

Relationship of George Floyd protests to increases in COVID-19 cases using event study methodology

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ABSTRACT

Background Protests ignited by the George Floyd incident were examined for any significant impact on COVID-19 infection rates in select US cities.

Methods Eight US cities were studied in which protestors in the tens of thousands were reported. Only cities that reside in states whose stay-at-home orders had been rescinded or expired for a minimum of 30 days were included in the sample to account for impact of growth rates solely due to economies reopening. Event study methodology was used with a 30-day estimation period to examine whether growth in COVID-19 infection rates was significant.

Results In the eight cities analyzed, all had positive abnormal growth in infection rate. In six of the eight cities, infection rate growth was positive and significant.

Conclusions In this study, it was apparent that violations of Centers for Disease Control and Prevention (CDC)-recommended social distancing guidelines caused a significant increase in infection rates. The data suggest that to slow the spread of COVID-19, CDC guidelines must be followed in protest situations.

Keywords COVID-19, public health, social distancing

Introduction

As the COVID-19 pandemic has spread around the USA, social distancing has been advocated to lower rates of infection in major cities. Epidemiology findings have probed both the infection's incubation period¹ and death rate^{2–4} but some elements associated with rates of infection are yet to be explored.⁵ Recently, rates of infection have created many hotspots around the country. The purpose of this study is to examine the impact of the George Floyd protests in relationship to the growth of infection rates for the virus.

There has been much discussion about the causality of the recent increase in infection rates for major US cities. With states reopening their economies, there has been a fear that relaxed social distancing requirements will result in an increase in new cases. This study used event study methodology to determine the abnormal growth rate that can directly be attributed to the George Floyd protests.

Methods

The eight cities shown in [Table 1](#) were studied for two parameters, estimated period for infection growth rate and 5-day abnormal infection growth rate. Data for each parameter were readily available on the Google search engine by entering the name of the city and the parameters studied. Cities were chosen due to two factors: (i) must be in a state that has reopened for at least 30 days and (ii) had documented protest in the tens of thousands. An event study methodology takes an estimation period of 30 days. In this study, the 30 days are the days after the stay-at-home order was rescinded or expired. This allows the data to account for an increase in infections due to reopening. The abnormal growth is calculated by subtracting the 5-day infection rate from the estimation period rate.

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Table 1 Comparison of infection growth rate by cities

Cities	Estimation period for daily infection growth rate	5-day abnormal growth
Atlanta	1.88%	6.12%*
Houston	2.88%	19.64%*
Jacksonville	1.89%	34.24%*
Miami	1.46%	9.76%*
New Orleans	0.31%	0.59%
Orlando	1.32%	53.07%*
Phoenix	4.53%	8.79%*
Seattle	0.85%	0.71%

$$AR_{it} = E(R_{it}) - R_{it}$$

AR_{it} —abnormal growth i on Day t .

R_{it} —actual growth i on Day t .

$E(R_{it})$ —expected growth i on Day t .

Because the data being used in [Table 1](#) were publicly available and had no identifiers, institutional review board approval was not required.

Results

The results in [Table 1](#) show that all eight cities have positive abnormal returns in the 3 weeks after the first day of protests. The 3-week mark was determined based of the data from the New Orleans Mardi Gras parades that resulted in New Orleans becoming a hotspot 3 weeks after the event. This gives time for the incubation period of COVID-19 to take effect, typically believed to occur within 14-day post-exposure. Comparing the actual growth rate of infections to the expected growth rate that was comprised of the 30-day estimation period that happened after there were no stay-at-home order in place, it was found that Atlanta, Miami, Orlando, Jacksonville, Phoenix and Houston have significant abnormal returns, whereas Seattle and New Orleans have positive but insignificant returns.

Discussion

Main finding of this study

The data set shows that the growth rate after the reopening of economies still showed positive growth infection rates for COVID-19 cases. The data show that Atlanta, Houston, Jacksonville, Miami, Orlando and Phoenix had positive and significant growth after the protests. It is interesting to note that New Orleans and Seattle, while having positive infection growth rates, findings were not significant. These were the

two cities in the data set that were previously designated as hotspots¹ and could indicate that these cities may have benefited from some degree of herd immunity or social awareness of the serious consequences from this viral infection.

What is known on COVID-19 and social distancing

There has been much discussion about the impact of social distancing on slowing both infection and death rate.⁵ Research has shown that high-density populations have greater infection rates. Further, communities that have enacted and enforced social distancing measures have shown a decrease in infection rate³ and impacted than changing landscape of public health death rate.^{6,7}

What this study adds

This advocates strongly for continued social distancing, as the protests did not follow social distancing guidelines. Also, since the protests were held outdoors, the data suggest that viral spread still is ongoing even in warm outdoor environments and that viral spread may not slow in summer months.

Limitations of this study

The study was limited by not knowing the exact number of people that were protesting and lack of contact tracing for those individuals. Also, the study was limited by the number of states that were not under stay-at-home orders for a minimum of 30 days to get a valid estimation period for the event study.

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