Exploration of the Effects of Political Affiliation on Behaviors of People with Disabilities During the Covid-19 Pandemic

Abstract

In this paper, the relationship between political identities and Covid-19 behaviors and perceptions are analyzed within disabled people. This analysis was done on a data set by Catherine Ipsen and Andrew Myers, collected via a survey using Amazon's Mechanical Turk during Feburary 2021. Much of the prior knowledge of the interaction between Covid-19 and politics is based on my own lived experience from the pandemic, and is used as a basis for this investigation. My resulting model showed that political views, as a scale from very liberal to very conservative, has an effect on one's intent to vaccinate, which was representative of Covid-19 prevention behaviors.

Introduction

Hand washing, mask-wearing, social distancing. Zoom calls, Amazon orders, work from home. The Covid-19 pandemic altered how we do everything in our daily life, an effort to protect ourselves and our loved ones from the illness that has killed over 6.5 million people globally (1). For disabled people, the pandemic was even riskier. Some disabilities put individuals at a higher risk of more severe illness due to their underlying medical conditions (2). For those with disabilities or loved ones with disabilities, the impact of a Covid-19 infection may be more severe. What measures did those groups take to protect themselves?

In the United States, Covid-19 protections such as masks or vaccination became a political issue. People's beliefs and influences in their life, such as news outlets, affected the ways they acted in response to the pandemic. I am interested in the intersection between one's personal beliefs and medical history, and how this affected pandemic behavior. As a person with a disability with passion for politics and whose life was turned upside-down by the pandemic, this area is a very personal interest to me. As the pandemic is not yet behind us, analyzing Covid-19 behaviors is still an emergent area and data exploration can provide

insight into which groups may have been more affected by Covid-19, and how the pandemic changed people's behaviors.

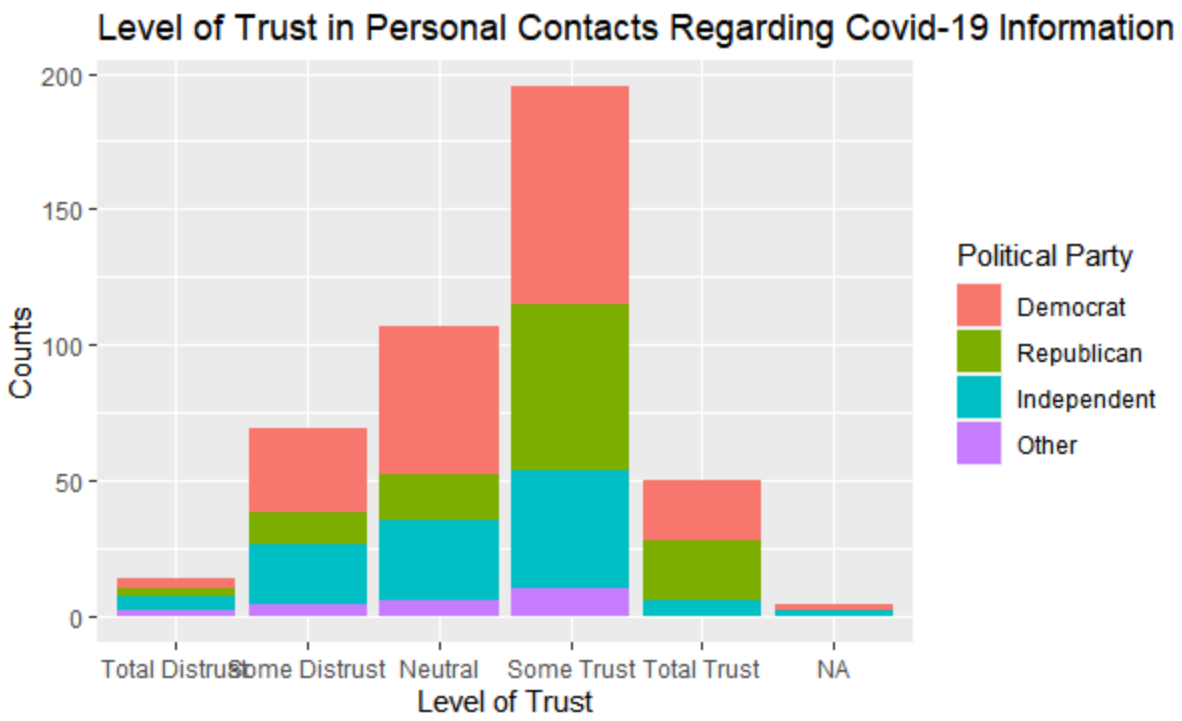
Data Exploration

For this analysis, I am using data from COVID-19 vaccination and people with disabilities, collected by Catherine Ipsen and Andrew Myers of the University of Montana. The data was sourced from OpenICPSR. The goal of the data set is to "investigate how people with disabilities view these vaccines as well as what barriers they face in getting vaccinated," and for this goal they collected data on "health status, health literacy, vaccination status and intent, views of and barriers surrounding access to vaccines, trust in information sources, and other pandemic related topics" (3). The data was collected using Amazon's Mechanical Turk (MTurk) between February 11th and 28th of 2021. The data has 439 rows and 202 columns, including variables on the nature of disability and demographics of the respondee. The data was cleaned by the collectors to ensure respondees were in the target age groups, disability status, and location (United States).

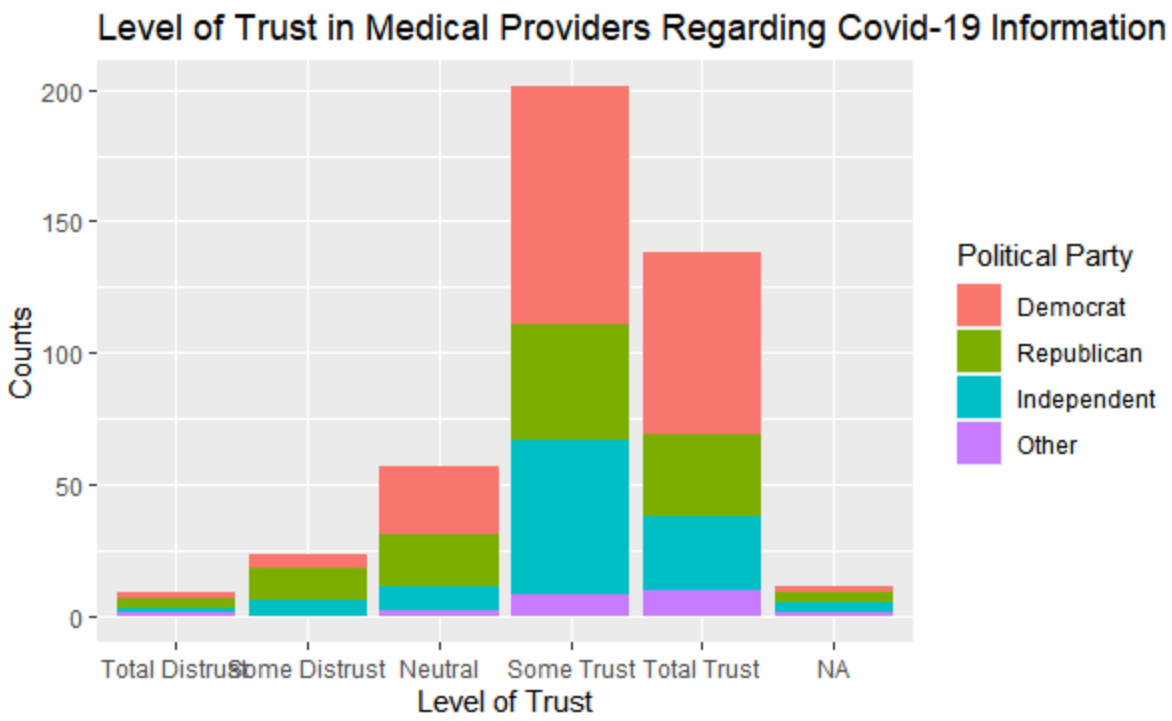
Sources of Information:

Due to the politicalization of the pandemic, I decided to look into who was considered a trusted source of information based on political alignment. There is a skew in the number of members of political parties - 194 Democrats, 115 Republicans, 108 Independents, and 22 Other, which may affect the raw count difference between groups, but as this is a visual data exploration, it is ok.

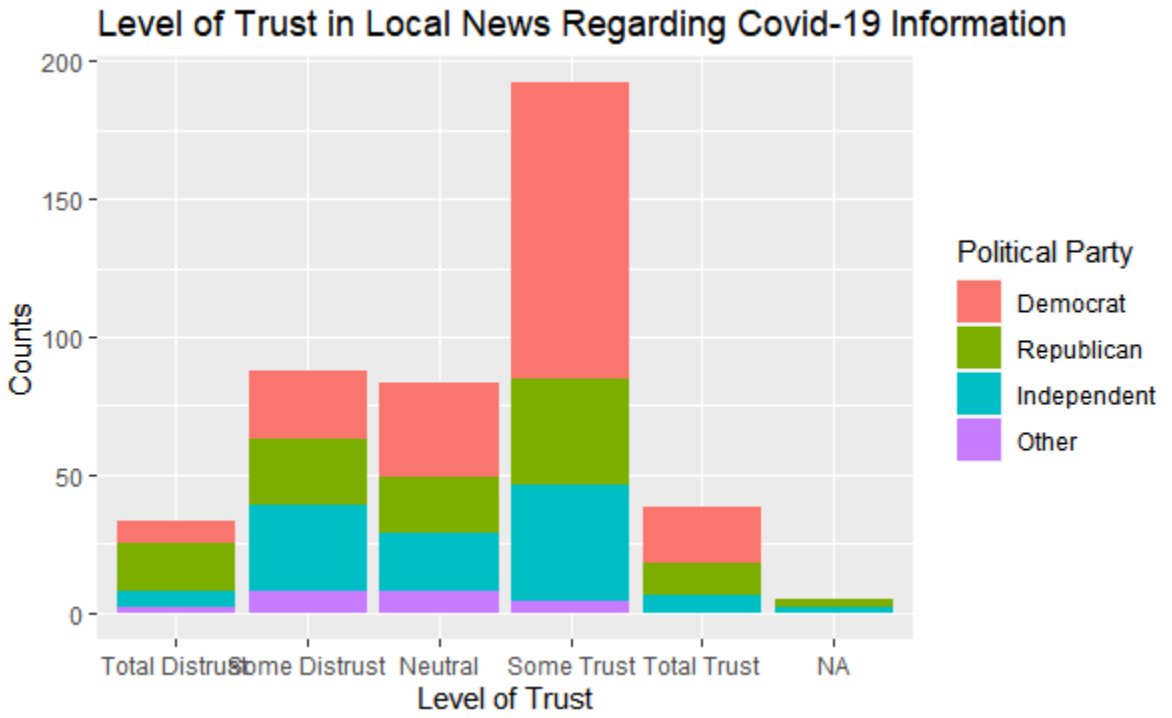
The difference in legislative behaviors between Democrats and Republicans was stark during the height of the pandemic. The rhetoric and policies of politicians could not be more different - but is this polarization the same in "normal people" (non-politicians) who have a more vested interest in the pandemic?



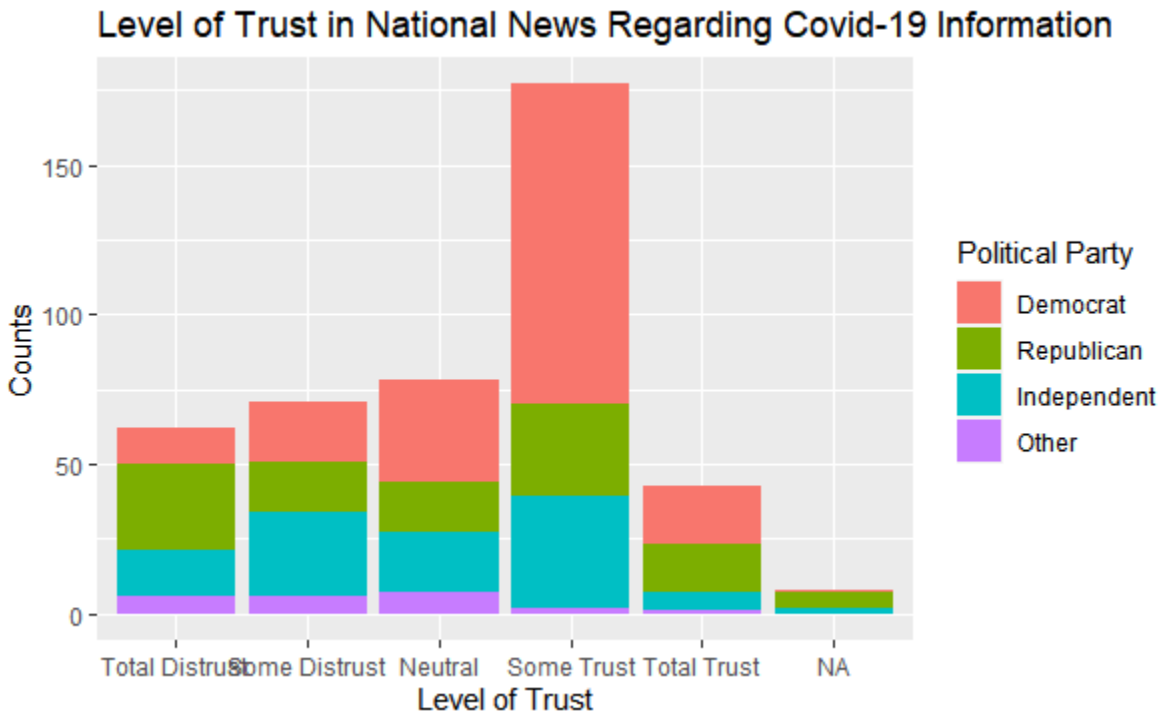
In terms of personal contacts, people regardless of political affiliation took their friends' words with a grain of salt. The distribution of Democrats and Republicans is pretty even between some distrust and some trust, with Independents mostly having some trust in ther contact's information. Few people totally trusted their contact's information, and even fewer completely distrusted their words. This was unsurprising to me, as people usually trust the people they know, but as misinformation was rampant during 2020-2021, it was wise to not blindly trust anyone.



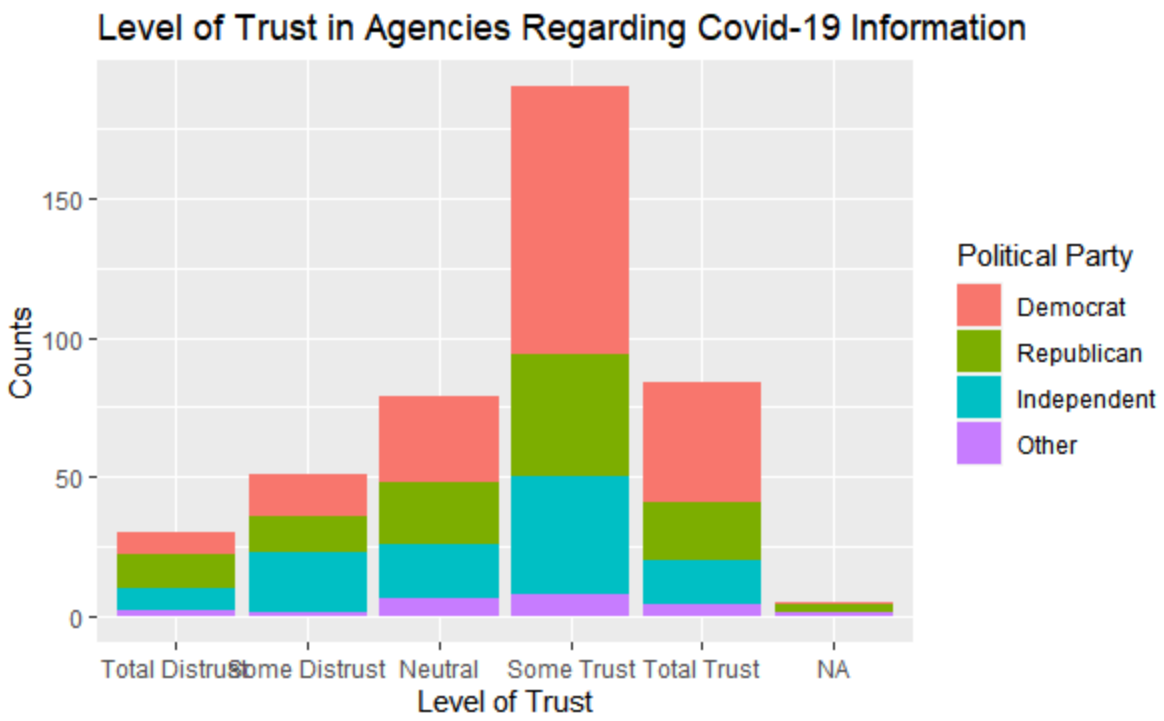
Medical providers are some of the most trusted people in disapled people's lives. Majority of people regardless of party had some level of trust in their providers. The spread of political affiliations is roughly even amongst the groups, with the most people having "Some Trust" in their providers.



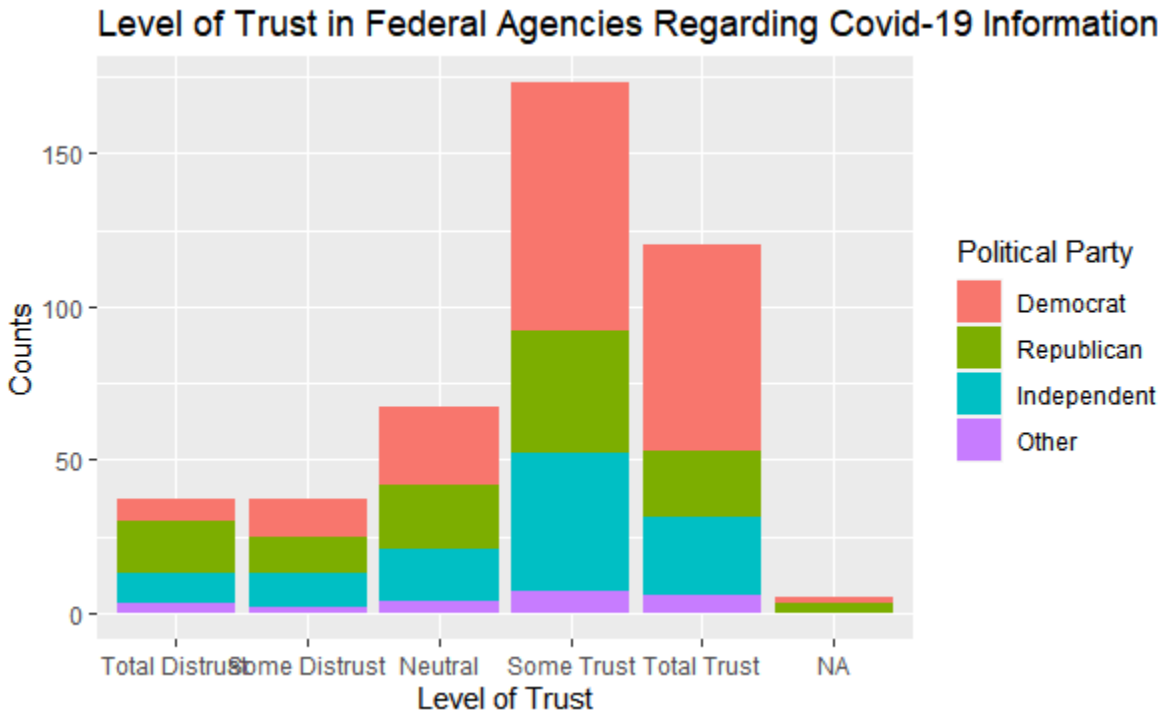
Majority of respondees have some level of trust in local news, roughly evenly spread across political parties, although few Democrats have total distrust in local news. It is interesting that a decent number of people have some or total distrust in local news, as it theoretically would be more attuned to issues an individual personally cares about.



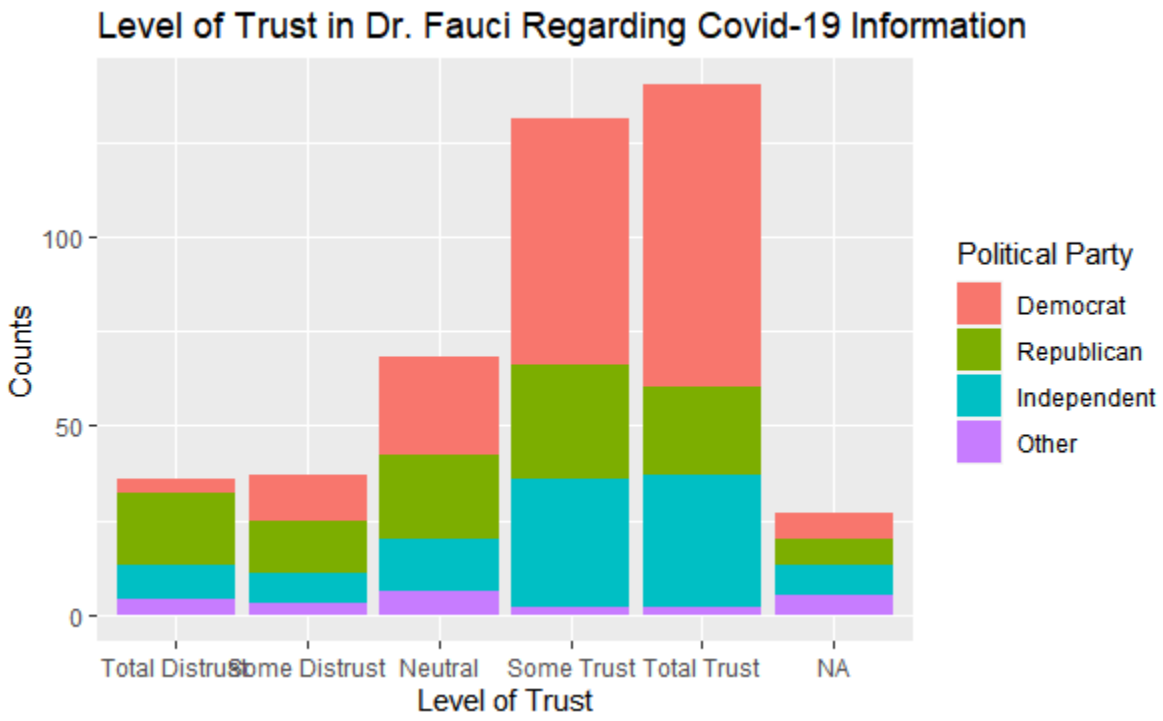
As with local news, most people have some level of trust in national news. However, there is more distrust in national news, and the proportion of Republicans in that category seems to be higher than in other levels of trust.



In the midst of misinformation, trusted agencies could be seen as a sure source of information. Majority of people do have some trust non-federal agencies, and the spread across political parties seems to be even.



The even distribution of Republicans in their trust of federal agencies surprised me - there was so much anti-federal government rhetoric during the pandemic (specifically the CDC) that one would think that rhetoric could override one's medical trust in the federal government's agencies. However, most people had some or total trust in federal agencies, a stark difference to the previous sources of information, where relatively few had total trust in the source.

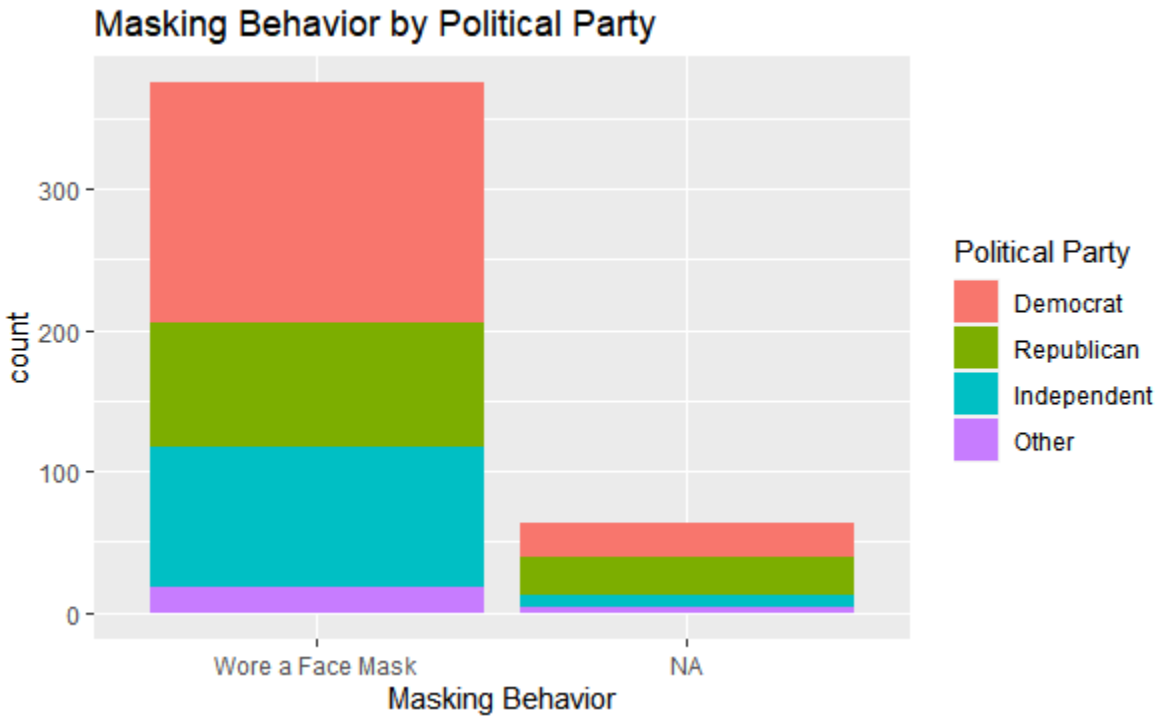


Dr. Fauci became the voice of the federal government on Covid-19, and thus became an easy scapegoat when people were displeased with Covid policies. A majority of the respondees have Total or Some Trust in Dr. Fauci, which is impressive compared to the general sense of distrust seen in the other sources of information. Republicans are the highest percentages of those who have Total Distrust in Dr. Fauci, but Republicans are relatively evenly distributed across all levels of trust.

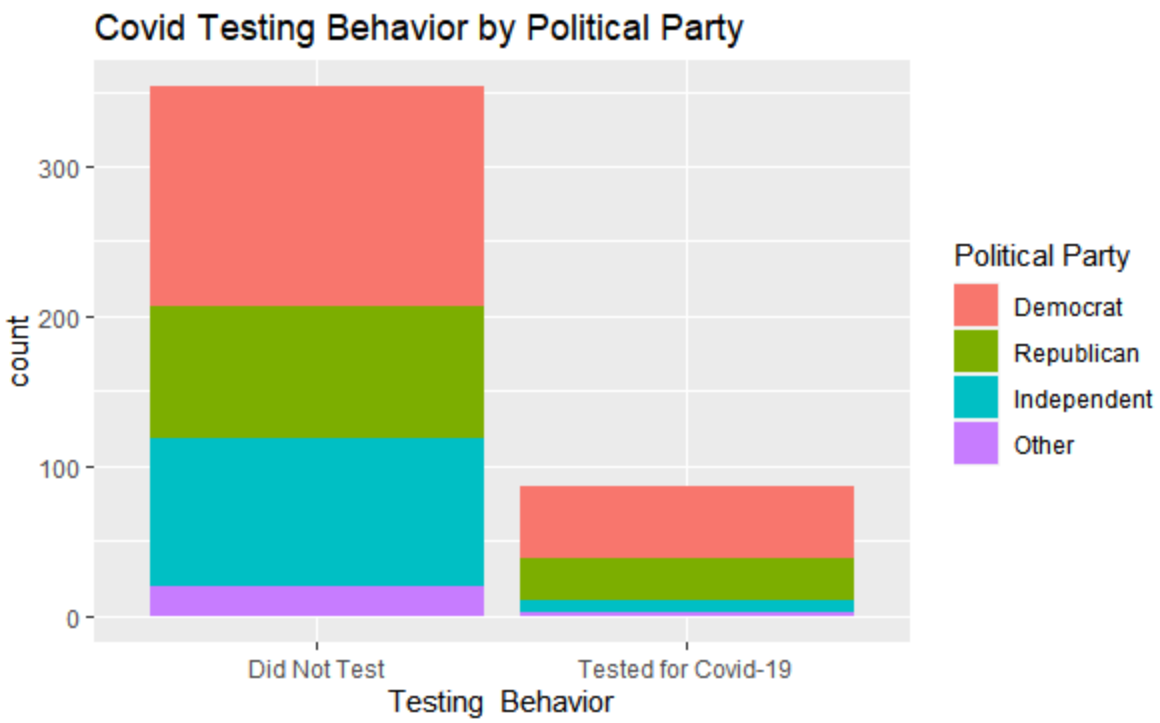
Overall, there seems to be little impact of one's political party on the sources of information that they trust. This is surprising considering the different message the political parties gave out during this time period, however, the population must be considered. Disabled people have more at stake in Covid-19, and this may cause them to stray from their party's rhetoric and choose different sources of information, such as federal agencies and Dr. Fauci.

Preventative Behaviors:

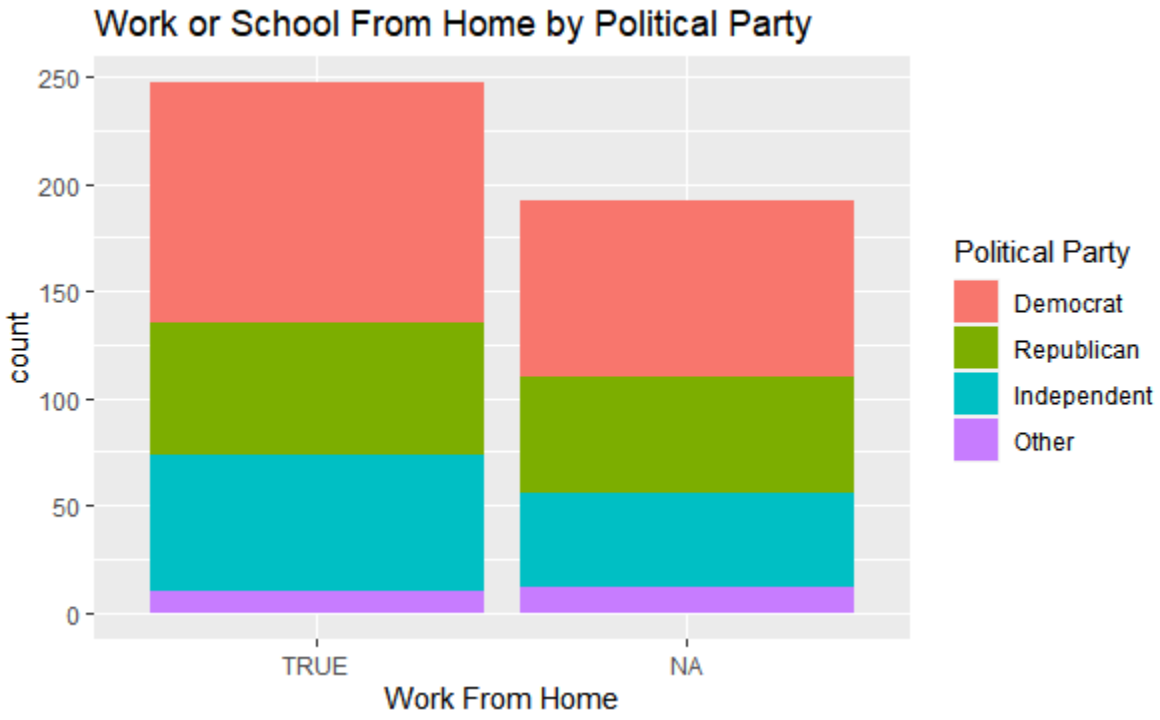
Since people with disabilities are likely to be more at risk of serious illness with Covid-19, it is interesting to look at the preventative measures these respondees used to keep themselves safe. Once again, we are looking at if political party influenced these behaviors. I've created stacked bar charts on masking, testing, work and school, social distancing, and vaccine intent to visualize if politics had an influence on these behaviors.



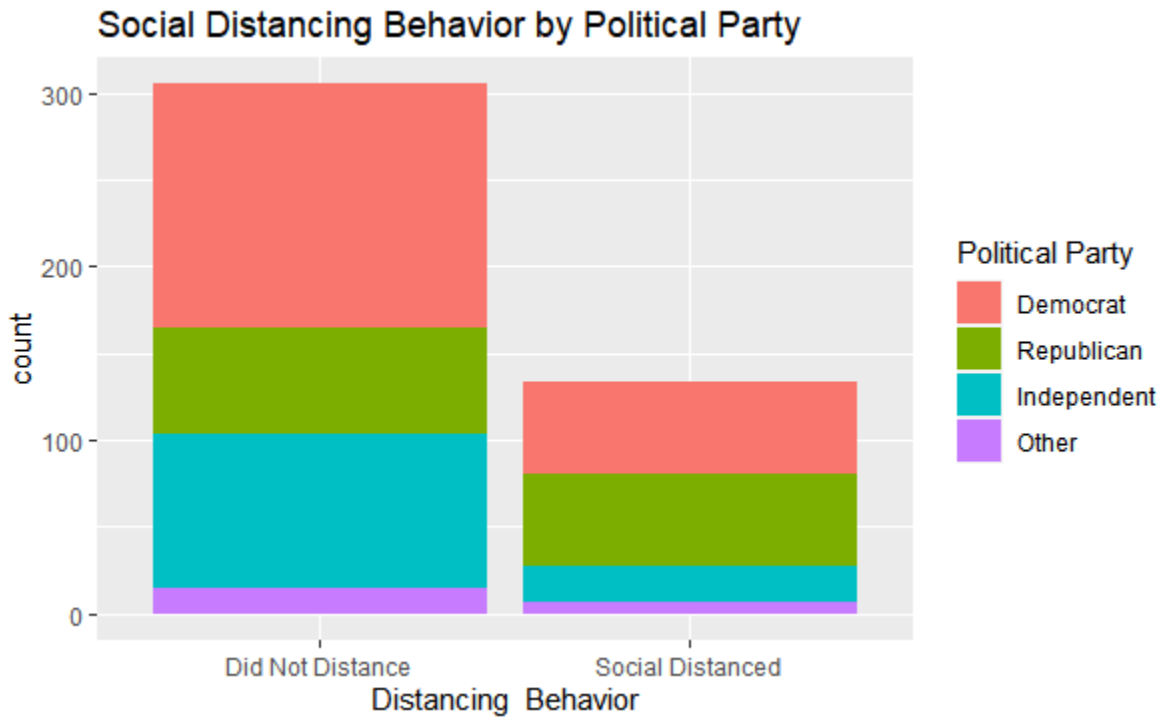
It is amazing that almost everyone in this data set wore a mask (with around 60 unknown masking statuses). Masking became an incredibly political behavior, with Republican leaders often denouncing masking, so this shows a difference between the non-disabled population and the people in this data set.



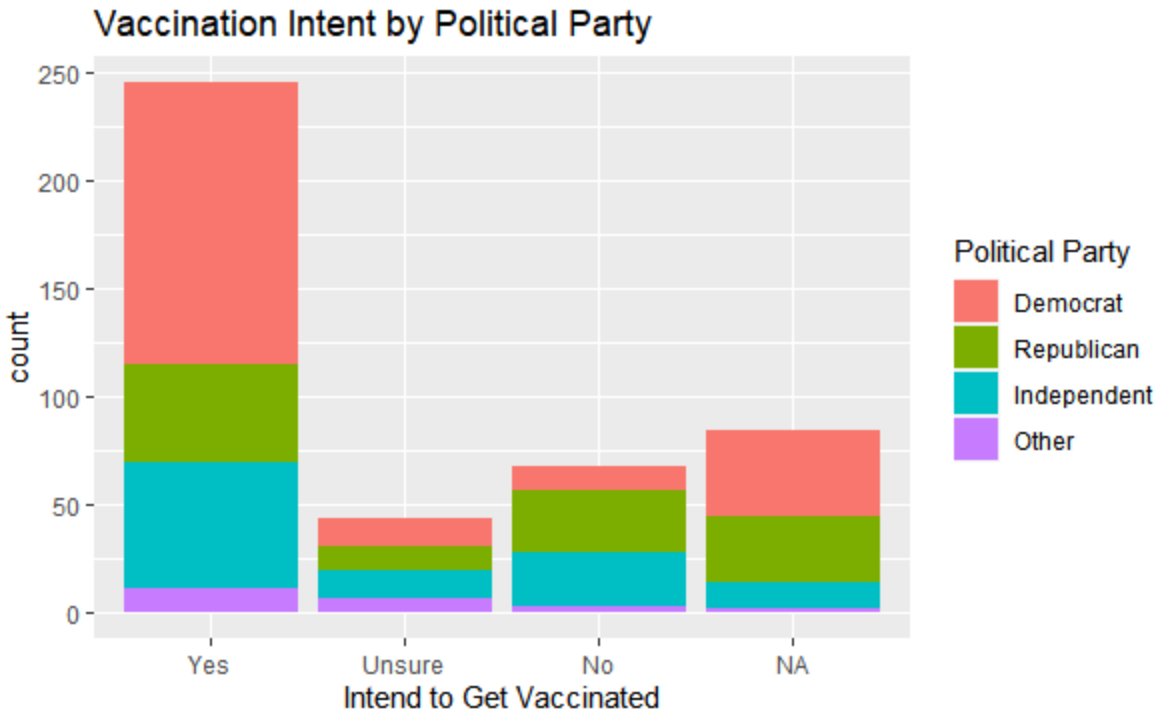
It's interesting that a majority of people did not test for Covid-19. However, taking into account that testing may not have been accessible to everyone, and people may not test unless they know they've been exposed to Covid-19, it's reasonable that this number is as high as it is.



It is not surprising that many people could not work or go to school online. There are many essential jobs that cannot be moved online, so working from home is not a good indicator of one's preventative behaviors.



This was very surprising that this subset of the population mostly did not social distance. Once again, it could be due to the nature of their work, and it doesn't seem to be politically motivated. A larger portion of Democrats did not socially distance, but as essential workers tend to be Democrats, this could explain the difference.



Vaccination is one of the strongest measures we have against Covid-19. It's reassuring to see that most of these respondees planned on getting the vaccine, and that political affiliation didn't seem to affect their decision.

Once again, I was surprised that political affiliation didn't seem to sway the respondee's actions as much as it seemed like it affected the general public. Of the variables I looked into, I believe intent to get vaccinated and masking would be the best indicators of preventative behavior that are not hindered by one's employment status. Since all non-NA values for masking were the same, and the purpose of the data collection was to measure relationship with the Covid-19 vaccine, vaccination intent is the best indicator overall.

Analysis and Results

In my prior data exploration, I realized that my prior beliefs of how political affiliation may not be true. However, I will be building a model based on those prior beliefs to show statistically that they are not significant, and suggest that political affiliation is a noninformative prior. I will be using vaccination intent as my response variable, with trust in federal agencies, political affiliation, and race as predictors. Vaccination intent is a categorical variable, but I am treating it as a numerical because the responses were a scale of 1-5, from Definitely getting vaccinated to Definitely Not.

Model used:
stan_glm(vaccination_intent~factor(political_party)+factor(trust_federal)+factor(race_construct), family = gaussian, data = data)

Model summary:
Estimates:

	mean	sd	10%	50%	90%
(Intercept)	3.372	0.227	3.083	3.376	3.653
factor(political_party)2	0.696	0.166	0.484	0.695	0.910
factor(political_party)3	0.603	0.153	0.412	0.604	0.798
factor(political_party)4	0.616	0.296	0.229	0.615	0.990
factor(trust_federal)2	-0.969	0.290	-1.338	-0.970	-0.592
factor(trust_federal)3	-1.187	0.264	-1.523	-1.191	-0.844
factor(trust_federal)4	-1.665	0.231	-1.956	-1.667	-1.367
factor(trust_federal)5	-2.088	0.242	-2.399	-2.087	-1.776
factor(race_construct)2	-0.169	0.172	-0.386	-0.173	0.056
factor(race_construct)3	-0.308	0.270	-0.649	-0.316	0.036
sigma	1.165	0.044	1.109	1.164	1.223

Fit Diagnostics:

	mean	sd	10%	50%	90%
mean_PPD	2.204	0.089	2.089	2.201	2.318

The mean_ppd is the sample average posterior predictive distribution of the outcome variable (for details see help('summary.stanreg')).

MCMC diagnostics

	mcse	Rhat	n_eff
(Intercept)	0.005	1.000	2465
factor(political_party)2	0.003	1.000	4201
factor(political_party)3	0.002	0.999	4489
factor(political_party)4	0.004	1.000	4843
factor(trust_federal)2	0.005	1.000	2917
factor(trust_federal)3	0.005	1.000	2616
factor(trust_federal)4	0.005	1.000	2465
factor(trust_federal)5	0.005	1.000	2402
factor(race_construct)2	0.002	1.000	5120
factor(race_construct)3	0.004	1.000	4786
sigma	0.001	1.001	4460
mean_PPD	0.001	0.999	4508

log-posterior 0.058 1.000 1711

Based on the 10% and 90% estimates for the betas, one's trust in the federal agencies and race are not a good predictors of their intent to get vaccinated because the interval contains 0. Removing trust in federal agencies and race from the model, this is my new model:

stan_glm(vaccination_intent~factor(race_construct), family = gaussian, data = data)

Model Summary:
Estimates:

	mean	sd	10%	50%	90%
(Intercept)	1.694	0.105	1.559	1.693	1.828
factor(political_party)2	1.084	0.179	0.857	1.083	1.316
factor(political_party)3	0.796	0.170	0.579	0.797	1.009
factor(political_party)4	0.755	0.306	0.360	0.755	1.137
sigma	1.305	0.049	1.244	1.304	1.367

Fit Diagnostics:

	mean	sd	10%	50%	90%
mean_PPD	2.213	0.096	2.088	2.214	2.332

The mean_ppd is the sample average posterior predictive distribution of the outcome variable (for details see help('summary.stanreg')).

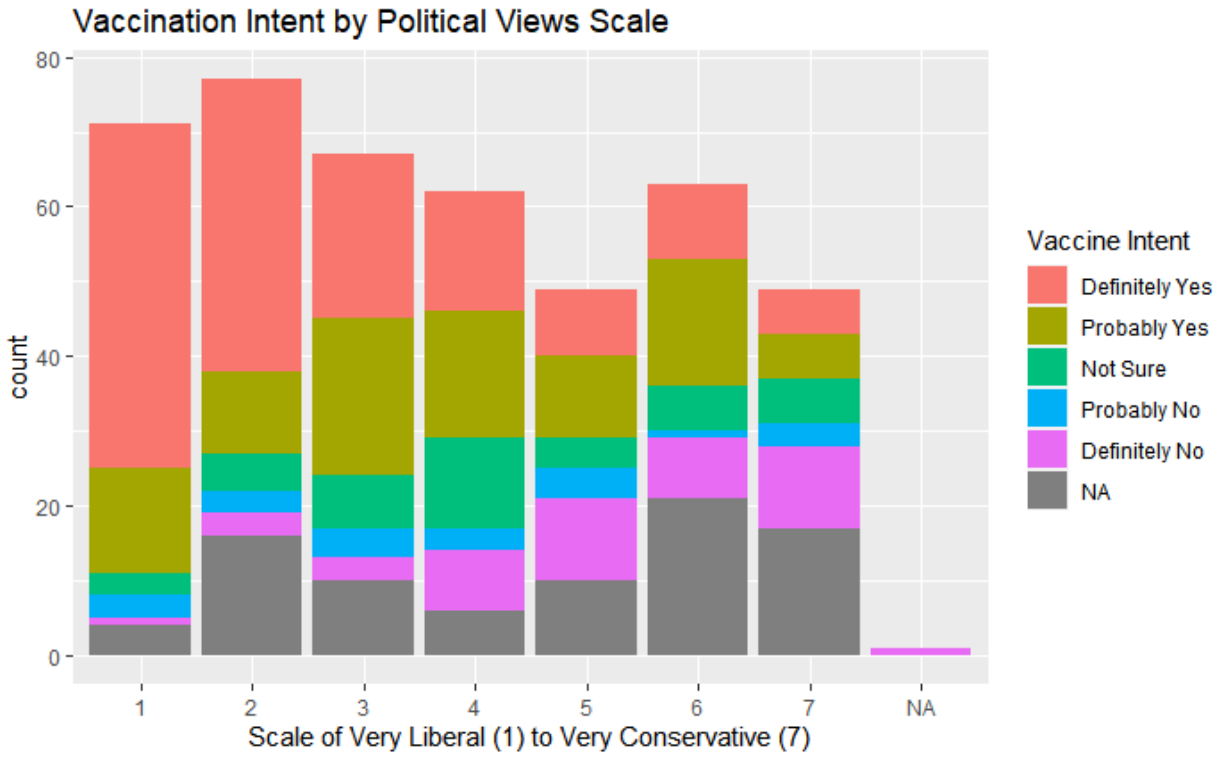
MCMC diagnostics

	mcse	Rhat	n_eff
(Intercept)	0.002	0.999	3765
factor(political_party)2	0.003	1.000	3817
factor(political_party)3	0.003	1.000	4095
factor(political_party)4	0.004	0.999	5089
sigma	0.001	1.000	5331
mean_PPD	0.001	1.000	4303
log-posterior	0.038	1.001	1602

Based on this new model, it seems like political party does have an impact on one's intent - none of the 10% to 90% intervals contain 0.

Variable Change:

This data set also includes the variable political_views as a scale of one's political alignment, from Very Liberal to Very Conservative. Using this variable against intent to vaccinate, this stacked bar chart is created:



There is definitely a difference in vaccination intent between the different political alignments, so I made a new model using political views.

Model:
stan_glm(vaccination_intent~factor(political_views), family = gaussian, data = data)

Model Summary:
Estimates:

	mean	sd	10%	50%	90%
(Intercept)	1.495	0.153	1.301	1.492	1.692
factor(political_views)2	0.192	0.225	-0.098	0.194	0.474
factor(political_views)3	0.540	0.231	0.243	0.546	0.834
factor(political_views)4	0.968	0.230	0.671	0.971	1.262
factor(political_views)5	1.427	0.259	1.103	1.429	1.761
factor(political_views)6	1.027	0.250	0.702	1.030	1.343
factor(political_views)7	1.725	0.271	1.373	1.725	2.066
sigma	1.265	0.049	1.201	1.263	1.328

Fit Diagnostics:

	mean	sd	10%	50%	90%
mean_PPD	2.201	0.095	2.079	2.201	2.322

The mean_ppd is the sample average posterior predictive distribution of the outcome variable (for details see help('summary.stanreg')).

MCMC diagnostics

	mcse	Rhat	n_eff
(Intercept)	0.004	1.002	1542
factor(political_views)2	0.005	1.002	1884
factor(political_views)3	0.005	1.002	2125
factor(political_views)4	0.005	1.001	2179
factor(political_views)5	0.005	1.000	2529
factor(political_views)6	0.005	1.001	2242
factor(political_views)7	0.006	1.001	2250
sigma	0.001	1.000	3543
mean_PPD	0.002	0.999	3709
log-posterior	0.051	1.000	1658

Political views seems to be a much stronger differentiator of vaccination intent than political party. This may be due to the wide variation in beliefs between people who align with one political party.

Discussion

In my data exploration, I have found that a scale of political views from very liberal to very conservative is a better indicator of intent to vaccinate, as a measure of Covid-19 safety precautions. There are several limitations I faced with the data, as well as with my own analysis of the existing data.

There were 439 responses in the data set, after the original researchers cleaned the data. This is not many responses as a fraction of the entire disabled population, which makes the data very susceptible to skew. The data was also collected via MTurk, which biases the data towards those who work for MTurk and are interested in the monetary benefit of filling out their survey. This resulted in the target population, disabled people, not being the sole respondees of the survey, as one of the original researcher's aggregate

variables show that there are responses from a view individuals who did not identify with any specified type of disability.

There were several areas of bias in the data as well. A vast majority of the respondees were white, to the point where the original researchers had an aggregate variable for if the respondee was simply a person of color or not. I personally know that one's race informs their politics and cultural behavior, so this greatly effects the intersection of my analysis. Additionally, majority of the respondees were between the ages of 18-64+. However, responses of those above 65+ may skew the results, as seniors tend to have different health issues and may be more cautious since they are an at risk group simply on the basis of age.

This data set was very extensive, with 202 variables. Many of these variables were binary responses to the survey (ex. Do they identify as having a visual impairment? Yes, No, or NA). This created a lot of excess variables that allow for one to analyze individuals identifying as multiple types of disabilities, but for purposes of my analysis, made it difficult to analyse the group as a whole. Additionally, a lot of these variables overlapped, which allowed for me to find political view as a predictor of intent to mask, but creates a lot of redundant variables that would have multicolliniearity issues if I were to use them together.

There were limitations in my analysis as well. For one, I could have narrowed down the data set to only the variables I was exploring to prevent my own confusion and to help me focus my exploration more. Additionally, I could have cleaned the data more to my interest, especially removing the individuals who did not identify with any disability. Reflecting further, it was difficult to decide how to construct a model from the variables I had chosen, as all the variables in this data set were categorical, with a few with the flexibility to be treated as a numerical. If I were to attempt an analysis like this again, I would find another data set that had more quantitative data and fewer categorical, as well as more observations to get a better grasp of the population behavior.

Overall, I proved my initial assumption that political alignment would impact Covid-19 prevention behavior in the disabled population false. Political views as a scale from very liberal to very conservative are a better indicator of vaccination intent, which was used as a measure of Covid-19 prevention.

REFERENCES

1) "Who Coronavirus (COVID-19) Dashboard." *World Health Organization*, World Health Organization, https://covid19.who.int/.
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3) Ipsen, Catherine, and Andrew Myers. “Covid-19 Vaccination and People with Disabilities.” *OpenICPSR*, Inter-University Consortium for Political and Social Research (ICPSR), 4 Feb. 2022, https://www.openicpsr.org/openicpsr/project/161502/version/V1/view;jsessionid=7AE82FBDD2B153FCCF67D41E9EA2BC37.