

# Racial Disparity in Covid-19 Deaths

Is there a significant difference between Black Americans' proportion of the total Covid-19 death and the proportion of the total Population in each state?

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## Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease that has spread globally, resulting in an ongoing pandemic causing more than 5.45 million cases (As of 25 May 2020) over across 188 countries and territories. In the United States data<sup>1</sup> suggests Black populations have been disproportionately affected by Covid: For each 100,000 Americans, about 50 Blacks have died from the coronavirus, a mortality rate more than any other race. Thus I was interested in investigating the racial disparity and specifically answering **if there is a significant difference between Black Americans proportion of the total Covid-19 death and the proportion of the total Population in each state?**

## Data and Methods

When we look at each of the states since there might not be a uniform distribution of race in the population, we should observe the proportion of total deaths compared to the proportion of the total population in that state. The dataset<sup>1</sup> has data of 41 states (that have reported race data) and for each state there is the Black American's percentage of total death and percentage of total population. A row of non state date was removed from the dataset.

Using percentage of total death and percentage of total population, two histograms were created.

Then I set up a null and alternate hypothesis, and then used two sample t-test to investigate the hypothesis.

$H_0$  : There is no difference between the total percentage of Black Covid-19 death and the proportion of Black Population

$H_a$  : There is a significant difference between the total percentage of Black Covid-19 death and the proportion of Black Population

Another graph has been plot to see and compare the difference between the (%) of total death and the (%) of Black Population in each state.

## Results and Conclusion

From the two sample t-test, we get a **p-value** of **0.002747** which is less than the threshold significance level of 0.05. Thus we can **reject** the null hypothesis and accept the alternate hypothesis that there is a significant difference between the total proportion of Black Covid-19 death and the proportion of Black Population. In another word, in general Black populations have been disproportionately affected by Covid-19 regardless of their proportion of total population.

The study had its shortcoming in that not all the states reported race data and of those who did there were fraction of total cases where the race was unknown.

## References

<sup>1</sup>APM, "The color of coronavirus:COVID-19 deaths by race and ethnicity in the U.S.", APM research lab, May 20 2020, <https://www.apmresearchlab.org/covid/deaths-by-race>

