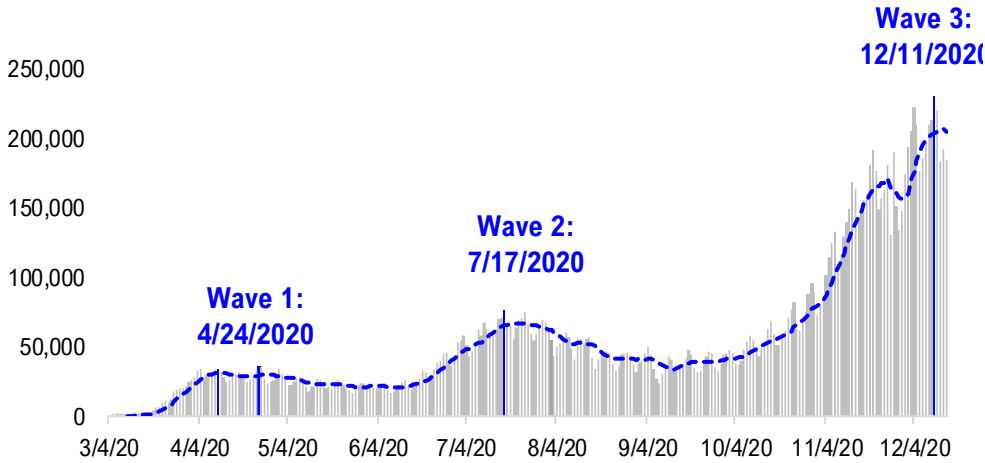


# FSInsight Daily COVID-19 Chartbook

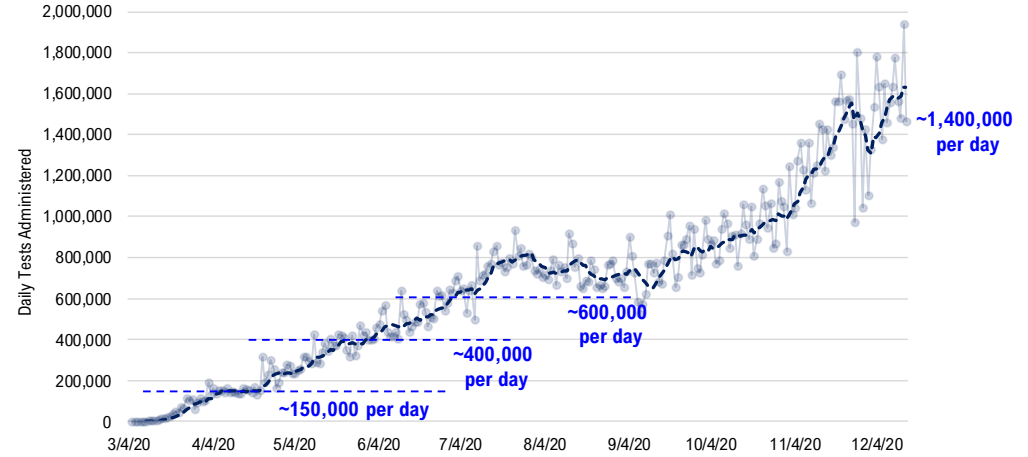


# #1: USA COVID-19 Situation at a Glance...

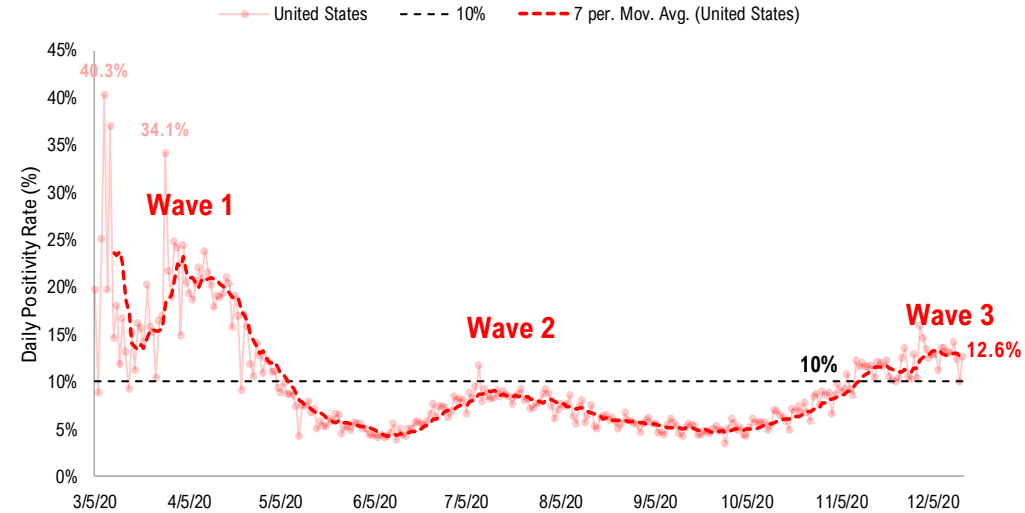
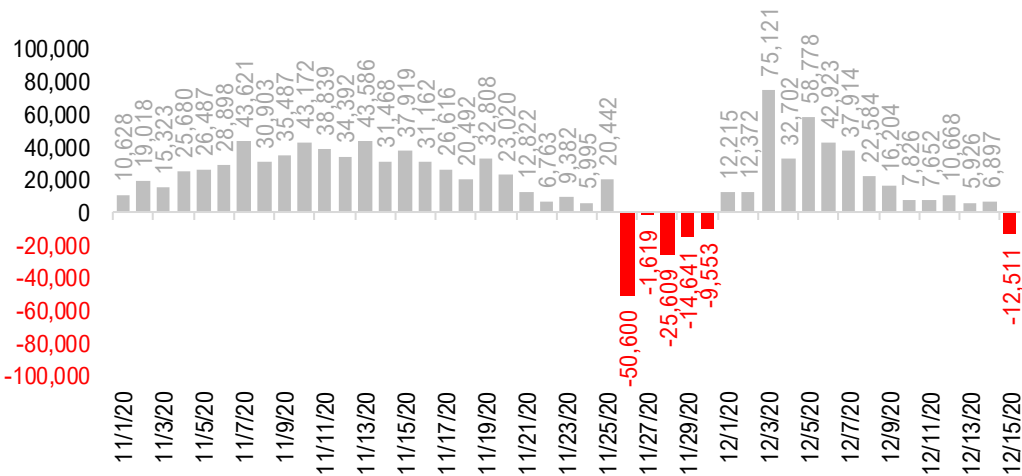
**US daily new cases**



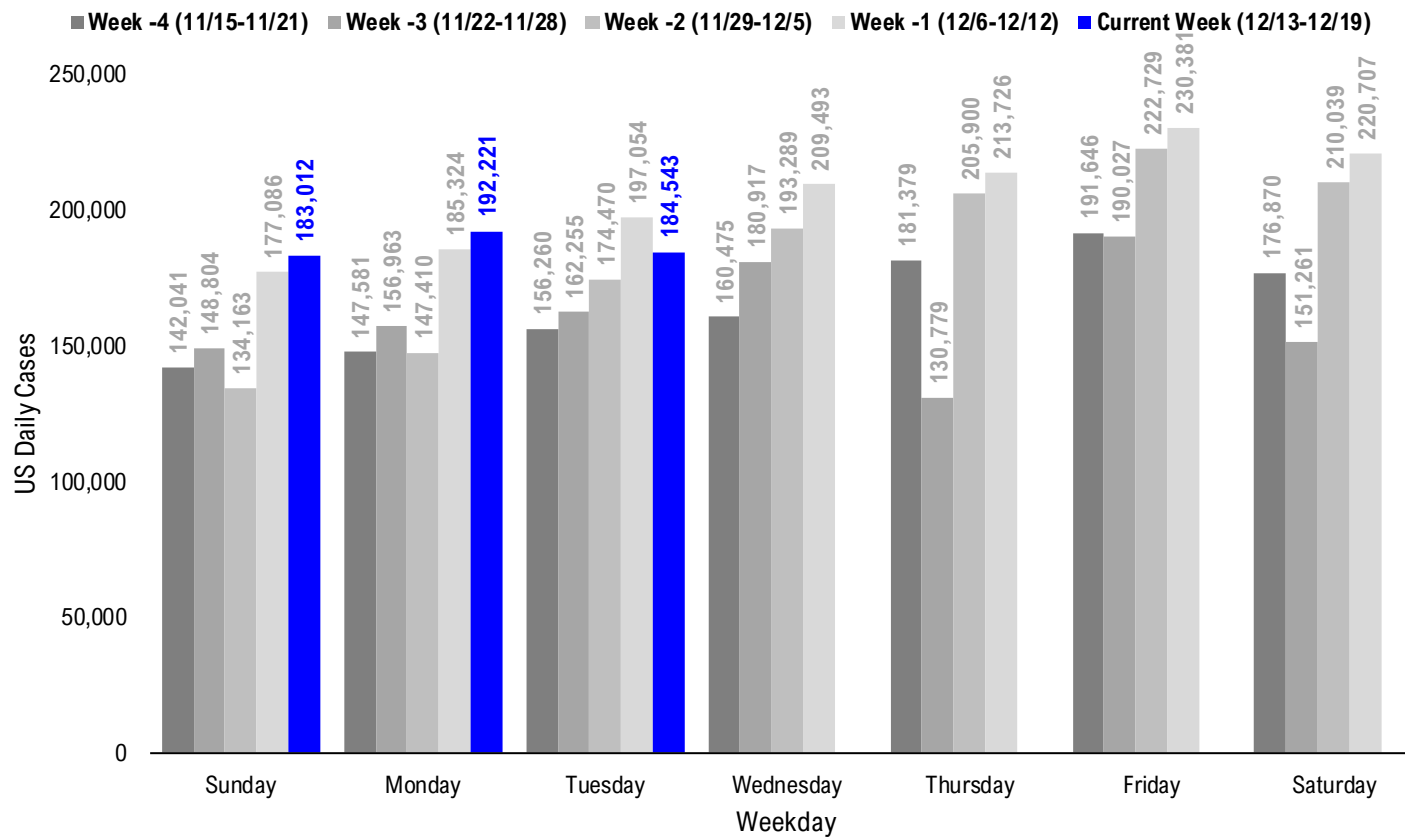
**USA total COVID-19 tests administered**



**US daily new cases rolling 7D delta**



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



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

	Sorted Daily Cases		Daily Cases (3D avg) per 1mm residents				Hospitalization			
	% US Pop	% US GDP	7D		7D		# Days	% Decline in Daily Cases	7D Net Hospitalization	7D Net Hospitalization / 7D New Cases
			12/15	Delta	12/15	Delta				
United States	100%	100%	184,543	-12,511	568	+0	3	-16%	8,226	0.6%

	Sorted Daily Cases		Daily Cases (3D avg) per 1mm residents				Hospitalization			
	% US Pop	% US GDP	7D		7D		# Days	% Decline in Daily Cases	7D Net Hospitalization	7D Net Hospitalization / 7D New Cases
			12/15	Delta	12/15	Delta				
United States	100%	100%	184,543	-12,511	568	+0	3	-16%	8,226	0.6%

### States:

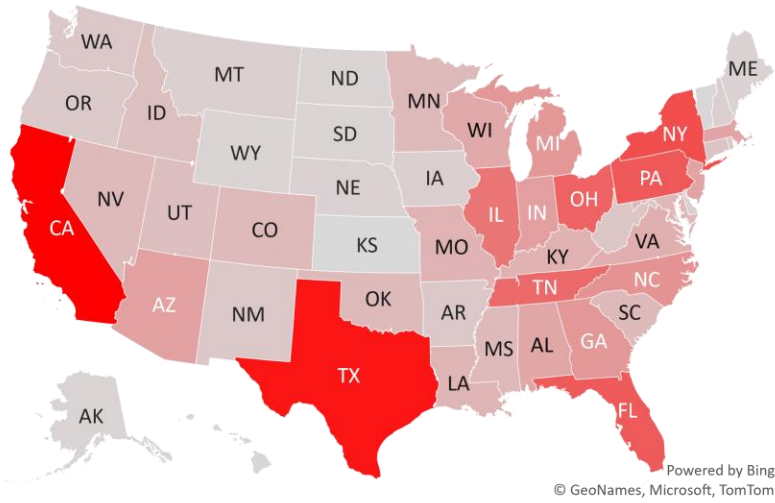
1 California	11.9%	14.6%	32,326	+9,054	809	+151	2	-6%	3,687	1.6%
2 Texas	8.7%	8.8%	14,569	-526	343	-28	12	-32%	444	0.6%
3 New York	5.9%	8.1%	10,353	+1,018	507	+56	2	-7%	1,147	1.6%
4 Pennsylvania	3.9%	3.8%	9,556	-614	734	+80	10	-22%	734	1.0%
5 Florida	6.5%	5.0%	9,411	+1,426	416	+42	155	-30%	545	0.8%
6 Ohio	3.5%	3.3%	8,755	-3,966	738	-105	5	-25%	115	0.2%
7 Tennessee	2.1%	1.8%	8,251	+2,232	1460	+620	0	0%	223	0.4%
8 Illinois	3.8%	4.2%	7,359	-551	573	-63	32	-47%	-234	(0.4%)
9 North Carolina	3.2%	2.7%	5,236	+566	535	+43	2	-18%	362	0.9%
10 Georgia	3.2%	2.9%	4,812	+1,126	390	+65	3	-21%	339	1.1%
11 Michigan	3.0%	2.6%	4,730	-1,179	398	-111	27	-54%	-417	(1.3%)
12 Indiana	2.0%	1.8%	4,241	-1,144	748	-126	10	-37%	-21	(0.1%)
13 Arizona	2.2%	1.7%	4,134	-8,180	998	+116	1	-15%	545	1.2%
14 New Jersey	2.7%	3.0%	3,966	-1,510	485	-81	9	-24%	179	0.6%
15 Massachusetts	2.1%	2.8%	3,929	-193	601	+49	10	-27%	282	0.8%
16 Alabama	1.5%	1.1%	3,638	-798	591	-26	5	-32%	256	1.0%
17 Wisconsin	1.8%	1.6%	3,501	-613	480	-39	32	-62%	-95	(0.4%)
18 Virginia	2.6%	2.6%	3,160	-700	379	-73	5	-20%	443	1.7%
19 Kentucky	1.3%	1.0%	2,928	-148	534	-33	12	-38%	28	0.1%
20 Missouri	1.8%	1.5%	2,762	-488	435	-96	31	-46%	-85	(0.4%)
21 Louisiana	1.4%	1.3%	2,617	+188	580	+51	12	-31%	81	0.5%
22 Maryland	1.8%	2.0%	2,401	-231	405	-12	9	-24%	146	0.8%
23 Minnesota	1.7%	1.8%	2,323	-728	518	-305	15	-63%	-295	(1.2%)
24 South Carolina	1.6%	1.1%	2,322	+55	515	+14	2	-19%	-133	(0.7%)
25 Nevada	0.9%	0.8%	2,320	-374	842	+14	10	-10%	195	1.1%
26 Colorado	1.7%	1.8%	2,278	-1,693	448	-202	24	-57%	-201	(0.8%)
27 Oklahoma	1.2%	1.0%	2,224	-73	729	+102	9	-30%	43	0.2%
28 Mississippi	0.9%	0.6%	2,205	+473	600	+99	4	-27%	97	0.6%

### States:

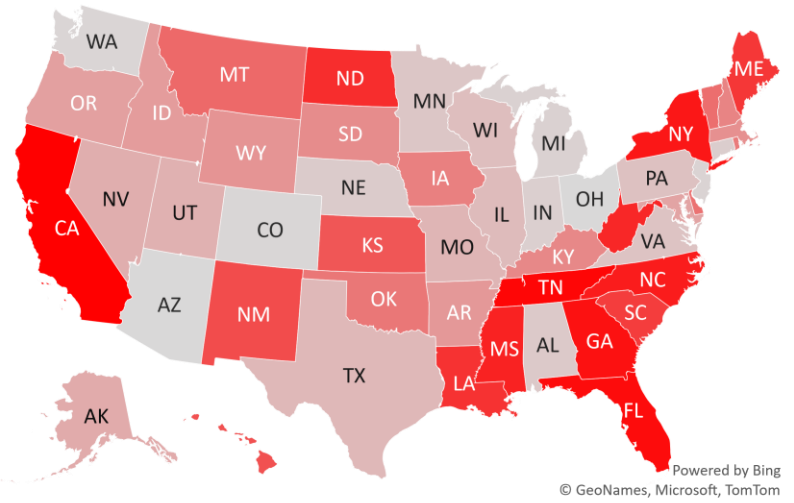
29 Utah	1.0%	0.9%	1,915	-418	620	-121	24	-50%	-20	(0.1%)
30 Idaho	0.5%	0.4%	1,802	-210	632	-152	5	-45%	84	0.8%
31 Connecticut	1.1%	1.3%	1,470	-944	813	-172	6	-32%	46	0.3%
32 West Virginia	0.5%	0.4%	1,307	+375	660	+12	9	-11%	128	1.5%
33 Washington	2.3%	2.7%	1,272	-1,651	233	-271	20	-58%	50	0.3%
34 New Mexico	0.6%	0.5%	1,258	+3	668	-23	25	-56%	-60	(0.5%)
35 Arkansas	0.9%	0.6%	1,236	-201	411	-20	10	-38%	-11	(0.1%)
36 Rhode Island	0.3%	0.3%	1,166	-83	814	-168	10	-48%	11	0.1%
37 Oregon	1.3%	1.2%	1,082	-212	257	-46	9	-37%	-7	(0.1%)
38 Montana	0.3%	0.2%	737	-18	435	-275	30	-66%	-141	(3.0%)
39 Iowa	1.0%	0.9%	726	-104	248	-69	32	-80%	-102	(1.2%)
40 Delaware	0.3%	0.4%	685	-68	776	-35	1	-14%	38	0.7%
41 New Hampshire	0.4%	0.4%	670	-137	564	-45	4	-19%	41	0.7%
42 Nebraska	0.6%	0.6%	483	-810	425	-402	26	-71%	-117	(1.4%)
43 Maine	0.4%	0.3%	411	+137	283	+54	3	-2%	25	0.9%
44 South Dakota	0.3%	0.3%	345	-193	487	-167	31	-76%	-56	(1.2%)
45 North Dakota	0.2%	0.3%	328	+328	352	-14	31	-85%	-27	(0.9%)
46 Puerto Rico	1.0%	0.5%	320	-242	144	-129	8	-52%	-35	(0.8%)
47 District of Columbia	0.2%	0.7%	301	+31	329	-10	10	-32%	19	1.1%
48 Wyoming	0.2%	0.2%	289	-201	666	-217	26	-61%	-25	(1.0%)
49 Alaska	0.2%	0.3%	278	-284	609	-209	10	-45%	-19	(0.5%)
50 Vermont	0.2%	0.2%	66	-34	159	+6	11	-43%	-12	(1.6%)
51 Hawaii	0.4%	0.5%	56	+3	78	+22	108	-62%	11	1.3%
52 U.S. Virgin Islands	0.0%	0.0%	21	-10	115	-31	116	-73%	0	0.0%
53 Guam	0.0%	0.0%	12	+5	119	+20	35	-89%	-5	(1.1%)
54 Northern Mariana	0.0%	0.0%	0	-2	0	-29	58	-100%	0	0.0%
55 Kansas	0.9%	0.8%	0	+0	541	-115	20	-64%	0	0.0%
56 American Samoa	0.0%	0.0%	0	+0	0	+0	0	0%	0	0.0%

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

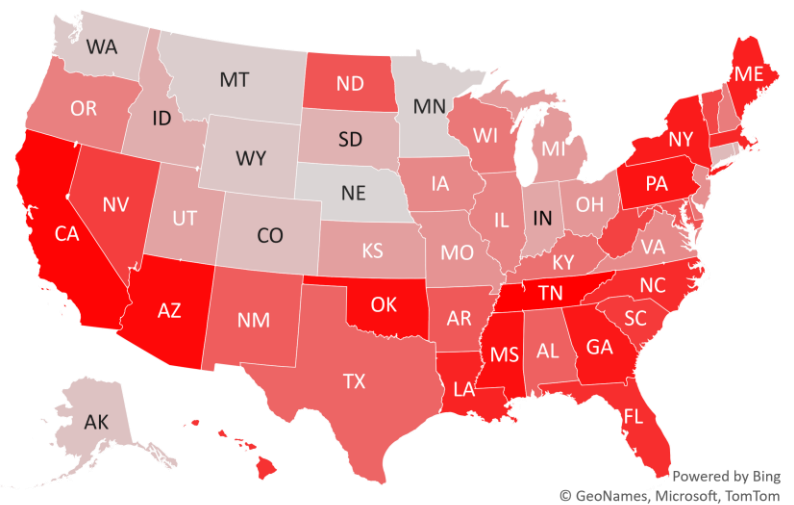
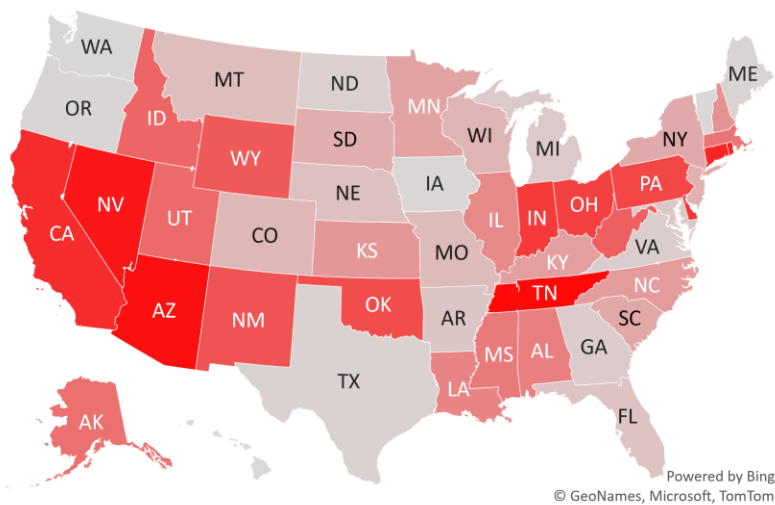
### Daily Case Increases



### 7D Delta in Daily New Cases



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



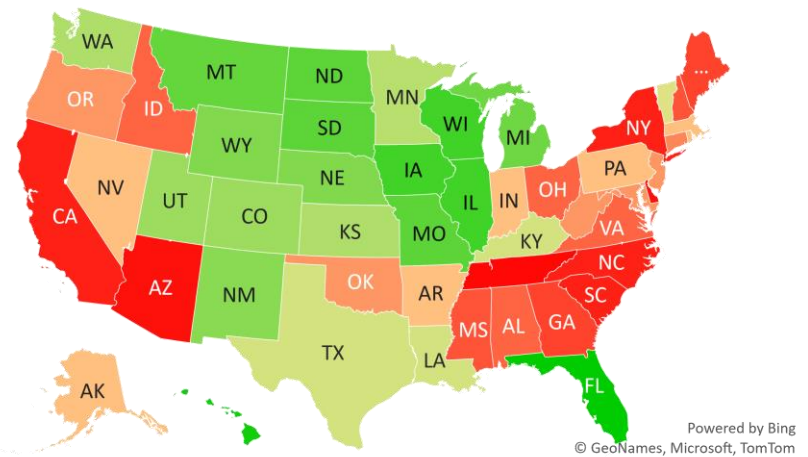
# #5: # of Days since Daily Case Peaked by States...

## # Days since Daily Cases (3D Avg) Peak (as of 12/15)

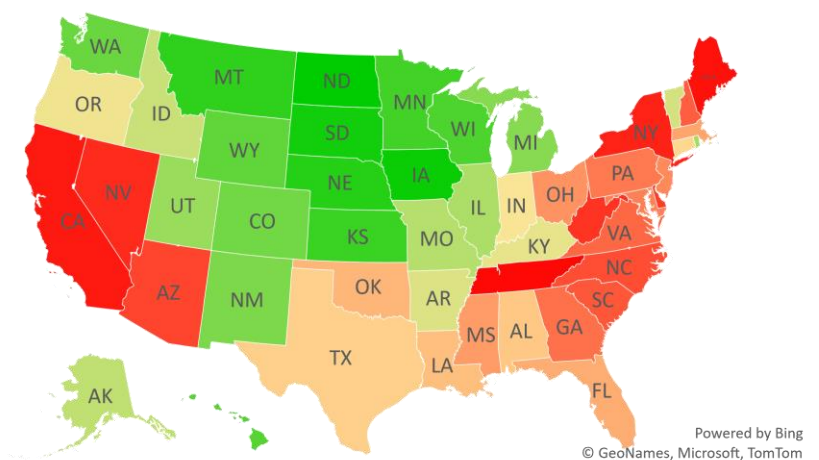
	Sorted			
	Peak Date	12/15/20	% off the Peak	% US Pop
United States	12/12/20	3	-16%	100%
<b>States:</b>				
Florida	7/13/20	155	-30%	6.5%
U.S. Virgin Islands	8/21/20	116	-73%	0.0%
Hawaii	8/29/20	108	-62%	0.4%
Northern Mariana Island	10/18/20	58	-100%	0.0%
Guam	11/10/20	35	-89%	0.0%
Wisconsin	11/13/20	32	-62%	1.8%
Illinois	11/13/20	32	-47%	3.8%
Iowa	11/13/20	32	-80%	1.0%
South Dakota	11/14/20	31	-76%	0.3%
North Dakota	11/14/20	31	-85%	0.2%
Missouri	11/14/20	31	-46%	1.8%
Montana	11/15/20	30	-66%	0.3%
Michigan	11/18/20	27	-54%	3.0%
Wyoming	11/19/20	26	-61%	0.2%
Nebraska	11/19/20	26	-71%	0.6%
New Mexico	11/20/20	25	-56%	0.6%
Utah	11/21/20	24	-50%	1.0%
Colorado	11/21/20	24	-57%	1.7%
Washington	11/25/20	20	-58%	2.3%
Kansas	11/25/20	20	-64%	0.9%
Minnesota	11/30/20	15	-63%	1.7%
Texas	12/3/20	12	-32%	8.7%
Louisiana	12/3/20	12	-31%	1.4%
Kentucky	12/3/20	12	-38%	1.3%
Vermont	12/4/20	11	-43%	0.2%
Rhode Island	12/5/20	10	-48%	0.3%
Pennsylvania	12/5/20	10	-22%	3.9%
Nevada	12/5/20	10	-10%	0.9%

	Sorted			
	Peak Date	12/15/20	% off the Peak	% US Pop
United States	12/12/20	3	-16%	100%
<b>States:</b>				
Massachusetts	12/5/20	10	-27%	2.1%
Indiana	12/5/20	10	-37%	2.0%
District of Columbia	12/5/20	10	-32%	0.2%
Arkansas	12/5/20	10	-38%	0.9%
Alaska	12/5/20	10	-45%	0.2%
West Virginia	12/6/20	9	-11%	0.5%
Oregon	12/6/20	9	-37%	1.3%
Oklahoma	12/6/20	9	-30%	1.2%
New Jersey	12/6/20	9	-24%	2.7%
Maryland	12/6/20	9	-24%	1.8%
Puerto Rico	12/7/20	8	-52%	1.0%
Connecticut	12/9/20	6	-32%	1.1%
Virginia	12/10/20	5	-20%	2.6%
Ohio	12/10/20	5	-25%	3.5%
Idaho	12/10/20	5	-45%	0.5%
Alabama	12/10/20	5	-32%	1.5%
New Hampshire	12/11/20	4	-19%	0.4%
Mississippi	12/11/20	4	-27%	0.9%
Maine	12/12/20	3	-2%	0.4%
Georgia	12/12/20	3	-21%	3.2%
South Carolina	12/13/20	2	-19%	1.6%
New York	12/13/20	2	-7%	5.9%
North Carolina	12/13/20	2	-18%	3.2%
California	12/13/20	2	-6%	11.9%
Delaware	12/14/20	1	-14%	0.3%
Arizona	12/14/20	1	-15%	2.2%
Tennessee	12/15/20	0	0%	2.1%

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



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



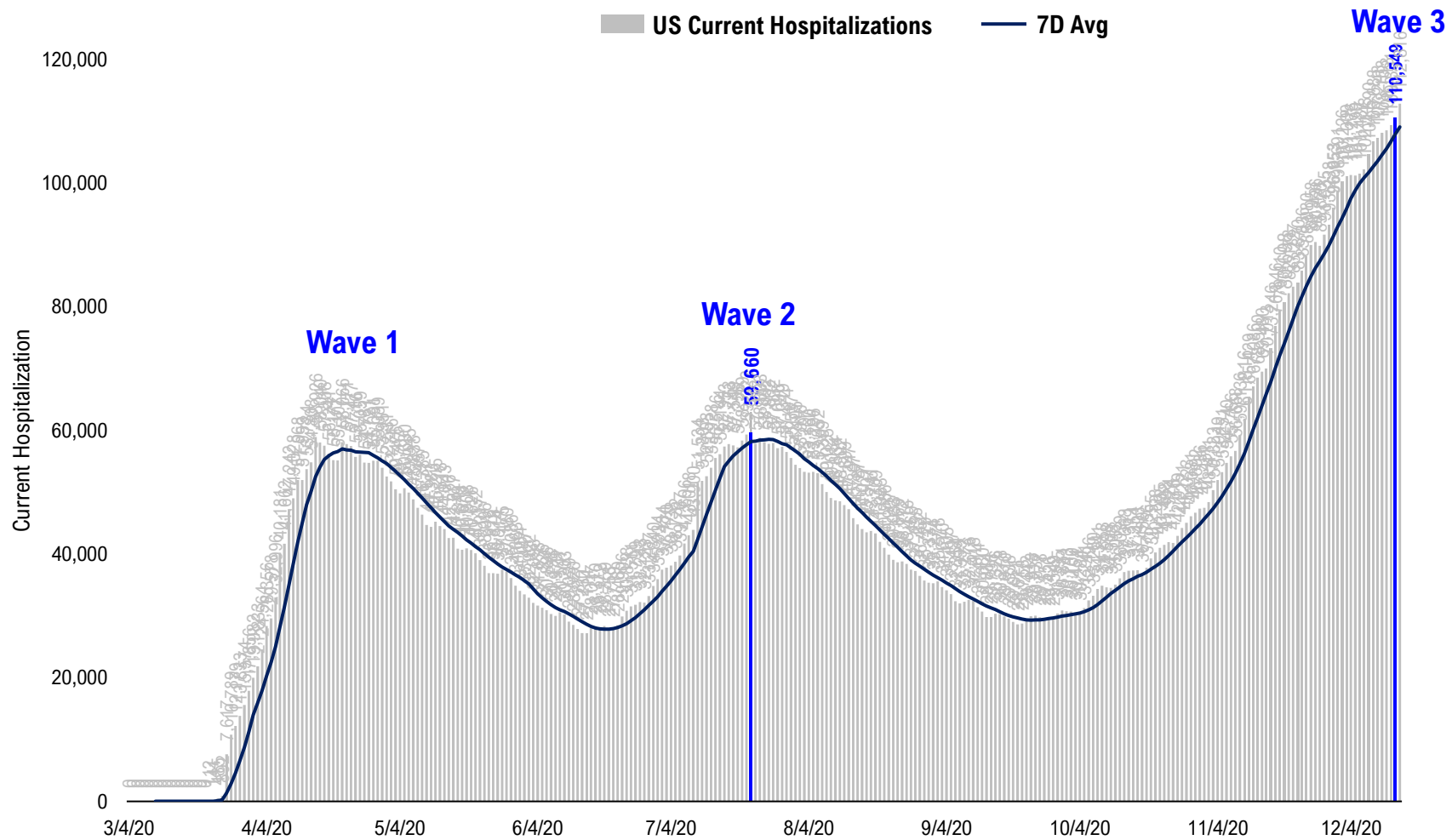
# #6: US New Cases by States... (sorted by today's new cases)

	Sorted				
	7D Ago	Last 3-day Trend			
	12/8/20	12/13/20	12/14/20	12/15/20	vs 7D ago
United States	197,054	183,012	192,221	184,543	-12,511
<b>States:</b>					
California	23,272	30,334	33,278	32,326	<--higher
Texas	15,095	6,479	8,771	14,569	
New York	9,335	10,194	9,044	10,353	
Pennsylvania	10,170	10,684	7,962	9,556	
Florida	7,985	8,958	8,452	9,411	
Ohio	12,721	9,266	7,875	8,755	
Tennessee	6,019	11,352	10,319	8,251	<--higher
Illinois	7,910	7,216	7,214	7,359	
North Carolina	4,670	6,819	4,770	5,236	
Georgia	3,686	4,310	3,296	4,812	<--higher
Michigan	5,909	0	7,205	4,730	
Indiana	5,385	5,898	4,967	4,241	
Arizona	12,314	5,853	11,806	4,134	
New Jersey	5,476	4,154	4,798	3,966	
Massachusetts	4,122	4,853	3,653	3,929	
Alabama	4,436	2,790	2,264	3,638	
Wisconsin	4,114	2,757	2,122	3,501	
Virginia	3,860	3,294	3,240	3,160	
Kentucky	3,076	2,444	1,786	2,928	
Missouri	3,250	2,694	2,562	2,762	
Louisiana	2,429	4,454	1,022	2,617	
Maryland	2,632	2,638	2,314	2,401	
Minnesota	3,051	3,425	3,018	2,323	
South Carolina	2,267	3,204	2,422	2,322	
Nevada	2,694	2,882	2,579	2,320	
Colorado	3,971	2,559	2,911	2,278	
Oklahoma	2,297	4,332	2,099	2,224	
Mississippi	1,732	1,500	1,648	2,205	<--higher

	Sorted				
	7D Ago	Last 3-day Trend			
	12/8/20	12/13/20	12/14/20	12/15/20	vs 7D ago
United States	197,054	183,012	192,221	184,543	-12,511
<b>States:</b>					
Utah	2,333	2,083	1,968	1,915	
Idaho	2,012	547	1,038	1,802	
Connecticut	2,414	0	7,231	1,470	
West Virginia	932	1,066	1,177	1,307	<--higher
Washington	2,923	2,328	1,734	1,272	
New Mexico	1,255	1,442	1,499	1,258	
Arkansas	1,437	1,248	1,233	1,236	
Rhode Island	1,249	870	552	1,166	
Oregon	1,294	1,014	1,157	1,082	
Montana	755	659	0	737	
Iowa	830	989	637	726	
Delaware	753	584	997	685	
New Hampshire	807	712	919	670	
Nebraska	1,293	811	1,173	483	
Maine	274	303	426	411	<--higher
South Dakota	538	631	316	345	
North Dakota	0	281	196	328	
Puerto Rico	562	550	506	320	
District of Columbia	270	231	164	301	
Wyoming	490	453	415	289	
Alaska	562	637	422	278	
Vermont	100	127	104	66	
Hawaii	53	87	189	56	
U.S. Virgin Islands	31	0	16	21	
Guam	7	16	31	12	<--higher
Northern Mariana Islands	2	0	0	0	
Kansas	0	0	4,724	0	
American Samoa	0	0	0	0	

# #7: US Daily Hospitalizations...

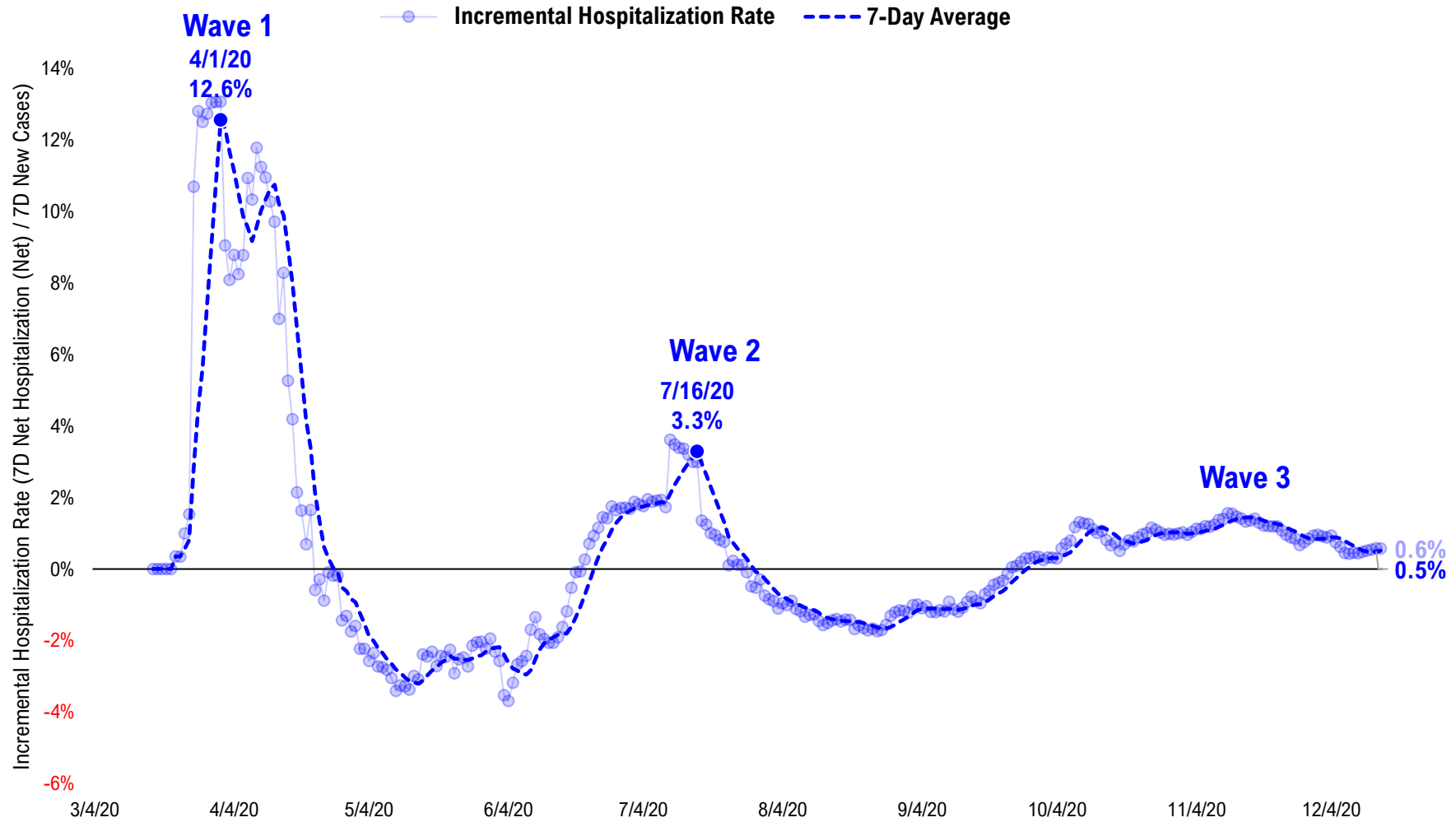
### US Net Hospitalizations (aggregate of 50 states + Washington, D.C.)





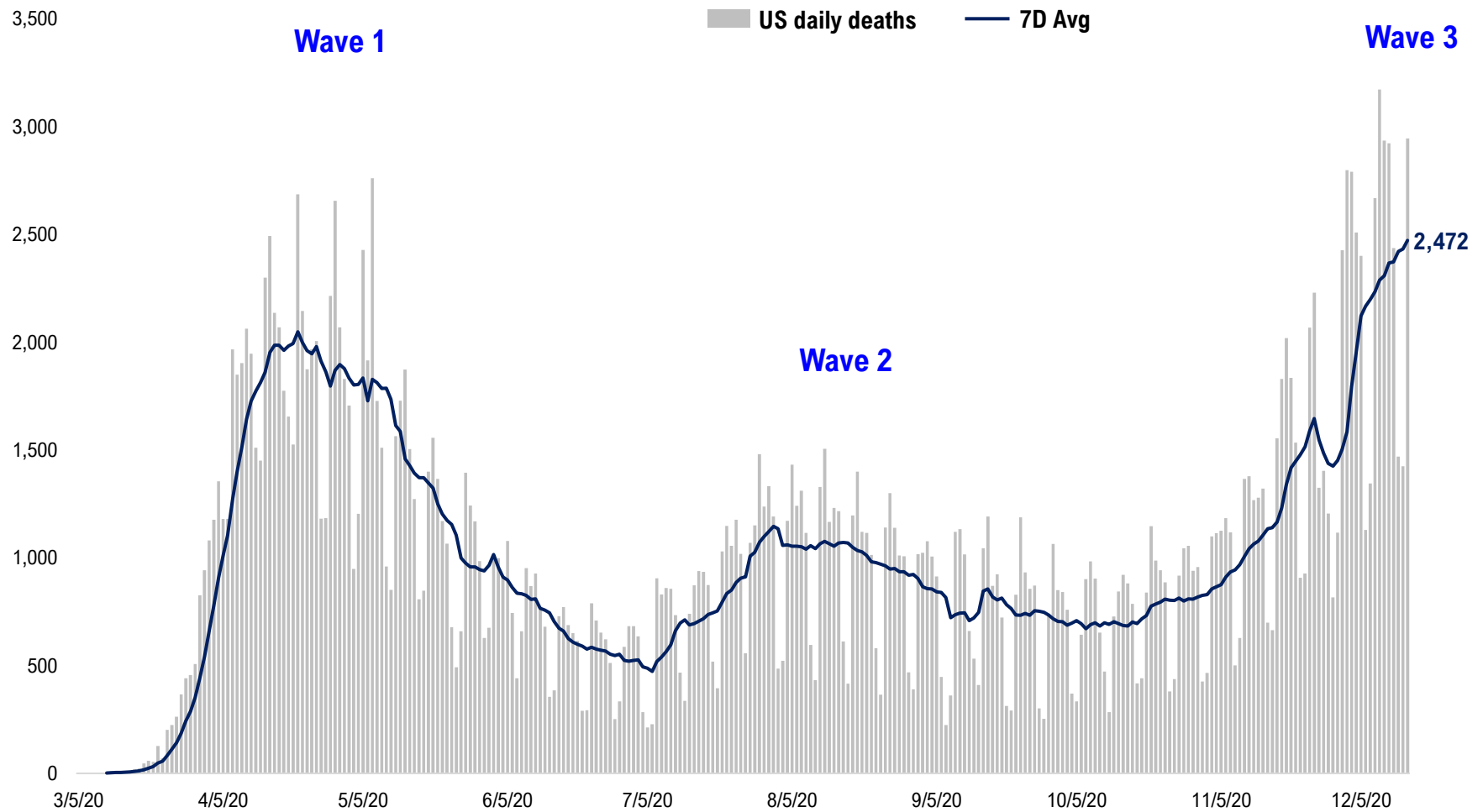
# #8: Incremental Hospitalization Rate...

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



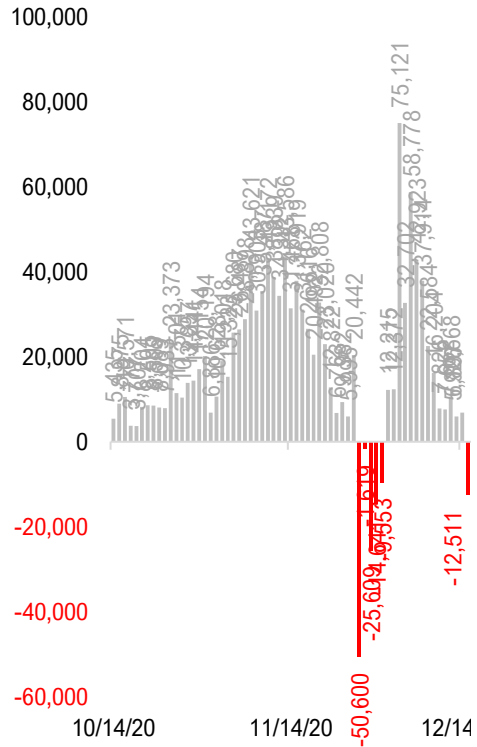
# #9: US Daily New Fatalities...

## US daily COVID-19 Fatalities

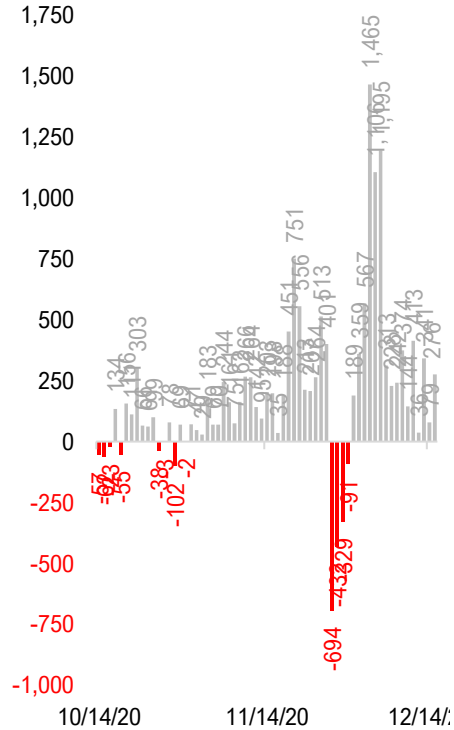


# #10: Rolling 7-Day Change in the Key Metrics... (Past 8 Weeks)

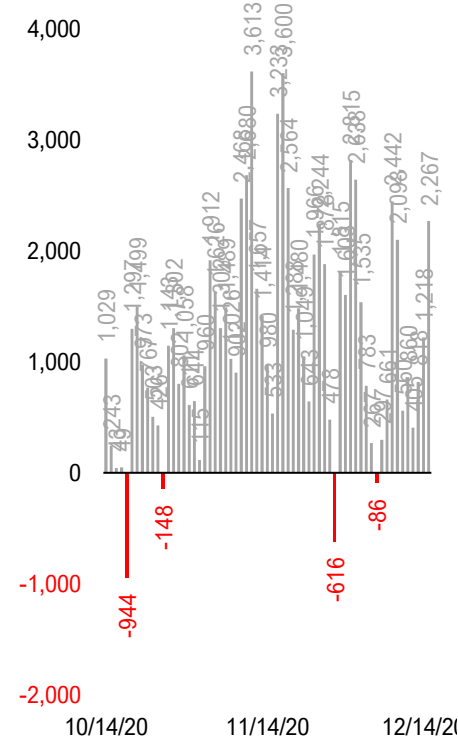
**Daily New Cases**  
(8/10-8/23 ex-CA; 9/4-9/5 ex-IL)



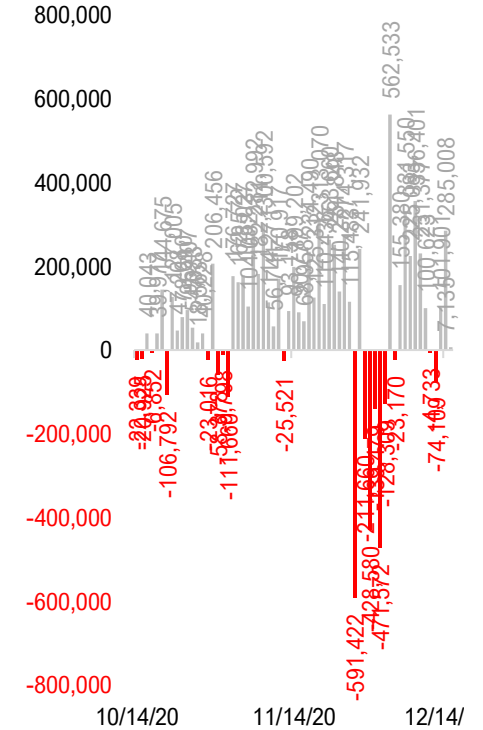
**Daily Deaths**



**Daily Net Hospitalization**  
(Red = more discharge than admission)

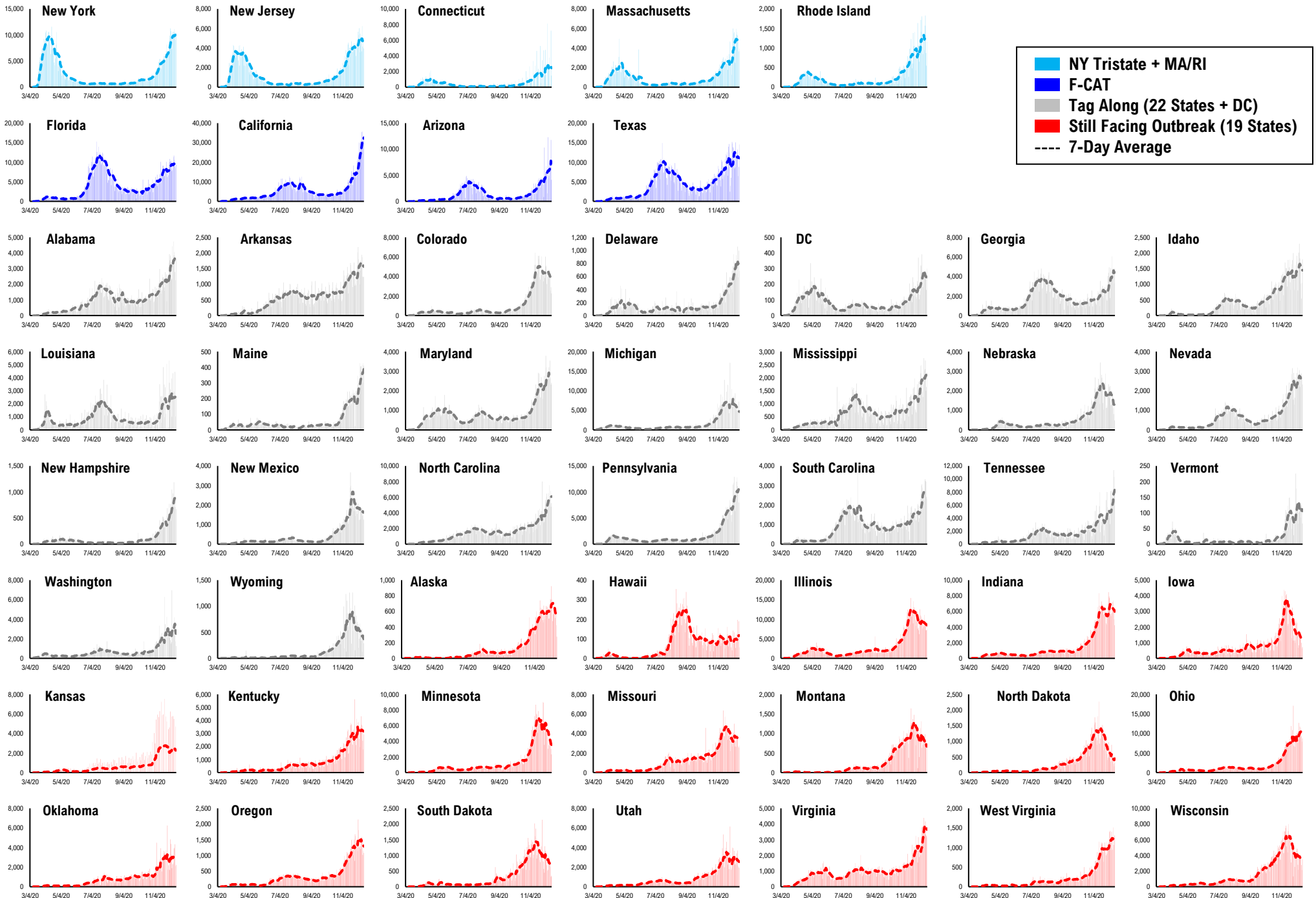


**Daily Tests**

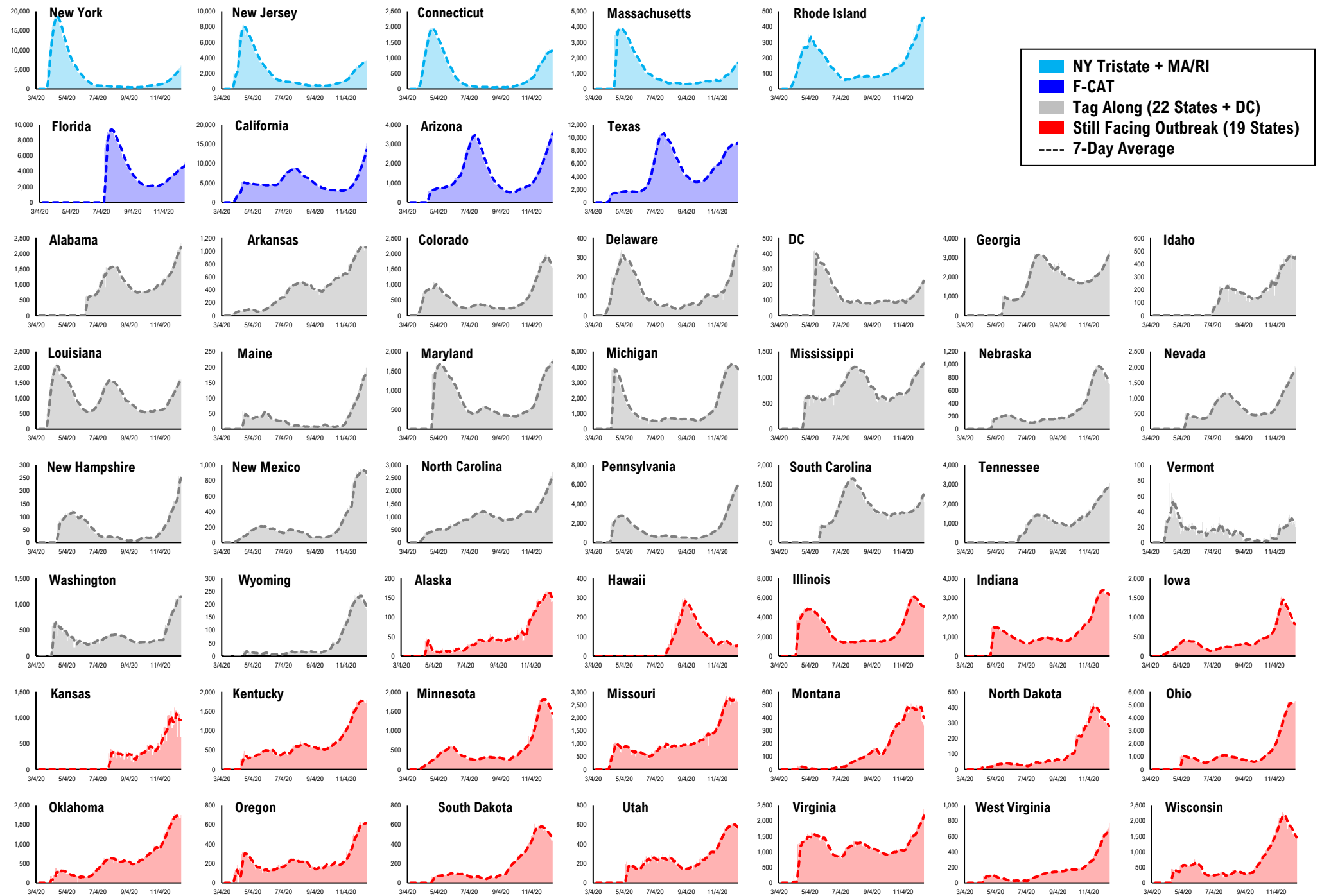


\* Ignored California between 8/10 and 8/23, due to its data glitch caused 300,000-case backlog  
Source: Fundstrat, COVID-19 Tracking Project, State Department of Health

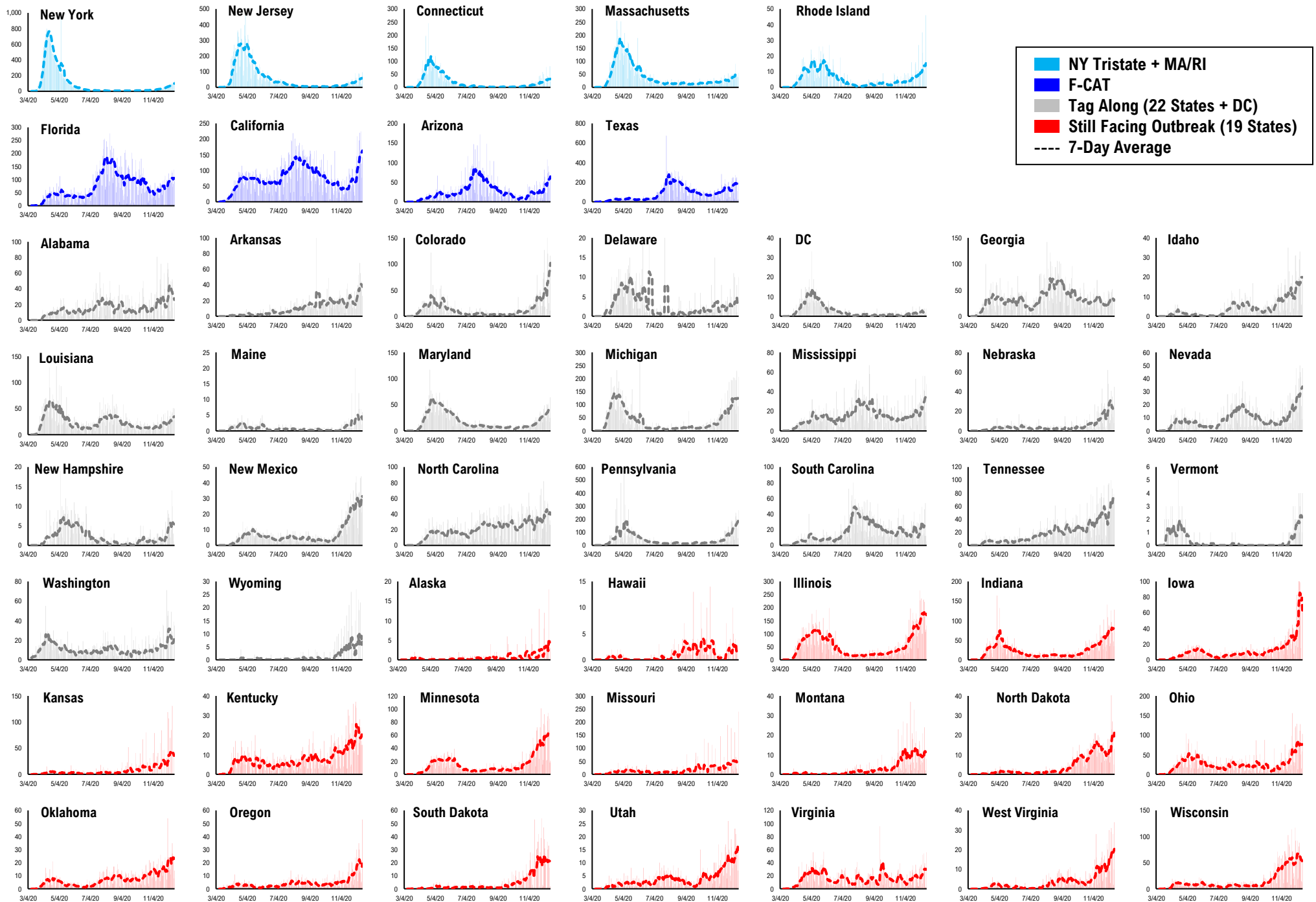
# #11: Daily New Cases by States...



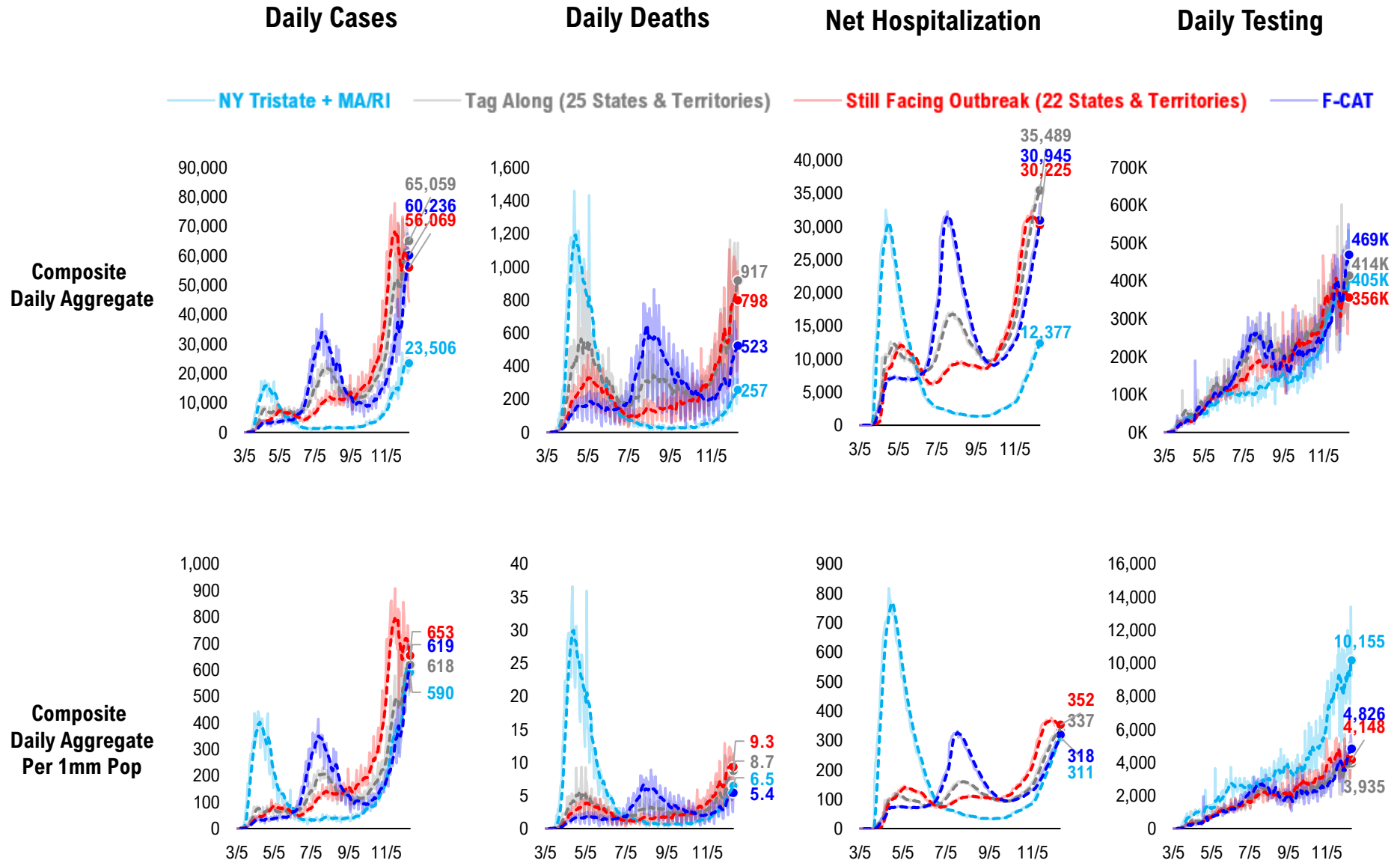
# #12: Current Hospitalizations by States...



# #13: Daily New Deaths by States...

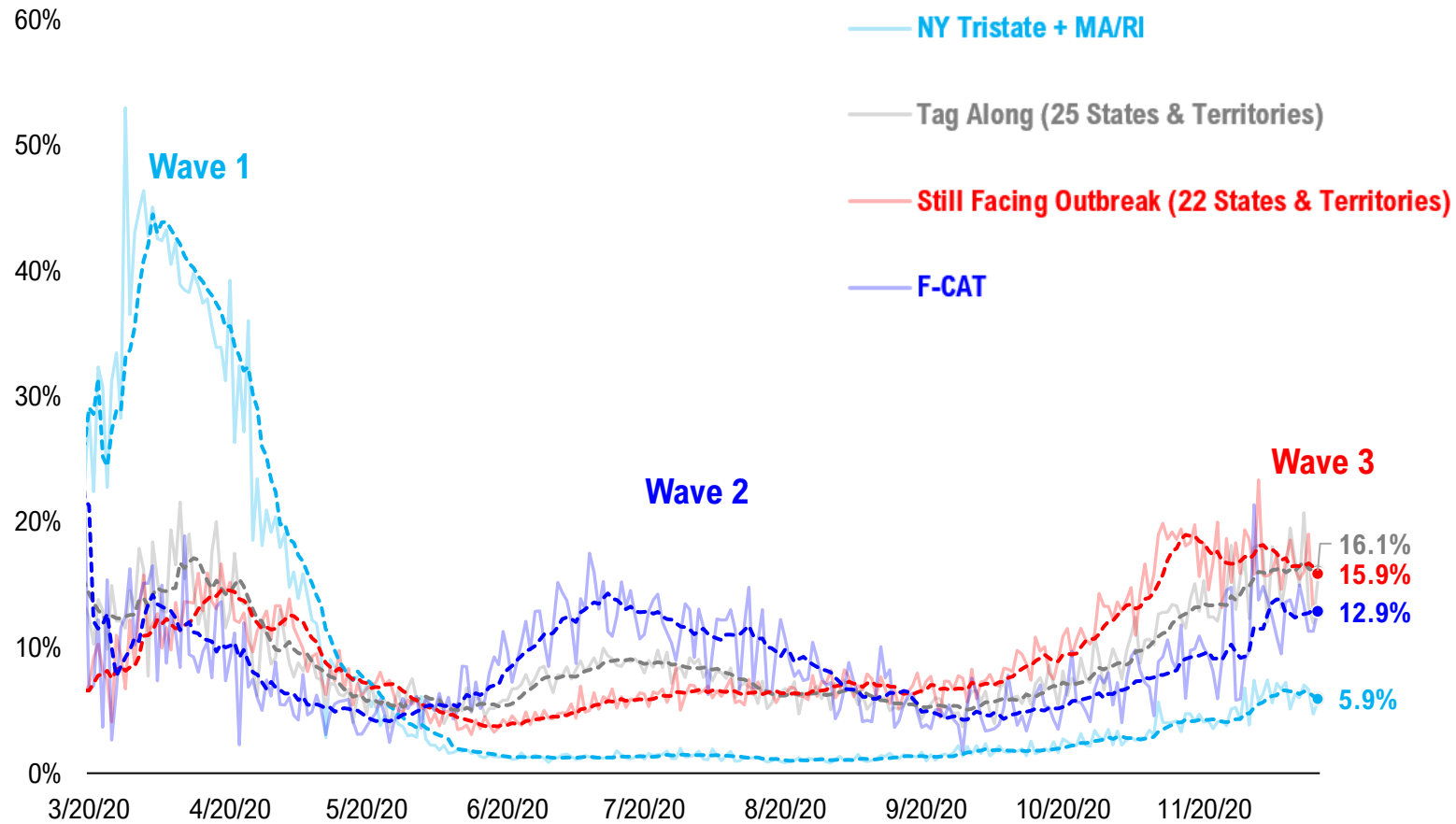


# #14: State COVID-19 situation by Tier...



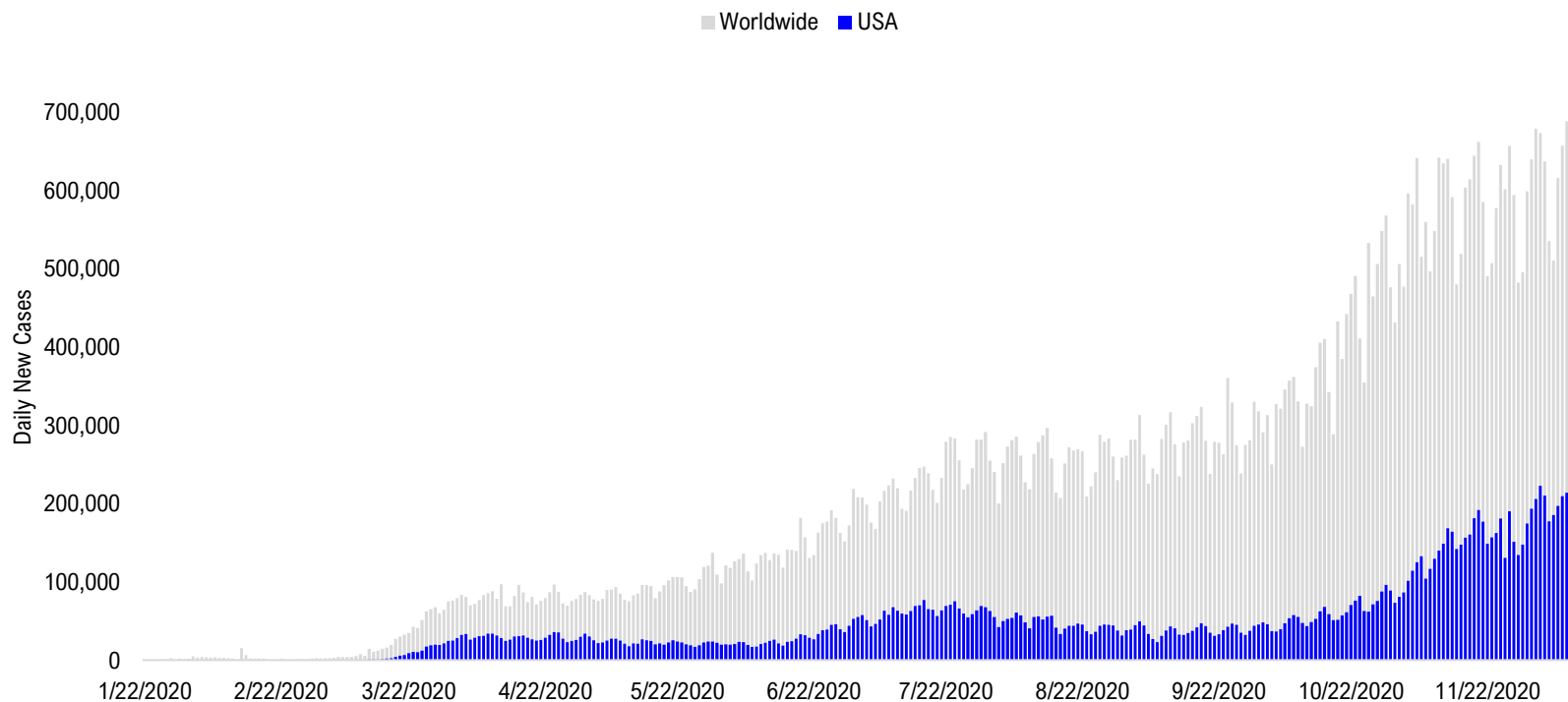
# #15: State COVID-19 Daily Positivity Rate by Tier...

## Composite Daily Positivity Rate





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



Jul 31	Aug 14	Aug 28	Sep 11	Sep 25	Oct 9	Oct 23	Nov 6	Nov 20	Dec 4	Dec 14
Latin America 97,308	Latin America 100,636	Latin America 88,255	Pakistan + India + Bangladesh 98,888	Pakistan + India + Bangladesh 88,225	Europe 112,040	Europe 223,901	Europe 326,485	Europe 279,377	Europe 258,862	Europe 212,675
US + Canada 67,272	Pakistan + India + Bangladesh 68,924	Pakistan + India + Bangladesh 82,644	Latin America 80,841	Latin America 76,712	Pakistan + India + Bangladesh 76,149	US + Canada 71,893	US + Canada 117,107	US + Canada 182,600	US + Canada 213,685	US + Canada 205,332
Pakistan + India + Bangladesh 58,625	US + Canada 54,914	US + Canada 45,273	Europe 47,433	Europe 67,915	Latin America 69,822	Latin America 69,390	Latin America 59,345	Latin America 68,233	Latin America 88,693	Latin America 63,839
Europe 20,929	Europe 28,225	Europe 35,965	US + Canada 37,795	US + Canada 43,790	US + Canada 54,955	Pakistan + India + Bangladesh 56,907	Pakistan + India + Bangladesh 52,404	Pakistan + India + Bangladesh 50,856	Pakistan + India + Bangladesh 41,815	Pakistan + India + Bangladesh 30,688
Africa 17,999	Asia ex- India+Pakistan 11,706	Asia ex- India+Pakistan 10,223	Asia ex- India+Pakistan 10,997	Asia ex- India+Pakistan 11,003	Asia ex- India+Pakistan 13,934	Asia ex- India+Pakistan 15,237	Africa 13,656	Asia ex- India+Pakistan 15,310	Asia ex- India+Pakistan 17,499	Asia ex- India+Pakistan 16,083
Asia ex- India+Pakistan 10,630	Africa 10,680	Africa 8,468	Africa 8,309	Africa 8,247	Africa 9,966	Africa 10,615	Asia ex- India+Pakistan 13,638	Africa 14,917	Africa 16,543	Africa 15,210

# 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 2020 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.**