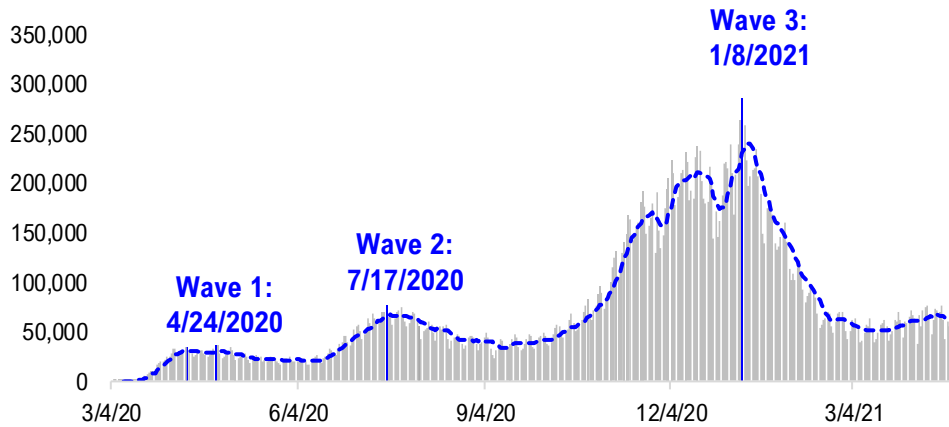


FSInsight Daily COVID-19 Chartbook

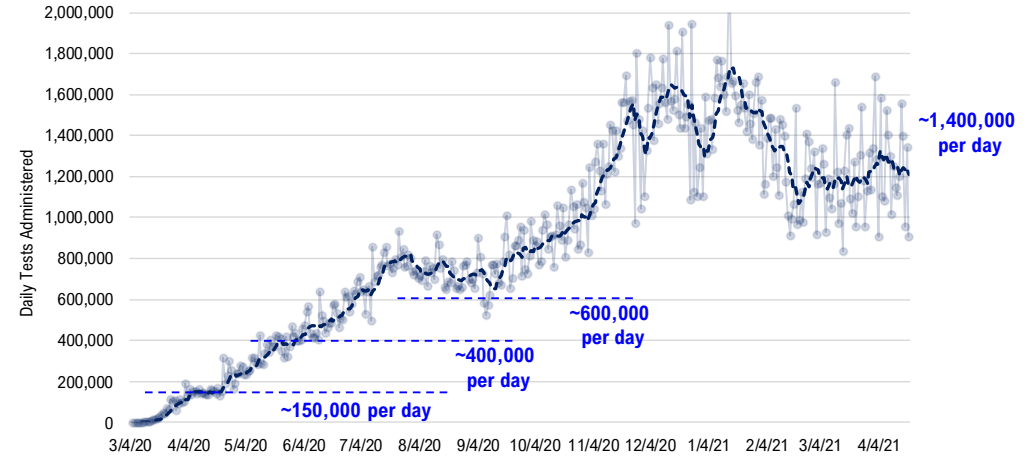


#1: USA COVID-19 Situation at a Glance...

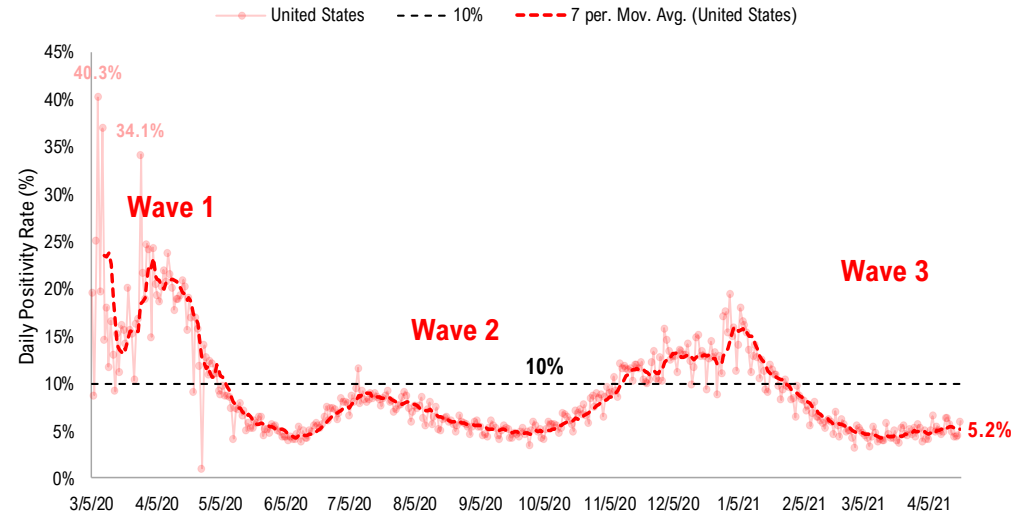
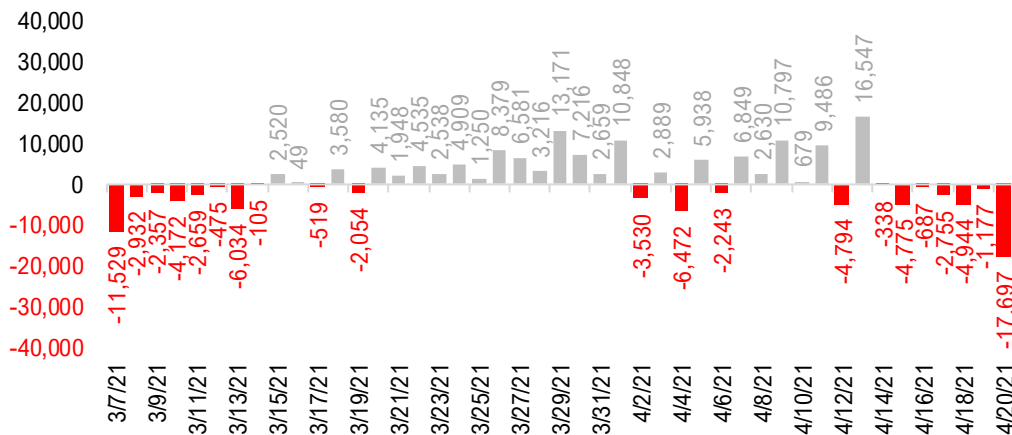
US daily new cases



USA total COVID-19 tests administered

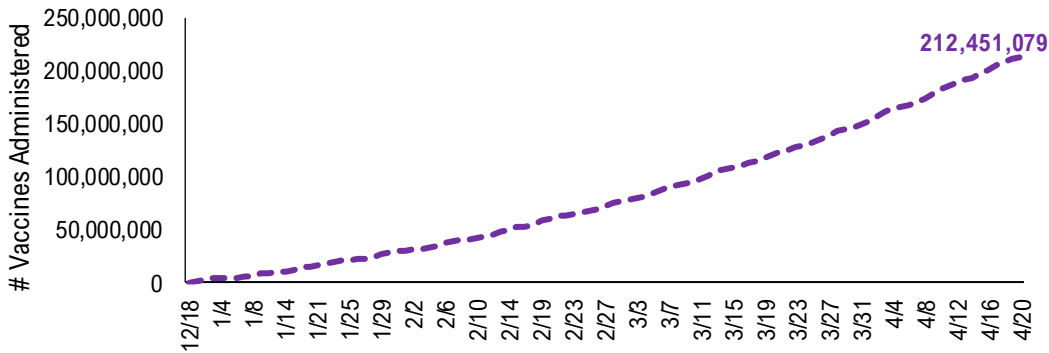


US daily new cases rolling 7D delta

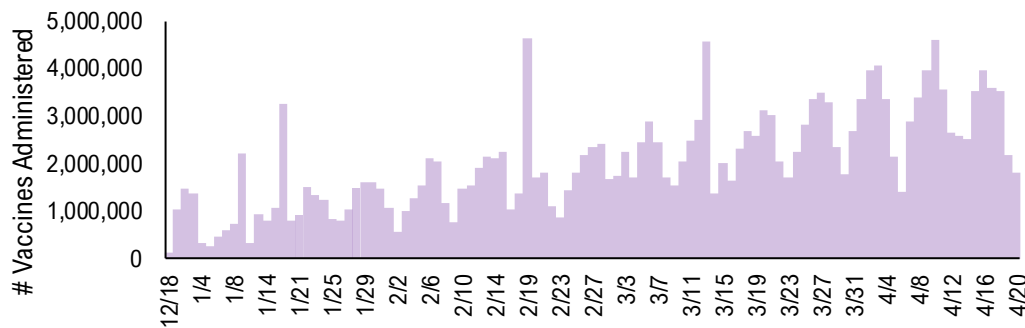


#2: USA COVID-19 Vaccination Progress at a Glance...

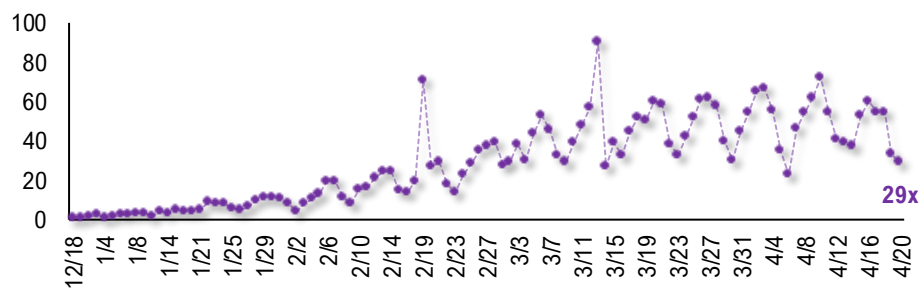
Cumulative Vaccines Administered



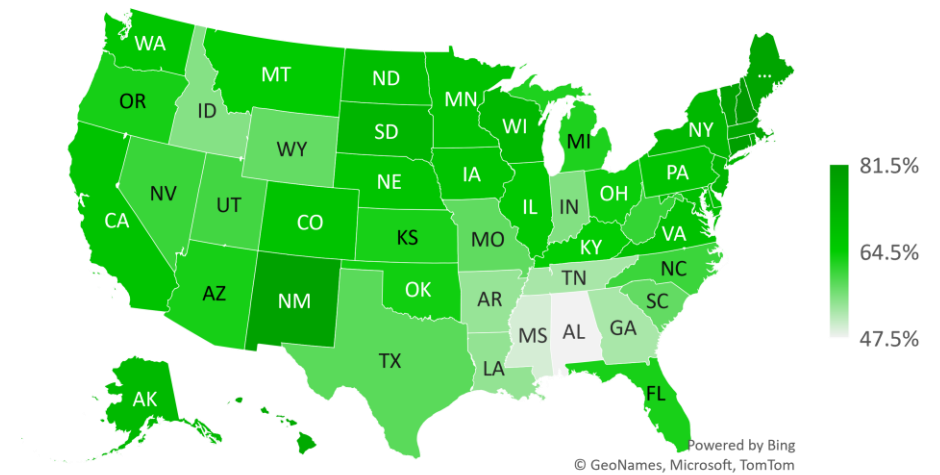
Daily Vaccines Administered



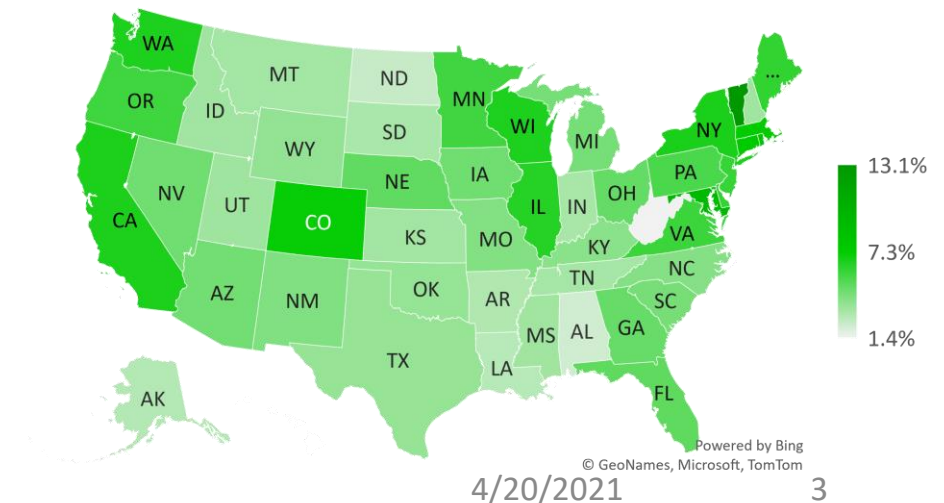
Daily Vaccinations / Daily Cases (7D Avg)



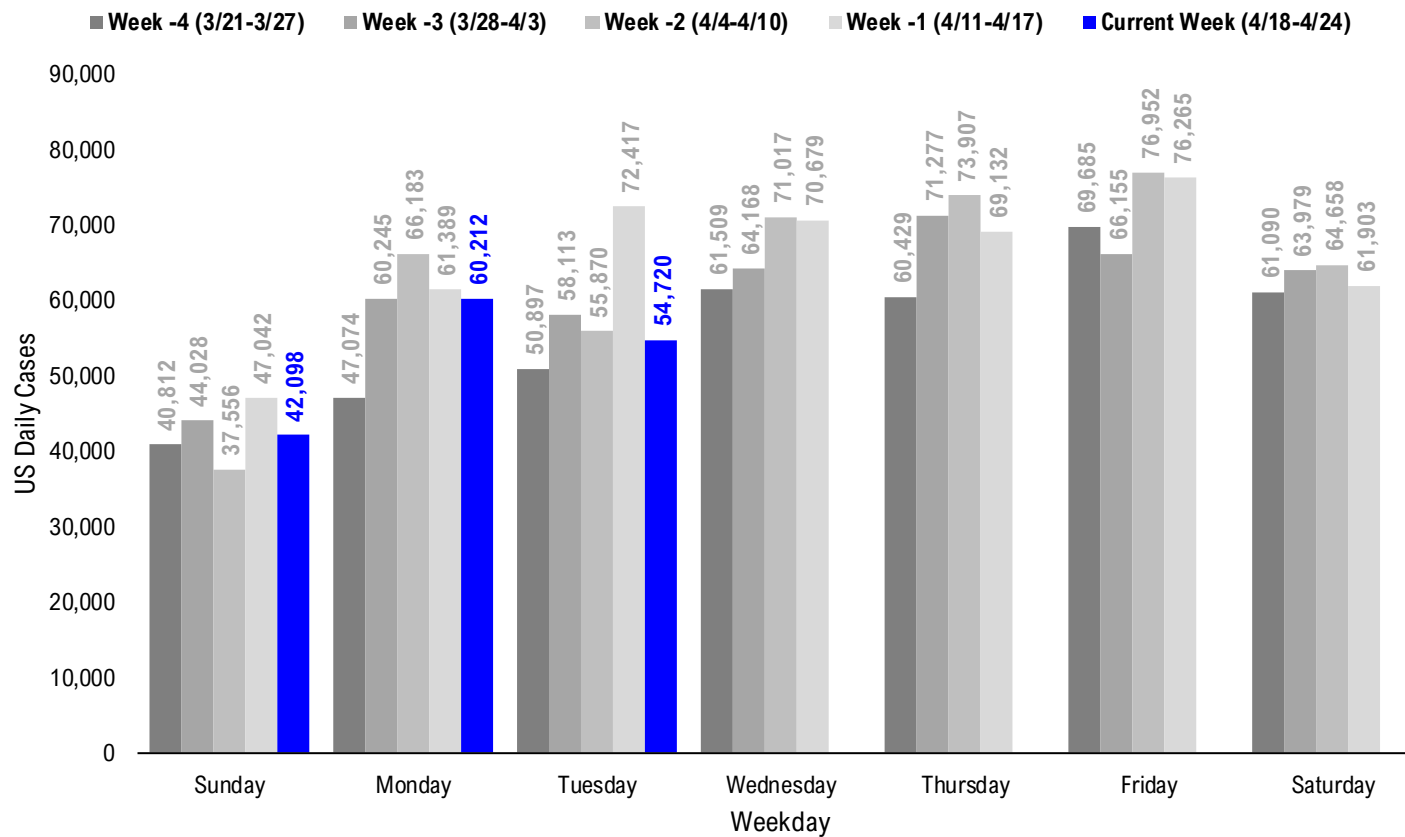
Cumulative Vaccines Administered as % State Population



Implied Weekly Vaccines Administered as % State Population



#3: USA COVID-19 Daily Cases Weekday Seasonality (Past 4 Weeks) ...



#4: USA State COVID-19 Situation at a Glance...

	Sorted Daily Cases		Daily Cases (3D avg) per 1mm residents				Since Peak		Hospitalization	
	% US Pop	% US GDP	4/20	7D Delta	4/20	7D Delta	# Days	% Decline in Daily Cases	7D Net Hospitalization	7D Net Hospitalization / 7D New Cases
	United States	100%	100%	54,720	-17,697	159	-24	101	-81%	1,365

	Sorted Daily Cases		Daily Cases (3D avg) per 1mm residents				Since Peak		Hospitalization	
	% US Pop	% US GDP	4/20	7D Delta	4/20	7D Delta	# Days	% Decline in Daily Cases	7D Net Hospitalization	7D Net Hospitalization / 7D New Cases
	United States	100%	100%	54,720	-17,697	159	-24	101	-81%	1,365

States:

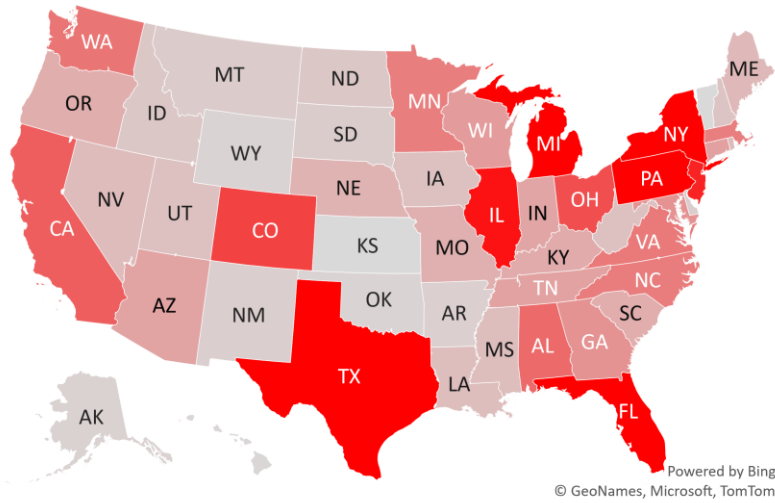
1 Florida	6.5%	5.0%	5,645	-3,423	259	+8	102	-71%	224	0.5%
2 Michigan	3.0%	2.6%	5,259	-3,608	462	-157	6	-48%	74	0.2%
3 Pennsylvania	3.9%	3.8%	4,577	-2,061	267	-74	136	-72%	292	0.9%
4 New York	5.9%	8.1%	3,922	-1,107	239	-47	101	-74%	-302	(0.7%)
5 Texas	8.7%	8.8%	3,554	-816	70	-15	103	-91%	-35	(0.2%)
6 Illinois	3.8%	4.2%	2,587	-606	190	-36	158	-82%	269	1.3%
7 New Jersey	2.7%	3.0%	2,364	-930	265	-44	101	-62%	-211	(1.0%)
8 Colorado	1.7%	1.8%	1,963	+59	232	-3	150	-78%	114	1.0%
9 Ohio	3.5%	3.3%	1,799	-541	129	-46	131	-87%	15	0.1%
10 California	11.9%	14.6%	1,606	+38	52	-25	100	-96%	-27	(0.2%)
11 Alabama	1.5%	1.1%	1,443	+11	124	-6	103	-88%	36	1.0%
12 Washington	2.3%	2.7%	1,294	+538	110	+13	146	-80%	159	2.0%
13 Virginia	2.6%	2.6%	1,236	-812	137	-42	92	-85%	22	0.2%
14 North Carolina	3.2%	2.7%	1,200	-164	218	-5	101	-79%	138	1.0%
15 Massachusetts	2.1%	2.8%	1,188	-410	189	-58	101	-83%	-6	(0.0%)
16 Minnesota	1.7%	1.8%	1,185	-173	255	-48	141	-82%	10	0.1%
17 Georgia	3.2%	2.9%	927	-167	74	-2	100	-91%	69	1.0%
18 Maryland	1.8%	2.0%	925	-159	150	-46	100	-75%	39	0.4%
19 Puerto Rico	1.0%	0.5%	831	+62	189	-41	122	-47%	140	2.4%
20 Wisconsin	1.8%	1.6%	805	-117	97	-11	158	-92%	33	0.7%
21 Connecticut	1.1%	1.3%	738	-380	288	-96	97	-79%	-38	(0.6%)
22 Tennessee	2.1%	1.8%	721	-736	297	+88	123	-80%	52	0.5%
23 Arizona	2.2%	1.7%	702	+92	96	+13	107	-94%	-3	(0.1%)
24 Indiana	2.0%	1.8%	676	-276	116	-44	136	-90%	10	0.1%
25 Kentucky	1.3%	1.0%	604	-192	83	-24	102	-93%	14	0.4%
26 South Carolina	1.6%	1.1%	574	-127	152	-0	100	-89%	-7	(0.1%)
27 Oregon	1.3%	1.2%	565	+17	131	+27	135	-68%	58	1.2%
28 Missouri	1.8%	1.5%	534	+105	53	+4	157	-93%	-12	(0.4%)

States:

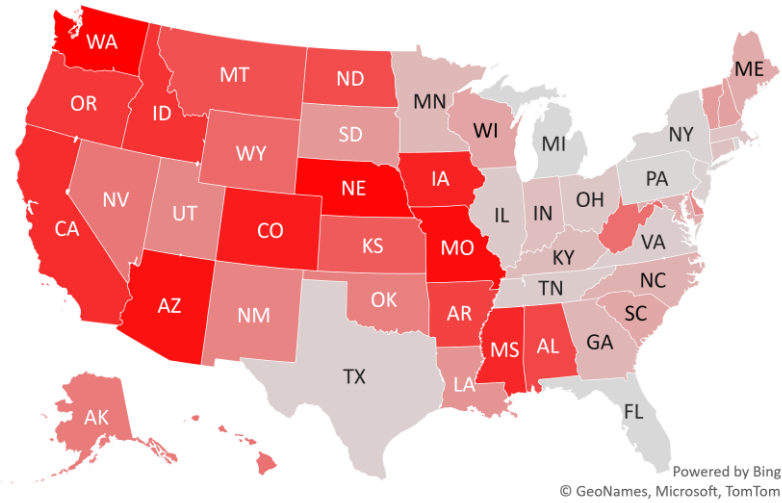
29 Nebraska	0.6%	0.6%	495	+164	140	+24	152	-90%	-6	(0.2%)
30 Maine	0.4%	0.3%	420	-151	254	-14	95	-58%	8	0.3%
31 Rhode Island	0.3%	0.3%	392	-1,285	380	-147	136	-76%	16	0.6%
32 Nevada	0.9%	0.8%	381	-31	117	+3	101	-88%	37	1.4%
33 Mississippi	0.9%	0.6%	362	+45	62	+6	101	-94%	0	0.0%
34 Louisiana	1.4%	1.3%	359	-83	127	+24	103	-89%	14	0.4%
35 West Virginia	0.5%	0.4%	315	-13	176	-17	107	-83%	0	0.0%
36 Utah	1.0%	0.9%	315	-43	79	-13	102	-94%	14	0.5%
37 Iowa	1.0%	0.9%	306	+55	81	-3	158	-94%	-5	(0.2%)
38 New Hampshire	0.4%	0.4%	270	-106	190	-94	106	-77%	6	0.2%
39 Idaho	0.5%	0.4%	238	+19	130	-11	131	-89%	10	0.6%
40 North Dakota	0.2%	0.3%	237	+6	151	+3	157	-94%	13	1.3%
41 Montana	0.3%	0.2%	177	+4	90	+2	156	-93%	15	1.6%
42 South Dakota	0.3%	0.3%	171	-91	115	-55	157	-94%	18	1.5%
43 Delaware	0.3%	0.4%	160	-50	318	-1	101	-66%	11	0.4%
44 New Mexico	0.6%	0.5%	137	-40	119	-8	151	-92%	18	1.2%
45 Arkansas	0.9%	0.6%	132	+15	25	-2	100	-97%	29	3.2%
46 District of Columbi	0.2%	0.7%	129	+16	137	+17	100	-72%	-1	(0.1%)
47 Alaska	0.2%	0.3%	103	-31	243	+6	136	-78%	-20	(1.8%)
48 Wyoming	0.2%	0.2%	78	-4	109	-5	152	-94%	3	0.8%
49 Oklahoma	1.2%	1.0%	75	-34	73	-18	100	-95%	-20	(1.1%)
50 Hawaii	0.4%	0.5%	44	-19	52	-1	234	-75%	-4	(0.7%)
51 Vermont	0.2%	0.2%	0	-97	130	-96	18	-62%	-2	(0.3%)
52 U.S. Virgin Islands	0.0%	0.0%	0	-60	0	-187	23	-100%	0	
53 Northern Mariana	0.0%	0.0%	0	+0	0	+0	175	-100%	0	0.0%
54 Kansas	0.9%	0.8%	0	+0	49	-6	146	-97%	84	5.3%
55 Guam	0.0%	0.0%	0	+0	0	+0	161	-100%	0	0.0%
56 American Samoa	0.0%	0.0%	0	+0	0	+0	0	0%	0	

#5: USA COVID-19 Heat Map...

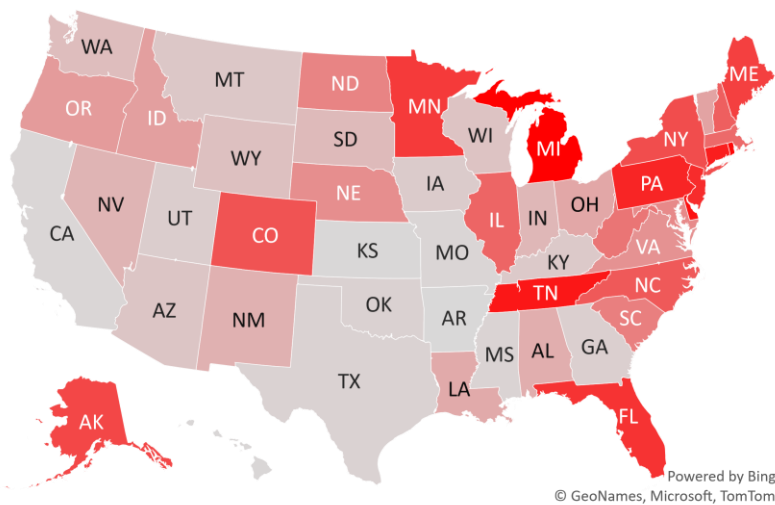
Daily Case Increases



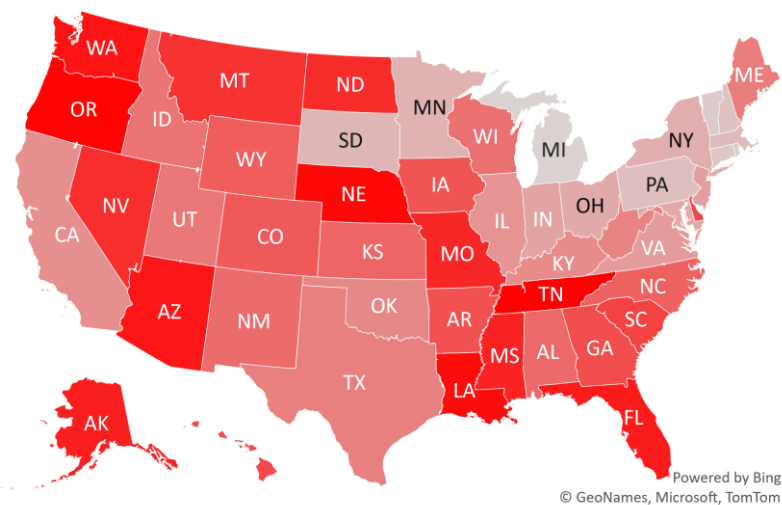
7D Delta in Daily New Cases



Daily Case Increases per 1mm Resident (3D Avg)



7D Delta in Daily Case Increases per 1mm Resident (3D Avg)



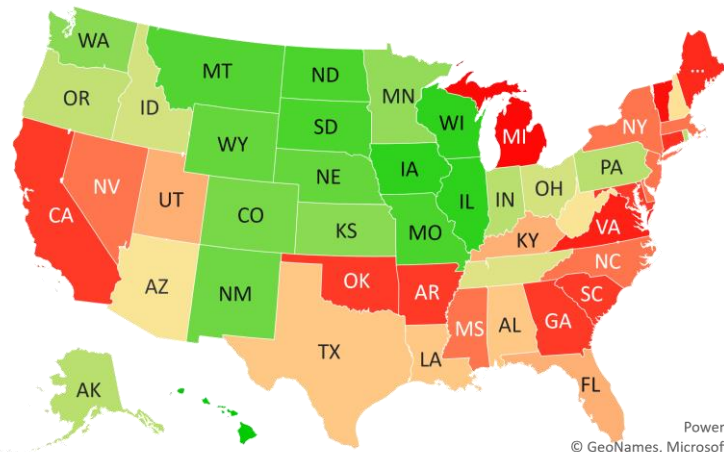
#6: # of Days since Daily Case Peaked by States...

Days since Daily Cases (3D Avg) Peak (as of 4/20)

	Sorted			
	Peak Date	4/20/21	% off the Peak	% US Pop
United States	1/9/21	101	-81%	100%
States:				
Hawaii	8/29/20	234	-75%	0.4%
Northern Mariana Island	10/27/20	175	-100%	0.0%
Guam	11/10/20	161	-100%	0.0%
Wisconsin	11/13/20	158	-92%	1.8%
Illinois	11/13/20	158	-82%	3.8%
Iowa	11/13/20	158	-94%	1.0%
South Dakota	11/14/20	157	-94%	0.3%
North Dakota	11/14/20	157	-94%	0.2%
Missouri	11/14/20	157	-93%	1.8%
Montana	11/15/20	156	-93%	0.3%
Wyoming	11/19/20	152	-94%	0.2%
Nebraska	11/19/20	152	-90%	0.6%
New Mexico	11/20/20	151	-92%	0.6%
Colorado	11/21/20	150	-78%	1.7%
Washington	11/25/20	146	-80%	2.3%
Kansas	11/25/20	146	-97%	0.9%
Minnesota	11/30/20	141	-82%	1.7%
Rhode Island	12/5/20	136	-76%	0.3%
Pennsylvania	12/5/20	136	-72%	3.9%
Indiana	12/5/20	136	-90%	2.0%
Alaska	12/5/20	136	-78%	0.2%
Oregon	12/6/20	135	-68%	1.3%
Ohio	12/10/20	131	-87%	3.5%
Idaho	12/10/20	131	-89%	0.5%
Tennessee	12/18/20	123	-80%	2.1%
Puerto Rico	12/19/20	122	-47%	1.0%
West Virginia	1/3/21	107	-83%	0.5%
Arizona	1/3/21	107	-94%	2.2%

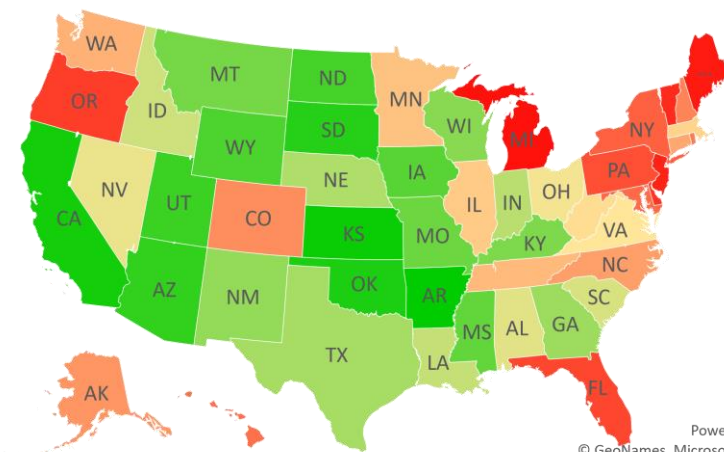
	Sorted			
	Peak Date	4/20/21	% off the Peak	% US Pop
United States	1/9/21	101	-81%	100%
States:				
New Hampshire	1/4/21	106	-77%	0.4%
Texas	1/7/21	103	-91%	8.7%
Louisiana	1/7/21	103	-89%	1.4%
Alabama	1/7/21	103	-88%	1.5%
Utah	1/8/21	102	-94%	1.0%
Kentucky	1/8/21	102	-93%	1.3%
Florida	1/8/21	102	-71%	6.5%
New York	1/9/21	101	-74%	5.9%
Nevada	1/9/21	101	-88%	0.9%
New Jersey	1/9/21	101	-62%	2.7%
North Carolina	1/9/21	101	-79%	3.2%
Mississippi	1/9/21	101	-94%	0.9%
Massachusetts	1/9/21	101	-83%	2.1%
Delaware	1/9/21	101	-66%	0.3%
South Carolina	1/10/21	100	-89%	1.6%
Oklahoma	1/10/21	100	-95%	1.2%
Maryland	1/10/21	100	-75%	1.8%
Georgia	1/10/21	100	-91%	3.2%
District of Columbia	1/10/21	100	-72%	0.2%
California	1/10/21	100	-96%	11.9%
Arkansas	1/10/21	100	-97%	0.9%
Connecticut	1/13/21	97	-79%	1.1%
Maine	1/15/21	95	-58%	0.4%
Virginia	1/18/21	92	-85%	2.6%
U.S. Virgin Islands	3/28/21	23	-100%	0.0%
Vermont	4/2/21	18	-62%	0.2%
Michigan	4/14/21	6	-48%	3.0%

Days since Daily Case Peak: **Longer = Good**



Powered by Bing
© GeoNames, Microsoft, TomTom

Daily Cases % off the Peak: **Larger Decline = Good**



Powered by Bing
© GeoNames, Microsoft, TomTom

#7: US New Cases by States... (sorted by today's new cases)

Sorted

7D Ago Last 3-day Trend

VT COVID dashboard is not updated on Tuesday due to a system upgrade...

	4/13/21	4/18/21	4/19/21	4/20/21	vs 7D ago
United States	72,417	42,098	60,212	54,720	-17,697
States:					
Florida	9,068	6,834	4,237	5,645	
Michigan	8,867	0	8,574	5,259	
Pennsylvania	6,638	3,761	1,914	4,577	
New York	5,029	5,704	4,339	3,922	
Texas	4,370	1,434	1,073	3,554	
Illinois	3,193	2,666	1,959	2,587	
New Jersey	3,294	2,760	1,928	2,364	
Colorado	1,904	1,261	777	1,963	
Ohio	2,340	1,076	1,632	1,799	
California	1,568	2,667	1,916	1,606	
Alabama	1,432	270	111	1,443	
Washington	756	0	1,218	1,294	<--higher
Virginia	2,048	1,305	978	1,236	
North Carolina	1,364	0	5,673	1,200	
Massachusetts	1,598	1,407	1,317	1,188	
Minnesota	1,358	1,845	1,284	1,185	
Georgia	1,094	702	725	927	
Maryland	1,084	1,169	631	925	
Puerto Rico	769	0	980	831	
Wisconsin	922	518	373	805	
Connecticut	1,118	0	2,339	738	
Tennessee	1,457	0	5,358	721	
Arizona	610	711	692	702	
Indiana	952	956	712	676	
Kentucky	796	275	231	604	
South Carolina	701	1,021	753	574	
Oregon	548	620	471	565	
Missouri	429	254	189	534	<--higher

Sorted

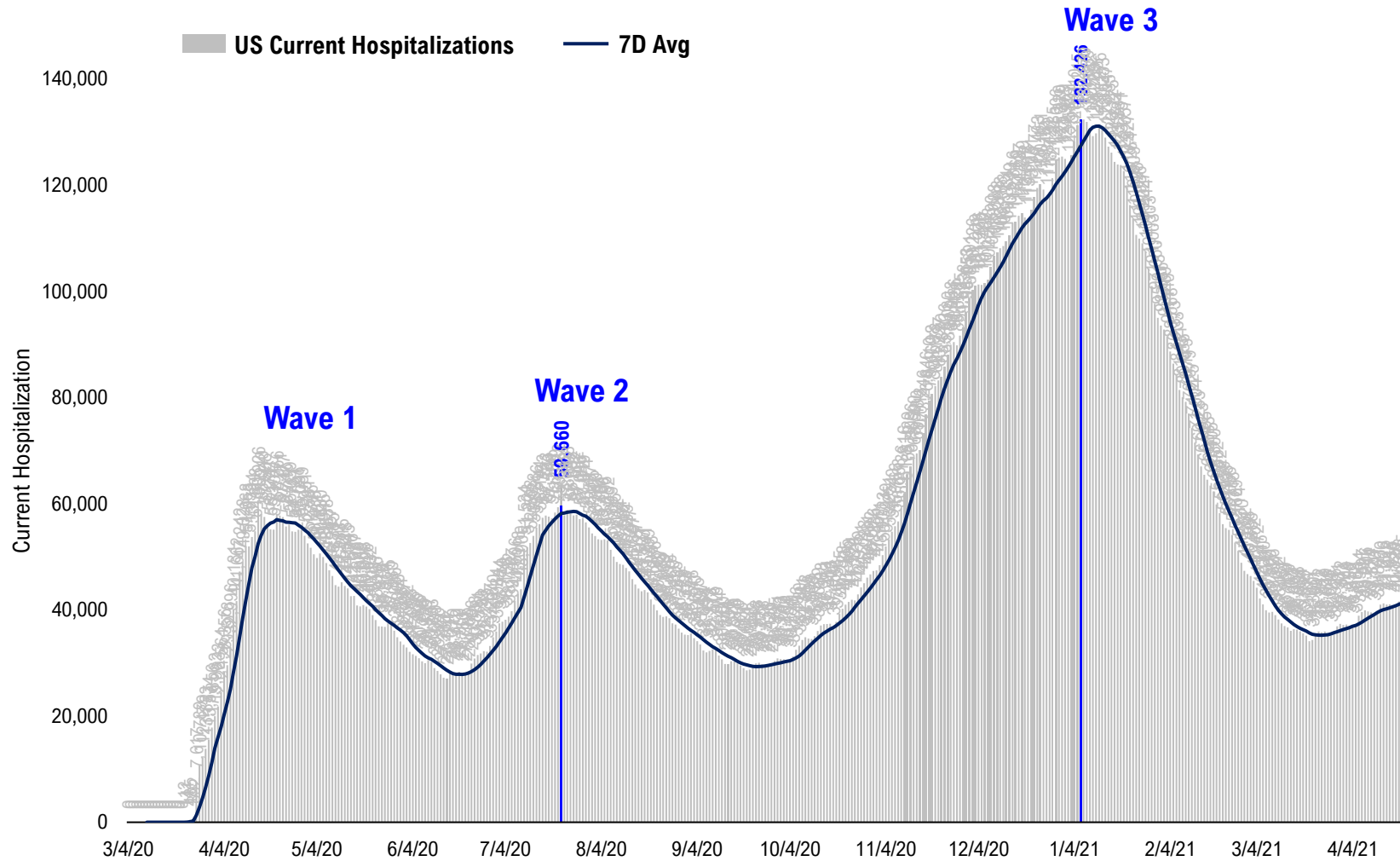
7D Ago Last 3-day Trend

VT COVID dashboard is not updated on Tuesday due to a system upgrade...

	4/13/21	4/18/21	4/19/21	4/20/21	vs 7D ago
United States	72,417	42,098	60,212	54,720	-17,697
States:					
Nebraska	331	176	140	495	<--higher
Maine	571	346	260	420	
Rhode Island	1,677	0	817	392	
Nevada	412	0	698	381	
Mississippi	317	157	37	362	
Louisiana	442	0	1,413	359	
West Virginia	328	370	260	315	
Utah	358	248	200	315	
Iowa	251	218	239	306	<--higher
New Hampshire	376	307	197	270	
Idaho	219	181	277	238	
North Dakota	231	58	51	237	
Montana	173	56	57	177	
South Dakota	262	0	133	171	
Delaware	210	381	389	160	
New Mexico	177	0	610	137	
Arkansas	117	43	54	132	
District of Columbia	113	83	78	129	
Alaska	134	0	430	103	
Wyoming	82	0	111	78	
Oklahoma	109	0	787	75	
Hawaii	63	111	65	44	
Vermont	97	147	96	0	
U.S. Virgin Islands	60	0	0	0	
Northern Mariana Islands	0	0	0	0	
Kansas	0	0	429	0	
Guam	0	0	0	0	
American Samoa	0	0	0	0	

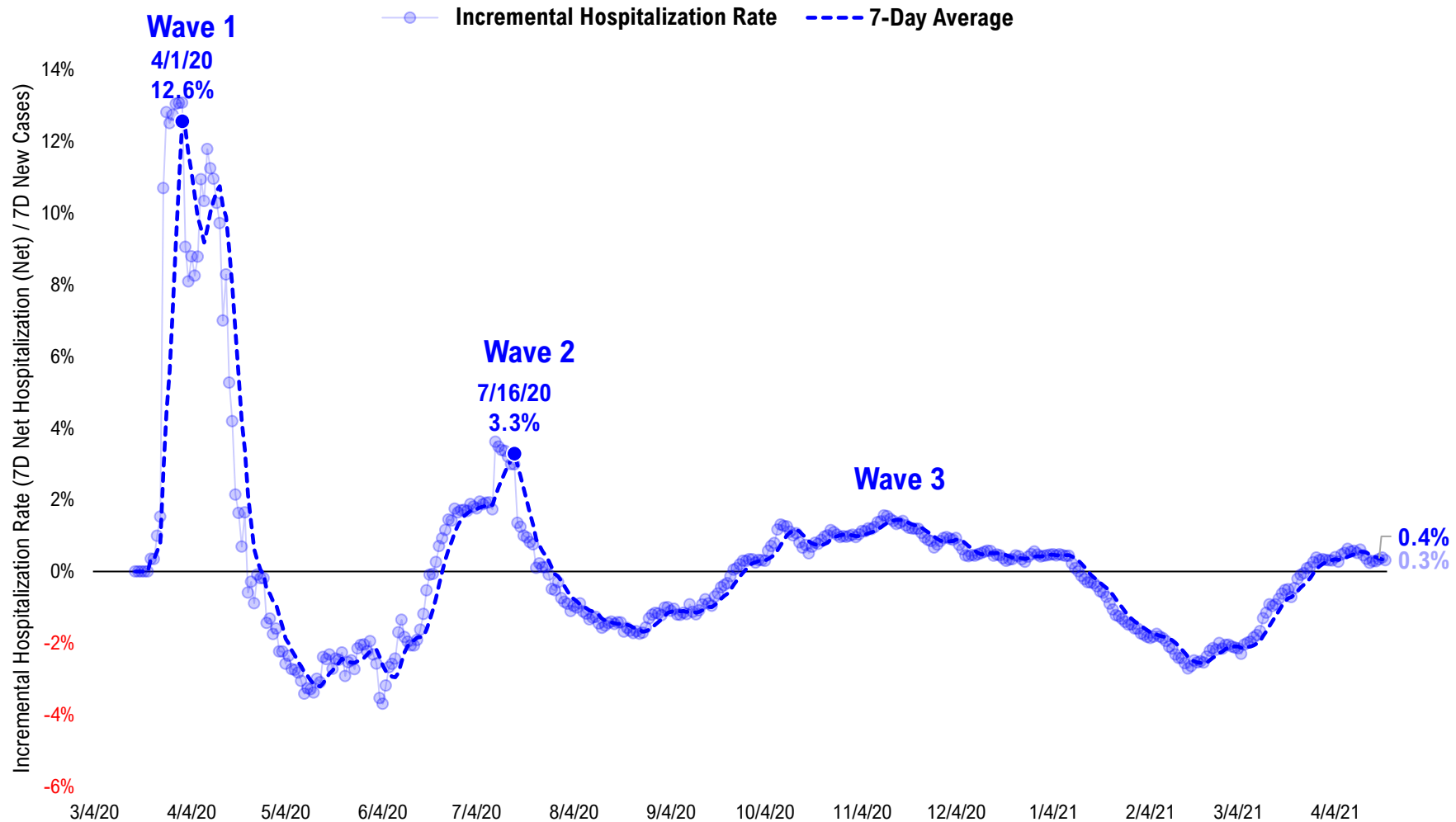
#8: US Daily Hospitalizations...

US Net Hospitalizations (aggregate of 50 states + Washington, D.C.)



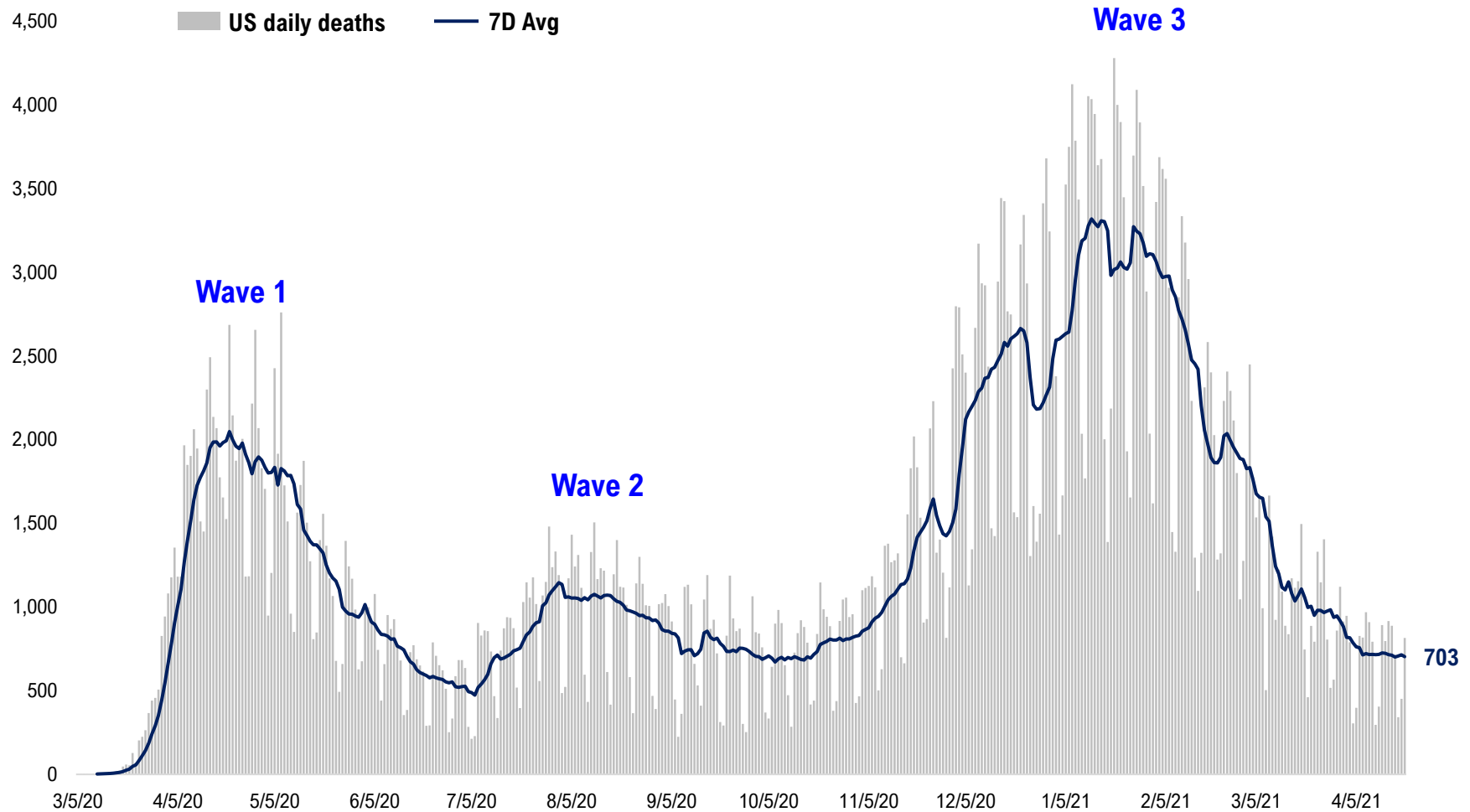
#9: Incremental Hospitalization Rate...

Incremental Hospitalization Rate: 7D Net Hospitalizations / 7D Total New Cases
(aggregate of 50 states + Washington, D.C.)

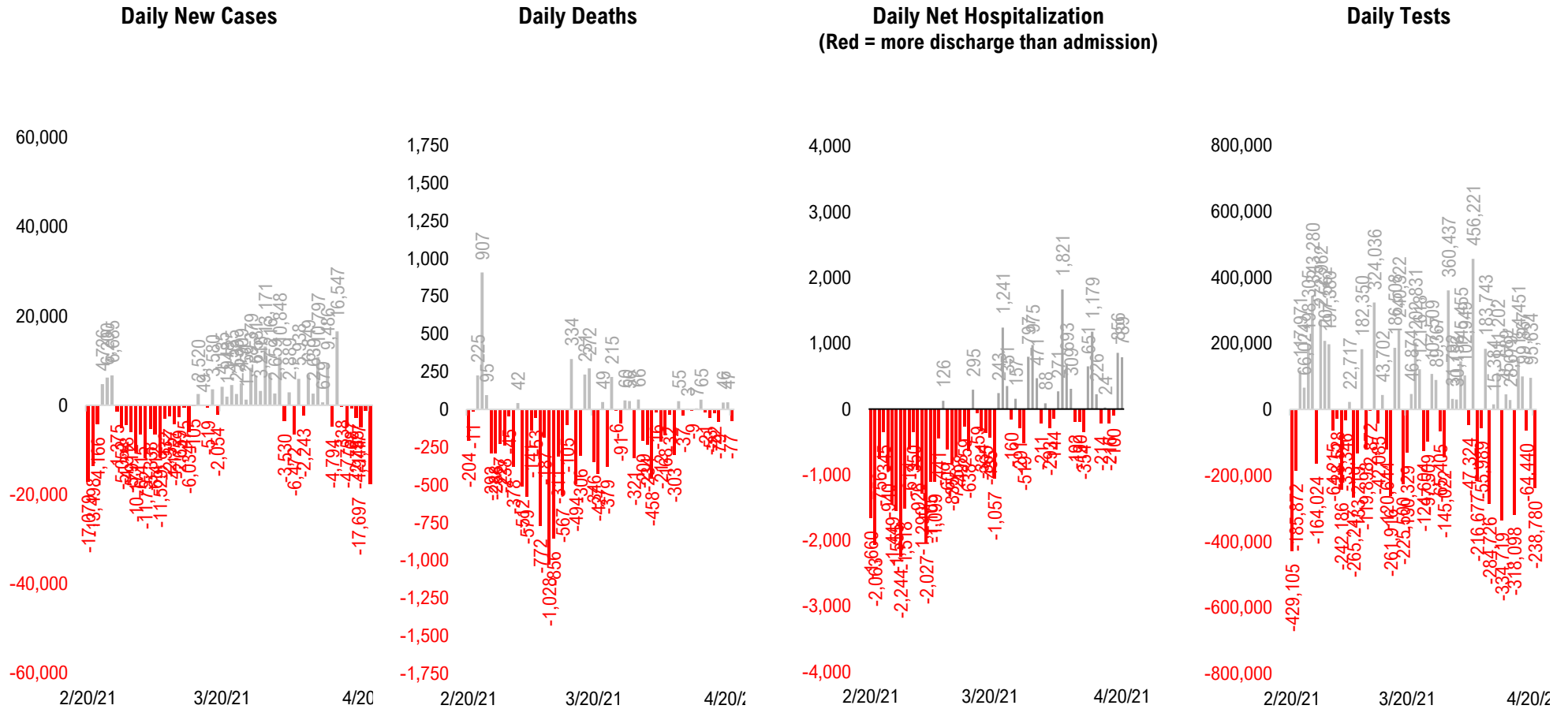


#10: US Daily New Fatalities...

US daily COVID-19 Fatalities



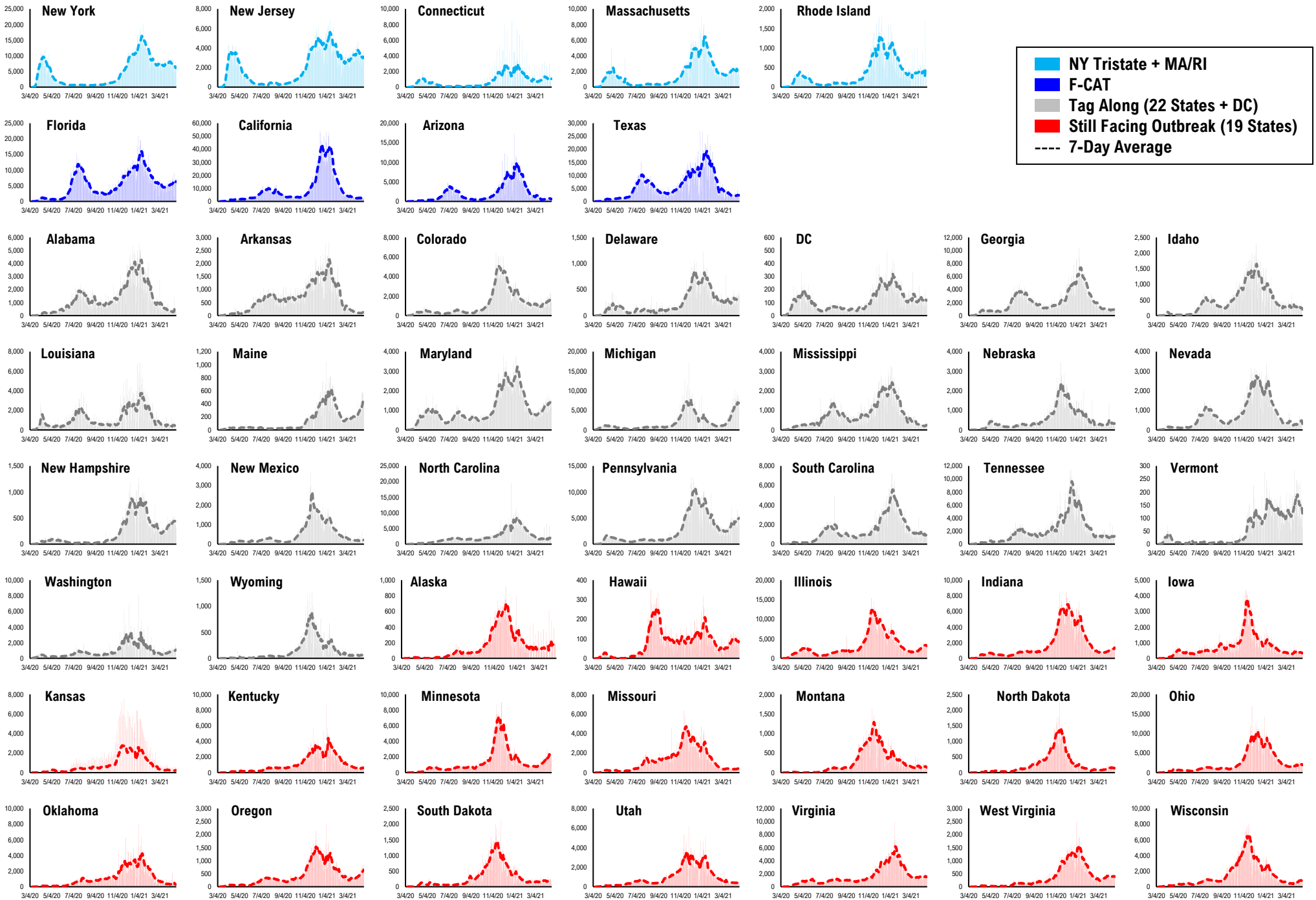
#11: Rolling 7-Day Change in the Key Metrics... (Past 8 Weeks)



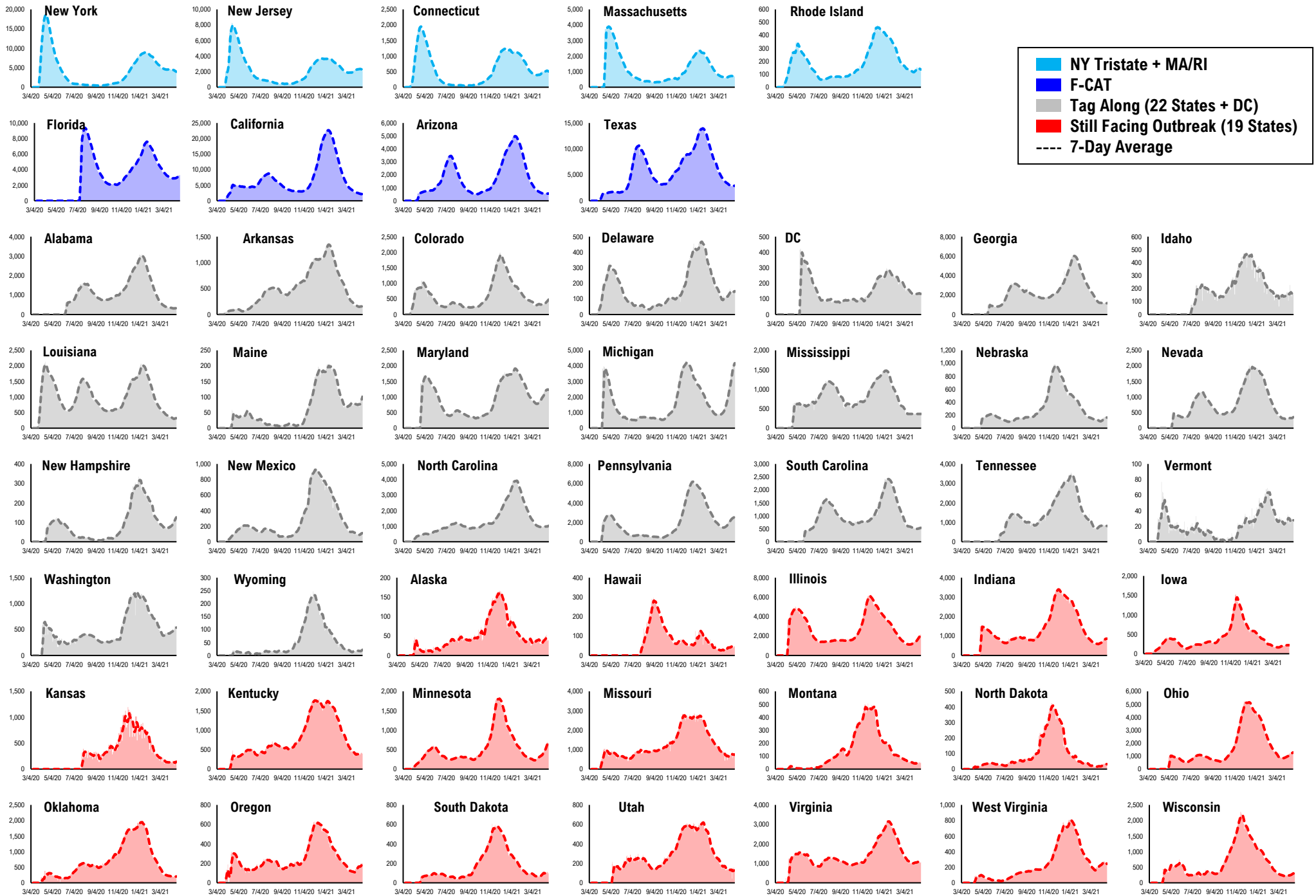
* Ignored California between 8/10 and 8/23, due to its data glitch caused 300,000-case backlog

Source: Fundstrat, COVID-19 Tracking Project, State Department of Health

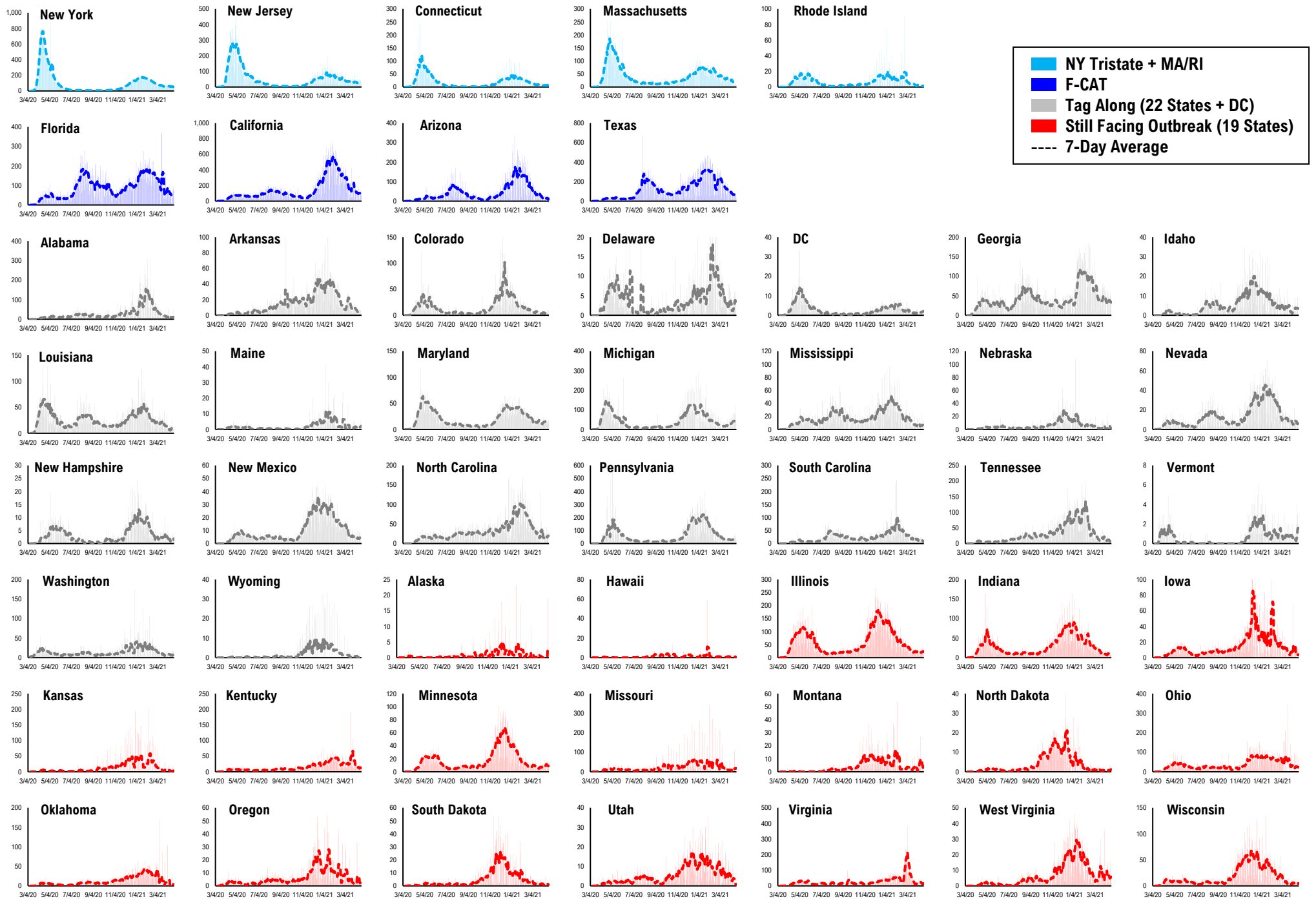
#12: Daily New Cases by States...



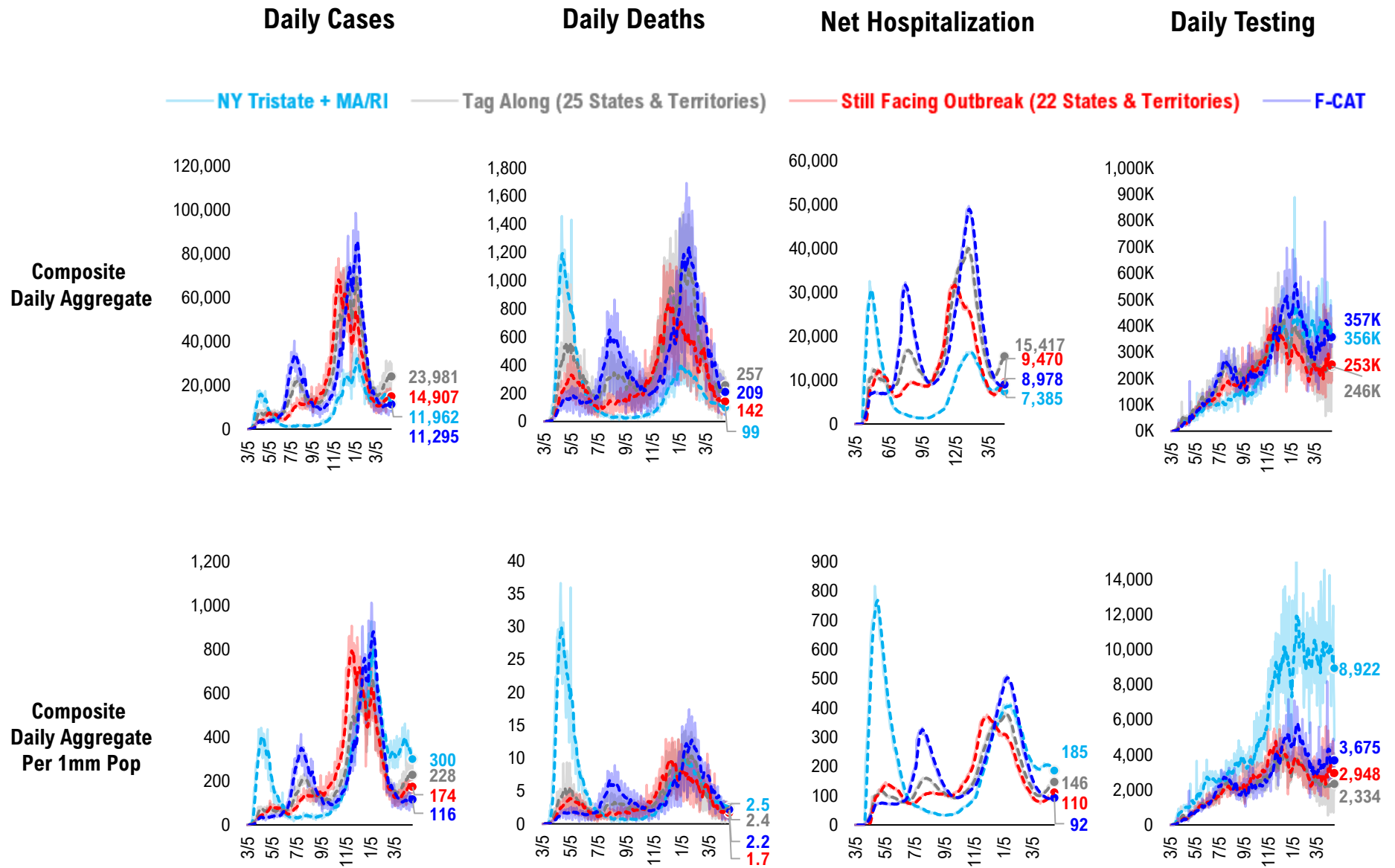
#13: Current Hospitalizations by States...



#14: Daily New Deaths by States...

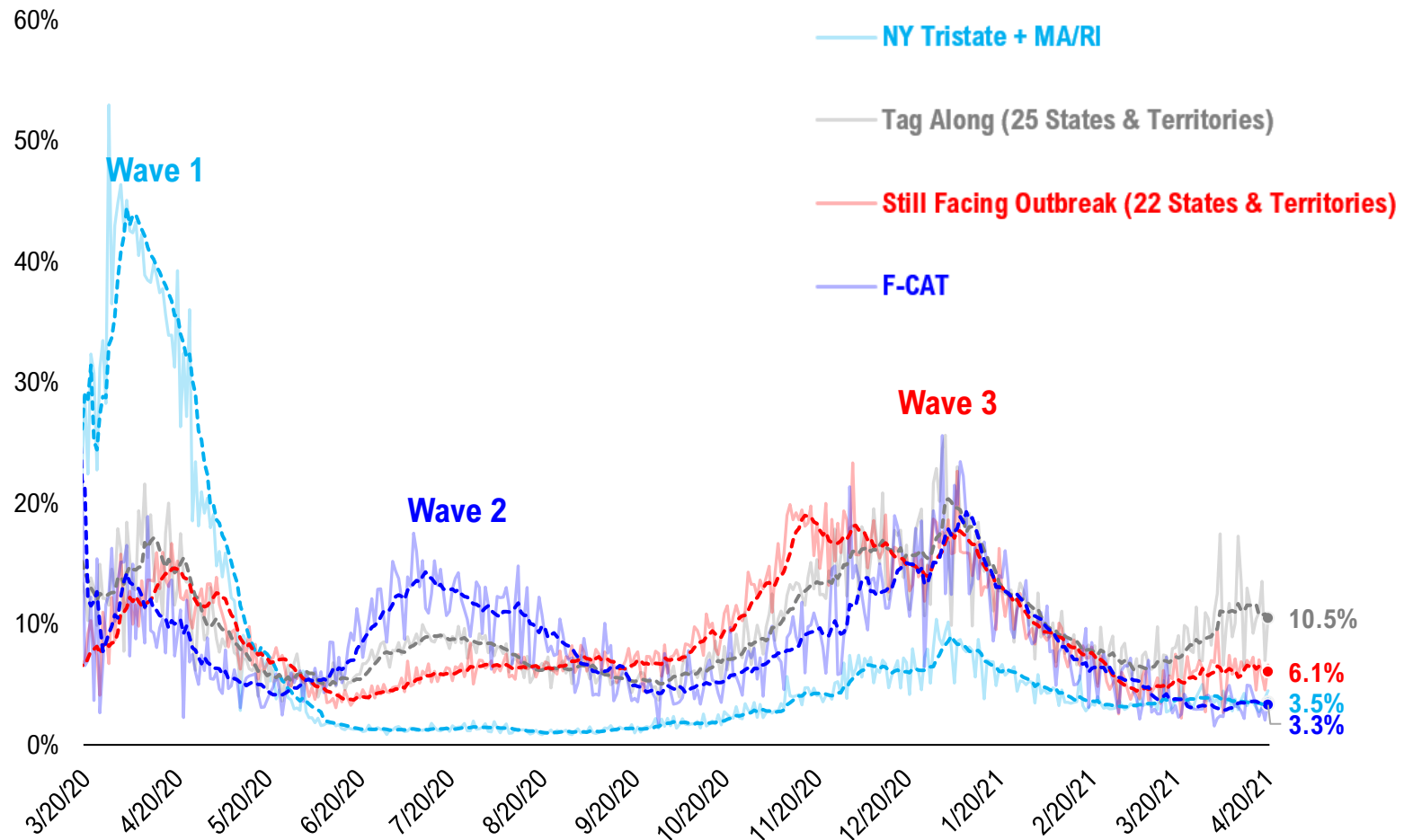


#15: State COVID-19 situation by Tier...

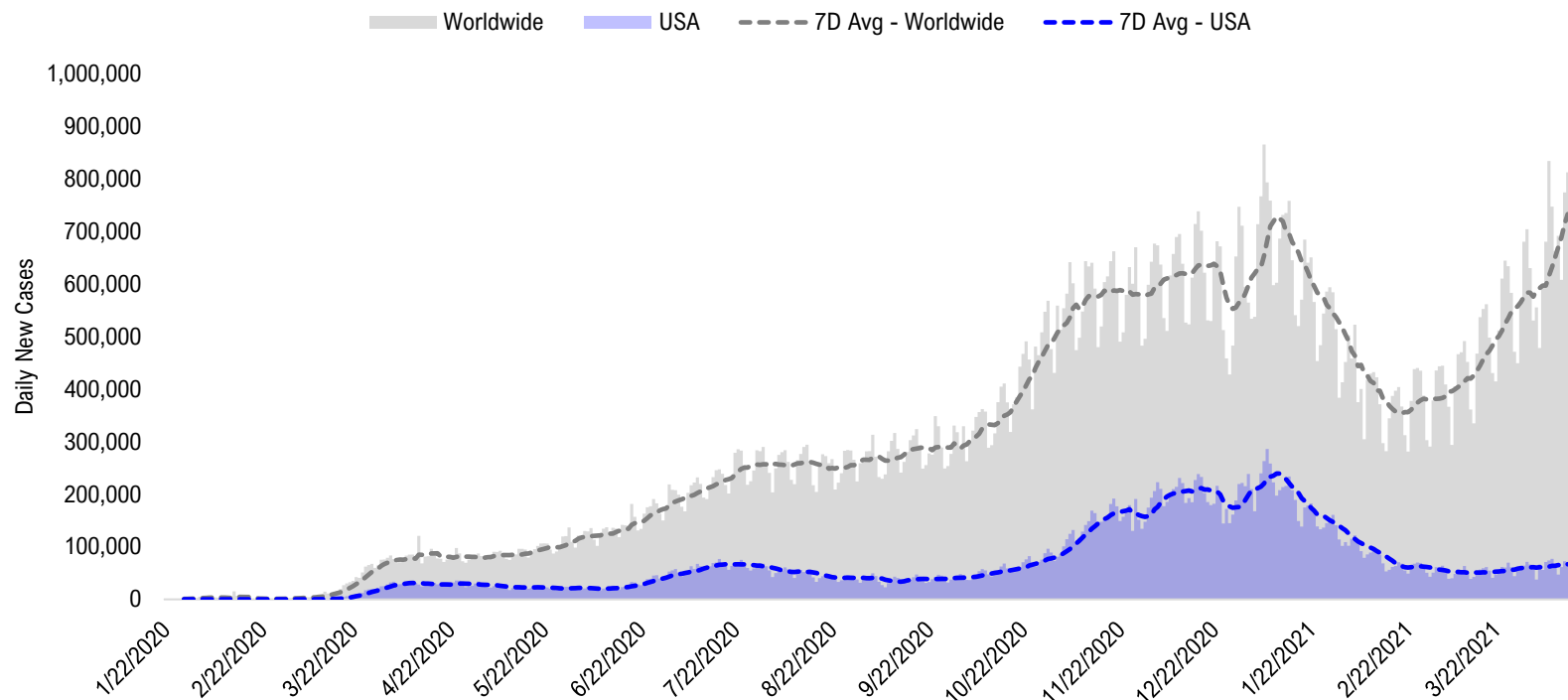


#16: State COVID-19 Daily Positivity Rate by Tier...

Composite Daily Positivity Rate



#17: Global COVID-19 Situation at a Glance...



Dec 4	Dec 18	Jan 1	Jan 15	Jan 29	Feb 12	Feb 26	Mar 12	Mar 26	Apr 9	Apr 19
Europe 234,613	Europe 248,691	Europe 227,213	Europe 243,930	Europe 195,208	Europe 145,047	Europe 150,232	Europe 172,950	Europe 233,545	Europe 226,762	Pakistan + India + Bangladesh 242,821
US + Canada 181,863	US + Canada 218,055	US + Canada 195,207	US + Canada 228,560	US + Canada 151,931	US + Canada 94,843	Latin America 90,697	Latin America 106,657	Latin America 121,448	Latin America 128,319	Europe 232,805
Latin America 77,676	Latin America 85,354	Latin America 78,723	Latin America 118,406	Latin America 110,698	Latin America 87,199	US + Canada 65,753	US + Canada 54,551	US + Canada 59,138	Pakistan + India + Bangladesh 127,964	Latin America 137,999
Pakistan + India + Bangladesh 41,888	Pakistan + India + Bangladesh 29,698	Africa 23,274	Africa 31,292	Asia ex- India+Pakistan 26,451	Asia ex- India+Pakistan 19,467	Asia ex- India+Pakistan 16,429	Pakistan + India + Bangladesh 23,076	Pakistan + India + Bangladesh 57,373	US + Canada 71,402	US + Canada 73,402
Asia ex- India+Pakistan 16,452	Africa 17,772	Pakistan + India + Bangladesh 19,958	Asia ex- India+Pakistan 25,115	Africa 20,287	Pakistan + India + Bangladesh 12,778	Pakistan + India + Bangladesh 16,328	Asia ex- India+Pakistan 14,244	Asia ex- India+Pakistan 19,058	Asia ex- India+Pakistan 24,103	Asia ex- India+Pakistan 29,600
Africa 13,958	Asia ex- India+Pakistan 17,001	Asia ex- India+Pakistan 18,156	Pakistan + India + Bangladesh 21,782	Pakistan + India + Bangladesh 15,623	Africa 12,288	Africa 9,945	Africa 10,142	Africa 11,175	Africa 11,159	Africa 11,424

Disclosures

This research is for the clients of FS Insight only. For important disclosures and rating histories regarding sectors or companies that are the subject of this report, please contact your sales representative or FS Insight at 150 East 52nd Street, New York, NY, 10022 USA.

Analyst Certification (Reg AC)

Thomas J. Lee, the research analyst denoted by an “AC” on the cover of this report, hereby certifies that all of the views expressed in this report accurately reflect his personal views, which have not been influenced by considerations of the firm’s business or client relationships.

Neither I, nor a member of my household is an officer, director, or advisory board member of the issuer(s) or has another significant affiliation with the issuer(s) that is/are the subject of this research report. There is a possibility that we will from time to time have long or short positions in, and buy or sell, the securities or derivatives, if any, referred to in this research

Conflicts of Interest

This research contains the views, opinions and recommendations of FS Insight . As of the time of writing and publication of this presentation, FS Insight does not know of, or have reason to know of any material conflicts of interest at the time of the publication of this presentation. The Company has no contractual relationship, nor have we received any compensation from any of the companies listed in this research report.

Analyst Industry/Sector Views

Positive (+): The analyst expects the performance of his industry/sector coverage universe over the next 6-18 months to be attractive vs. the relevant broad market benchmark, being the S&P 500 for North America.

Neutral (N): The analyst expects the performance of his or her industry/sector coverage universe over the next 6-18 months to be in line with the relevant broad market benchmark, being the S&P 500 for North America.

Negative (-): The analyst expects his or her industry coverage universe over the next 6-18 months to underperform vs. the relevant broad market benchmark, being the S&P 500 for North America.

General Disclosures

FS Insight is an independent research company and is not a registered investment advisor and is not acting as a broker dealer under any federal or state securities laws. FS Insight is a member of IRC Securities’ Research Prime Services Platform. IRC Securities is a FINRA registered broker-dealer that is focused on supporting the independent research industry. Certain personnel of FS Insight (i.e. Research Analysts) are registered representatives of IRC Securities, a FINRA member firm registered as a broker-dealer with the Securities and Exchange Commission and certain state securities regulators. As registered representatives and independent contractors of IRC Securities, such personnel may receive commissions paid to or shared with IRC Securities for transactions placed by FS Insight clients directly with IRC Securities or with securities firms that may share commissions with IRC Securities in accordance with applicable SEC and FINRA requirements. IRC Securities does not distribute the research of FS Insight , which is available to select institutional clients that have engaged FS Insight .

As registered representatives of IRC Securities our analysts must follow IRC Securities’ Written Supervisory Procedures. Notable compliance policies include (1) prohibition of insider trading or the facilitation thereof, (2) maintaining client confidentiality, (3) archival of electronic communications, and (4) appropriate use of electronic communications, amongst other compliance related policies.

FS Insight does not have the same conflicts that traditional sell-side research organizations have because FS Insight (1) does not conduct any investment banking activities, (2) does not manage any investment funds, and (3) our clients are only institutional investors.

This research is for the clients of FS Insight only. Additional information is available upon request. Information has been obtained from sources believed to be reliable but FS Insight does not warrant its completeness or accuracy except with respect to any disclosures relative to FS Insight and the analyst’s involvement (if any) with any of the subject companies of the research. All pricing is as of the market close for the securities discussed, unless otherwise stated. Opinions and estimates constitute our judgment as of the date of this material and are subject to change without notice. Past performance is not indicative of future results. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, risk tolerance, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies. The recipient of this report must make its own independent decision regarding any securities or financial instruments mentioned herein. Except in circumstances where FS Insight expressly agrees otherwise in writing, FS Insight is not acting as a municipal advisor and the opinions or views contained herein are not intended to be, and do not constitute, advice, including within the meaning of Section 15B of the Securities Exchange Act of 1934. All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client website, FS Insight .com. Not all research content is redistributed to our clients or made available to third-party aggregators or the media. Please contact your sales representative if you would like to receive any of our research publications.

Copyright 2021 FS Insight LLC. All rights reserved. No part of this material may be reprinted, sold or redistributed without the prior written consent of FS Insight LLC.