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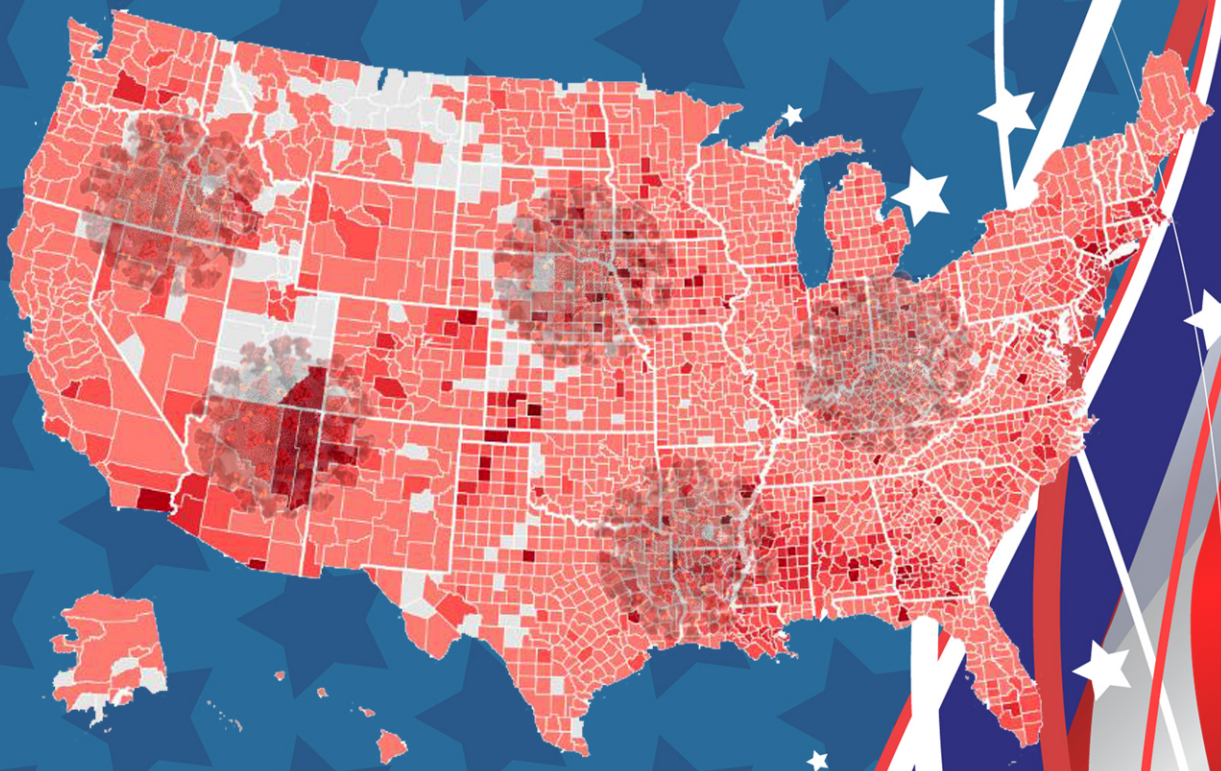
Reviewing the Data on the Efficacy of the Lockdown and Comparison of Red States versus Blue States dealing with Covid-19



Prepared By
Wilfred Reilly, PHD
Associate Professor, Political Science,
Criminal Justice School of Government,
Policy and Social Justice,
Kentucky State University

Reviewing the Data on the Efficacy of the Lockdown and Comparison of Red States versus Blue States dealing with Covid-19

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Associate Professor, Political Science, Criminal Justice
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This paper examines the relationship between (1) the political leadership of a U.S. state (in partisan Democrat/Republican terms) and (2) the lockdown behavior of the state and (3) the impact of COVID-19, the "novel coronavirus," on that state. To measure that relationship, I calculate the mean average number of COVID cases, deaths, cases per million residents, and deaths per million residents for Democratic "blue states," Republican "red states," and states corresponding to each of several measures of lockdown. In addition, I conduct similar state-by-state analyses of cases, deaths, cases-per-million (CPM), and deaths-per-million (DPM) focused only on/among minority victims of COVID-19.

Finally, I run a series of multi-variate linear regressions, with the factor variables contained in each model detailed below, against the dependent variables of: total COVID cases, total COVID deaths, COVID CPM, COVID DPM, COVID cases among POC, COVID deaths among POC, POC CPM, and POC DPM. Overall, I find few statistically significant differences between red states and blue states in terms of performance against COVID-19,[1] and essentially no evidence for the efficacy of lockdowns. While this paper is written in business-brief format, I do expect to publish or present sections of it as an academic article.

Case Numbers

[1] As will be detailed below, status as a blue state was a significant predictor of experiencing fewer COVID-19 cases during multi-variate regression analysis. However, raw blue v. red state case totals (98,122 v. 97,798) were almost literally identical. Further, red state cases were more likely to be concentrated among less vulnerable individuals, and there was no correspondence between increased red-state case rate and a greater COVID death rate. In fact, red states experienced FEWER deaths (2,165 v. 3,918) and DPM (495 v. 305) than blue states. However, *that* difference then failed to reach significance in multivariate models which properly adjusted for state characteristics such as population density.

Table One: Linear Regression – Number of Cases in State

Variable	Coefficient (S.E)
Population	9940 (2532)***
Population Density	28.5 (24.4)
Red or Blue State	-40655 (13961)*
Testing	31.3 (11.3)*
Lockdown or No	-11204 (18427)
Date of Onset	700.2 (983.2)
R2 = .91	
Number of Observations = 50	

I opened my analysis by examining pure, raw COVID-19 case numbers across states in each definitional category. As of August 10, 2020, case totals were almost identical across blue and red states,[2] with the former averaging 98,122 cases and the latter 97,798 cases.[3] While most of the hardest-hit U.S. states, such as California (554,160 cases at the time of analysis) and New York (420, 860) have so far been "blue," other Democrat-led states like Montana (4,952) and Hawa'ii (3,346) have incurred very small caseloads due to isolation or skilled leadership. Similarly, caseloads in the red states ranged from a few thousand in Alaska up to 532,806 in Florida. Non-lockdown states did have a definite advantage over states that locked down,[4] averaging just 37, 198 cases as vs. 113, 372 for the lockdown states.

[2] A state was coded as "blue" if the current sitting Governor is a Democrat, and "red" if the current sitting Governor is a Republican.
[3] All of this data was obtained from the highly regarded Covid Tracking project website, and should be vet-able in the site's archives here: https://covidtracking.com/
[4] A state was coded as a "non-lockdown state" if it never issued an official shelter-in-place order, as detailed in my previous popular-press but quantitative piece dealing with this topic (https://www.spiked-online.com/2020/05/08/the-lockdowns-still-arent-working/). South Carolina, which did so late and very briefly, is also coded as a non-lockdown state. A more complex definition of lockdown, along with a breakdown of the results attendant to it, appears in Appendix A.

Table Two: Linear Regression – Number of Deaths in State

Variable	Coefficient (S.E)
Population	-342.9 (143.1)*
Population Density	5.7 (1.4)***
Red or Blue State	-561.8 (788.7)
Testing	3.3 (.64)***
Lockdown or No	-296.9 (1040.9)
Date of Onset	81.5 (55.5)
R2 = .77	
Number of Observations = 50	

Given that state populations vary quite widely, I next calculated cases per million residents across my four primary categories of U.S. states. Here, again, red as versus blue state differences were relatively miniscule. The blue state mean was 12,436 cases per million, with a range from 2,390 CPM in Hawaii to 28,565 CPM in Louisiana. The slightly smaller red states ranged from 2,432 cases per million in Vermont up to 25,606 in Arizona – for an overall average of 13,697. Lockdown v. non-lockdown differences also faded to complete insignificance at this specific level of analysis, with states that locked down averaging 12,990 CPM and non-lockdown "social distancing" states averaging 12,911. The range for the non-lockdown players was between 5,083 CPM in Wyoming to 19,693 in South Carolina, while the rather broader one for the larger lockdown group was between the previously given figures for HI and LA.

Table Three: Linear Regression – Cases per Million in State

Variable	Coefficient (S.E)
Population	-347.5 (342.7)
Population Density	6.9 (3.3)*
Red or Blue State	-3598.5 (1889.1)
Testing	2.5 (1.5)
Lockdown or No	1140.9 (2493.3)
Date of Onset	237.6 (133)
R2 = .31	
Number of Observations = 50	

Death Numbers

I next moved to analysis of state-by-state death numbers, and here I did notice some substantive differences. As per Covid Tracking, the average number of COVID-19 deaths in a blue state was 3,918, as versus 2,165 for a red state – or 81% more. To a large extent, this dichotomy was driven by the extreme right side of the bell curve: red state deaths ranged from 26 in Alaska to fully 8,735 in the non-traditional red state of Massachussetts, but the blue-state tolls varied between 31 in Hawaii and 25,202 in New York. New Jersey, second in the nation with 15,874 deaths as of the starting date for my analysis, also fell into the Democratic-Governor camp. Lockdown/non-lockdown differences in death rates were even more substantively significant, with the lockdown states averaging 3,624 deaths and those states that never locked down just 562. The variance in mortality within the non-LD states, including some sizable players like South Carolina, Oklahoma, and Utah, was far smaller than that within the lockdown states: it ranged only from Wyoming (28 deaths) to SC (2,031).

Table Four: Linear Regression – Deaths per Million in State

Variable	Coefficient (S.E)
Population	-35.2 (11.9)**
Population Density	1.04 (.12)***
Red or Blue State	-24.4 (66)
Testing	.16 (.05)**
Lockdown or No	-29.7 (87)
Date of Onset	10.1 (4.6)*
R2 = .75	
Number of Observations = 50	

Essentially the same effect obtained at the deaths-per-million level of analysis. There were, all told, far fewer DPM in red states than in blue states and in lockdown states than in non-lockdown states. DPM in red states ranged from a low of 20 in (again) Alaska to a high of 1,266 in the technical red state of Massachusetts, for an average of 305. In contrast, blue state DPM rates varied from 22 DPM in Hawaii to 1,784 in New Jersey, for an average of 495. Overall, there were 62.4% more human deaths per million residents in the average blue state than in the average red state. The same pattern held true, to an even more striking extent, for the non-lockdown states as versus the lockdown states. The cumulative mean/average number of deaths per million residents for non-lockdown states was 182 – ranging from 47 in Wyoming to 398 in South Carolina – while the equivalent figure for lockdown states was 435, or 239% as many.

Table Five: Linear Regression – POC Cases in State

Variable	Coefficient (S.E)
Population	6186.4 (2383.1)*
Population Density	10.6 (18.4)
Red or Blue State	-26172 (10470)*
Testing	29.5 (11.6)*
Lockdown or No	-6067 (14313)
Date of Onset	181.7 (736.3)
Minority Percent of State	411.2 (311.5)
R2 = .91	
Number of Observations = 50	

Citizens of Color

Roughly speaking, COVID case and death numbers for citizens of color followed the same pattern as case and death numbers overall – with very similar bases for red and blue states in terms of raw numbers of infections, but more deaths and deaths per million in blue states. Among POC as with citizens overall,[5] lockdown states again averaged far fewer deaths and deaths per million than non-lockdown states. The average raw number of cases among POC citizens was 52,774 for blue states, ranging from 990 in Montana to 459,953 (83% of all cases) in California. The same figure was 59,190 for red states, ranging from 248 cases in Vermont to 362,308 in hard-hit Florida. Among lockdown states, the average POC caseload was 65,109 – although this again varied from Vermont's total to California's – while metrics for the non-LD states varied from 1,159 in Wyoming to 50,218 in South Carolina, and produced a much lower POC case mean of 16,472.

[5] For this paper, "POC" or "citizens of color" were defined as anyone not identified by CovidTracking as falling into the census category of 'White Alone.' This includes Hispanics.

Table Six: Linear Regression – POC Deaths in State

Variable	Coefficient (S.E)
Population	-285 (87.5)**
Population Density	1.7 (.85)
Red or Blue State	-357 (494.2)*
Testing	2.54 (.39)***
Lockdown or No	-.171.7 (658.5)
Date of Onset	30.1 (35.4)
Minority Percent of State	7.7 (16.9)
R2 = .79	
Number of Observations = 50	

As was true for case numbers overall, red state and even non-lockdown state numbers specifically for individuals of color surged past those for blue states and lockdown states when analyzed on a per-million-residents basis. Per million citizens of color, red states averaged 31,921 cases while blue states averaged 26,120. Red state caseloads ranged from 4,492 cases per one million POC in Vermont – a bit misleading given that the entire state had ~250 minority cases – to 74,235 per million in Florida, while blue state caseloads varied from 2,539 cases per million POC in Hawaii to 61,740 in tiny Rhode Island. While smaller and less diverse non-lockdown states averaged far fewer POC cases than lockdown states in raw numbers, they actually averaged more cases per million: 31,901 to 28,684 – with the non-lockdown states ranging between 11,667 POC CPM (Oklahoma) and 54,563 (Utah) and the lockdown players all falling between Hawaii's already-cited total and Florida's.

Table Seven: Linear Regression – Cases per Million POC Residents

Variable	Coefficient (S.E)
Population	-466.9 (1070.4)
Population Density	22.2 (8.3)*
Red or Blue State	-7661.3 (4703)
Testing	5.4 (5.2)
Lockdown or No	5008.1 (6428.9)
Date of Onset	266.5 (330.7)
Minority Percent of State	-172.6 (139.9)

R2 = .33
Number of Observations = 50

For POC as for Americans overall, the picture changed very considerably when it came to deaths. Red states overall averaged only 999 POC deaths (ranging from three in Vermont to 5,668 in Texas), as versus 2,163 in blue states (four in Maine to 16,633 in NY). Even more remarkably, non-lockdown states averaged just **215** POC deaths – from 15 in Wyoming to 995 in South Carolina – in contrast to 1,859 in the lockdown states. Empirically put, there were 217% as many deaths of individuals of color in blue states as in red states, and 865% as many in lockdown states as in non-lockdown states.

Obviously, disparities this large persisted into the analysis of POC deaths-per-million. While the initial gaps narrowed somewhat, blue states "boasted" 801 POC deaths per one million residents, while red states averaged just 498. The blue state range went from 59 POC DPM in Maine to 2,613 in New Jersey, while the red state variance was between 35 in Alaska and 1,808 in Massachusetts. Similarly, non-lockdown states averaged just 351 DPM among POC residents (from 124 to 594) while lockdown states averaged 690 (35 to 2,613). While shrunken in size, the

empirical disparity between blue states and red states was 161% and that between lockdown and non-lockdown states was 196%.

Table Eight: Linear Regression – Deaths per Million POC Residents

Variable	Coefficient (S.E)
Population	-56.5 (23.2)*
Population Density	1.2 (.22)***
Red or Blue State	-31.9 (131.1)
Testing	.33 (.10)**
Lockdown or No	6.4 (174.7)
Date of Onset	13.8 (9.4)
Minority Percent of State	.37 (4.49)
R2 = .91	
Number of Observations = 50	

At the conclusion of this stage of analysis, it certainly does not seem to be the case that frequently-made claims about the superiority of blue states to red states, or of lockdown to non-lockdown states,[6] in terms of response to COVID have received much empirical support. However, ultimate tests of that question remain to await regression analysis. However, one thing made absolutely clear by this point is that there is a VERY limited connection between COVID-19 (1) case rates and (2) death rates, and that an excessive focuses on case numbers in the absence of a more in-depth analysis including variables like subject age and case outcome is likely to be a "waste of time."

Simply put, there were as many CASES in the red states as the blue states (97,798 to 98,122) and as many cases per million in the non-lockdown states as the lockdown states (12,911 to 12,990). However, there were nearly two times as many *deaths* in the blue states (3,918 to

[6] This piece is a good example of such claims. Leading MSN and *The Atlantic*, it argued that essentially any attempt to quickly open business in major Southern states would be an example of "human sacrifice:" https://www.msn.com/en-ie/news/coronavirus/georgias-experiment-in-human-sacrifice/ar-BB13pCtd?li=BBr5PkO

2,615) and something like five times as many in the lockdown states (3,624 to 562). As the scholars for the center-right think tank FreeOPP pointed out in an excellent report which noted that nearly 50% of all fatal COVID-19 cases originate in nursing homes,[7] a COVID "case" sustained by a 19 year old non-lockdown state resident working as an essential employee or attempting to build herd immunity is very different from a potentially terminal case suffered by a 90 year old hospital patient.

The Regression Models

After finishing arithmetical analysis of the relevant data, I moved to regression analysis, running a series of multivariate linear regression models with the dependent variables: Cases, Deaths, CPM, DPM, POC cases, POC deaths, POC CPM, and POC DPM. Each of these models contained independent factor variables representing state population (in millions), state population density (in persons per square mile), red v. blue political leadership/composition of the state, number of COVID-19 tests administered in the state as of 08/10/2020, whether or not the state locked down via SIP order, and days since the date of onset of COVID-19 in the state. Models focused on analysis of the "POC" dependent variables also included an IV representing the percentage of the state population made up of people of color. Results from these regression models will not be reported as comprehensively as the arithmetical results, because the regression tables appear throughout this paper, and because there is no reason to dwell on non-significant results. However, several findings do stand out.

Most of the strongest observed effects belonged to the general "state-characteristic" variables entered in the models almost as controls. Most notably, population density reached

[7] Here's the report: https://www.msn.com/en-ie/news/coronavirus/georgias-experiment-in-human-sacrifice/ar-BB13pCtd?li=BBr5PkO.

statistical significance as a predictor of COVID outcomes, always in a positive direction, in five of eight regression models.[8] Total population, similarly, had a statistically significant relationship with the dependent variable representing COVID outcomes in six of sight models. Interestingly, this relationship was in a negative direction in several models, probably because of the inclusion of a "testing" variable obviously highly correlated with the state population metric. However, all of these correlations returned to the positive with the testing variable removed, and the strongest relationships were positive ones even with (Testing) present. Most notably, in Table One, which deals with the raw number of cases in a state, a one-unit increase in population – equivalent to a gain of one million people – was highly correlated with a state-wide increase of 9,940 COVID-19 cases (as a mean average). At the most basic level, none of this is particularly surprising: larger states with more densely packed populations will suffer more during disease pandemics.

Only one other variable, (Testing), was statistically significant in more than one or two models, and this metric was significant at the .05 level or better in six of them and had influence in a positive direction in all eight. This IS an interesting finding. It is no great surprise that the number of tests conducted is a predictor of the number of COVID-19 *cases* recorded; that much seems almost self-explanatory. However, I find that level of testing is also a predictor of total COVID-19 deaths, COVID deaths per million, and COVID DPM among minorities alone. This points to one of two intriguing possibilities. Either states with low rates of testing are almost certainly experiencing deaths caused by but not officially attributed to COVID-19, or states with

[8] As readers almost certainly know, the coefficients in this paper's regression tables represent the correlation between a one-unit change in the independent variable and the behavior of the dependent variable. Thus, in Table Two, a coefficient of 5.7 means that – on average - each one-unit increase in population density (i.e., one more person per square mile) corresponded to a jump of 5.7 in the state death toll. As in most charts of this kind, "stars" indicate significance: * = significance at the .05 level, ** = .005, and *** = .001 or better.

high rates of testing are classifying many/most/all deaths of individuals to pass away after contracting COVID-19 as COVID-19 deaths (or, both trends are occurring at once).[9] More research around this topic, such as ongoing empirical analyses of the excess death rate in the USA, would certainly be merited.[10]

No other variables did much. Status as a blue/Democratic state did have a statistically significant negative effect – at the lowest of the three levels of significance – on the overall number of cases and the number of cases per million in a state. This obviously indicates that blue states experienced slightly fewer COVID cases than red states, on average, with all other relevant factor variables controlled for. However, consistent with the arithmetical finding that there were far more COVID *deaths* in blue states, this result did not extend to the dependent variable(s) representing death numbers in any model. Even more notably, the lockdown/no lockdown variable did not reach significance in any model. Further, the correlations between *not* locking down and all eight unwelcome dependent variables remained in a negative direction even with population, density, partisanship, testing, date of the COVID outbreak, and minority population percentage all taken into account.

I do not, at least at this level of analysis, find empirical support for the effectiveness of lockdowns.

[9] Much of the conversation around both of these points has reached the popular press. At one point, federal officials like Dr. Deborah Birx came fairly close to admitting to what I just described: https://nypost.com/2020/04/07/feds-classify-all-coronavirus-patient-deaths-as-covid-19-deaths/.

[10] Now somewhat dated, this piece uses excess death figures to conclude that as many as 30% of COVID-19 deaths may go unreported: https://www.cidrap.umn.edu/news-perspective/2020/07/about-30-covid-deaths-may-not-be-classified-such.

Appendix A: Breakdowns of Key Variables by State Type:

Cases:

Average for Blue states: 98,121.7
Average for Red states: 97,797.8
Average for lockdown states: 113,371.8
Average for non-lockdown states: 37,198

Average for "0" states on complex lockdown scale[11]: 20,959.4
Average for "1" states: 133,350.2
Average for "2" states: 6,831
Average for "3" states: 84,469.5
Average for "4" states: 287, 716

Deaths:

Average for Blue states: 3,917.8
Average for Red states: 2,164.6
Average for lockdown states: 3,623.7
Average for non-lockdown states: 562.3

Average for "0" states on complex lockdown scale: 299
Average for "1" states: 2,241.9
Average for "2" states: 419
Average for "3" states: 3,398.3
Average for "4" states: 5,324.5

Cases per Million (CPM):

Average for Blue states: 12,435.5
Average for Red states: 13,696.8
Average for lockdown states: 12,990
Average for non-lockdown states: 12,910.7

Average for "0" states on complex lockdown scale: 10,274.3
Average for "1" states: 15,969.4
Average for "2" states: 4,879
Average for "3" states: 12,113.6
Average for "4" states: 9,547

[11] This scale was coded as follows: states received one point for enacting a shelter-in-place (SIP) order, one point for enacting a state-wide mask mandate, and one point apiece for retaining either policy when the study period began. Thus, a state that enacted both policies, and had both in place 08/11/2020 would be coded "4," while a state that never enacted either would be coded "0."

Deaths per Million (DPM):

Average for Blue states: 495.4
Average for Red states: 304.8
Average for lockdown states: 434.8
Average for non-lockdown states: 182.2

Average for "0" states on complex lockdown scale: 141.4
Average for "1" states: 254.9
Average for "2" states: 299
Average for "3" states: 466.2
Average for "4" states: 173

POC Case Numbers – All non-"White Alone:"

Average for Blue states: 52,774.2
Average for Red states: 59,189.7
Average for lockdown states: 65,108.6
Average for non-lockdown states: 16,472.4

Average for "0" states on complex lockdown scale: 8,845
Average for "1" states: 79,841.4
Average for "2" states: 1,776
Average for "3" states: 44,715
Average for "4" states: 235,720

POC Death Number(s):

Average for Blue states: 2,162.9
Average for Red states: 998.8
Average for lockdown states: 1,859.3
Average for non-lockdown states: 214.8

Average for "0" states on complex lockdown scale: 93.8
Average for "1" states: 1,104.6
Average for "2" states: 25
Average for "3" states: 1,803
Average for "4" states: 3,645

POC Cases per Million POC in State:

Average for Blue states: 26,120.4
Average for Red states: 31,921.1
Average for lockdown states: 28,683.9
Average for non-lockdown states: 31,901

Average for "0" states on complex lockdown scale: 31,543.5
Average for "1" states: 37,191.9
Average for "2" states: 20,796.3
Average for "3" states: 25,519
Average for "4" states: 30,045.9

POC Deaths per Million POC:

Average for Blue states: 800.7
Average for Red states: 498.3
Average for lockdown states: 690
Average for non-lockdown states: 351.3

Average for "0" states on complex lockdown scale: 348.6
Average for "1" states: 457.2
Average for "2" states: 292.7
Average for "3" states: 758.2
Average for "4" states: 394.8

Appendix B: COVID-19 Regressions, Grouped Together: Client Tom Donelson

Table One: Linear Regression – Number of Cases in State

Variable	Coefficient (S.E)
Population	9940 (2532)***
Population Density	28.5 (24.4)
Red or Blue State	-40655 (13961)*
Testing	31.3 (11.3)*
Lockdown or No	-11204 (18427)
Date of Onset	700.2 (983.2)
R2 = .91	
Number of Observations = 50	

Table Two: Logistic Regression – Number of Deaths in State

Variable	Coefficient (S.E)
Population	-342.9 (143.1)*
Population Density	5.7 (1.4)***
Red or Blue State	-561.8 (788.7)
Testing	3.3 (.64)***
Lockdown or No	-296.9 (1040.9)
Date of Onset	81.5 (55.5)
R2 = .77	
Number of Observations = 50	

Table Three: Linear Regression – Cases per Million in State

Variable	Coefficient (S.E)
Population	-347.5 (342.7)
Population Density	6.9 (3.3)*
Red or Blue State	-3598.5 (1889.1)
Testing	2.5 (1.5)
Lockdown or No	1140.9 (2493.3)
Date of Onset	237.6 (133)

R2 = .31	
Number of Observations = 50	

Table Four: Linear Regression – Deaths per Million in State

Variable	Coefficient (S.E)
Population	-35.2 (11.9)**
Population Density	1.04 (.12)***
Red or Blue State	-24.4 (66)
Testing	.16 (.05)**
Lockdown or No	-29.7 (87)
Date of Onset	10.1 (4.6)*
R2 = .75	
Number of Observations = 50	

Table Five: Linear Regression – POC Cases in State

Variable	Coefficient (S.E)
Population	6186.4 (2383.1)*
Population Density	10.6 (18.4)
Red or Blue State	-26172 (10470)*
Testing	29.5 (11.6)*
Lockdown or No	-6067 (14313)
Date of Onset	181.7 (736.3)
Minority Percent of State	411.2 (311.5)
R2 = .91	
Number of Observations = 50	

Table Six: Linear Regression – POC Deaths in State

Variable	Coefficient (S.E)
Population	-285 (87.5)**
Population Density	1.7 (.85)
Red or Blue State	-357 (494.2)*

Testing	2.54 (.39)***
Lockdown or No	-.171.7 (658.5)
Date of Onset	30.1 (35.4)
Minority Percent of State	7.7 (16.9)

R2 = .79
Number of Observations = 50

Table Seven: Linear Regression – Cases per Million POC Residents

Variable	Coefficient (S.E)
Population	-466.9 (1070.4)
Population Density	22.2 (8.3)*
Red or Blue State	-7661.3 (4703)
Testing	5.4 (5.2)
Lockdown or No	5008.1 (6428.9)
Date of Onset	266.5 (330.7)
Minority Percent of State	-172.6 (139.9)

R2 = .33
Number of Observations = 50

Table Eight: Linear Regression – Deaths per Million POC Residents

Variable	Coefficient (S.E)
Population	-56.5 (23.2)*
Population Density	1.2 (.22)***
Red or Blue State	-31.9 (131.1)
Testing	.33 (.10)**
Lockdown or No	6.4 (174.7)
Date of Onset	13.8 (9.4)
Minority Percent of State	.37 (4.49)

R2 = .91
Number of Observations = 50