Supplementary Figures and Tables

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Figure 1A: Unadjusted temporal trends in psychological distress over 28 waves in the Understanding Coronavirus in America study, March 2020 to June 2021
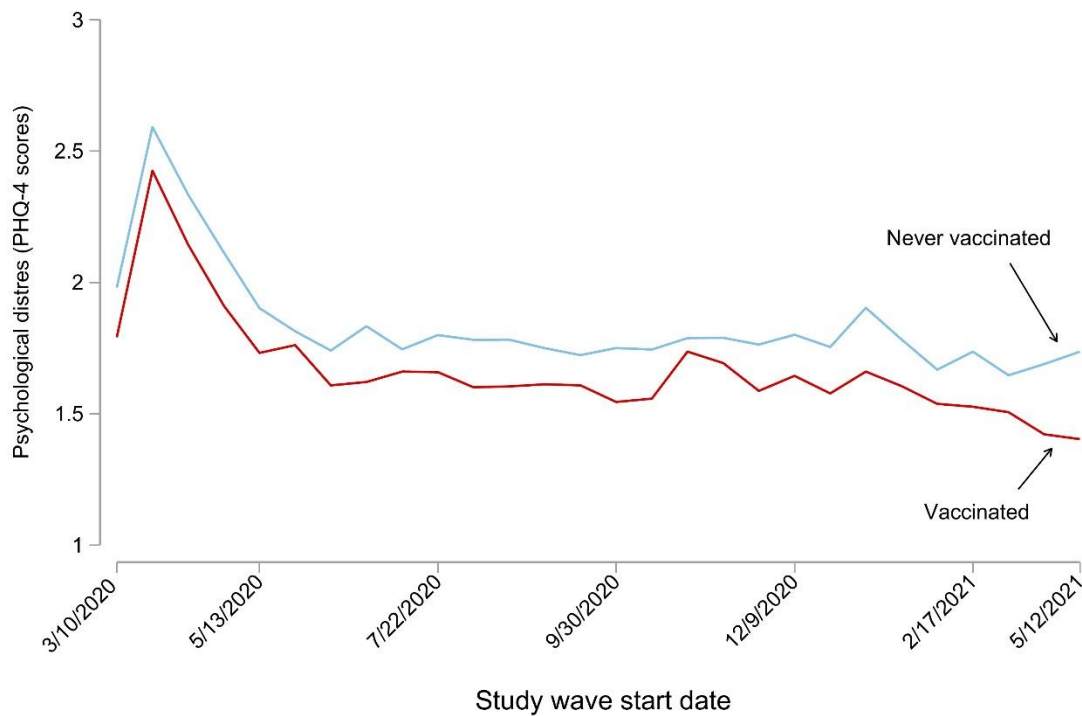
Figure 2A: Unadjusted temporal trends in risk perceptions over 28 waves in the Understanding Coronavirus in America study, March 2020 to June 2021
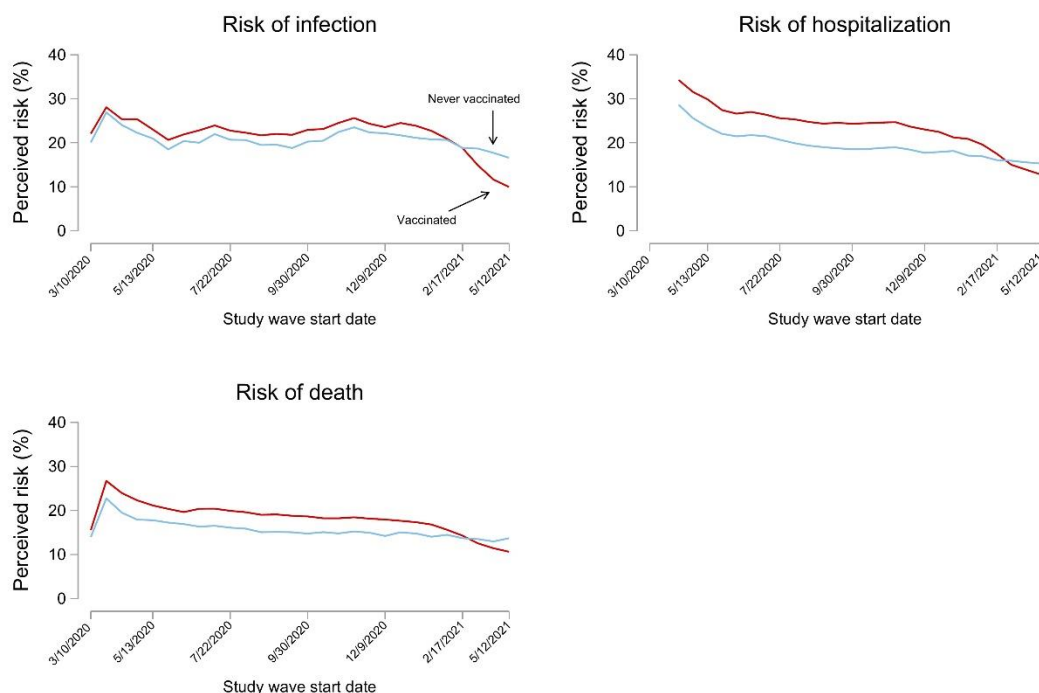

Notes: Red lines are secular trends in risk perceptions over time for respondents who became vaccinated. Blue lines are secular trends over time for respondents who did not become vaccinated.

Figure 3A: Difference-in-Differences Estimates of the Association Between Receiving the COVID-19 Vaccine and Psychological Distress (**including risk factors as mediators**)
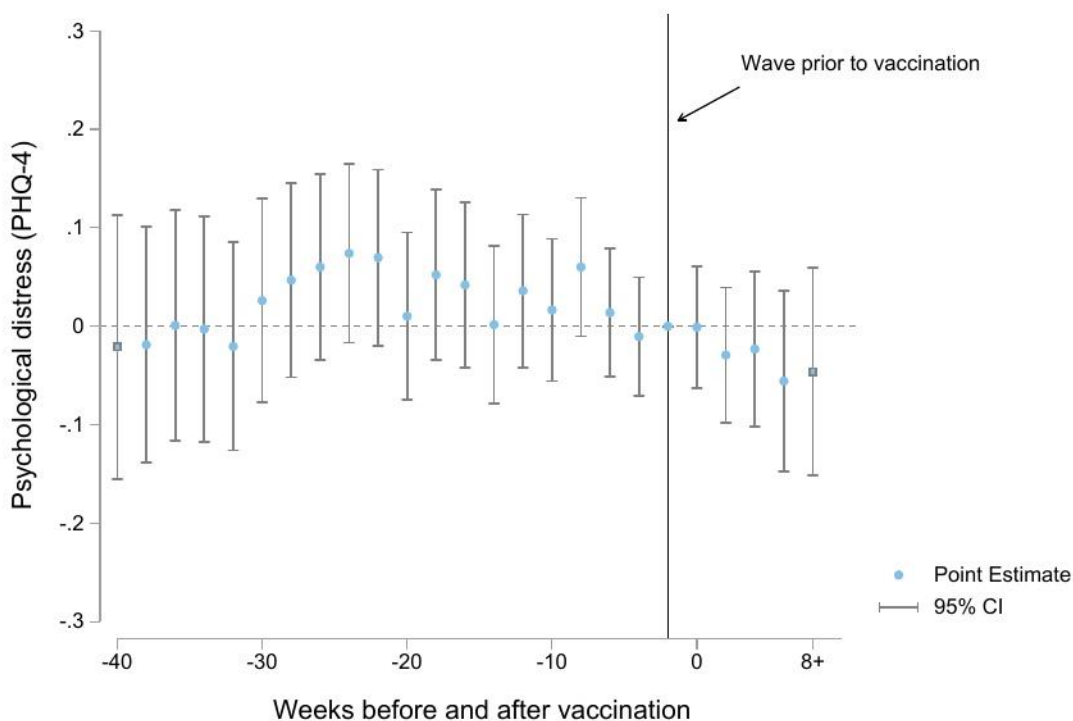
Notes: Each point estimate refers to the change in distress between vaccinated and never vaccinated individuals, compared to their baseline differential in the wave immediately prior to vaccination. Models control for individual and wave fixed effects, receiving Supplemental Nutrition Assistance Program (SNAP) benefits in the month prior to the survey, whether the respondent received unemployment insurance in the past 14 days, and employment status at the time of the survey.

Figure 4A. Two-way fixed effects models with psychological distress (PHQ-4) regressed on vaccination status, stratified by age, April 2020 to June 2021
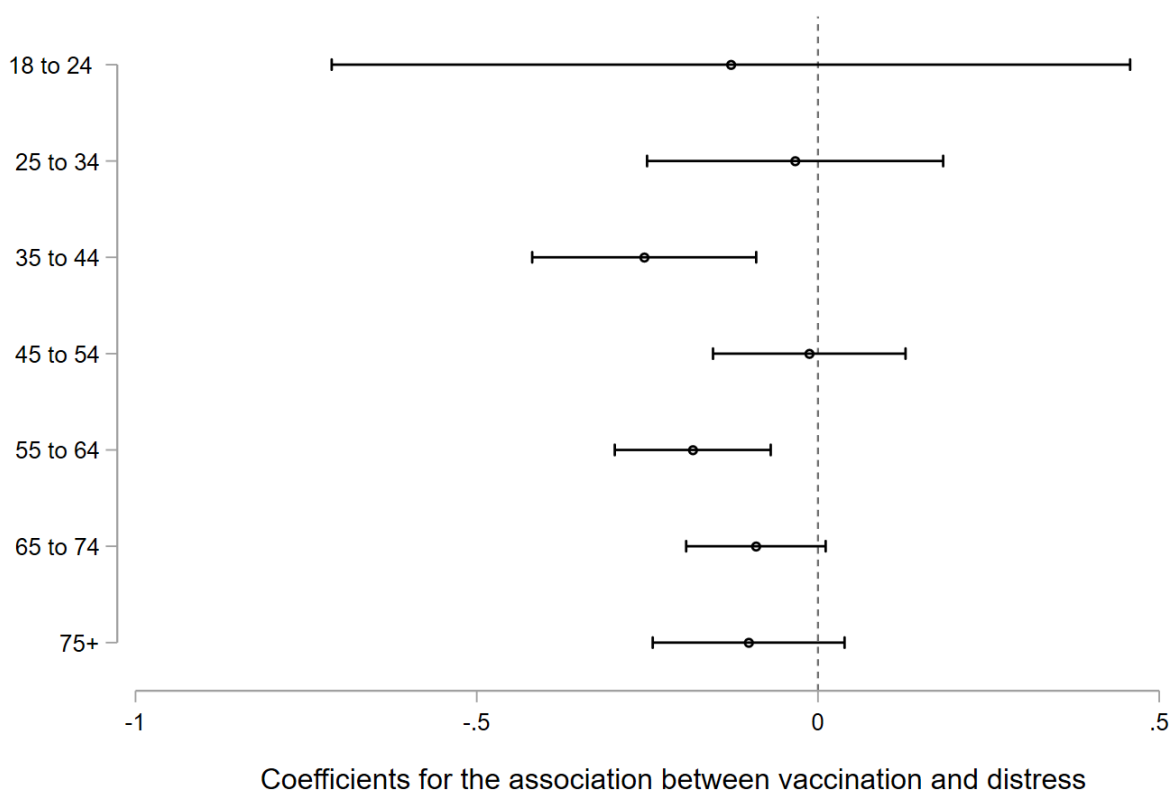
Coefficients for the association between vaccination and distress

Notes: Point estimates and 95% confidence intervals are from separate two-way fixed effects models stratified by subgroup. Models control for individual and wave fixed effects, receiving Supplemental Nutrition Assistance Program (SNAP) benefits in the month prior to the survey, whether the respondent received unemployment insurance in the past 14 days, and employment status at the time of the survey. Standard errors are clustered at the individual level.

Figure 5A. Two-way fixed effects models with psychological distress (PHQ-4) regressed on vaccination status, stratified by self-reported race/ethnicity, April 2020 to June 2021

Coefficients for the association between vaccination and distress
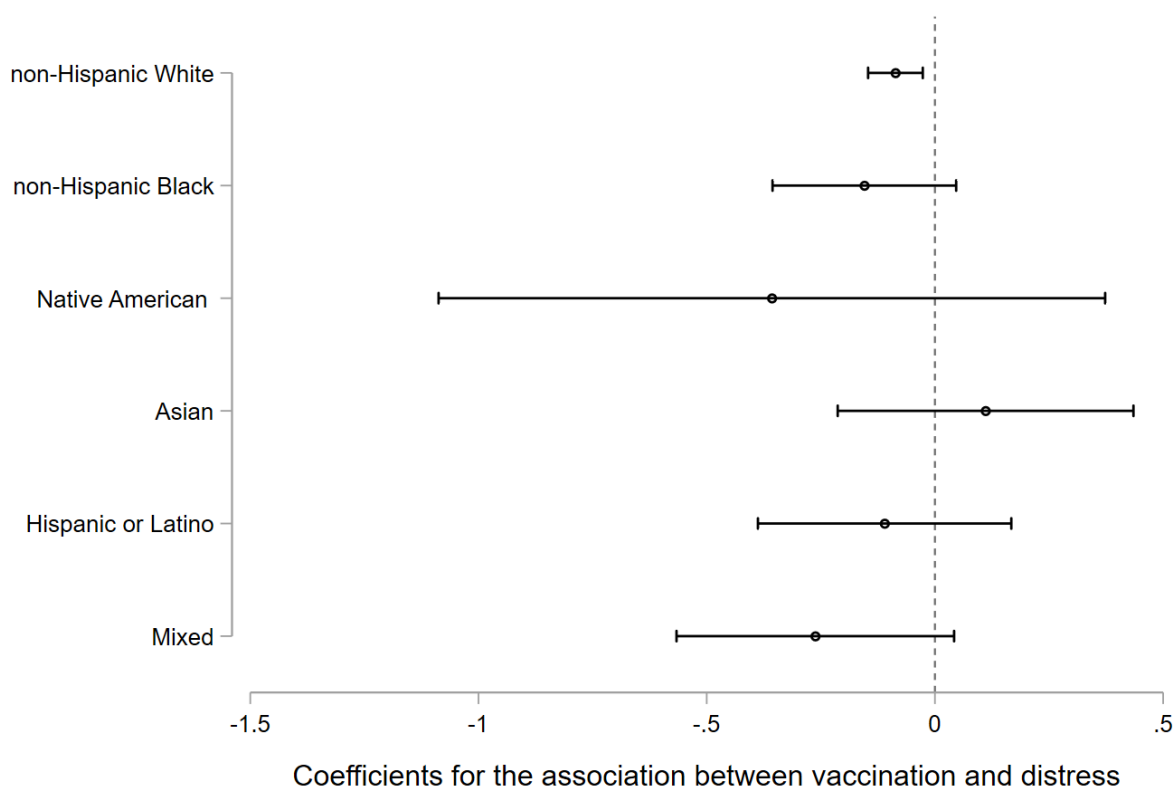
Notes: Point estimates and 95% confidence intervals are from separate two-way fixed effects models stratified by subgroup. Native Hawaiian or Other Pacific Islander respondents were combined with Asian respondents due to extremely small cell sizes for the former groups. Models control for individual and wave fixed effects, receiving Supplemental Nutrition Assistance Program (SNAP) benefits in the month prior to the survey, whether the respondent received unemployment insurance in the past 14 days, and employment status at the time of the survey. Standard errors are clustered at the individual level.

Figure 6A. Two-way fixed effects models with psychological distress (PHQ-4) regressed on vaccination status, stratified by education, April 2020 to June 2021

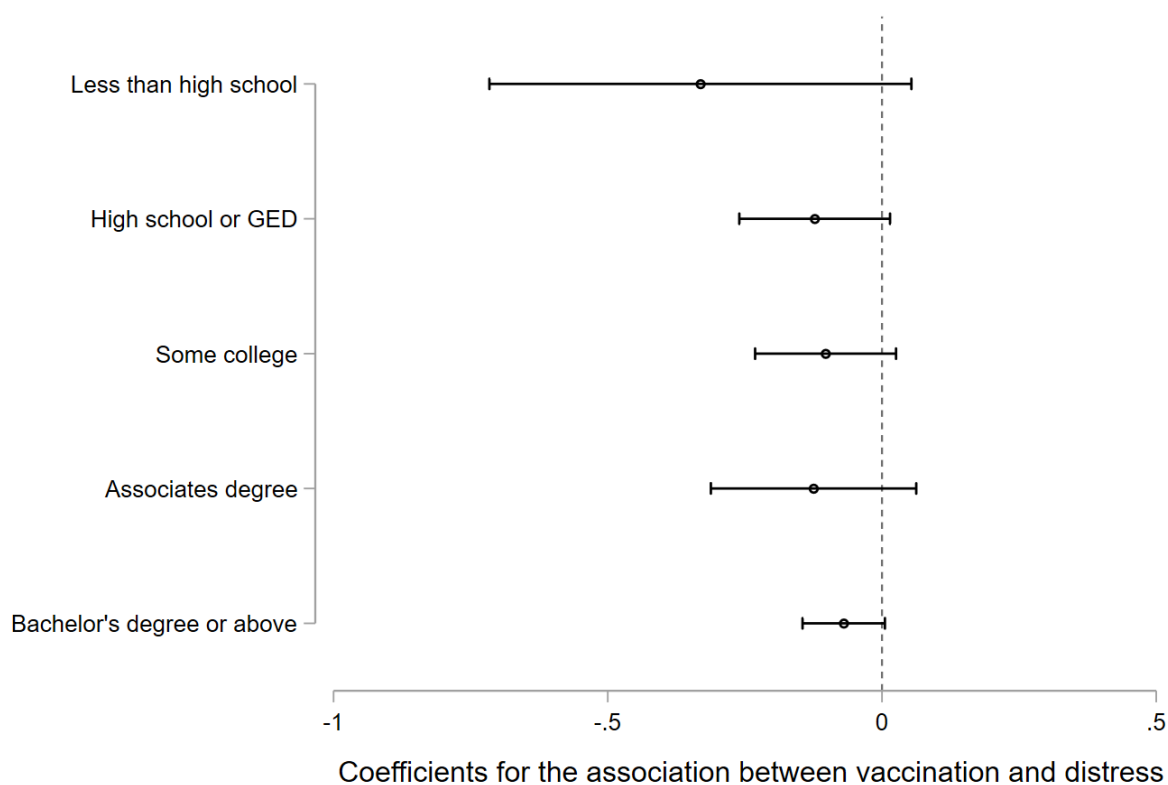Coefficients for the association between vaccination and distress
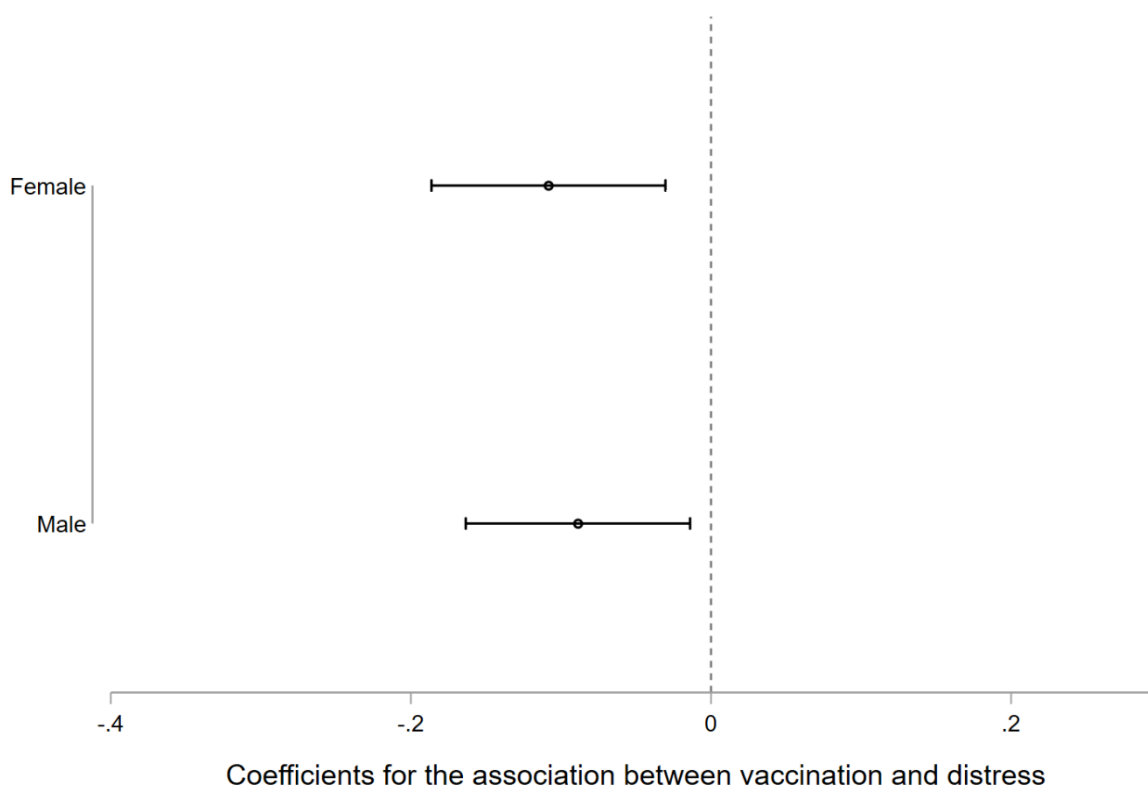
Notes: Point estimates and 95% confidence intervals are from separate two-way fixed effects models stratified by subgroup. Models control for individual and wave fixed effects, receiving Supplemental Nutrition Assistance Program (SNAP) benefits in the month prior to the survey, whether the respondent received unemployment insurance in the past 14 days, and employment status at the time of the survey. Standard errors are clustered at the individual level.

Figure 7A. Two-way fixed effects models with psychological distress (PHQ-4) regressed on vaccination status, stratified by gender, April 2020 to June 2021

Coefficients for the association between vaccination and distress

Notes: Point estimates and 95% confidence intervals are from separate two-way fixed effects models stratified by subgroup. Models control for individual and wave fixed effects, receiving Supplemental Nutrition Assistance Program (SNAP) benefits in the month prior to the survey, whether the respondent received unemployment insurance in the past 14 days, and employment status at the time of the survey. Standard errors are clustered at the individual level.

Figure 8A. Two-way fixed effects models with psychological distress (PHQ-4) regressed on vaccination status, stratified by household income, April 2020 to June 2021

Coefficients for the association between vaccination and distress

Notes: Point estimates and 95% confidence intervals are from separate two-way fixed effects models stratified by subgroup. Models control for individual and wave fixed effects, receiving Supplemental Nutrition Assistance Program (SNAP) benefits in the month prior to the survey, whether the respondent received unemployment insurance in the past 14 days, and employment status at the time of the survey. Standard errors are clustered at the individual level.
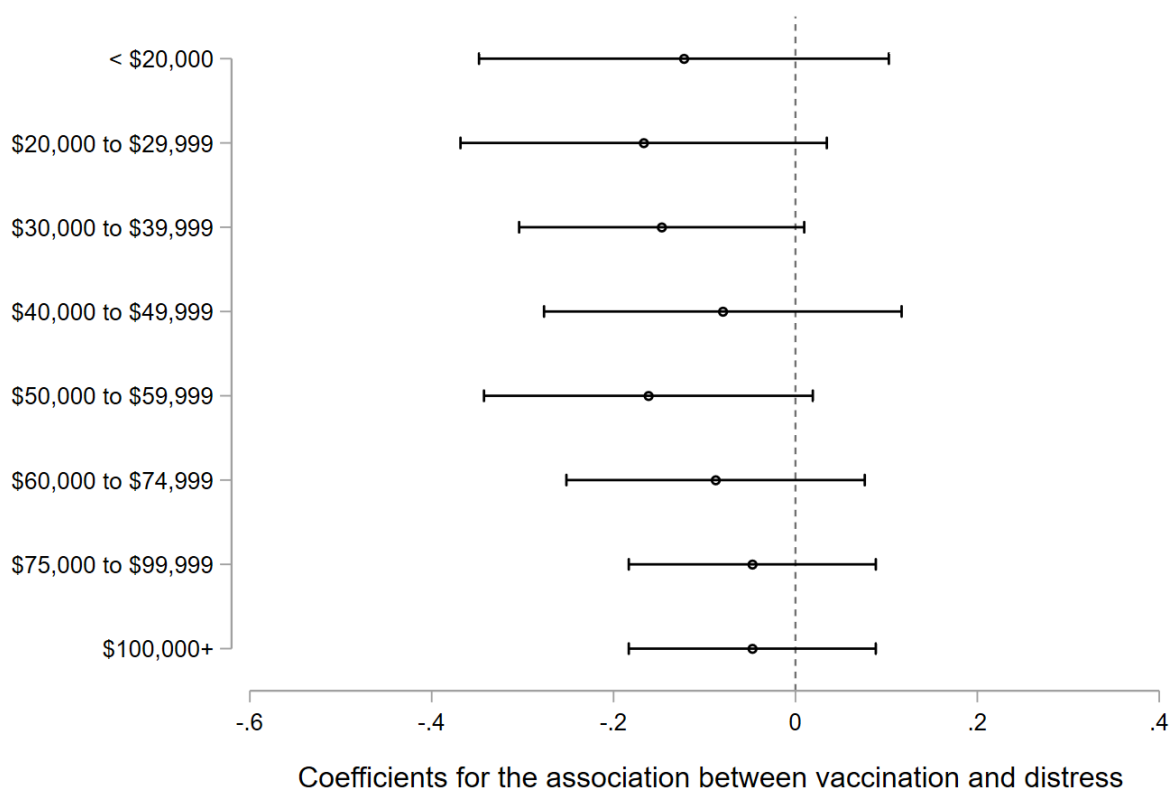
Table A1. Timing of data collection for each wave of the Understanding Coronavirus in America

Wave	Date begin	Date close
1	3/10/2020	3/31/2020
2	4/1/2020	4/27/2020
3	4/15/2020	5/11/2020
4	4/29/2020	5/25/2020
5	5/13/2020	6/8/2020
6	5/27/2020	6/22/2020
7	6/10/2020	7/6/2020
8	6/24/2020	7/20/2020
9	7/8/2020	8/3/2020
10	7/22/2020	8/17/2020
11	8/5/2020	8/31/2020
12	8/19/2020	9/14/2020
13	9/2/2020	9/28/2020
14	9/16/2020	10/12/2020
15	9/30/2020	10/26/2020
16	10/14/2020	11/9/2020
17	10/28/2020	11/23/2020
18	11/11/2020	12/7/2020
19	11/25/2020	12/21/2020
20	12/9/2020	1/4/2021
21	12/23/2020	1/18/2021
22	1/6/2021	2/1/2021
23	1/20/2021	2/15/2021
24	2/3/2021	3/1/2021
25	2/17/2021	3/29/2021
26	3/17/2021	4/27/2021
27	4/14/2021	5/25/2021
28	5/12/2021	6/22/2021

Notes: Waves 1 and 9 excluded from our TWFE and event study models because core questions were not asked in these periods. New UCA surveys are fielded every two weeks. Each day one fourteenth of participants are invited to take the survey, and participants have two weeks to take the survey – meaning that the total field period for each wave of the survey is 4 weeks and there is overlap between waves. Participants are incentivized to respond to the survey on the day they are invited to participate.

Table 2A: Characteristics of sample by vaccination status

	Vaccinated (57%)	Never Vaccinated (43%)	P-value
Household income ($)			<0.001
<20,000	36%	64%	
20,000 to 29,999	48%	52%	
30,000 to 39,999	50%	50%	
40,000 to 49,999	59%	41%	
50,000 to 59,999	53%	47%	
60,000 to 74,999	59%	41%	
75,000 to 99,999	63%	37%	
100,000+	68%	32%	
Education			<0.001
Less than high school	35%	65%	
High school or GED	41%	59%	
Some college	49%	51%	
Assoc. degree	55%	46%	
Bachelor's or higher	68%	32%	
Race			<0.001
White	57%	43%	
Black	48%	52%	
American Indian or Alaska Native	38%	62%	
Asian	69%	31%	
Hawaiian/Pacific Islander	59%	41%	
Mixed	49%	51%	
Hispanic	47%	53%	<0.001
Gender			<0.001
Male	59%	41%	
Female	54%	46%	
Marital status			<0.001
Married (spouse lives with respondent)	61%	39%	
Married (spouse lives elsewhere)	41%	59%	
Separated	36%	64%	
Divorced	55%	45%	
Widowed	60%	40%	
Never married	45%	55%	
Age categories			<0.001
18 to 24	34%	66%	
25 to 34	35%	65%	
35 to 44	45%	55%	
45 to 54	55%	45%	
55 to 64	62%	39%	
65 to 74	78%	22%	
75+	80%	20%	

Note: Characteristics are unweighted and based on the first observation for each participant in the sample. P-
values are from chi-square tests of the bivariate association between the demographic group and a dichotomous

variable that equals 1 if the respondent indicates being vaccinated in any wave of the survey and 0 if never vaccinated.

Table 3A. Two-way fixed effects models with psychological distress (PHQ-4) regressed on vaccination status and perceived risk factors using sample weights, April 2020 to June 2021 (N= 5,792)

	Model 1		Model 2		Model 3	
	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI
Received Vaccination (ref: no)	-0.08*	-0.15 to -0.01	-0.08*	-0.15 to -0.01	-0.03	-0.10 to 0.04
Received UI (ref: no)						
Yes			0.06	-0.10 to 0.23	0.06	-0.11 to 0.22
Unsure			0.12	-0.23 to 0.47	0.12	-0.24 to 0.47
Received SNAP (ref: no)						
Yes			-0.02	-0.15 to 0.11	-0.02	-0.15 to 0.11
Unsure			-0.36**	-0.58 to -0.13	-0.35**	-0.58 to -0.12
Currently working (ref: no)						
Yes			0.22**	0.06 to 0.38	0.22**	0.06 to 0.38
Risk of death					0.03**	0.01 to 0.05
Risk of infection					0.04***	0.02 to 0.05
Risk of Hospitalization					0.01	-0.00 to 0.03
Individual fixed effects	Yes		Yes		Yes	
Wave fixed effects	Yes		Yes		Yes	
Constant	2.25***	2.13 to 2.37	2.13***	1.99 to 2.28	1.94***	1.78 to 2.09
N. of cases	5,792		5,792		5,792	

* p<0.05, ** p<0.01, *** p<0.001

Table 4A. Two-way fixed effects models with psychological distress (PHQ-4) regressed on vaccination status and perceived risk factors among respondents aged 65 and above, April 2020 to June 2021 (N= 1,473)

	Model 1		Model 2		Model 3	
	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI
Received Vaccination (ref: no)	-0.10*	-0.18 to -0.01	-0.09*	-0.18 to -0.01	-0.05	-0.14 to 0.03
Received UI (ref: no)						
Yes			0.14	-0.04 to 0.33	0.14	-0.04 to 0.33
Unsure			0.43	-0.30 to 1.16	0.42	-0.30 to 1.14
Received SNAP (ref: no)						
Yes			-0.03	-0.29 to 0.23	-0.03	-0.28 to 0.23
Unsure			0.00	-0.34 to 0.33	0.01	-0.33 to 0.35
Currently working (ref: no)						
Yes						
Risk of death					0.01	-0.01 to 0.03
Risk of infection					0.03***	0.01 to 0.04
Risk of Hospitalization					0.01*	0.00 to 0.03
Individual fixed effects	Yes		Yes		Yes	
Wave fixed effects	Yes		Yes		Yes	
Constant	1.47***	1.37 to 1.56	1.45***	1.35 to 1.55	1.31***	1.19 to 1.43
N. of cases	1,473		1,473		1,473	

* p<0.05, ** p<0.01, *** p<0.001

Table 5A. Two-way fixed effects models with severe psychological distress (PHQ-4 scores $\geq$ 9) regressed on vaccination status and perceived risk factors, April 2020 to June 2021 (N= 5,792)

	Model 1		Model 2		Model 3	
	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI
Received Vaccination (ref: no)	-0.006*	-0.011,-0.001	-0.006*	-0.011,-0.001	-0.003	-0.008,0.002
Received UI (ref: no)						
Yes			-0.004	-0.014,0.005	-0.004	-0.014 to 0.005
Unsure			-0.008	-0.033,0.016	-0.009	-0.033 to 0.016
Received SNAP (ref: no)						
Yes			-0.005	-0.017 to 0.007	-0.005	-0.017 to 0.007
Unsure			-0.014	-0.031 to 0.002	-0.014	-0.030 to 0.002
Currently working (ref: no)						
Yes			0.008	-0.004 to 0.019	0.007	-0.004 to 0.019
Risk of death					0.001*	0.000 to 0.003
Risk of infection					0.002***	0.001 to 0.003
Risk of Hospitalization					0.000	-0.001 to 0.001
Individual fixed effects						
Wave fixed effects						
Constant	0.064***	0.055 to 0.072	0.061***	0.050 to 0.071	0.051***	0.040 to 0.063
N. of cases	5,792		5,792		5,792	

* p<0.05, ** p<0.01, *** p<0.001

Notes: Coefficients are from linear probability models. Severe distress is coded 1 if PHQ-4 scores are equal to or greater than 9 and coded 0 for scores below 9.

Table 6A. Two-way fixed effects models with severe psychological distress (PHQ-4 scores 9 and above) regressed on vaccination status and perceived risk factors adjusting for state-by-wave fixed effects, April 2020 to June 2021 (N= 5,788)

	Model 1		Model 2		Model 3	
	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI
Received Vaccination (ref: no)	-0.09**	-0.14 to -0.03	-0.09**	-0.14 to -0.03	-0.03	-0.09 to 0.02
Received UI (ref: no)						
Yes			0.07	-0.04 to 0.18	0.06	-0.05 to 0.18
Unsure			-0.01	-0.31 to 0.29	-0.02	-0.32 to 0.28
Received SNAP (ref: no)						
Yes			0.02	-0.09 to 0.14	0.02	-0.09 to 0.14
Unsure			-0.20*	-0.39 to -0.02	-0.20*	-0.38 to -0.01
Currently working (ref: no)						
Yes			0.07	-0.06 to 0.19	0.07	-0.06 to 0.19
Risk of death					0.03***	0.01 to 0.04
Risk of infection					0.04***	0.03 to 0.04
Risk of Hospitalization					0.02***	0.01 to 0.03
Individual fixed effects	Yes		Yes		Yes	
Wave fixed effects	Yes		Yes		Yes	
State × wave fixed effects	Yes		Yes		Yes	
Constant	2.35***	1.03 to 3.67	2.29***	0.96 to 3.63	2.07**	0.74 to 3.41
N. of cases	5,788		5,788		5,788	

* p<0.05, ** p<0.01, *** p<0.001