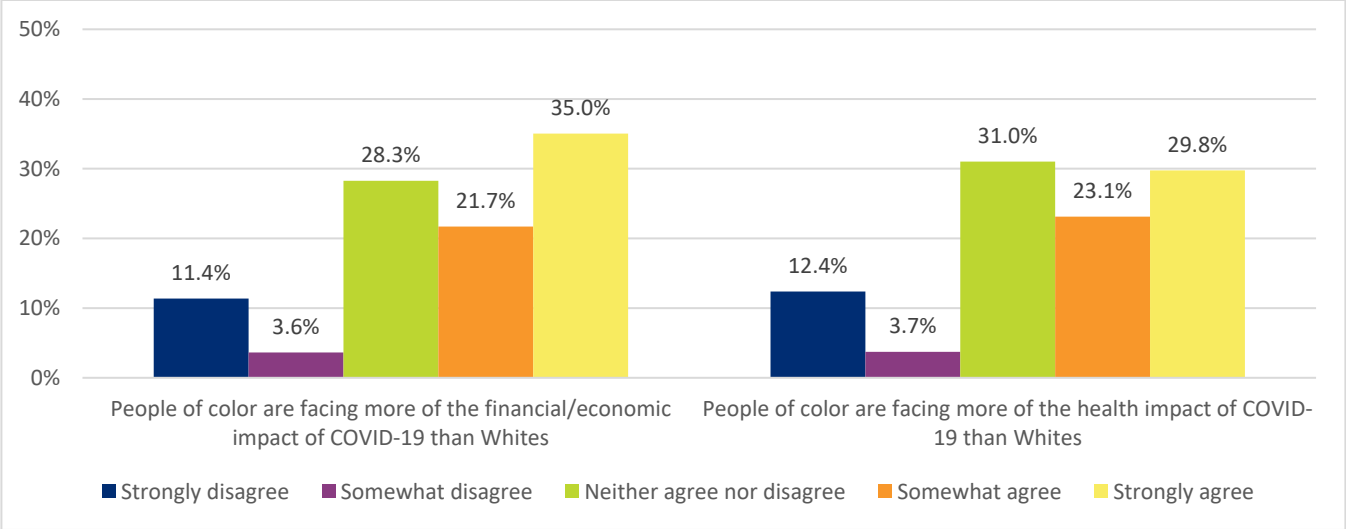
Disproportionate Impact of COVID-19 on Communities of Color

The COVID-19 pandemic exacerbated a variety of health, social, and economic problems. Among these areas, health inequities were highlighted among communities of color as racial and ethnic minorities were disproportionally at risk of becoming ill or dying from COVID-19.[23] To understand perceptions of these health inequities, residents were provided with statements to rate their agreement/disagreement. Specifically, they rated, "People of color (e.g., African Americans, Latinos) are facing more of the health impact of coronavirus (COVID-19) than Whites" and "People of color (e.g., African Americans, Latinos) are facing more of the financial/economic impact of coronavirus (COVID-19) than Whites".

As illustrated in the figure below, about a third (35.0%) of residents "strongly agree" that people of color are facing more of the financial/economic impact of COVID-19 compared to Whites, with another 21.7% stating that they "somewhat agree."

Residents provided similar ratings when asked about the health impact of COVID-19. Specifically, as illustrated in Figure 50 below, about 29.8% "strongly agree," and another 23.1% "somewhat agree" that people of color are facing more of the health impact of COVID-19.

Figure 50. Disproportionate Impact of COVID-19 on Communities of Color



Note: People of color are facing more of the financial/economic impact of COVID-19 than Whites *n* = 1,790,359. People of color are facing more of the health impact of COVID-19 than Whites *n* = 1,792,342.

[23] Health Equity Considerations and Racial and Ethnic Minority Groups (2021). Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html

Disproportionate Impact of COVID-19 on Communities of Color based on Race/Ethnicity

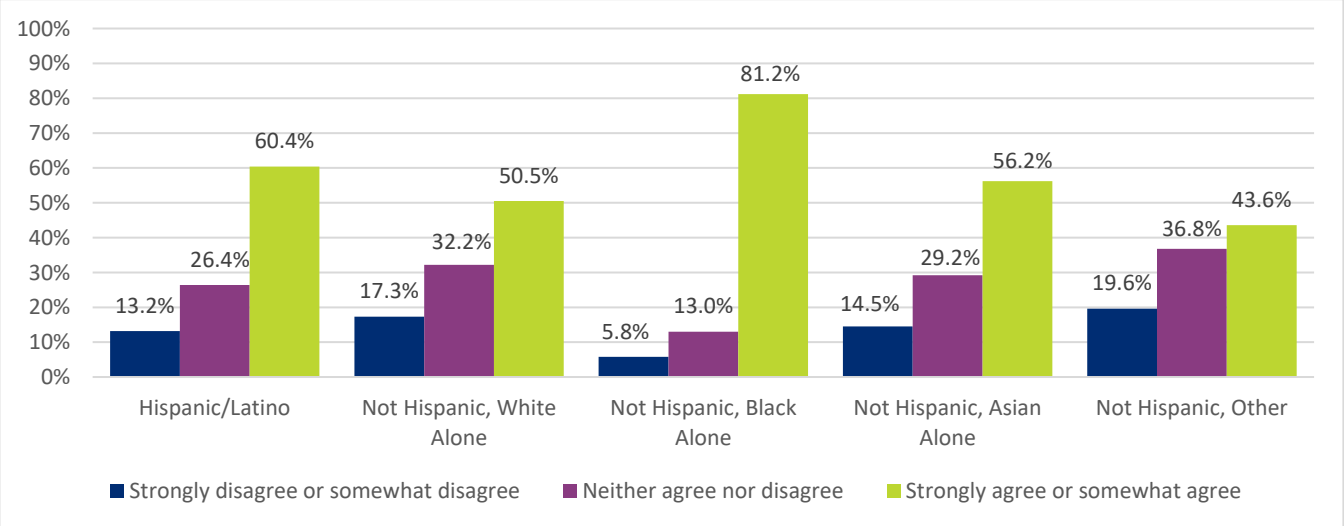
It stands to reason that perceptions related to racial equity in COVID-19 might vary based on an individual's race/ethnicity. To examine this issue, the responses "strongly agree" and "somewhat agree" were combined into a single category hereafter called "agree", while the responses "strongly disagree" and "somewhat disagree" were combined into a single category hereafter called "disagree".

There was a statistically significant relationship between race by ethnicity and perceptions of financial/economic impact of COVID-19, χ^2 (8, n = 1,730,522) = 119.529, p < .001. That is, Non-Hispanic, Black residents (81.2%) were significantly more likely (p < .05) to agree that people of color are facing greater financial/economic impact compared to residents who were Hispanic/Latino (60.4%), non-Hispanic, White alone (50.5%), non-Hispanic, Asian alone (56.2%), and non-Hispanic, other (43.6%).

Further, non-Hispanic, Asian alone residents (56.2%) were significantly (p < .05) more likely to agree that people of color are facing greater financial/economic impact compared to residents who were non-Hispanic, other (43.6%).

Lastly, Hispanic/Latino residents (60.4%) were significantly (p < .05) more likely to agree that people of color are facing greater financial/economic impact compared to residents who were non-Hispanic, White alone (50.5%) and non-Hispanic, other (43.6%).

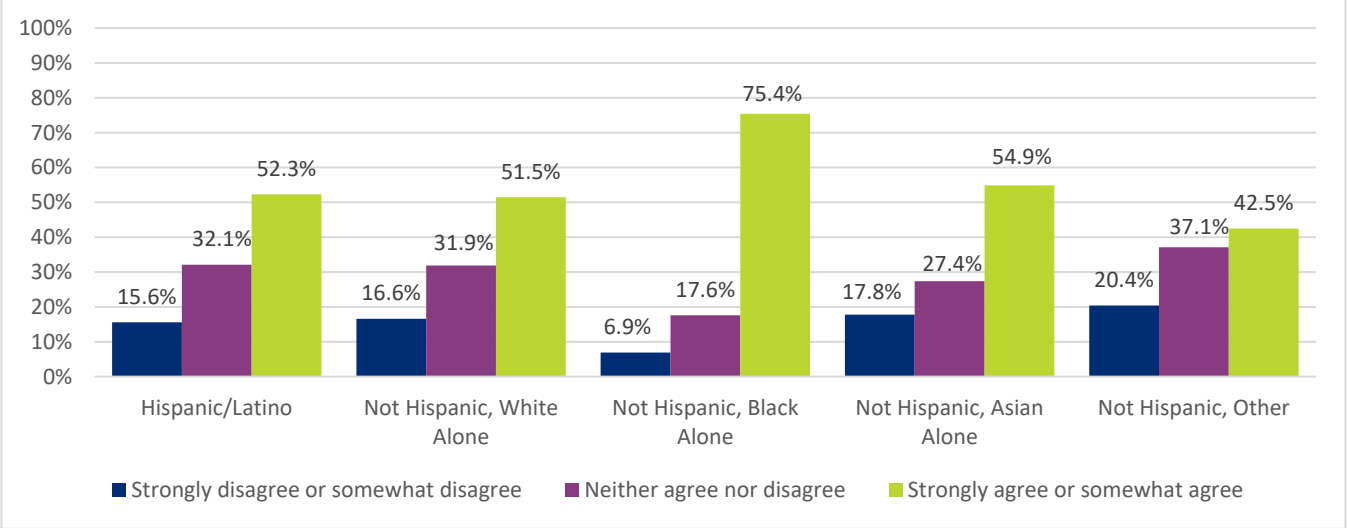
Figure 51. Disproportionate Financial/Economic Impact of COVID-19 by Race/Ethnicity



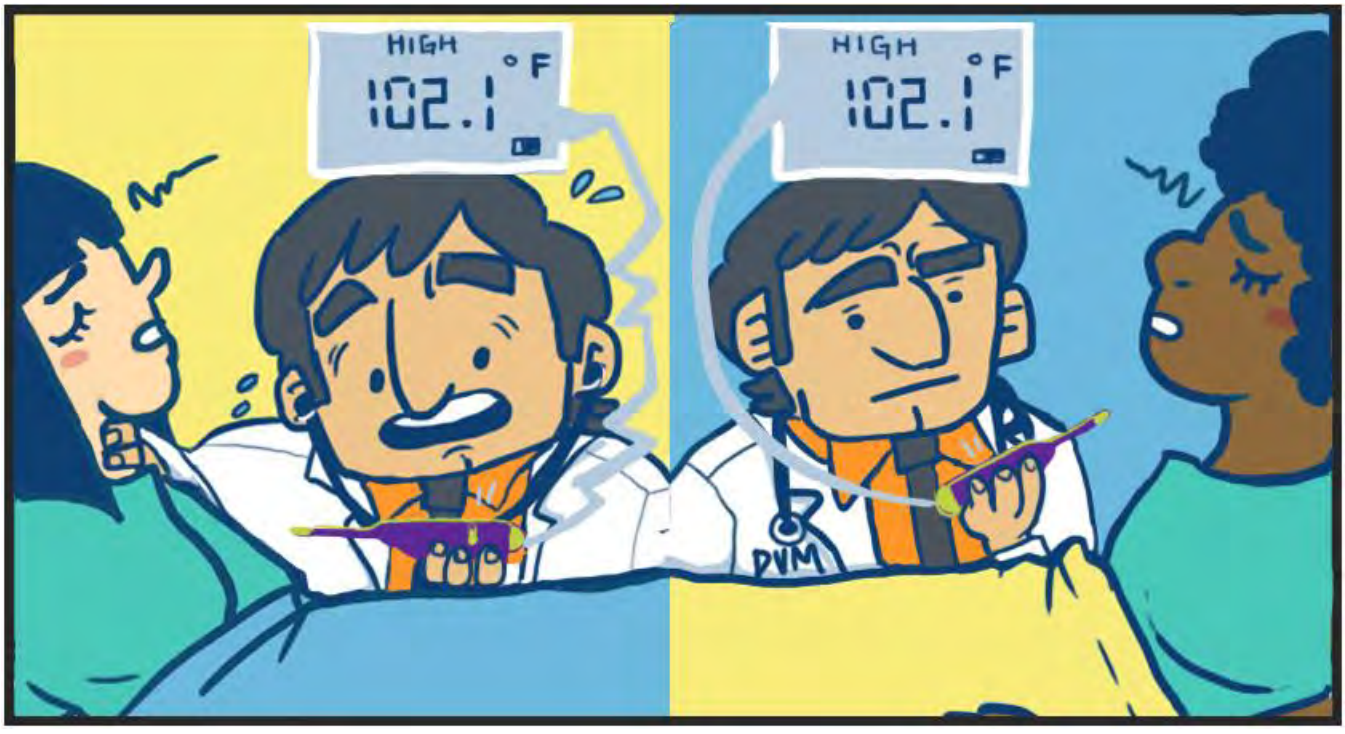
Note: Hispanic/Latino n = 794,307, Not Hispanic, White Alone n = 626,357, Not Hispanic, Black Alone n = 108,250, Not Hispanic, Asian Alone n = 129,765, Not Hispanic, Other (includes AIAN alone, SOR alone, NHOPI alone, multiracial) n = 71,843.

There was a statistically significant relationship between race by ethnicity and perceptions of health impact of COVID-19, χ^2 (8, n = 1,731,650) = 70.963, p < .001. Specifically, non-Hispanic, Black residents (75.4%) were significantly more likely (p < .05) to agree that people of color are facing more of the health impact compared to residents who were Hispanic/Latino (52.3%), non-Hispanic, White alone (51.5%), non-Hispanic, Asian alone (54.9%), and non-Hispanic, other (42.5%).

Figure 52. Disproportionate Health Impact of COVID-19 by Race/Ethnicity



Note: Hispanic/Latino n = 795,190, Not Hispanic, White Alone n = 626,135, Not Hispanic, Black Alone n = 108,478, Not Hispanic, Asian Alone n = 130,004, Not Hispanic, Other (includes AIAN alone, SOR alone, NHOPI alone, multiracial) n = 71,843.



COVID-19 Information Seeking

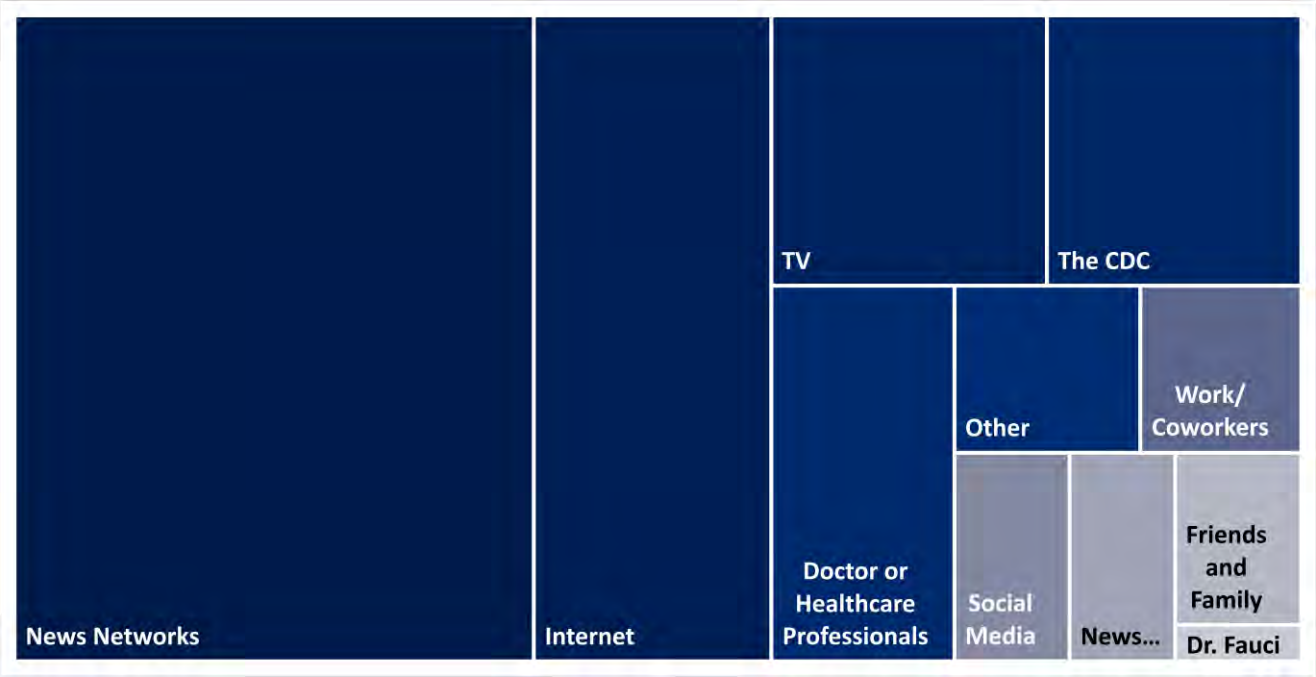
While there is a plethora of critically needed information regarding nearly anything associated with COVID-19, there is also false information being proliferated. That said, information seeking is important to understand because false information has the potential to increase adverse health effects and divisiveness, while accurate information can help mitigate the effects of COVID-19.

Residents were asked, "Where do you usually get information on COVID-19?" in an open-ended format. The responses to this open-ended question were grouped into themes post-data-collection and are illustrated in Figure 53 below.

As illustrated in the figure below, **news networks** are by far the most common source of COVID-19 information (e.g., "CNN", "NPR"), followed by the **Internet** (e.g., "Online", "Internet"). Other common themes include seeking information from **television** (e.g., "TV", "television"), and **the CDC** (e.g., "CDC", "CDC website").

Other less common themes include healthcare professionals, workplace/coworkers, friends and family, social media, newspapers, Dr. Fauci, and other.

Figure 53. Getting Information on COVID-19



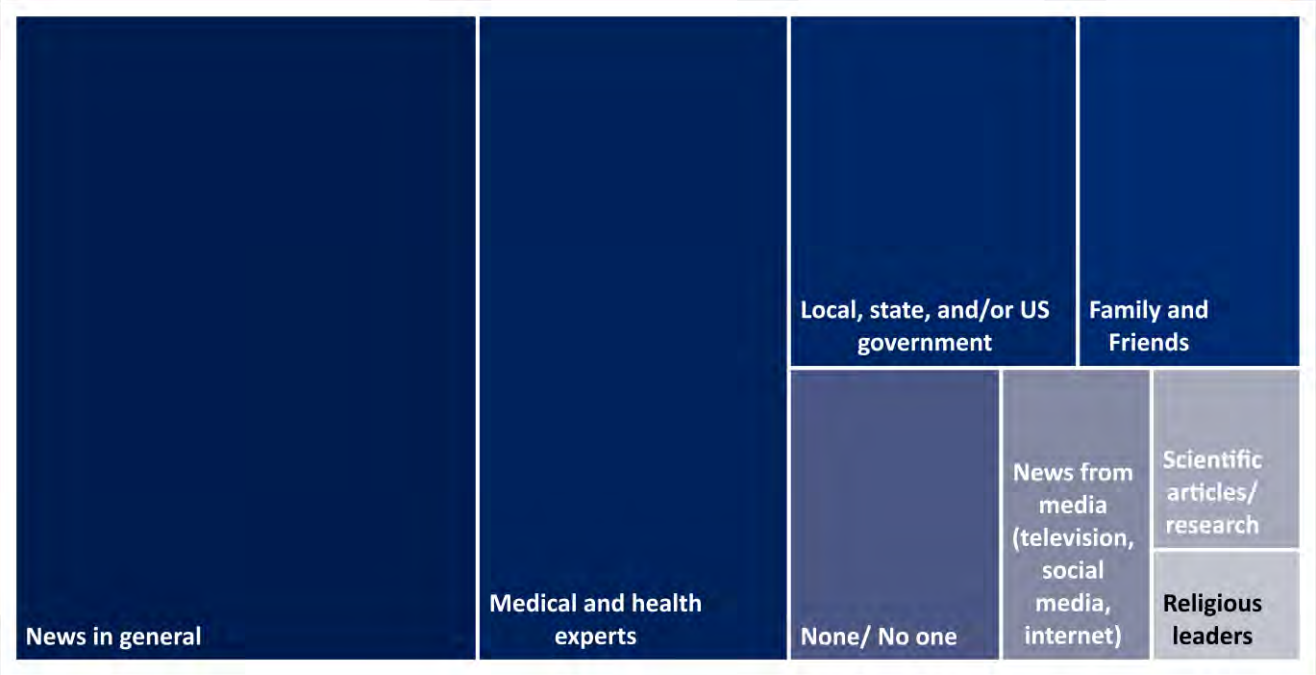
Note: Question was asked of all participants.

To better understand how much residents trust the information they are receiving, they were asked the following open-ended question," What people or groups do you trust to give you accurate COVID-19 information? (e.g., the news, the government, religious leaders, family members, etc.)". The responses to this open-ended question were grouped into themes post-data-collection and are illustrated in Figure 54 below.

The most common theme that emerged was **news** (e.g., "news"), **medical and health experts** (e.g., "medical professionals", "health care provider", "CDC", "Dr. Fauci"), **governmental agencies** (e.g., "current administration", "Biden admin"), and **family and friends** (e.g., "family members"). Hundreds of respondents indicated that they **trust no one**'s information.

Other less common themes include relying on news from media, scientific articles and research, and religious leaders.

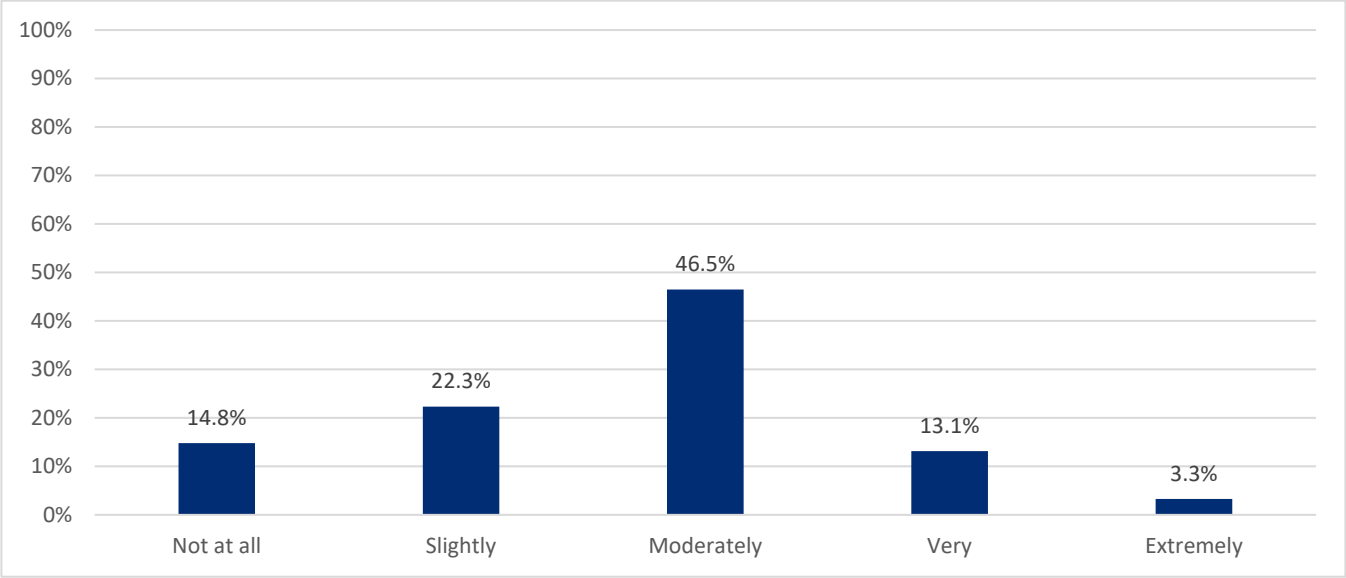
Figure 54. Who To Trust for COVID-19 Information



Note: Question was asked of all participants.

Residents were asked, “How well do you trust information from members of your own community?” As illustrated in Figure 55 below, most participants trust members of their own community at least “moderately” if not more. However, 14.8% of residents do not trust information from their own community at all.

Figure 55. Trust in Information from One's Own Community

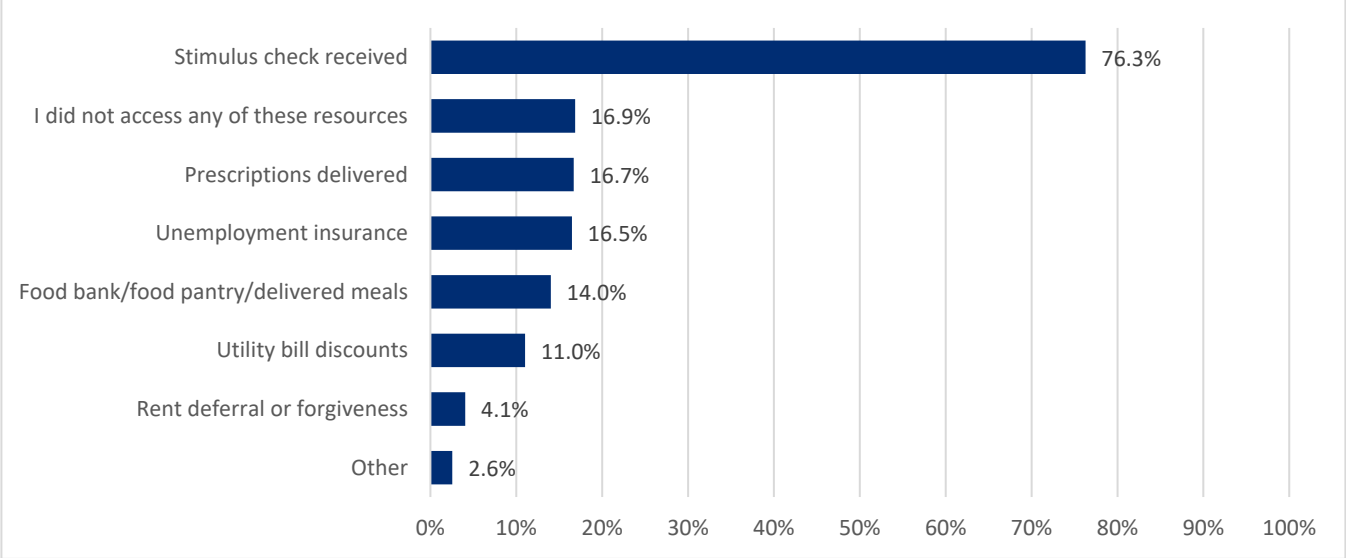


Note: *n* = 1,799,065.

COVID-19 Resources Accessed

Residents were also asked, “Have you accessed any of these resources during the pandemic?” and were encouraged to select all that apply. As illustrated in Figure 56 below, more than three-quarters (76.3%) reported that they received their stimulus checks. In contrast, 16.9% accessed none of the resources on the list.

Figure 56. Resources Accessed During the Pandemic



Note: *n* = 1,757,248.

Those who said "other" (2.6%) were asked to specify in an open-ended format. The responses to this open-ended question were grouped into themes post-data-collection and are illustrated in Figure 57 below.

The most common theme that emerged was **loan deferrals** (e.g., "student loan deferral," "mortgage forbearance"). Other common themes included **electronic benefit transfer (EBT) assistance**, including food stamps (Supplementation Nutrition Assistance Program, or SNAP, also known as CalFresh) and Pandemic EBT (P-EBT; an expansion of SNAP benefits). Other reported benefits included **grocery /food delivery** and **small business loans**, including Paycheck Protection Program (PPP) loans. Further, some residents indicated "none" or "N/A," as illustrated in the figure below.

Figure 57. "Other" Resources Accessed During the Pandemic

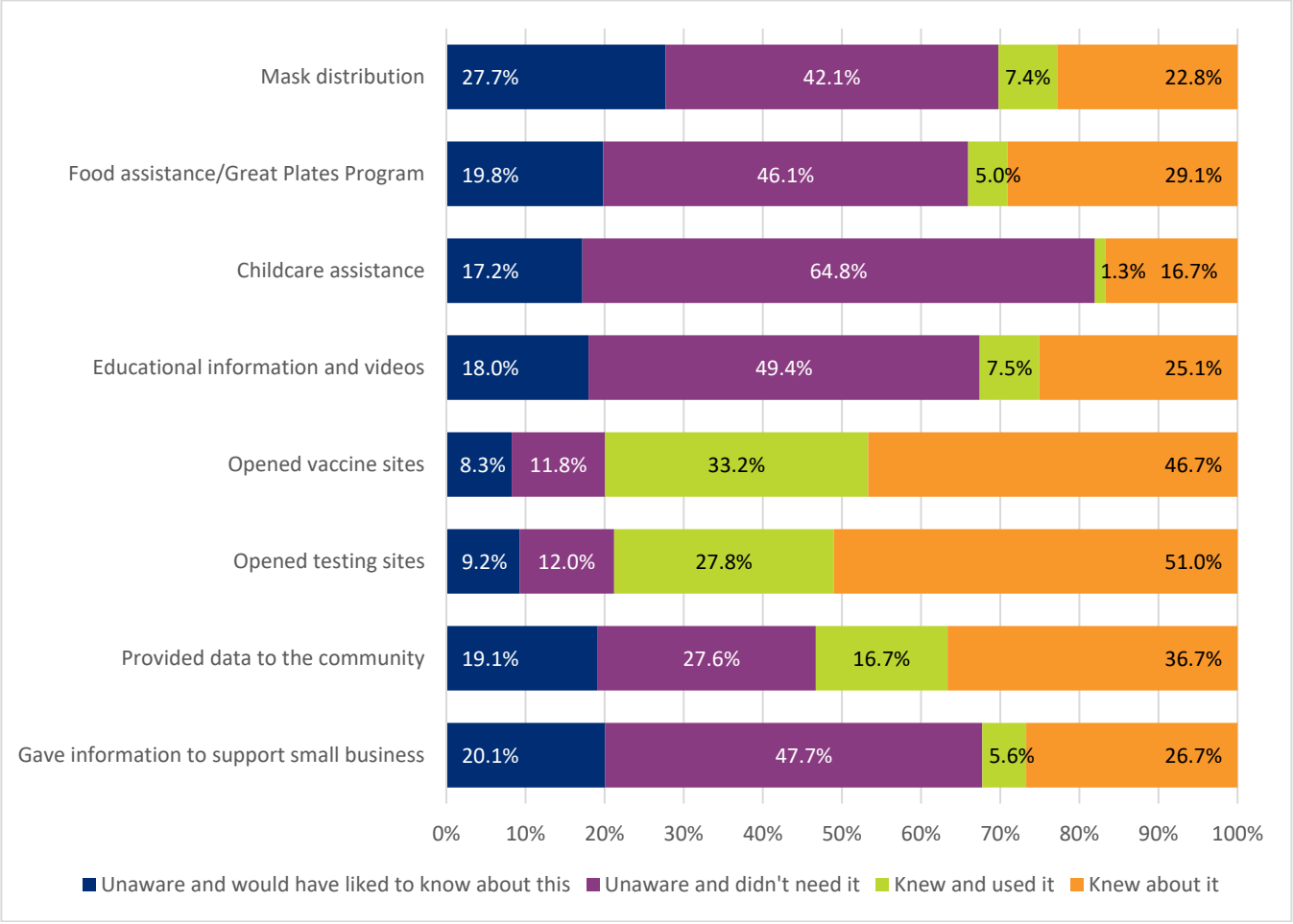
Note: Only includes those who said, "other, please specify" in response to the question, "Have you accessed any of these resources during the pandemic?"

Knowledge of Public Health Efforts During COVID-19

RUHS - Public Health has worked relentlessly to mitigate the effects of COVID-19 in our communities. To evaluate efforts and understand local perception, residents were given the following prompt, "The Department of Public Health within Riverside County has worked to reduce the impact of COVID-19 throughout the community" and could then rate their knowledge of each activity.

As illustrated in Figure 58 below, large proportions of participants knew about opened testing (51.0%) and opened vaccine sites (46.7%). Many residents also reported using vaccine sites (33.2%) and testing sites (27.8%). Some also used the data provided by RUHS - Public Health (16.7%).

Figure 58. Knowledge of Public Health Efforts during COVID-19



Note: Mask distribution *n* = 1,769,563, Food assistance/Great Plates Program *n* = 1,751,008, Childcare assistance *n* = 1,724,050, Educational information and videos *n* = 1,721,723, Opened vaccine sites *n* = 1,759,452, Opened testing sites *n* = 1,750,356, Provided data to the community *n* = 1,730,364, Gave information to support small business *n* = 1,731,837.

There were some resources that residents were unaware of and would have liked to know more about. For instance, residents reporting being unaware and would have like to know about mask distribution (27.7%) most of all.

Others would've liked to know about RUHS – Public Health's work on giving information to support small businesses, food assistance/Great Plates Program (19.8%), providing data to the community (19.1%), educational information and videos (18.0%), and childcare assistance (17.2%).

Knowledge of Public Health Efforts by Public Health Region

Most residents who needed resources were aware of Public Health's efforts; however, the residents who were unaware and would have liked to know about these resources were mapped by Public Health region to understand where higher percentages may exist across the County.

Further, to make the estimates comparable with each other, the weighted estimate of each response was divided by the population (18 years and older) for each Public Health region. For clarity, these estimates are provided in the table below. As an example, in the Northwest region (827,331 adults), an estimated 238,843 adults were unaware and would have liked to know about mask distribution, which equates to approximately 29% of that region.

These percentages are calculated for each region and mapped on subsequent pages.

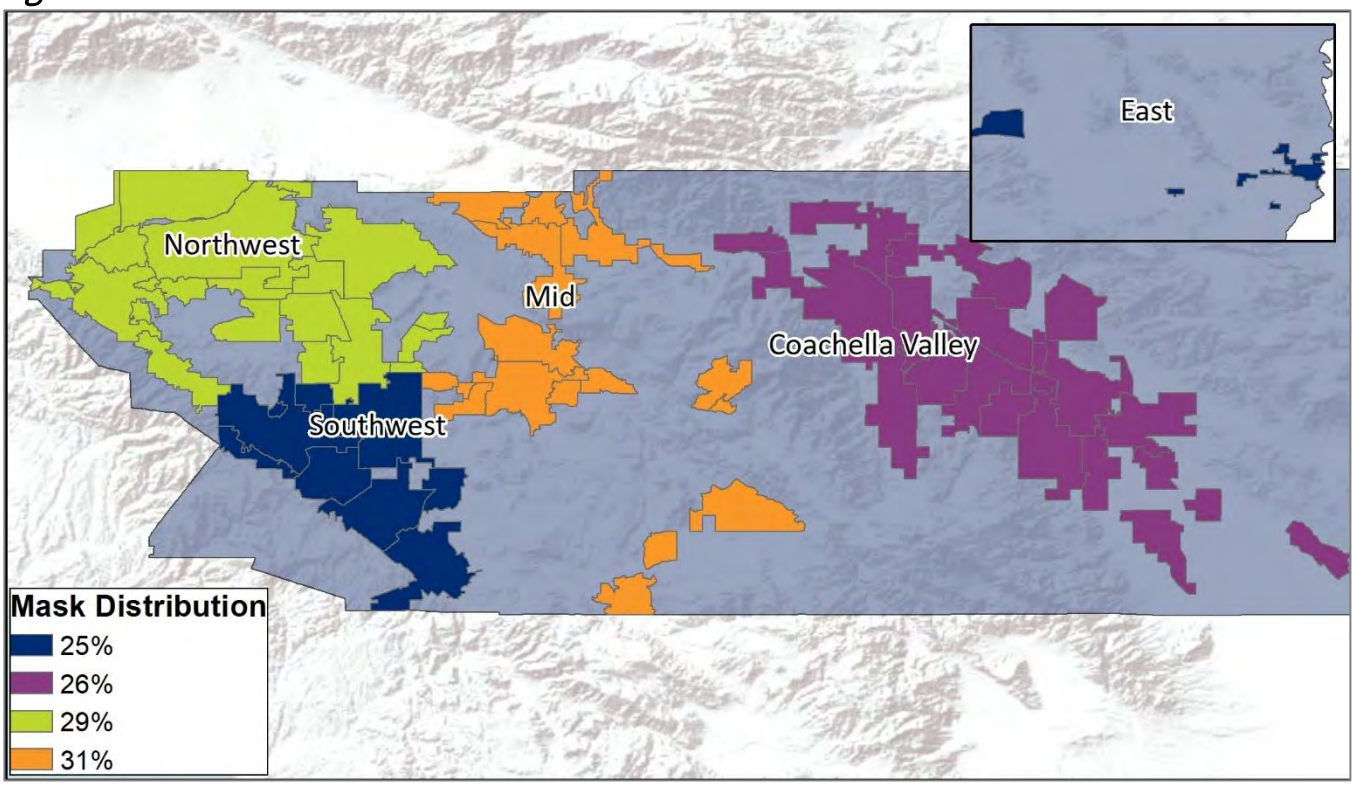
Table 12. Estimates of Public Region and Those Unaware of Public Health's Efforts

Category	Northwest	Southwest	Mid	Coachella Valley	East
Sum of Population 18 years and older	827,331	346,755	212,665	347,969	16,406
Mask distribution	238,843	87,227	66,812	91,969	4,095
Food assistance/Great Plates Program	176,554	59,846	51,966	54,783	3,935
Childcare assistance	148,116	57,720	39,121	47,394	3,888
Educational information and videos	152,833	55,625	43,601	53,087	3,496
Opened vaccine sites	68,377	29,477	24,632	20,902	1,615
Opened testing sites	78,841	30,143	28,609	21,853	1,959
Provided data to the community	161,801	58,888	48,795	56,211	3,352

Gave information to support small business	173,256	67,082	43,905	59,816	2,606

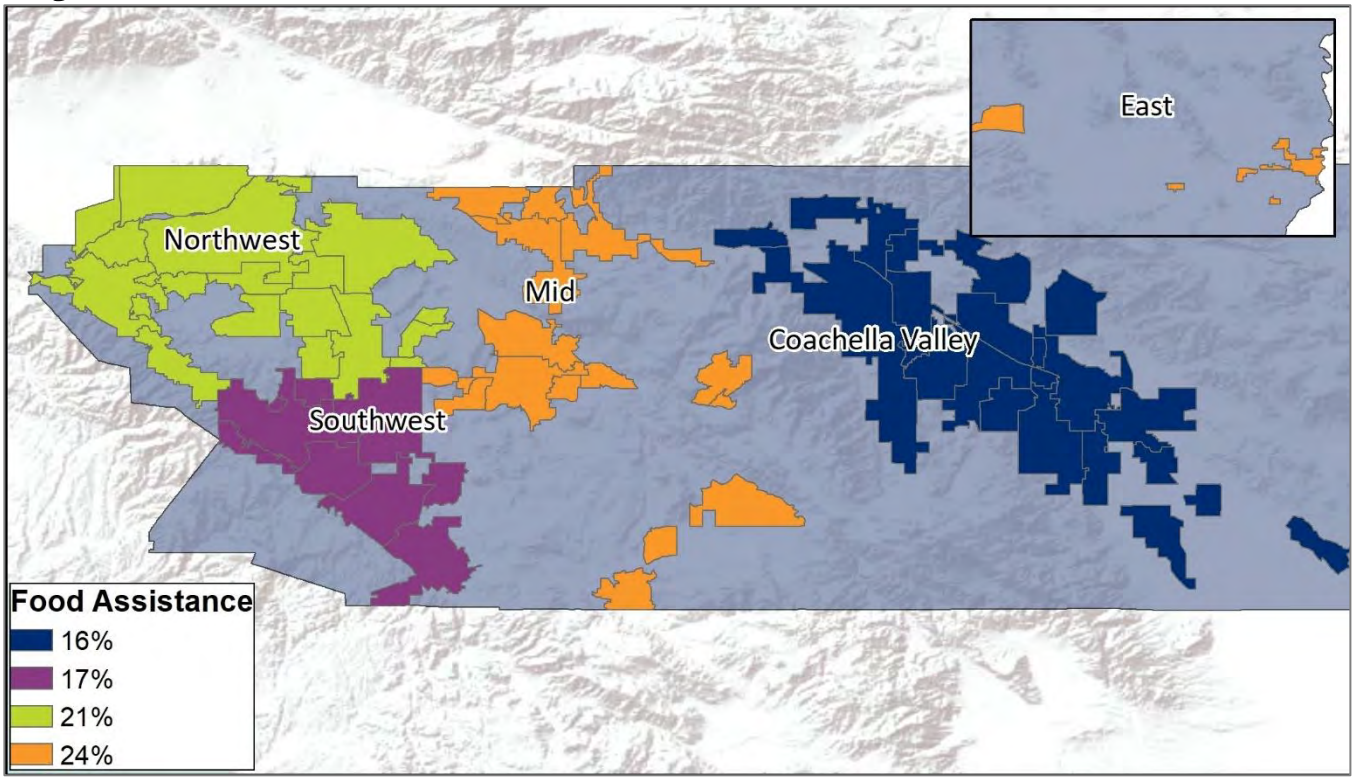
As illustrated in the map below, an estimated 25 to 31% of adults were unaware and would have liked to know about mask distribution, with the largest percentage being in the Mid region (31%). See the map below for additional details.

Figure 59. Unaware and Would Have Liked to Know About Mask Distribution



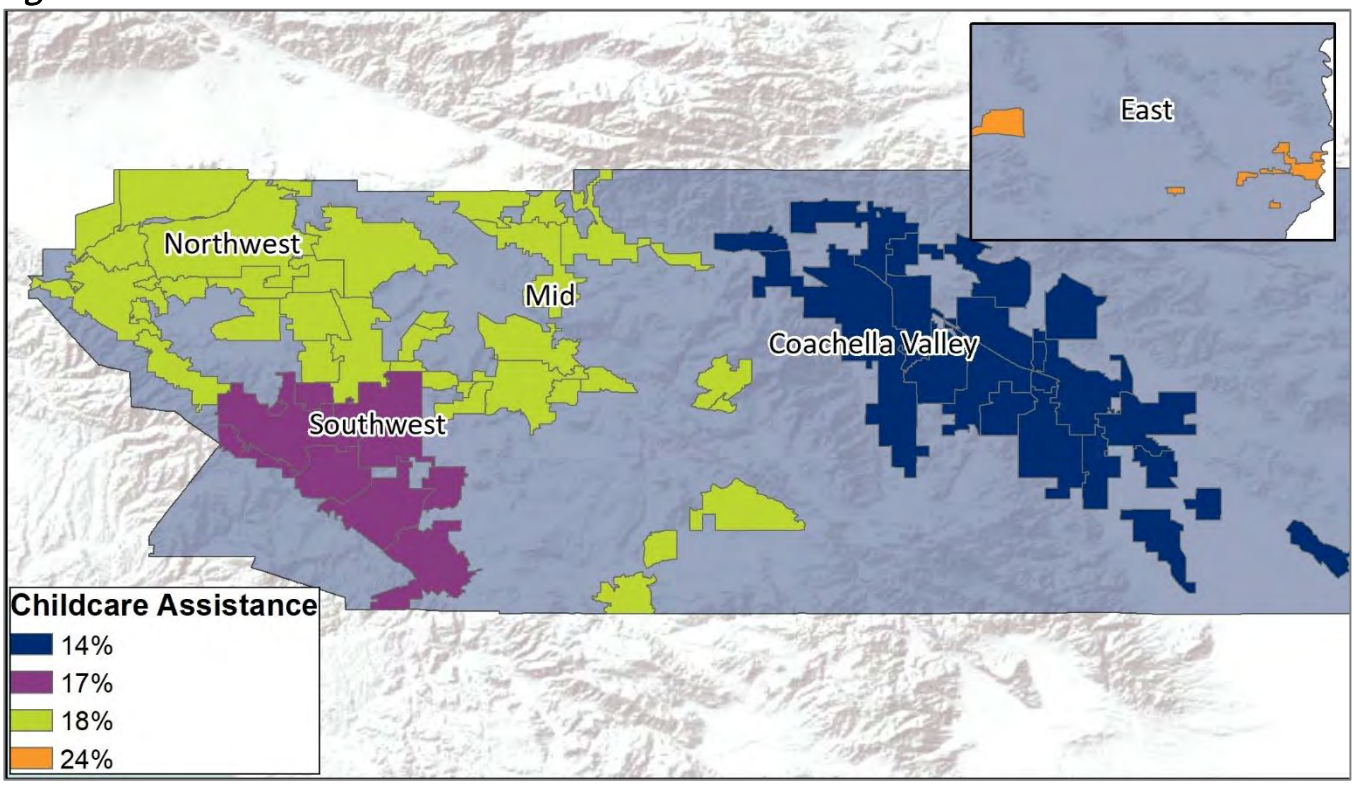
Between 16% and 24% of adults were unaware and would have liked to know about food assistance/Great Plates Program. The regions with the largest percentage of adults who were unaware and would have like to know were the Mid region (24%) and the East region (24%). See the map below for additional details.

Figure 60. Unaware and Would Have Liked to Know About Food Assistance/Great Plates Program



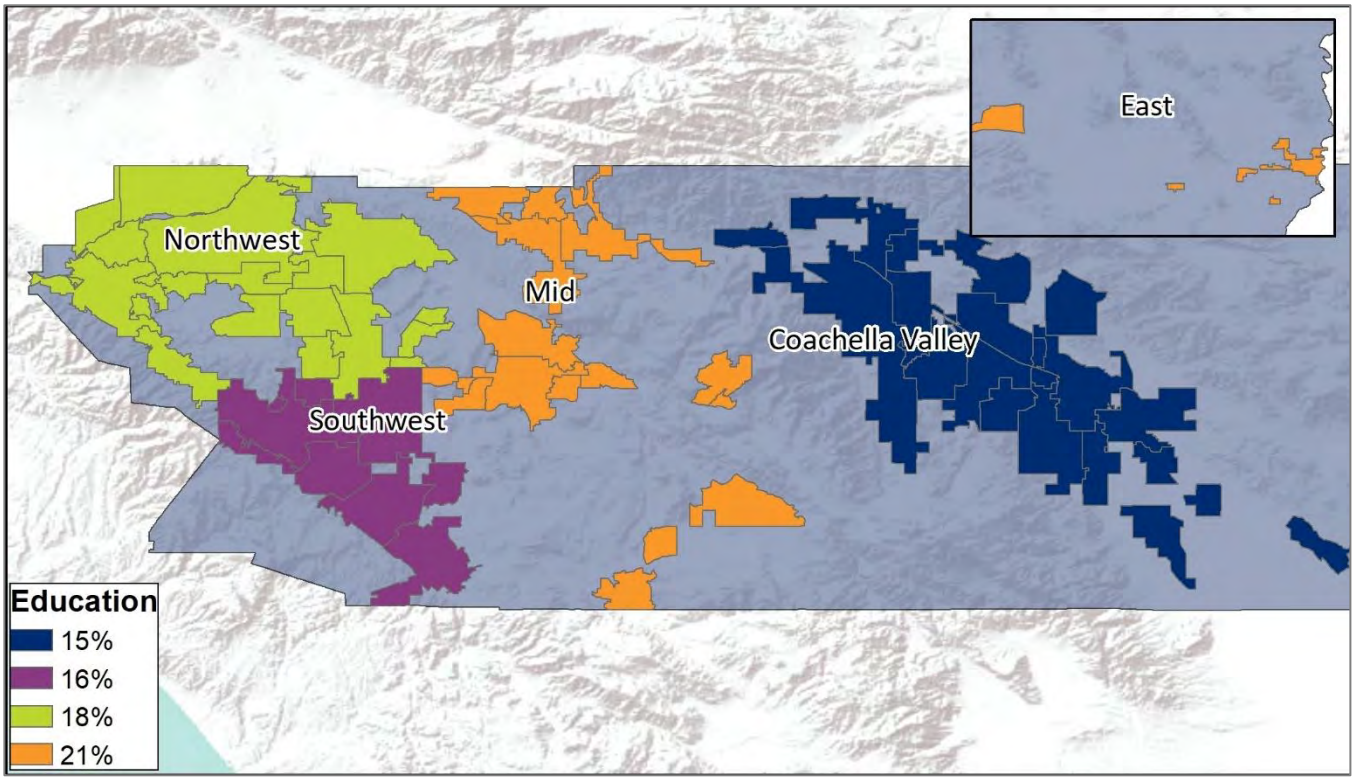
Between 14% and 24% of adults were unaware and would have liked to know about childcare assistance. The region with the largest percentage of adults who were unaware and would have like to know was the East region (24%). See the map below for additional details.

Figure 61. Unaware and Would Have Liked to Know About Childcare Assistance



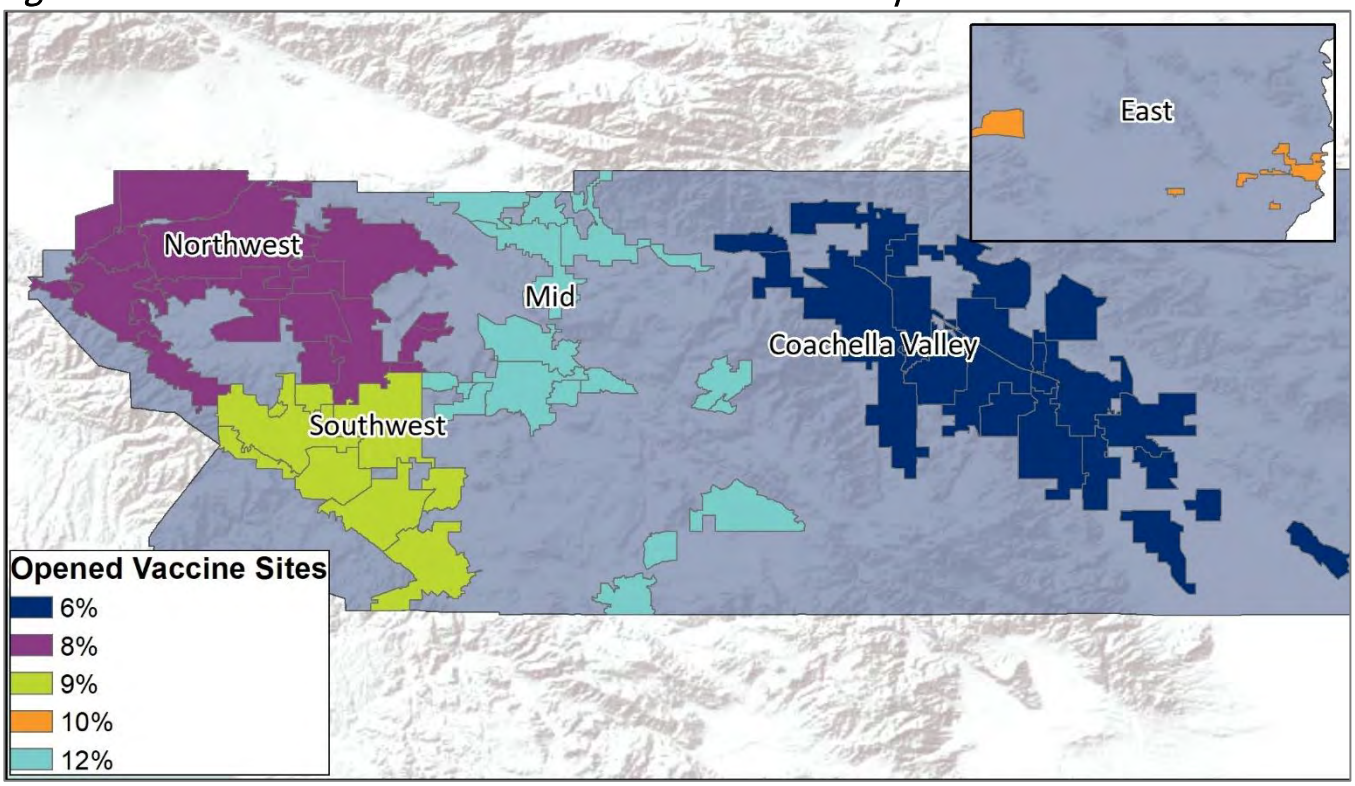
Between 15% and 21% of adults were unaware and would have liked to know about educational information and videos. The regions with the largest percentage of adults who were unaware and would have like to know were the Mid region (21%) and the East region (21%). See the map below for additional details.

Figure 62. Unaware and Would Have Liked to Know About Educational Information and Videos



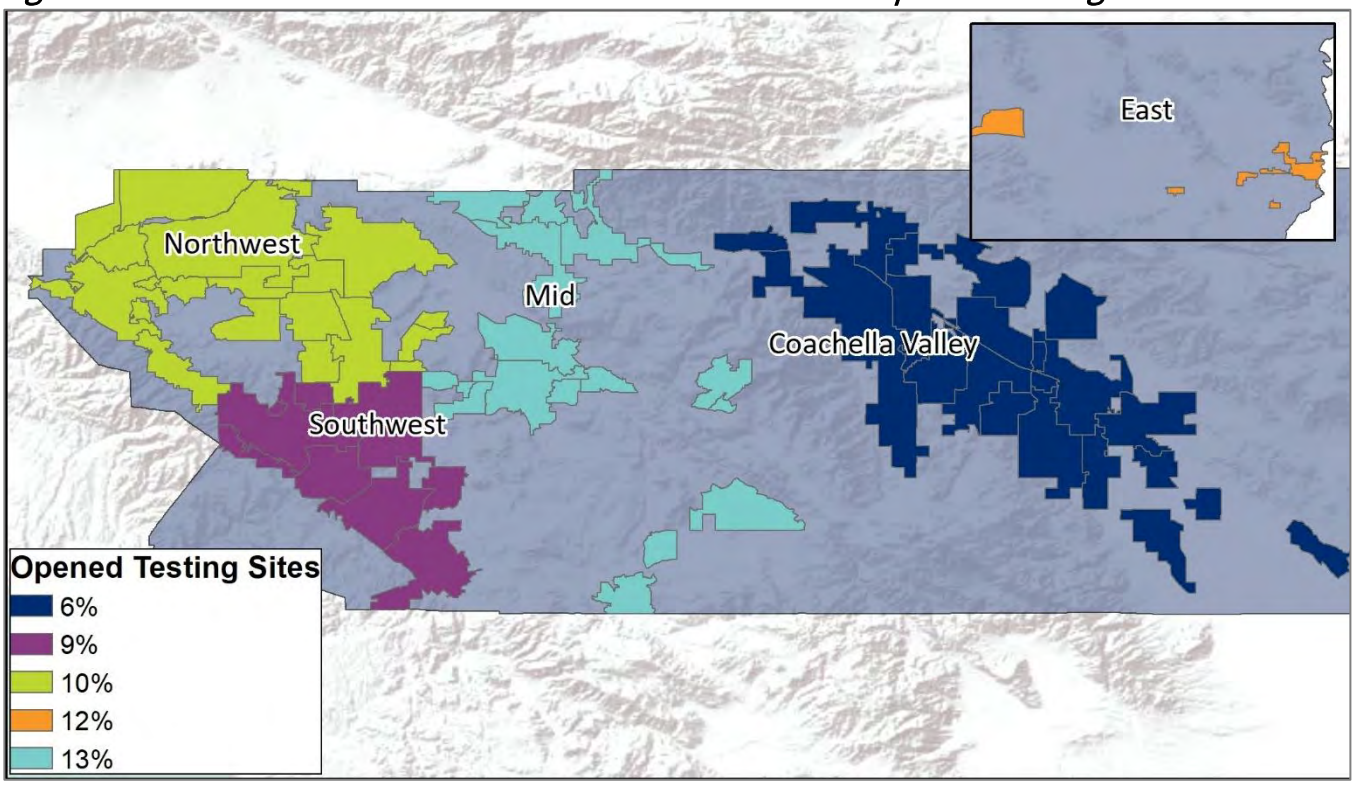
In comparison to the other efforts of Public Health, the percentage of adults being unaware (and would have like to know) of vaccine sites was substantially lower. That said, between 6% and 12% of adults were unaware and would have liked to know about the opened vaccine sites. The region with the largest percentage of adults who were unaware and would have like to know was the Mid region (12.0%). See the map below for additional details.

Figure 63. Unaware and Would Have Liked to Know About Opened Vaccine Sites



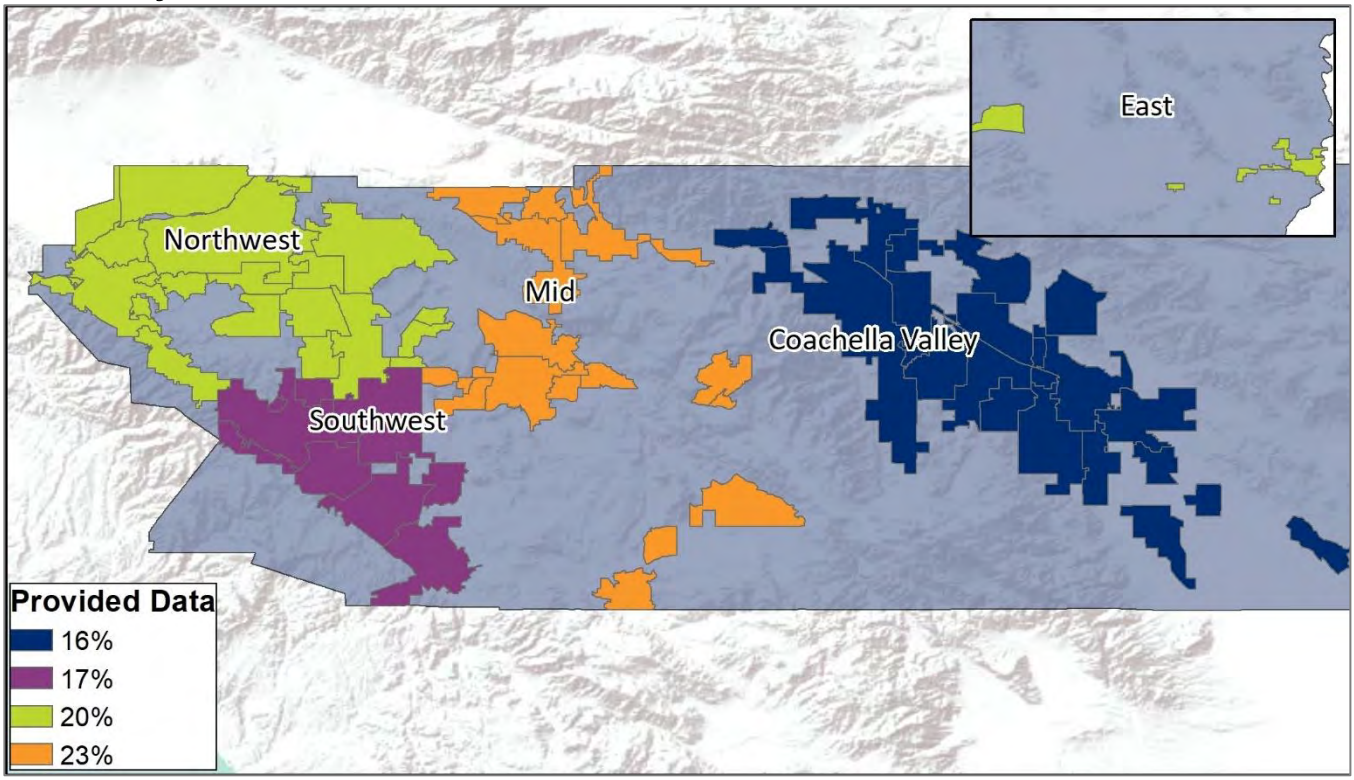
Likewise, in comparison to the other efforts of Public Health, the percentage of adults being unaware (and would have like to know) of testing sites was substantially lower. Between 6% and 13% of adults were unaware and would have liked to know about opened testing sites. The region with the largest percentage of adults who were unaware and would have like to know was the Mid region (13%). See the map below for additional details.

Figure 64. Unaware and Would Have Liked to Know About Opened Testing Sites



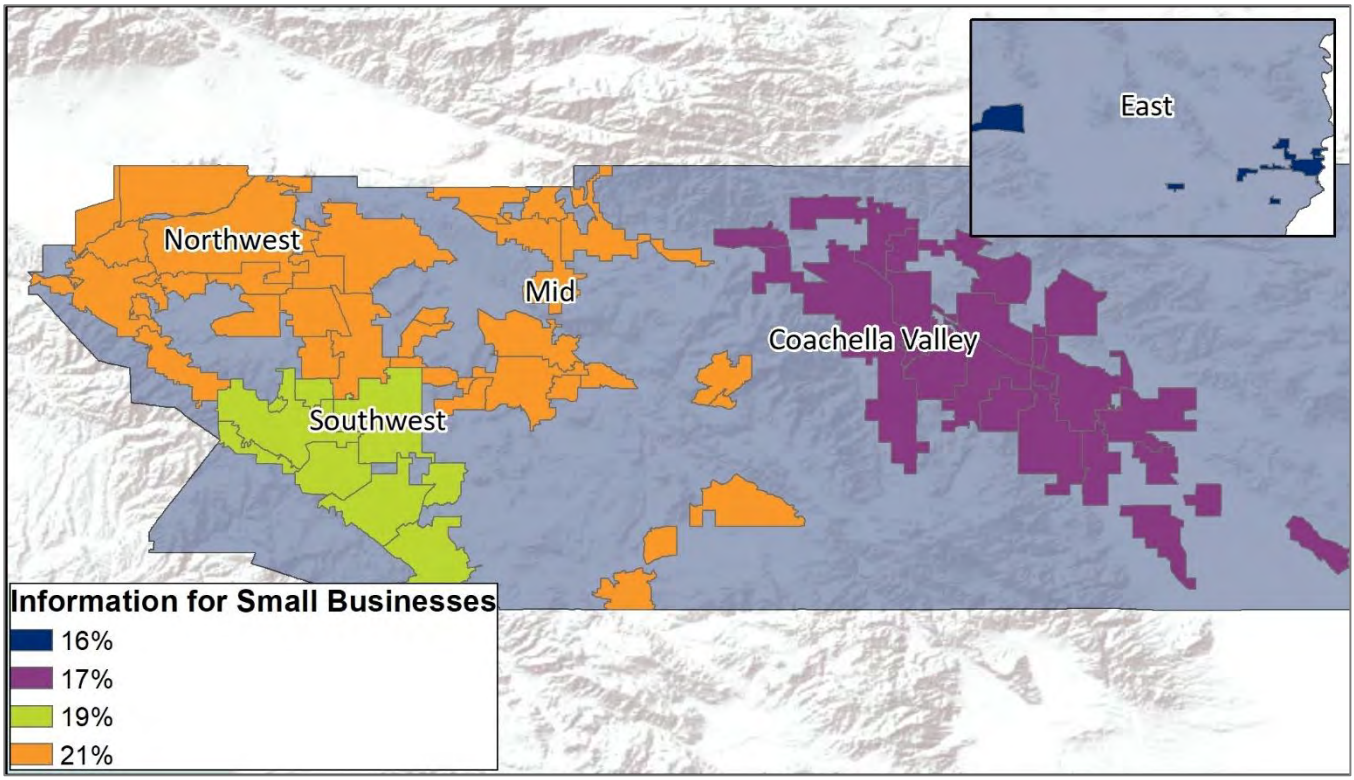
Between 16% and 23% of adults were unaware and would have liked to know about data being provided to the community. The region with the largest percentage of adults who were unaware and would have like to know was the Mid region (23%). See the map below for additional details.

Figure 65. Unaware and Would Have Liked to Know About Provided Data to The Community



Between 16% and 21% of adults were unaware and would have liked to know about information supporting small businesses. The region with the largest percentage of adults who were unaware and would have like to know was the Mid region (21%). See the map below for additional details.

Figure 66. Unaware and Would Have Liked to Know About Gave Information to Support Small Business

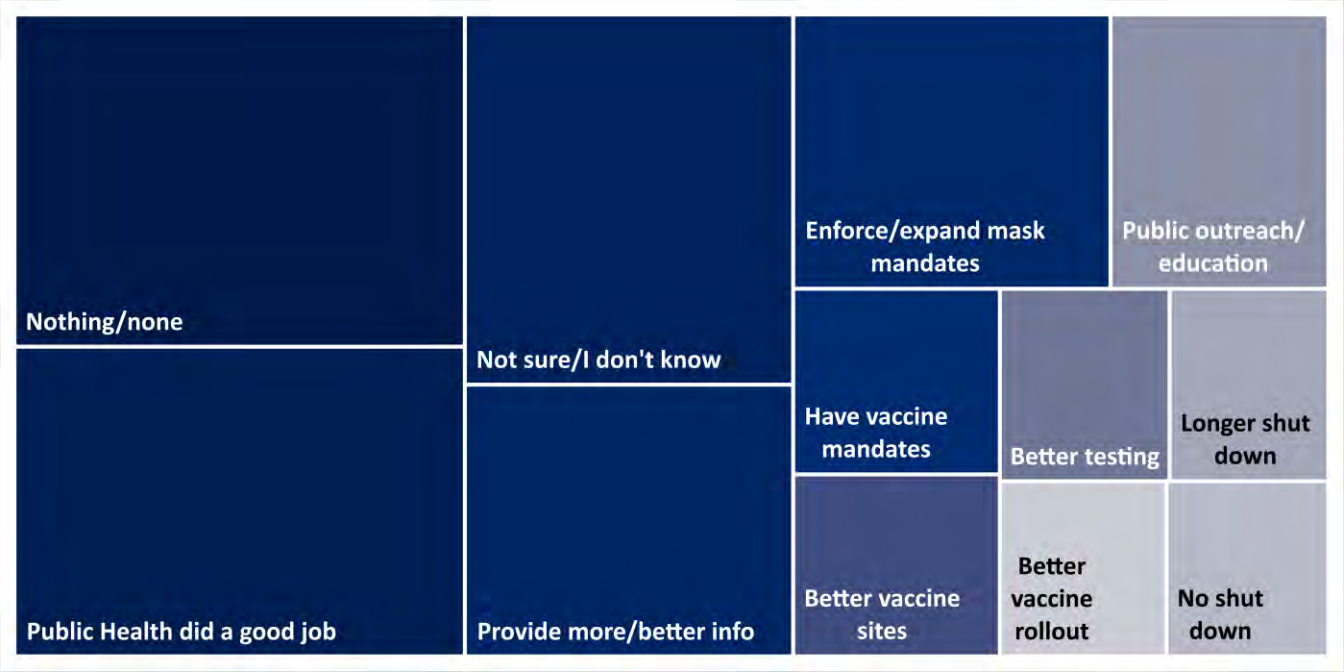


Residents were asked "In your own words, what could Riverside County Public Health have done differently to reduce the impact of COVID-19?" The responses to this open-ended question were grouped into themes post-data-collection and are illustrated in Figure 67.

Many responses fell in the theme of **none** (e.g., "nothing—this was beyond your control," "no opinion") and in the **unsure** theme (e.g., "I'm really not sure," "no idea!"). Besides those, the most common theme was that **RUHS – Public Health did a good job** (e.g., "I believe that Riverside County has done a great job. Everyone was informed, mandated to wear masks and sanitize," "I feel safe in this county and I love it"). Other common themes included **providing more/better information** (e.g., "put more information in local newspaper/on radio, have more places available to get information," "we always hear about LA County statistics, but very little about Riverside County"), **public outreach/education** (e.g., "more aggressive education regarding vaccine safety," "stop vaccination misinformation! Billboards, etc., public education campaigns to get people vaccinated"), and **enforce/expand mask mandates** (e.g., "continue mask mandate indoors for all people," "enforce mask mandates").

Other common themes included improving vaccine sites, having vaccine mandates, better testing, better vaccine rollout, and—with conflicting opinions—having a longer shutdown versus having no shutdown.

Figure 67. What Public Health Could Have Done Differently

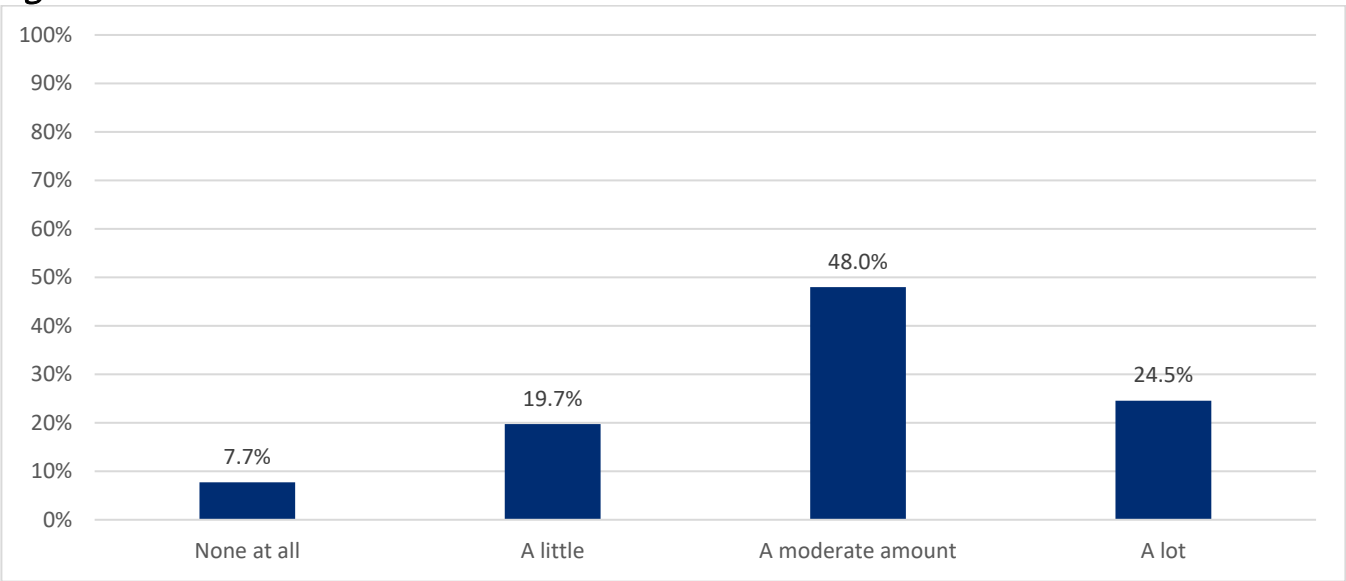


Note: Question was asked of all participants.

Trust in Local Government

Given that RUHS – Public Health is a vital entity to helping the community thrive and recover from COVID-19, residents were asked, "How much do you trust local government such as County Public Health departments?" About a quarter (24.5%) stated: "a lot," while about 48.0% stated "a moderate amount" of trust. Conversely, some stated "a little" (19.7%) or "none at all" (7.7%), as illustrated in Figure 68.

Figure 68. Trust in Local Government



Note: *n* = 1,757,248.

CONCLUSION

This report provides information to inform future efforts of RUHS – Public Health and others in the pandemic response. Hopefully, this information will inform the development of more effective outreach and education to encourage safe behaviors and stem the pandemic.

For example, the information on the commonly used sources of information and the most trusted sources of information indicate that the news is the ideal mode of communication; those hoping to reach the public should utilize the local news. Those who should be key messengers include the existing news anchors, medical professionals, and governmental agencies. As such, RUHS – Public Health's existing efforts of having healthcare professionals, such as Dr. Leung, speak about the pandemic, is an excellent approach.

The information on what motivated people to get the vaccine indicates that the most compelling reasons are to protect oneself and others. Thus, messaging encouraging vaccination should emphasize how it will protect oneself, one's friends/family, and the community at large.

One common barrier to vaccination can be overcome with time (that is, those who said they want to "wait and see"). Others who are not vaccinated may be persuaded with more factual information about the contents of the vaccine and how it interacts with/causes allergies as well as the solid science behind mRNA vaccines. This information does need to be communicated in user-friendly, easy-to-understand ways, from trusted sources. Unfortunately, a third of unvaccinated people stated that their lack of trust in the government is what keeps them from getting vaccinated. There is a deep need to disentangle health from politics so that this barrier becomes less relevant.

This report is merely the tip of the iceberg; HARC and RUHS – Public Health will also release follow-up pieces that examine various disparities in this data (e.g., geographic differences, differences based on race/ethnicity, etc.), as well as releasing pieces in smaller, more digestible formats designed for the general public (e.g., infographics).

APPENDICES

Appendices begin on the following pages.

Appendix A: Artist Bios

This report represents the data collected throughout the study and is also supplemented by artwork by Riverside County residents to illustrate the themes. The artwork in this report is created exclusively for Riverside University Health System – Public Health by two local artists: Consuelo Marquez and Darren Olivares.

Consuelo Marquez

Consuelo Marquez (she/her) is a Mexican-American artist born and raised in the Eastern Coachella Valley. With themes such as environmental justice, public health, and the world around her, she creates art that shows how colorful and diverse her communities are through a blend of realistic and surrealist styles.

Consuelo's artwork is featured in this report on pages 8, 12, 17, 38, 66, 76, and 80.

To see more of Consuelo's work, please visit her personal Instagram at:
https://instagram.com/risingtraaash?utm_medium=copy_link
Or visit the Instagram of the CEMPAZUCHITL Zine, an art zine:
https://instagram.com/cempa_zine?utm_medium=copy_link

Darren Olivares

Darren Olivares (he/him) is a freelance multimedia artist who lives in Riverside, CA, with his partner and four cats. His art is inspired by expressions of self-discovery, vulnerability, and strength that exist in the lived experiences of his peers. In Riverside, Darren engages in community outreach and fellowship with LGBTQ and faith collectives to inform his art that highlights forms & color to emphasize realities that are harsh, soft, in-between, and outside of ourselves. Darren's artwork is featured in this report on pages 45, 53, 69, and 73.

To see more of Darren's work, please visit: https://darrenverse.wixsite.com/darrenolivares
To contact Darren, please email him at: darrenverse@gmail.com

Appendix B: English Version of Survey

1. Have you ever tested positive for COVID-19?
   - ☐ Yes (**Skip to question 2)**
   - ☐ No (**Skip to question 6)**

2. How serious was it when you tested positive for COVID-19?
   - ☐ Not at all serious
   - ☐ A little
   - ☐ Moderately
   - ☐ Very serious

3. Did you have an overnight stay in a hospital for suspected or diagnosed COVID-19?[i]
   - ☐ Yes
   - ☐ No **(skip to question 5)**

4. If yes, were you put into the ICU (intensive care unit) because of suspected or diagnosed COVID-19?
   - ☐ Yes
   - ☐ No

5. If you know, or believe, that you had COVID-19: have you recovered to your usual state of health?[ii]
   - ☐ No
   - ☐ Yes: # of days it took to recover _____

6. How serious do you think it would be if you tested positive for COVID-19?

   Select one response.
   - ☐ Not at all serious
   - ☐ A little
   - ☐ Moderately
   - ☐ Very serious

7. In your opinion, how much would the COVID-19 vaccine protect you against getting COVID-19?[iii]
   Select one response.
   - ☐ Not at all
   - ☐ A little
   - ☐ Moderately
   - ☐ Very much

8. Have you experienced any COVID-19 vaccine requirements? *Select all that apply.*
   - ☐ Yes, there is a vaccine requirement at my work
   - ☐ Yes, there is a vaccine requirement at my school
   - ☐ Yes, family has required me to be vaccinated to visit them
   - ☐ Yes, friends have required me to be vaccinated to visit them
   - ☐ Yes, other (please specify): _____
   - ☐ No, I have not experienced any vaccine requirements **(skip to #10)**

9. If yes to any of the options in #8, how (if at all) did this/these requirement(s) change your behavior?
   _____

10. Did COVID-19 variants (like the Delta variant) change your mind about getting a COVID-19 vaccine?
    - ☐ Variants made me want the vaccine *more*
    - ☐ Variants made me want the vaccine *less*
    - ☐ Variants *didn't change* how I felt about the vaccine

11. Have you had the COVID-19 vaccine?
    - ☐ Yes, I'm fully vaccinated **(skip to 12)**
    - ☐ Yes, but I'm not fully vaccinated **(skip to 12)**
    - ☐ No, but I plan on getting vaccinated **(skip to 16)**
    - ☐ No, and I don't plan on getting vaccinated **(skip to 16)**

12. Why did you choose to get vaccinated?

    _____

    _____

13. What vaccine did you receive?
    - ☐ I don't know
    - ☐ Pfizer-BioNTech
    - ☐ Moderna
    - ☐ Johnson & Johnson/Janssen
    - ☐ Other (please specify)

      _____

14. How likely are you to recommend the vaccine to someone else?
    - ☐ Extremely Likely
    - ☐ Likely
    - ☐ Neutral
    - ☐ Unlikely
    - ☐ Extremely unlikely

15. Did you have any side-effects or symptoms after receiving the COVID-19 vaccination?
    - ☐ No
    - ☐ I don't know
    - ☐ Yes (please describe your side effects and/or symptoms) _____

16. What is/are the main reason(s) you have not taken the vaccine? *(Select all that apply)* **(After answering this question, skip to 17)**
    - ☐ I am waiting for FDA approval
    - ☐ I have concerns about it being a new type of vaccine (mRNA vaccine)
    - ☐ I do not have time or time off work
    - ☐ It does not affect me
    - ☐ I am worried about the side effects or I have allergy concerns
    - ☐ I want to wait longer and see what reactions others have
    - ☐ I do not have health insurance
    - ☐ I do not trust the government
    - ☐ My spiritual or religious beliefs stop me from wanting the vaccine
    - ☐ I am healthy, so I do not need the vaccine
    - ☐ I heard it can affect my sexual health or fertility
    - ☐ I do not know where or how to get the vaccine
    - ☐ I am afraid of needles
    - ☐ I do not have a car or bus I can take to get the vaccine
    - ☐ I have a disability that worries me for getting the vaccine
    - ☐ Other_____

      _____

17. How confident are you that the COVID-19 vaccine is being distributed fairly?[iv] *Select one response.*
    - ☐ Very confident **(skip to 19)**
    - ☐ Somewhat confident **(skip to 19)**
    - ☐ Not too confident
    - ☐ Not at all confident
    - ☐ I don't know **(skip to 19)**

18. In your own words, how could the COVID-19 vaccine be distributed more fairly?

    _____

    _____

19. Please answer the following questions in your own words: The biggest fear I have about COVID-19 is...[v]

_____

_____

How has the COVID-19 pandemic impacted your personal daily life with regards to:[vi]	To a great extent	Somewhat	Very little	Not at all
20. Work/school participation				
21. Economic situation				
22. Physical health				
23. Mental health				
24. Social life or relationships				

25. COVID-19 has also affected how people feel and act. Which of the following have you experienced due to COVID-19?[vii] *Please select all that apply.*

- ☐ Anxiety
- ☐ Boredom
- ☐ Conflict in the home
- ☐ Confusion
- ☐ Decreased exercise
- ☐ Decreased sexual activity
- ☐ Depression
- ☐ Fear of getting sick
- ☐ Frustration
- ☐ Increased alcohol or other substance use
- ☐ Increased eating
- ☐ Increased sexual activity
- ☐ Loneliness
- ☐ Loss of hope
- ☐ Trouble sleeping
- ☐ Worry about friends and family
- ☐ None of the above
- ☐ Other (please specify)

  _____

  _____

People have made many types of changes to their lifestyle or daily activities because of COVID-19. Please rate each of the following activities:[viii]	I did this at the beginning of the pandemic	I am doing this now	I will keep doing this throughout my life	I didn't do this
26. Bought extra medicine or medical supplies (e.g., thermometer)				
27. Bought food supplies on a larger scale				
28. Bought cleaning supplies on a larger scale				
29. Bought other household supplies (e.g., toilet paper) on a larger scale				
30. Had groceries or other supplies delivered to my home				
31. Avoided or cancelled domestic travel				
32. Avoided or cancelled international travel				
33. Avoided visiting family members or friends even when I did not have symptoms of coronavirus				
34. Avoided going to the doctor or dentist for routine appointments or preventive care				
35. Worked from home				

36. Were there any other changes to your lifestyle or daily activities because of COVID-19 you'd like to share?

_____

_____

COVID-19 has impacted people's day-to-day life in many different ways. Have you experienced any of these difficulties due to COVID-19?[ix]	Yes, I did in 2020	Yes, this is a problem for me now	No, not a problem
37. Reduced wages or work hours			
38. Job loss			
39. Loss of savings or retirement funds			
40. Problems with housing			
41. Childcare issues			
42. Problems getting food			
43. Problems getting cleaning supplies or other household items			
44. Problems getting medications			
45. Transportation issues			
46. Problems accessing healthcare			

47. Were there any other ways COVID-19 impacted your day-to-day life that you'd like to share?

_____

_____

Upon receiving the COVID-19 vaccine (if you have/if choose to in the future), do you plan to stop…[x]	Yes, I plan to stop this after I am vaccinated	No, I plan to continue this until after the pandemic ends	No, I plan to continue this even after the pandemic	I have already stopped doing this	I do not do this	I don't plan on getting the vaccine
48. Social distancing (staying at home and avoiding others as much as possible)						
49. Wearing a face mask in public						
50. Doubling up on face masks						
51. Frequently washing or sanitizing your hands						

At any time in the last 12 months, did you DELAY getting _____ because of the coronavirus pandemic?[xi]	Yes	No
52. Medical care		
53. Mental healthcare		
54. Dental care		

At any time in the last 12 months, did you need _____ for something other than coronavirus, but DID NOT GET IT because of the coronavirus pandemic?[xii]	Yes	No
55. Medical care		
56. Mental healthcare		
57. Dental care		

Please rate how much you agree with the following statements:[xiii]	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
58. People of color (e.g., African Americans, Latinos) are facing more of the health impact of coronavirus (COVID-19) than whites.					
59. People of color (e.g., African Americans, Latinos) are facing more of the financial/economic impact of coronavirus (COVID-19) than whites.					

60. Where do you usually get information on COVID-19?

_____

61. What people or groups do you trust to give you accurate COVID-19 information? (e.g., the news, the government, religious leaders, family members, etc.)

_____

62. How well do you trust information from members of your own community?
- ☐ Extremely
- ☐ Very
- ☐ Moderately
- ☐ Slightly
- ☐ Not at all

How would you describe the quality of the _____ in your neighborhood?[xiv]	Excellent	Very good	Good	Fair	Poor	Don't know or unsure
63. Health and wellness						
64. Economy						
65. Safety						
66. Education						
67. Transportation						
68. Environment						
69. Housing						

70. Please select the **five** most important health problems that need to be fixed in your community.[xv]

- ☐ A shortage of health professionals
- ☐ Air quality
- ☐ Asthma
- ☐ Cancer
- ☐ Cardiovascular disease (heart attacks, etc.)
- ☐ Delays in access to health care
- ☐ Diabetes
- ☐ Disabilities (hearing loss, blindness, etc.)
- ☐ Environmental pollution
- ☐ High blood pressure
- ☐ Infant mortality
- ☐ Insufficient physical activity
- ☐ Limited access to healthy foods
- ☐ Mental health problems (anxiety, depression, etc.)
- ☐ Not having a usual source of health care
- ☐ Not having health insurance coverage
- ☐ Obesity/overweight
- ☐ Poor dental hygiene
- ☐ Poor nutrition/diet
- ☐ Respiratory/lung disease
- ☐ Sexually transmitted diseases (STDs)
- ☐ Smoking/tobacco use/vaping/e-cigarette access & use
- ☐ Stroke
- ☐ Suicide
- ☐ Teen pregnancy
- ☐ Traffic injuries
- ☐ Other (please specify) _____ _____

71. Please select the **five** most important social problems that need to be fixed in your community.[xvi]

- ☐ Child abuse
- ☐ Climate change
- ☐ Domestic violence
- ☐ Gun violence
- ☐ High housing costs (purchase or rental)
- ☐ Homelessness
- ☐ Low college readiness
- ☐ Low English literacy
- ☐ Low reading proficiency
- ☐ Low school attendance
- ☐ Low walkability or bikeability
- ☐ Marijuana growing (illegal)
- ☐ Police brutality
- ☐ Poor educational attainment
- ☐ Poor high school graduation rates
- ☐ Poor school drop-out rates
- ☐ Poor student-teacher ratios
- ☐ Poverty
- ☐ Property crime
- ☐ Public transportation (quantity or quality)
- ☐ Racism
- ☐ Rape/sexual assault
- ☐ Traffic injuries
- ☐ Unemployment/underemployment
- ☐ Violent crime
- ☐ Other (please specify) _____ _____

Would you say, in general, that your _____ is excellent, good, very good, fair, or poor?	Excellent	Very good	Good	Fair	Poor
72. Physical health					
73. Mental health					

74. Do you have any children under the age of 18?

- ☐ Yes
- ☐ No **(skip to next page, #79)**

	Yes	No	Not sure
75. Are the child's or children's parents divorced or separated?			
76. During the child's or children's lifetime, has anyone in the household been to jail or prison?			
77. During the child's or children's lifetime, has anyone in the household been a problem drinker or alcoholic, or used street drugs?			
78. During the child's or children's lifetime, has anyone in the household been depressed, mentally ill, or attempted suicide?			

79. Have you accessed any of these resources during the pandemic? *Please check all that apply.*

- ☐ Food bank/food pantry/free delivered meals
- ☐ Prescriptions delivered
- ☐ Stimulus check received
- ☐ Rent deferral or forgiveness
- ☐ Utility bill discounts
- ☐ Unemployment insurance
- ☐ I did not access any of these resources
- ☐ Other: Please Specify: _____

The department of Public Health within Riverside County has worked to reduce the impact of COVID-19 throughout the community. Please rate whether you were aware of Public Health's following activities:	Knew about it	Knew and used it	Unaware and didn't need it	Unaware and would have liked to know about this
80. Mask distribution				
81. Food assistance/Great Plates Program				
82. Childcare assistance				
83. Educational information and videos				
84. Opened vaccine sites				
85. Opened testing sites				
86. Provided data to the community				
87. Gave information to support small business				

88. In your own words, what could Riverside County Public Health have done differently to reduce the impact of COVID-19?

_____

_____

89. How much do you trust local government such as County Public Health departments?

- ☐ A lot
- ☐ A moderate amount
- ☐ A little
- ☐ None at all

90. Are you of Hispanic, Latino, or Spanish origin?

- ☐ No, not of Hispanic, Latino, or Spanish origin
- ☐ Yes, Mexican, Mexican American, Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, Other Hispanic, Latino, or Spanish origin (specify): _____

91. Which one of these groups would you say best represents your race? For the purposes of this survey, Hispanic is not a race.

- ☐ White/Caucasian
- ☐ Black/African American
- ☐ Asian
- ☐ American Indian/Alaska Native
- ☐ Native Hawaiian/Pacific Islander
- ☐ Multiracial/more than one race
- ☐ Other (specify): _____

92. Last year, what was your household income from all sources before taxes? _____

93. How many people, including you, reside in your household? Please include adults and children.

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10 or more

94. What sex were you assigned at birth, on your original birth certificate?

- ☐ Male
- ☐ Female

95. How do you describe yourself? *Select one response.*

- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Do not identify as female, male, or transgender

96. Do you consider yourself to be…

- ☐ Heterosexual
- ☐ Homosexual
- ☐ Bisexual
- ☐ Questioning
- ☐ Other (please specify) _____

97. Generally speaking, do you think of yourself as a _____?[xvii] *Select one response.*

- ☐ Democrat
- ☐ Republican
- ☐ Independent
- ☐ Not sure
- ☐ Choose not to respond
- ☐ Other (please specify) _____

98. What is your age, in years? _____

99. About how tall are you without shoes? Please answer in feet/inches. _____

100. How much do you weigh, in pounds, without shoes? _____

That concludes the survey!

Thank you so much for your time and responses. We truly appreciate it.

Appendix C: Weighting Methodology

This is a brief report on the weighting procedure and outcome for the HARC COVID mail survey, created by Brian Kriz, statistician. A total of 9,232 cases were provided in a .sav file. Missing data were imputed using a hotdeck method. Iterative proportional fitting was used to ensure marginal distributions for age, sex, race, ethnicity, and household income aligned. Weights were rescaled to the 2020 Census population estimates (1,823,505 residents of Riverside County).

Crosscheck coding

First, the statistician conducted a check to confirm all variable recodes used for weighting were properly recoded, with the exception of income (as this required subjective judgment by HARC staff). Codes were confirmed as accurate.

Missingness

Over 71% of cases were complete and just under a quarter had one missing variable. Less than 1% were missing all weighting information. Income is the most common missing variable, making up roughly 20% of cases. Imputation using hotdeck occurred in two stages: The first stage imputed all variables simultaneously, except income.

As income is likely heavily influenced by many of the other weighting variables, the statistician decided to impute this value within the race x ethnicity domain. This means that income hotdeck imputation took place within each level of race x ethnicity. This is an effort to ensure the distribution of the income variable remains correlated with race and ethnicity.

Imputation

Imputation was conducted in three steps: baseline, all variables except income, and final income alone. After the first round of imputation, the statistician recomputed the race and ethnicity variable to account for the imputation of these variables. Finally, the statistician ran a double-check to ensure the recategorization of the race and ethnicity variable was properly executed.

Weighting diagnostics

The data was weighted using an iterative proportional fitting (i.e., raking or rim weighting) algorithm. The weighting procedure converged. Below are diagnostics of the weights winsorized at the 0.01 and 0.99 level and not winsorized. The design effect is 1.98 in both cases, which is within a tolerable level. The ratio of min and max weights is also tolerable.

Because there is no decrease in the design effect after winsorizing, the statistician recommended staying with the non-winsorized set of weights. Using the winsorized weights would add bias with no variance reduction benefit.

Table 13. Comparison of Weighting Metrics with and without Winsorizing

Weight	Population Estimate	Min. Weight	Mean Weight	Median Weight	Max Weight	Ratio	Deff
Weight	1,823,505	46.33	197.52	135.63	987.61	21.32	1.92
Winsorized Weight	1,823,505	47.27	197.52	135.63	987.61	20.89	1.92

Check Targets and Weight

Finally, the statistician ran an analysis to examine the unweighted and weighted distribution in comparison to the targets. Unweighted, some distributions are off by as much as 17 percentage points. The largest difference was with young adults (underrepresented by 17 percentage points), Hispanics/Latinos (underrepresented by 15 percentage points), and White Non-Hispanics (over-represented by 16 percentage points). When weighted, we achieved the exact same distribution as the targets, as illustrated in the table below.

Table 14. Comparison of Weighted and Unweighted Estimates Against Weighting Targets

Variable/Category	Unweighted	Weighted	Target	Difference without Weight	Difference with Weight
Income					
Less than $14,999	6.9%	8.7%	8.7%	1.8	0
$15,000 to $34,999	17.2%	14.1%	14.1%	3.1	0
$35,000 to $74,999	29.3%	28.3%	28.3%	1	0
$75,000 to $149,999	31.4%	31.9%	31.9%	0.5	0
$150,000 or more	15.3%	17.0%	17.0%	1.7	0
Total	*100.00%*	*100.00%*	*100.00%*	*8.1*	*0*
Age					
18 to 29	5.2%	22.3%	22.3%	17.1	0
30s	11.0%	18.0%	18.0%	6.9	0
40s	14.8%	16.6%	16.6%	1.8	0
50s	18.0%	16.0%	16.0%	2	0
60s	23.6%	13.3%	13.3%	10.3	0
70s and up	27.4%	13.9%	13.9%	13.6	0
Total	*100.0%*	*100.0%*	*100.0%*	*51.7*	*0*

Variable/Category	Unweighted	Weighted	Target	Difference without Weight	Difference with Weight
Sex at Birth					
Male	37.7%	49.50%	49.5%	11.8	0
Female	62.3%	50.50%	50.5%	11.8	0
Total	*100.0%*	*100.00%*	*100.0%*	*23.6*	*0*
Race x Ethnicity					
Hispanic/Latino	30.2%	45.6%	45.6%	15.4	0
Not Hispanic, White Alone	52.6%	36.6%	36.6%	16.1	0
Not Hispanic, Black Alone	5.9%	6.2%	6.2%	0.4	0
Not Hispanic, Asian Alone	6.5%	7.4%	7.4%	0.8	0
Not Hispanic, Other	4.8%	4.3%	4.3%	0.5	0
Total	*100.0%*	*100.0%*	*100.0%*	*33.1*	*0*

Final Data Set

The final data set was provided back to HARC with original weights (recommended for use, used by HARC) as well as winsorized weights (not recommended for use, not used by HARC).

Appendix D: Survey References

[i] PhenX Toolkit. MESA COVID-19 Questionnaire. Recovery topic. https://www.phenxtoolkit.org/toolkit_content/PDF/MESA_COVID_19_Diagnosis.pdf . Note: HARC modified from original, "Have you ever had an overnight stay in a hospital for suspected or diagnoses COVID-19?"

[ii] PhenX Toolkit. MESA COVID-19 Questionnaire. Recovery topic. https://www.phenxtoolkit.org/toolkit_content/PDF/MESA_COVID_19_Diagnosis.pdf Note: HARC modified response option from "How long did take for you to recover? _____days"

[iii] Reiter, P. L., Pennell, M. L., & Katz, M. L. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated?. Vaccine, 38(42), 6500–6507. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7440153/

[iv] KFF Health Tracking Poll/ KFF COVID-19 Vaccine Monitor https://files.kff.org/attachment/Topline-KFF-COVID-19-Vaccine-Monitor-December-2020.pdf Modified by HARC: Changed from "How confident are you that when a COVID-19 vaccine becomes available, it will be distributed in a way that is fair?"

[v] Pogue, K., Jensen, J. L., Stancil, C. K., Ferguson, D. G., Hughes, S. J., Mello, E. J., ... & Poole, B. D. (2020). Influences on attitudes regarding potential COVID-19 vaccination in the United States. Vaccines, 8(4), 582. https://www.mdpi.com/2076-393X/8/4/582/htm Note: Modified by HARC: changed question from, "Please answer the following questions in your own words: The biggest fear I have about a COVID-19 vaccine is..."

[vi] Phenx Toolkit. Telling our stories in the age of COVID-19. Overall impact topic. https://www.phenxtoolkit.org/toolkit_content/PDF/CU_TOSC_Impact.pdf

[vii] Reiter, P. L., Pennell, M. L., & Katz, M. L. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated?. Vaccine, 38(42), 6500‑6507. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7440153/ Note: Modified by HARC: Added an "other" option to the responses.

[viii] Reiter, P. L., Pennell, M. L., & Katz, M. L. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated?. Vaccine, 38(42), 6500‑6507. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7440153/

[ix] Reiter, P. L., Pennell, M. L., & Katz, M. L. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated?. Vaccine, 38(42), 6500‑6507. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7440153/

[x] Axios/Ipsos panel survey found in "(SEAN) COVID-19 Survey Archive" https://covid-19.parc.us.com/client/index.html#/ Note: Modified by HARC: removed "each of the following at end of question" and modified response from "Social distancing, that is staying at home and avoiding others as much as possible"

[xi] Phenx Toolkit. COVID-19 Household Pulse Questionnaire. Risk Reduction Topic. https://www.phenxtoolkit.org/toolkit_content/PDF/Census_HPS_Health.pdf

[xii] Ibid.

[xiii] COVID-19 and the Experiences of Populations at Greater Risk: Description and Top-Line Summary Data https://www.rand.org/pubs/research_reports/RRA764-2.html - Question developed by RWJF (Robert Woods Johnson Foundation) and RAND.

[xiv] 2019 CHA San Bernardino County Community Vital Signs

[xv] Ibid. Note: HARC modified the options to be alphabetical. Also modified to select the top 5 rather than the top 7.

[xvi] Ibid. Note: HARC included "racism" as a social problem and modified the options to be alphabetical. From review of the listening sessions, "climate change", "police brutality", and "marijuana growing" were included.

[xvii] PhenX Toolkit - RAND American Life Panel Survey: Impacts of COVID-19