

An analysis of local health, economic, and political factors on low income job loss rate in the United States during the COVID-19 pandemic

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Abstract. Unemployment rate suddenly spiked in the US after COVID-19 onset. This project aimed to discover factors that most impact low income job loss rate (LI-JLR) as well as compare LI-JLR by state. We used LI-JLR data between Feb-Apr 2020 from the Bureau of Labor Statistics (BLS) and built a linear mixed effects model, with a random intercept by state. We found that stricter lockdown policies towards COVID-19 better inform LI-JLR, while health and social factors may predict return to work rates.

1 Background & Introduction

With the spread of COVID-19 in the US, unemployment spiked nation-wide. Various factors such as industry type, sex, education, income levels, may have impacted the severity of job loss due to COVID-19. Further, empirical evidence shows improvements and investments in healthcare infrastructure are associated with increased job return rates after recession¹²³⁴. We decided to focus on LI-JLR because low wage jobs usually require close physical distance and suffered the most losses due to COVID-19. Our project aims to explore 1) which factors most impact and/or mitigate LI-JLR due to COVID-19, and 2) which states experienced greater LI-JLR due to COVID-19.

2 Methods

LI-JLR (defined as jobs earning < \$40,000 per year) data was retrieved from the Urban Institute between February 2020 and May 2020. Health, education, and other socioeconomic factors were retrieved from the US Department of Agriculture, and US County Health Rankings & Roadmaps. Due to the natural grouping of States we decided on a Gaussian mixed effects model, predicting logit-transformed LI-JLR response (approx. Gaussian distributed). We used PCA for preliminary feature selection and to control for model collinearity. Out of 250+ features, we fit four fixed effects (% high school graduation, % poverty, % fair or poor health, and COVID-19 case rate) and a random intercept for State. We further explored relationships between time to issue stay-at-home orders and political leaning and LI-JLR for each state.

3 Results

The model showed that high school graduation rate (1.59518, s.e.=0.08103) and rate of fair or poor health (0.78036, s.e.=0.16834) are positively associated with LI-JLR, while poverty rate is negatively associated (-0.51393, s.e.=0.09237). The State random intercept explained $\approx 86.2\%$ of all variation. The COVID-19 case rate per county did not clearly affect LI-JLR. Earlier stay-at-home orders were associated with higher LI-JLR. Interestingly, states with a higher % of Democrat leaning population show greater LI-JLR.

4 Discussion

Interestingly, we saw that states with better health and social outcomes suffered from greater LI-JLR. While seemingly counterintuitive, trends in LI-JLR may be better explained by political leaning and restrictiveness of COVID-19 policy. The longer people are forced to stay at home, the more likely revenue and job loss is incurred by businesses requiring social contact. In fact, it may be that the health and socioeconomic outcomes are correlated with pre-existing government policies, funding, and laws of each state. Therefore, we suggest that trends in LI-JLR due to COVID-19 are better explained by political factors, and that socioeconomic outcomes are potentially also governed by underlying policy decisions.

5 Conclusion

Ultimately, political factors better illustrate trends in LI-JLR during COVID-19, whereas health and socioeconomic factors better inform rates of job return post-COVID-19. We were limited to analyzing data in midst of the pandemic, which may be incomplete. In the future, models can include these two political factors to more rigorously investigate impact on LI-JLR accompanied with a more complete dataset.