

Coronavirus (COVID-19) has been a current issue worldwide, and the prevalence of COVID-19 comparing to that of seasonal influenza (flu) has been an important topic in the public community. This study focuses on comparing national COVID-19 to flu in order to explore the epidemical features of COVID-19 for better understanding of this virus. The pandemic trend of Oklahoma has also been compared to national data to demonstrate the state's standing in this pandemic event. Data were retrieved from the CDC, Worldometer, the COVID Tracking Project databases, and the Oklahoma Executive Order Report to look at the cases of cumulative, daily active, recovery, deaths, hospitalizations, ICU, and ventilator applications from 3/28/2020 to 10/31/2020. An unpaired, two-tailed, student t-test was used for statistical analysis. The results showed that there were two different COVID-19 peak phases which were phase one (P1) from 3/28/2020 to 6/15/2020 and phase two (P2) from 6/16/2020 to 10/31/2020. In general, COVID-19 showed higher rates for cumulative cases and hospitalizations than flu ( $p < 0.01$ ). However, the mortality of each virus showed no significant difference in the study. COVID-19 showed higher rates in the daily change of cumulative and recovery cases in P2 than in P1 ( $p < 0.01$ ), and no significant differences in daily active cases and death rate ( $p > 0.05$ ). The COVID-19 hospital admissions in both P1 and P2 had no remarkable difference; however, the ICU and ventilator cases in P2 had decreased ( $p < 0.01$ ). Upon comparing the data of Oklahoma to the nation, the confirmed positive cases, the hospitalization rates, and the death rates were 7.48%, 7.27%, and 1.09% in Oklahoma and 7.23%, 8.13%, and 2.44% in the nation. The results indicated that COVID-19 has stronger infectious capability and severity than flu, but the same mortality. COVID-19 P2 showed a reduced severity and mortality, but an increase in infectious capability comparing to P1. Oklahoma has a similar level of confirmed and hospitalized cases but a lower death rate than the nation. This study provides a broad epidemiological view of COVID-19 and solid evidence for future studies and preventions of this virus.

## Introduction

Coronavirus (COVID-19) has been a current issue worldwide, and the prevalence of COVID-19 comparing to that of seasonal influenza (Flu) has been an important topic in the public community. This study focuses on comparing national COVID-19 to Flu in order to explore the epidemical features of COVID-19 for better understanding of this virus. The pandemic trend of Oklahoma has also been compared to national data to demonstrate the state's standing in this pandemic event.

## Objectives

1. Comparing the pandemic trends of national COVID-19 to seasonal influenza (Flu).
2. Comparing the pandemic trends of Oklahoma State to the whole nation.

## Materials and Methods

### Database Resources:

1. The Centers for Disease Control (CDC): <https://www.cdc.gov/nchs/nvss/index.htm>
2. Worldometer: <https://www.worldometers.info/coronavirus/country/us/>
3. The COVID Tracking Project: <https://covidtracking.com/>
4. The Oklahoma Executive Order Report: <https://oklahoma.gov/covid19.html>

### Data Coverage:

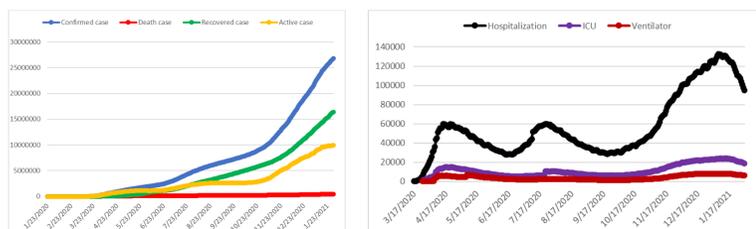
Influenza (Flu): October 5, 2019 to September 26, 2020  
 COVID-19: January 23, 2020 to October 31, 2020

### Data Analysis:

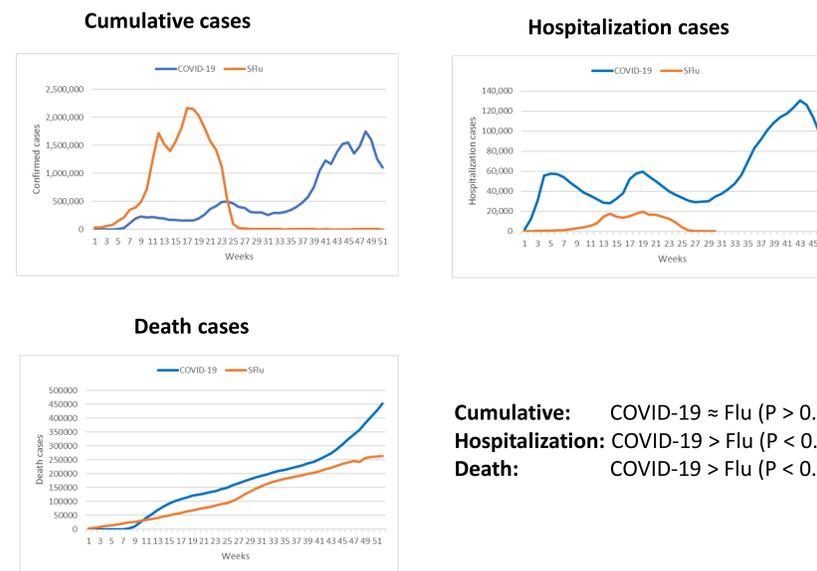
Microsoft Excel: student t-test

## Results

### 1. Current pandemic trends of COVID-19 in USA (end by 1/31/2021).



### 2. Comparison of COVID-19 to Flu (2019-2020) weekly changes in USA



**Cumulative:** COVID-19  $\approx$  Flu ( $P > 0.05$ )  
**Hospitalization:** COVID-19  $>$  Flu ( $P < 0.01$ )  
**Death:** COVID-19  $>$  Flu ( $P < 0.01$ )

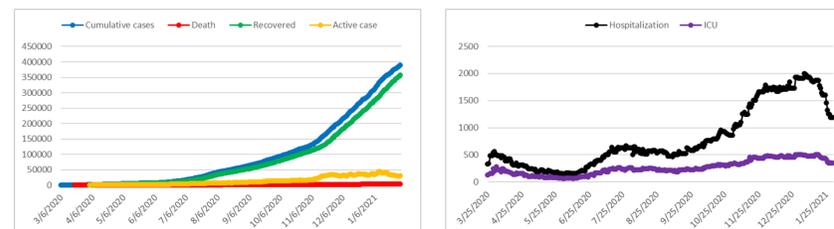
### 3. Comparison of COVID-19 daily changes in different phases (P1 vs. P2)



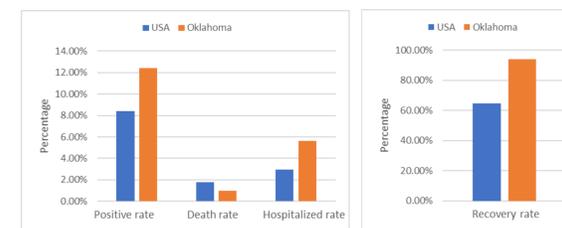
**Cumulative:** P2  $>$  P1 ( $P < 0.01$ )  
**Recovery:** P2  $>$  P1 ( $P < 0.01$ )  
**Death:** P2  $<$  P1 ( $P < 0.01$ )  
**Active:** P2  $\approx$  P1 ( $P > 0.05$ )

**Hospitalization:** P2  $<$  P1 ( $P < 0.05$ )  
**ICU:** P2  $<$  P1 ( $P < 0.01$ )  
**Ventilator:** P2  $<$  P1 ( $P < 0.01$ )

### 4. Current pandemic trends of COVID-19 in Oklahoma (end by 1/31/2021)



### 5. Comparison of COVID-19 in Oklahoma State and USA (end by 2/15/21)



### Oklahoma State vs. USA

**Positive cases:** OK : USA = 1.47  
**Hospitalization:** OK : USA = 1.89  
**Death:** OK : USA = 0.55  
**Recovery cases:** OK : USA = 1.45

## Summary

- The results indicated that COVID-19 is not greatly impacted by the environment like Flu, and it does not resemble a seasonal infectious disease.
- COVID-19 is more severe than Flu in the severity and mortality.
- The results of this study have been concluded from a certain period of a calendar year, which may not reflect the complete epidemiological mechanisms.

## Future plan

With the COVID-19 pandemic still progressing, new data collection and additional studies are needed to fully understand this new disease.

## Societal impacts

Not only has COVID-19 created a long-lasting impact on the United States, but it has also greatly affected nations around the globe. The results of this study provide more insight into the true nature of COVID-19, especially as it relates to the United States. The information found in this study will be beneficial in the future studies and can be used to learn more about the progression and long-lasting effects of this disease on humans, society, and the world.

## Acknowledgement

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