# Your State Doesn't Care About You
# (as much as they probably should)

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When COVID-19 first spread across the United States, each state had a tough decision to make: They had to find a reasonable balance between the economy and the physical health of their citizens, as opposed to completely shutting everything down—which would kill business and eliminate jobs—or completely leaving things open—which would kill people and encourage the spread of the virus.

Faced with this enormous responsibility, each state government had to determine how and when to help the public, being tasked with the burden of deciding between stricter mandates for the sake of public health, or looser regulations to support the economy. Often, decisions to support public health came at the cost of the economy and vice versa, although most states tried to find a balance between the two after carefully examining the potential tradeoffs of their prospective decisions.

Despite the significance of tradeoffs, little attention has been paid to their details and specifics; there is a question surrounding how states balanced mortality and unemployment. Thus, we conducted an exploratory analysis based on census data to further examine the trade off between low income job loss and COVID-19 deaths.

Our paper proceeds as follows: First, we used regression analysis to estimate the tradeoff between low income job loss and mortality at the regional level. Then, we analyzed the financial aspects of the ratio of low income jobs lost to COVID-19 deaths to determine the value each state put on one human life. We found that coastal states had much higher trade-offs while inland states did not, as shown by the graph below. We also found that according to the federal government's value of a human life, saving one life is worth approximately 712 jobs lost. However, no states even came close to this threshold, with the highest state (Hawaii) losing 60 jobs for saving one life and most states having roughly 20.
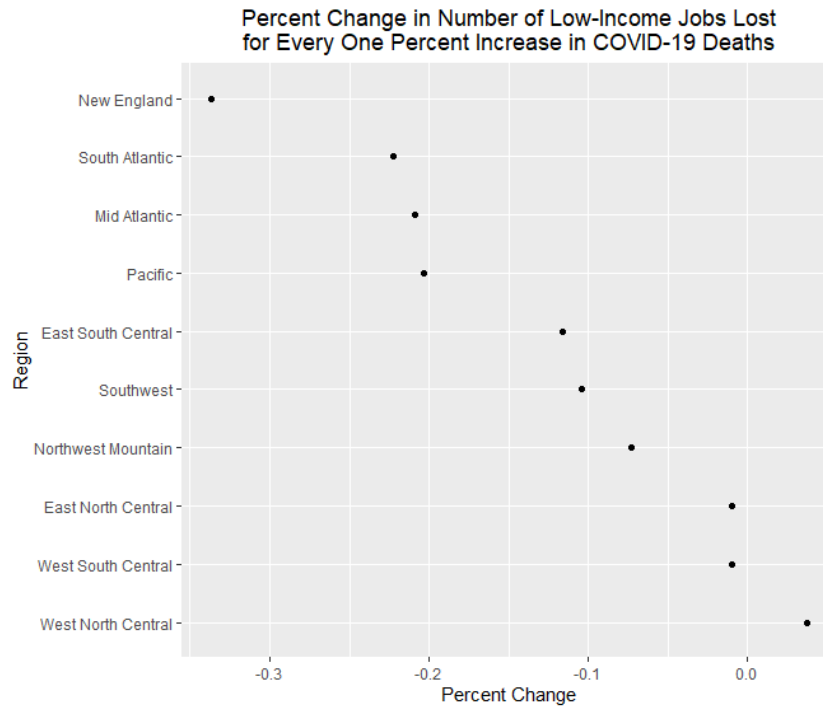
*Fig. 1. The above graph highlights the regional percent change in the number of low income jobs lost for every one percent increase in COVID-19 deaths. It uses state counties as the unit of analysis for each region in the United States.*
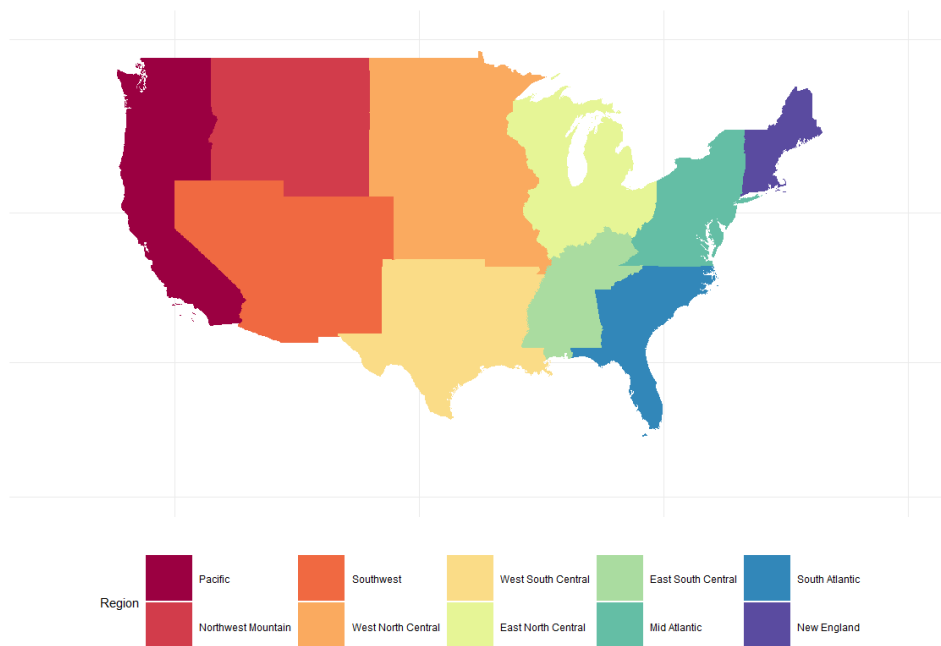


*Fig. 2. The above display illustrates the 10 geographical regions used in our model.*

We found that coastal regions such as New England, Mid Atlantic, South Atlantic, and Pacific regions had higher trade-offs than the inland regions. Essentially, for every 1% increase in COVID-19 deaths in the counties of these regions, the percentage of job losses not only decreased, but decreased significantly more than the other regions where job losses also decreased. Likewise, for every 1% decrease in COVID-19 deaths in these regions, the percentage of job losses increased, and increased more than the other regions where job losses also increased. This might imply that these regions prioritized public health over their economies, as they were willing to sacrifice more jobs compared to other regions. Alternatively, it could imply that these regions used economic shutdowns as a way to mitigate the virus. Regardless, we infer that these regions placed a lower value on low income job loss, and therefore, placed a higher value on preserving public health.

In contrast, the East North Central, West South Central, and Northwest Mountain regions had the least severe tradeoffs with near-zero decreases in job losses per 1% increase in COVID-19 deaths. For every 1% increase in COVID-19 deaths in these regions, the percentage of job losses decreased to a lesser extent than the other regions. Likewise, for every 1% decrease in COVID-19 deaths in most of these regions, the percentage of job losses increased, but increased less than the other regions where job losses also increased. This might imply that these regions prioritized their economies over public health, as they were willing to sacrifice fewer jobs compared to other regions. Alternatively, it could imply that these regions did not use the economy to mitigate deaths.

The West North Central region is a unique case. There was a 0.037 percent *increase* in the number of low income jobs lost per 1% increase in COVID-19 deaths. Equivalently, this means that for every 1% decrease in COVID-19 deaths, the percentage of job losses decreased; in other words, the percentage of job gains increased. In the West North Central region, there was no tradeoff between the economy and public health. When COVID-19 deaths rose, so did the amount of jobs lost. In this case, there is no sacrifice to be made, as focusing on either the economy or public health will result in a decrease for both.

To put it simply, regions with higher trade-offs were more willing to lose jobs and destabilize their economies in order to focus on public health, whereas regions with lower trade-offs were less willing to lose jobs in order to place more focus on the economy.

The tradeoff values were calculated using a linear regression model. The model regressed jobs lost on COVID-19 deaths while controlling for county population and all three variables were transformed on the logarithmic scale to improve normality. Overall, the equation

log(COVID-19 Deaths) ~ log(Low Income Jobs Lost) + log(Population)

had a very high adjusted r-squared value of 0.8895 for the entire country and adjusted r-squared values between 0.85 and 0.94 for the individual regions. The tradeoff value between deaths and jobs lost is the coefficient in front of low income jobs lost. For the whole country, the tradeoff value was -0.09.

Regions were used in this part of the analysis as opposed to states due to the varying number of counties in each state. Some states with only a few counties were unable to meet the observation threshold for the linear regression model—a small area estimation problem. Therefore, these states could not be included, thus warranting the necessity for using regions as an alternative. Analyzing the tradeoff in different regions gave a higher sample size for a more accurate model while still maintaining the geographical importance of the analysis. In many cases, neighboring states have the same or similar population densities, county sizes, and decision making process for COVID-19 regulations. Regions were determined using CDC recommendations, with the "mountain" states split into Northwest Mountain and Southwest regions.

While this regional analysis is useful in determining general trends, we also wanted to show more specific insights by conducting analysis on the state level. In order to further examine the trade off between a COVID-19 death and the number of low income workers who would need to lose their job in the United States, we decided to focus on the ratio of jobs lost to deaths.

It should be noted that Idaho (which was included in the Northwest Mountain region) and Utah (Southwest) have negative ratios because they gained low income jobs during the pandemic. Thus, they did not face a tradeoff between COVID-19 deaths and the number of low income jobs lost. Similarly, Arizona (Southwest), South Dakota (West North Central), and Arkansas (West South Central) all had multiple counties with low income job gains, and Mississippi (East South Central) had one county where there were low income job gains.
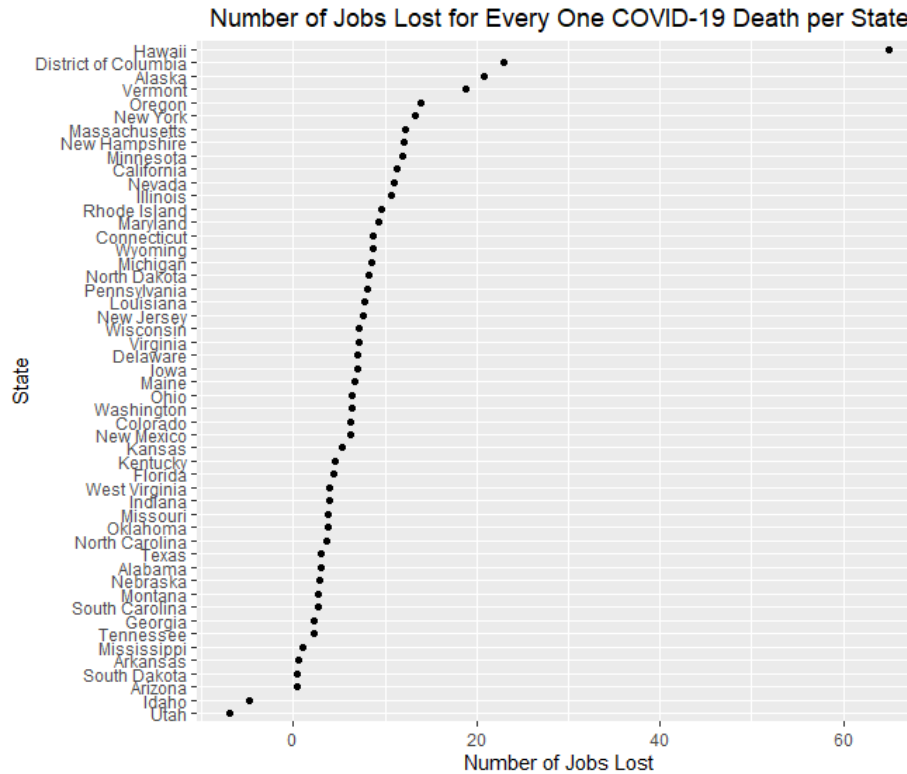
Fig. 3. The above graph highlights the number of jobs lost for every 1 COVID-19 death per state.

In order to understand the financial impact of these ratios, we built an equation to quantify equal financial impacts to both the public health and economic sectors. From this equation, we found that in order to have the same financial impact as one death from COVID-19, 712 low income workers would need to lose their job.

$$7,400,000(COVID19\ Deaths)\ =\ 10(40)(26)(Low\ Income\ Jobs\ Lost)$$

In 2006, the Environmental Protection Agency's (EPA) calculated that the monetary value of a human life is $7.4 million USD ("Environmental Protection Agency", n.d.). This is the value the federal government places on one human life. Additionally, according to *Pew Research Center*, $10 dollars was the median hourly wage during the second quarter of 2021 for people who work low income jobs (Kochhar & Bennett, 2021). We used 40 hours to represent a full-time work week and used 26 for the number of weeks that a person can collect unemployment, which is the standard in most states. This equals the amount of money the

average state must pay a person who loses their job and must collect unemployment for the maximum allowed time, which totals to $10,400.

From this, we determined that our calculated ratio of 712 jobs lost for every death was much smaller than the ratios acquired from actual state data. States didn't come close to meeting the threshold for equal financial impacts. Since every state had less than 712 jobs lost for every COVID-19 death, this suggests that states suffered a high public health toll to a comparatively lower economic toll with regards to low income individuals. This could also suggest that states do not place the same monetary value on a human life that the federal government does.
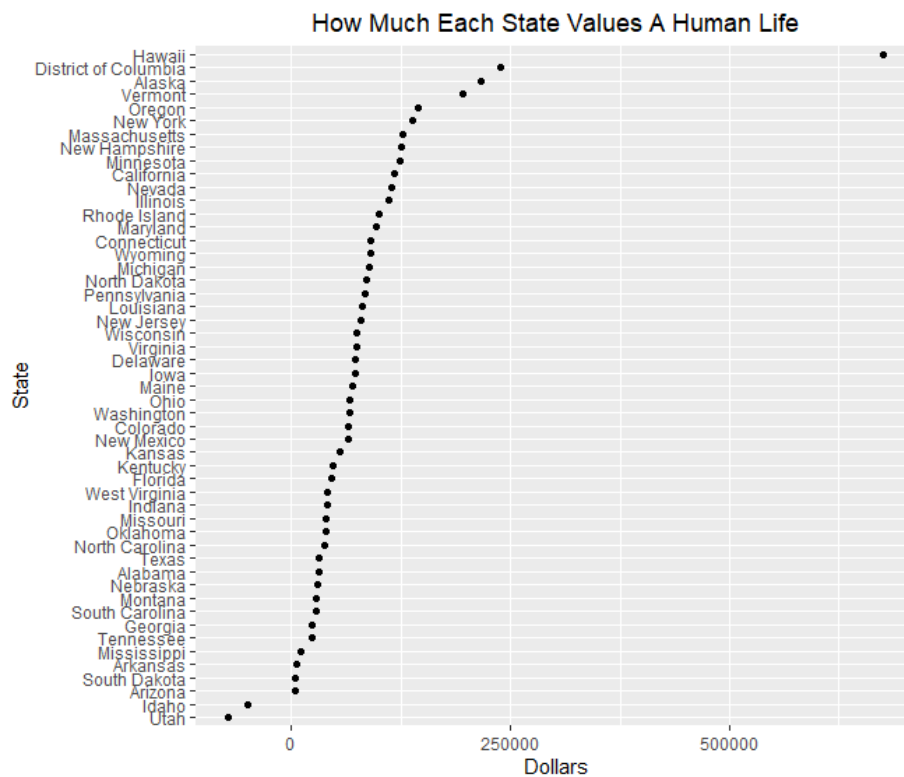


Fig. 4. The above graph highlights the value in dollars that each state placed on a human life when considering the public health and economic tolls of COVID-19.

As the above graph illustrates, no state valued human lives as much as the federal government has expressed in the past. The average state only valued a human life at $82,190.97. This is equivalent to roughly 8 jobs lost for every death, rather than the 712 suggested by calculations made using the federal values.

Ultimately, our findings enabled us to take a deeper look into the trade off between low income job loss and COVID- 19 deaths. We found significant differences in the regions' ratios of COVID-19 deaths and low income job loss. East North Central, West South Central, and Northwest Mountain did not have as much of a tradeoff as other regions, likely due to these areas prioritizing the economy. Certain states had counties that defied expectations and actually produced a net increase of low income jobs. Lastly, after creating a financial equation for the entire United States to compare to the individual state ratios, we found that each state had a high public health toll in relation to low income workers, while the economic toll suffered was not as severe.

Our tradeoffs and calculated ratios seem to reveal a telling narrative—that states might not have cared about the lives of their citizens as much as one would like to believe, and that their efforts fall short of ideal in the pursuit of the preservation of human life amidst the pandemic. Coastal areas had higher tradeoffs, indicating that they were more willing to sacrifice their economies for the sake of maintaining public health, but even so, no state was even close to valuing human life at the federally estimated 7.4 million dollars. This illustrates that states did not care as much as they should have about the public health crisis caused by COVID-19, and instead, chose to keep their economies intact. Every citizen deserves to understand the efforts that their government has put forth during this time and we hope that this information can help educate state governments on the effects of their actions so they can make more informed decisions in the future if another pandemic occurs.

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