

Measure	Desired Change	Yesterday in the U.S.
No. of Tests	Increase	Up 10.2% (Cumulative)
Positive Test Rate	Decline	Up to 18.8% (from 18.2%)
No. of Cases	Plateau	Up 8.8%, Rate is still declining over time
% of Deaths Per Case	Decline	Up to 2.6% (v. 2.4%)
No. of Deaths / 1M Pop.	Plateau	Up to 18.3 (from 15.4)
Recoveries : Deaths	Increase (>1:1)	Down slightly to 1.71 (from 1.74)

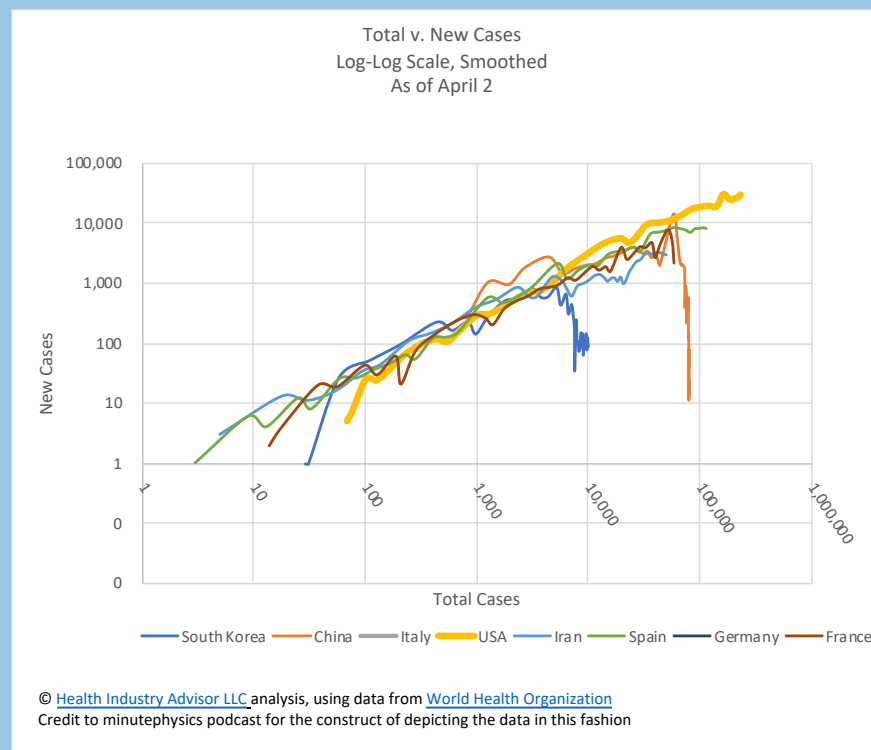
Yesterday's Highlights:

- Thursday was a difficult day psychologically in the U.S. as new unemployment claims reached 6.6M, total coronavirus cases exceeded 230,000 and total deaths from the virus grew by 968, to more than 6,000. The U.S. death rate from the virus continued its steady increase and now stands at 2.4%
- Cases continued to spread across the U.S. too, as New York, despite having more than 93,000 cases, now represents 38% of the U.S. total; it represented 56% 11 days ago
- Testing again was nearly 120,000 for the day; and, 24.4% of these tests were positive. Despite increased testing (70% more tests the past 7 days than the prior week), the positive test rate continues to increase (up to 21.3% this past week v. 16.2% the week prior)
- Louisiana is showing greater challenges in dealing with the virus: unlike with most states, cases in Louisiana are growing at a faster pace each day. On Thursday, it passed Florida, Illinois and Michigan in the number of total cases. Michigan passed Connecticut in the concentration of cases (cases per 1M population)
- Concentration of cases in New York, New Jersey and Louisiana exceeds that of Italy
- Still, it's not all bad news for the U.S.: Daily case growth rate (5-day moving average) is down to 13.5%; it was 39.4% two weeks ago. That's a difference of doubling about every 6 days versus every 2 days. The U.S. rate is now lower than for Canada and the United Kingdom
- Similarly, these growth rates for the majority of states are consistently declining each day. It now takes at least 4 days to double cases in each state; in Washington, it takes 8 days; and, importantly, in New York (along with 8 other states), it now takes more than 6 days
- We continue to watch for any sign of containment beyond South Korea and China (of course, questions about the integrity of China's data are intensifying). Germany, Iran, Italy and Spain are showing indications that their growth in new cases may be deviating (downward) from the exponential pattern typical for virus spread. (We still need to see several more day's evidence to draw a definitive conclusion.)
- Germany surpassed China in total cases, as of yesterday. Spain's concentration of cases now exceeds Italy's
- France's active cases declined yesterday, however, in may be due in part to a spike in deaths (I remain skeptical, however, of any a single day data point)

This graphic bears repeating – it's what we need to observe in order to know when the virus enters containment phase.

During its contagion phase, a virus like COVID-19 grows exponentially, as shown on the graphic below. Once the virus-spread begins to be contained, a noticeable downward trend emerges - see China and South Korea's experience.

South Korea's downward trend, or the beginning of containment, occurred on about March 4-7; peak active cases occurred there on March 11. China's downward trend began on or about February 8; peak active cases occurred February 17.

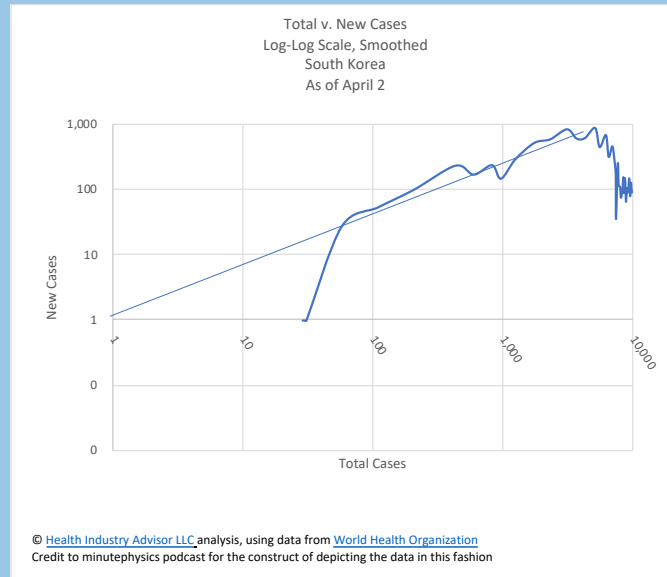


Information provided as a courtesy, based on data from the above-named sources. HIA has no responsibility for the accuracy and updating of any data. Sources: [worldometers.info](https://www.worldometers.info); covidtracking.com
Graphics depict data as of April 2, 2020

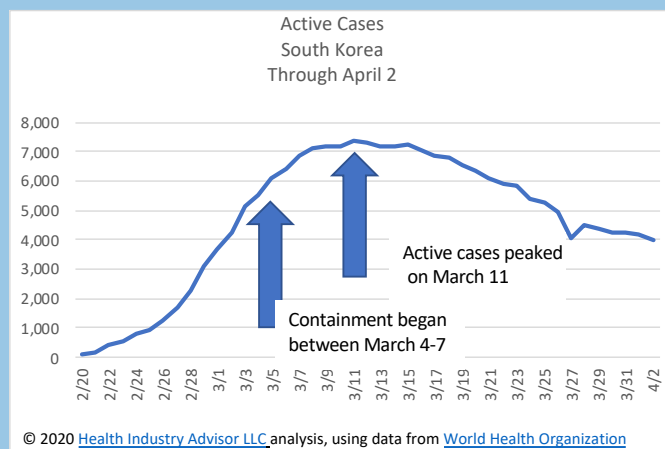
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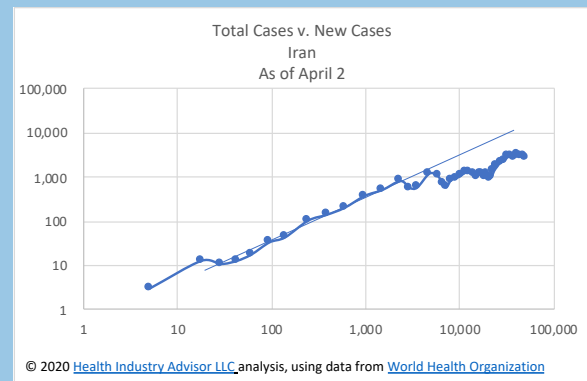
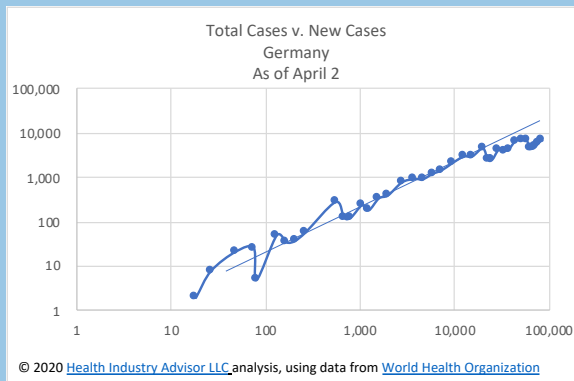
Let's observe South Korea's experience more closely. Here is the previous graph, with only South Korea depicted. The beginning of its containment phase is easily discerned by the shift from the exponential growth line to a clear downward trend:



Now, observe South Korea's active cases by day. The "containment" phase" – defined as when cases no longer grew exponentially – occurred around March 4-7. Peak active cases then followed on March 11:

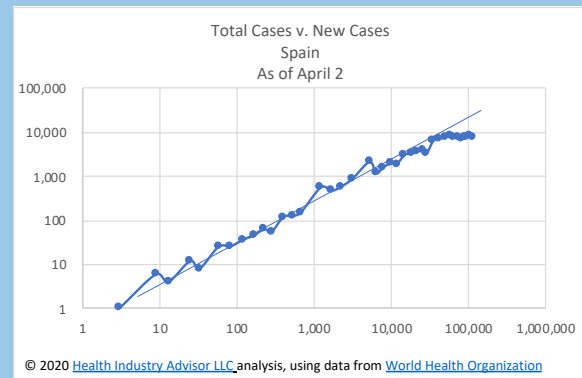
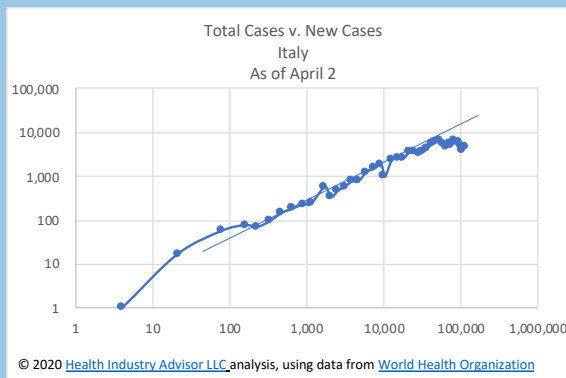


Now, let's look at the experiences for four specific countries:



Germany and Iran, Italy and Spain appeared poised to enter the containment phase (data starting to fall below exponential trend line). We will need to see a more definitive downward movement on these charts to confirm this progress.

Unfortunately, the U.S. does not appear to be at containment yet.



Growth is slowing across the U.S.:

As expected with an exponentially-growing virus, average daily growth rates diminish over time. Washington's cases are now taking more than 8 days to double; Vermont's more than a week; Alaska, Maine, Minnesota, Mississippi, Montana, New York, Oregon and Wisconsin, more than 6 days. (This is especially welcome news for New York: only 8 days ago, cases there were doubling every 3 days.)

