

PANDEMIC INSIGHT SERIES

Prelude to a Pandemic



Photo: Nick Bolton on Unsplash

The first wave is just beginning, not ending. For New York, the virus was a catastrophic eradication of life that was previously unimaginable. The economic calamity only worsened the forlorn feeling of the populace. The reality is that confirmed cases are less than five percent of the population in New York. Nationally, the number is less than one percent. Ninety-nine percent of the population remains susceptible to the disease, and a vaccine at scale is at least six months away. The good news is that the fatality rates appear lower than initially measured. The bad news is that the US reproduction rate's current growth would return to the May 1st level by July 4th. The implication: the larger confirmed base would require further targeted constraints on movement in the US and globally.

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The reproduction rate is a better measure of virus spread than the confirmed case amount.

The recent increase in the reproduction rate suggests the US may face targeted closures by July 4th. Business and employee beware.

- Jason Prole

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Highlights

- The **reproduction rate** is the best measure of the disease spread.
- **Absolute case numbers** do not show the speed of disease spread.
- The reproduction rate was approaching a **containment level**.
- The growth rate of the production rate recently **turned positive**.
- Only **one percent** of the population contracted the disease.
- The US faces targeted closures by **July 4th** unless mitigation measures prevail.

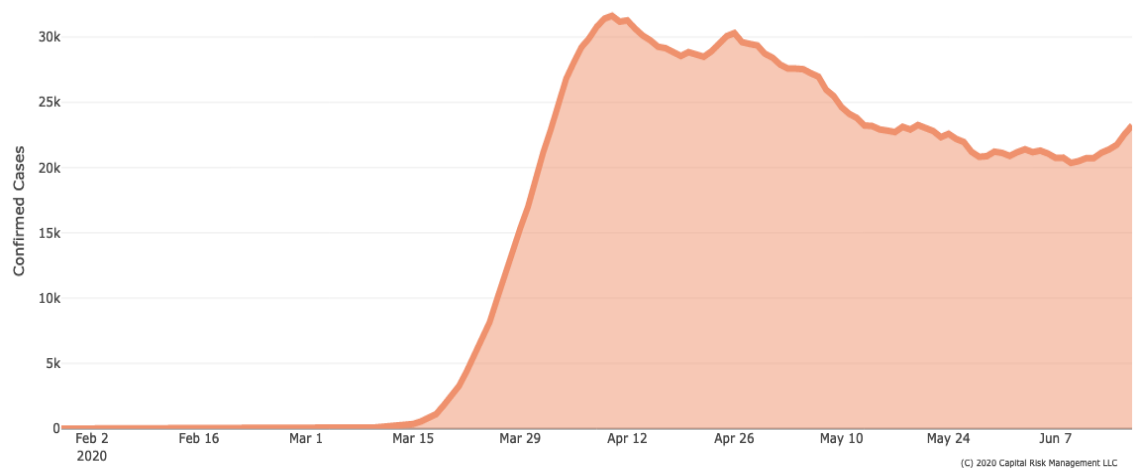
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Experience is usually a good teacher. Unfortunately, sometimes we forget even the hardest lessons. The past three months subjected the world to a degree of concurrent uncertainty not experienced for generations. Therein lies the genesis of the problem. When asked merely to wait at home and practice prudent disease spread mitigation measures in public, some of the populace rebelled, specifically in the US.

The economic torment unfolding justified some of the negative response to the closures. The fiscal stimulus provided a credible counter to this prior argument, with some people receiving more in government support than they did while working and others much less. Nevertheless, the closures manifest monetary misery for most. The urgency to diminish this aftermath by evading its most virulent economic effects is palpable.

This urge emanates from the rising confirmed cases, which is an ominous omen (exhibit 1). The complication is that this measure is an inadequate benchmark for action because it is an absolute and not a relative measure. The distinction is imperative for timely and credible policy action. Act too early, and policymakers appear alarmists. Act too late, and they seem apathetic.

Exhibit I. US Confirmed Cases (7-day average)



Source: Capital Risk Calculations with John Hopkins data.

The stay-at-home order was a burden for some.

The rise of cases brings calls of alarm.

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Confirmed cases are a faulty measure. As the base of people grows who contracted the virus and remain contagious, so do the number of new confirmed cases. An identical reproduction rate results in vast differences in the number of people infected daily in this illustration.

The reproduction rate is the measure of success.

Ten thousand confirmed cases result in a thousand new cases per day for ten days with a reproduction rate of two. In contrast, one thousand people would result in one hundred instances per day.¹ This elementary mathematical law thus reveals the vulnerability of confirmed cases as a measure: despite low levels of reproduction, it escalates over time. Confirmed cases are increasing, but the reproduction rate lingers near its low.

The key is that new cases are growing at a slower rate than before, not the absolute number of cases (exhibit 2). This is where the trouble arises. The reproduction rate recently stopped falling and is growing again (mid-June). This fallout is the motivation for apprehension. When the reproduction rate is on a declining trend, virus dormancy is foreseeable, despite growing cases. Now, the path is at best uncertain, and, probably, sinister for society.

Exhibit 2. US Reproduction Rate



Rate is starting to grow after two months of decline.

Source: Capital Risk Calculations with John Hopkins data.

¹ The reproduction rate indicates how many people a person infects over the contagious period, which is assumed ten days in this example. Thus, a rate of two means infection of one-tenth of a person daily.

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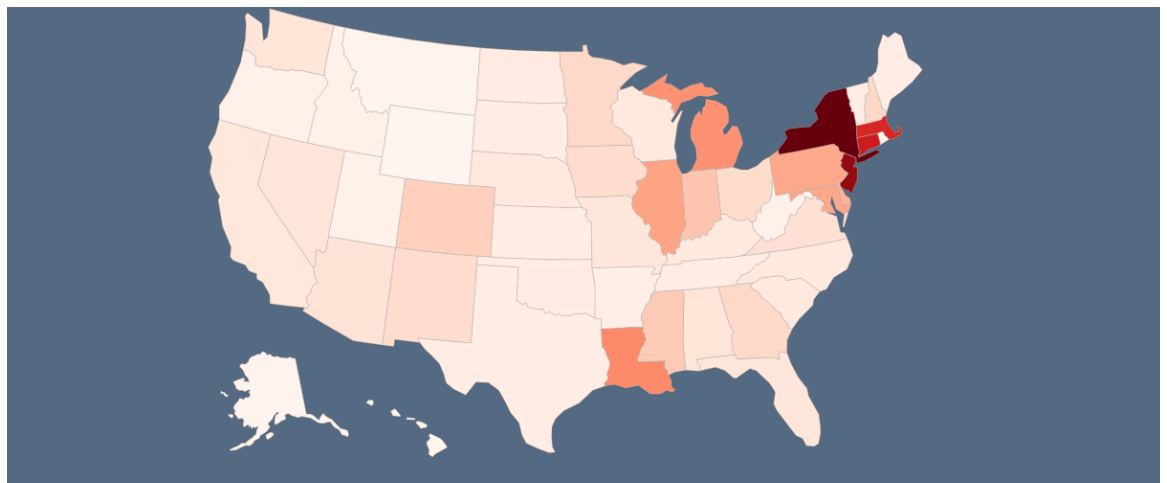
This recent turn of the reproduction rate is a portentous harbinger. Were this trend to accelerate at its current rate, it would return to the beginning of May level by July 4th. This sequel is momentously significant because of the difference in mortality it portends.

The current reproduction rate could result in 700,000 deaths.

The current US reproduction rate, with its prior continual decline, would allude to about 250,000 fatalities by the end of the year. This number is sobering. If this rate would continue at the current level and make no further progress, fatalities could exceed 450,000. The additional lives lost is a grievous number. Were the US to return to the rate seen at the beginning of May, the fatalities could exceed 700,000. This number is heinous, given the economic calamity already endured.

Confirmed cases represent less than one percent of US residents. Herd immunity is unapproachable presently. Over 99% of the population perch precariously vulnerable. The carnage seen in New England is inconspicuous in the rest of the US (exhibit 3). The challenge is where the virus is not. The three largest states by population (California, Florida, Texas) do not show a similar incidence of the disease despite similar urban densities and demographic profiles. Thus, room to grow endures with this wave.

Exhibit 3. United States COVID19 Confirmed Cases per million



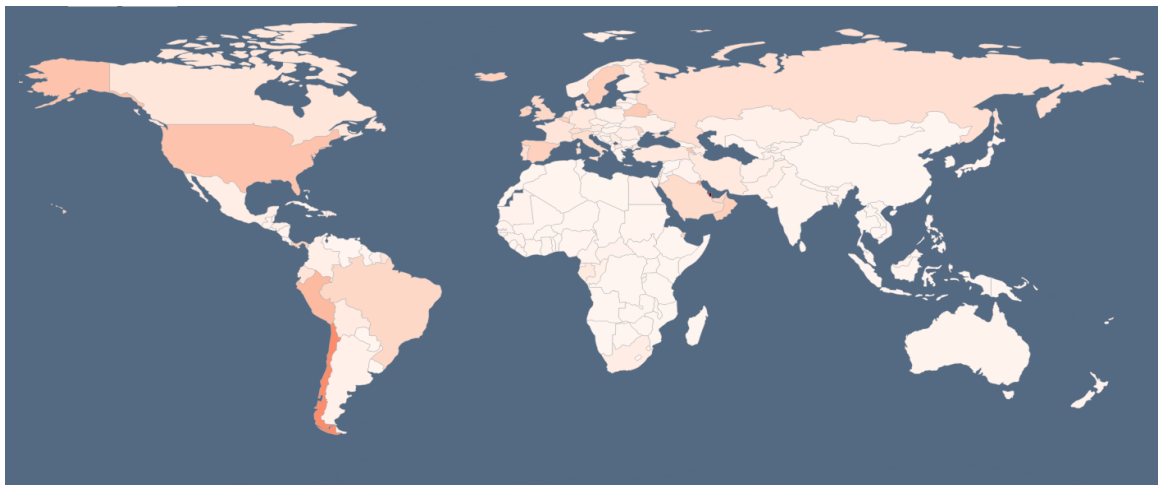
The three most populous states are remarkably untouched.

Source: Capital Risk Calculations with John Hopkins data.

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A similar divination divulges itself globally. While the virus saturated Europe and permeates the United States, the menace avoided the rest of the world. This fortune most likely reflected global travel patterns. That moment is past as South America is the prevailing hot spot (exhibit 4). As with the US, it is where the virus is absent, which is the revelation. Africa, India, and China remain glaring in their dearth of disease.

Exhibit 4. Global COVID19 Confirmed Cases per million



Source: Capital Risk Calculations with John Hopkins data.

The three most populous regions are conspicuous.

Targeting shutdowns will return unless behavior changes.

The ramification manifests in the policy repercussions. A continual resurgence of the reproduction rate will compel policymakers to act. The less cumbersome path is ensuring people follow the three Cs protocol: avoid closed-in spaces, cover your breath, and don't get close. These actions will enable businesses to function while mitigating transmission. If we can't live up to these minimal inconveniences, then it will oblige policy makers to enforce draconian restrictions again. Sometimes the best path is the easiest.

"We must build dikes of courage to hold back the flood of fear."

Martin Luther King Jr.

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