



**COVID-19 UPDATE: AZ converging to CT = good. Dr. Fauci reiterates vaccine possibly by early 2021 -- binary for markets and massive cyclical rotation. 28 "trifecta" epicenter stocks**

THIS MESSAGE IS BEING SENT SOLELY TO CLIENTS OF FS INSIGHT

Wednesday is the start of 3Q2020 and marks the halfway point for 2020. And compared to the state of the World at the end of March (1Q2020), I am thankful for the progress humanity has made against COVID-19. The collective tragedy is staggering with total worldwide cases >10.5 million (rising 150k/day) and attributed deaths >500,000. COVID-19 case growth in the US is, unfortunately not contained, which we have attributed to a combination of three factors:

- nationwide protests taking place in >350 cities for >4 weeks now -- 10,000X super spreader events
- surging imported cases from Mexico/Latin America and evidenced by the fact the massive US outbreaks are taking place at the Southern US border states (even FL)
- somewhat careless compliance as economy re-opened (bars, etc.).

So we do not attribute the surge primarily to re-opening the economy. But mitigating spread is important. I realize masks are not a popular topic for many, and while there is some science supporting the use of masks, COVID-19 is a novel disease. Tom Block, our policy strategist, forwarded an email from Senate Majority Leader, Mitch McConnell. His statement is a commentary in support of the use of masks.

# MITCH McCONNELL

**SENATE MAJORITY LEADER  
U.S. SENATOR for KENTUCKY**

For Immediate Release, Monday, June 29, 2020

Contacts: David Popp, Doug Andres

Robert Steurer, Stephanie Penn

Press release link: <https://sen.gov/4N9J>

YouTube link: <https://youtu.be/a7mbDDk2WUA>

## **McConnell: Nation Must Work Together to “Stay on Offense Against the Virus”**

*We must have no stigma, none, about wearing masks when we leave our homes and come near other people. Wearing simple face coverings is not about protecting ourselves, it is about protecting everyone we encounter.*

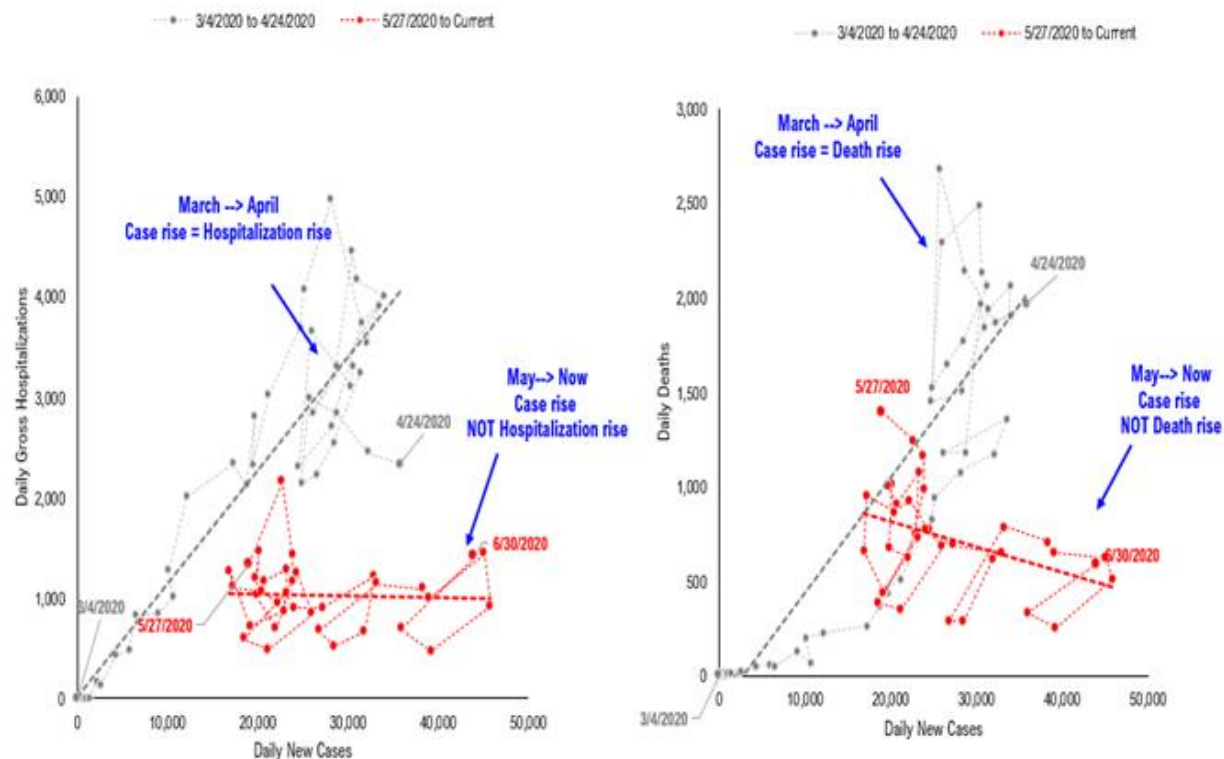
**WASHINGTON, D.C.** – U.S. Senate Majority Leader Mitch McConnell (R-KY) delivered the following remarks today on the Senate floor regarding COVID-19:

“Each time I’ve returned home over the last several weeks, I’ve had the honor of traveling to different Kentucky hospitals to safely meet with healthcare professionals, thank them for their incredible work, and listen to what’s on their minds.

“For more than three months now, our nation’s doctors, nurses, and health professionals have been fighting day and night to heal strangers and protect our nation. I said in mid-March that our country was about to meet a lot of new heroes, and that among them would be many people “who wear scrubs...who rush toward the sick, and wash their hands until they bleed.”

The positive aspect of the past few months is that the healthcare tragedy is taking a smaller toll with each case. We continue to see a curious divergence between cases surging in the US and the downward (not upward) path of deaths. The red lines below are the relationship since May 27th, while the grey lines are the relationship from late March to late-April.

- Ultimately, this is a good thing. Either patients are healthier. Or healthcare regimens are better.
- But the bearish argument is that we are simply facing a lag.



Source: COVID-19 Tracking Project

***Dr. Fauci and a vaccine potentially by early 2021...***

Dr. Fauci spoke before Congress today and I have two major takeaways:

- US daily cases do not have a ceiling, and he hinted we could surge past 100K/day (but deaths do not have to follow)
- He expects a vaccine potentially by early 2021, a quantum order of magnitude faster than consensus expects.

## THE WALL STREET JOURNAL.

CATCHING COVID-19

GOING OUTSIDE SAFELY

SUMMER CHILD CARE

CAN I TRAVEL?

U.S.

# Fauci Warns Coronavirus Cases Could Reach 100,000 a Day, as Surge Delays Reopenings

With daily Covid-19 numbers growing across U.S., states shift gears on what is allowed



<https://www.wsj.com/articles/coronavirus-latest-news-06-30-2020-11593505070>

By [Talal Ansari](#) and Tom Burton

Updated June 30, 2020 6:41 pm ET

SAVE SHARE TEXT

2,024

New coronavirus cases “could go up to 100,000 a day” if people continue to flout advice on social distancing and face masks, Anthony Fauci, the nation’s top infectious-disease doctor told a Senate committee.

“It could get very bad,” Dr. Fauci said. The U.S. is now recording about 40,000 new cases a day of [the new coronavirus](#). The surge of new infections and rising hospitalization rates in states such as California and Texas have jeopardized reopening plans throughout the U.S., threatening a nascent economic recovery.

Treasury Secretary Steven Mnuchin and Federal Reserve Chairman Jerome Powell on Tuesday [pledged to consider additional relief](#) to prevent lasting damage to labor markets and businesses as states struggle to contain the pandemic.

<https://www.wsj.com/articles/coronavirus-latest-news-06-30-2020-11593505070>

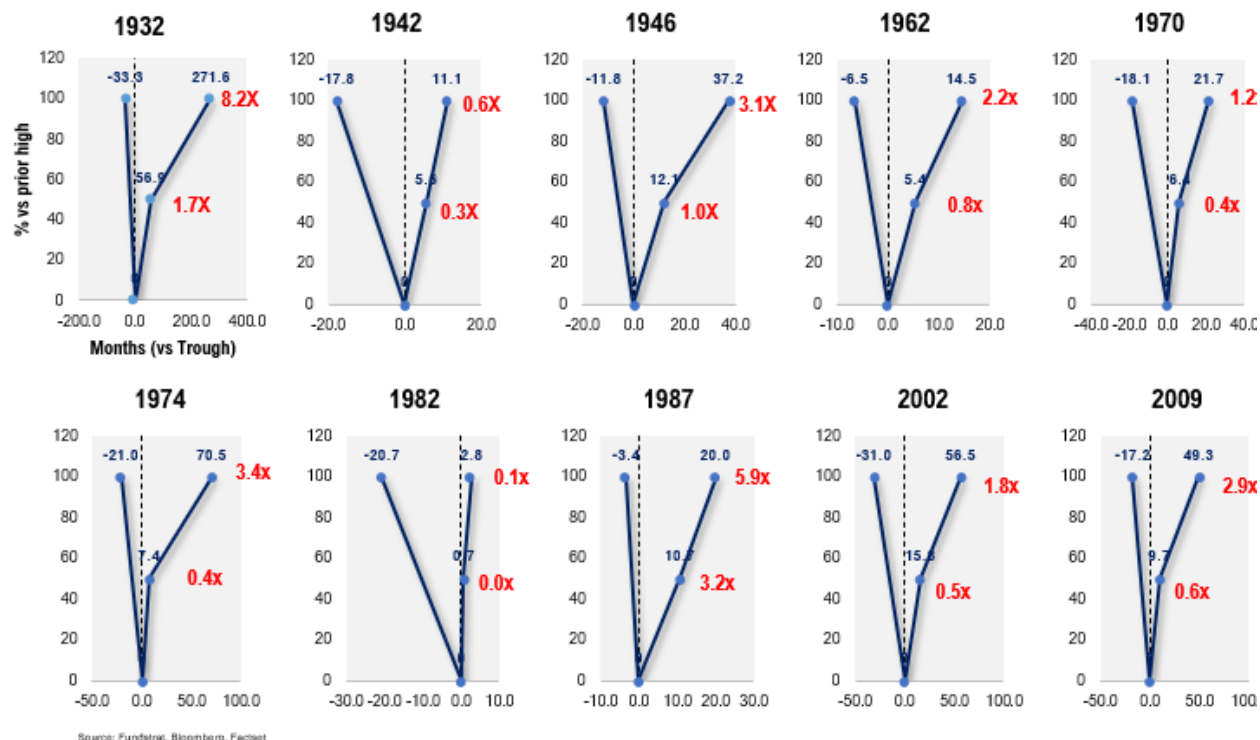
### ***A vaccine/ cure is a binary event for markets...***

This latter point is all that really matters, honestly. Think about the seismic impact of a cure/vaccine. This provides a path to normalcy and full recovery. A vaccine/ cure does not need to be fully deployed for markets to make a binary and abrupt change. But think about Fauci's comments (we do not know whether this will be correct).

- If a vaccine/cure is 6 months away, how long before equity markets begin to see through the horrific case data
- similarly, as we look at the final 6 months, a bearish view on equities would be predicated on lack of success on healthcare or on mitigating case growth.

And perhaps this is the reason we will see the "V"-shaped recovery in US stocks. This chart below shows the 10 declines >35% since 1929, and as you can see, stocks recovery is proportionate to the speed of the decline. Hence, the lightning fast decline points to a full recovery far faster than consensus expects.

**Figure: Speed of recovery versus speed of decline**  
Declines from 1920 to 2019



### STRATEGY: Vaccine (or cure) is a binary market event

Investors that favor earnings visibility and certainty are not finding much to be constructive about in the current equity market. And this is a reason we found a large contingent of our clients are either "sidelined" or outright bearish. And given the still rapid spread of COVID-19, many retail investors, particularly Baby Boomers, are negative and sitting on a large cash position. This is why a vaccine/ cure (rather, a clear path) is a binary event for markets because this would change the reaction function of those sidelined. And of course, in the real world, a cure/vaccine would enable the World to return to some level of normalcy.

In Congressional testimony today, Dr. Fauci, White House coronavirus task force key member, and de facto "healthcare face" for USA, is cautiously optimistic about a vaccine ready by early 2021. He based his optimism on the state of human and animal trials and believes that given where these stand, a vaccine is closer than most expect. Most skeptics cite 2022 as a more realistic window. And we know there is a huge difference between 6 months and 18 months.

## Fauci 'Cautiously Optimistic' Covid Vaccine Ready by Beginning of 2021

June 30th, 2020, 11:48 AM EDT

Dr. Anthony Fauci, White House coronavirus task force member and director of the National Institute of Allergy and Infectious Diseases, tells a Senate panel that he's hopeful a vaccine for Covid-19 will be ready by the beginning of next year. (Source: Bloomberg)

<https://www.bloomberg.com/news/videos/2020-06-30/fauci-cautiously-optimistic-covid-vaccine-ready-by-beginning-of-2021-video?sref=NVS0rEaE>

### ***If this "binary event" happens, the stock market will likely get instantly re-rated higher...***

But if this binary event, a vaccine/cure, happens, we will likely see a binary reaction in the stock market. That is, we would see a massive wall of liquidity move out of bonds and out of cash into equities. And there would be a rethink about the length and time needed for GDP to recover. Think about these impacts:

- a cure means the US and World are indeed at the bottom of an economic cycle = recovery
- a cure means the worst is behind us on stresses, and surviving companies are "unkillable"
- because these companies survived, equity risk premia should fall = P/E expands
- companies are cutting costs fiercely now, so we should expect major operating leverage
- investors will seek stocks with greatest sensitivity biz cycle = worst hit outperform = epicenter

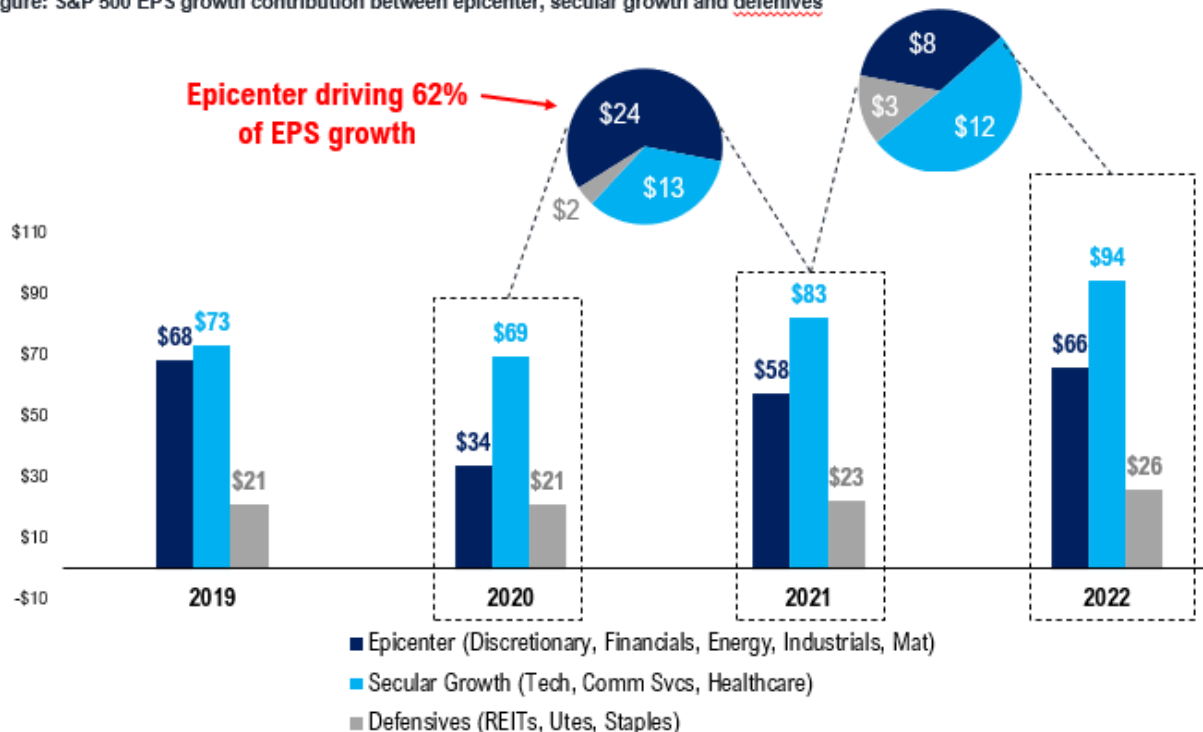
So the playbook, if Fauci's comments play to fruition, is a massive cyclical rotation.



**Keep in mind that Epicenter stocks are just 26% of market cap but expected to be 62% of 2021 EPS growth (Consensus)**

Much of the EPS "heavy lifting" in 2021 is coming from the 4 epicenter groups: Discretionary, Industrials, Financials and Energy. And as the chart below shows, just using Consensus estimates, 62% of the EPS growth is from these groups. These 4 sectors are just 26% of the market cap, so they are "punching above their weight."

Figure: S&P 500 EPS growth contribution between epicenter, secular growth and defensives



Source: Fundstrat, Bloomberg, Factset

**28 "trifecta" epicenter stocks...**

These 28 stocks below remain "trifecta" names, as they are OW rated by our DQM model (Quintile 1), OW on Technicals (Rob Sluymer) and OW per Brian Rauscher's models.

Discretionary: **GNTX, BBY, GRMN, TPX, DHI, LEN, EBAY, DRI**

Energy: **CVX, XOM, COP, PXD**

Financials: **GS, MS, SBNY, SIVB, EQH**

Industrials: **GD, ALK, FBHS, MAS, CMI, OSK, ITT, GWW, MSM, SNDR, HWM**



Ticker	Companyname	Sub-industry name	Current Price	Mkt Cap (\$mm)	Performance...					
					DQM Quintile	Brian Rauscher	Robert Sluymer	2/19-3/23	3/23-6/30	YTD
Consumer Discretionary										
GNTX	Gentex Corp	Auto Parts & Equipment	25.77	6,310	OW	OW	OW	-35.2%	28.3%	-11.1%
BBY	Best Buy Co Inc	Computer & Electronics Retail	87.27	22,543	OW	OW	OW	-44.3%	72.2%	-0.6%
GRMN	Garmin Ltd	Consumer Electronics	97.50	18,624	OW	OW	OW	-38.6%	53.2%	-0.1%
TPX	Tempur Sealy International	Home Furnishings	71.95	3,708	OW	OW	OW	-61.6%	98.7%	-17.4%
DHI	Dr Horton Inc	Homebuilding	55.45	20,158	OW	OW	OW	-52.2%	87.6%	5.1%
LEN	Lennar Corp	Homebuilding	61.62	18,656	OW	OW	OW	-58.3%	109.9%	10.4%
EBAY	Ebay Inc	Internet & Direct Marketing Re	52.45	36,855	OW	OW	OW	-29.8%	99.1%	45.3%
DRI	Darden Restaurants Inc	Restaurants	75.77	9,841	OW	OW	OW	-66.0%	84.7%	-30.5%
Energy										
CVX	Chevron Corp	Integrated Oil & Gas	89.23	166,591	OW	OW	OW	-51.0%	64.6%	-26.0%
XOM	Exxon Mobil Corp	Integrated Oil & Gas	44.72	189,086	OW	OW	OW	-47.9%	42.2%	-35.9%
COP	ConocoPhillips	Oil & Gas Exploration & Produc	42.02	45,063	OW	OW	OW	-58.6%	71.2%	-35.4%
PXD	Pioneer Natural Resource	Oil & Gas Exploration & Produc	97.70	16,107	OW	OW	OW	-56.6%	59.4%	-35.5%
Financials										
GS	Goldman Sachs Group Inc	Investment Banking & Brokerage	197.62	70,844	OW	OW	OW	-43.1%	46.4%	-14.1%
MS	Morgan Stanley	Investment Banking & Brokerage	48.30	76,104	OW	OW	OW	-50.6%	73.7%	-5.5%
SBNY	Signature Bank New York	Regional Banks	106.92	5,773	OW	OW	OW	-50.1%	46.3%	-21.7%
SIVB	Sub Financial Group	Regional Banks	215.53	11,103	OW	OW	OW	-46.4%	50.5%	-14.1%
EQH	Equitable Holdings Inc	Other Diversified Financial Se	19.29	8,691	OW	OW	OW	-61.4%	85.1%	-22.2%
Industrials										
HWM	Howmet Aerospace Inc	Aerospace & Defense	15.85	6,912	OW	OW	OW	-64.8%	64.4%	-35.9%
GD	General Dynamics Corp	Aerospace & Defense	149.46	42,875	OW	OW	OW	-42.9%	40.2%	-15.2%
ALK	Alaska Air Group Inc	Airlines	36.26	4,445	OW	OW	OW	-63.1%	50.9%	-46.5%
FBHS	Fortune Brands Home & S	Building Products	63.93	8,819	OW	OW	OW	-51.8%	83.5%	-2.2%
MAS	Masco Corp	Building Products	50.21	13,243	OW	OW	OW	-38.9%	82.4%	4.6%
CMI	Cummins Inc	Construction Machinery & Heavy	173.26	25,560	OW	OW	OW	-38.8%	68.6%	-3.2%
OSK	Oshkosh Corp	Construction Machinery & Heavy	71.62	4,875	OW	OW	OW	-42.1%	46.8%	-24.3%
ITT	Itt Inc	Industrial Machinery	58.74	5,069	OW	OW	OW	-44.4%	54.6%	-20.5%
GWW	Ww Grainger Inc	Trading Companies & Distributo	314.16	16,797	OW	OW	OW	-31.8%	50.0%	-7.2%
MSM	Msc Industrial Direct Co In	Trading Companies & Distributo	72.81	4,045	OW	OW	OW	-34.3%	55.9%	-7.2%
SNDR	Schneider National Inc	Trucking	24.67	4,372	OW	OW	OW	-22.4%	44.8%	13.1%

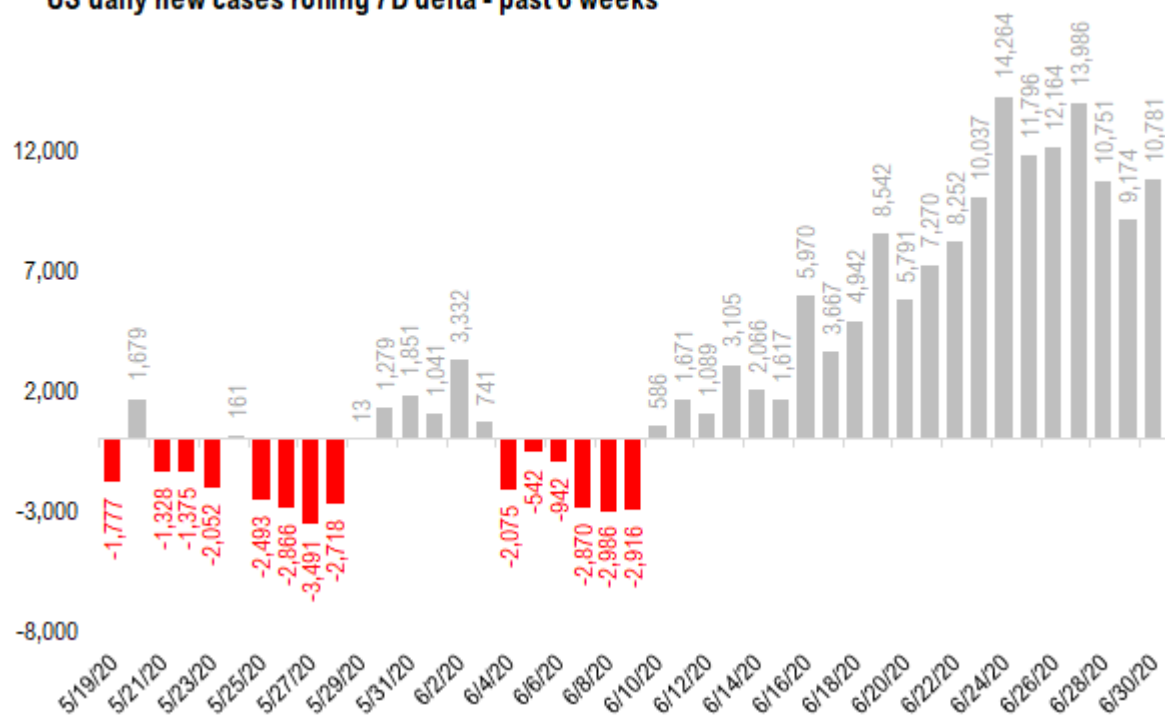
Source: Fundstrat

**POINT #1: Daily cases rise to +43,994 (+8,075 vs 1D ago) AZ is half due to "payback"**

Total cases in the US rose to +43,994, nearly a record high and up sharply from yesterday. But as we pointed out yesterday, that decline on Monday was an aberration due to AZ having 80% of test results not reported.

- the good news is that the daily change, compared to 1 week ago is easing somewhat. Instead of the +14k to +15k seen in recent days, the increases are somewhat flattening
- of course, the best case is to see this chart show red columns, because that signifies a decline.

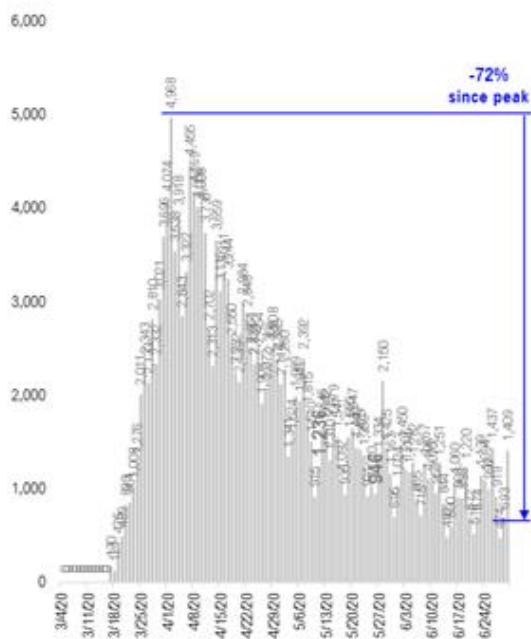
**US daily new cases rolling 7D delta - past 6 weeks**



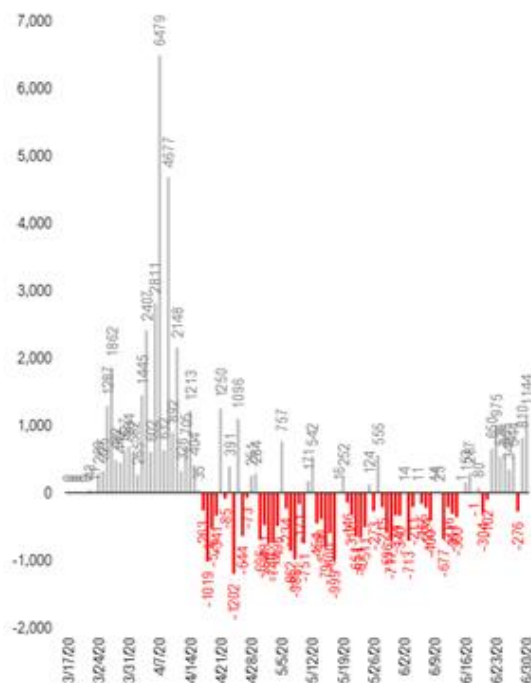
Source: COVID-19 Tracking Project

And fortunately, hospitalizations and deaths have not soared to the same extent. Hospitalizations are rising (see right chart) but daily increase is not nearly as high as the level of hospitalizations in March/April.

**US Gross Hospitalizations**  
(Composite of 33 states that report "gross hospitalizations")



**US Net Hospitalizations**  
(Composite of 18 states that report "net/current hospitalizations")



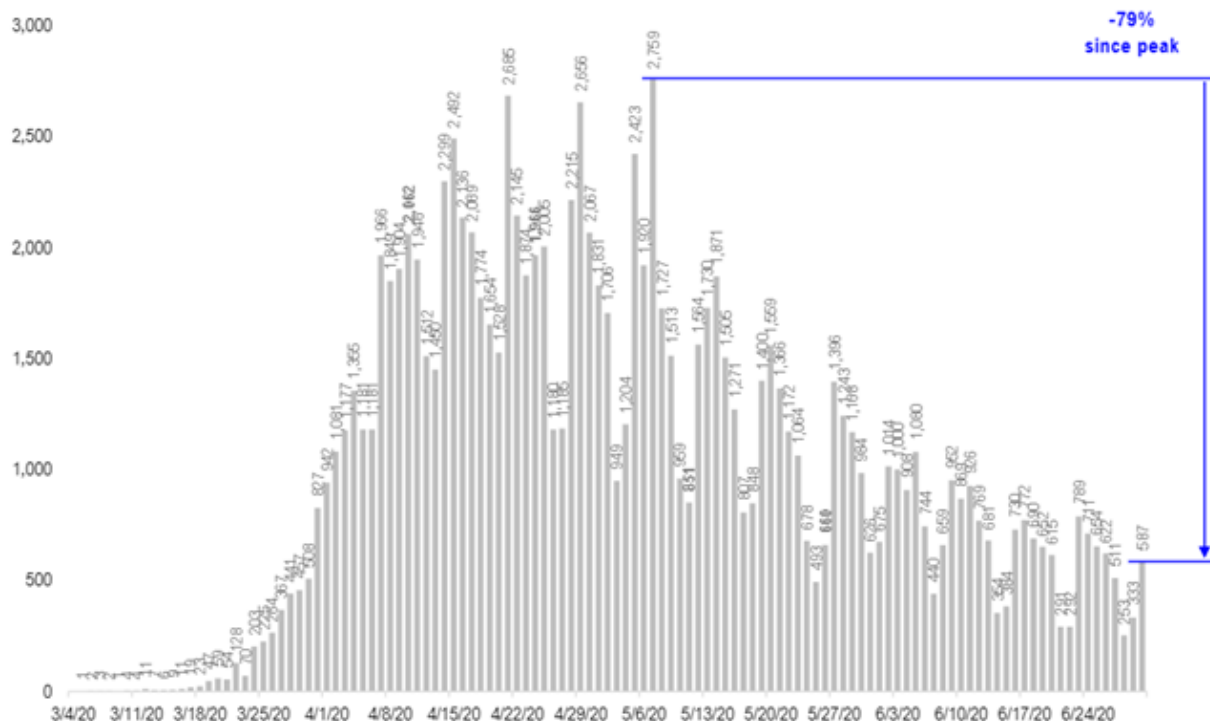
Source: Fundstrat, COVID-19 Tracking Project, State Department of Health

6/30/2020

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Similarly, daily deaths are generally trending lower, which is a positive trend given the ultimate cost any infected person incurs is death. The fact that 587 Americans died from COVID-19 yesterday is a senseless tragedy.

### US daily COVID-19 Fatalities



Source: COVID-19 Tracking Project

#### 6 states with biggest 1D increase

Arizona	4,682 vs 625 (1D)	+4,057
Texas	6,975 vs 4,283	+2,692
California	6,367 vs 5,307	+1,060
Florida	6,093 vs 5,266	+827
South Carolina	1,755 vs 1,324	+431
Oklahoma	585 vs 228	+357
<b>Total 6 states</b>		<b>+9,424</b>

#### 6 states reported sizable declines

Tennessee	1,212 vs 2,125 (1D)	-913
Alabama	870 vs 1,734	-864
Georgia	1,874 vs 2,207	-333
Maryland	305 vs 477	-172
Nevada	562 vs 734	-172
North Carolina	1,186 vs 1,342	-156
<b>Total 6 states</b>		<b>-2,610</b>

## Daily Case Increases (by State) (06/30)

% total new cases (state cases/ total US cases)

% total US pop (state population/ total US population)

Sorted				
Last 3-day trend growth rates				
	6/28/20	6/29/20	6/30/20	
United States	39,237	35,919	43,994	+8,075
<b>States:</b>				
1 Texas	5,357	4,283	6,975	<-higher
2 California	4,810	5,307	6,367	
3 Florida	8,530	5,266	6,093	
4 Arizona	3,857	625	4,682	<-higher
5 Georgia	2,225	2,207	1,874	
6 South Carolina	1,381	1,324	1,755	<-higher
7 Tennessee	0	2,125	1,212	
8 North Carolina	1,605	1,342	1,186	
9 Louisiana	0	845	1,014	
10 Alabama	358	1,734	870	
11 Ohio	854	737	743	
12 Illinois	646	738	724	
13 Mississippi	361	675	680	
14 Pennsylvania	505	492	618	<-higher
15 Wisconsin	457	315	601	<-higher
16 Virginia	489	453	598	<-higher
17 Oklahoma	302	228	585	<-higher
18 Nevada	821	734	562	
19 Utah	472	564	553	
20 New York	616	391	524	
21 Arkansas	508	439	520	
22 Missouri	314	468	508	
23 Washington	549	348	501	
24 Minnesota	516	312	442	
25 New Jersey	309	90	395	<-higher
26 Michigan	252	236	373	<-higher
27 Indiana	355	298	366	
28 Idaho	224	209	365	<-higher
29 Maryland	327	477	305	
30 Kentucky	65	115	277	<-higher
31 Iowa	477	293	225	
32 Colorado	285	204	204	
33 Oregon	247	144	171	
34 New Mexico	190	173	165	
35 Connecticut	97	59	152	<-higher
36 Nebraska	124	143	135	
37 Massachusetts	224	101	114	
38 Delaware	135	150	98	
39 Puerto Rico	22	14	55	<-higher
40 Rhode Island	31	16	49	<-higher
41 Montana	11	55	49	
42 South Dakota	55	35	48	
43 Wyoming	25	33	37	
44 North Dakota	37	44	37	
45 Alaska	29	21	36	<-higher
46 West Virginia	56	53	35	
47 District of Columbia	32	44	35	
48 Maine	37	28	34	
49 New Hampshire	30	13	22	
50 Hawaii	26	1	18	
51 Guam	0	7	4	
52 U.S. Virgin Islands	0	0	3	
53 Vermont	2	6	0	
54 Northern Mariana Islands	0	0	0	
55 Kansas	0	905	0	
56 American Samoa	0	0	0	

Source: COVID-19 Tracking Project

## POINT #2: F-CAT converging with NY/NJ/CT in case prevalence...

### **Arizona about to match up with CT = good thing**

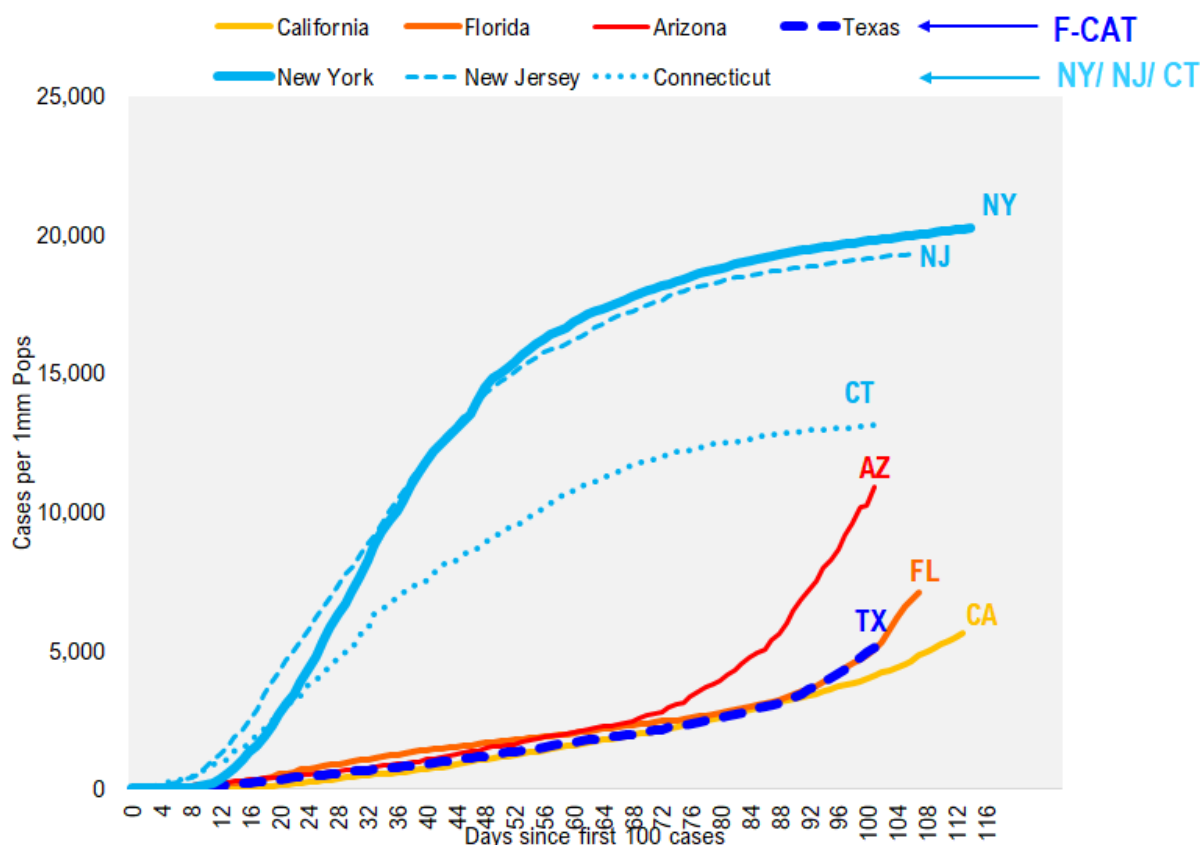
We have plotted case prevalence (total cases / 1mm residents) for:

- original epicenter: NY/NJ/CT
- new epi-center F-CAT: FL, CA, AZ, TX

This creates a pretty obvious convergence. We can see the F-CAT states rapidly catching up to NY/NJ/CT. But the more interesting thing is that Arizona is close to converging with CT. CT was a particularly hard hit state, nursing homes especially, but they are close:

- AZ cases per 1mm residents: 10,833
- CT cases per 1mm residents: 13,100

Once CT hit that threshold, the state managed to see cases flatten dramatically. We wonder if F-CAT could be approaching this "disease break point" rapidly.



Source: COVID-19 Tracking Project

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***Top 50 largest counties in the US -- 5 of them are seeing case growth nearly matching NYC at its "worst point"***

We have listed the top 50 counties in the USA (by size) and color coded them based upon:

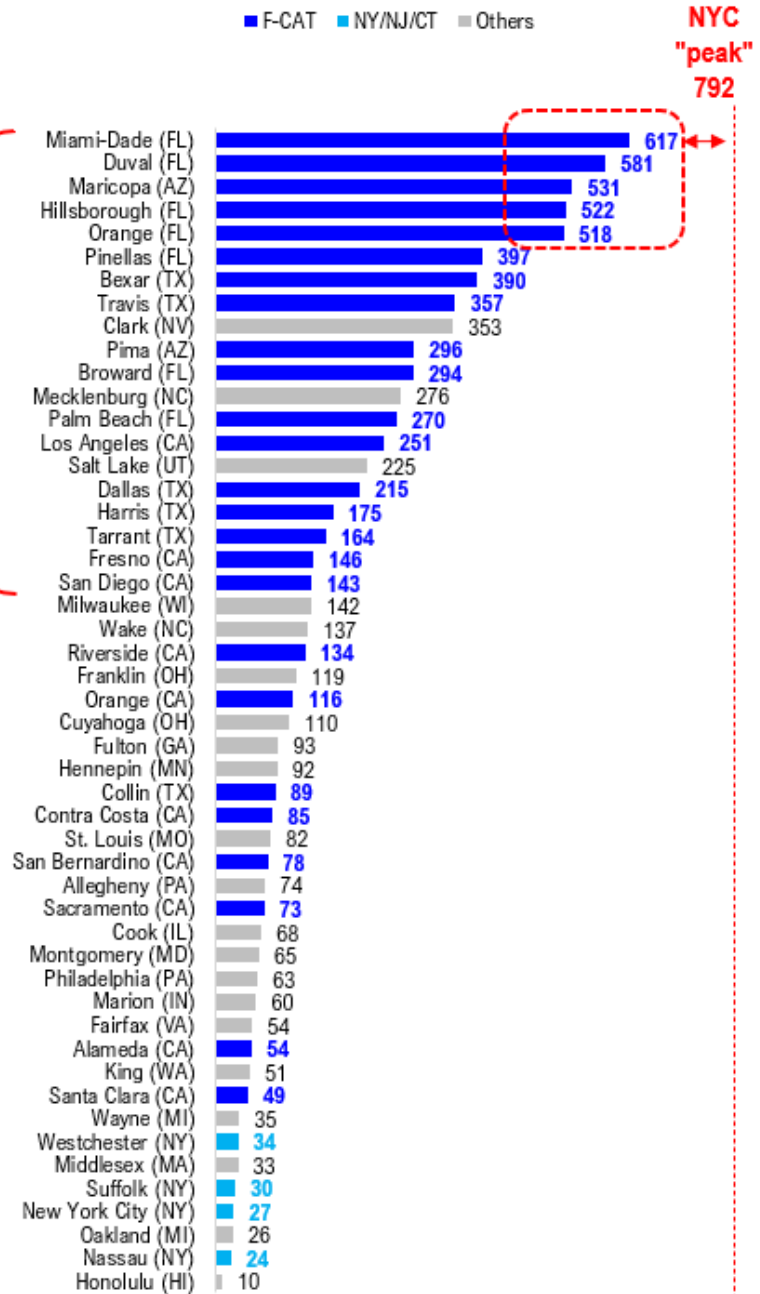
- DARK BLUE: F-CAT (FL, CA, AZ, TX)
- LIGHT BLUE: NY/NJ/CT
- GREY: Other 43 states

As shown below, the 17 of 20 counties with the fastest case growth (3D avg cases/1mm Pops), are in F-CAT.

- Florida has 4 of the 5 counties with the fastest case growth
- These 5 counties have daily cases/1mm Pops that nearly match the 792 NYC saw at the height of NYC crisis
- FL population density is far lower than NYC, and thus, population density is not the reason for this surge in prevalence



**17 of 20 largest  
counties with fastest  
case growth  
are in:  
FL, CA, AZ, TX,  
aka F-CAT**



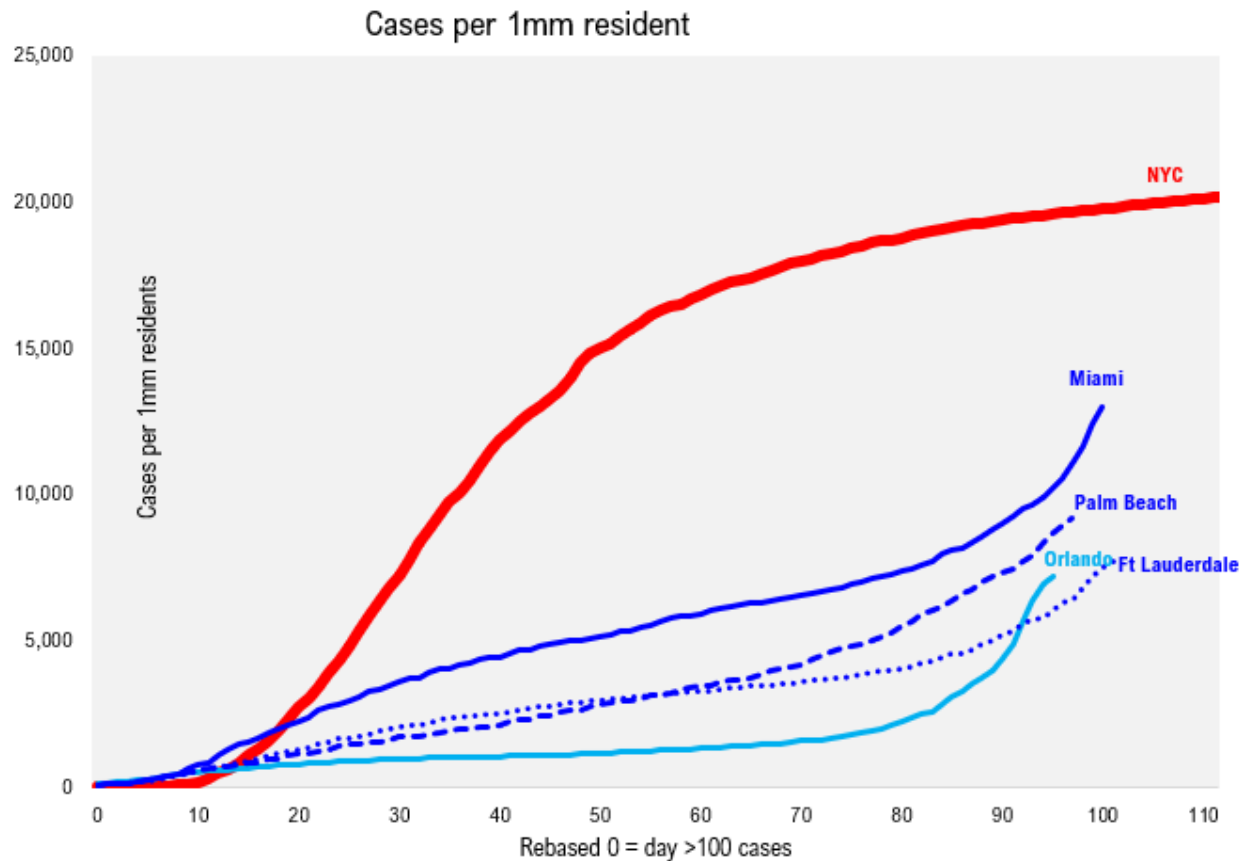
Source: Johns Hopkins data

While the case figures have soared in F-CAT, we also know that these states have far fewer fatalities, and hospitalizations relative to the NYC experience. Part of this is due to the younger demographic of the infected and part of it is better preparation of the healthcare industry at dealing with COVID-19.

***Florida has the total case prevalence trajectory that is on track to surpass NYC...***

So, of all the states F-CAT, Florida is the closest to matching NYC in overall prevalence. Miami and Palm Beach have particularly high prevalence, measured as total cases/1mm residents. But Orlando is rapidly surging as well.

The F-CAT states have all course-corrected, so it is not necessarily the case that these states will keep seeing cases surge. In fact, Arizona joined the other 3 states in closing/limiting Bars and Clubs in terms of capacity.



Source: Johns Hopkins

### POINT #3: More studies show Vitamin D mitigates severity of COVID-19

It has been about a month since we last discussed the multiple studies that showed deficiencies in Vitamin D are associated with more severe COVID-19 outcomes (see FLASH dated 5/28/2020). In the past month, >15 additional studies have been conducted on the relationship between Vitamin D (either insufficient or deficient) and COVID-19 severity. And broadly, most are finding a relationship (We did not read all the studies and a few were "questioning" the relationship)

#### **Two recent UK studies find low Vitamin D = severe outcomes COVID-19**

Two studies about Vitamin D were published on MedRxiv in the past week. The more recent one was led by a large tertiary academic NHS Foundation Trust in the North East of England, UK, providing care to COVID-19 patients and had 134 hospitalized patients with documented COVID-19 infection. Below are the summaries of these two studies:

- The first study found that patients in the ITU (equivalent to ICU) were more frequently Vitamin D deficient (compared to those just in the medical ward), despite being younger.
- The second study found mortality rates from respiratory disease of >9,500 adults (in Germany, following them over past 15 years) were 2.1X and 3.0X greater for infected with "insufficient" and "deficient" Vitamin D levels. Thus, they believe this may influence outcomes in COVID-19.

Date	Authors	Title	Conclusion
June 25, 2020	Grigorios Panagiotou, Su Ann Tee, Yasir Ihsan, Waseem Athar, Gabriella Marchitelli, Donna Kelly, Christopher S. Boot, Nadia Stock, Jim Macfarlane, Adrian R. Martineau, Graham Paul Burns, Richard Quinton	<b>Low serum 25-hydroxyvitamin D (25[OH]D) levels in patients hospitalised with COVID-19 are associated with greater disease severity: results of a local audit of practice.</b> <a href="https://www.medrxiv.org/content/10.1101/2020.06.21.20136903v2">https://www.medrxiv.org/content/10.1101/2020.06.21.20136903v2</a>	Conclusions: UK study found that patients requiring ITU (aka ICU in USA) admission were more frequently vitamin D deficient than those managed on medical wards, despite being significantly younger.
June 22, 2020	Hermann Brenner, Bernd Holleczek, View ORCID ProfileBen Schoettker	<b>Vitamin D insufficiency and deficiency and mortality from respiratory diseases in a cohort of older adults: potential for limiting the death toll during and beyond the COVID-19 pandemic</b> <a href="https://www.medrxiv.org/content/10.1101/2020.06.22.20137299v1">https://www.medrxiv.org/content/10.1101/2020.06.22.20137299v1</a>	Conclusions: Compared to sufficient vitamin D status, respiratory disease mortality was 2.1 (insufficient)- and 3.0 (deficient)-fold increased, respectively. Vitamin D insufficiency and deficiency are common and account for a large proportion of respiratory disease mortality in older adults

May 19, 2020  
Dieter De Smet,  
Kristof DeSmet,  
Pauline Herroelen,  
Stefaan Gryspeerdt,  
Geert Antoine Martens

**Vitamin D deficiency as risk factor for severe COVID-19: a convergence of two pandemics**  
<https://www.medrxiv.org/content/10.1101/2020.05.01.20079378v2>

Conclusions: vitamin D deficiency is a prevalent risk factor for severe COVID-19. Vitamin D supplementation might be an inexpensive and safe mitigation for the SARS-CoV-2 pandemic.

May 18, 2020  
Ali Daneshkhan,  
Vasundhara Agrawal,  
Adam Eshein,  
Hariharan Subramanian,  
Hemant Kumar Roy,  
Vadim Backman

**The Possible Role of Vitamin D in Suppressing Cytokine Storm and Associated Mortality in COVID-19 Patients**  
<https://www.medrxiv.org/content/10.1101/2020.04.08.20058578v4>

Conclusions: COVID-19 patient-level data shows a notable OR of 3.4 with 95% CI (2.15 to 5.4) for high CRP (C-Reactive Protein) in severe COVID-19 patients. Given that CRP is a surrogate marker for cytokine storm and is associated with Vit D deficiency, based on retrospective data and indirect evidence we see a possible role of Vit D in reducing complications attributed to unregulated inflammation and cytokine storm.

May 06, 2020  
Gareth Davies,  
Attila R Garami,  
Joanna C Byers

**Evidence Supports a Causal Model for Vitamin D in COVID-19 Outcomes**  
<https://www.medrxiv.org/content/10.1101/2020.05.01.20087965v1>

Conclusion: We examine the factors that govern confidence in causal inference models and conclude that a high level of confidence in a causal beneficial role for Vitamin D is justified.

April 28, 2020  
Frank H. Lau,  
Rinku Majumder,  
Radbeh Torabi,  
Fouad Saeg, Ryan Hoffman,  
Jeffrey D. Cirillo,  
Patrick Greiffenstein

**Vitamin D Insufficiency is Prevalent in Severe COVID-19**  
<https://www.medrxiv.org/content/10.1101/2020.04.24.20075838v1>

Conclusions: Vitamin D deficiency (VDI) seen in 100% of ICU patients less than 75 years old. VDI is highly prevalent in severe COVID-19 patients.

<https://www.medrxiv.org/content/10.1101/2020.06.21.20136903v2>  
<https://www.medrxiv.org/content/10.1101/2020.06.22.20137299v1>  
<https://www.medrxiv.org/content/10.1101/2020.05.01.20079376v2>  
<https://www.medrxiv.org/content/10.1101/2020.04.08.20058578v4>  
<https://www.medrxiv.org/content/10.1101/2020.05.01.20087965v1>  
<https://www.medrxiv.org/content/10.1101/2020.04.24.20075838v1>

This is the abstract to the ITU hospital study of 134 patients. The link to the report is at the end. FYI, the ITU is the Intensive Therapy Unit and seems to be the equivalent of the ICU in the US.



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## Low serum 25-hydroxyvitamin D (25[OH]D) levels in patients hospitalised with COVID-19 are associated with greater disease severity: results of a local audit of practice.

Grigorios Panagiotou, Su Ann Tee, Yasir Ihsan, Waseem Athar, Gabriella Marchitelli, Donna Kelly, Christopher S. Boot, Nadia Stock, Jim Macfarlane, Adrian R. Martineau, Graham Paul Burns, Richard Quinton

doi: <https://doi.org/10.1101/2020.06.21.20136903>

<https://www.medrxiv.org/content/10.1101/2020.06.21.20136903v2>

**Conclusions:** Subject to the inherent limitations of observational (non-trial) audit data, analysed retrospectively, we found that patients requiring <sup>ITU</sup> ITU admission were more frequently vitamin D deficient than those managed on medical wards, despite being significantly younger. Larger prospective studies and/or clinical trials are needed to elucidate the role of vitamin D as a preventive and/or therapeutic strategy for mitigating the effects of COVID-19 infection in patients with VDD.

<https://www.medrxiv.org/content/10.1101/2020.06.21.20136903v2>

This second study is a longer 15-year study of >9,500 adults in Germany and looked at mortality from respiratory disease. But the authors believe this also has implications for COVID-19.

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## Vitamin D insufficiency and deficiency and mortality from respiratory diseases in a cohort of older adults: potential for limiting the death toll during and beyond the COVID-19 pandemic

Hermann Brenner, Bernd Holleczek, Ben Schoettker

doi: <https://doi.org/10.1101/2020.06.22.20137299>

**This article is a preprint and has not been peer-reviewed [what does this mean?]. It reports new medical research that has yet to be evaluated and so should not be used to guide clinical practice.**

Abstract

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Metrics

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### Abstract

**Background.** The COVID-19 pandemic goes along with increased mortality from acute respiratory disease, and measures to limit the spread of the infection go along with increased risk of vitamin D deficiency, especially among high risk groups. It has been suggested that vitamin D3 supplementation might help to reduce respiratory disease mortality. **Methods.** We assessed the prevalence of vitamin D insufficiency and deficiency, defined by 25(OH)D blood levels of 30-50 and <30 nmol/L, respectively, and their association with mortality from respiratory diseases during 15 years of follow-up in a cohort of 9,548 adults aged 50-75 years from Saarland, Germany. **Results.** Vitamin D insufficiency and deficiency were common (44% and 15%, respectively). Compared to sufficient vitamin D status, respiratory disease mortality was 2.1 (95%-CI 1.3-3.2)- and 3.0 (95%-CI 1.8-5.2)-fold increased, respectively. Although significant increases were seen in both women and men, they were much stronger among women, with 8.5 (95% CI 2.4-30.1) and 2.3 (95% CI 1.1-4.4)-fold increase of respiratory disease mortality in case of vitamin D deficiency among women and men, respectively (p-value for interaction =0.041). Overall, 41% (95% CI 20%-58%) of respiratory disease mortality was statistically attributable to vitamin D insufficiency or deficiency. **Conclusion.** Vitamin D insufficiency and deficiency are common and account for a large proportion of respiratory disease mortality in older adults, supporting suggestions that vitamin D3 supplementation might make a major contribution to limit the burden of the COVID-19 pandemic, particularly among women.

<https://www.medrxiv.org/content/10.1101/2020.06.22.20137299v1>

***Getting enough Vitamin D is an action we can all take...***

Hence, among the many actions any of us can take against COVID-19, a simple one is to get enough Vitamin D. The easiest way to get this is by exposure to direct sunlight.



Source: Google

***Low Vitamin D levels may explain why Latino/Hispanic and Blacks are a disproportionate share of COVID-19 severity...***

The NIH has several studies showing both ethnic profile of Vitamin D sufficiency and also the associated conditions that are more likely to see poor Vitamin D levels (not clear if it is a cause or a byproduct). The reason we are talking about those groups with vitamin D deficiency is that they overlap with those same cohorts suffering more severely from COVID-19 disease. The CDC completed a study of racial and minority groups severity from COVID-19 (see below marked in red and also table created).

**Table: NIH Study of cohorts with Vitamin D deficiency**

*% of cohort with vitamin D deficiency:*

US overall	41.6%
- White	30.9
- Black	82.1 <- wow
- Hispanics	69.2 <- wow
- Male	41.1
- Female	42.0



*Vitamin D deficiency more common among:*

- poor health status 59.5
- obese 53.8
- low HDL cholesterol 49.9
- no college education 48.2
- Not consume milk 48.0
- hypertension 46.3
- Smoker 43.7

<https://pubmed.ncbi.nlm.nih.gov/21310306/>

<https://tahomaclinic.com/Private/Articles4/WellMan/Forrest%202011%20-%20Prevalence%20and%20correlates%20of%20vitamin%20D%20deficiency%20in%20US%20adults.pdf>

***As a side note, apparently sunlight actually de-activates Coronavirus within 7 minutes...***

There is another ancillary benefit to sunlight (besides getting vitamin D), as it turns out that there is another study (multiple previously showed this as well) that shows COVID-19 is weakened by direct exposure to sunlight.

**Forbes**

CORONAVIRUS | 3,068 views | Jun 29, 2020, 10:13pm EDT

## Light Kills Coronavirus. Here's How It Could Help Beat Covid-19



**JV Chamary** Contributor

Science

*I write about science and technology*

When researchers at the National Biodefense Analysis and Countermeasures Center exposed SARS-CoV-2 in simulated saliva to artificial sunlight (equivalent to a sunny day), 90% of viruses were inactivated within seven minutes. This result suggests that Coronavirus is less able to survive under the Sun's rays and that your risk of exposure is significantly lower in outdoor environments.

<https://www.forbes.com/sites/jvchamary/2020/06/29/light-coronavirus/#2141ef695853>

## Disclosures

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