ASSESSING COVID-19 INFECTION RATES IN THE URBAN & RURAL LOW INCOME COUNTIES IN THE UNITED STATES

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BACKGROUND

Since the emergence of COVID-19, more than 600k people have died and more than 35 million have been infected by the virus. According to CDC, there is a significant disparity in the distribution of COVID-19 infection by income, race, and ethnicity. Low income groups are known to be disproportionately affected by the pandemic. Additionally, we believe there is a disparity in the infection rate among low income groups in rural and urban america.

PROBLEM

There is a statistical significant difference in the the COVID-19 infection rates of rural and urban counties among low income groups. Our project is hoping to show the various demographic variables such as income, urbanization, and political affiliation played the role in the distribution of reported cases.

SOLUTION

We did a comprehensive analysis on how cases of COVID-19 are distributed among various demographic groups. We hope our findings will help stakeholders such as policy makers, civic and government organization address the current disparities and to be better prepared for a possible pandemics.

3,143 Total Counties

94% Counties Analyzed

918 Low Income Counties

33,057,752 Total Cases June 2021

1706 Rural Counties*

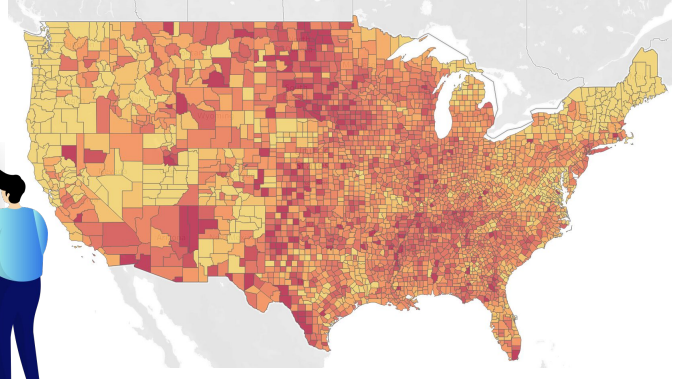
DATA

We used publicly accessible datasets from the US Census Bureau, Boston University, Johns Hopkins University and Centers for Disease Control (CDC) to prove our hypothesis. Using EDA (Exploratory Data Analysis) in Python and MS Excel, we summarized our dataset by urban classification and by median income at the state and county level. We also incorporated the covid infection rates in relation to political affiliations in Blue vs Red Counties.

CHALLENGES

Insufficient access to disaggregated data and lack of time prevented us from further exploring and analyzing other driving factors in the infection rates.. Based on this limitation, we reformulated our hypothesis to exclude the race variable due to the complexity of gathering accurate death data per race per county.

CASES PER 50,000 - JUNE 2021



HIGHLIGHTS

- COVID-19 has impacted the world in ways unimagined for 20+ months since 2019
- It is a widely accepted that lower income and minority populations are impacted more by COVID-19 than other socioeconomic groups
- There is a statistically significant difference in rural and urban counties among the low income population
- As global citizens, we owe it to ourselves to identify and address disparities that will ultimately impact us all, regardless of socioeconomic class or social status

RESULTS & DISCUSSION

Results indicate the following:

1. When testing the population sample as a whole, urban low income counties have a higher infection rate than their rural counterparts
2. However, when testing per population ratio or per 50,000 people, the findings are the exact opposite.

We rejected the null hypothesis. We defined our statistical significance as $p<0.05$. We used an analysis of variance (ANOVA) to analyze the effect of more than one categorical independent variables, on our dependent variable — total cases per county. While the infection rate was more experienced by poorer and more rural areas as of June 30th, 2021, disparities in COVID-19 infections exist beyond those explained by differences of income and urban classifications.

CASES BY URBAN-RURAL CLASSIFICATION