

COVID-19 and Public Health Behaviors

Sarah Crisci, Shannon Malloy, Mariami Chitadze
Global Health Disaster Preparedness and Response, Spring 2024

Objective: This study measures COVID-19-related experiences, attitudes, and health-related behaviors in order to assess the relationship of experiences and attitudes to behaviors. Survey items measured include past COVID-19 morbidity, knowing individuals for whom COVID-19 led to hospitalization or death, level of disease concern, relied upon sources of public health information, confidence in the health authorities and the public during a future pandemic, overall self-reported adherence to public health recommendations, and past and current compliance with specific recommendations, including vaccination.

Methods: This quantitative, cross-sectional study utilized data collected between 26 February and 1 March 2024 through an online survey administered through Qualtrics. Convenience sampling of researchers' social networks resulted in a total of 102 responses. Twelve individuals did not complete the survey and were removed from the analytic sample, resulting in a total of 90 responses. Univariate analysis was conducted to provide descriptive statistics for survey responses using Stata version 18. Questions were categorical variables, so frequency and percentage of responses were calculated for each. Additionally, chi-square was used to detect statistically significant differences in responses by demographic characteristics.

Results: The analytic sample included 90 responses. Respondents were mostly female (76%), aged 25-34 (63%), White (83%), not Hispanic or Latino (93%), and college-educated (44% bachelor's degree, 33% master's degree, and 11% doctoral). Most respondents (91%) lived in the United States, with a majority in New Jersey and New York. Fourteen additional states and 3 other countries were represented. For demographic characteristics see Table 1 in the Appendix.

Eighty-one percent of the sample reported having been diagnosed with COVID-19 (44% once, 40% twice, and 16% three or more times). Nearly half (46%) knew someone who was hospitalized and 38% knew someone who had died from COVID-19. A majority of the sample (51%) was "somewhat concerned" about getting COVID-19 (with 32% not at all concerned, 12% concerned, 2% moderately concerned, and 2% extremely concerned). Similarly, 44% of the sample was "somewhat concerned" about the effects of long COVID-19 (with 23% not at all concerned, 16% concerned, 8% moderately concerned, and 9% extremely concerned). Respondents expressed a lack of confidence that the US government could handle another pandemic (49% not at all confident, 47% somewhat confident, and 4% confident) and overall lack of confidence that the US public would take another pandemic seriously (57% not at all confident, 39% somewhat confident, 2% confident, and 2% very confident).

Public health behaviors: The most common public health behavior was vaccination, with 97.8% of the sample having received at least one vaccine. Respondents reported an overall high level of compliance with public health recommendations prior to vaccines becoming available, with 16.7% reporting "excellent" compliance, 40.0% reporting "above average" compliance, 37.8% reporting "average" compliance, and 5.6% reporting below-average compliance. The most

commonly reported behavior was washing or sanitizing hands after physical contact (94.4%). This was followed by distancing from others (90.0%), wearing masks or face coverings (87.8%), and avoiding crowds (84.4%). When asked if they currently engage in these behaviors, hand washing or sanitizing after contact remained the most common (70.0%), followed by wearing masks or face coverings (25.6%), avoiding crowds (20.0%), and distancing from others (20.0%). Additionally, 55.6% of the sample reported that they receive vaccine boosters.

Trusted information sources: Overall, the sample reported the highest level of trust in their healthcare provider (72.2%), followed by the Centers for Disease Control and Prevention (68.9%), the local public health department (32.2%), personal social media and/or knowledge research (23.3%), and friends and family (22.2%).

Discussion: The present analysis suggests that members of the sample self-reported reduced adherence to every COVID-19 protective health behavior measured, across all demographic strata, during the period of time between vaccination and completion of the survey. However, as the data is cross-sectional, any assessment of causality is beyond the scope of this study. Interestingly, there appear to be discrepancies in respondents' sense of how seriously others were taking recommendations. When asked to rank themselves against their perceptions of normative behaviors, respondents reporting the same specific behaviors ranged in self-categorization from "below average" to "excellent." Further research exploring the role of social norm perception on COVID-19 health behaviors could prove generative.

Analysis by demographic characteristics produced statistically significant between-group variance in compliance with some recommended health behaviors. Current use of face masks varied significantly by age, country of residence, and knowing someone who was hospitalized with COVID-19. Current avoidance of crowds varied significantly by age and country of residence. For example, 12.1% of participants in the 25-34 age range reported avoiding crowds, while 100% of the respondents aged 65-74 reported avoiding crowds. Additionally, reported prior distancing from others varied by education level and knowing someone who died from COVID-19. See Appendix: Table 2 for bivariable analysis on demographics and health behavior.

Trust in personal social media and/or knowledge research as a source of health information varied significantly by gender (with males more likely than females to trust this source) as well as previous diagnosis of COVID-19 (those who reported having COVID-19 were more likely to trust this source than those that did not). Respondents who knew someone hospitalized with COVID-19 were significantly more likely to trust the local health department when compared with people who did not know someone who was hospitalized related to COVID-19. Race was a factor in trust in healthcare providers, with White and Asian respondents significantly more likely to report trust in their healthcare provider than Black respondents. See Appendix: Table 3.

Due to the use of convenience sampling for this study resulting in selection bias, the sample is not representative of any larger population and the study has no external validity. The sample is, for example, disproportionately young, female, white, and highly educated. Inherent limitations in cross-sectional data also limit inferences related to within-person changes in attitudes or behaviors over time. Self-reported data is known to be unreliable, and what data was collected

is subject to recall bias. In addition, due to the sensitive nature of the topic, there is a possibility of social desirability bias influencing respondents.

Conclusions: Analysis of sample data suggests that compliance with COVID-19 health recommendations is significantly influenced by demographic factors including age, country of residence, and education status. These relationships may thus prove fertile areas for further research toward the development of targeted interventions to increase compliance in the event of future pandemics.

While the number of persons living outside the U.S. in the sample is small (8 individuals), these respondents reported higher levels of compliance with all health recommendations when compared to United States residents. Findings indicate low overall confidence in the United States government to respond successfully to a future pandemic, coupled with low confidence among respondents that the U.S. population will take future pandemic response seriously. In order to ensure future response capacities are not limited by general non-compliance, interventions aimed at rebuilding trust should be prioritized as important prevention and mitigation measures. Additional studies designed to measure trends over time should be convened to explore changes in public trust in healthcare and response authorities related to COVID-19 experiences, as well as their impact on compliance with public health measures.

Appendix

Table 1: Sociodemographic characteristics of sample, previous diagnosis of COVID-19, and knowing someone who was hospitalized or died from COVID-19 (n=90)

Sociodemographic characteristics	n (%)
Gender Male Female Non-binary	19 (21%) 70 (76%) 1 (1%)
Age Under 18 18 - 24 25 - 34 35 - 44 45 - 54 55 - 64 65 - 74 75 years or older	0 (0%) 9 (10%) 58 (63%) 10 (11%) 2 (2%) 7 (8%) 3 (3%) 1 (1%)
Race American Indian or Alaskan Native Asian Black or African American Native Hawaiian or Other Pacific Islander White Prefer not to answer	0 (0%) 9 (10%) 5 (6%) 0 (0%) 75 (83%) 2 (2%)
Ethnicity Hispanic or Latino Not Hispanic or Latino Prefer not to answer	3 (3%) 83 (93%) 3 (3%)
Education level Less than high school diploma or GED High school diploma or GED Associate's degree Bachelor's degree Master's degree Doctoral degree or equivalent (e.g. JD, DO, PhD) Prefer not to answer	0 (0%) 6 (7%) 3 (3%) 40 (44%) 30 (33%) 10 (11%) 1 (1%)
Country of residence United States Other Australia Japan Georgia	82 (91.1%) 8 (8.9%) 3 (3.3%) 1 (1.1%) 4 (4.4%)
Has been diagnosed with COVID-19 Yes No	73 (81.1%) 17 (18.9%)
How many times did you have COVID-19 (n=73) 1 time 2 times 3 or more times	32 (43.8%) 29 (39.7%) 12 (16.4%)
Know someone who was hospitalized with COVID-19 Yes No Don't remember	41 (46.1%) 46 (51.7%) 2 (2.3%)
Know someone who died from COVID-19	

Yes No Don't remember	34 (38.2%) 53 (59.6%) 2 (2.3%)
Self-rated overall compliance with public health recommendations to limit the spread of COVID-19 Excellent Above average Average Below average	15 (16.7%) 36 (40.0%) 34 (37.8%) 5 (5.6%)
Communicable diseases viewed as the biggest threat to your health in 2024 COVID-19 Ebola Measles RSV Seasonal influenza Other Do not feel threatened by any of these diseases	30 (33.3%) 2 (2.2%) 1 (1.1%) 10 (11.1%) 22 (24.4%) 3 (3.3%) 22 (24.4%)
Present concern about getting COVID-19 Not at all concerned Somewhat concerned Concerned Moderately concerned Extremely concerned	29 (32.2%) 46 (51.1%) 11 (12.2%) 2 (2.2%) 2 (2.2%)
Present concern about the effect of long COVID-19 Not at all concerned Somewhat concerned Concerned Moderately concerned Extremely concerned	21 (23.3%) 40 (44.4%) 14 (15.6%) 7 (7.8%) 8 (8.9%)
Confidence that the US Government could handle another pandemic Not at all confident Somewhat confident Confident Very confident Extremely confident	44 (48.9%) 42 (46.7%) 4 (4.4%) 0 (0%) 0 (0%)
Confidence that the US public would take another pandemic seriously Not at all confident Somewhat confident Confident Very confident Extremely confident	51 (56.7%) 35 (38.9%) 2 (2.2%) 2 (2.2%) 0 (0%)

Table 2: Public health behaviors by sociodemographic characteristics and previous diagnosis of COVID-19 (statistically significant differences highlighted in blue)

Sociodemographic characteristics	Distanced from others		Washed hands / sanitized after making contact		Wore masks / face coverings		Avoided crowds		Vaccinated	
	Before vax	Now	Before vax	Now	Before vax	Now	Before vax	Now	Had at least 1	Gets booster
Overall (90)	90.0%	20.0%	94.4%	70.0%	87.8%	25.6%	84.4%	20.0%	97.8%	55.6%
Gender (n)										
Male (19)	89.5%	15.8%	89.5%	52.6%	84.2%	10.5%	73.7%	21.1%	100%	63.2%
Female (70)	90.0%	21.4%	95.7%	74.3%	88.6%	28.6%	87.1%	20.0%	97.1%	52.9%
Non-binary (1)	100%	0%	100%	100%	100%	100%	100%	0%	100%	100%
Age (n)										
18 - 24 (9)	100%	33.3%	100%	88.9%	100%	66.7%	88.9%	44.4%	100%	55.6%
25 - 34 (58)	84.5%	19.0%	91.4%	67.2%	82.8%	15.5%	79.3%	12.1%	96.6%	46.6%
35 - 44 (10)	100%	20.0%	100%	80.0%	100%	50.5%	100%	40.4%	100%	80.0%
45 - 54 (2)	100%	0%	100%	100%	100%	100%	100%	0%	100%	100%
55 - 64 (7)	100%	0%	100%	71.4%	85.7%	0%	85.7%	0%	100%	57.1%
65 - 74 (3)	100%	33.3%	100%	0%	100%	33.3%	100%	100%	100%	100%
75 years+ (1)	100%	100%	100%	100%	100%	0%	100%	0%	100%	100%
Race (n)										
Asian (9)	88.9%	22.2%	100%	55.6%	88.9%	44.4%	77.8%	33.3%	100%	77.8%
Black or African American (5)	100%	20.0%	100%	100%	100%	40.0%	100%	20.0%	100%	60.0%
White (75)	88.0%	20.0%	93.3%	69.3%	85.3%	20.0%	84.0%	17.3%	97.3%	50.7%
Ethnicity (n)										
Hispanic or Latino (3)	100%	0%	100%	66.7%	100%	33.3%	100%	0%	100%	66.7%
Not Hispanic or Latino (83)	89.2%	20.5%	94.0%	68.7%	86.8%	24.1%	83.1%	19.3%	98.8%	53.0%
Education level (n)										
High school diploma (6)	83.3%	0%	100%	83.3%	100%	16.7%	83.3%	16.7%	100%	66.7%
Associate's degree (3)	100%	0%	100%	33.3%	100%	33.3%	100%	33.3%	100%	66.7%
Bachelor's degree (30)	90.0%	30.0%	92.5%	72.5%	82.5%	30.0%	82.5%	20.0%	95.0%	60.0%
Master's degree (40)	90.0%	13.3%	93.3%	66.7%	86.7%	20.0%	80.0%	16.7%	100%	46.7%
Doctoral degree (10)	100%	20.0%	100%	70.0%	100%	30.0%	100%	30.0%	100%	60.0%
Country of residence										
United States (81)	90.1%	16.1%	95.1%	69.1%	87.6%	21.0%	83.9%	17.3%	97.53%	54.3%
Other (8)	87.6%	62.5%	87.6%	75.0%	87.5%	62.5%	87.5%	50.0%	100%	62.5%
Has been diagnosed with COVID-19 (n)										
Yes (73)	90.4%	16.4%	94.5%	68.5%	89.0%	23.3%	83.6%	16.4%	97.2%	56.2%
No (17)	88.2%	47.1%	94.1%	76.5%	82.4%	35.3%	88.2%	35.3%	100%	52.9%
Know someone who was hospitalized with COVID-19										
Yes (41)	95.1%	24.4%	95.1%	73.2%	92.7%	36.6%	82.9%	29.3%	97.6%	56.1%
No (46)	87.0%	17.4%	93.5%	65.2%	82.6%	15.2%	84.8%	13.0%	97.8%	56.5%
Don't remember (2)	50.0%	0%	100%	100%	100%	0%	100%	0%	100%	0%
Know someone who died from COVID-19										
Yes (34)	97.1%	20.6%	97.1%	73.5%	91.2%	35.3%	82.4%	23.5%	97.1%	52.9%
No (53)	86.8%	20.8%	92.5%	66.0%	84.9%	17.0%	84.9%	18.9%	98.1%	56.6%
Don't remember (2)	50.0%	0%	100%	100%	100%	50.0%	100%	0%	100%	50.0%

Table 3: Trusted sources of public health information by sociodemographic characteristics and previous diagnosis of COVID-19 (statistically significant differences highlighted in blue)

Sociodemographic characteristics	My healthcare provider	Friends and family	The Centers for Disease Control and Prevention	Local Public Health Department	Personal social media and/or knowledge research
Overall	72.2%	22.2%	68.9%	32.2%	23.3%
Gender (n)					
Male (19)	73.7%	31.6%	68.4%	21.1%	47.4%
Female (70)	71.4%	18.6%	68.6%	34.3%	17.1%
Non-binary (1)	100%	100%	100%	100%	0%
Age (n)					
18 - 24 (9)	88.9%	33.3%	77.8%	55.6%	44.4%
25 - 34 (58)	70.7%	22.4%	62.1%	22.4%	22.4%
35 - 44 (10)	70.0%	20.0%	60.0%	50.0%	30.0%
45 - 54 (2)	100%	50.0%	100%	100%	0%
55 - 64 (7)	85.7%	0%	100%	28.57%	14.3%
65 - 74 (3)	33.3%	0%	100%	66.7%	0%
75 years+ (1)	0%	100%	100%	0%	0%
Race (n)					
Asian (9)	77.8%	0%	88.9%	55.6%	33.3%
Black or African American (5)	20.0%	40.0%	80.0%	40.0%	0%
White (75)	74.7%	24.0%	66.7%	29.3%	22.7%
Ethnicity (n)					
Hispanic or Latino (3)	66.7%	0%	66.7%	0%	0%
Not Hispanic or Latino (83)	72.3%	22.9%	67.5%	32.5%	25.3%
Education level (n)					
High school diploma (6)	83.3%	16.7%	83.3%	33.3%	33.3%
Associate's degree (3)	66.7%	33.3%	66.7%	66.7%	33.3%
Bachelor's degree (30)	62.5%	30.0%	67.5%	32.5%	27.5%
Master's degree (40)	80.0%	16.7%	70.0%	33.3%	16.7%
Doctoral degree (10)	90.0%	0%	70.0%	10.0%	20.0%
Has been diagnosed with COVID-19 (n)					
Yes (73)	75.3%	23.3%	65.8%	30.1%	28.8%
No (17)	58.8%	17.6%	82.4%	41.2%	0%
Know someone who was hospitalized with COVID-19					
Yes (41)	80.5%	17.1%	65.9%	43.9%	34.1%
No (46)	65.2%	21.7%	71.7%	19.6%	15.2%
Don't remember (2)	50.0%	100%	50.0%	50.0%	0%
Know someone who died from COVID-19					
Yes (34)	76.5%	14.7%	58.8%	35.3%	29.4%
No (53)	69.8%	24.5%	75.5%	26.4%	20.8%
Don't remember (2)	50.0%	50.0%	50.0%	100%	0%