COVID-19 Statistical Review

Our Daily Update on the Data and the Trends

Today's Analysis: Data from July 18, 2020

Saturday was a promising day in cases with the WOW increase at the lowest level since July 6 and only the second below 2,000 since June 16 back when the second hot spot wave started. (See charts in Exhibit 3c.) Deaths were up obviously in response to the major increase in cases two weeks ago. There is a two to three week lag between changes in cases and deaths. Although deaths continue to stay at a low percentage of cases (Exhibit 1), they do move up modestly in response to major increases in cases.

BROUGHTON CAPITAL, LLC
THE INDEPENDENT VARIABLE

Note today a significant addition to the state details on Exhibits 3A and 3b. You will now see which states fit in each hot spot grouping (second column) and how states compare on cases/million (rightmost column). The latter is important because the data from the first hot spot group gives us a guess at the level of cases needed to establish herd immunity. The first group began its case inflection at around 7,000 cases/million, with large variation between states. (Chart at bottom of Exhibit 3C.) The second group is currently beyond that threshold, indicating that inflection is soon likely. The data for Saturday for the five recent leaders of that group, shown in the table at the bottom of Exhibit 3B, says that this group is approaching inflection. A week ago, their total was close to 10,000. This subtotal also tells us that the current action among the second hot spot states is more in the heretofore smaller players like Tennessee. One again this this contagion has taught us is it goes everywhere.

Industrials Research Analysis

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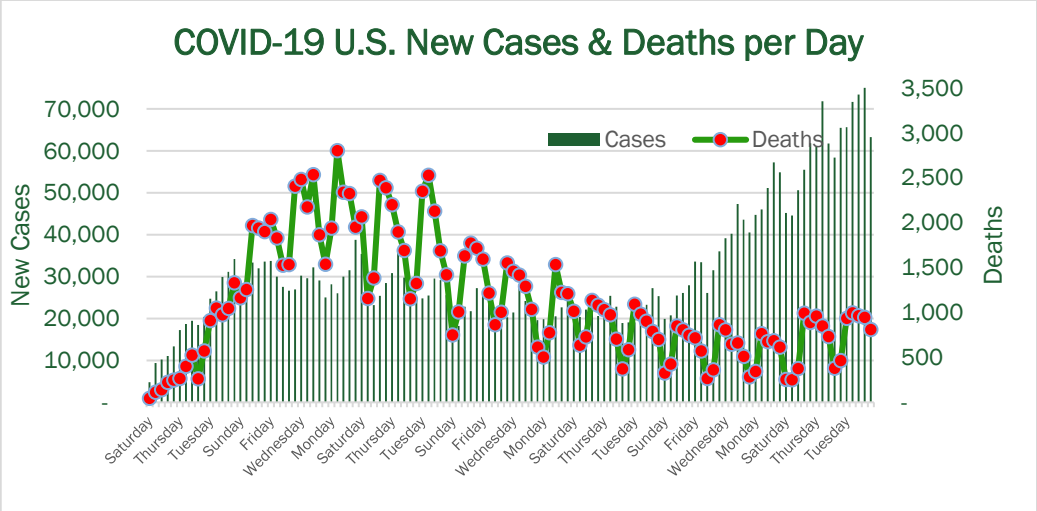
Exhibit 1


COVID-19 U.S. New Cases & Deaths per Day
New Cases
Deaths
Cases
Deaths
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
3,500
3,000
2,500
2,000
1,500
1,000
500
-
Saturday
Thursday
Tuesday
Sunday
Friday
Wednesday
Monday
Saturday
Thursday
Tuesday
Sunday
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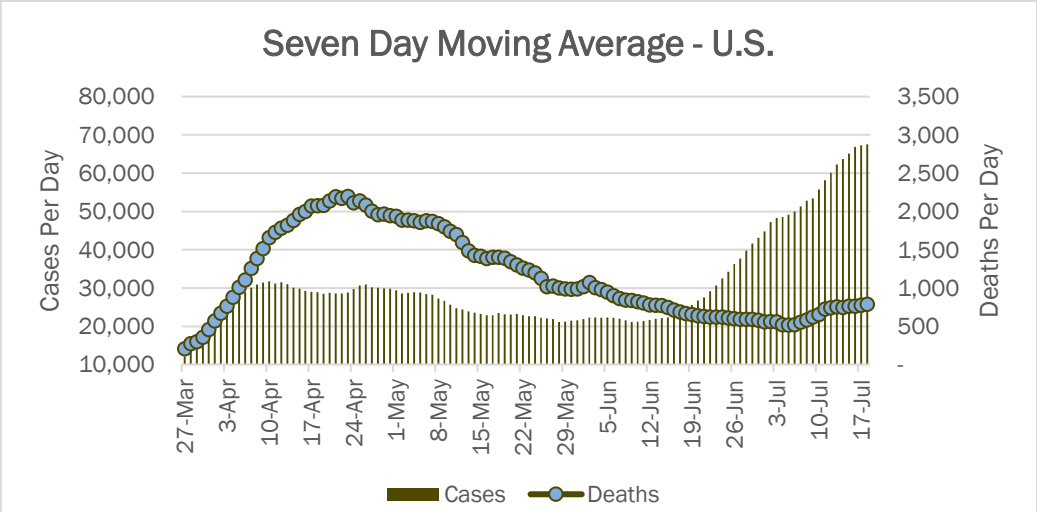
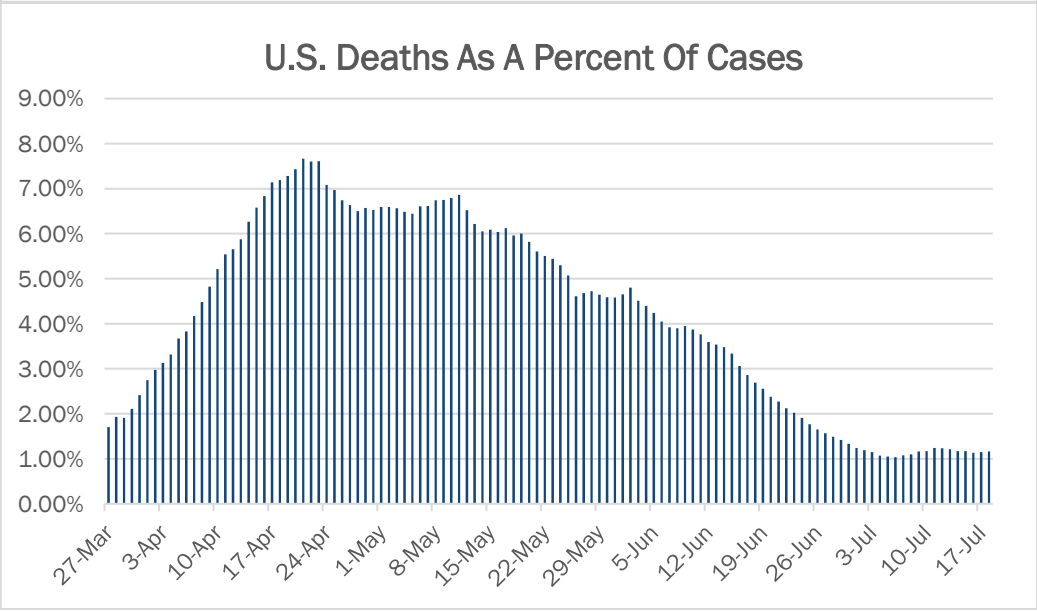
Wednesday
Monday
Saturday
Thursday
Tuesday


Seven Day Moving Average - U.S.
Cases Per Day
Deaths Per Day
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
27-Mar
3-Apr
10-Apr
17-Apr
24-Apr
1-May
8-May
15-May
22-May
29-May
5-Jun
12-Jun
19-Jun
26-Jun
3-Jul
10-Jul
17-Jul
Cases
Deaths


U.S. Deaths As A Percent Of Cases
9.00%
8.00%
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
27-Mar
3-Apr
10-Apr
17-Apr
24-Apr
1-May
8-May
15-May
22-May
29-May
5-Jun
12-Jun
19-Jun
26-Jun
3-Jul
10-Jul
17-Jul

Source: Worldometer.com, Transport Futures, & Broughton Capital

Exhibit 2

Country	Status	Cases	Deaths	Death Rate	Pop per case	Pop per death	Daly Max Cases	New Cases Latest Day	Daily Max Deaths	New Deaths Latest Day	Change In New Case Count Latest Day	Change In New Case Count From Week Before	Change in New Death Count Latest Day	in New Death Count From Week Ago
China	Recovery	83,644	4,634	5.5%	17,241	333,333	6,000	22	150	-	12	20	0	0
S. Korea	Recovery	13,711	294	2.1%	3,745	166,667	851	39	9	1	(21)	4	-1	1
Italy	Recovery	244,216	35,042	14.3%	248	1,724	6,557	249	919	14	18	61	3	7
Iran	Falling	271,606	13,979	5.1%	309	6,024	3,186	2,166	179	188	(213)	(231)	5	0
Germany	Recovery	202,572	9,162	4.5%	414	9,174	6,933	227	333	2	(282)	3	-1	-2
France	Recovery?	174,674	30,152	17.3%	374	2,165	9,678	-	1,809	-	(836)	-	-14	0
UK	Recovery	294,066	45,273	15.4%	231	1,499	8,681	827	980	40	140	7	-74	-108
Norway	Recovery	9,028	255	2.8%	601	21,277	399	3	16	-	(7)	-	-1	0
Netherlands	Recovery?	51,581	6,136	11.9%	332	2,793	1,316	127	234	-	24	46	-1	-1
Sweden	Recovery?	77,281	5,619	7.3%	131	1,799	2,214	-	185	-	(152)	-	-10	0
USA	Rising	**3,833,271**	**142,877**	**3.7%**	**86**	**2,315**	**61,690**	**63,259**	**2,804**	**813**	**(11,728)**	**1,540**	**-133**	**81**
Spain	Recovery	307,335	28,420	9.2%	152	1,645	8,271	-	961	-	(1,400)	-	-4	0
Switzerland	Recovery	33,492	1,969	5.9%	259	4,405	1,321	110	75	-	18	(17)	0	-2
Belgium	Recovery?	63,499	9,800	15.4%	183	1,183	2,454	261	496	5	62	149	2	4
Denmark	Recovery?	13,173	611	4.6%	440	9,524	390	-	15	-	(49)	-	-1	0
Austria	Recovery	19,573	711	3.6%	460	12,658	1,321	134	30	-	(35)	60	0	0
Canada	Recovery	109,999	8,848	8.0%	343	4,274	1,920	330	207	9	(75)	109	-3	-5
Ireland	Recovery	25,750	1,753	6.8%	-	2,817	1,515	20	57	1	(12)	(2)	-2	-1
Portugal	Recovery	48,390	1,684	3.5%	211	6,061	1,516	313	37	2	1	(229)	-1	-6
Australia	Recovery	11,441	118	1.0%	2,232	200,000	534	206	8	2	(219)	12	-1	1
Brazil	Falling	2,075,246	78,817	3.8%	102	2,695	55,209	26,549	1,341	885	(7,410)	(9,925)	-225	-83
Malaysia	Recovery	8,764	122	1.4%	3,690	250,000	235	9	8	-	(9)	1	0	-1
Mexico	Falling	331,298	38,310	11.6%	389	3,367	7,280	7,257	60	736	851	366	68	71
Singapore	Recovery	47,655	27	0.1%	123	200,000	1,426	202	2	-	(125)	32	0	0
North America	Rising	4,274,568	190,035	4.4%	116	2,620	81,798	70,846	2,974	1,558	(10,952)	2,015	(68)	147
Western Europe	Recovery	1,564,630	176,587	11.3%	257	2,277	35,453	2,271	4,442	64	(2,510)	78	(104)	(109)
Other	Rising	8,575,256	237,618	2.8%	802	28,929	164,520	150,951	3,155	3,386	(2,872)	7,234	(375)	(26)
World	Rising	#########	604,240	4.2%	541	12,903	248,871	224,068	7,960	5,008	(16,334)	9,327	(547)	12

U.S. Change Since Last Week

	Cases/Day	Deaths/Day
First Hot Spot	(1,913)	(52)
Second Hot Spot	3,002	128
Third Hot Spot	663	(23)
Remainder	(212)	27

Seven-Day Moving Averages

	Maximum	Today	Reduction
Cases	67,314	67,534	0%
Deaths	2,193	786	-64%

State Conditions - Weekly Deaths		
Falling	Inflection	Rising
30	2	20

Source: Worldometer.com, Transport Futures, & Broughton Capital

Exhibit 3A

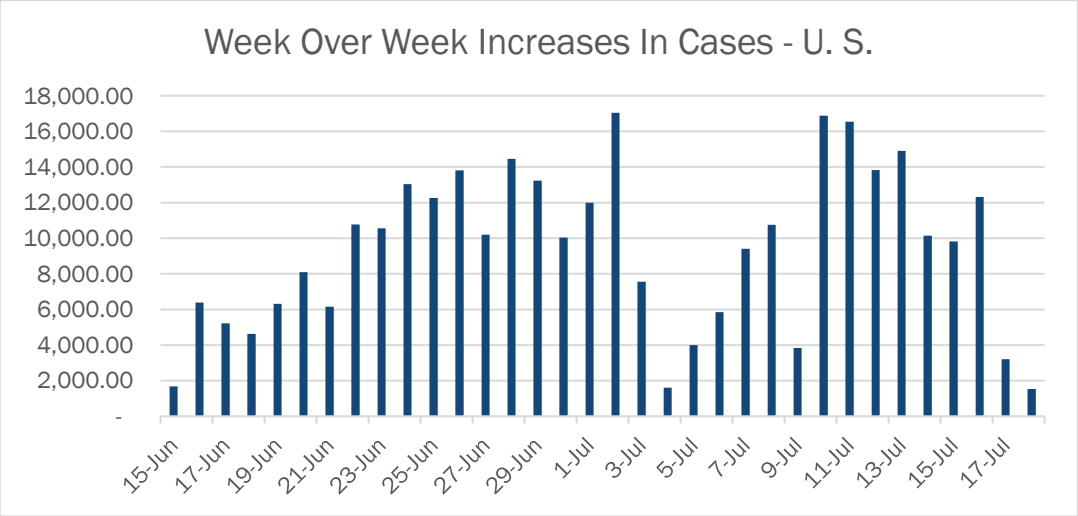
	Hot Spot Group	Total Cases	Max New Cases/Day Since 21 April	New Cases Latest Day	Change in New Cases/Day	Change In Cases/Day Since Week Ago	Change In Cases/Day Since Max	Total Deaths	Max New Deaths/Day Since 21 April	New Deaths Latest Day	Change In New Deaths/Day	Change In Deaths/Day Since Week Ago	Change In Deaths/Day Since Max	Cases/Million
USA Total	**NA**	**3,833,271**	**38,474**	**63,259**	**(11,728)**	**1,540**	**64%**	**4,979**	**2,804**	**813**	**(133)**	**80**	**-71%**	**11,581**
New York	1	433,314	10,868	902	(130)	111	-92%	46,054	764	17	-	(1)	-98%	22,274
New Jersey	1	182,936	4,160	132	(140)	(181)	-97%	9,832	458	20	-	(30)	-96%	20,596
Massachusetts	1	113,238	4,946	359	61	71	-93%	6,668	252	17	(5)	3	-93%	16,429
California	2	382,968	9,687	8,806	(802)	925	-9%	-	150	91	(31)	17	-39%	9,692
Pennsylvania	1	104,780	3,096	608	(395)	(47)	-80%	44,030	294	11	(6)	(6)	-96%	8,185
Illinois	3	161,785	4,014	1,276	(151)	81	-68%	(1,913)	191	18	5	(6)	-91%	12,767
Michigan	3	81,338	1,350	745	(9)	60	-45%	3,002	232	9	2	(19)	-96%	8,145
Florida	2	337,569	15,300	10,328	(1,138)	(32)	-32%	663	132	93	(35)	(2)	-30%	15,717
Louisiana	1	88,590	2,179	-	(2,179)	(2,167)	-100%	(212)	126	-	(24)	(23)	-100%	19,057
Texas	2	330,501	12,235	7,945	(1,551)	(444)	-35%	-	154	75	(87)	(3)	-51%	11,398
Connecticut	1	47,893	2,109	-	(143)	-	-100%	-	125	-	(7)	-	-100%	13,433
Georgia	2	139,872	4,484	4,689	781	1,499	5%	-	78	36	8	5	-54%	13,174
Maryland	1	77,206	1,730	835	128	278	-52%	-	77	9	(3)	2	-88%	12,770
Ohio	3	73,859	1,720	1,538	(182)	192	-11%	-	138	19	3	15	-86%	6,319
Washington	3	47,137	1,209	631	(316)	276	-48%	1,060	30	9	(1)	9	-70%	6,190
Indiana	4	55,654	949	841	108	62	-11%	-	119	17	9	9	-86%	8,267
Colorado	4	39,788	994	444	(174)	44	-55%	-	122	1	(5)	-	-99%	6,909
Virginia	4	76,373	1,615	940	(62)	89	-42%	142,877	43	12	6	8	-72%	8,948
Tennessee	2	76,336	3,314	2,517	238	1,057	-24%	32,552	27	23	4	8	-15%	11,178
North Carolina	2	97,958	2,387	2,386	375	65	0%	15,776	35	17	5	1	-51%	9,340
Missouri	3	34,461	1,431	875	(556)	(14)	-39%	8,419	31	6	(2)	(8)	-81%	5,615
Rhode Island	1	17,793	443	-	(82)	-	-100%	7,702	27	-	(2)	-	-100%	16,796
Alabama	2	65,234	2,143	2,143	140	704	0%	7,079	47	21	(14)	11	-55%	13,304
Arizona	2	141,265	4,877	2,742	(1,168)	(296)	-44%	7,483	147	147	56	78	0%	19,408
Mississippi	3	41,846	1,265	1,017	(15)	220	-20%	6,364	44	14	(10)	(1)	-68%	14,060

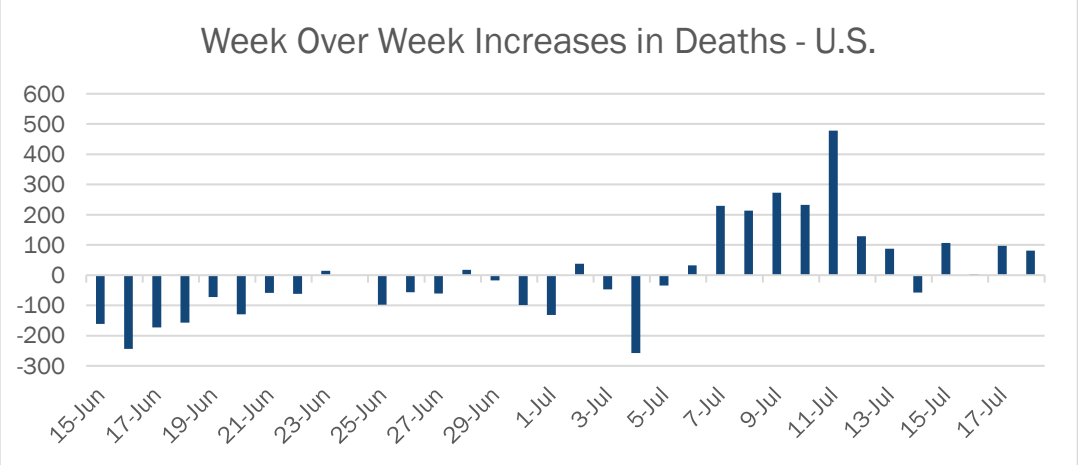
Exhibit 3B.

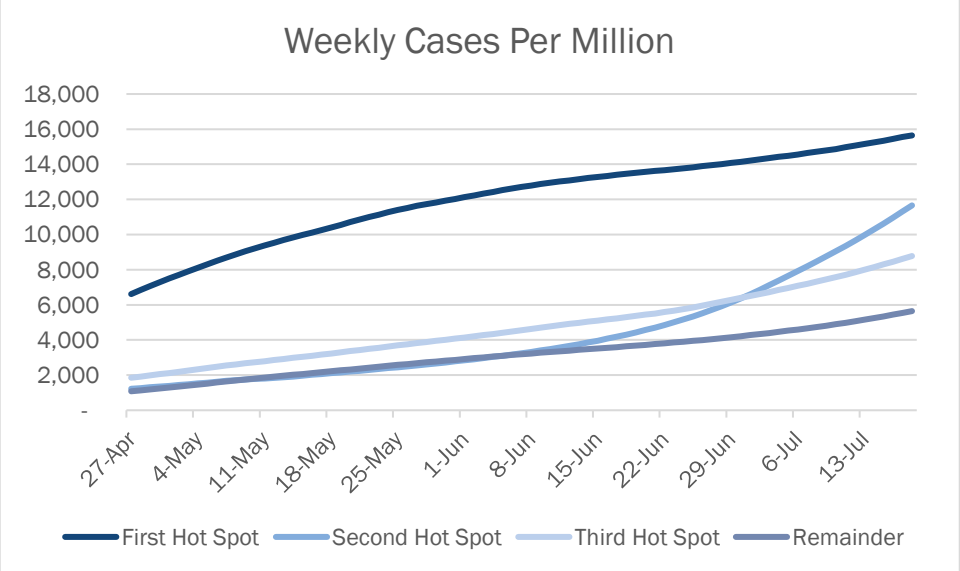
	Hot Spot C	Total Cases	Max New Cases/Day Since 21 April	New Cases Latest Day	Change in New Cases/Day	Change In Cases/Day Since Week Ago	Change In Cases/Day Since Max	Total Deaths	Max New Deaths/Day Since 21 April	New Deaths Latest Day	Change In New Deaths/Day	Change In Deaths/Day Since Week Ago	Change In Deaths/Day Since Max	Cases/Million
Wisconsin	3	41,485	964	978	98	52	1%	4,898	20	10	8	3	**-50%**	7,125
South Carolina	2	67,612	2,280	1,552	(425)	(728)	-32%	3,511	72	39	13	17	-46%	13,132
Nevada	2	34,477	1,447	1,182	(198)	252	-18%	4,007	19	9	(2)	(4)	-53%	11,193
Iowa	4	38,041	894	264	(296)	(223)	-70%	4,396	21	5	2	-	-76%	12,057
Utah	3	33,332	954	760	33	128	-20%	3,168	10	8	7	3	-20%	10,397
Kentucky	4	22,184	579	579	57	128	0%	3,368	17	9	1	7	-47%	4,965
District Of Columbia	1	11,194	335	79	40	21	-76%	3,138	19	1	(2)	1	-95%	15,861
Delaware	1	13,429	458	92	(131)	1	-80%	1,451	69	2	2	2	-97%	13,791
Oklahoma	4	25,056	1,075	916	217	229	-15%	2,820	21	6	(1)	1	-71%	6,332
Minnesota	4	45,470	840	457	(209)	(347)	-46%	1,752	39	5	(2)	1	-87%	8,063
Kansas	4	22,223	1,080	107	(858)	(60)	-90%	2,025	13	1	-	1	-92%	7,628
New Mexico	4	16,736	319	280	(38)	56	-12%	838	12	4	1	-	-67%	7,982
Oregon	4	14,149	429	347	55	(50)	-19%	1,651	7	3	(2)	3	-57%	3,355
Arkansas	3	32,533	1,061	771	123	(290)	-27%	1,164	12	4	(8)	(2)	-67%	10,780
Idaho	4	14,302	727	550	(69)	(27)	-24%	990	4	1	(3)	-	-75%	8,003
South Dakota	4	7,862	239	73	(22)	20	-69%	1,286	5	0	(1)	(2)	-100%	8,887
Nebraska	4	22,481	641	120	(107)	(101)	-81%	2,730	21	0	(2)	-	-100%	11,622
New Hampshire	4	6,188	164	23	(3)	(10)	-86%	1,346	19	1	1	-	-95%	4,551
West Virginia	4	4,922	202	139	13	(24)	-31%	843	4	0	(1)	(1)	-100%	2,746
Maine	4	3,646	76	10	(28)	(11)	-87%	1,135	5	2	1	1	-60%	2,712
Vermont	4	1,338	17	4	(5)	(2)	-76%	646	3	0	-	-	-100%	2,144
North Dakota	4	4,907	134	115	(9)	26	-14%	789	6	0	(1)	(2)	-100%	6,439
Hawaii	4	1,354	36	20	(3)	(22)	-44%	243	3	1	-	1	-67%	956
Wyoming	4	2,108	49	39	(4)	(10)	-20%	667	4	0	-	-	-100%	3,642
Montana	4	2,471	127	105	(30)	21	-17%	578	3	0	(2)	(1)	-100%	2,312
Alaska	4	1,795	94	62	22	-	-34%	523	2	1	1	1	-50%	2,454
Other	3	92,282	4,588	936	(2,589)	(42)	-80%	451	186	19	(9)	(17)	-90%	11,581

Week-Over-Week Gains		
	Cases	**Deaths**
California	925	17
Florida	(32)	(2)
Texas	(444)	(3)
Arizona	(296)	78
Florida	(32)	(2)
Total	**121**	**88**

Exhibit 3C


Week Over Week Increases In Cases - U. S.
18,000.00
16,000.00
14,000.00
12,000.00
10,000.00
8,000.00
6,000.00
4,000.00
2,000.00
-
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
1-Jul
3-Jul
5-Jul
7-Jul
9-Jul
11-Jul
13-Jul
15-Jul
17-Jul


Week Over Week Increases in Deaths - U.S.
600
500
400
300
200
100
0
-100
-200
-300
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
29-Jun
1-Jul
3-Jul
5-Jul
7-Jul
9-Jul
11-Jul
13-Jul
15-Jul
17-Jul


Weekly Cases Per Million
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
-
27-Apr
4-May
11-May
18-May
25-May
1-Jun
8-Jun
15-Jun
22-Jun
29-Jun
6-Jul
13-Jul
First Hot Spot
Second Hot Spot
Third Hot Spot
Remainder

A note about data and our approach:

As we have noted before, the 'new case' numbers are influenced by the number of tests. Since the rate of testing varies between entities, varies over time, and is dependent on the completeness of collection, the data on new cases can be misleading at times. However, counting them is simple. Does the test show positive? It is not so simple with deaths, where there is considerable interpretation as to whether COVID-19 was the causal factor. Take the case of a desperately ill person already in hospice care. When that person dies, if he or she has contracted COVID-19, that death is attributed to the contagion, even though death was near anyway. Moreover, some jurisdictions are counting a person dying with 'possible' COVID-19 infection as a COVID-19 death. In addition, there is also the same problem with completeness of counting as with the case statistics.

Recent revisions have slightly increased the number of new cases reported and widened the gap between our projection and the actual data. This process has lowered our confidence in our prediction of the quarantines being lifted quickly. In all of our analysis, we try to point out other factors that may bias the data or those who are reporting the data; and, in the interest of transparency,we strive to admit any bias we harbor. We acknowledge one of our biases - we suspect that there are deaths, classified as caused by Covid-19, in which Covid-19 was only coincidental. Call it our bias about someone else's bias - the potential of increased government and insurance funding, as well as other resources, may incentivize hospitals to report more of the deaths experienced in their facilities as Covid-19 caused.

We continue to find the scarcity of factual data being reported about the Covid-19 Virus alarming. Even more distressing is the scarcity of statistically-based trend analysis. There are many models based largely on assumption, with little of the kind of evidence-based analysis you will find in this report.

1. From within the health care industry, those with intimate working knowledge of patients and the evolution of the cases overall, are for some reason, not producing any statistical forecasts or even conducting simple mathematical trend analysis. We will give the benefit of the doubt, since we know they are busy treating patients, and perhaps the kind of work we love to do, just isn't on their priority list.
2. We claim no special insights into the virology or contagion or appropriate medical treatment protocols. We do, however, understand the basic principles of applying critical thinking, conducting a bit of evidence scrutiny, and then using some old-fashioned mathematical reasoning. We use data science techniques to produce trend analysis that is free from emotion, as well as to construct forecasts which have statistical significance. This analysis should allow our readers a chance to improve their awareness, embolden their patience (and we could all use a little more patience, right now), and set realistic expectations for the coming days, weeks, and months.

Important Disclosures

Broughton Capital, LLC is an independent, privately held, deep-data driven quantimental economics balanced with fundamental equity research, firm. Headquartered in St. Louis, with personnel in Boston, Dallas, Chicago, Nashville and Philadelphia, we travel the globe to meet with companies, their customers and vendors, and clients, as we strive to be the single best resource for transportation data and understanding the trends driving the future of the commercial transportation of goods. The material contained herein is based upon sources we believe to be reliable, but is not guaranteed to be accurate or complete. It is published for informational purposes only and should not be construed as an offer, or the solicitation of an offer to buy or sell any security. Opinions expressed are solely those of the author and subject to change as new data becomes available.

We are "The Independent Variable." Why? Two reasons:

1. As is true in a mathematical equation, **the independent variable drives the value, changes the value of the dependent variables.** Knowing the independent variable, allows you to solve for the value of not only the dependent variables but the value of the overall equation. We know that through good fundamental research, high quality data, and years of industry experience, we can literally change the value of an equity, a company's access to capital (debt and equity), ability to merge or acquire, and even a management team or their behavior. We know that if we do our job well, *we become the 'Independent Variable' in a company's future*.
2. **We are Independent**. We do not work for a large commercial bank. We are not beholden to lending relationships, or our firm's investment holdings, or even worse – our firm's investment bankers. While we pride ourselves on being independent from emotion and influence, we are aware of, and guarded against falling victim to, the cognitive biases inherent in the human brain. We are dependent on math and the power of back tested multivariable analysis, especially when balanced with wisdom of experience from those who have made decades of mistakes. **We are Variable**. Over the last several decades, we have been everything from strongly positive about to strongly negative about almost every single equity in the transportation universe. We have built our reputation upon having an opinion, and being clear about that opinion (i.e., no one ever finishes a conversation with us and says, "I wonder what they really think?"). We know that our opinions and outlooks may be everything from slightly flawed to completely wrong. As a result, we consider it our professional duty to change our opinions and outlooks as the statistics, data, or evidence warrant.

   Transportation stocks have the reputation for predicting the overall market #dowtransporttheory because the underlying goods flow is heartbeat of the economy. That goods flow becomes increased (or decreased) levels of asset utilization for asset intensive transportation companies, which becomes increased (or decreased) levels of financial returns, which becomes stock price. We believe that the stock price performance of transportation companies is only symptomatic of the underlying goods flow.