# Louisiana COVID-19 Risk Factor Analysis

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## Introduction

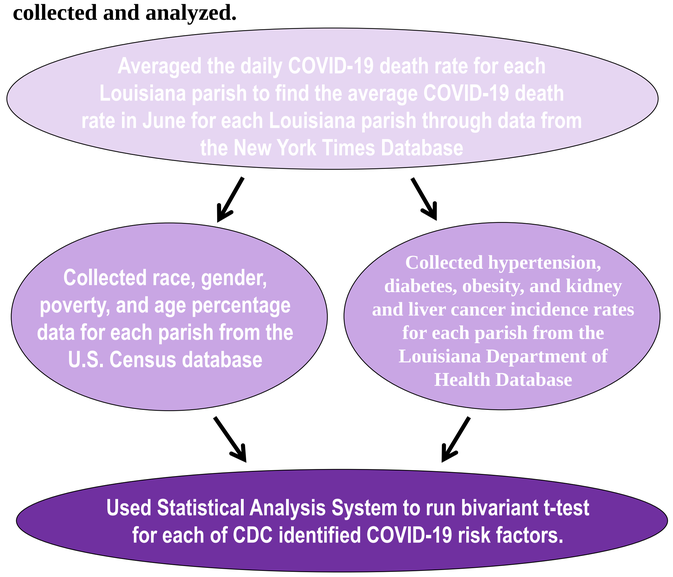
- Novel coronavirus has emerged as one of the world's largest public health crises of the century.[1]
- It has infected over 11 million people and caused over $3.5 trillion in economic impact.[2]
- With such a large impact, it has become imperative to identify high risk populations in order to slow the spread of disease.
- The CDC has identified obesity status, diabetes, heart conditions, and kidney and liver cancer to be overall risk factors for experiencing severe illness from coronavirus.[1]
- Identifying which risk factors are most applicable to Louisiana would allow policy makers in Louisiana to more effectively cater interventions for Louisiana.

## Objective

- The study objective is to identify possible COVID-19 risk factors for Louisiana.
- **Hypothesis:** Not all the CDC identified risk factors will be statistically significant for Louisiana.

## Methods

**Figure 1: Figure depicting the order in which the data was collected and analyzed.**




- Over 1,900 data points were collected to calculate the average COVID-19 death rates. The COVID-19 death rate was defined as the number of COVID-19 deaths per 100,000 people.
- Incidence rate for kidney and liver cancer was defined as the 2010 annual incidence rate per 100,000 people.
- T-tests and linear regression models were used to analyze the data for significance.

## Results

**Table 1: Significant data for parishes with top three COVID-19 death rates compared to Louisiana and U.S. averages.**

| | COVID-19 Death Rate | Aged Over 65 | Diabetes | Obesity | Hypertension | Liver Cancer Incidence Rate | Kidney Cancer Incidence Rate |
|---|---|---|---|---|---|---|---|
| St. John the Baptist | 193.3 | 17.7% | 14.4% | 35.8% | 41.6% | 8.7 | 29.3 |
| Bienville | 179.3 | 21.7% | 14.0% | 38.2% | 45.5% | <3 | 26.6 |
| East Feliciana | 161.4 | 18.4% | 17.2% | 42.1% | 43.2% | <3 | 24.1 |
| Louisiana Average | 54.0 | 17.0% | 12.9% | 36.1% | 40.2% | 7.4 | 21.5 |
| United States Average | 33.9 | 16.5% | 10.5% | 40.0% | 45.0% | 8.3 | 16.1 |
| P-Value | | <.001 | <.001 | <.005 | <.05 | <.001 | <.001 |

**Risk Factor Analysis (Table 1):**

- P-Values listed indicate significant correlation between COVID-19 death rate and the tested risk factor.
- In comparing the U.S. averages to the Louisiana averages, Louisiana had a significantly higher average COVID-19 death rate.
- Louisiana was also found to have significantly higher percentages of those aged over 65, diabetics, and kidney cancer incidence rates.
- St. John the Baptist parish had the highest COVID-19 death rate and kidney cancer incidence rate in the state.

**Figure 2: Analysis of correlation between COVID-19 death rate and percent black population.**

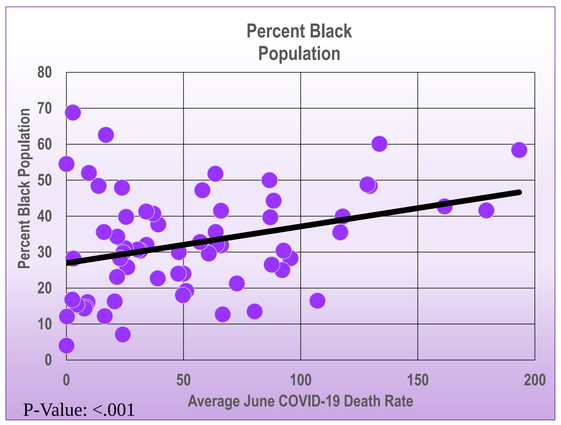
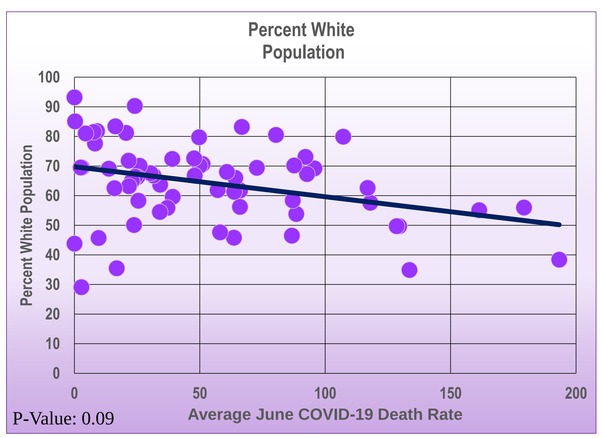


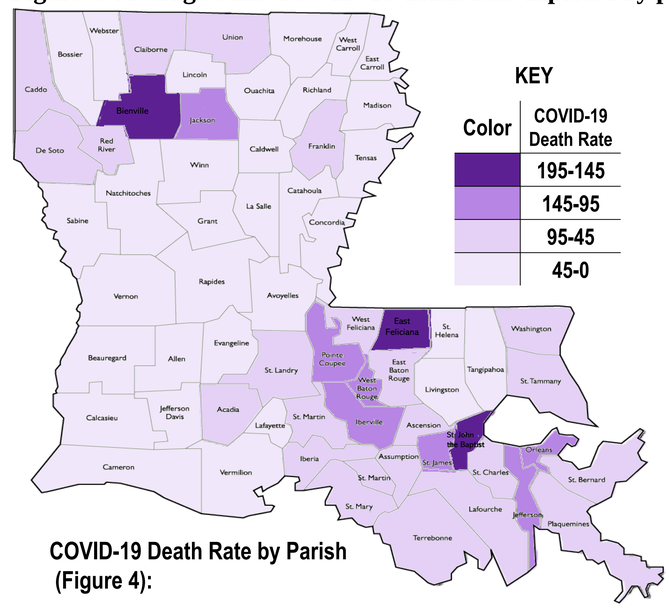

**Figure 3: Analysis of correlation between COVID-19 death rate and percent white population.**




**Analysis of Correlation (Figures 2 and 3):**

- Significant correlation was found between percent black populations and COVID-19 death rates.
- No significant correlation was found between percent white populations and COVID-19 death rates, indicating a racial disparity within the state.
- Significant correlation to the Louisiana COVID-19 death rate was also found with lung cancer, percent with college education, and percent in poverty.

**Figure 4: Average June COVID-19 death rate depicted by parish**




**COVID-19 Death Rate by Parish (Figure 4):**

- The figure above depicts the average COVID-19 death rate by parish in Louisiana for the month of June.
- The key illustrates the various ranges of the COVID-death rate represented by each color.
- St. John the Baptist parish was found to have a significantly higher average COVID-19 death rate at an average of 193.276 COVID-19 deaths per 100,000 people.
- Tensas and Cameron parish tied for having the lowest COVID-19 death rate at averages near 0 COVID-19 deaths per 100,000 cases.

## Conclusions

- Overall, all the CDC identified risk factors were found to be significant for Louisiana populations.
- Other factors such as lung cancer incidence, poverty percentage, and percent with college education were also found to be correlated.
- The black population percentage was significantly correlated with higher COVID-19 death rates, but no such correlation was found for white populations. This may indicate a racial disparity.
- St. John Parish had the highest overall COVID-19 death rate in the state and had the highest kidney and liver cancer rate of the top three parishes, which may be related to chloroprene production in the region.

## References

1. "People Who Are at Higher Risk for Severe Illness." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 25 June 2020, www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html.
2. Policy, Research and Statistics Department, UNIDO. "Coronavirus: the Economic Impact – 10 July 2020." *UNIDO*, 10 July 2020, www.unido.org/stories/coronavirus-economic-impact-10-july-2020.

**This research was supported through the LSU Health Sciences Center, School of Medicine.**