**INTRODUCTION:**

How does a state's predominant ideology relate to the severity of COVID-19, in terms of number deaths (mortality rate), in the state? This question is important because there may exist a relationship between political entities favoring or disagreeing with government involvement in personal lives that may be tested with a global pandemic. Discovering a potential relationship could be helpful in determining what is best practice is helping alleviate the issues associated with a global pandemic. It is initially expected that states leaning more towards conservatism may have faced greater severity regarding COVID-19 than states that are more liberal. This may have something to do with attitudes towards government involvement in citizen lives and therefore impact the efficiency of enacting healthcare practices that infringe personal choice, like mandated vaccinations and wearing a face-covering. Based on this, this paper will utilize the average political score to act as a place hold to determine the general political leaning of the state and therefore potentially measuring the political parties in power in the states. States that are not in favor of government involvement may not have had institutions in place to manage a health crisis or place an increased question on the efficacy of COVID-19 practices, while states in favor of government involvement may have had more health policies and systems in place or more efficient mobility to enact pandemic related policies.

To investigate this possible relationship, this paper will utilize the average ideology score of each state’s senators as measured by the NOMINATE first dimension ideological score. This measurement compares political figures voting practices to place them on a scale of negative one, being most liberal, to positive, being most conservative. As the NOMINATE first dimension variable becomes more positive, the severity of COVID-19 may also additionally increase in deaths and mortality. To measure mortality, a table was compiled using John Hopkins survey data of total deaths by state and total state population from the 2020 U.S. census. To get the mortality rate by state, total deaths was divided by total state population to get a percentage of deaths by state to account for large state populations with larger death numbers, like California versus Wyoming. These results will then be placed on a scatterplot and a correlation analysis will be run to determine the strength of the supposed relationship. The eventual results show that there is only a weak correlation between COVID-19 deaths by state and average ideological score in terms of conservative versus liberal. This is important because it shows that political ideology has a relatively minor impact on the severity of COVID-19 and that other areas may have a larger impact in an already very divided country.

**BACKGROUND:**

The importance of investigating a potential relationship between political ideology and the death rate of COVID-19 is that is creates areas of focus that could receive further attention in terms of promoting COVID-19 preventative measures, like medical masks, and addressing why the severity is larger in these areas, if a significant relationship exists. Initially, it could be theorized that more conservative states may have a worse mortality rate due to hesitancy to utilize face masks or receive vaccinations compared to more liberal states. An article by Kelsey E. Gonzalez on conservatism and the usage of masks, Gonzalez found that more conservative areas tended to utilize masks less than other less conservative counties. Gonzalez writes, “…populations with greater support for President Trump, greater affiliation with evangelical Christianity, and greater interest in *Fox News* tend to exhibit *higher* rates of infrequent mask usage.” (Gonzalez 17). This measurement in terms of measuring conservatism supports the initial hypothesis that decreased mask usage may then increase the spread of COVID-19 to more vulnerable populations, like the elderly, and therefore increase the death rate in the associated state. This paper will seek to test if there is a strong relationship between political ideology, namely conservatism, and the relative death rate by COVID-19 in the state. This will seek to explore if a relationship between the two exists.

**DATA AND APPROACH:**

The datasets used for this analysis was a dataset associated with voting patterns of Senators in the 116th Congress session, which was the convening Congress from January 2019 to January 2021, and a dataset compiled from COVID-19 deaths from Johns Hopkins University and CNN and state populations from the 2020 census. The 116th Congress was chosen because these political figures and their voting tendencies were the most influential during the global pandemic which gained prevalence in the United States beginning in March of 2020. The key variable used from this data set was the NOMINATE first dimension variable, titled nominate\_dim1 in the data. This variable utilizes the voting tendencies on Congressmembers compared to other Congressmembers to create a scale from negative one to positive one, with most conservative being the highest number on the scale. To only include data points that were present in both sets, the District of Columbia and Puerto Rico were removed because they do not currently have senators in Congress to measure ideology. To simplify, the ideological scores of only the senators were utilized to determine the trend. The average ideological scored of the two senators was taken to get the average ideological score for the state. In the appendix, Figure 1 shows the final average ideological state values with the redder states representing more conservative on the ideological score and the bluer states representing more liberal. The Johns Hopkins and CNN data set is comprised of total deaths by COVID-19 by state up until December 13, 2021. The total deaths were then put into a table combined with total state population as stated in the 2020 census, used because it gives the most recent population values. To get total death percentage as a function of total state population to offset population disparities between states, the total deaths per state were divided by total state population and then the total was multiplied by 100 to get the total as a percent. Figure 2 in the appendix shows percent of deaths by COVID-19, with the reddest states have a larger percentage of state population dead by COVID-19. These two variables, average state ideological scores and the percent of state population deaths by COVID-19, were then plotted, with ideological score on the x-axis and the independent or treatment variable, and percent death on the y-axis as the dependent variable. In the data set, ideological scores were titled as “StateAvgNom1”, and death percentage was labelled as “RelativePercentCOVIDDeath”. Once the data was plotted, the correlation coefficient would be found comparing the two variables.

**RESULTS:**

Chart, scatter chart

Description automatically generated The graph resulting from the plotting of the average ideological score of the state and the severity of COVID-19 deaths within the state showed widely dispersed and varied points. The mentioned graph can be seen in below. The associated correlation analysis result from the graph and the relationship between a state’s average ideological score as the treatment variable and the percent of deaths caused by COVID-19 relative to the total state population was approximately 0.295. This is a relatively small number compared to correlation meaning that for every one unit increase in ideological score, there is a 0.295% increase in the severity of COVID-19 in terms of death rates. To get this correlation rate and associated graph, each state variable was placed in a loop program in R Studio which tabulated the average state ideological score based on the state’s senators voting patterns. Using Alabama as an example, the NOMINATE score for the Senators was -0.088 for Senator Gordon Jones and 0.444 for Senator Richard Shelby. Based on these scores, the average NOMINATE first dimension political ideological score was 0.178, meaning slightly more conservative in terms of voting patterns. Continuing to use Alabama as an example for the procedure used for each state, the total death by COVID-19 as a percentage of total state population was calculate by dividing cumulative deaths by COVID-19, which was 16,265, by total state population from the 2020 census, which was 5,024,279. This value was then multiplied by 100 to get the percentage for Alabama, which was equal to about 0.324%. This data showed a very small relationship between state average political ideology and deaths caused by COVID-19 varying by state. This relationship could be even further negated by adding further variables that have a large sway in causing increased COVID-19 deaths. While this evidence does support a slight relationship between ideology and COVID-19 deaths, it is not strong enough to fully support a meaningful relationship between the two variables.

**CONCLUSION:**

The data from the exploration of political ideology and COVID-19 seems to suggest that there is not a strong relationship between the average political ideology of a state and deaths caused by COVID-19. Furthermore, the slight relationship seen by the correlation of about 0.29 could be explained better by different variable, such as the number of large cities in a state or the population density of the state. These findings are equally as important despite failing to support the initial hypothesis because they move the blame away from political ideology and thus can help mend the divisive political bridges currently affecting the United States and the accusatory claims of both political parties. Looking into more influential causes of COVID-19 deaths would be a very worthy avenue of exploration. Overall, political ideology does not have a very strong influence on the number of deaths caused by COVID-19 in a state relative to total state population.

APPENDIX:

FIGURE 1: FIGURE 2:

**Chart

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