

**CCTST COVID-19 Critical Community Challenge Grant**

**A COMMUNITY-BASED APPROACH TO UNDERSTANDING AND  
IMPROVING ADHERENCE TO CDC COVID-19 GUIDELINES:  
DEVELOPING EVIDENCE-BASED STRATEGIES TO IMPROVING MASK-  
WEARING AND SOCIAL DISTANCING IN PUBLIC**

**FINAL REPORT**

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## Study Overview

The purpose of this study is two-fold: 1) To gather information about the behaviors, beliefs, and attitudes relating to COVID-19 within a broad community population, and 2) Develop public health messaging that will promote awareness and adherence to CDC and local public health recommendations for reducing the risk of contracting and spreading COVID-19. This report provides preliminary data related to Goal 1 of this study. Data related to Goal 1 includes responses to an online survey that has been posted on more than 40 websites, listservs and e-mail distribution lists. It will also include transcripts from three focus groups and three individual interviews (currently being analyzed).

## COVID-19 Community Survey

The survey was constructed around 10 conceptual areas of inquiry: 1) mask wearing and social distancing behavior, 2) experience with COVID-19 testing/positive results and symptoms, 3) perceived risk of contracting COVID-19, 4) the perceived safety of various situations and places, 5) emotions experienced related to COVID-19, 6) effectiveness of masks and social distancing for stopping the spread of COVID-19, 7) worry for self and others related to contracting COVID-19, 8) reasons for wearing and not wearing masks, 9) likelihood of getting the COVID-19 vaccine when it is available, and 10) respondent demographics. Table 1 lists the number of questions in each of the survey sections.

**Table 1: Survey Sections and Numbers of Questions**

Survey Content Area	Number of Questions
Mask wearing and social distancing behavior	12
Experience with COVID-19 testing/positive results and symptoms	6
Perceived safety of various situations and places	20
Emotions experienced related to COVID-19	15
Effectiveness of masks and social distancing for stopping the spread of COVID-19	2
Worry for self and others related to contracting COVID-19	3
Reasons for wearing and not wearing masks	17
Likelihood of getting the COVID-19 vaccine when it is available	1
Respondent demographics	7

## Risk Index

The Center for Disease Control and Prevention (CDC) and local and state governments have been specific in their recommendations for reducing the spread of COVID-19. Some of these recommendations have been updated since the release of several COVID-19 vaccines, however, this survey was distributed prior to their availability. The pre-vaccine recommendations include wearing a mask when in public, maintaining social distancing of at least six feet, and regular hand-washing and cleaning of common surfaces. Additionally, there have been general warnings to avoid congregating in large groups, especially indoors. Based on these recommendations and general scientific evidence regarding the seriousness of the COVID-19

virus, we created an index of risk behavior and beliefs that includes the responses to nine questions on the survey. Table 2 describes the risk index items and scoring. We classified a score of 0 as low risk, scores of 1 or 2 as moderate risk, and scores of 3 or above as high risk. We recognize that some behaviors and beliefs may put an individual at higher risk than others; for the purposes of our preliminary analysis, we have weighted all nine items the same.

**Table 2: Risk Index Items and Scoring**

Survey Question	Response Options	Risk Index Score
When you have gone out in public in the past week, how often do you wear a mask or face covering?	All of the time Most of the time Some of the time Never I have not gone out in public in the past week	0 0 1 1 0
When you have gone out in public in the past week, how often do you practice social distancing (of more than 6 feet)?	All of the time Most of the time Some of the time Never I have not gone out in public in the past week	0 0 1 1 0
Have you worn a mask in the following places in the past week: SHOPPING IN A STORE	All of the time Most of the time Some of the time Never I have not gone here in the past week	0 0 1 1 0
How effective do you think wearing a mask is for stopping the spread of COVID-19?	Very effective Somewhat effective Somewhat ineffective Very ineffective I don't know/unsure	0 0 1 1 0
How effective do you think social distancing is for stopping the spread of COVID-19?	Very effective Somewhat effective Somewhat ineffective Very ineffective I don't know/unsure	0 0 1 1 0
How important is the following reason NOT TO WEAR a mask: I DON'T BELIEVE IT IS NECESSARY	Not Important Somewhat important Important Very Important	0 0 1 1
How important is the following reason NOT TO WEAR a mask: I DON'T BELIEVE IT IS EFFECTIVE	Not Important Somewhat important Important Very Important	0 0 1 1
How important is the following reason NOT TO WEAR a mask: TO	Not Important Somewhat important	0 0

MAKE A SOCIAL/POLITICAL STATEMENT	Important	1
	Very Important	1
If a vaccine becomes available for COVID-19, how likely are you to want to get it?	Very unlikely	1
	Somewhat unlikely	1
	Somewhat likely	0
	Very likely	0

## Preliminary Results

Our data analysis was conducted on surveys received by October 20, 2020. At that time, we had 4,636 US responses (745: 16.1% were incomplete). The following results reflect completed surveys from respondents living in the Greater Cincinnati area: 8 counties in Southwest Ohio, 3 counties in Northern Kentucky, and 3 counties in Southeast Indiana. We had 2,987 completed surveys from those counties.

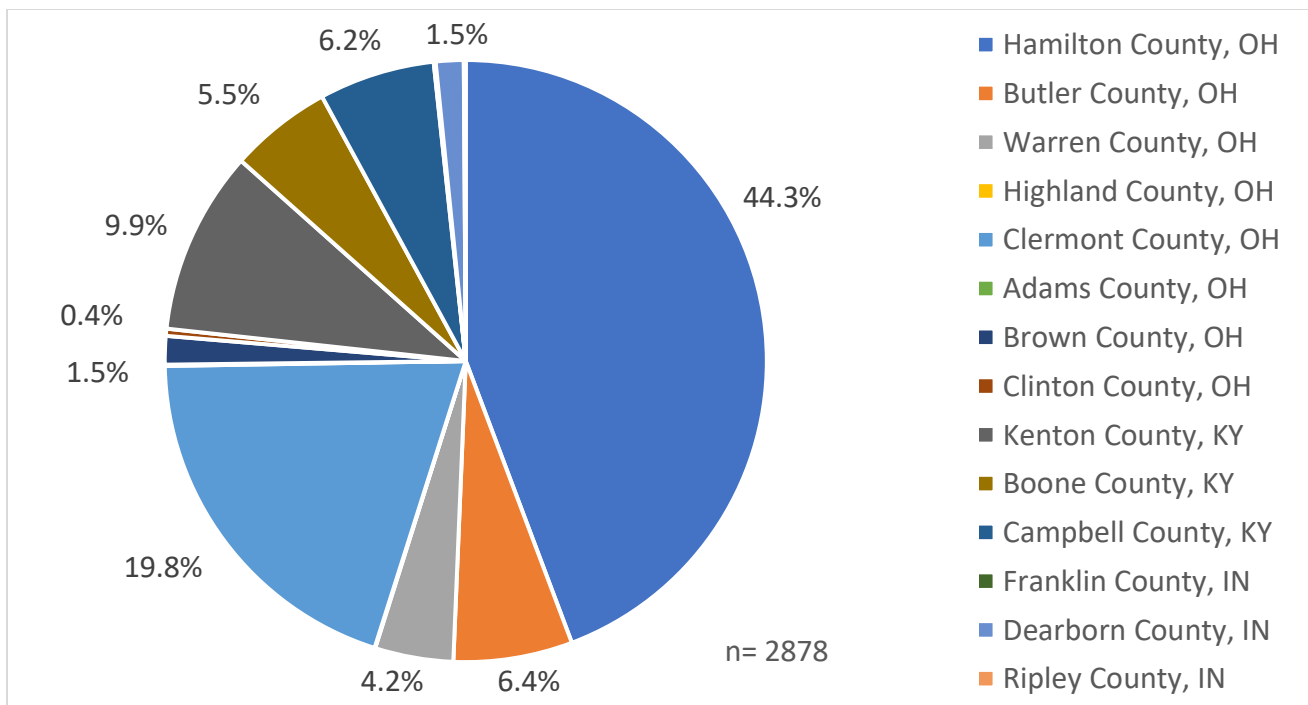
Table 3 includes the distribution of responses for key demographic variables. Almost three quarters of the respondents were between the ages of 31 and 60. The overwhelming majority (87.6%) of the respondents were female and white (93.0%). Residence location was classified by county. Hamilton County was classified as the only urban county. Suburban counties included Butler, Warren, and Clermont counties in Ohio and all three counties in Northern Kentucky (Campbell, Kenton, and Boone). Rural counties included Highland, Adams, Brown, and Clinton counties in Ohio and Franklin, Dearborn, and Ripley counties in Indiana. Slightly more than 70% have college degrees or advanced education and more than three quarters (77.4%) were employed at the time they completed the survey.

**Table3: Demographic characteristics of study participants (N=2878)**

	N (%)
Age (n= 2857)	
18-30	305 (10.7)
31-45	1296 (45.4)
46-60	830 (29.1)
61 yrs and older	426 (14.9)
Gender (n = 2843)	
Female	2497 (87.8)
Male	346 (12.2)
Race (n = 2789)	
White	2616 (93.8)
Black/African American	64 (2.3)
Other	109 (3.9)
Education level (n= 2836)	
Pre-bachelor	846 (29.8)
Bachelor and more	1990 (70.2)
Employment status (n =2804)	
Working	2171 (77.4)
Not working	579 (20.6)
Student	54 (1.9)

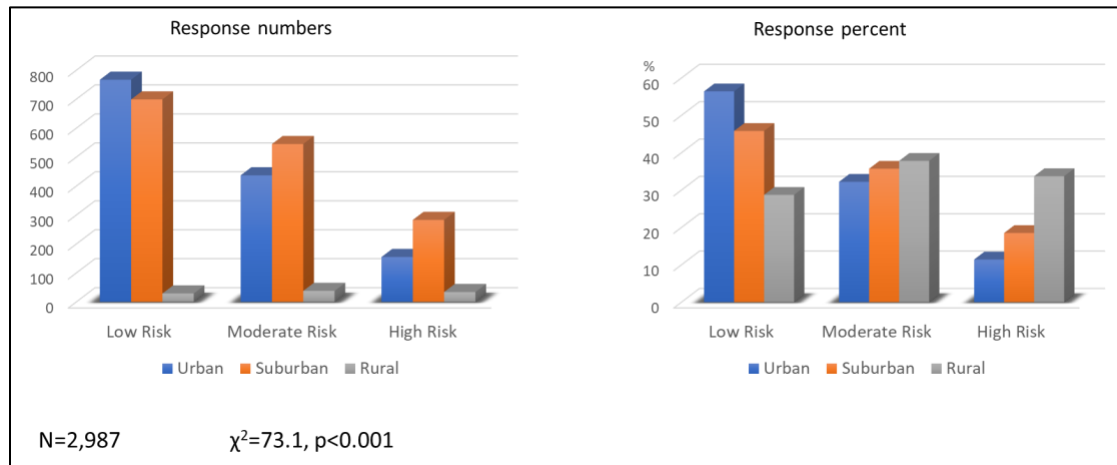
As described above, we focused our analysis to respondents in the Greater Cincinnati area, including Southwest Ohio, Northern Kentucky, and Southeast Indiana. The distribution of responses by county can be seen in Figure 1. Our largest group of responses (44.3%) came from Hamilton County, Ohio. Clermont county accounted for 19.8% of the responses and Butler County added another 6.4%. The three Northern Kentucky counties (Campbell, Kenton, and Boone) represented 21.6% of the total responses and the remaining counties totaled less than 10%.

**Figure 1: Responses by County**



We were particularly interested in identifying characteristics that placed respondents in different categories of risky behaviors and/or beliefs. We examined the distribution of several demographic characteristics across the three levels of risk. The following figures depict the data in both numbers of responses and response percentages. This was done to show that numbers of responses in some categories were very small. Statistical analyses were calculated for these comparisons and all the comparisons in the following figures were determined to be statistically significant.

**Figure 2: Risk Group by Residence Location**



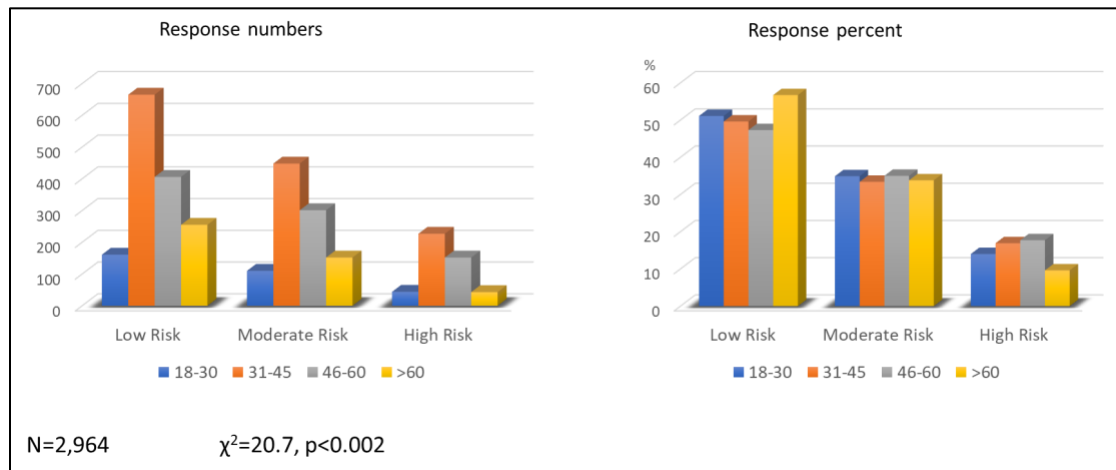
In general, we found that respondents living in urban areas were much more likely to be in the low-risk group. Likewise, those in suburban areas had a similar response pattern. We found that respondents from rural areas were more likely to be in the moderate and high-risk groups although the number of rural respondents was much smaller than either those from urban or suburban areas. When broken out by individual counties, we found the highest percentage of low-risk respondents (56.44%) were living in Hamilton County (Table 4). However, we found that all three Northern Kentucky counties had close to half of their respondents classified in the low-risk group. Of the counties with more than 40 survey responses, three counties (Warren and Brown counties in Ohio and Dearborn County in Indiana) had more than a quarter of their respondents in the high-risk group. Dearborn county had almost 40% of their respondents classified as engaging in high-risk behavior or exhibiting high risk attitudes.

**Table 4: Risk Group by County**

	Low risk		Moderate risk		High risk	
	N	%	N	%	N	%
OH						
Hamilton county	767	56.44	437	32.16	155	11.41
Clermont county	255	44.19	215	0.37	107	18.50
Butler county	95	51.08	60	32.26	31	16.67
Warren county	49	39.20	41	32.80	35	28.00
Brown county	10	22.73	19	43.18	15	34.09
Clinton county	2	18.18	9	81.82	0	0.00
Adams County	1	50.00	0	0.00	1	50.00
Highland county	0	0.00	0	0.00	1	100.00
KY						

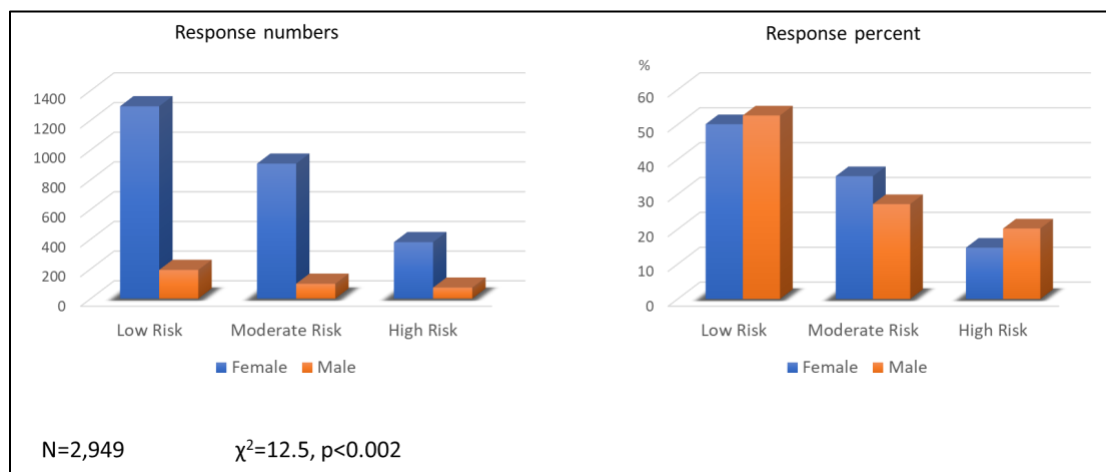
Kenton county	137	47.57	99	34.38	52	18.06
Campbell county	88	47.57	63	34.05	34	18.38
Boone county	74	46.25	64	40.00	22	13.75
IN						
Dearborn county	16	37.21	10	23.26	17	39.53
Franklin county	0	0.00	1	33.33	2	66.67
Ripley county	1	33.33	2	66.67	0	0.00

**Figure 3: Risk Group by Age Group**



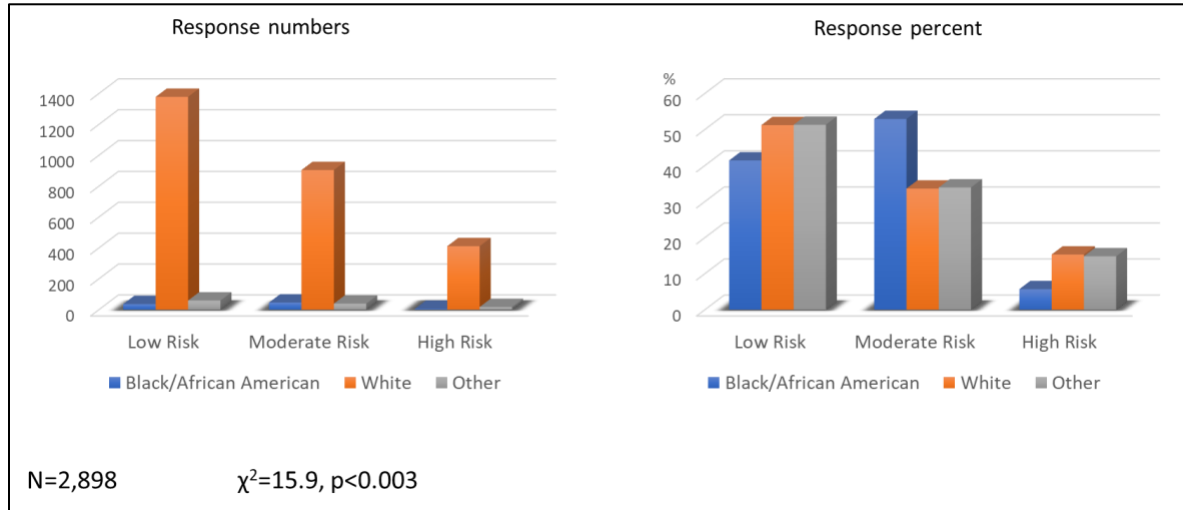
The majority of respondents on all age groups were in the low risk category. The high risk group had larger numbers of respondents aged 31 through 60. The moderate risk group had very similar percentages of all age groups.

**Figure 4: Risk Group by Gender**



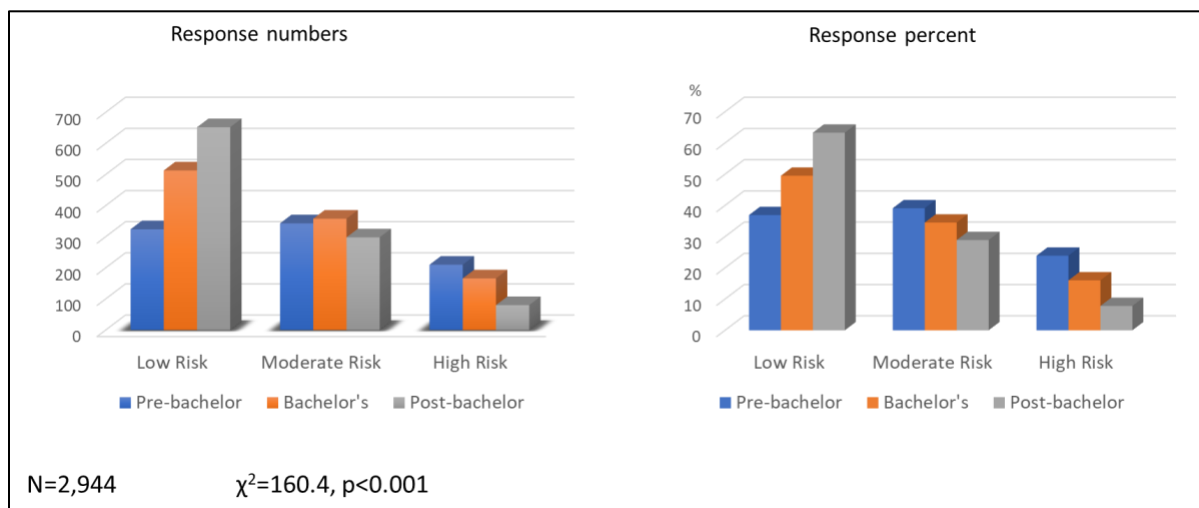
A greater percentage of males were in the high-risk group but overall, the number of males responding to the survey was much smaller. Both males and females had greatest number of respondents in the low and moderate risk groups.

**Figure 5: Risk Group by Race**



The overwhelming majority of respondents were White. Less than 3% of our respondents were Black/African American (N=64). Over half (53%) of the Black/African American respondents were in the moderate risk group. White respondents and those of other racial groups were predominately (>50%) in the low-risk group. However, Black/African American respondents were much less likely to be in the high-risk group.

**Figure 6: Risk Group by Education**



Respondents in both the bachelor's degree and post-bachelor's degree groups had similar stair-stepped response patterns with the majority of respondents in the low-risk group. The pre-



bachelor’s group had the greatest response percentage in the moderate risk group (39%) with almost a quarter (23%) in the high-risk group.

In addition to the Risk categories, we created seven additional measures based on responses to a several survey items. The seven measures include: 1) safety, 2) mask-wearing, 3) venturing out, 4) experience with COVID-19, 5) risk self-assessment, 6) worry, and 7) emotions. Below is a description of each as well as the questions and scoring scheme.

### Safety

Safety was defined as the cumulative score for responses to 20 questions about how safe respondents feel engaging in specific activities. Each item was awarded a score of “1” for ratings of “unsafe”, a score of “2” for ratings of “unsure” and a score of “3” for ratings of safe. The possible range of scores was 20 – 60. Table 5 lists the questions that were included in the Safety Index.

**Table 5: Safety Index Questions**

<b>How safe do you believe the following activities are for YOU right now: (Possible responses include Unsafe (1), Not Sure (2), and Safe (3))</b>
Having a few family members over to your house. (Gathering inside)
Going to a family member's house with a few people. (Gathering outside)
Attending a gathering at a friend or family member's house where individuals you do not know will also be attending.
Inviting family and friends to your house (more than 10 individuals).
Attending a moderate sized (15-20) social gathering in a public place. (indoors)
Attending an outdoor gathering of moderate size (15-20) with family and friends
Attending a Wedding/Funeral or special event
Sending your child to camp or sports practice
Sending your child to school
Going to visit your doctor or dentist
Going to the grocery store
Going to a restaurant and eating indoors
Going to a beauty salon or barbershop
Flying on a commercial airline
Attending a religious service indoors
Going to a gym
Going to a public pool
Going to a movie theater
Going to an amusement park
Using public transportation (bus, Uber, etc.)

### Mask-wearing Index

We asked respondents whether they had engaged in specific activities in the past week. If they had, we asked them whether they had worn a mask. The possible responses and scoring included “Never” (1), “Some of the time” (2), and “All or most of the time” (3). The Mask-wearing Index was calculated as the mean (average) score for all activities in which the

respondent had participated in the past week. The items included in this index are listed in Table 6 below.

**Table 6: Mask-wearing Index Items**

<b>Please indicate how often you have worn a mask in the following places in the past week.</b>
Shopping in a store
Restaurant (Dine in)
Walking or exercising outdoors
Place of worship
Home of friends or family
Gas station (pumping gas)
Workplace
Places of outdoor recreation
School

### Venturing Out Index

The Venturing Out Index was derived from responses to the nine items in the Mask-wearing Index. If they indicate that they did not go to one of the nine places in the past week, they received a 0. If they provided any other answer, they received one point for each place they attended in the past week. Scores ranged from 0 through 9.

### Exposure to COVID-19 Index

This Index is comprised with the answers to three questions: 1) Have you, or anyone in your immediate family been tested for COVID-19? 2) If they tested positive, did they have symptoms and how severe were they? And 3) Did they know anyone, outside of yourself or family, who has been hospitalized or died from COVID. The underlying measure of this Index is to assess their personal exposure to COVID and its health consequences. The scoring rubric is listed below in Table 7. The range of scores are 0 – 14, where 0 would indicate no exposure to COVID positivity and 14 would indicate personal exposure to themselves and others close to them have had serious consequences (including death) from COVID.

**Table 7: Exposure to COVID-19 Index Scoring Matrix**

<b>Survey Question</b>	<b>Scoring</b>
Have you, or anyone in your immediate family been tested for COVID-19?	No = 0 Yes, and everyone tested negative = 0 Yes, and one or more tested positive = 1
If Yes, check all that apply	No symptoms = 0 Only very mild symptoms = 1 Moderate symptoms, treated at home with over-the-counter or prescription medications = 1 Admitted to the Hospital = 3 Placed on ventilator = 3 Deceased = 4

Outside of yourself or immediate family, do you personally know anyone who has been hospitalized or died from COVID-19?	No = 0 Yes = 1 Prefer not to answer = 0
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### Risk Self-Assessment Index

The risk self-assessment index is based on the answers to two questions about the likelihood that they would contract COVID and the likelihood that they would become seriously ill as a result. Scores range from 0 to 8 based on the scoring scales listed in Table 8. Low scores indicate a perception of very low risk of contracting and becoming seriously ill from the virus and high scores represent the opposite. Responses of “prefer not to answer” resulted in no score calculated for this index.

**Table 8: Risk Self-Assessment Scoring Strategy**

Question	Scoring Strategy
How likely do you think it is that you will contract COVID-19?	Very small risk = 1 Small risk = 2 High risk = 3 Very high risk = 4 Prefer not to answer = no score
If you were to contract COVID-19, how likely do you think you would be to become seriously ill and need hospitalization?	Very unlikely = 1 Somewhat unlikely = 2 Somewhat likely = 3 Very likely = 4 Prefer not to answer = no score

### Worry Index

We asked respondents to respond to three questions to indicate how worried they were about worried they were about contracting COVID for themselves, other members of their household, and family members not living with them. The scores ranged from 1 to 4 for each of the questions and the range for the index is 3 to 12 with 3 indicating that they were not worried at all and 12 indicating they were very worried for themselves, members of their household, and other family members (Table 9). Responses of “prefer not to answer” to any of the three questions resulted in the index not being calculated.

**Table 9: Worry Index Questions and Scoring**

Question	Scoring Strategy
How worried are you that YOU might contract COVID-19?	Not at all worried = 1 A little worried = 2 Worried = 3 Very worried = 4 Prefer not to answer = No score

How worried are you that someone in your household might contract COVID-19?	Not at all worried = 1 A little worried = 2 Worried = 3 Very worried = 4 Prefer not to answer = No score
How worried are you that a family member or close friend (not living with you) might contract COVID-19?	Not at all worried = 1 A little worried = 2 Worried = 3 Very worried = 4 Prefer not to answer = No score

**Emotions Indices**

We asked respondents to indicate how frequently they were feeling 16 different emotions as a Positive, and Other. The responses to each emotion were “rarely”, “sometimes”, “regularly”, and “almost all the time.” Tables 10 -12 list the emotions and the scoring for each. The Negative Emotion Index included: Frustrated, Resentful, Angry, and Depressed. The range of potential scores was 4 to 16. The Positive Emotion Index included: Compassionate, Inspired, Empathetic, and Appreciative and also had a range from 4 to 16. The Other Emotions Index included: Bored, Concerned, Tired, Confused, Humbled, Helpless, and Frightened. The range for this index was 7 to 28.

**Table 10 Negative Emotion Index**

<b>Emotion</b>	<b>Scoring Strategy</b>
Frustrated	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Resentful	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Angry	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Depressed	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4

**Table 11: Positive Emotion Index**

<b>Emotion</b>	<b>Scoring Strategy</b>
Compassionate	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Inspired	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Empathetic	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Appreciative	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4

**Table 12: Other Emotions Index**

<b>Emotion</b>	<b>Scoring Strategy</b>
Bored	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Concerned	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Tired	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Confused	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Humbled	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4

Helpless	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4
Frightened	Rarely = 1 Sometimes = 2 Regularly = 3 Almost all the time = 4

**Examination of the impact of demographic variables on index variables**

We conducted a statistical analysis to assess the impact of various demographic variables on the indices described above. Where there were more than two categories of the demographic variables, we did bivariate comparisons to identify differences between pairs of demographic characteristics. Student’s t-tests for independent samples were calculated for these comparisons.

**Comparisons of Urban, Suburban, and Rural residents**

Table 13 presents the index score comparisons for urban, suburban, and rural respondents. As previously stated, we designated entire counties as to the type of population. We recognize that many of the counties are very diverse, and our designations cannot be considered precise for individual respondents.

We found that 5 of the 7 index variables showed broad significant differences based on location of residence. The emotion indices and COVID experience index showed few differences across residence type. In general, rural respondents saw more activities as safe, were less engaged in mask wearing, were more likely to venture out, viewed themselves as less at risk, and were less worried than respondents from urban locations. Suburban respondents tended to have scores mid-distant between urban and rural respondents but, nevertheless, statistically different from either of the other groups. We do note that the number of rural respondents is much smaller than that of the other two groups (n=101).

**Table 13: Index Scores by Residence Location**

	n	Group 1		Group 2		Group 3	
		Urban	n = 1359	Suburban	n = 1527	Rural	n = 101
		M	SD	M	SD	M	SD
<b>Safety</b>	2987	36.8	10.9	38.9	11.6	41.7	12.60
Median (min-max)		34	(20-60)	37	(20-60)	41	(22-60)
		Gp 1 vs 2		Gp 2 vs 3		Gp 3 vs 1	
P value		<b>p &lt; 0.001</b>		<b>p = 0.04</b>		<b>p &lt; 0.001</b>	
<b>Mask wearing</b>	2952	2.2	0.5	2.1	0.5	2	0.5
Median (min-max)		2.2	(1-3)	2	(1-3)	2	(1-3)
P value		<b>p &lt; 0.001</b>		p= 0.6		<b>p = 0.004</b>	
<b>Venturing</b>	2987	5.2	1.9	5.4	1.9	6.1	1.9
Median (min-max)		5	(0-9)	5	(0-9)	6	(1-9)
P value		<b>p = 0.008</b>		<b>p &lt; 0.001</b>		<b>p &lt; 0.001</b>	
<b>Risk self-assessment</b>	2905	4.5	1.3	4.3	1.4	4.2	1.5
Median (min-max)		4	(2-8)	4	(2-8)	4	(2-8)
P value		<b>p = 0.01</b>		P= 0.3		<b>p = 0.02</b>	
<b>Worry</b>	2823	7.6	2.5	7.4	2.6	6.6	2.6
Median (min-max)		8	(3-12)	7	(3-12)	6	(3-12)
P value		<b>p = 0.02</b>		<b>P= 0.006</b>		<b>p &lt; 0.001</b>	
<b>Positive emotions</b>	2987	9.1	2.4	8.9	2.5	8.7	2.6
Median (min-max)		9	(4-16)	9	(4-16)	8	(4-16)
P value		p = 0.4		p = 0.2		p = 0.1	
<b>Negative emotions</b>	2987	8.7	2.9	8.9	3.01	9.02	3.2
Median (min-max)		8	(4-16)	9	(4-16)	8	(4-16)
P value		<b>p = 0.03</b>		p = 0.9		p = 0.3	
<b>Other emotions</b>	2987	8.3	2.2	8.4	2.2	8.03	2.1
Median (min-max)		8	8 (4-15)	8	8 (4-16)	8	8 (4-14)
P value		p = 0.3		p= 0.2		p= 0.3	
<b>COVID experience</b>	2987	0.5	0.7	0.4	0.7	0.6	0.8
Median (min-max)		0	(0-6)	0	(0-6)	0	(0-5)
P value		P= 0.2		<b>p= 0.03</b>		p= 0.09	

**Comparisons of Education Level**

We condensed respondent education level into three categories: pre-baccalaureate, baccalaureate degree, and post-baccalaureate degree for convenience and to create groups of roughly similar size. There were slightly fewer than 900 respondents with less than a bachelor’s degree, and slightly over 1,000 respondents in the other two groups. Table 14 describes the differences among the three educational groups for the seven indices.

**Table 14: Index Scores by Education Group**

Education/Construct scores	Group 1		Group 2		Group 3	
	Pre-bachelor	n = 877	Bachelor	n =1037	Post-bachelor	n =1030
	M	SD	M	SD	M	SD
<b>Safety</b>	39.9	12.1	38.7	11.4	35.7	10.3
Median (min-max)	38	(20-60)	36	(20-60)	33	(20-60)
	<b>Gp 1 vs 2</b>		<b>Gp 2 vs 3</b>		<b>Gp 3 vs 1</b>	
P value	<b>p = 0.048</b>		<b>p &lt; 0.001</b>		<b>p &lt; 0.001</b>	
<b>Mask wearing</b>	2.1	0.5	2.08	0.47	2.19	0.5
Median (min-max)	2	(1-3)	2	(1-3)	2.17	(1-3)
P value	p = 0.07		<b>p &lt; 0.001</b>		<b>p = 0.005</b>	
<b>Venturing</b>	5.4	2.09	5.3	1.9	5.2	1.9
Median (min-max)	5	(0-9)	5	(0-9)	5	(0-9)
P value	p = 0.6		p = 0.2		p = 0.07	
<b>Risk self-assessment</b>	4.3	1.4	4.37	1.3	4.57	1.3
Median (min-max)	4	(2-8)	4	(2-8)	5	(2-8)
P value	p = 0.4		<b>p &lt; 0.001</b>		<b>p &lt; 0.001</b>	
<b>Worry</b>	7.1	2.66	7.38	2.45	7.93	2.4
Median (min-max)	7	(3-12)	7	(3-12)	8	(3-12)
P value	<b>p = 0.03</b>		<b>p &lt; 0.001</b>		<b>p &lt; 0.001</b>	
<b>Positive emotions</b>	8.97	2.6	8.91	2.3	9.1	2.4
Median (min-max)	9	(4-16)	9	(4-16)	9	(4-16)
P value	p = 0.7		p = 0.1		p = 0.3	
<b>Negative emotions</b>						
Median (min-max)	9	8 (4-16)	8	8 (4-16)	8	8 (4-16)
P value	<b>p = 0.02</b>		p = 0.3		<b>p &lt; 0.001</b>	
<b>Other emotions</b>	8.53	2.4	8.18	2.1	8.27	2.1
Median (min-max)	8	(4-16)	8	(4-16)	8	(4-16)
P value	<b>p = 0.006</b>		p = 0.4		p = 0.06	

The safety and worry indices were the only two areas that showed differences among all three educational groups. Higher educated respondents saw fewer places as safe and were more worried than those with less than a college degree. Those with college degrees had scores in those indices between that of the other two groups. There were no differences between the groups for the venturing out index or the positive emotion index. All the other indices showed at least one significant difference between two of the groups.

### Comparisons by Race

We had a very low response rate by African Americans (<100) and are, consequently, not confident in the racial comparisons for our index variables. Also, because of the low response



rates, we combined all respondents not identifying themselves as white or African American as “other.” Table 15 shows the findings for racial comparisons on the index variables. In general, white and African American respondents showed significant differences in their index scores. White respondents tended to rate more places as safe, were less likely to wear a mask when they participated in the listed activities and were more likely to be venturing out in the past week. However, African American respondents were more likely to have felt positive emotions and less likely to have felt negative emotions related to COVID in the past week. African American respondents were also more likely to have had more, and more intense, experience with COVID than white respondents.

**Table 15: Index Scores by Race**

	Group 1		Group 2		Group 3		
	White		Black		Other		
	M	SD	M	SD	M	SD	
<b>Safety</b>	38.11	11.31	34.05	9.07	35.22	11.32	
Median (min-max)	36.00	(20-60)	33.00	(20-60)	31.00	(20-60)	
	<b>Gp 1 vs 2</b>		<b>Gp 2 vs 3</b>		<b>Gp 3 vs 1</b>		
P value	<b>0.002</b>		0.9		<b>0.002</b>		<b>&lt;0.001</b>
<b>Mask wearing</b>	2.13	0.48	2.41	0.48	2.20	0.53	
Median (min-max)	2	(1-3)	2.4	(1-3)	2.2	(1-3)	
P value	<b>&lt;0.001</b>		<b>0.004</b>		0.1		<b>&lt;0.001</b>
<b>Venturing</b>	5.31	1.94	4.69	2.11	5.12	2.19	
Median (min-max)	5	(0-9)	5	(0-9)	5	(0-9)	
P value	<b>0.006</b>		0.2		0.3		<b>0.02</b>
<b>Risk self-assessment</b>	4.43	1.31	4.59	1.39	4.43	1.37	
Median (min-max)	4	(2-8)	5	(2-7)	4.5	(2-7)	
P value	0.2		0.5		0.7		0.5
<b>Worry</b>	7.53	2.52	7.49	2.37	7.69	2.59	
Median (min-max)	7	(3-12)	7	(3-12)	8	(3-12)	
P value	0.9		0.6		0.5		0.8
<b>Positive emotions</b>	8.97	2.43	10.01	2.67	9.49	2.44	
Median (min-max)	9	(4-16)	10	(4-16)	9	(4-16)	
P value	<b>&lt;0.001</b>		0.1		<b>0.03</b>		<b>&lt;0.001</b>
<b>Negative emotions</b>	8.80	2.97	8.18	3.31	8.68	2.76	
Median (min-max)	8	(4-16)	7	(4-16)	8	(4-16)	
P value	<b>0.03</b>		0.1		0.8		0.09
<b>Other emotions</b>	8.30	2.19	8.78	2.48	8.44	2.22	
Median (min-max)	8	(4-16)	8.5	(4-16)	8	(4-16)	
P value	0.09		0.4		0.5		0.2
<b>COVID-19 experience</b>	0.44	0.72	0.83	1.04	0.48	0.61	
Median (min-max)	0.00	(0-6)	1.00	(0-6)	0.00	(0-3)	
P value	<b>&lt;0.001</b>		<b>0.004</b>		0.2		<b>&lt;0.001</b>

### Further Analysis of Survey Responses

This survey has yielded a great deal of valuable data that will need more scrutiny. We intend to conduct additional analyses that will examine various models of behavior and attitudes and we are continuing to collect data from respondent groups who were underrepresented in the current dataset. The data were collected over a six-month period and we will examine changes in attitudes and behaviors that have occurred over time. We also have conducted a number of interviews and focus groups that have provided a very rich qualitative dataset that we will compare with survey responses.

### C5G Summary of Qualitative Analysis

In Phase 3 of the C5G project entitled “A Community-Based Approach to Understanding and Improving Adherence to CDC COVID-19 Guidelines: Developing Evidence-Based Strategies to Improve Mask-Wearing and Social Distancing in Public,” our research team used survey data to identify community members who reported engaging in high-risk behaviors, such as frequenting public places, not regularly wearing a mask in public, and not practicing social distancing. We sent follow-up emails to these survey respondents who provided emails, and scheduled 3 focus groups with 4-5 individuals in each (n=14) and 3 interviews (n=3) during the month of December 2020.

A team of seven qualitative coders used an interpretive phenomenological approach to analyze the focus group and interview data as a whole. Each coder analyzed the data independently at first, and then the team met five times from January-March 2021 to refine interpretations and reach inter-coder agreement. The qualitative data were organized by topic areas as outlined in the focus group and interview protocols, with themes and supporting categories for each.

### C5G Summary of Qualitative Findings

The topic areas from both data collection and analysis included: COVID Impacts, Sources of Information about COVID, Participant Risky Behaviors, Characteristics of the Future/“New Normal”, and Perceptions of the Vaccine. Key qualitative findings are presented in the table below. Several overarching themes emerged that spanned across multiple topic areas; these included: Mental Health, Change in Priorities, Trust, and Behavioral Changes.

Topic Area	Themes	Categories
COVID Impacts	Behavioral Changes	<ul style="list-style-type: none"><li>• Strong desire to protect elderly and/or high-risk friends &amp; family</li><li>• Sacrificing some relationships to keep elderly family members safe</li><li>• Creating bubbles or pods</li><li>• Working from home<ul style="list-style-type: none"><li>○ Zoom fatigue</li><li>○ Trying to work remotely with kids and spouses around</li><li>○ Kids are learning new skills at home</li></ul></li></ul>

	<ul style="list-style-type: none"> <li>• Ability to slow down and prioritize</li> <li>• Distrust of strangers</li> </ul>
Change in priorities	<ul style="list-style-type: none"> <li>• Away from: <ul style="list-style-type: none"> <li>○ Work</li> <li>○ Friends</li> <li>○ Activities</li> </ul> </li> <li>• More towards: <ul style="list-style-type: none"> <li>○ Family</li> <li>○ Community</li> <li>○ Health</li> </ul> </li> </ul>
Strained relationships	<ul style="list-style-type: none"> <li>• Differences in opinion between friends, family</li> <li>• Judging others, being suspicious of others</li> <li>• Frustration/anger at others</li> <li>• Relationships moved to online</li> <li>• Working from home has led to big shifts in family dynamics, personal happiness</li> <li>• Social Media Fatigue</li> </ul>
Mental health	<ul style="list-style-type: none"> <li>• Isolation, loneliness</li> <li>• Depression</li> <li>• Anxiety from the news</li> <li>• School kids are checked out or struggling</li> <li>• Emotional toll of losing people (to COVID, or because of differences in belief)</li> <li>• Constant juggling of risk/benefits of decisions</li> <li>• Guilt <ul style="list-style-type: none"> <li>○ “Survivor guilt”: still employed, healthy</li> <li>○ Guilt about doing risky behaviors</li> </ul> </li> <li>• Numbness</li> <li>• PTSD</li> <li>• Helplessness over numbers going up no matter what you do, exhaustion</li> <li>• Negative social effects of children</li> <li>• Working from home has led to big shifts in family dynamics (see “changes in behavior”)</li> <li>• COVID Fatigue <ul style="list-style-type: none"> <li>○ Local/state government (health departments, governor, hospital data)</li> <li>○ Second-hand experiences of family/friends</li> <li>○ Friends and family who work in healthcare/science</li> <li>○ Major News Media (CNN, NPR, NYT, BBC)</li> <li>○ Schools</li> <li>○ Federal/World Health Agencies (CDC, WHO)</li> </ul> </li> <li>• Appreciation: to still have job, to be healthy, to have work flexibility, to have more time with family, to have the medical technology, medical professionals</li> </ul>
Economic shifts	<ul style="list-style-type: none"> <li>• Lost work/wages</li> <li>• Changed jobs</li> </ul>

		<ul style="list-style-type: none"> <li>• Tighter budgeting</li> <li>• New ideas and new businesses</li> </ul>
<b>Information/ Sources</b>	Trustworthiness	<ul style="list-style-type: none"> <li>• High trust</li> <li>• Low Trust <ul style="list-style-type: none"> <li>○ Social Media</li> <li>○ Second-hand experiences of family/friends</li> <li>○ Federal government</li> <li>○ Trump administration politicized the virus/safety guidelines</li> <li>○ Data/conclusions are interpreted differently by different people/news organizations <ul style="list-style-type: none"> <li>▪ no black and white answers</li> </ul> </li> <li>○ Confused by conspiracies</li> </ul> </li> </ul>
	Politicization of COVID	<ul style="list-style-type: none"> <li>• Concerned by the part that partisan politics plays in messaging and misinformation</li> <li>• Leaders keep changing the message</li> <li>• It's been terribly mishandled</li> <li>• Conflicting messages <ul style="list-style-type: none"> <li>○ being told different things on federal and local levels</li> <li>○ Scientist conflicts with political leaders</li> <li>○ Data/conclusions are interpreted differently by different people/news organizations</li> </ul> </li> </ul>
	Media Fatigue	<ul style="list-style-type: none"> <li>• Media overload/fatigue, avoidance</li> <li>• Initially read everything possible as a means to try to control the situation <ul style="list-style-type: none"> <li>○ Overwhelmed at first, needed to slow down for own mental health</li> <li>○ Avoiding news because it causes depression, anxiety</li> </ul> </li> <li>• Social Media Fatigue</li> </ul>
	Confusion	<ul style="list-style-type: none"> <li>• Not understanding the scientific process</li> <li>• Conflicting messages</li> <li>• Data/conclusions are interpreted differently by different people/news organizations <ul style="list-style-type: none"> <li>○ no black and white answers</li> </ul> </li> <li>• Confused by conspiracies</li> </ul>
<b>Risky Behaviors Participants</b>	Necessary Activities	<ul style="list-style-type: none"> <li>• Work <ul style="list-style-type: none"> <li>○ Not enough PPE</li> <li>○ Sharing office equipment</li> <li>○ Working in an environment where others do not follow safety recommendations</li> </ul> </li> <li>• Childcare/School <ul style="list-style-type: none"> <li>○ Kids away at college brought it home and everyone got it</li> <li>○ Logistical nightmare with daycares closing or teachers/kids needing to quarantine after exposure</li> <li>○ Kids have missed out on a lot <ul style="list-style-type: none"> <li>▪ High schoolers/seniors – graduation, prom</li> <li>▪ sports</li> </ul> </li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>▪ learning online is not as effective – even good students check out, and kids with no support lose so much</li> <li>○ Grateful for school community, experiencing this together has brought people closer</li> <li>○ Several participants are homeschooling or know people who are homeschooling, with mixed results <ul style="list-style-type: none"> <li>▪ Some have found the balance healthy and relaxed</li> <li>▪ Others have watched their kids struggle and homeschooling was one way out of the virtual school system</li> </ul> </li> <li>○ For those who work in education, fear of contracting the virus at work and bringing it home/to their parents or grandparents</li> </ul>
	Optional/ Extracurricular Activities Participants Felt Were Worth the Risk	<ul style="list-style-type: none"> <li>• Church</li> <li>• Helping Family/Community <ul style="list-style-type: none"> <li>○ Grocery Shopping</li> <li>○ Volunteering</li> <li>○ Taking care of parents or grandparents or children</li> <li>○ Childcaring for neighbors</li> </ul> </li> <li>• Seeing Family <ul style="list-style-type: none"> <li>○ Traveling to be with family</li> <li>○ Getting together over the holidays, typically in smaller gatherings</li> <li>○ Visiting or quarantining with grown children</li> <li>○ Created family bubbles that included parents and siblings</li> </ul> </li> <li>• Hair Appointments</li> <li>• Eating out at restaurants</li> <li>• Traveling with friends</li> <li>• Kids sports</li> </ul>
	Behaviors Undertaken to Mitigate Risk	<ul style="list-style-type: none"> <li>• Packing hygiene kits (gloves, sanitizer, wipes, masks)</li> <li>• Washing hands frequently</li> <li>• Bringing own toilet paper</li> <li>• Packing own food</li> <li>• Minimal stops on driving trips</li> </ul>
<b>Characteristics of the Future/ “New Normal”</b>	Behavioral Changes	<ul style="list-style-type: none"> <li>• Mask-wearing will continue, especially when sick or traveling</li> <li>• Less travel, especially on airplanes</li> <li>• Discomfort/high awareness when in close proximity to others /more wary of strangers</li> <li>• Simplified lives, schedules, priorities</li> <li>• Shopping online</li> <li>• Supporting locally owned businesses</li> <li>• Educational system – concern for protection of student health</li> <li>• More people working remotely</li> </ul>
	Long- Term Mental Health Impacts	<ul style="list-style-type: none"> <li>• Anxiety</li> <li>• Grief</li> <li>• PTSD</li> </ul>

		<ul style="list-style-type: none"> <li>• Children will have changed permanently (fear of social engagement, agoraphobia)</li> </ul>
<b>Vaccine Perceptions</b>	Hesitations	<ul style="list-style-type: none"> <li>• Personal or family/friend experiences with other vaccines</li> <li>• Rushed development, it seems new and experimental</li> <li>• Lack of information about vaccine</li> <li>• mRNA style makes people nervous</li> <li>• Personal health issues (immune-suppressed, allergies)</li> <li>• History of research on Black community</li> <li>• Unknowns about long-term effects</li> </ul>
	Motivations	<ul style="list-style-type: none"> <li>• Personal or family/friend experiences with COVID</li> <li>• Protect others</li> <li>• Wanting to get back to normal</li> <li>• Have a “layer of protection”</li> </ul>
	Trust	<ul style="list-style-type: none"> <li>• Science</li> <li>• Doctors</li> <li>• Medical Technology</li> </ul>