

## Covid-19 in Red and Blue States

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This brief note addresses the question: Do the “red versus blue” political attitudes of US states matter for their outcomes – cases and deaths – during the Covid-19 pandemic? Such attitudes have influenced behavior, norms, and laws about distancing, mask-wearing etc., which in turn can affect outcomes. The question to explore is the direction and significance of these effects.

Table 1 shows the 2020 cumulative totals of cases and deaths for the US as a whole and for individual states (plus the District of Columbia).<sup>1</sup> In each case I calculate the numbers per million of population, and for the states whether this number is greater than or less than the average for the US as a whole. I use two indicators of red/blue politics of the states: the first whether Trump or Clinton won the majority vote in the 2016 presidential election; the second whether the governor of the state (mayor in the case of DC) in 2020 was a Republican or a Democrat<sup>2</sup>. I have not used the data for the November 2020 elections, because I want to understand the effects of political attitudes that people brought into the pandemic year, not the possible reverse impact their experience with Covid-19 may have had on the 2020 elections.

After the data, on the second page of the table I show four two-by-two contingency tables: (1) the numbers of states that had greater versus smaller than average numbers of cases per million in relation to whether the state went for Trump or Clinton, (2) a similar table with Republican or Democrat governors as the red vs. blue measure, and (3) and (4) with corresponding figures for deaths. For each of the four contingency tables, I calculate the chi-square tests for the null hypothesis that politics makes no difference.

The null is very soundly rejected for the case numbers, whether the presidential vote or the governor measure is used. Red states have significantly far more cases in relation to population than the blue states. However, for deaths the effect is if anything in the opposite direction, but is very small and statistically very weak and insignificant.

One possible explanation for the discrepancy between the results for cases and deaths is as follows. Deaths in many blue states (NY, NJ, MA, CT, perhaps CA ...) were concentrated in the early months. Those states had the major air connections to China and Europe, and therefore were hit at a time when no one knew the best way to treat Covid patients, and there were big bottlenecks of equipment and medicines. Table 2 attempts to make some allowance for this by leaving out figures through April, and repeating the same exercise as above for case and death numbers from May 1 to December 31. The effect for case numbers is just as big and significant for cases in this time frame as for the full period. For deaths there is now a small tendency in the same direction (red states have slightly

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<sup>1</sup> The data come from the CDC site, <https://data.cdc.gov/Case-Surveillance/United-States-COVID-19-Cases-and-Deaths-by-State-o/9mfq-cb36/data> . One may want to exclude from the DC numbers those infected during the superspreader events at the Trump White House, but I have not done so.

<sup>2</sup> There are ambiguous cases like the moderate Republican governors in Maryland and Massachusetts, but I have not made any ad hoc adjustments for such reasons.

more deaths in relation to their population), but it is far below the usually required levels of statistical significance. Some other explanation should be explored, perhaps using county/SMSA-level data and other explanatory variables such as population density, urban/rural split, education, and income.

This study looks at only the general political attitudes of states, and not at any specific policy differences that result from these attitudes, such as mandates for masking and distancing, or closure of non-essential businesses. Those are also worth studying.

Table 1 - Outcomes for full 2020

Entity	Population for 2019	CASES			DEATHS			POLITICS	
		Cases	Cases per Million	Relative to US Average	Deaths	Deaths per Million	Relative to US Average	Presidential Election 2016	Party of Governor thru 2020
United States	328239523	19806654	60342.1	1.00	342830	1044.45	1.00		
Alabama	4903185	361,226	73671.7	1.22	4,827	984.46	0.94	T	R
Alaska	731545	45,461	62143.8	1.03	205	280.23	0.27	T	R
Arizona	7278717	520,207	71469.6	1.18	8,864	1217.80	1.17	T	R
Arkansas	3017804	225,138	74603.3	1.24	3,676	1218.10	1.17	T	R
California	39512223	2,245,379	56827.5	0.94	25,386	642.48	0.62	C	D
Colorado	5758736	334,097	58015.7	0.96	4,814	835.95	0.80	C	D
Connecticut	3565287	185,708	52087.8	0.86	5,995	1681.49	1.61	C	D
Delaware	973764	58,064	59628.4	0.99	930	955.06	0.91	C	D
District of Columbia	705749	28,983	41067.0	0.68	786	1113.71	1.07	C	D
Florida	21477737	1,300,528	60552.4	1.00	21,673	1009.09	0.97	T	R
Georgia	10617423	666,452	62769.7	1.04	10,934	1029.82	0.99	T	R
Hawaii	1415872	21,026	14850.2	0.25	286	202.00	0.19	C	D
Idaho	1787065	141,077	78943.4	1.31	1,436	803.55	0.77	T	R
Illinois	12671821	963,389	76026.1	1.26	17,978	1418.74	1.36	C	D
Indiana	6732219	511,485	75975.7	1.26	8,263	1227.38	1.18	T	R
Iowa	3155070	280,669	88958.1	1.47	3,891	1233.25	1.18	T	R
Kansas	2913314	222,433	76350.5	1.27	2,741	940.85	0.90	T	D
Kentucky	4467673	265,262	59373.6	0.98	2,623	587.11	0.56	T	D
Louisiana	4648794	315,275	67818.7	1.12	7,488	1610.74	1.54	T	D
Maine	1344212	24,201	18003.9	0.30	347	258.14	0.25	C	D
Maryland	6045680	280,219	46350.3	0.77	5,942	982.85	0.94	C	R
Massachusetts	6892503	369,341	53585.9	0.89	12,365	1793.98	1.72	C	R
Michigan	9986857	528,621	52931.7	0.88	13,018	1303.51	1.25	T	D
Minnesota	5639632	415,302	73639.9	1.22	5,382	954.32	0.91	C	D
Mississippi	2976149	218,386	73378.7	1.22	4,816	1618.20	1.55	T	R
Missouri	6137428	392,570	63963.3	1.06	5,519	899.24	0.86	T	D
Montana	1068778	81,555	76306.8	1.26	961	899.16	0.86	T	D
Nebraska	1934408	166,798	86226.9	1.43	1,651	853.49	0.82	T	R
Nevada	3080156	224,731	72960.9	1.21	3,125	1014.56	0.97	C	D
New Hampshire	1359711	44,028	32380.4	0.54	758	557.47	0.53	C	R
New Jersey	8882190	477,360	53743.5	0.89	19,042	2143.84	2.05	C	D
New Mexico	2096829	142,864	68133.4	1.13	2,477	1181.31	1.13	C	D
New York	19453561	986,424	50706.6	0.84	37,753	1940.67	1.86	C	D
North Carolina	10488084	539,545	51443.6	0.85	6,748	643.40	0.62	T	D

Table 1 - Outcomes for full 2020

North Dakota	762062	92,770	121735.5	2.02	1,309	1717.71	1.64	T	R
Ohio	11689100	700,380	59917.4	0.99	8,962	766.70	0.73	T	R
Oklahoma	3956971	302,148	76358.4	1.27	2,534	640.39	0.61	T	R
Oregon	4217737	113,909	27007.1	0.45	1,477	350.19	0.34	C	D
Pennsylvania	12801989	640,325	50017.6	0.83	15,978	1248.09	1.19	T	D
Rhode Island	1059361	87,949	83020.8	1.38	1,777	1677.43	1.61	C	D
South Carolina	5148714	307,507	59725.0	0.99	5,296	1028.61	0.98	T	R
South Dakota	884659	99,164	112092.9	1.86	1,488	1682.00	1.61	T	R
Tennessee	6829174	586,802	85925.8	1.42	6,907	1011.40	0.97	T	R
Texas	28995881	1,756,172	60566.3	1.00	27,437	946.24	0.91	T	R
Utah	3205958	276,612	86280.6	1.43	1,269	395.83	0.38	T	R
Vermont	623989	7,412	11878.4	0.20	136	217.95	0.21	C	R
Virginia	8535519	354,767	41563.6	0.69	5,081	595.28	0.57	C	D
Washington	7614893	246,752	32403.9	0.54	3,461	454.50	0.44	C	D
West Virginia	1792147	85,334	47615.5	0.79	1,338	746.59	0.71	T	R
Wisconsin	5822434	520,438	89385.0	1.48	5,242	900.31	0.86	T	D
Wyoming	578759	44,409	76731.4	1.27	438	756.79	0.72	T	R
<b>CASES</b>									
	Trump	Clinton			R Gov	D Gov			
> Nat'l Avg	24	3		> Nat'l Avg	18	9			
< Nat'l Avg	6	18		< Nat'l Avg	7	17			
Expected values under null that politics makes no diff	15.882	11.118			13.235	13.765			
	14.118	9.882			11.765	12.235			
Chi-sq p value	3.705E-06				0.007				
<b>DEATHS</b>									
	Trump	Clinton			R Gov	D Gov			
> Nat'l Avg	10	8		> Nat'l Avg	8	10			
< Nat'l Avg	20	13		< Nat'l Avg	17	16			
Expected values under null that politics makes no diff	10.588	7.412			8.824	9.176			
	19.412	13.588			16.176	16.824			
Chi-sq p value	0.726				0.629				

Table 2 - Outcomes May to December 2020

Entity	Population for 2019	CASES					DEATHS					POLITICS	
		Cases Upto 12/31/20	Cases upto 4/30/20	Cases May-Dec	Cases May-Dec per Million	Relative to US Average	Deaths Upto 12/31/20	Deaths upto 4/30/20	Deaths May-Dec	Deaths May-Dec per Million	Relative to US Average	Presidential Election 2016	Party of Governor thru 2020
Total	328239523	19806654	1059872	18746782	57113.1	1.00	342830	62301	280529	854.65	1.00		
Alabama	4903185	361,226	7306	353920	72181.7	1.26	4,827	280	4547	927.36	1.09	T	R
Alaska	731545	45,461	355	45106	61658.5	1.08	205	9	196	267.93	0.31	T	R
Arizona	7278717	520,207	7648	512559	70418.9	1.23	8,864	320	8544	1173.83	1.37	T	R
Arkansas	3017804	225,138	3255	221883	73524.7	1.29	3,676	61	3615	1197.89	1.40	T	R
California	39512223	2,245,379	48917	2196462	55589.4	0.97	25,386	1982	23404	592.32	0.69	C	D
Colorado	5758736	334,097	15182	318915	55379.3	0.97	4,814	777	4037	701.02	0.82	C	D
Connecticut	3565287	185,708	27700	158008	44318.5	0.78	5,995	2257	3738	1048.44	1.23	C	D
Delaware	973764	58,064	4734	53330	54766.9	0.96	930	152	778	798.96	0.93	C	D
District of Columbia	705749	28,983	4323	24660	34941.6	0.61	786	224	562	796.32	0.93	C	D
Florida	21477737	1,300,528	33690	1266838	58983.8	1.03	21,673	1268	20405	950.05	1.11	T	R
Georgia	10617423	666,452	25241	641211	60392.3	1.06	10,934	1111	9823	925.18	1.08	T	R
Hawaii	1415872	21,026	607	20419	14421.5	0.25	286	16	270	190.70	0.22	C	D
Idaho	1787065	141,077	2015	139062	77815.9	1.36	1,436	63	1373	768.30	0.90	T	R
Illinois	12671821	963,389	52918	910471	71850.1	1.26	17,978	2355	15623	1232.89	1.44	C	D
Indiana	6732219	511,485	17835	493650	73326.5	1.28	8,263	1114	7149	1061.91	1.24	T	R
Iowa	3155070	280,669	7145	273524	86693.5	1.52	3,891	162	3729	1181.91	1.38	T	R
Kansas	2913314	222,433	4238	218195	74895.8	1.31	2,741	129	2612	896.57	1.05	T	D
Kentucky	4467673	265,262	4708	260554	58319.8	1.02	2,623	240	2383	533.39	0.62	T	D
Louisiana	4648794	315,275	28044	287231	61786.1	1.08	7,488	1905	5583	1200.96	1.41	T	D
Maine	1344212	24,201	1123	23078	17168.4	0.30	347	55	292	217.23	0.25	C	D
Maryland	6045680	280,219	23472	256747	42467.8	0.74	5,942	1192	4750	785.68	0.92	C	R
Massachusetts	6892503	369,341	62205	307136	44560.9	0.78	12,365	3562	8803	1277.18	1.49	C	R
Michigan	9986857	528,621	41379	487242	48788.3	0.85	13,018	3787	9231	924.31	1.08	T	D
Minnesota	5639632	415,302	5136	410166	72729.2	1.27	5,382	343	5039	893.50	1.05	C	D
Mississippi	2976149	218,386	7212	211174	70955.5	1.24	4,816	282	4534	1523.45	1.78	T	R
Missouri	6137428	392,570	7562	385008	62731.2	1.10	5,519	329	5190	845.63	0.99	T	D
Montana	1068778	81,555	453	81102	75882.9	1.33	961	16	945	884.19	1.03	T	D
Nebraska	1934408	166,798	4281	162517	84013.8	1.47	1,651	70	1581	817.30	0.96	T	R
Nevada	3080156	224,731	5007	219724	71335.3	1.25	3,125	252	2873	932.74	1.09	C	D
New Hampshire	1359711	44,028	2146	41882	30802.1	0.54	758	72	686	504.52	0.59	C	R
New Jersey	8882190	477,360	118652	358708	40385.1	0.71	19,042	7228	11814	1330.08	1.56	C	D
New Mexico	2096829	142,864	3411	139453	66506.6	1.16	2,477	123	2354	1122.65	1.31	C	D
New York	19453561	986,424	299106	687318	35331.2	0.62	37,753	23211	14542	747.52	0.87	C	D
North Carolina	10488084	539,545	10509	529036	50441.6	0.88	6,748	378	6370	607.36	0.71	T	D
North Dakota	762062	92,770	1067	91703	120335.4	2.11	1,309	19	1290	1692.78	1.98	T	R
Ohio	11689100	700,380	18207	682173	58359.8	1.02	8,962	975	7987	683.29	0.80	T	R
Oklahoma	3956971	302,148	3618	298530	75444.1	1.32	2,534	222	2312	584.29	0.68	T	R
Oregon	4217737	113,909	2510	111399	26412.0	0.46	1,477	103	1374	325.77	0.38	C	D
Pennsylvania	12801989	640,325	45763	594562	46442.9	0.81	15,978	2292	13686	1069.05	1.25	T	D
Rhode Island	1059361	87,949	8621	79328	74882.9	1.31	1,777	266	1511	1426.33	1.67	C	D
South Carolina	5148714	307,507	6095	301412	58541.2	1.03	5,296	244	5052	981.22	1.15	T	R
South Dakota	884659	99,164	2449	96715	109324.6	1.91	1,488	17	1471	1662.79	1.95	T	R

Table 2 - Outcomes May to December 2020

Tennessee	6829174	586,802	10735	576067	84353.8	1.48	6,907	199	6708	982.26	1.15	T	R
Texas	28995881	1,756,172	28087	1728085	59597.6	1.04	27,437	782	26655	919.27	1.08	T	R
Utah	3205958	276,612	4753	271859	84798.1	1.48	1,269	46	1223	381.48	0.45	T	R
Vermont	623989	7,412	866	6546	10490.6	0.18	136	49	87	139.43	0.16	C	R
Virginia	8535519	354,767	16901	337866	39583.5	0.69	5,081	581	4500	527.21	0.62	C	D
Washington	7614893	246,752	14327	232425	30522.4	0.53	3,461	814	2647	347.61	0.41	C	D
West Virginia	1792147	85,334	1125	84209	46987.8	0.82	1,338	44	1294	722.04	0.84	T	R
Wisconsin	5822434	520,438	6854	513584	88207.8	1.54	5,242	316	4926	846.04	0.99	T	D
Wyoming	578759	44,409	559	43850	75765.6	1.33	438	7	431	744.70	0.87	T	R
<b>CASES</b>													
	Trump	Clinton					R Gov	D Gov					
> Nat'l Avg	26	5				> Nat'l Avg	20	11					
< Nat'l Avg	4	16				< Nat'l Avg	5	15					
Expected values under null	18.235	12.765					15.196	15.804					
that politics makes no diff	11.765	8.235					9.804	10.196					
Chi-sq p value	6.041E-06						0.006						
<b>DEATHS</b>													
	Trump	Clinton					R Gov	D Gov					
> Nat'l Avg	18	8				> Nat'l Avg	14	12					
< Nat'l Avg	12	13				< Nat'l Avg	11	14					
Expected values under null	15.294	10.706					12.745	13.255					
that politics makes no diff	14.706	10.294					12.255	12.745					
Chi-sq p value	0.124						0.482						