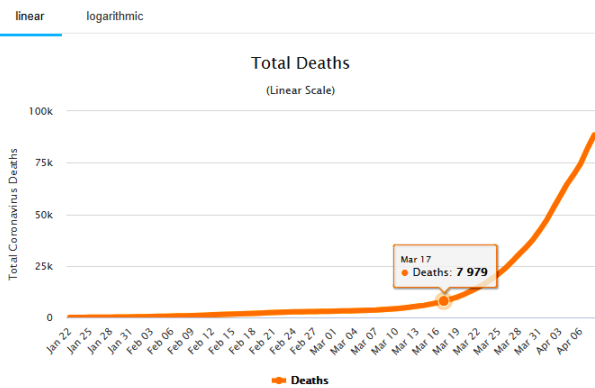


STAYING THE COURSE & FINISHING STRONG: It *absolutely is* all about the numbers



April 10, 2020
Tony Wayne
IronHorse LLC



Premise/Summary: This article attempts to propose a very simple, admittedly rather scientifically unsophisticated model to consider the potential impact and risks of Covid-19 in terms of a concerted effort to “re-open” the economy for business within the next few weeks. I would suggest the economic risks/potential impairment costs of “too much, too soon, too quickly” outweigh the risks of not aggressively pushing to “get back to work”.

Like all of you, I’ve been consumed with the unbelievable challenge of struggling to seek and find some sense of “new normal” the past six weeks or so. On the one hand, time seems to have flown by with weeks feeling like days and the blur between Wednesday and Sunday making it tough to discern morning from night, the workday from the weekend.

And yet, when I ponder the coming weeks and months, I wonder and I worry just when or if the old routine and regimen will be returning someday. I think it will, and I sure hope it does but the uncertainty of it all is unsettling to say the least and worrisome most nights. Admittedly, I’m not sleeping great but I have started to make a concerted effort to tune out the news as much as possible, to try and avoid peeking at the market 4-5 times per day; something admittedly I honestly have not been guilty of in the past. I’m a 1-2 times per month dude at checking the investment balances, but not the past few weeks.



Mr. Toad’s Wild Ride

For fun and to try and say young, I’ve maintained a part-time gig in my “spare time”.

I’ve been teaching undergraduate and graduate-level accounting courses for the past 15 years in addition to my first love, *IronHorse*. Always face to face classes (“F2F”) and never on-line as for me it’s all about the connections, the relationships and the interactions with the next captains of industry. But, Covid-19 has absolutely rocked the world of higher education and the first full week of March we were tasked with trying to transition all of our F2F classes to the on-line, virtual platform. Fortunately, the next week was Spring Break and to facilitate the massive undertaking we closed down the week after to try and move around 15,000 students to the new environment.

So, until just the past few days, this has been my focus and my pressing challenge.

I began the endeavor right around the day after St. Paddy's Day. As such and as my anxiety began to climb, I found myself really distracted by the rapidly shifting, extraordinarily frightening bombardment of news and the chaotic, violently volatile reactions of the financial markets to the massive uncertainty crashing down around us:



To be clear, I've always said that *"...a little bit of trouble"* is a good thing for our business. As restructuring and bad deal experts, downturns usually result in nice upticks in our engagement volume; sometimes for extended periods. Fortunately for us, economic "coolings" drive growth and especially post-2008 we experienced a rather sustained counter-cyclical case flow that remained for the next 4-5 years.

Regardless and as with pretty much everyone else, the volatility, the tremendous cloud of ambiguity, the fear can feel overwhelming at times. And, March 18th is the first time I can ever recall feeling tempted to move a chunk out of the free falling markets into some cash. I mean really, really tempted. Sweaty hands/arm pits and all, I opted to do my homework, my research to calm my nerves and steady my hands.

Three overpowering questions were beating down on me:

1. Could the market free fall way, way beyond where it had already fallen?
2. If so, what might the probability of that scenario be and should we cash out now to buffer some of that downside risk? And,
3. Just how bad might things get, virus-wise before it is "safe" to return to "normal"?

Finding Some Perspective & Peace In Data

My goal with all of you in this conversation is try my absolute best to keep things politically neutral/unbiased. I mean that sincerely. Speaking only for myself, but I see zero value in searching for who to blame in all this. Honestly, what good does it provide for tomorrow by looking back weeks and months to point fingers and to second-guess, find fault and play Monday morning quarterback. I want both sides of the aisle on the same page, charting the same course and removing all barriers to keeping us safe and getting us to the other side of this very turbulent ocean we found ourselves floundering in.

At the same time I found myself mid-March struggling to come to grips with stuff, to remain focused and calm, and to get the class transition behind me so I could refocus on IronHorse, I felt like the messages I was hearing were confusing, inconsistent, contradictory and just simply all over the map. Worse yet, the political positioning and posturing going on.

As a result, I decided I would try on my own to get a better first-hand look and feel as to how bad things were, and how awful could things get.

As it turns out the answers to the three questions above actually were pretty straight-forward to obtain:

1. Yes, the market could collapse by way over 50%, but in my opinion this is not the most likely scenario as even if it did, the likelihood of it remaining at that level for an extended period of time is not the most probable scenario outcome.
2. Hell no I shouldn't cash a big chunk out!! I'm a career finance guy and make a living off of estimating enterprise values. I know better than to take an unrealized short-term paper loss and convert it to a realized cash loss. Time indeed does and will heal the market trauma and I took comfort in reminding myself we have years of history behind us and years ahead of us that can and will confirm that outcome, which for sure is highly likely.
3. As for the virus, unfortunately for us all the answer to that question has and will continue to prove that indeed the road will likely be a very long and rough one before we see that light we so badly want to see right now. The model I constructed confirms that for me.

The Model

Back in September, I spoke to the inherent uncertainty when working with forward-looking forecasts and projections in, "A FEEL FOR THE FUTURE: SCIENCE & ART OF FORTUNE TELLING/FORECASTING FOR A LIVING-STUDY YOUR "MISSES":

<https://www.linkedin.com/pulse/feel-future-science-art-fortune-tellingforecasting-your-tony-wayne/>



To help me sift through the white noise and the cluttered messages, I decided to build a very simple, easy to maintain forecast model of the impacts of the virus. Morbid as it very well may appear, I felt and still feel that the likely most accurate number being reported is the world-wide Covid-19 daily fatality count. Got to remember the challenges we faced and still face with testing; we've made a few strides in this country but I remain very suspect as to the infection rate trends being reported here. Rather, I have read that in the U.S. we are trailing the European experience by several weeks and the hot spots appear limited to high areas of population concentration primarily in Italy, Spain, France, Germany and the UK. If anything, deaths may be understated but the probability of them being over-stated is not high, in my opinion. Numbers out of China and Russia are hot garbage and not to be trusted.

So, March 18th is the first day I forecasted world-wide daily fatalities and yesterday marked the 22nd day in my forecast period. Actual total deaths over the 22 days were 80,478, and the model forecasted 84,295. That's a cumulative forecast error to date of less than 5%. The mean daily average error is 11.2% under-forecasted; median is 15.4% under-forecasted. Range of daily error is from a low of 45% under forecast to a high of 40% over-forecasted.

Using some very rough, bastardized arithmetic weighted 65% to total 22 day cumulative accuracy, 35% to daily accuracy, I scored the model as follows:

SUMMARY 3/18-4/8:	
-11.2%	MEAN AVG DAILY ERROR
-15.4%	MEDIAN AVG DAILY ERROR
1.38	MEDIAN TO MEAN FACTOR
39.6%	HIGH
-45.1%	LOW
84.6%	RANGE
5.5	RANGE TO MEDIAN FACTOR
-0.0453	CUMULATIVE ERROR FACTOR-TRAILING 22 DAYS
98.107485	SCORECARD RATING

To provide some perspective on exponential rates of growth, on 2/28 the world-wide death count for that day was 65 deaths, and 817 on 3/17. Total cumulative deaths were 7,979 as of 3/17

As of 4:40 PM on 4/9, the total exceeded 95,000.

The forecast vs actual data for the past 22 days and a look at the forecast going out 30 and then 60 days follows as discussed below:

3		FCST	FCST	FCST	ACT	ACT	ACT	ACT	CUMULATIVE	DAILY
4		Total	DAILY	DAILY	Total	DAILY	DAILY	Change in	FCST	FCST
5	Date	Deaths	COUNT	% CHANGE	Deaths	COUNT	% CHANGE	Total (%)	ERROR	ERROR
6	2/18/2020	2,009	136							
34	3/17/2020	7,978	817		7,979	817				
35	3/18/2020	8,856	878	7%	8,951	972	19%	12%	-1.1%	-10.8%
36	3/19/2020	9,830	974	11%	10,030	1,079	11%	12%	-2.0%	-10.8%
37	3/20/2020	10,911	1,081	11%	11,386	1,356	26%	14%	-4.4%	-25.4%
38	3/21/2020	12,111	1,200	11%	13,011	1,625	20%	14%	-7.4%	-35.4%
39	3/22/2020	13,443	1,332	11%	14,640	1,629	0%	13%	-8.9%	-22.3%
40	3/23/2020	14,922	1,479	11%	16,513	1,873	15%	13%	-10.7%	-26.7%
41	3/24/2020	16,564	1,641	11%	18,894	2,381	27%	14%	-14.1%	-45.1%
42	3/25/2020	18,386	1,822	11%	21,282	2,388	0%	13%	-15.8%	-31.1%
43	3/26/2020	20,408	2,022	11%	24,073	2,791	17%	13%	-18.0%	-38.0%
44	3/27/2020	22,857	2,449	21%	27,343	3,270	17%	14%	-19.6%	-33.5%
45	3/28/2020	25,600	2,743	12%	33,523	3,518	8%	13%	-31.0%	-28.3%
46	3/29/2020	28,672	3,072	12%	34,064	3,203	-9%	10%	-18.8%	-4.3%
47	3/30/2020	32,112	3,441	12%	37,773	3,708	16%	11%	-17.6%	-7.8%
48	3/31/2020	35,966	3,853	12%	42,309	4,535	22%	12%	-17.6%	-17.7%
49	4/1/2020	40,282	4,316	12%	47,192	4,883	8%	12%	-17.2%	-13.1%
50	4/2/2020	45,116	4,834	12%	53,167	5,969	22%	13%	-17.8%	-23.5%
51	4/3/2020	50,530	5,414	12%	59,174	5,997	0%	11%	-17.1%	-10.8%
52	4/4/2020	56,593	6,064	12%	64,691	5,800	-3%	10%	-14.3%	4.3%
53	4/5/2020	63,950	7,357	21%	69,427	4,737	-18%	7%	-8.6%	35.6%
54	4/6/2020	72,264	8,314	13%	74,654	5,227	10%	8%	-3.3%	37.1%
55	4/7/2020	81,658	9,394	13%	82,036	7,382	41%	10%	-0.5%	21.4%
56	4/8/2020	92,273	10,616	13%	88,457	6,414	-13%	8%	4.1%	39.6%
57	4/9/2020	104,269	11,996	13%						

World-wide, we will exceed 100,000 cumulative total deaths either today or tomorrow (4/10) and we were at 2,900 at the end of February.

It's too early yet, but for the past week or so we have been seeing some signs of inflection in the world-wide fatality trend. It is still growing extremely rapidly but the rate of *daily exponential acceleration* began peaking a couple of weeks ago, with very early indicators of some possible reduction in the rate of growth; the oft described "flattening of the curve".

This is why the assumed growth rate in the model has begun to exceed the actual rate-the model assumes a peak of 13% with a gentle trending downward beginning in around 5-7 days from now.

Short-Term 30-60 Day Forecast

The key assumption in the model is the estimated daily % change in reported fatalities; which is true with any model being used. There are numerous variables, many quite subjective/highly volatile and based on very informal estimates with very questionable accuracy in terms of:

- Testing availability/coverage and thoroughness
- Accurate diagnoses of infections, accurate reporting of infection rates
- Accurate cause of death reporting
- Availability of treatment
- Treatment facility, human resource and equipment capacity
- Population density and social interactivity frequency

- Demographical make-up profile by region

My model is extremely simple, but also not all that sophisticated. It does assume the measures put in place will continue over the next 2-4 months, with a gradual, measured return to “normal” starting early to mid-summer.

Taking a look back at the trailing 22 days, here is the model daily % change forecast vs the actual % daily change in deaths:

	WORST CASE	
	FCST	ACT
MEDIAN DAILY GROWTH RATE 3/18-04/08	12%	13%
MEAN DAILY GROWTH RATE 03/18-04/08	13%	10%
	12.3%	11.7%
FATALITIES	84,295	80,478
CUMULATIVE ERROR	4.5%	

And, here is the forward-looking assumed probability weighted projections looking 30 and 60 days out:

	WORST	LIKELY	BEST
PROBABILITY ESTIMATION/ASSUMPTION	15%	65%	20%
5/8/2020 FCST	1,865,052	565,100	286,539
FCST	704,381		
6/8/2020 FCST	7,613,690	2,289,692	1,148,835
FCST	2,860,120		
MEDIAN DAILY % FCST GROWTH RATE 4/9-5/8	9.0%		
MEAN DAILY FCST GROWTH RATE 4/9-5/8	8.7%		
	8.9%		
MEDIAN DAILY % FCST GROWTH RATE 5/9-6/8	1.4%		
MEAN DAILY FCST GROWTH RATE 5/9-6/8	1.2%		
	1%		

Those assumed daily growth rates are the “worst case” estimates in the model. The inflection point (growth rate deceleration) is assumed to peak tomorrow (4/10) and a downward trend in the rate of growth as shown over the next 30 days, and 30 days after that. The model assumes that daily deaths will start their decline 6/1 and eventually reaching less than ten deaths per day worldwide starting early September.

Assuming the probabilities as shown, the model projects 3.6 million worldwide Covid-19 fatalities by 12/31. As of today, the U.S has accounted for 29% of the reported worldwide cases and 17% of the deaths. To date, the fatality rate as a % of U.S. cases is 3.5% vs a worldwide rate of 6% and a rate 9% in Western Europe.

As such I believe we will exceed 100,000 deaths in the U.S by early June and the total for 2020 will likely approach or exceed at least 200,000-sadly heavily concentrated in 15 of our largest metro areas. Moreover, I believe this will be the likely outcome assuming we continue the social distancing and other restrictions over the next 75-90 days with a gradual loosening thereafter.

For sure, 200,000 is a much higher number than 60,000; a number that seems to be getting a lot of attention and air-play in the media the past 48 hours or so. Moreover, the calls for “opening up the economy,” a May 1st “return to normal” also appear to be growing louder by the day. Estimates of 20% unemployment, catastrophic business failure projections, massive acceleration in credit defaults, and unfathomable levels of fear and uncertainty are certainly not to be taken lightly. Honestly, it’s virtually impossible to accurately project the extent and duration of the economic damage being inflicted.

But.....

The fragility and vulnerability of the current state of things simply can't be overstated, discounted or ignored. The threat of this virus simply has not been exaggerated, over-stated or misstated in furtherance of agendas. That's quite candidly readily disputed and contradicted by the experience in Western Europe.

Europe is approximately three weeks or so ahead of us in terms of the progression of the virus with an infection rate of 1,767 per million and average fatality rate of around 9%. The population is similar to ours in terms of size, but the density of this population in major cities is even more than ours. More people are compact into smaller areas, the frequency of close social interaction is higher, and they rely on public transportation more than we do. Moreover, they have experienced challenges in uniting their efforts across the various nations and diverse national governments in place. All of these factors are contributing to higher rates of infection and much higher fatality rates in Europe.

If we were to assume comparable infection and fatality rates in the U.S. to Western Europe's rates, we would have 26% more reported cases and 220% more fatalities; 52,000 deaths vs the actual through 4/8 of 16,300.

My U.S. 30 and 60 day forecast is as follows:

	WORST CASE	WORST CASE	WORST CASE	WORST CASE	50%	25%
UNITED STATES	TOT	DAILY	TOT %	DAILY %	LIKELY	BEST
DATE	DEATHS	DEATHS	CHANGE	CHANGE	CASE	CASE
3/1/2020	1	1				
4/9/2020	16,691	1,900	13%	-2%		
4/10/2020	19,028	2,337	14%	23%	17,859	17,275
4/11/2020	21,692	2,664	14%	14%	19,191	17,941
4/12/2020	24,078	2,386	11%	-10%	20,384	18,538
4/13/2020	26,726	2,649	11%	11%	21,709	19,200
4/14/2020	29,666	2,940	11%	11%	23,179	19,935
4/15/2020	32,929	3,263	11%	11%	24,810	20,751
4/16/2020	35,564	2,634	8%	-19%	26,127	21,409
4/17/2020	38,409	2,845	8%	8%	27,550	22,120
4/18/2020	41,482	3,073	8%	8%	29,086	22,889
4/19/2020	43,970	2,489	6%	-19%	30,331	23,511
4/20/2020	46,609	2,638	6%	6%	31,650	24,170
4/21/2020	49,405	2,797	6%	6%	33,048	24,870
4/22/2020	52,370	2,964	6%	6%	34,530	25,611
4/23/2020	55,512	3,142	6%	6%	36,101	26,396
4/24/2020	58,842	3,331	6%	6%	37,767	27,229
4/25/2020	62,373	3,531	6%	6%	39,532	28,111
4/26/2020	65,492	3,119	5%	-12%	41,091	28,891
4/27/2020	68,766	3,275	5%	5%	42,729	29,710
4/28/2020	72,204	3,438	5%	5%	44,448	30,569
4/29/2020	75,815	3,610	5%	5%	46,253	31,472
4/30/2020	79,605	3,791	5%	5%	48,148	32,420
5/1/2020	83,586	3,980	5%	5%	50,138	33,415
6/9/2020	172,813	1,043	1%	-7%	94,752	55,722
PROBABILITY:	25%				50%	25%
6/9 FCST	104,510					

And, here is a summary comparison of the U.S. vs European experience to-date, focusing on case per million reported infection rates and fatality rates:

	DEATH		%		WTD AVG DEATH		WTD AVG FATALITY		WTD AVG	
	RATE	TOT	TOT	CASES PER	RATE	CASES PER	RATE	RATE	FATALITY	FATALITY
DATA THRU 4/8/2020:	PER MILL	CASES	CASES	MILL	POPULATION	PER MILL	MILL	PER CASE	PER CASE	PER CASE
AUSTRIA	33	13,244	1%	1,471	9,003,399	0.747711545	33.32981	2.24%	0.05%	
BELGIUM	218	24,983	2%	2,156	11,587,662	6.357201428	62.87214	10.11%	0.29%	
DENMARK	41	5,635	0%	973	5,791,367	0.597555962	14.18102	4.21%	0.06%	
FINLAND	8	2,605	0%	470	5,542,553	0.111586975	6.555735	1.70%	0.02%	
FRANCE	187	117,749	10%	1,804	65,271,064	30.71679845	296.3268	10.37%	1.70%	
GERMANY	29	115,523	10%	1,379	83,773,024	6.113864895	290.7248	2.10%	0.44%	
ITALY	302	143,626	12%	2,375	60,474,105	45.96106057	361.4487	12.72%	1.94%	
NETHERLANDS	140	21,762	2%	1,270	17,135,433	6.037216744	54.76618	11.02%	0.48%	
NORWAY	20	6,162	1%	1,137	5,419,525	0.272775193	15.50727	1.76%	0.02%	
SPAIN	326	152,446	13%	3,261	46,748,237	38.35274756	383.6451	10.00%	1.18%	
SWEDEN	79	9,141	1%	905	10,100,552	2.00810246	23.00421	8.73%	0.22%	
SWITZERLAND	110	24,046	2%	2,778	8,655,868	2.396166178	60.51409	3.96%	0.09%	
UK	118	65,077	6%	959	67,859,228	20.15136973	163.7726	12.30%	2.10%	
EURO TOTALS		701,999			397,362,018	160	1,767		9%	
USA	49	457,101	39%	1,381	330,992,759					3.55%
USA & EURO COMBINED		1,159,100	100%		728,354,777					
TOT WORLD CASES		<u>1,584,902</u>								

The relevant take-away of comparing the U.S. to these countries is to highlight the risk of the virus overwhelming our healthcare systems and the vitally critical priority of ensuring adequate human treatment resources, facility capacity, equipment availability, testing availability/coverage. The brutally cold reality is we too are a nation with high concentrations/density of population in a relatively limited number of major metro areas; this is where a disproportionate frequency of our social contact and activity occurs, but also our economic engine is centered here as well.

Where The Action Most Definitely Is

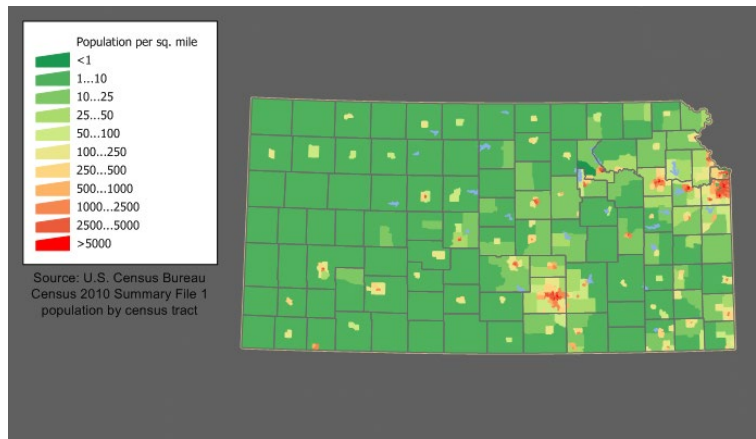
Covid-19 is a highly contagious, easily spread virus that thrives on social contact. Rates of infection are a function of frequency of social interaction/contact. This very clearly explains the challenges being faced in the Greater NYC metro area. The extreme density of population, the dependence on very crowded systems of public transportation, the huge numbers of people walking the sidewalks, the frequency of people shopping in very busy stores and shops is truly unlike anywhere else and by a very large factor. Moreover, this area generates a significant portion of this country's economic output and if we include all in the top 15 most populated centers, suffice it to say we are not out of the woods unless and until these areas are out of the woods.

The flow of people in/out of these cities, the flow of goods and services, and the resultant flow of dollars depends on very minimal risks and verified mitigation and control over this insidious virus. The economic recovery depends on this as ours is a predominantly consumer-driven economy and that just won't happen, it can't be sustained at the current rates of infection and risks of exposure of accelerated infection. We can declare we're open for business May 1st, but it's the shoppers that do the shopping, passengers that fly on airplanes, travelers that stay in hotels, diners who eat at the restaurants and tens of millions of others who serve the infrastructure and administrative needs to serve the systems and keep them functional.

And, the decisions to allow the economy to open back up in these critical areas will ***not be made*** in Washington, DC. Indeed, those calls will be made using rather clear, definitive and stable data that persuasively points to a safe shift in that direction, *by the responsible folks with local boots on the ground.*

Just slightly less than 50% of the U.S population resides in around 35 or so communities, which in turn generates a huge percentage of our economic output, human travel in/out, shipments of goods, social connections and activity, and cash flow.

I think it's safe to suggest this is the central economic hub of the United States and the spokes extend outward to connect with the rest of the country. In fact, we can see this very clearly in the state of Kansas for example. Johnson County accounts for something like 25% of the entire state's economic output and if we add in Wyandotte, Douglass, Shawnee and Sedgwick counties we've got the bulk of the economic output for the entire state:



Here are the top 25 most dense population centers:

Density Rank	Pop. rank	City	Per square mile	Square miles	Population
1	1	New York, N.Y.	28,492	302.64	8,622,698
2	13	San Francisco, Calif.	18,868	46.87	884,363
3	74	Jersey City, N.J.	18,306	14.79	270,753
4	21	Boston, Mass.	14,190	48.28	685,094
5	43	Miami, Fla.	12,917	35.87	463,347
6	56	Santa Ana, Calif.	12,253	27.27	334,136
7	3	Chicago, Ill.	11,934	227.63	2,716,450
8	6	Philadelphia, Pa.	11,789	134.10	1,580,863
9	69	Newark, N.J.	11,788	24.19	285,154
10	20	Washington, D.C.	11,367	61.05	693,972
11	39	Long Beach, Calif.	9,335	50.29	469,450
12	18	Seattle, Wash.	8,634	83.94	724,745
13	2	Los Angeles, Calif.	8,534	468.67	3,999,759
14	46	Minneapolis, Minn.	7,825	53.97	422,331
15	45	Oakland, Calif.	7,621	55.79	425,195
16	30	Baltimore, Md.	7,557	80.94	611,648
17	55	Anaheim, Calif.	7,073	49.84	352,497
18	80	Buffalo, N.Y.	6,404	40.38	258,612
19	31	Milwaukee, Wis.	6,194	96.12	595,351
20	62	St. Paul, Minn.	5,899	51.98	306,621
21	10	San Jose, Calif.	5,865	176.53	1,035,317
22	64	Pittsburgh, Pa.	5,462	55.37	302,407
23	75	Chula Vista, Calif.	5,450	49.63	270,471
24	35	Sacramento, Calif.	5,126	97.92	501,901
25	60	Stockton, Calif.	5,035	61.67	310,496

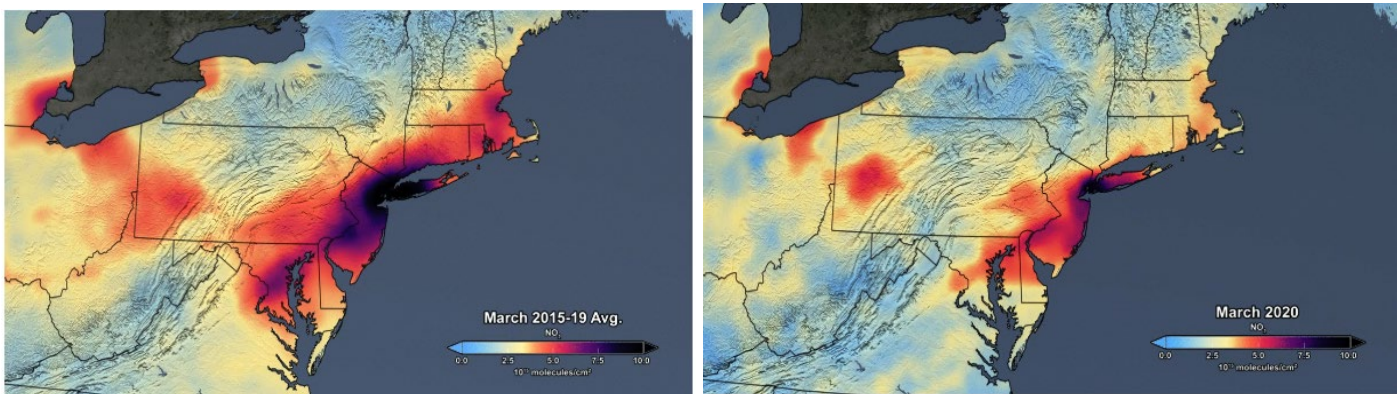
To get a better feel for economic and social activity, I once again bastardized an extremely crude, rough and scientifically untested metric for this by simply multiplying the populations in 32 key metro areas by the number of annual flight boardings leaving those areas, and then multiplying that result by the area GDP.

A poor man's socio-econometric **buzz indicator**, if you will:

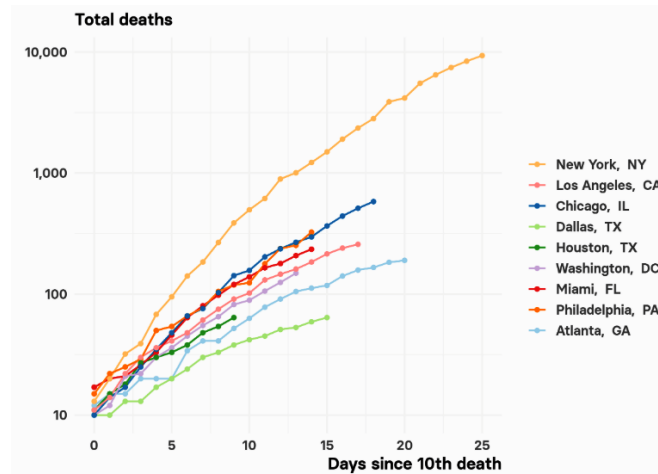
	Metropolitan statistical area	POPULATION	% U.S. POP	CUMULATIVE POP %	BOARDINGS	2017 GDP	% US GDP	CUMULATIVE % GDP	FACTOR	% ACTIVITY	CUMULATIVE ACTIVITY
1	New York-Newark-Jersey City, NY-NJ-PA MSA	19,979,477	6.1%	6.1%	68,399,461	1,717,712	8.9%	8.9%	23.47	49.3%	49%
2	Los Angeles-Long Beach-Anaheim, CA MSA	17,913,847	5.5%	11.6%	55,040,015	1,201,666	6.2%	15.1%	11.85	24.9%	74%
3	Chicago-Naperville-Elgin, IL-IN-WI MSA	9,498,716	2.9%	14.5%	50,560,444	679,699	3.5%	18.6%	3.26	6.9%	81%
4	Dallas-Fort Worth-Arlington, TX MSA	7,539,711	2.3%	16.8%	40,935,569	535,499	2.8%	21.3%	1.65	3.5%	85%
5	Atlanta-Sandy Springs-Alpharetta, GA MSA	5,949,951	1.8%	18.6%	51,866,464	385,542	2.0%	23.3%	1.19	2.5%	87%
6	Miami-Fort Lauderdale-Pompano Beach, FL MSA	6,198,792	1.9%	20.5%	45,165,251	344,882	1.8%	25.1%	0.97	2.0%	89%
7	Houston-The Woodlands-Sugar Land, TX MSA	6,997,384	2.1%	22.7%	28,095,009	490,074	2.5%	27.6%	0.96	2.0%	91%
8	San Francisco-Oakland-Berkeley, CA MSA	4,729,484	1.4%	24.1%	34,592,475	500,701	2.6%	30.2%	0.82	1.7%	93%
9	Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	6,249,950	1.9%	26.0%	22,995,485	529,990	2.7%	32.9%	0.76	1.6%	94%
10	Boston-Cambridge-Newton, MA-NH MSA	4,875,390	1.5%	27.5%	20,010,262	438,684	2.3%	35.2%	0.43	0.9%	95%
11	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	6,096,372	1.9%	29.4%	15,285,948	444,975	2.3%	37.5%	0.41	0.9%	96%
12	Seattle-Tacoma-Bellevue, WA MSA	3,939,363	1.2%	30.6%	24,894,338	356,572	1.8%	39.3%	0.35	0.7%	97%
13	Phoenix-Mesa-Chandler, AZ MSA	4,857,962	1.5%	32.1%	21,623,842	242,951	1.3%	40.6%	0.26	0.5%	97%
14	Detroit-Warren-Dearborn, MI MSA	4,326,442	1.3%	33.4%	17,437,716	260,612	1.3%	41.9%	0.20	0.4%	98%
15	Denver-Aurora-Lakewood, CO MSA	2,932,415	0.9%	34.3%	31,363,573	208,868	1.1%	43.0%	0.19	0.4%	98%
16	Minneapolis-St. Paul-Bloomington, MN-WI MSA	3,629,190	1.1%	35.4%	18,363,493	260,106	1.3%	44.3%	0.17	0.4%	99%
17	Charlotte-Concord-Gastonia, NC-SC MSA	2,569,213	0.8%	36.2%	22,283,574	174,029	0.9%	45.2%	0.10	0.2%	99%
18	San Diego-Chula Vista-Carlsbad, CA MSA	3,343,364	1.0%	37.2%	12,176,303	231,845	1.2%	46.4%	0.09	0.2%	99%
19	Orlando-Kissimmee-Sanford, FL MSA	2,572,693	0.8%	38.0%	23,184,634	132,448	0.7%	47.1%	0.08	0.2%	99%
20	Baltimore-Columbia-Towson, MD MSA	2,802,789	0.9%	38.8%	13,373,773	192,178	1.0%	48.1%	0.07	0.2%	99%
21	Las Vegas-Henderson-Paradise, NV MSA	2,231,647	0.7%	39.5%	23,655,285	112,288	0.6%	48.7%	0.06	0.1%	99%
22	Tampa-St. Petersburg-Clearwater, FL MSA	3,142,663	1.0%	40.5%	10,369,622	146,349	0.8%	49.4%	0.05	0.1%	100%
23	Portland-Vancouver-Hillsboro, OR-WA MSA	2,478,810	0.8%	41.2%	9,940,866	171,772	0.9%	50.3%	0.04	0.1%	100%
24	St. Louis, MO-IL MSA	2,805,465	0.9%	42.1%	7,822,274	161,281	0.8%	51.2%	0.04	0.1%	100%
25	Austin-Round Rock-Georgetown, TX MSA	2,168,316	0.7%	42.8%	7,921,797	148,750	0.8%	51.9%	0.03	0.1%	100%
26	NASHVILLE	1,930,961	0.6%	43.4%	8,007,049	133,251	0.7%	52.6%	0.02	0.0%	100%
27	Sacramento-Roseville-Folsom, CA MSA	2,345,210	0.7%	44.1%	6,031,630	126,352	0.7%	53.3%	0.02	0.0%	100%
28	Kansas City, MO-KS MSA	2,143,651	0.7%	44.7%	5,935,131	131,092	0.7%	53.9%	0.02	0.0%	100%
29	San Antonio-New Braunfels, TX MSA	2,518,036	0.8%	45.5%	5,028,785	129,298	0.7%	54.6%	0.02	0.0%	100%
30	Pittsburgh, PA MSA	2,324,743	0.7%	46.2%	4,670,033	147,367	0.8%	55.4%	0.02	0.0%	100%
31	Cincinnati, OH-KY-IN MSA	2,190,209	0.7%	46.9%	4,269,258	138,034	0.7%	56.1%	0.01	0.0%	100%
32	NEW ORLEANS	1,270,399	0.4%	47.3%	6,565,482	79,290	0.4%	56.5%	0.01	0.0%	100%
	TOTALS	154,552,615	47.3%		717,864,841	10,954,157	56.5%		47.61		

I tossed in New Orleans only because their experience has been significantly disproportionately worse than their regional population and activity level might otherwise indicate.

Another way of seeing this reflected in the NY/NJ area is through NASA satellite images of air pollution comparing 2015-2019 averages and as of March 2020:



Although this graph is a week old, the fatality rates continue to grow per day, albeit the exponentiality is showing signs of flattening:



Here is the critical take-away:

We must keep top of mind that we are looking at the economic **and** social activity hub: the two are extensively intertwined **and** interdependent. A too early push to return to normal risks a dramatic acceleration in the infection rates which in turn can overwhelm the health care system to such a degree that the pandemic could morph into widespread social panic, and a long-term economic picture much, much worse than had we stayed the course.

This past Monday, the Health and Human Services inspector general's office reported Monday morning that a shortage of tests and long waits for results were at the root of mounting problems faced by hospitals.

"Hospitals reported that severe shortages of testing supplies and extended waits for test results limited (their) ability to monitor the health of patients and staff," the report said.

In short, when looking at the virus numbers shared above, the economic risks of attempting to revert too quickly back to "normal" exceeds the perceived economic consequences of not doing so.

This perspective was shared this past week by Dr. Anthony Fauci in an interview on CNN. He indicated, "**...the virus would determine**" when the economy should reopen:

*"I would want to see a clear indication that you are **very, very clearly and strongly** going in the right direction — because the one thing you don't want to do, is you don't want to get out there prematurely and then wind up you're back in the same situation."*

But, the good news to all this is our model assumptions of more gradual easing of the restrictions coinciding with the data are backed up by a rather formidable, "blue wall".

The Blue Wall

Ok, so maybe I spoke too soon above in promising political neutrality. In reality, there are politics and political agendas colliding all over the place in this crisis: special interests galore, a presidential election year, House reps, senators, governors, mayors up for re-election and *all hyper sensitive to the perceived positions of their voters* as well as those who apply pressure and provide cash to their cause. It's a classic case of distancing oneself from the potential political downside of getting too close to the fire, while at the same time deftly positioning and repositioning to be seen as the champion if/when we find ourselves in calmer waters. I'd like to believe, I certainly hold out at least some modicum of hope that politics could be set aside for a while to do the right thing and demonstrate a coordinated, aligned course of action.

But, this article is about likelihoods, probabilities and making educated, reasoned bets about what to prioritize and do. As such, I put the odds on likely political cross-aisle cooperation as quite long, to say the least.

The most critical decisions in terms of the restrictions on businesses and social activity are being made at the state and local level. And those folks will most likely make those decisions based on the data in their respective regions-they won't be made at the federal level and even then, you can't force people to shop, to sell, to ship, or to manufacture.

In fact, if we take a glance at the color of those political boots on the ground, what do we see?

STATE	SENATE			VOTERS	VOTERS	VOTERS	VOTERS	VOTERS	MAYOR
	GOV	1	2						
NY	DEM	DEM	DEM	50%	23%	21%	6%	100%	DEM
NJ	DEM	DEM	DEM	37%	22%	40%	1%	100%	DEM
CT	DEM	DEM	DEM	36%	21%	41%	1%	100%	LIBERTERIAN
CALI	DEM	DEM	DEM	44%	25%	26%	5%	100%	DEM
ILL	DEM	DEM	DEM	56%	39%	0%	5%	100%	DEM
TX	GOP	GOP	GOP	43%	53%	0%	4%	100%	DEM
GEO	GOP	GOP	GOP	46%	51%	0%	3%	100%	DEM
FL	GOP	GOP	GOP	37%	35%	27%	1%	100%	GOP
DC AREA	DEM			76%	6%	16%	1%	100%	DEM
VIRGINIA	DEM	DEM	DEM	51%	45%	0%	4%	100%	DEM
MARYLAND	GOP	DEM	DEM	55%	26%	18%	2%	100%	DEM
AZ	GOP	DEM	GOP	30%	35%	34%	1%	100%	DEM
WASH	DEM	DEM	DEM	55%	38%	0%	7%	100%	DEM
MASS	GOP	DEM	DEM	34%	11%	54%	1%	100%	DEM
PENN	DEM	DEM	GOP	48%	38%	13%	1%	100%	DEM
COLO	DEM	DEM	GOP	31%	30%	37%	2%	100%	DEM
MICH	DEM	DEM	DEM	48%	48%	0%	5%	100%	DEM
MINN	DEM	DEM	DEM	48%	47%	0%	5%	100%	DEM
				44%	33%	19%	3%	100%	

This also reflects why there has been so much reported tension between the administration, the governors as well as the mayors. It's abundantly clear that the areas most acutely at risk for Covid-19 are those in these particular states, where the population density, the social interaction frequency, and the economic activity are most concentrated.

In my opinion, the risks of a too quick rush to normal will be largely mitigated by the reality that cities like NYC, LA, Seattle, New Orleans, Detroit, Boston, Chicago, San Francisco, Philadelphia can't and won't "open back up for business" until the data clearly tells them it is demonstrably safe to do so.

Which in closing, I believe is the absolute right decision to make.

Trust the numbers. Stay the course.

ABOUT IRONHORSE LLC:

IronHorse is a K.C. based specialty consulting firm providing targeted, demonstrated solutions to complex legal and commercial finance problems; merger & acquisition capital sourcing due diligence, credit origination & administrative decision support, workouts & credit restructurings, commercial lending field exams and credit file Value Range services, and complex financial, commercial and transactional expert witness and litigation support.

Tony Wayne has spent his entire career working in and with specialty niche industrial firms; manufacturers and wholesalers in building materials, specialty industrial equipment suppliers, automotive after-market component manufacturers, the dairy equipment & farm supply industry, paper and specialty chemical processors, and alternative energy companies. He has served in both mid and c-level senior operations and financial executive capacities and has been instrumental to the successful turnaround and recovery of numerous under-performing as well as financially distressed firms. Currently he serves on the Board of Trustees of TMA Global and the Reorganization Committee of the American Bankruptcy Institute and is active in Association for Corporate Growth, as well as the National Association of Certified Analysts. He holds numerous specialty certifications in insolvency/restructuring, business valuation and financial forensics