6-1-2020

Early COVID-19 Interventions Failed to Replicate St. Louis vs. Philadelphia Outcomes in the United States

Aliea M. Jalali
Biola University

Brent M. Peterson
Biola University

Thushara Galbadage
Biola University

Early COVID-19 Interventions Failed to Replicate St. Louis vs. Philadelphia Outcomes in the United States

Aliea M. Jalali[1,2], Brent M. Peterson[1], Thushara Galbadage[1,*]

[1] Department of Kinesiology and Health Science, Biola University, La Mirada, CA, United States

[2] College of Nursing and Health Care Professions, Grand Canyon University, Phoenix, AZ, United States

*** Correspondence:**

Thushara Galbadage

don.galbadage@biola.edu

Keywords: Coronavirus, Spread, Intervention, Prevention, Outcomes, Evidence-based practice, Health Disparities, Influenza virus

Abstract

The Coronavirus disease 2019 (COVID-19) pandemic has elicited an abrupt pause in the United States in multiple sectors of commerce and social activity. As the US faces this health crisis, the magnitude, and rigor of their initial public health response was unprecedented. As a response, the entire nation shutdown at the state-level for the duration of approximately one to three months. These public health interventions, however, were not arbitrarily decided, but rather, implemented as a result of evidence-based practices. These practices were a result of lessons learned during the 1918 influenza pandemic and the city-level non-pharmaceutical interventions (NPIs) taken across the US. During the 1918 pandemic, two model cities, St. Louis, MO, and Philadelphia, PA, carried out two different approaches to address the spreading disease, which resulted in two distinctly different outcomes. Our group has evaluated the state-level public health response adopted by states across the US, with a focus on New York, California, Florida, and Texas, and compared the effectiveness of reducing the spread of COVID-19. Our assessments show that while the states mentioned above benefited from the implementations of early preventative measures, they inadequately replicated the desired outcomes observed in St. Louis during the 1918 crisis. Our study indicates that there are other factors, including health disparities that may influence the effectiveness of public health interventions applied. Identifying more specific health determinants may help implement targeted interventions aimed at preventing the spread of COVID-19 and improving health equity.

Introduction

As the first wave of Coronavirus Disease 2019 (COVID-19) pandemic began to sweep through the United States (US) in March 2020, multiple public health measures were enforced across the nation in an unprecedented manner. However, by the end of June 2020, the US remained one of the largest COVID-19 epicenters in the world, with more than 2.5 million confirmed cases and the number of new daily cases reaching highs in certain states and the US (CDC, 2020b). Now, faced with the renewed threat of experiencing prolonged second wave, many states are reintroducing partial shutdown measures, which are examples of non-pharmaceutical interventions (NPIs). During the first wave of this pandemic, the US strictly implemented multiple NPIs to help mitigate the spread of the disease, and reduce the number of COVID-19-related deaths. Herein we discuss the successes and failures of the implemented evidence-based public health practices amid a nationwide public health crisis that abruptly brought the nation and its economy to a screeching halt.

As of February 2020, while China, Italy, and Spain experienced the turmoil of being the epicenters for the COVID-19 pandemic, the US had only about 50 confirmed cases, and the national populace was nearly unaffected. No one could have anticipated how life was about to change in the ensuing months. In March 2020, different states started to sound the alarms, and place their respective constituencies under states of emergency. After that, increasingly rigorous preventative measures that affected the function and dynamics of societal interaction were implemented. These interventions, aimed at facilitating social distancing and preventing the spread of COVID-19, can be categorized into four broad measures (Galbadage et al., 2020b; Wilder-Smith and Freedman, 2020). These are (1) screening and testing, (2) prevention of mass gatherings, (3) stay at home orders, and (4) the use of face masks. In the US, 44 states of the 50 states

implemented statewide stay at home orders at the early stages of the COVID-19 pandemic, paralleling other measures listed above (Figure 1, Supplemental Table 1). The mean duration of stay at home orders for all US states was 49.5 days (SD ± 16.5) (median 50 days, range 25 to 81 days).

While seemingly sudden and societally intrusive, historical precedent and evidence-based practices have guided these measures. For example, a century ago, the world experienced a devastating toll on lives caused by the 1918 influenza pandemic. In response to this pandemic, health officials implemented a broad range of NPIs according to the then available understanding of disease transmission (Mills et al., 2004; Ferguson et al., 2005; Markel et al., 2006). Furthermore, studies comparing public health measures implemented by several cities across the United States and other nations such as England further illustrated how these measures helped reduce the spread of the 1918 influenza pandemic and decrease mortality rates (Ferguson et al., 2006; Bootsma and Ferguson, 2007; Handel et al., 2007; Hatchett et al., 2007).

Studies on the 1918 influenza pandemic have focused on contrasting NPIs implemented by two US cities, St. Louis, MO, and Philadelphia, PA. St. Louis imposed strict preventative interventions early on, while Philadelphia minimally applied restrictions at a much later date. Accordingly, St. Louis had a milder outbreak, whereas Philadelphia experienced significantly higher mortality rates (Hatchett et al., 2007). These outcomes observed in the 1918 influenza pandemic helped guide the widely-adopted rigorous public health measures against COVID-19. Hatchett et al. (2007) also identified four critical factors that helped determine the success of the control of the pandemic dissemination. These factors were (1) implementation of early and rapid interventions, (2) duration the responses, (3) multiple concurrent interventions, and (4) the intensity of the interventions implemented.

Other studies supported these conclusions while emphasizing the effectiveness of early interventions, but also noted that stringent preventative measures could leave many more susceptible individuals once these NPIs are relaxed (Kalnins, 2006; Bootsma and Ferguson, 2007). During the 1918 pandemic, most of the US cities maintained preventative measures for about two to eight weeks (Hatchett et al., 2007). However, cities that relaxed NPIs earlier experienced increased case numbers resulting in second wave resurgences. An inverse relationship between the intensity of the first and second waves of the pandemic was also observed. These observations were partly due to the smaller proportion of susceptible populations present in cities after a strong first wave of the disease (Bootsma and Ferguson, 2007; Hatchett et al., 2007).

Here we compare and contrast public health interventions implemented in the US during the first wave of the COVID-19 pandemic, focusing on four states: New York, Florida, Texas, and California. These states comprised some of the most populous counties in the US and were affected sharply by the COVID-19 pandemic. In addition, our group studied the case rates of COVID-19 before, during, and after these measures were implemented, and then compared it to the outcomes of St. Louis, and Philadelphia, during the 1918 influenza pandemic (Figure 2). While variation in the timing and the intensity of the public health measures applied was observed, all four states implemented very similar interventions. Our comparisons show that the early evidence-based interventions implemented by the US were not adequately able to replicate the desired outcomes of St. Louis vs. Philadelphia and curtail the COVID-19 pandemic.

Public Health Response to COVID-19

As mentioned earlier, responses to earlier pandemics in the US included school closures, restaurant restrictions, emergency declarations, gathering restrictions, stay at home orders, and non-essential business closures (Gupta et al., 2020). The COVID-19-related responses have been

mainly relegated to state-level decision making and based on necessity and intensity within each state.

Screening and Testing

Targeted screening for COVID-19 began in California and New York with Los Angeles (LAX), San Francisco (SFO), and New York (JFK) airports for travelers coming from Wuhan, China, starting on January 17th (CDC, 2020e). The first reported case in the United States occurred on January 26th in California. New York, Florida, and Texas all had initial cases within the first week of March (Figure 1c). State-funded testing sites for all four states implemented utilized drive-through and walk-up options to reduce numbers of potentially infected individuals from seeking assistance at healthcare facilities. Early in the pandemic, testing was limited, and priority was given to high-risk individuals, including symptomatic patients, healthcare workers, first responders, essential workers, and individuals in contact with other high-risk individuals. As more tests were readily available, fewer restrictions were placed on who was able to get tested (Florida Department of Health, 2020; State of California, 2020b; State of New York, 2020a; Texas Department of State Health Services, 2020). In addition to walk-up and drive-through sites, mobile testing sites were also deployed in Florida and New York to increase the number of tests administered (City of New York, 2020; Florida Division of Emergency Management, 2020). Each state also implemented contact tracing to identify potentially exposed individuals (CDC, 2020c).

Mass Gatherings

The next primary public health intervention implemented across all four states was the cancellation of mass gatherings of 250 individuals, followed by 50 individuals per location (Supplemental Tables 2-5). These orders followed shortly after initial cases were identified in each state. Events that brought in large amounts of attendance, such as concerts, sporting events, and

festivals were canceled first. Next, the states incrementally decreased the number of people allowed to gather in one location until, eventually, the state recommended that people should only interact with those who were within the same household.

Stay at Home Orders

One of the most rigorous measures utilized during COVID-19 was the stay at home orders. California was under stay at home order for 50 days (March 19th to May 7th) (State of California, 2020a). The stay at home order in California was implemented more rigorously at the county level because the state-level order acted more as a recommendation (Supplemental Table 3). The NY State on PAUSE plan stay at home order was enforced for 68 days (March 22nd to May 28th) before the state started its Phase one reopening plan (Cuomo, 2020; State of New York, 2020b; c). Florida state stay at home order was in effect for 27 days (April 3rd to April 29th) (State of Florida, 2020). Texas implemented stay at home orders for 29 days before relaxing these measures statewide (April 2nd to April 30th) (Abbott, 2020).

Many US states enacted stay at home orders very early on in the COVID-19 transmission. States with early COVID-19 cases placed these measures before April 29th (cluster 1) and did so with a statewide case count of fewer than 2000 cases, while states that put stay at home orders after April 29th did so before reaching 5000 cases (cluster 2) (Figure 1a, Supplemental Table 1). When adjusted to the county population, these measures were implemented with case rates of below 50 cases per 10,000 (Figure 1b). The only exception was New York, which implemented these measures after 11,700 cases were confirmed. (Figure 1a).

Cloth Face Masks

On April 3rd, the Centers for Disease Control and Prevention (CDC) released its recommendation for all individuals to use cloth face masks when in public (CDC, 2020a). The

goal of this recommendation was to reduce the viral transmission from asymptomatic carriers that may unknowingly spread to disease to susceptible individuals (Esposito et al., 2020; Galbadage et al., 2020b). While the extent to which the effectiveness of this measure is debatable, it helps bring more awareness to the public and help curtail the person-to-person transmission of the virus (Eikenberry et al., 2020). California was the first to implement this statewide on April 1st, which was two days before the CDC's recommendation (Figure 1c). New York also implemented this measure as a state-level order, but it happened two weeks after the CDC's recommendation. Florida and Texas only recommended face coverings at the state-level but was mandated in most counties (supplemental Tables 4 and 5).

Differences in Statewide Responses to COVID-19

The public health interventions implemented across the four states, New York, California, Florida, and Texas, were very similar. Any differences stem from the relative time of implementation and the intensity of measures taken. Unfortunately, New York was one of the first states severely affected by COVID-19 and was likely too late to implement these preventative measures (Figure 1a and b, Figure 2 and b). The initial wave of COVID-19 in New York, therefore, resembled that of Philadelphia during the 1918 pandemic. California, on the other hand, initiated precautionary measures early and seemed to follow the outcomes of St. Louis, at least in the initial stages (Figure 2, c, and d). Regulations in both of these states were more stringent, and often had consequences such as fines and jail time tied to not adhering to them.

In Texas and Florida, the implementation of specific public health interventions was less rigorous as compared to California and New York. In Texas, for example, the regulations were not implemented as quickly or as firmly at the state-level. Some public health interventions, such as the ban on gathering, stay at home orders, and wearing cloth face masks, may have been perceived

as violations of individual liberties and disrupting businesses. In many ways, the small-government philosophy of these states left essential decisions and actions to be made at the county-level. Around the time many states went into shut down mode, spring break activities remained open in Florida. The decision to not shut down before spring break was made in support of the state's economy. It was only after large tourist attractions, including Universal Studios and Disney World, decided to close were more rigorous measures put in place in Florida.

The Spread of COVID-19 Across States and Counties

During the first months of COVID-19, the disease spread rapidly across the United States. In New York, the number of positive cases grew exponentially over the first month of the pandemic, especially in the New York City area and surrounding boroughs. However, unlike other states, the number of daily cases in New York has decreased consistently since the end of April. In California, Florida, and Texas, the number of daily cases has continued to increase over time at a slower rate compared to New York. To better understand the dynamics of COVID-19 spread in each of these states, we reviewed the number of cases and deaths in the six most populous counties in each of these states (Figure 2).

In New York, the most populous counties all experienced a similar first wave of COVID-19, with a peak of about 100 cases per 10,000 people in early April (Figure a). Most counties in the state of California continued to have a relatively slow, but steady rise in the number of cases, making it difficult to distinguish between a first and a second wave (Figure 2c). We observed a similar pattern in the counties in Florida and Texas, except Miami-Dade County in Florida, which showed a peak case rate of about 15 cases per 10,000 people in early April (Figure 2c, e, g). Among these states, it is clear that New York experienced a robust first wave and a negligible second wave of the COVID-19 pandemic. While California, Florida, and Texas were spared from a significant

first wave with cases rate peaking at less than 20 cases per 10,000, they are now facing a much higher risk for a prolonged second wave of the disease.

US COVID-19 Interventions Failed to Replicate 1918 Pandemic Outcomes

In the COVID-19 pandemic, the goal of effective public health preventative measures implemented was to mitigate and contain the spread of the disease. In the US, for the most part, public health interventions followed the principles of effective NPIs. They were implemented early on in the pandemic, using multiple preventative measures, with high intensity and for average durations longer than 45 days (Figure 1, Supplement Table 1). The exception to this was New York, which delayed the initiation of these measures (Figure 1a and b). This caused New York to experience a peak first wave, with hospitals reaching their capacity and a peak number of deaths occurring during mid-April (Figure 1b). However, New York enforced its preventative measures for close to three months, which in turn helped them bring their daily case rates to less than 5 cases per 10,000 by the end of June.

In contrast to New York, most other states followed the evidence-based recommendations, as stated above (Figure 1). This helped states "flatten the curve" to various degrees and control the initial spread of COVID-19 within their states. However, these public health interventions seemed to have only prolonged the transmission potential of the COVID-19 as states, including California, Florida, and Texas, were experiencing new daily highs in confirmed cases by the end of June 2020 (CDC, 2020b). While the general expectation was that US states would follow the outcome of St. Louis during the 1918 pandemic, they have fallen short of replicating this desired outcome. On the contrary, by the end of June 2020, many such states were reimplementing statewide partial shutdown measures to prevent a potential second wave of COVID-19.

Discussion

While the United States is now moving toward increased testing, there were some differences between how individual states responded to COVID-19 compared to countries that have already returned to pre-COVID-19 societal normality. In Iceland, for example, when cases were identified, public health officials implemented the following strategies, 1) quarantine requirements for international travelers coming and going, 2) high tracing of infection, 3) ban on gatherings larger than 20 persons, school closures with limited openings of elementary and preschools, defining areas of higher risk, and constant communication with the general public (Iceland Directorate of Health, 2020). New Zealand, another island nation with great success, was a bit more rigorous in the process by modifying and intensifying pre-existing plans for the management of influenza pandemics from previous outbreaks (Baker et al., 2020). These methods included the declaration of a national emergency, locking down the country, closing non-essential locations of work, banning social gatherings, extreme restrictions on travel, and closure of all schools. Furthermore, as part of this intensified strategy, border security was highly controlled. However, there are some distinct differences between Iceland, New Zealand, and the United States. For one, Iceland and New Zealand are small island nations with much smaller populations, making it much easier to implement stringent preventative measures, including better travel restrictions. Another aspect to bear in mind is the fact that with Iceland and New Zealand, orders were also able to be carried out more consistently, unlike the US, which has delegated authority to individual states.

Many other factors can play a role in explaining why the US was not able to effectively replicate the outcomes of St. Louis vs. Philadelphia in the 1918 pandemic. A primary consideration is the level of adherence to these implemented measures. Regardless of the effectiveness of these

measures, if people do not consistently comply, then outcomes can undoubtedly change. As an important note to add, numerous risk factors have been identified for COVID-19 and its clinical outcomes. These include advanced age, sex, immune-compromised status, and comorbidities, including chronic respiratory diseases, diabetes, and hypertension (Galbadage et al., 2020a; Li et al., 2020; Richardson et al., 2020). Genetic factors or social behaviors can also influence the spread of the disease. American Indian and African Americans have been reported to be five times more likely to be hospitalized for COVID-19, and Hispanic individuals are four times more likely to be hospitalized when compared to non-Hispanic whites (CDC, 2020d). Other social determinants of health, such as access to healthcare, insurance status, employment, poverty, education, and density of residential population, can also contribute to the disparities observed in COVID-19 transmission. Potential clusters of these risk factors and health determinates present in different geographic regions can lead to a disproportionate spread of the Coronavirus. These can make it more difficult to predict the outcomes of COVID-19 preventative measures implemented.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author Contributions

AJ analyzed the US public health response and helped with the figure preparation, writing, and editing of the manuscript. BP aided in intervention comparative analysis and helped with the writing and editing of the manuscript. TG aided in disease spread, and comparative analysis, and helped with the figure preparation, writing and editing of the manuscript.

Funding

No external funds were used for this study.

Acknowledgments

We thank Drs. Richard S. Gunasekera, Genti Buzi, and Biola research students JongWon See, Alexis Gulsvig, and Sumaia Khoury for their discussions and data analysis on this research topic. We also thank Dr. Ranjan S. Muttiah, Water Resources Engineer, City of Fort Worth, for his advice on reviewing COVID-19 related demographic data, and Dr. Jeffrey S. Wang, Infectious Disease Specialist at Kaiser Permanente, Anaheim, California, for his clinical insights.

Supplementary Material

The Supplementary Material for this article can be found below.

References

Abbott, G.G. (2020). *Executive Order GA14 (Relating to statewide continuity of essential services aizd activities during the COVID-19 disaster)* [Online]. Available: https://lrl.texas.gov/scanned/govdocs/Greg%20Abbott/2020/GA-14.pdf [Accessed June 26, 2020].

Baker, M., Kvalsvig, A., Verrall, A.J., Telfar-Barnard, L., and Wilson, N. (2020). New Zealand's elimination strategy for the COVID-19 pandemic and what is required to make it work. *N Z Med J* 133(1512)**,** 10-14.

Bootsma, M.C., and Ferguson, N.M. (2007). The effect of public health measures on the 1918 influenza pandemic in U.S. cities. *Proc Natl Acad Sci U S A* 104(18)**,** 7588-7593. doi: 10.1073/pnas.0611071104.

CDC (2020a). *Considerations for Wearing Cloth Face Coverings* [Online]. Centers for Disease Control and Prevention. Available: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html [Accessed June 28, 2020].

CDC (2020b). *Coronavirus Disease 2019 (COVID-19) Cases in the U.S.* [Online]. Centers for Disease Control and Prevention. Available: https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html [Accessed June 30, 2020].

CDC (2020c). *Coronavirus Disease 2019 (COVID-19) COVIDTracer 1.0* [Online]. Centers for Disease Control and Prevention. Available: https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/COVIDTracer.html [Accessed June 28, 2020].

CDC (2020d). *COVID-19 in Racial and Ethnic Minority Groups* [Online]. Centers for Disease Control and Prevention. Available: https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/racial-ethnic-minorities.html [Accessed June 26, 2020].

CDC (2020e). *Public Health Screening to Begin at 3 U.S. Airports for 2019 Novel Coronavirus ("2019-nCoV")* [Online]. Centers for Disease Control and Prevention. Available: https://www.cdc.gov/media/releases/2020/p0117-coronavirus-screening.html [Accessed June 25, 2020].

City of New York (2020). *NYC COVID-19 Citywide Information Portal* [Online]. Available: https://www1.nyc.gov/site/coronavirus/get-tested/covid-19-testing.page [Accessed June 25 2020].

Cuomo, G.A.M. (2020). *No. 202.31: Continuing Temporary Suspension and Modification of Laws Relating to the Disaster Emergency* [Online]. Available: https://www.governor.ny.gov/news/no-20231-continuing-temporary-suspension-and-modification-laws-relating-disaster-emergency [Accessed June 26, 2020].

Dong, E., Du, H., and Gardner, L. (2020). An interactive web-based dashboard to track COVID-19 in real time. *Lancet Infect Dis* 20(5)**,** 533-534. doi: 10.1016/s1473-3099(20)30120-1.

Eikenberry, S.E., Mancuso, M., Iboi, E., Phan, T., Eikenberry, K., Kuang, Y., et al. (2020). To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic. *Infect Dis Model* 5**,** 293-308. doi: 10.1016/j.idm.2020.04.001.

Esposito, S., Principi, N., Leung, C.C., and Migliori, G.B. (2020). Universal use of face masks for success against COVID-19: evidence and implications for prevention policies. *Eur Respir J* 55(6). doi: 10.1183/13993003.01260-2020.

Ferguson, N.M., Cummings, D.A., Cauchemez, S., Fraser, C., Riley, S., Meeyai, A., et al. (2005). Strategies for containing an emerging influenza pandemic in Southeast Asia. *Nature* 437(7056)**,** 209-214. doi: 10.1038/nature04017.

Ferguson, N.M., Cummings, D.A., Fraser, C., Cajka, J.C., Cooley, P.C., and Burke, D.S. (2006). Strategies for mitigating an influenza pandemic. *Nature* 442(7101)**,** 448-452. doi: 10.1038/nature04795.

Florida Department of Health (2020). *Clinical Screening Tool for Identifying Persons Under Investigation* [Online]. Available: https://floridahealthcovid19.gov/health-care-providers/ [Accessed June 26, 2020].

Florida Division of Emergency Management (2020). *Florida COVID-19 Mobile Testing Lab* [Online]. Available: https://flcovidtest-floridadisaster.hub.arcgis.com/ [Accessed June 25, 2020].

Galbadage, T., Peterson, B.M., Awada, J., Buck, A.S., Ramirez, D.A., Wilson, J., et al. (2020a). Systematic Review and Meta-Analysis of Sex-Specific COVID-19 Clinical Outcomes. *Frontiers in Medicine* 7(348). doi: 10.3389/fmed.2020.00348.

Galbadage, T., Peterson, B.M., and Gunasekera, R.S. (2020b). Does COVID-19 Spread Through Droplets Alone? *Front Public Health* 8**,** 163. doi: 10.3389/fpubh.2020.00163.

Gupta, S., Nguyen, T.D., Rojas, F.L., Raman, S., Lee, B., Bento, A., et al. (2020). Tracking Public and Private Responses to the COVID-19 Epidemic: Evidence from State and Local Government Actions. *National Bureau of Economic Research* nber.org/papers/w27027**,** Paper No. 27027. doi: 10.3386/w27027.

Handel, A., Longini, I.M., Jr., and Antia, R. (2007). What is the best control strategy for multiple infectious disease outbreaks? *Proc Biol Sci* 274(1611)**,** 833-837. doi: 10.1098/rspb.2006.0015.

Hatchett, R.J., Mecher, C.E., and Lipsitch, M. (2007). Public health interventions and epidemic intensity during the 1918 influenza pandemic. *Proc Natl Acad Sci U S A* 104(18)**,** 7582-7587. doi: 10.1073/pnas.0610941104.

Iceland Directorate of Health (2020). *Iceland's Response: Government objectives and actions* [Online]. Available: https://www.covid.is/sub-categories/icelands-response [Accessed June 28, 2020].

Kalnins, I. (2006). The Spanish influenza of 1918 in St. Louis, Missouri. *Public Health Nurs* 23(5)**,** 479-483. doi: 10.1111/j.1525-1446.2006.00586.x.

Li, L.Q., Huang, T., Wang, Y.Q., Wang, Z.P., Liang, Y., Huang, T.B., et al. (2020). COVID-19 patients' clinical characteristics, discharge rate, and fatality rate of meta-analysis. *J Med Virol*. doi: 10.1002/jmv.25757.

Markel, H., Stern, A.M., Navarro, J.A., Michalsen, J.R., Monto, A.S., and DiGiovanni, C. (2006). Nonpharmaceutical influenza mitigation strategies, US communities, 1918-1920 pandemic. *Emerg Infect Dis* 12(12)**,** 1961-1964. doi: 10.3201/eid1212.060506.

Mills, C.E., Robins, J.M., and Lipsitch, M. (2004). Transmissibility of 1918 pandemic influenza. *Nature* 432(7019)**,** 904-906. doi: 10.1038/nature03063.

Richardson, S., Hirsch, J.S., Narasimhan, M., Crawford, J.M., McGinn, T., Davidson, K.W., et al. (2020). Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. *Jama* 323(20)**,** 2052-2059. doi: 10.1001/jama.2020.6775.

State of California (2020a). *Stay home Q&A* [Online]. Available: https://covid19.ca.gov/stay-home-except-for-essential-needs/ [Accessed June 26, 2020].

State of California (2020b). *Testing and treatment* [Online]. Available: https://covid19.ca.gov/testing-and-treatment/ [Accessed June 25, 2020].

State of Florida (2020). *Executive Order Number 20-91 (Essential Services and Activities During COVID-19 Emergency)* [Online]. Available: https://www.flgov.com/wp-content/uploads/orders/2020/EO 20-91-compressed.pdf [Accessed June 26 2020].

State of New York (2020a). *COVID-19 Testing* [Online]. Available: https://coronavirus.health.ny.gov/covid-19-testing [Accessed June 25, 2020].

State of New York (2020b). *New York State on PAUSE* [Online]. Available: https://coronavirus.health.ny.gov/new-york-state-pause [Accessed June 26, 2020].

State of New York (2020c). *Reopening New York* [Online]. Available: https://forward.ny.gov/ [Accessed June 26, 2020].

Texas Department of State Health Services (2020). *COVID-19 Testing Information* [Online]. Available: https://www.dshs.state.tx.us/coronavirus/testing.aspx [Accessed June 25, 2020].

Wilder-Smith, A., and Freedman, D.O. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J Travel Med* 27(2). doi: 10.1093/jtm/taaa020.

Figures

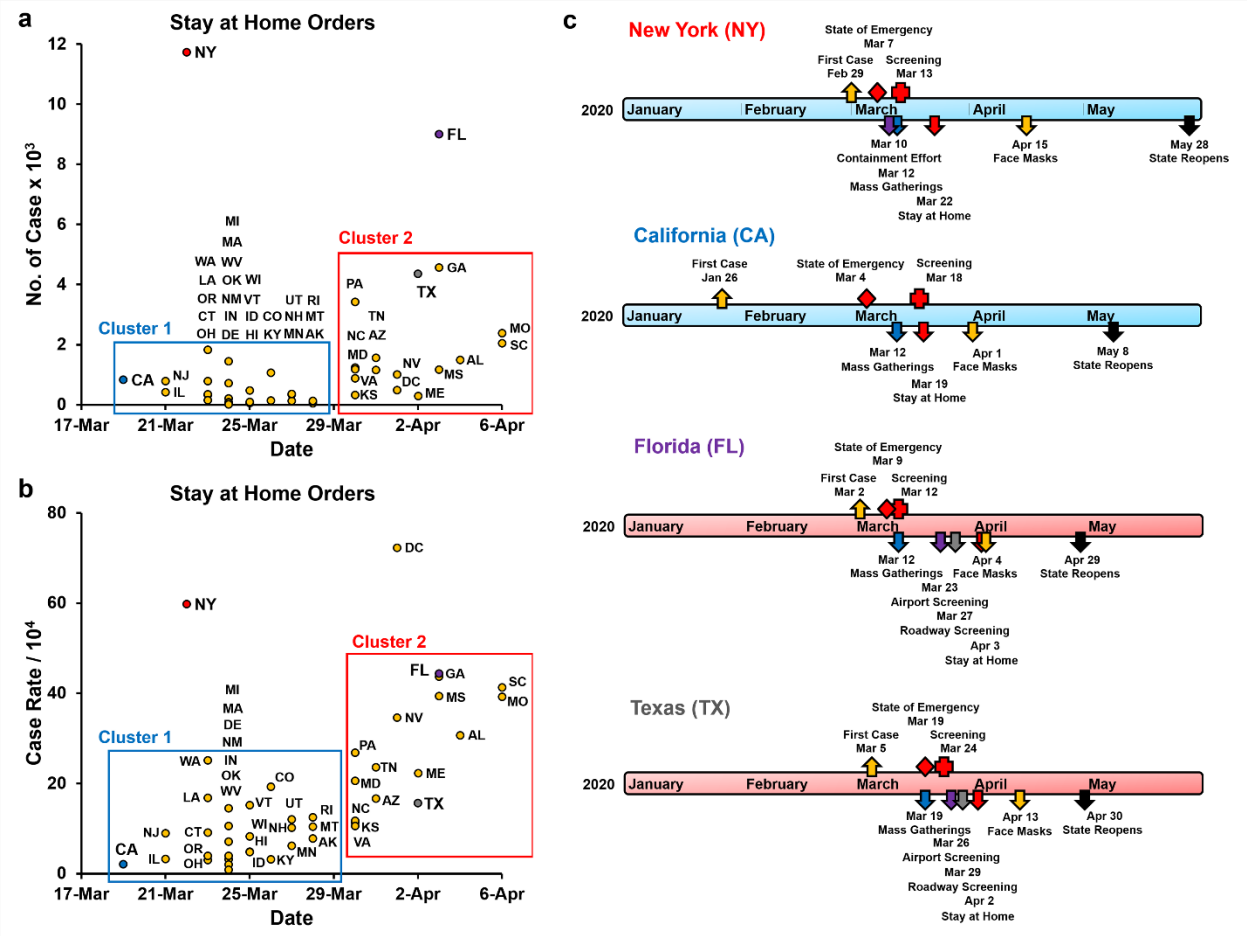
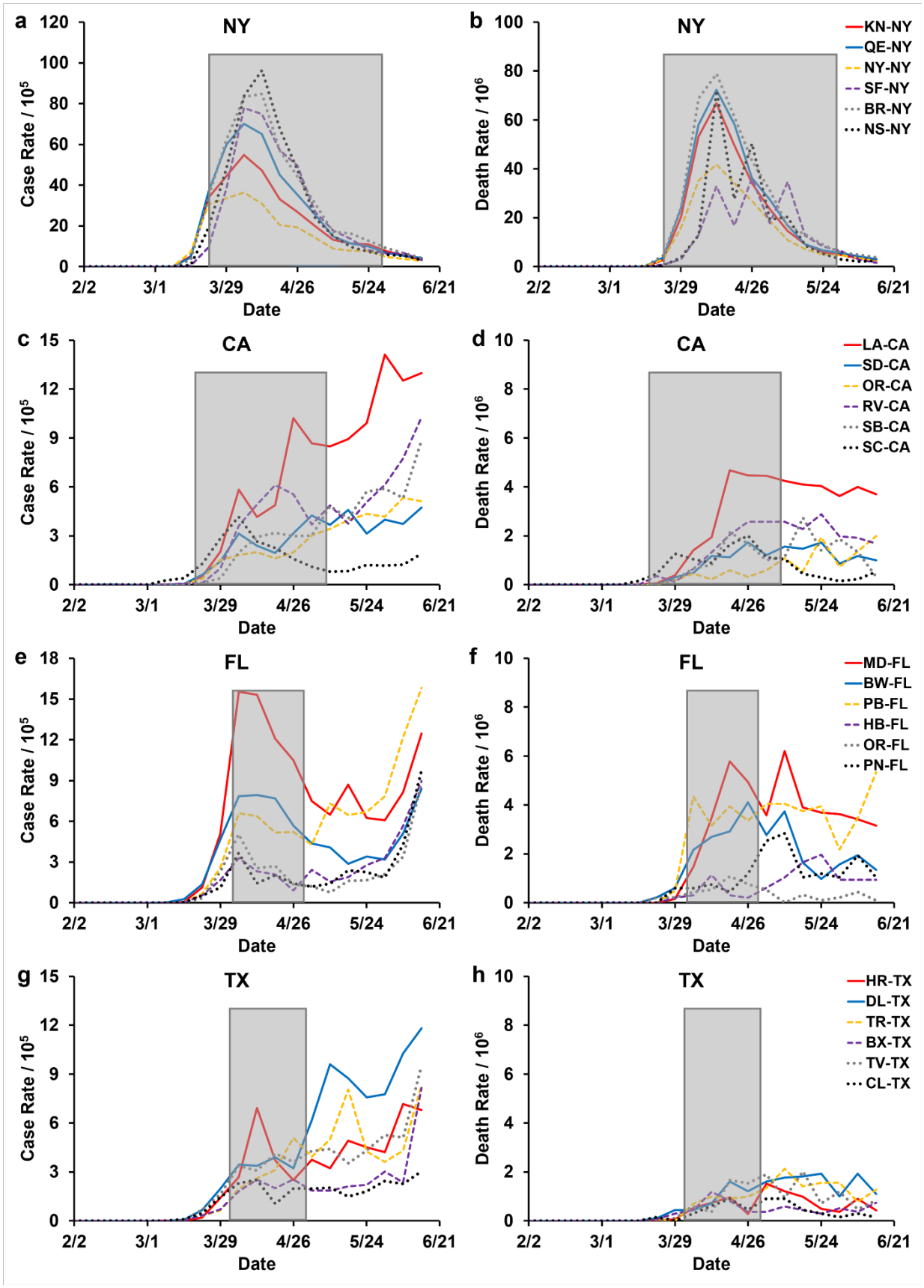


Figure 1. State and county-level public health interventions to contain the spread of COVID-19. (a) The number of lab-confirmed COVID-19 cases at the start of the stay at home orders implemented by each state (Dong et al., 2020). Arkansas, Iowa, Nebraska, North Dakota, South Dakota, and Wyoming did not issue statewide stay at home orders and are not included. Cluster 1 -states that implemented stay at home orders before March 29th, 2020, and Cluster 2 - states that implemented these orders after March 29th. (b) Case rates of lab-confirmed COVID-19 patients at the start of the stay at home orders implemented by each state. Cases rates are the number of cases per 10,000 of the county population. (c) Timeline of public health response (non-pharmaceutical interventions) in the states of New York (NY), California (CA), Florida

(FL) and Texas (TX). These interventions included screening and testing, a ban on mass gatherings, stay at home orders, requirements for face masks in public locations, and other state-specific measures. In NY contained a one-mile containment effort around hotspot New Rochelle in Westchester County. In FL airport and roadway, screening was implemented for travelers coming to FL from the tri-state region as well as other regions with a high prevalence of COVID-19. In TX Airport and roadway, screening was implemented mainly for travelers coming into TX from the tri-state area and Louisiana, where the prevalence of COVID-19 was high. TX did not enforce mandatory use of cloth facemasks at the state level. Travis (4/13), Harris (4/13), Bexar (4/16), Dallas County (4/18) ordered mandatory facemasks.


a
NY
Case Rate / 10^5
Date
b
NY
Death Rate / 10^6
KN-NY
QE-NY
NY-NY
SF-NY
BR-NY
NS-NY
c
CA
d
CA
LA-CA
SD-CA
OR-CA
RV-CA
SB-CA
SC-CA
e
FL
f
FL
MD-FL
BW-FL
PB-FL
HB-FL
OR-FL
PN-FL
g
TX
h
TX
HR-TX
DL-TX
TR-TX
BX-TX
TV-TX
CL-TX
2/2
3/1
3/29
4/26
5/24
6/21

414

Figure 2. United States COVID-19 cases and mortality in the six most populous counties in the states of New York, California, Florida, and Texas. COVID-19 Cases and deaths are presented as seven-day averages from data provided by Johns Hopkins University and the City of New York (Dong et al., 2020). Grey boxed areas are the duration statewide stay-at-home orders that were implemented by each state: New York (NY) March 22nd to May 28th (68 days), California (CA) March 19th to May 7th (50 days), Florida (FL) April 3rd to April 29th (27 days), and Texas (TX) April 2nd to April 20th (29 days). (a, c, e, g) Case rates are new confirmed COVID-19 cases per 100,000 population in the respective counties. (b, d, f, h) Death rates are new COVID-19 related deaths per 1,000,000 population in the individual counties. (a, b) Six most populous counties in the state of NY: KN-NY - Kings, QE-NY - Queens, NY-NY - New York, SF-NY - Suffolk, BR-NY - Bronx, and NS-NY - Nassau. (c, d) Six most populous counties in the state of CA: LA-CA - Los Angeles, SD-CA - San Diego, OR-CA - Orange, RV-CA - Riverside, SB-CA - San Bernardino, and SC-CA - Santa Clara. (e, f) Six most populous counties in the state of FL: MD-FL - Miami-Dade, BW-FL - Broward, PB-FL - Palm Beach, HB-FL - Hillsborough, OR-FL - Orange, and PN-FL - Pinellas. (g, h) Six most populous counties in the state of TX: HR-TX - Harris, DL-TX - Dallas, TR-TX - Tarrant, BX-TX - Bexar, TV-TX - Travis, and CL-TX - Collin.

Early COVID-19 Interventions Failed to Replicate St. Louis vs. Philadelphia Outcomes in the United States

Supplemental Material

Aliea M. Jalali[1,2], Brent M. Peterson[1], Thushara Galbadage[1,*]

[1] Department of Kinesiology and Health Science, Biola University, La Mirada, CA, United States

[2] College of Nursing and Health Care Professions, Grand Canyon University, Phoenix, AZ, United States

*** Correspondence:**

Thushara Galbadage

don.galbadage@biola.edu

Keywords: Coronavirus, Spread, Intervention, Prevention, Outcomes, Evidence-based practice, Health Disparities, Influenza virus

Supplemental Table 1. Stay at home orders put in place in each state in the United States.

US State	Description	State Date (2020)[1,2,3]	End Date (2020)[1,2,3]	Duration (Days)	Number of Cases[4]
Alabama	Stay at home	April 4	April 30	27	1495
Alaska	Shelter in place	March 28	April 21	25	58
Arizona	Stay home, stay healthy, stay connected	March 31	May 15	46	1157
Arkansas[5]	-	-	-	-	-
California	Shelter in place	March 19	May 7	50	828
Colorado	Stay at home	March 26	April 26	32	1069
Connecticut	Stay safe, stay home	March 23	May 20	59	327
Delaware	Stay at home	March 24	May 31	69	68
District of Columbia[6]	Stay at home	April 1	June 8	69	495
Florida	Stay at home	April 3	April 29	27	8999
Georgia	Shelter in place	April 3	April 30	28	4570
Hawaii	Stay at home	March 25	May 31	68	70
Idaho	Stay home	March 25	April 30	37	81
Illinois	Stay at home	March 21	May 31	72	418
Indiana	Stay at home	March 24	May 4	42	214
Iowa[5]	-	-	-	-	-
Kansas	Stay home	March 30	May 3	35	330
Kentucky	Stay healthy at home	March 26	May 10	46	143
Louisiana	Stay at home	March 23	May 15	54	787
Maine	Stay at home	April 2	May 31	60	297

US State	Description	State Date (2020)[1,2,3]	End Date (2020)[1,2,3]	Duration (Days)	Number of Cases[4]
Maryland	Stay at home	March 30	May 15	47	1239
Massachusetts	Stay at home	March 24	May 18	56	723
Michigan	Stay home, stay safe	March 24	May 28	66	1450
Minnesota	Stay at home	March 27	May 17	52	344
Mississippi	Shelter in place	April 3	April 27	25	1177
Missouri	Stay home Missouri	April 6	May 3	28	2393
Montana	Stay at home	March 28	April 26	30	109
Nebraska[5]	-	-	-	-	-
Nevada	Stay at home	April 1	May 15	45	1012
New Hampshire	Stay at home	March 27	June 15	71	137
New Jersey	Stay at home	March 21	June 9	81	798
New Mexico	Stay at home	March 24	May 31	69	83
New York	New York State on PAUSE	March 22	May 28	68	11727
North Carolina	Stay at home	March 30	May 8	40	1191
North Dakota[5]	-	-	-	-	-
Ohio	Stay at home	March 23	May 29	68	356
Oklahoma[7]	Safer at home	March 24	May 24	62	81
Oregon	Stay at home	March 23	May 15	54	161
Pennsylvania	Stay at home	March 30	June 4	67	3432
Rhode Island	Stay at home	March 28	May 8	42	132
South Carolina	Home or work	April 6	May 4	29	2049
South Dakota[5]	-	-	-	-	-

US State	Description	State Date (2020)[1,2,3]	End Date (2020)[1,2,3]	Duration (Days)	Number of Cases[4]
Tennessee	Safer at home	March 31	April 30	31	1570
Texas	Shelter in place	April 2	April 30	29	4355
Utah	Stay Safe, stay home	March 27	May 1	36	368
Vermont	Stay at home	March 25	May 15	52	95
Virginia	Stay at home	March 30	June 10	73	890
Washington	Stay at home	March 23	May 31	70	1833
West Virginia	Stay at home	March 24	May 3	41	16
Wisconsin	Safer at home	March 25	May 13	50	480
Wyoming[5]	-	-	-	-	-

[1] Stay at home orders start and end dates as listed on executive orders issued by each respective state.

[2] Chart: Each State's Stay-at-Home Orders and Reopening Dates, June 23, 2020, National Academy for State Health Policy.

[3] Stay on Top of "Stay At Home" – A List of Statewide Orders, May 20, 2020, Littler Mendelson, Littler.

[4] The number of cumulative confirmed COVID-19 cases in each state on the day before the start date of their stay at home order.

[5] Six states – Arkansas, Iowa, Nebraska, North Dakota, South Dakota, and Wyoming did not issue statewide stay at home orders.

[6] District of Columbia is the capital city of the United States and is not a state.

[7] The stay at home order was limited to the elderly and vulnerable populations only.

Supplemental Table 2. New York state-level public health response to COVID-19 pandemic.

Date	New York State Response to COVID-19
3/3/20	Governor Cuomo signs $40 million Emergency Management Authorization for Coronavirus response.
3/4/20	Governor Cuomo announces SUNY and CUNY Study abroad programs in China, Italy, Japan, Iran, and South Korea are suspended immediately.
3/7/20	Governor Cuomo declares a State of Emergency to control the spread of Coronavirus.
3/9/20	Governor Cuomo announces the state will provide alcohol-based hand sanitizer to New Yorkers free of charge.
3/12/20	Governor Cuomo announces mass gathering restrictions.
3/12/20	Events and gatherings with 500 or more people postponed or canceled.
3/12/20	Businesses with less than 500 individuals in attendance are required to cut capacity to 50 percent (exceptions include schools, hospitals, public buildings, mass transit, grocery stores, and retail stores).
3/12/20	Only medically necessary visits will be allowed at nursing homes.
3/12/20	Health screenings required for all nursing home workers each day when they enter a facility and require them to wear surgical masks to guard against asymptomatic spread.
3/12/20	SUNY Albany cancels all in-person classes for the rest of the semester.
3/13/20	The first public drive-through testing site in New Rochelle opens.
3/13/20	FDA gives NY State authority to conduct all COVID-19 testing at public and private labs.
3/14/20	Department of financial services will require insurance companies to waive copayments for telehealth visits.
3/16/20	Governor Cuomo issues executive order to increase hospital capacity.
3/16/20	Department of Financial Services announced a special enrollment period for uninsured New Yorkers.
3/17/20	Governor Cuomo announces a three-way agreement with the legislature on paid sick leave bill to provide immediate assistance for New Yorkers impacted by COVID-19.
3/20/20	Temporary closure of barber shops, nail and hair salons and related personal care services.
3/20/20	New York State on PAUSE executive order signed.
3/20/20	100% closure of non-essential businesses statewide.

Date	New York State Response to COVID-19
3/20/20	Matilda's Law enacted. People 70 years old and older and those with compromised immune systems and illness required to stay home and limit home visitations by others.
3/20/20	90-day moratorium on any residential or commercial evictions.
3/27/20	First 1000 bed temporary hospital at Jacob K Javits Convention Center.
3/29/20	NYS on PAUSE restrictions extended 2 weeks.
4/6/20	NYS on PAUSE restrictions extended 2 weeks.
4/12/20	Governor Cuomo executive order directs employers to provide masks for employees who interact with the public.
4/15/20	Governor Cuomo issues an executive order requiring all people in New York to wear masks or face coverings in public.
4/16/20	NYS on PAUSE restrictions extended until May 15.
4/17/20	Executive order directing all NYS public and private labs to coordinate with state DOH to prioritize diagnostic testing.
4/21/20	Elective outpatient surgeries may resume in low-risk areas.
5/9/20	Initiative to expand access to testing in Low-income communities and communities of color.
6/25/20	Counties to receive 323$ million from enhanced Medicaid funds in response to COVID-19.

Supplemental Table 3. California state-level public health response to COVID-19 pandemic.

Date	California State Response to COVID-19
1/26/20	Two confirmed cases of coronavirus in California, 1 in Los Angeles County, 1 in Orange County.
1/31/20	Three confirmed cases of coronavirus, one new case in Santa Clara County.
2/6/20	CDPH and network of labs prepared to begin coronavirus testing in California.
2/26/20	CDC confirmed the first instance of coronavirus community transmission in California.
2/28/20	COVID-19 testing kits arrived at state public health laboratories.
3/2/20	State health & emergency officials ramped up response. Governor Newsom activated the State Operations Center (SOC) in Mather, California, to its second-highest level.
3/3/20	Governor Newsom, state health & emergency officials, announced the release of millions of N95 filtering facepiece masks for use in low-risk health settings to address shortages caused by COVID-19.
3/4/20	State declares State of Emergency. First known coronavirus death in Placer County, California.
3/5/20	Governor Newsom announced more than 22 million Californians now eligible for free medically necessary COVID-19 testing.
3/7/20	California released updated guidance for schools, colleges & large public events to prepare and protect Californians from COVID-19.
3/9/20	State health & emergency officials encouraged individuals at higher risk of severe illness due to COVID-19 to take precautions.
3/11/20	State health & emergency officials released guidance to prepare and protect homeless Californians and service providers from COVID-19.
3/12/20	Cancellation of large gatherings 250 or more. Social distancing (6ft), individuals at higher risk should not go to gatherings of 10 or more.
3/13/20	Guidance released to prevent the transmission of COVID-19 in gambling venues, theme parks and theaters.
3/13/20	Executive order mandates that school districts use dollars to fund distance learning and high-quality educational opportunities, safely provide school meals, and arrange for the supervision of students during school hours.
3/16/20	Seniors and COVID-19 vulnerable residents directed to home isolate. Governor Newsom issues Executive Order redirecting California agencies to protect licensed facilities, staff & residents most vulnerable to COVID-19.
3/16/20	Guidance released to prevent the transmission of COVID-19 in food and beverage venues.

Date	California State Response to COVID-19
3/16/20	Executive order authorized local governments to halt evictions, slows foreclosures, and protects against utility shut offs.
3/18/20	Executive order to protect ongoing safety net services for most vulnerable Californians during COVID-19 outbreak.
3/18/20	Executive order made to waive, pending federal approval, this year's statewide testing for California's more than 6 million students.
3/18/20	Governor Newsom takes emergency actions & authorizes $150 million in funding to protect homeless Californians from COVID-19.
3/19/20	Stay at Home order, except for essential needs.
3/20/20	Executive order to permit vote-by-mail procedures to be used in three upcoming special elections, protecting public health and safety during the COVID-19 outbreak.
3/21/20	Order expands capacity to combat COVID-19 in health care facilities.
3/24/20	Executive order on state prisons and juvenile facilities. No new commitments to state prisons or juvenile facilities will be accepted for the next 30 days Order also directs videoconferencing of all scheduled parole suitability hearings starting next month.
3/27/20	Executive action authorizing local governments to halt evictions extended.
3/27/20	Executive order granting emergency authority to judicial council to be able to conduct business during COVID-19.
3/30/20	Executive order to expand health care workforce and staff at least an additional 50,000 hospital beds needed for the COVID-19 surge.
3/30/20	Order provides 90-day extension in state and local taxes, including sales tax order extends licensing deadlines and requirements for a number of industries.
4/1/20	Executive order that allows for the immediate use of funds to support the state's continuing efforts.
4/1/20	Guidance released on the use of cloth face coverings.
4/2/20	Executive order that will restrict water shutoffs to homes and small businesses while the state responds to the COVID-19.
4/3/20	Executive order comes in response to COVID-19 pandemic to limit price increases from sellers on critical items, such as food and medical supplies.
4/3/20	Executive order allows health care providers to use video chats and applications to provide health services without risk of penalty.

Date	California State Response to COVID-19
4/4/20	Executive order to provide expanded access to childcare for essential workers during COVID-19 response.
4/7/20	Executive order that provides additional support for older adults and vulnerable young children.
4/7/20	Executive order to help the state procure necessary medical supplies to fight COVID-19.
4/8/20	Latest COVID-19 facts, including new data on racial demographics and expanded health care worker data announced.
4/14/20	Executive order addressed the release and reentry process at the Division of Juvenile Justice (DJJ) in response to the COVID-19 pandemic, so that eligible youth serving time at DJJ can be discharged safely.
4/15/20	Expansion of call center hours at the Employment Development Department (EDD) to better assist Californians with unemployment insurance applications EDD will also implement a one-stop shop for those applying for Pandemic Unemployment.
4/16/20	Executive order will benefit workers in grocery stores and fast-food chains and delivery drivers. Order will give two weeks of supplemental paid sick leave to certain food sector workers if they are subject to a quarantine or isolation order or medical treatment.
4/17/20	Executive order that allows for temporary waivers to certain foster youth programs to ensure continuity of care in response to the COVID-19 pandemic.
4/23/20	Governor Newsom announced a deal to expand student loan relief for 1.1. million Californians Governor also signs an executive order to stop debt collectors from garnishing individual COVID-19-related financial assistance.
4/23/20	Executive order empowered schools to focus on COVID-19 response and transparency.
4/23/20	Executive order on actions taken in response to COVID-19. 60-day extension for several DMV related issues.
5/1/20	Executive order that temporarily broadened the capability of counties to enroll persons into the California Work Opportunity and Responsibility to Kids (CalWORKs) program.
5/6/20	State launches California COVID-19 testing sites website.
5/12/20	California Department of Public Health announces new sectors that can reopen with modifications statewide.
5/22/20	California Connected, contact tracing program, and public awareness campaign launched.
5/25/20	Counties statewide can reopen places of worship for religious services and retail stores.
5/26/20	Most counties can reopen barbershops and hair salons with modifications.

Date	California State Response to COVID-19
6/18/20	Californians now required to wear a mask in most settings outside the home.
6/28/20	Governor acts to close bars in specific counties.

Supplemental Table 4. Florida state-level public health response to COVID-19 pandemic.

Date	Florida State Response to COVID-19
3/1/20	Department of Health announces two presumptive positive cases of COVID-19 in Florida.
3/6/20	Two confirmed COVID-19 deaths.
3/7/20	Department of Health advises individuals who traveled on Nile River cruise to self-isolate for 14 days from the date of return.
3/9/20	State of Emergency declared.
3/16/20	President Trump & CDC issue the "15 Days to Slow the Spread" guidance advising individuals to adopt far-reaching social distancing measures, such as working from home and avoiding gatherings of 10 or more people.
3/17/20	Restrictions placed on bars, pubs, nightclubs (Closed), restaurants (50% occupancy, 6ft distancing, employee screening) and beaches (no groups larger than 10, 6ft distances between parties, beach closures at the discretion of local authorities).
3/20/20	Broward and Palm Beach County beaches closed.
3/20/20	Restriction placed on alcohol sales for takeout and delivery suspended. Restaurants closing for dine in customers; take-out and delivery only. Gyms and fitness center closures.
3/20/20	Non-essential and elective surgeries/procedures are postponed or canceled in order to preserve essential equipment.
3/23/20	Executive order for airport screening and isolation directs all persons traveling to Florida from an area with substantial community spread to isolate or quarantine for a period of 14 days from the time of entry into the state.
3/24/20	Individuals must isolate after entering Florida from the Tristate region for 14 days.
3/24/20	Public health advisory for people 65 years old and older to stay home and to take other measures to limit their risk of exposure to COVID-19.
3/24/20	Public health advisory for individuals with serious underlying health issues.
3/24/20	Ban on gatherings of 10 or more people.
3/24/20	Public health advisory urging people who can work remotely to do so.
3/27/20	Individuals traveling to Florida from roadways must isolate for 14 days. Checkpoints present on roadways.
3/27/20	Vacation rentals and third-party platforms cannot take new reservations and suspend vacation rental operations.

Date	Florida State Response to COVID-19
3/30/20	Re-employment of essential personnel from retired status.
3/30/20	Miami-Dade County, Broward County, Palm Beach County, and Monroe County public access restrictions to essential businesses only.
3/31/20	Broward Country and Palm Beach County beaches remain closed.
4/1/20	Safer at home executive order for seniors and individuals with underlying illnesses until April 30th.
4/10/20	Vacation rental closures extended to April 30th.
4/29/20	Limited extension of essential services and activities and vacation rental prohibited until May 4th, 2020.
4/29/20	Florida reopens. "Phase 1: Safe. Smart. Step-by-Step." Restaurants, museums, and in-store retail establishments may open and have 25% of capacity while practicing distancing. Elective surgeries may resume in low-risk areas.
5/5/20	State launches Community Action Survey "Stronger Than C-19."
5/5/20	State launches COVID prevention page.
5/8/20	Executive order extends state emergency.
5/9/20	Reopening state expanded.
5/14/20	State-supported community-based testing sites to temporarily close due to a low-pressure system. Phase 1 reopening for Miami-Dade and Broward counties.
5/16/20	Miami-Dade County state-run community-based testing sites to reopen on Sunday.
5/22/20	Reopening of state expanded.
6/3/20	State of Florida announced three new COVID-19 testing sites through a partnership with Publix.
6/5/20	Florida Division of Emergency Management sends 500,000 gowns to long-term care facilities.
6/8/20	Home Depot partner to provide three COVID-19 testing sites.
6/27/20	The Florida DOH signs on to the U=U campaign.

Supplemental Table 5. Texas state-level public health response to COVID-19 pandemic.

Date	Texas State Response to COVID-19
3/4/20	Department of State Health Services (DSHS) announced the first case of COVID-19 in Texas.
3/9/20	Texas' case of COVID-19 without international travel likely contracted from a recent trip to California.
3/11/20	COVID-19 case with no travel or known exposure identified.
3/15/20	DSHS distributed additional medical supplies for COVID-19 response.
3/17/20	First COVID-19 related death.
3/19/20	Texas health commissioner declares a public health disaster.
3/19/20	Executive order GA-08. Schools closed. Avoid gatherings of 10 or more people. No visiting nursing homes, retirement or long-term care facilities unless critical.
3/22/20	Postponement of all surgeries and procedures that are not immediately medically necessary.
3/24/20	Executive order GA-10 DSHS accelerated COVIOD-19 case reporting.
3/26/20	Executive order GA-11 Increased airport screening for individuals coming from the Tri State area, must self-quarantine for 14 days upon arrival.
3/29/20	Executive order GA-12 Roadway screening for individuals coming from Louisiana must self-quarantine for 14 days upon arrival.
3/29/20	Executive order GA-13. Detention of inmates and regulations on who may be released.
3/31/20	Executive order GA-14 extending prior recommendations essential businesses, social distancing, school closures, restaurants, etc. until April 30, 2020.
4/17/20	Executive order GA-15 postponement of elective surgeries and procedures extended until May 8, 2020.
4/17/20	Executive order GA-16 safe strategic opening of select services as a 1st step to opening Texas. Starting April 24, 2020, non-essential businesses that can-do delivery by mail, delivery to doorstep, or pickup may open.
4/17/20	Executive order GA- 17 establishment of COVID-19 Strike force, an advisory committee to reopening the state.
4/27/20	Executive order GA-18 expanded reopening of services, effective until May 15, 2020.
4/27/20	Executive order GA-19 beginning May 1, 2020, healthcare facilities may begin elective procedures/surgeries but must conserve 15% of resources for COVID-19 patients.
4/27/20	Executive order GA-20 rescinds GA-11 & 12 on travel and self-quarantining.

Date	Texas State Response to COVID-19
5/5/20	Executive order GA-21 expansion of reopened services.
5/7/20	Executive order GA-22 cosmetology salons allowed to reopen.
5/12/20	DSHS distributes Remdesivir to hospitals to treat COVID-19 patients.
5/18/20	Executive order GA-23 expansion of reopened services.
5/21/20	Executive order GA-24 termination of air travel restrictions.
5/22/20	Executive order GA-25 visitations reopened at the county and municipal jails.
6/3/20	Executive order GA-26 expansion of reopened services.
6/25/20	Executive over GA-27 need for increased hospital capacity- postponement of all surgeries and procedures that are not medically necessary.
6/26/20	Executive order GA -28 expansion of reopened services.