

Final Presentation: SQL for Data Science Capstone Project

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Data Set

- Pew Research Center American Trends Panel Wave 83, February 2021
- Accompanying documentation (methodology, full questionnaire, topline numbers, codebook and instructions)
- Covers various topics related to coronavirus vaccines and restrictions

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Initial Approach

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Initial Approach

- Analysis of responses regarding:
 - COVID-19 restrictions
 - Schools reopening
 - Mental health
 - Government response to COVID-19 pandemic
 - Vaccination status
- Analysis of respondent demographics
- Total for each rating to view summary of data
- Correlations with certain demographic factors

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Initial Questions

- Based on the results of the survey, how do Americans generally feel about how Donald Trump responded to the coronavirus (COVID-19) outbreak?
- Based on the results of the survey, how do Americans feel about schools reopening?
- Based on the results of the survey, how has COVID-19 affected Americans' mental health?
- Based on the results of the survey, what percentage of Americans are vaccinated against COVID-19?
- How do the demographics for this survey affect Americans' responses?

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Initial Hypotheses

- The majority of Americans are vaccinated against COVID-19.
- The majority of Americans are not happy with the way Donald Trump handled the response to COVID-19 during his term as president.
- The majority of Americans want schools to reopen (and in general want a return to normalcy in society).
- Americans with a lower level of education and a lower level of household income likely did not receive the vaccine for the coronavirus.

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Changes

- Mental health questions included in original data model
- More demographic factors also originally included
- Chose to focus on more specific factors and responses
- Too many variables in survey to focus on all at once

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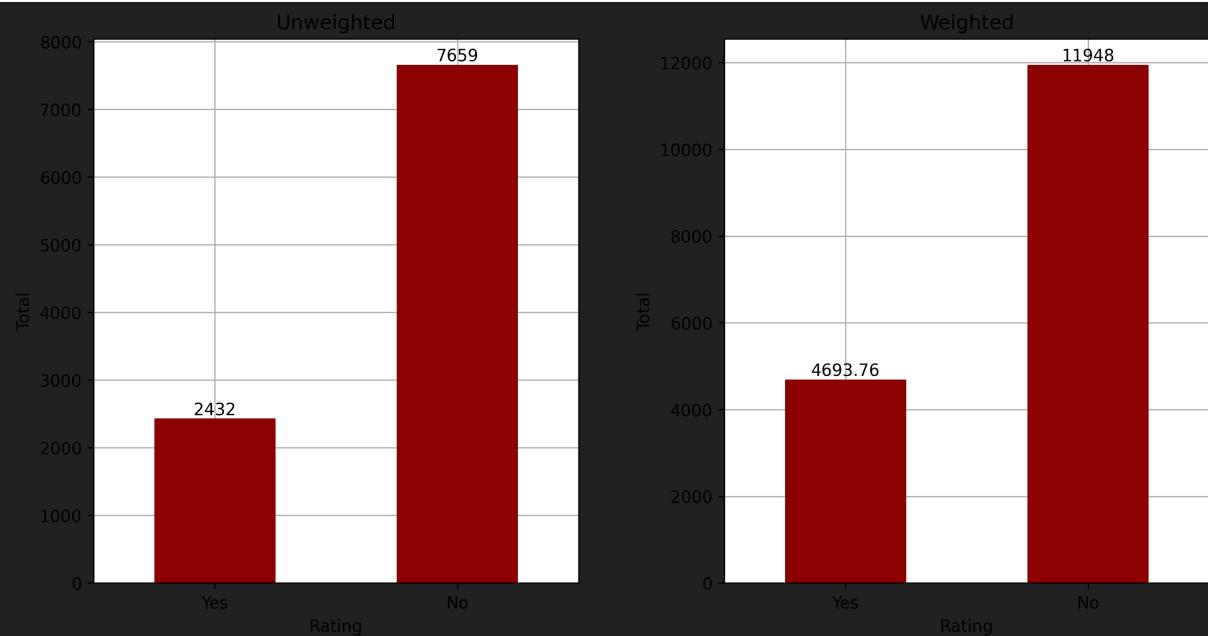
Results of Initial Hypotheses

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Hypothesis 1

- The majority of Americans are vaccinated against COVID-19 — **DISPROVEN**
- Responses to question “Have you received a vaccine to prevent COVID-19?”
 - 1: Yes, have received at least one dose of a vaccine
 - 2: No, have not received a vaccine

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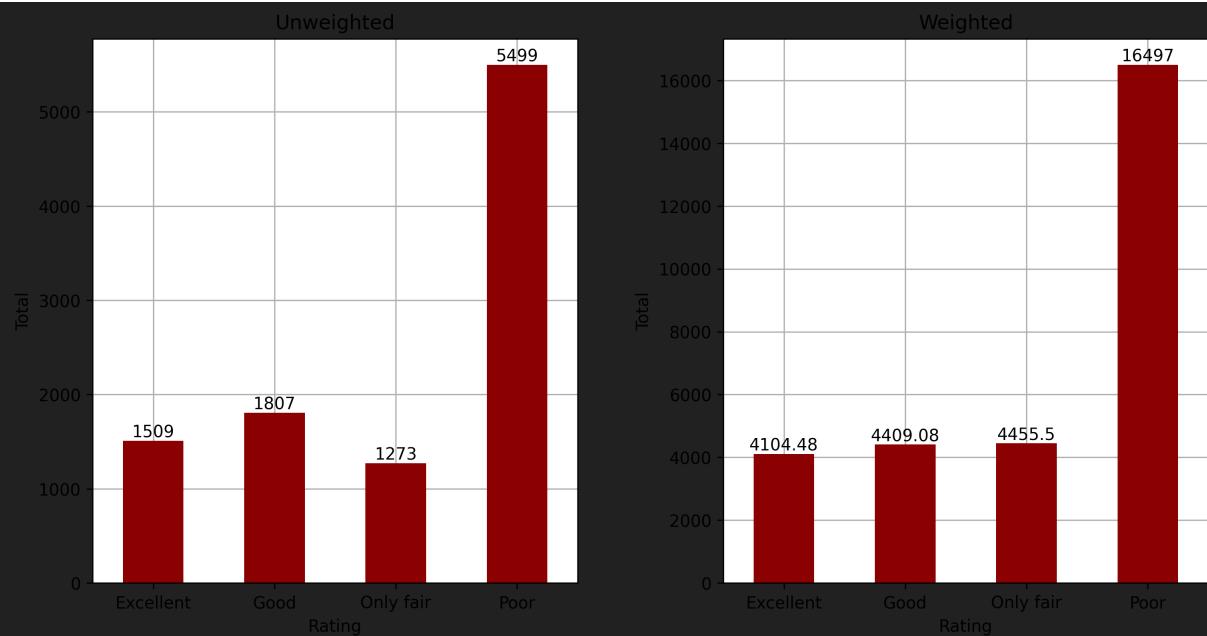
Results for Question COVID_VAXD_W83

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Hypothesis 2

- The majority of Americans are not happy with the way Donald Trump handled the response to COVID-19 during his term as president — **PROVEN**
- Responses to question “And overall, how would you rate the job Donald Trump did responding to the coronavirus outbreak during his time in office?”

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Results for Question COVIDEGFPDT_W83

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Hypothesis 2

- Responses to question “How would you rate the job each of the following is doing responding to the coronavirus outbreak?”
 - 1: Excellent
 - 2: Good
 - 3: Only fair
 - 4: Poor
- Items were randomized

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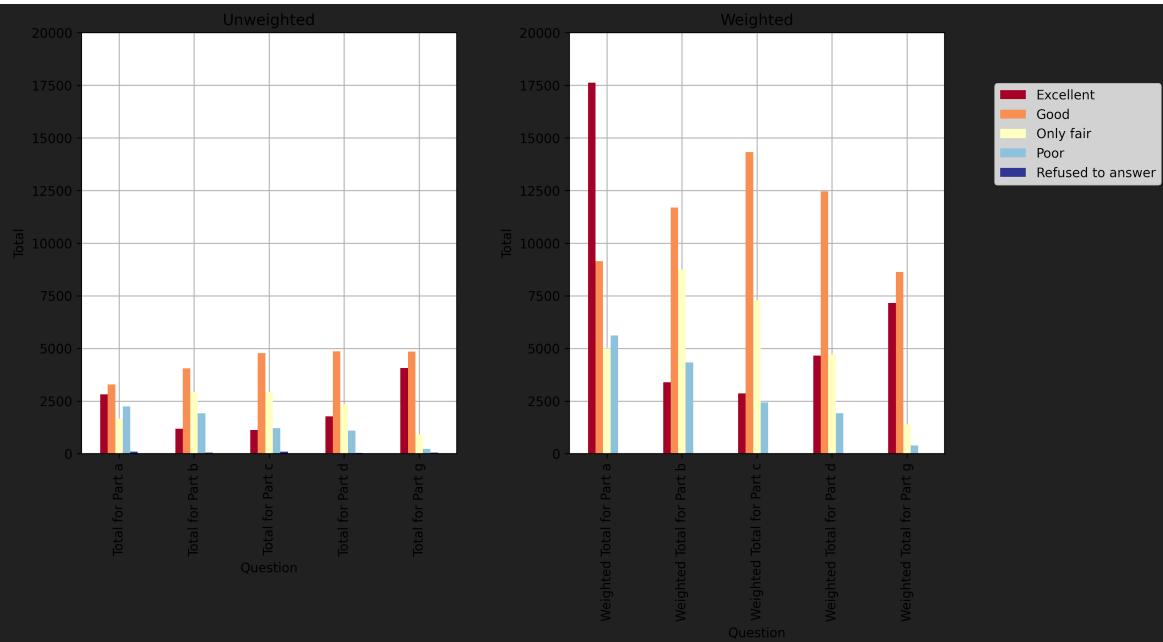
Hypothesis 2

- a. Joe Biden
- b. Your state elected officials
- c. Your local elected officials
- d. Public health officials such as those at the CDC (Centers for Disease Control and Prevention)

NO ITEMS e-f

- a. Hospitals and medical centers in your area

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Results for Question COVIDEGFP_W83(a–d, g)

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Hypothesis 3

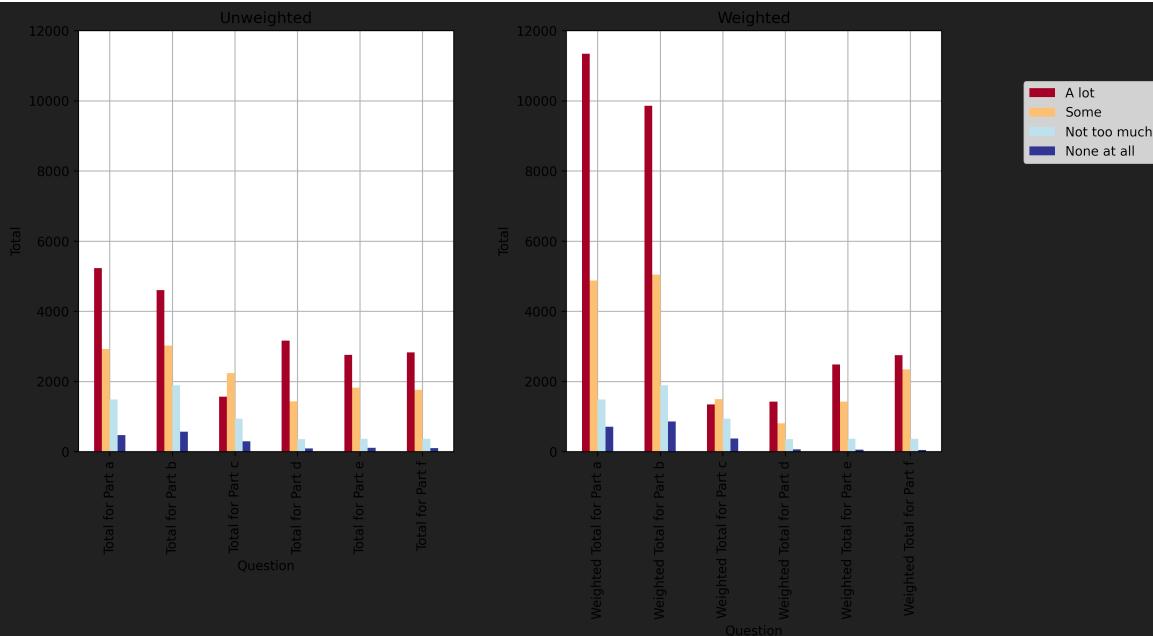
- The majority of Americans want schools to reopen (and in general want a return to normalcy in society) —
PARTIALLY PROVEN
- Responses to question “Thinking about K-12 schools that are not currently open for any in-person instruction, how much consideration should be given to each of the following as these schools decide whether to reopen?”
 - 1: A lot
 - 2: Some
 - 3: Not too much
 - 4: None at all
- Items were randomized

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Hypothesis 3

- **ALL:**
 - The risk to teachers of getting or spreading the coronavirus
 - The risk to students of getting or spreading the coronavirus
- **FORM 1 ONLY:**
 - The financial cost to school systems of following public health guidelines for safe reopening
 - The possibility that students will fall behind academically without in-person instruction
- **FORM 2 ONLY:**
 - Parents not being able to work if their children are at home
 - The possibility that students’ emotional well-being will be negatively impacted if they don’t attend school in person

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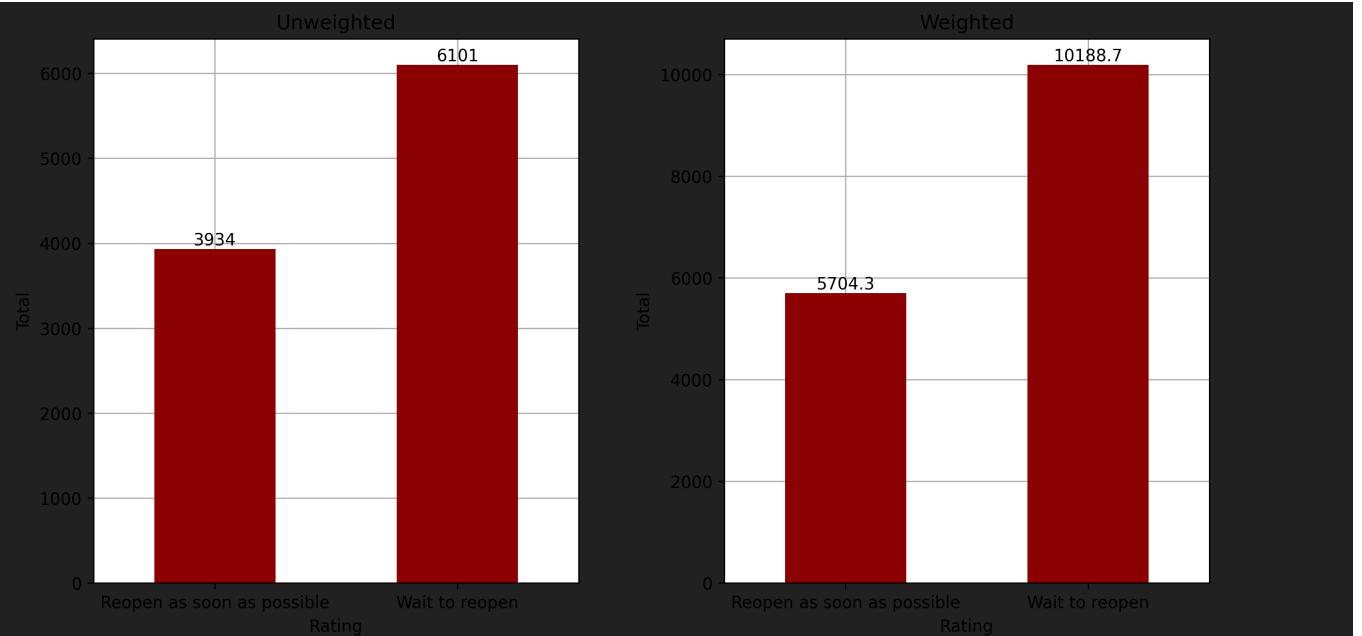
Results for Question SCHLREOPEN_W83(a-f)

19

Hypothesis 3

- Responses to question “Thinking about K-12 schools that are not currently open for any in-person instruction, do you think these schools should...?”
 - 1: Reopen as soon as possible, even if many teachers who want the coronavirus vaccine haven’t received it
 - 2: Wait to reopen until all teachers who want the coronavirus vaccine have received it
- Response options were randomized

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Results for Question TCHRVACCINE_W83

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Hypothesis 3

- Responses to question “Thinking about policies in place in some areas to address the coronavirus outbreak, in general do you think each of the following is necessary or unnecessary?”
 - 1: Necessary
 - 2: Unnecessary
- Items were randomized

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Hypothesis 3

- a. Restricting international travel to the U.S.

NO ITEM b

- b. Asking people to avoid gathering in large groups

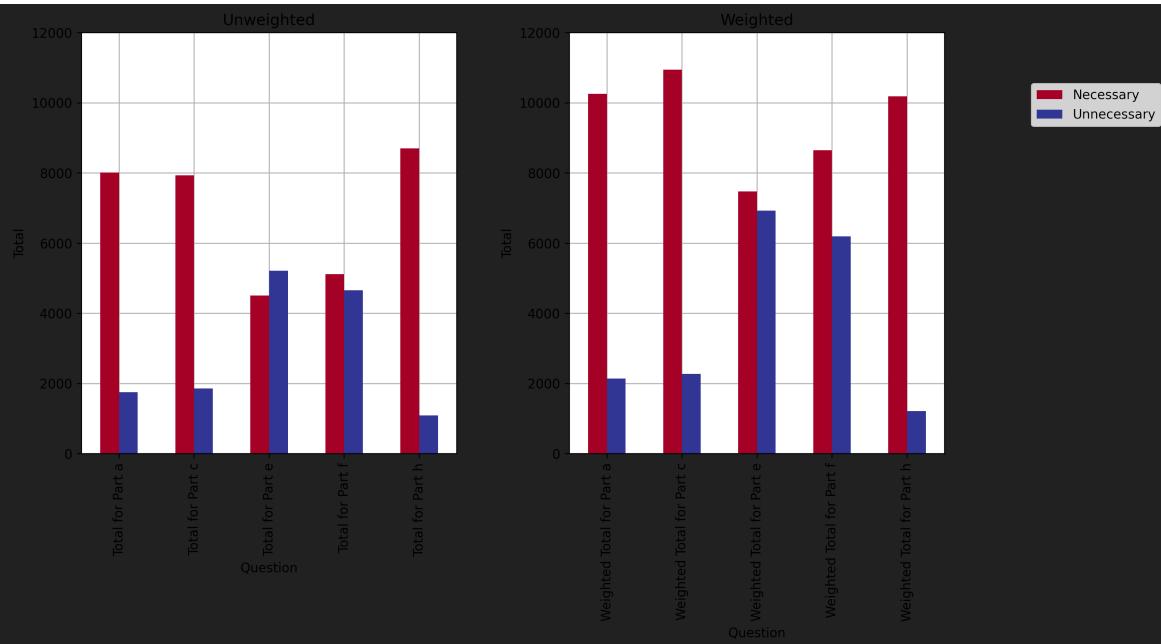
NO ITEM d

- c. Closing K-12 schools for in-person learning
- d. Limiting restaurants to carry-out only

NO ITEM g

- e. Requiring masks or face coverings for travelers on airplanes and public transportation

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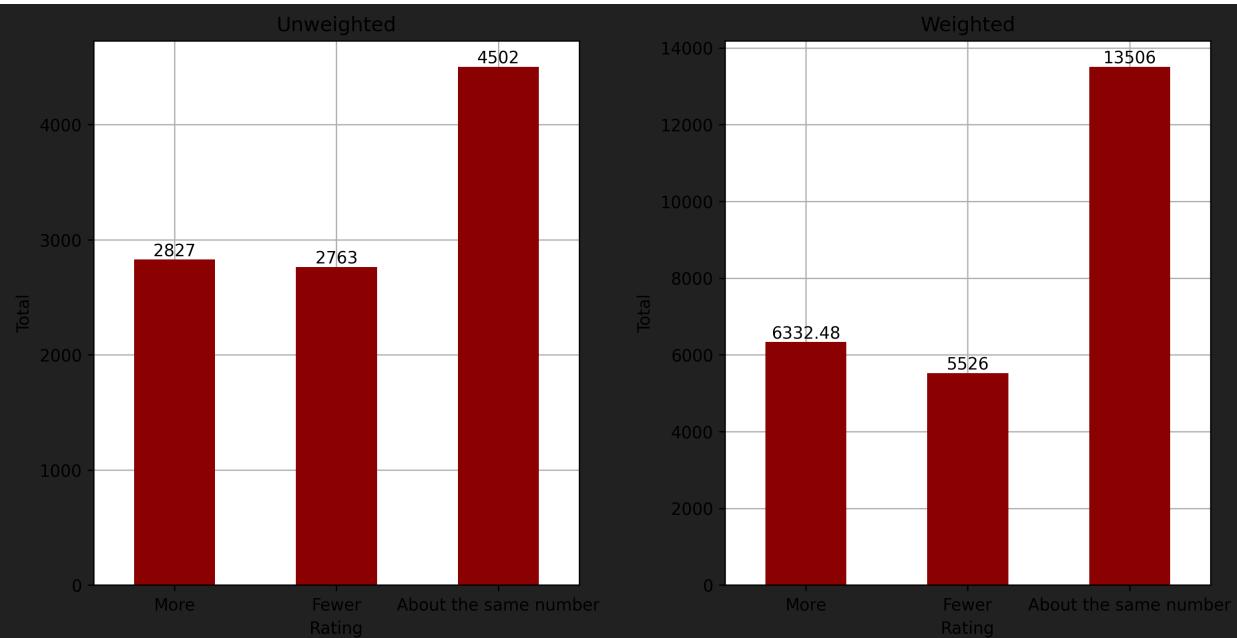
Results for Question COVID_RESTRICTION_W83(a, c, e, f, h)

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Hypothesis 3

- Responses to question “Thinking about restrictions on public activity because of the coronavirus outbreak IN YOUR AREA, do you think there should be...”
 - 1: MORE restrictions right now
 - 2: FEWER restrictions right now
 - 3: About the same number of restrictions right now

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Results for Question COVID_OPENMORE_W83

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Hypothesis 4

- Americans with a lower level of education and a lower level of household income likely did not receive the vaccine for the coronavirus — **PARTIALLY PROVEN**
- Examined correlations

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Education Level	Vaccination Status	Total (Unweighted)		Total (Weighted)
		Yes	No	
College graduate+	Yes	1574		3037
	No		3958	6174
	Refused to answer		11	0
Some college	Yes	602		1161
	No		2361	3683
	Refused to answer		11	0
High school graduate or less	Yes	250		482
	No		1325	2067
	Refused to answer		8	0
Refused to answer	Yes		6	11
	No		15	23

Education Level

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Income Tier

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		Total (Unweighted)	Total (Weighted)
Income Tier	Vaccination Status		
		Yes	No
Lower income	Yes	309	596
	No	1796	2801
	Refused to answer	14	0
Middle income	Yes	1152	2223
	No	3652	5697
	Refused to answer	6	0
Upper income	Yes	857	1654
	No	1908	2976
	Refused to answer	2	0
Refused to answer	Yes	114	220
	No	303	472
	Refused to answer	8	0

Discussion

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Discussion of Hypotheses

- Originally overly simplistic — weighted values not incorporated and only summary of weighted values analyzed
- Additional metrics and correlations needed
- More specific focus (vaccination status) needed

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Metrics

- Percentages
- Unweighted vs. weighted values
- More accurately represent the population being studied
- Can make generalizations regarding broader population
- Correlations using Pearson's correlation coefficient

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Correlations

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Initial Correlation Analysis

- Examined various demographic factors, including:
 - Vaccination status
 - Mask-wearing habits
 - Age
 - Gender
 - Education
 - Family income
 - Income tier
 - Religious affiliation
 - Political party affiliation

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Initial Correlation Analysis

- Heat map shows unweighted values only
- Examined responses to question “Have you received a vaccine to prevent COVID-19?”
 - 1: Yes, have received at least one dose of a vaccine
 - 2: No, have not received a vaccine

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Demographics

- From survey documentation:

Each ATP dataset comes with a number of variables prefixed by “F_” (for “frame”) that contain demographic profile data. These variables are not measured every wave; instead, they are sourced from panel profile surveys conducted on a less frequent basis. Some profile variables are also occasionally asked on panel waves and are accordingly updated for each panelist. Profile information is based on panelists’ most recent response to the profile questions. Some variables are coarsened to help protect the confidentiality of our panelists.

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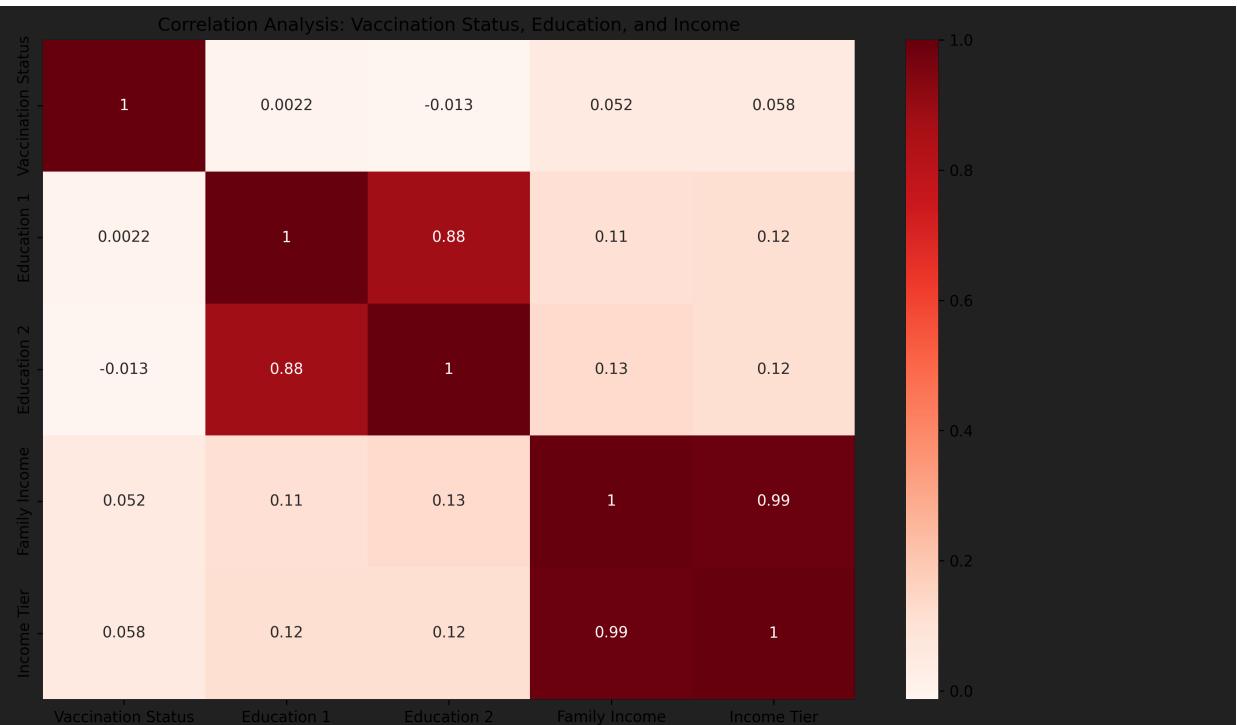


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Vaccination Status and Education Level

- Heat map shows unweighted values only
- F_EDUCCAT (Education 1)
Three-way category coded from self-reported educational attainment
- F_EDUCCAT2 (Education 2)
Six-way category coded from self-reported educational attainment

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		Total (Unweighted)	Total (Weighted)
Education Level	Vaccination Status		
	Yes	1574	3037
	No	3958	6174
Some college	Refused to answer	11	0
	Yes	602	1161
	No	2361	3683
High school graduate or less	Refused to answer	11	0
	Yes	250	482
	No	1325	2067
Refused to answer	Refused to answer	8	0
	Yes	6	11
	No	15	23

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Education 2

F_EDUCCAT2

Six-way category coded from self-reported educational attainment

- 1: Less than high school
- 2: High school graduate
- 3: Some college, no degree
- 4: Associate's degree
- 5: College graduate/some postgrad
- 6: Postgraduate

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Education Level	Vaccination Status	Total (Unweighted)		Total (Weighted)
		Yes	No	
Less than high school	Yes	47	90	
	No	260	405	
	Refused to answer	8	0	
High school graduate	Yes	203	391	
	No	1065	1661	
	Refused to answer	8	0	
Some college, no degree	Yes	405	781	
	No	1576	2458	
	Refused to answer	8	0	
Associate's degree	Yes	197	380	
	No	785	1224	
	Refused to answer	3	0	
College graduate/some postgrad	Yes	666	1285	
	No	2256	3519	
	Refused to answer	6	0	
Postgraduate	Yes	908	1752	
	No	1702	2655	
	Refused to answer	5	0	
Refused to answer	Yes	6	11	
	No	15	23	

Vaccination Status and Income Level

- Family income
- Last year, that is in [PREVIOUS YEAR], what was your total family income from all sources, before taxes?

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Family Income

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Family Income (in US\$)	Vaccination Status	Total (Unweighted)		Total (Weighted)
		Yes	No	
Less than 30,000	Yes	260	501	
	No	1394	2174	
	Refused to answer	12	0	
30,000 to less than 40,000	Yes	207	399	
	No	795	1240	
	Refused to answer	3	0	
40,000 to less than 50,000	Yes	172	331	
	No	630	982	
	Refused to answer	1	0	
50,000 to less than 60,000	Yes	202	389	
	No	633	987	
	Refused to answer	1	0	
60,000 to less than 70,000	Yes	180	347	
	No	538	839	
	Refused to answer	3	0	
70,000 to less than 80,000	Yes	168	324	
	No	544	848	
	Refused to answer			
80,000 to less than 90,000	Yes	146	281	
	No	419	653	
	Refused to answer			
90,000 to less than 100,000	Yes	165	318	
	No	425	663	
	Refused to answer			
100,000 or more	Yes	818	1578	
	No	1978	3085	
	Refused to answer	2	0	
Refused to answer	Yes	114	220	
	No	303	472	
	Refused to answer	8	0	

Vaccination Status and Income Tier

- Income tier 3-way
- From survey documentation:

To create upper-, middle- and lower-income tiers, respondents' family incomes were adjusted for differences in purchasing power by geographic region and for household size. "Middle-income" adults live in families with annual incomes that are two-thirds to double the median family income in the panel (after incomes have been adjusted for the local cost of living and for household size). The middle-income range for the American Trends Panel is about \$38,900 to \$116,800 annually for an average family of three. Lower-income families have incomes less than roughly \$38,900, and upper-income families have incomes greater than roughly \$116,800.

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		Total (Unweighted)	Total (Weighted)
Income Tier	Vaccination Status	Yes	309
		No	596
Lower income	Refused to answer	1796	2801
	Yes	14	0
	No	1152	2223
Middle income	Refused to answer	3652	5697
	Yes	6	0
	No	857	1654
Upper income	Refused to answer	1908	2976
	Yes	2	0
	No	114	220
Refused to answer	Yes	303	472
	No	8	0
	Refused to answer		

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Vaccination Status and Mask Wearing

- Examined responses to question “In the past month, how often, if ever, have you worn a mask or face covering when in stores or other businesses?”
 - 1: All or most of the time
 - 2: Some of the time
 - 3: Hardly ever
 - 4: Never
 - 5: Have not gone to these types of places

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Mask Wearing

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		Total (Unweighted)	Total (Weighted)
	Mask Wearing	Vaccination Status	
All or most of the time	Yes	2311	4460
All or most of the time	No	6974	10879
All or most of the time	Refused to answer	21	0
Some of the time	Yes	50	96
Some of the time	No	333	519
Some of the time	Refused to answer	4	0
Hardly ever	Yes	16	30
Hardly ever	No	162	252
Hardly ever	Refused to answer	2	0
Never	Yes	8	15
Never	No	61	95
Never	Refused to answer	43	82
Have not gone to these types of places	Yes	114	177
Have not gone to these types of places	No	1	0
Have not gone to these types of places	Refused to answer	4	7
Refused to answer	Yes	15	23
Refused to answer	No	2	0

Vaccination Status and Religious Beliefs

- F_RELIG
Religion
- F_BORN
Born-again or evangelical Christian
- F_RELIGCAT1
Condensed 4-way religion variable

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Religion
F_RELIG

Religion	Vaccination Status	Total (Unweighted)		Total (Weighted)
		Yes	No	
Protestant	Yes	941		1816
	No		3077	4800
	Refused to answer		13	0
Roman Catholic	Yes	548		1057
	No		1527	2382

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Vaccination Status and Political Affiliation

- F_PARTY_FINAL
Party
- F_PARTYLN_FINAL
Party lean
- F_PARTYSUM_FINAL
Party summary
- F_PARTYSUMIDEO
Combining ideology and party identification

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Political Affiliation

F_PARTY_FINAL

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		Total (Unweighted)	Total (Weighted)
Political Party	Vaccination Status		
	Yes	573	1105
	No	2095	3268
Republican	Refused to answer	8	0
	Yes	1169	2256
	No	2726	4252
Democrat	Refused to answer	3	0
	Yes	569	1098
	No	2001	3121
Independent	Refused to answer	5	0
	Yes	108	208
	No	769	1199
Something else	Refused to answer	8	0
	Yes	13	25
	No	68	106
Refused to answer	Refused to answer	6	0
	Refused to answer		

Insights

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Insights

- Most people not vaccinated
- As of survey date (February 2021), vaccines not yet widely available

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Insights

- Majority of respondents believed Trump did a poor job handling the COVID-19 pandemic
- Response from most government entities rated “good”
- Biden’s response overwhelmingly rated “excellent” in weighted values

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Insights

- Respondents most concerned with:
 - The risk to teachers of getting or spreading the coronavirus
 - The risk to students of getting or spreading the coronavirus

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Insights

- Majority felt schools should wait to reopen until all teachers who want the coronavirus vaccine have received it
- Unexpected finding

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Insights

- In terms of COVID-19 restrictions, following items significant for weighted values:
 - Closing K-12 schools for in-person learning
 - Limiting restaurants to carry-out only

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Insights

- Vaccination status highly correlated with:
 - Mask wearing
 - Family income
 - Income tier
 - Religion
 - Political affiliation

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Insights

- Highest level of vaccinations reported for those with a college degree or above
- Postgraduates specifically reported the most vaccinations
- For income tier, more middle-income respondents were vaccinated compared with lower-income or upper-income participants

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Insights

- Highest level of vaccinations in the following income brackets:
 - Less than \$30,000
 - More than \$100,000
- Unexpected and surprising gap — each end of spectrum
- Were most families in these brackets?

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Insights

- Compared with those affiliated with other political parties, most Democrats were vaccinated
- Is this because most participants were Democrats?

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Recommendations and Next Steps

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Recommendations and Next Steps

- Compare results with those from more recent surveys or other past surveys
- Vaccines now more widely available
- Evaluate questions regarding future plans — are those who had planned to be vaccinated indeed vaccinated now?
- If respondents are not vaccinated, why not?
- More recent data could provide more nuanced insights