

Shamdemic or Cruel Incompetency?

Challenging the Establishment Data on COVID Is Not a Conspiracy

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Suppose you are tasked to prepare an analysis of the state of the economy for policy makers. Your analysis will be used as a basis to enact very consequential public policies that will significantly affect the lives of millions of people. You come up with an analysis that the inflation rate will be 70%, skyrocketing from the usual rate of 3-5%, and hence you want the government to increase the interest rates sharply, raise the tax rate substantially, and reduce government spending significantly.

It turns out, your policy prescriptions end up destroying the economy as your analysis was fatally flawed. Your analysis that the inflation rate would be 70% was based on wrong assumptions and projections.

Do you think you would still be employed? Or, are you really a credible economist to begin with? In a fair world, you will be labelled an idiot and have no more business of giving advice on economic policy or teaching economic subjects.

In the Beginning

Enter the coronavirus. The virus was sold to the world as the most dangerous virus—possibly ever. It started out with the chilling 3.4% mortality rate touted by the WHO in February 2020, which became meme throughout the spring and summer of last year. Then came the second piece of Armageddon narrative: the virus could infect up to 80% of the population and could kill 50 million people.

The world was trembled and terrified.

Professor Gabriel Leung, the chair of public health medicine at Hong Kong University and one of the world's experts on coronavirus epidemics who played a major role in the SARS outbreak in 2002-03, told *The Guardian* newspaper on 11 February that the virus “attack rate” between 60% and 80%.

“Sixty per cent of the world's population is an awfully big number,” said Leung.

Even if the fatality rate (number of deaths per infected population) is as low as 1%, which Leung thought was possible once milder cases were taken into account, the death toll could be in the neighborhood of 50 million people.

Not to be outdone, Marc Lipsitch, one of America's top experts on viruses and the Director of the Center for Communicable Disease Dynamics at the Harvard T.H. Chan School of Public Health told CBS News in February, 2020, that 40-70% of the world's population would become infected — and from that number, 1% of people who got symptoms from COVID-19 could die.

The assumption of 1% fatality rate came from a projection by Professor Neil Ferguson of Imperial College London. With 7.8 billion people on earth in 2020 and a 60% infection rate, a 1% fatality rate means that 46.8 million people would die. Horribly scary.

Jim Axelrod from CBS understood this and so he wanted to make sure whether he heard the right number.

Jim Axelrod (CBS): So, the number that I think is grabbing a lot of people is this estimate: 40-70% of the world's adult population could be infected.

Marc Lipsitch: Yes.

Axelrod: Accurate?

Lipsitch: That is a projection, so we will find out if it's accurate as things go on. It is the best estimate that I've been able to make based on a combination of the mathematical models that we use to track and predict epidemics.

Marc Lipsitch again told The Wall Street Journal that "it's likely we'll see a global pandemic" of coronavirus, with 40 to 70 percent of the world's population likely to be infected this year (2020).

They were not alone. Ira Longini, a biostatistician and adviser to the World Health Organization (WHO) predicted that two-thirds of the global population may eventually contract COVID-19. Also the rejoinder was Michael Osterholm, an American infectious disease epidemiologist and director of the Center for Infectious Disease Research and Policy at the University of Minnesota who said Coronavirus won't stop until it hits 60%-70% of people.

Meanwhile, in February, 2020, disease modelers from the CDC suggested between 160 million and 214 million Americans could be infected, and as many as 1.7 million could die. And on March 13, 2020, a panel of experts at the University of California, San Francisco, predicted that between 40 and 70% of

Americans could become infected within the next 18 months. Assuming a 1% mortality rate from the coronavirus, and 50% of the US population becoming infected, that means, again, about 1.7 million Americans could die.

Around the same time, on March 11, 2020, German Chancellor Angela Merkel also jumped in. “When the virus is out there, the population has no immunity and no therapy exists, then 60 to 70% of the population will be infected,” said the German leader.

The Germans can do the calculation in their head. With 1% fatality rate that means 500 thousand Germans could die from the virus. It sent them to a panic mode.

One model that got serious attention from many people, including the White House, was a 20-page report on March 16, 2020 from Neil Ferguson's team at Imperial College London. They came up with an assumption that 81% of the American population gets infected –268 million people– and that 0.9% of them die. Their model produced enormous death estimates, 2.2 million Americans.

That is still a lower bound.

The report further says: **“In total, in an unmitigated epidemic, we would predict approximately 510,000 deaths in G.B. and 2.2 million in the U.S., not accounting for the potential negative effects of health systems being overwhelmed on mortality.”**

If factoring an overwhelmed health care system due to the virus, the number of deaths could be well over 2.2 million. Americans were told to be locked down for two weeks to slow the spread. Although some American still questioned the severity of the virus, the land of the free became the land of the scare.

After the media kept repeating the above projections and the public health officials assured the public of the need for radical restrictions on daily lives, the world practically stopped in March. Countries were in lockdowns. Cities' downtowns were empty. Schools were closed. Social and religious gatherings abandoned completely. Family gatherings put on hold. Travels banned. Nearly all regular life activities stopped.

(YouTube Video: [The coronavirus: Lock down visuals from around the world](#)).

As someone who is a little familiar with numbers, my first attention was on the infection rate. If the number is so high, even with a reasonably low fatality rate, the virus could still cause death to millions of people. But the WHO had already tossed up a mortality rate of 3.4%. Hence, with 1% fatality rate, which was

probably reasonable, the key to the severity of the virus lies on the infection rate. That was my thought.

But is the virus truly very contagious?

For the virus to infect up to 80% of the population, it must be easily spread out like crazy. Again, most experts last year thought that each person infected would go on to transmit the virus to about 2.5 other people. The virus was deemed deadly, spread out through the air and could stay in some dead materials for days. In April 2020, a new report by the National Academy of Sciences (NAS) concluded that the coronavirus could spread through the air—not just through the large droplets emitted in a cough or sneeze. Hence, the coronavirus could be spread out just by breathing.

Boom! The person next to you could be sending you to the ICU or the cemetery because he or she forgot to stop breathing! People went crazy, wearing masks alone in public parks. Or in their own car. The masking of the world then commenced.

The world has never been the same since then.

More Than One Year Later

A 55-year-old individual from Hubei province in China may have been the first person to have contracted the coronavirus. The case dates back to Nov. 17, 2019, according to the South China Morning Post. The virus was initially reported to have come out of the seafood market in Wuhan. But one case from Dec. 1, 2019 showed an individual who had no link to that seafood market as reported Jan. 20 in the journal The Lancet. So, the seafood market meme is just as fake as Elvis is still alive. In the United States, the first case was reported on January 19, 2020 in Snohomish County, Washington.

It is fair to say that the outbreak of the coronavirus has been more than a year. In fact, it could have been more than 14 months. Given what we were told in the first few months of the outbreak, that the number of people infected by the virus would be astronomically high, it is imperative to examine what has been the case after more than one year of the outbreak.

Unadjusted Number of Cases

Let us begin with the unadjusted infection rate. This is simply the number of cases reported divided by population at any given time.

Per February 1, 2021, there were around 103.42 million cases around the world. Divided by the world population, this is an infection rate of 1.33%. Which means, only 133 out of 1000 people contracted the virus. This is extremely low for the virus to be considered a dangerous pandemic.

Pre October 2020

Looking at the infection rates in several countries, it shows that the spread of the virus is also alarmingly low. About 10 months after the outbreak, or on the first day of October 2020, the infection rate in the US was roughly 2% and less than 1% in most European countries. The infection rates in some developing countries such as Algeria, Indonesia, and Nigeria were even much lower, barely reaching at 0.15%.

Infection Rate (%) per October 1, 2020

World	0.44
US	2.20
Colombia	1.64
Sweden	0.94
United Kingdom	0.68
Switzerland	0.62
Italy	0.52
Germany	0.35
Pakistan	0.14
Algeria	0.12
Indonesia	0.11
Nigeria	0.03
Vietnam	0.00

Of course, one may argue that the low infection rates were due to low numbers of COVID testing. While this argument may sound legitimate, it does not really hold under scrutiny. **First, if we have to do testing to know that the virus is very contagious and very lethal, as what public health experts, government leaders, and the media told us in spring and summer 2020, then with the very low infection rates, the virus is not very contagious and lethal after all** (about the lethality of the virus will be discussed in the next series). Either the virus is very contagious but the number of infected people without symptoms and were not tested were more than 30 times of the tested positive cases (but then infection rate would be much lower than 1%) or not highly contagious at all.

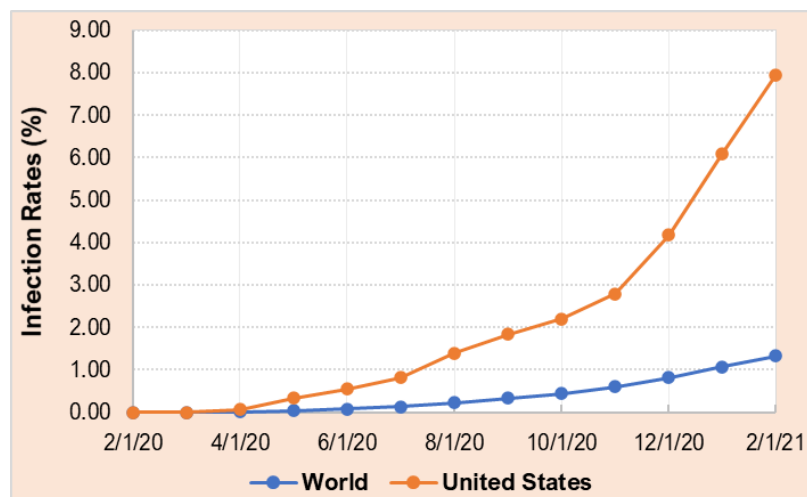
Secondly, while testing was not largely available in many countries throughout the spring and summer 2020, the numbers of testing in the US and UK were relatively high. By October 1, the numbers of testing per population in the US, UK, Germany, and Italy were 35.7, 33.5, 19.8, and 18.9, respectively. Granted, some people may have been tested more than once so in terms of the ratios of population tested, they were lower than the numbers above. Nonetheless, the ratios in the US and UK are objectively high enough to be used to assess the true infection rate of the virus. It is conceivable that the real ratio of population tested in the US (UK) was between 20% and 35.7% (20% and 33.5%) by October 1. **However, with the infection rate of 2.2% (0.68%), the rate was still exceedingly low for the virus to be considered highly contagious.**

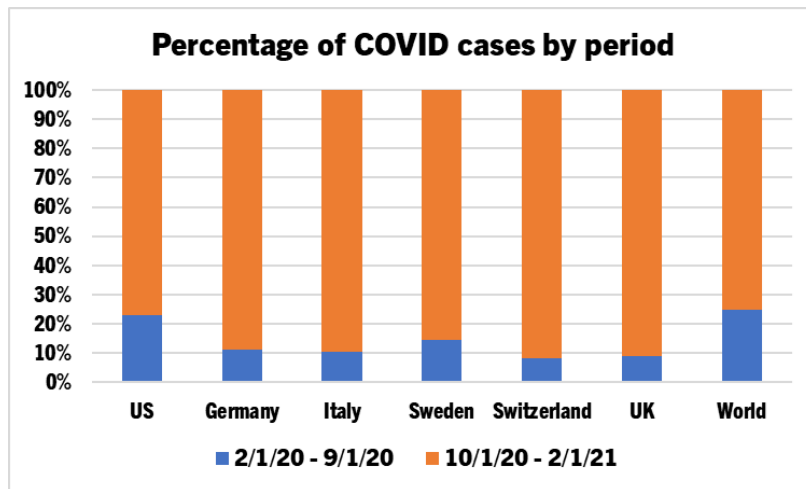
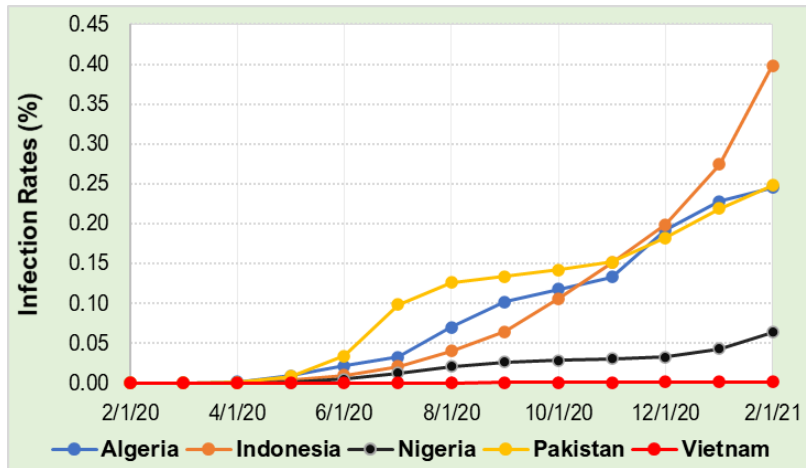
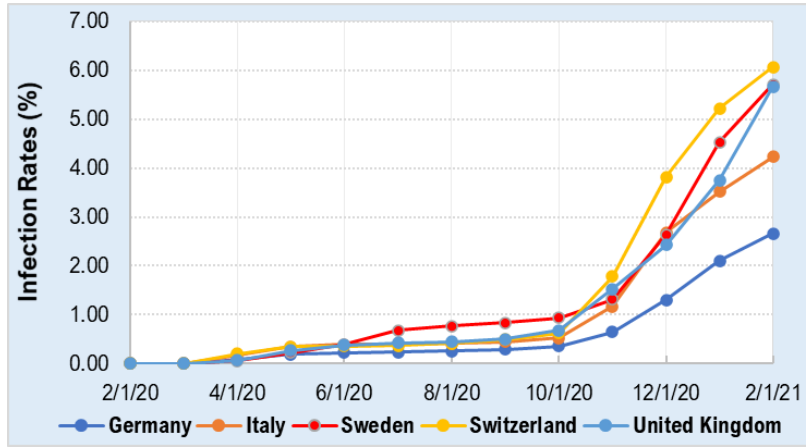
Another argument for the low infection rate is due to the lockdowns and COVID restrictive protocols imposed in spring and summer 2020. However, the infection rates in Sweden and Denmark, two countries that did not impose restrictive protocols and lockdowns, were very small as well—0.94% and 0.50%, respectively.

For those who followed this issue, the low infection rates toward the beginning of the fall 2020 should be alarming. But then something interesting took place in the subsequent months.

What Happened after September 2020?

The graphs shown indicate interesting patterns. In developed countries (Europe and US), the number of cases suddenly took a rapid increase starting in October 2020.



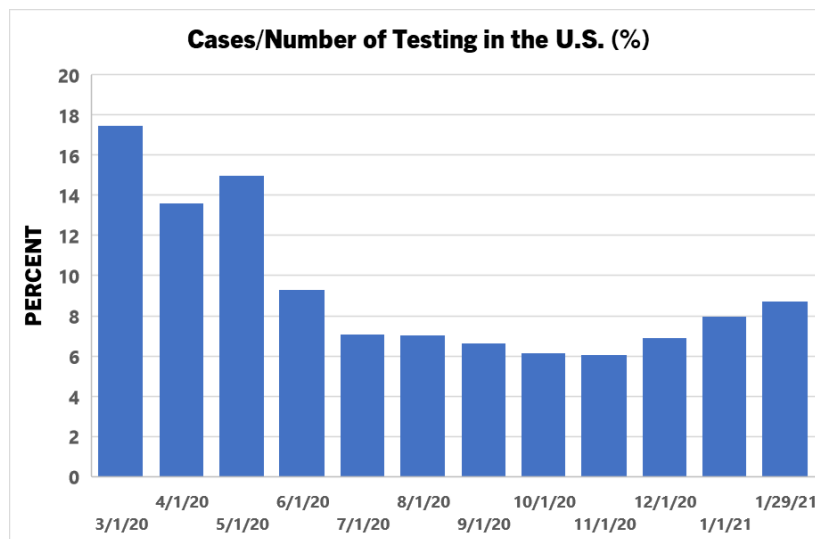


Here is the summary of the graphs: Around 90% of the COVID cases in Germany, Italy, Switzerland, and the UK occurred after October 1, while 77% and 85% in the US and Sweden, respectively. Worldwide, 75% of the cases occurred after October 1, 2020. Why?

Again, one may point out the increased numbers of testing. While it was slow in the beginning of the outbreak, the numbers of testing increased rapidly since October 2020, especially in the United Kingdom and the United States. By February 1, 2021, the numbers of testing per population have reached at 90% and 107% in the US and UK, respectively, while about 50% in Germany, Italy, and Switzerland.

As mentioned before, the high numbers of testing such as the ones in the UK and US do not necessarily imply that almost all populations have been tested as some people were tested repeatedly due to some purposes. However, it does still show that relative to the population size, the numbers of testing have already been high enough to assess the contagiousness of the virus. In fact, it may have been the right time to conclude that the spread of the virus has been under control. To see why, let us focus on the US data.

During an eight-month period from July 1, 2020 to February 1, 2021, as the number of testing increased, the ratios of cases to the number of testing were steady within the range of 6-8%. The rapid increase in the number of testing was not followed by equally rapid increase in cases per testing. In other words, the cases per testing have reached a certain threshold range even as the number of testing increased dramatically. Hence, while the numbers of testing have increased rapidly since September 2020, it cannot fully explain the rapid increase in the infection rates.



And what about Sweden that did not mandate testing? Yet, the country also experienced an increase in infection rates on par with the UK that rigidly imposed testing mandates. Moreover, some may argue that the less restrictive COVID protocols in the fall, after lockdowns imposed in spring and summer 2020, may have contributed to the rapid increase since October. Again, Sweden did not impose restrictive COVID protocols in spring and summer 2020, but the trajectory of the country's infection rates was not significantly different from those of other countries that mandated restrictive protocols.

What really happened in October and the subsequent months, especially in Europe and the US? One important explanation is flu season.

Flu Season

Flu season is an annually recurring time period characterized by the prevalence of an outbreak of influenza (flu). The season occurs during the cold half of the year in each hemisphere. Within EU/EEA countries, up to 50 million people a year are estimated to have symptomatic influenza, and between 15,000-70,000 are estimated to die from influenza associated causes.

In the United States, the flu season is considered October through May. It typically reaches an apex in February, with a seasonal baseline varying between 6.1% and 7.7% of all deaths.

In the 2019 to 2020 flu season, the CDC estimated 39-56 million flu illnesses, 18-26 million medical visits, 410,000-740,000 hospitalizations, and 24,000-64,000 deaths. If we compare the percentage of visits to hospital for influenza-like illness (ILI) in the US, the numbers for fall 2020/21 were far below the 2019/2020. On February 1, 2021, this percentage was around 1%, which is below the national baseline of 2.6% and far below the 6.7% and 7.5% during the high flu seasons in 2019/20 and 2017/18, respectively.

The CDC listed only 165 laboratory-confirmed influenza that were associated hospitalizations in its weekly U.S. influenza surveillance report between October 1, 2020, and February 6, 2021, "for an overall cumulative hospitalization rate of 0.6 per 100,000 population."

According to the agency, the number is "lower than average for this point in the season and lower than rates for any season since routine data collection began in 2005, including the low severity 2011/12 season." Even during the low flu season in 2011/12, the hospitalization rate was 212.1 per 100,000.

Many of the symptoms of the coronavirus match those associated with the flu, including fever, chills, headache, body aches, and fatigue. Even the CDC states that a seeming elevation in influenza-like illness “is likely related to COVID-19.” This suggests that many, if not a vast number of influenza-like illness cases during the 2020/21 flu season may have been recorded as COVID cases.

We have no idea how many ILI cases were recorded as COVID cases. We can only guess so far given the seasonal flu season has not been over until early May. However, let us use the lower estimate from the 2019/20 seasonal flu where about 40 million of people estimated suffered from flu during the season as the benchmark. Since we are still midway to the 2020/21 flu season, we can cut the number in half. Moreover, due to the social distancing and remote learning in many states, we can further cut the number in half. Which means there were probably about 10 million seasonal flu cases recorded as COVID cases. If we remove this number from the total reported COVID cases per February 1, 2021, the “real” number of cases would be 14.5 million. This will give us a 5% infection rate.

Problems with Testing

RT-PCR tests to detect severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) RNA are the operational gold standard for detecting COVID-19 disease in clinical practice. The PCR test analyzes samples by amplifying viral RNA in cycles. Most tests use a 40-cycle protocol. If the virus is not detected within 40 amplification cycles, the test result is negative. If viral RNA is detected in 40 cycles or less, the PCR machine stops running, and the test is positive. When someone received a positive result, that means the test detected the virus in the person’s sample by the time it reached its 40-cycle limit.

“PCR” stands for *polymerase chain reaction*, the biochemical process developed by Kary Mullis in 1983 which earned him a Nobel Prize. Mullis invented it to synthesize genetic material for research purposes and, in fact, was strongly opposed to the way it wound up being used to test for the HIV virus. So, the test widely used to test whether a person is infected by the coronavirus was not designed to test for viruses at all.

It is not a surprise that the test can give wrong results. In fact, the question is not whether it can give wrong results, but how big of the errors are. In the COVID test, there are four possible outcomes:

True positive (TP): when the test gives a positive result that is correct.

False positive (FP): when the test gives a positive result that is wrong.

True negative (TN): when the test gives a negative result that is correct.

False positive (FN): when the test gives a negative result that is wrong.

A credible test is the one that can produce a high rate of TP or TN. The FP and FN results occurred when the tests or the circumstantial of the tests were messing up. The **false positive rate** (FPR) is the proportion of all negatives that still yield positive test outcomes, i.e., the conditional probability of a positive test result given an event that was not present. Meanwhile, the **false negative rate** (FNR) is the proportion of positives which yield negative test outcomes with the test, i.e., the conditional probability of a negative test result given that the condition being looked for is present.

The false negative rate is ranging from 0% to 30%, depending on the study and when in the course of infection the test is performed.

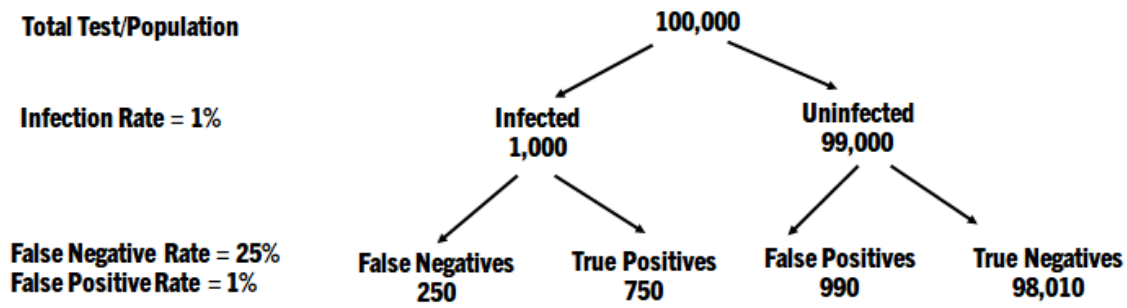
A systematic review reported that false negative rates between 2% and 29%, while the false positive rate has been estimated at between 0.8% and 4.3%. A study published in the Lancet in December 2020 indicates that FPR is somewhere between 0.8% and 4.0%.

The effect of false positive is quite serious and especially true when the infection rate is low. To see this, suppose we have 25% false negative and 1% false positive rate. Suppose also we have 100,000 tests with an infection rate of 1%. Hence, there would be 1,000 infected and 99,000 uninfected. Moreover, there would be 990 false positives (1% of 99,000) and 750 (75% of 1,000) true positives. Then the percentage of positive results that are wrong (false positive/total positives x 100%) is $990/(750+990) \times 100\% = 56.90\%$. In other words, the positive predictive value is only 43.10%.

Under the values of the FNR and FPR, the reported number of positive cases will be $750 + 990 = 1,740$. Hence, the reported infection rate (prevalence) will be 1.74%, which is higher than the true prevalence.

(Note: The percentage of positive results that are wrong is not the same as the percentage of all negatives that still yield positive test outcomes).

The diagram below demonstrates the calculations.



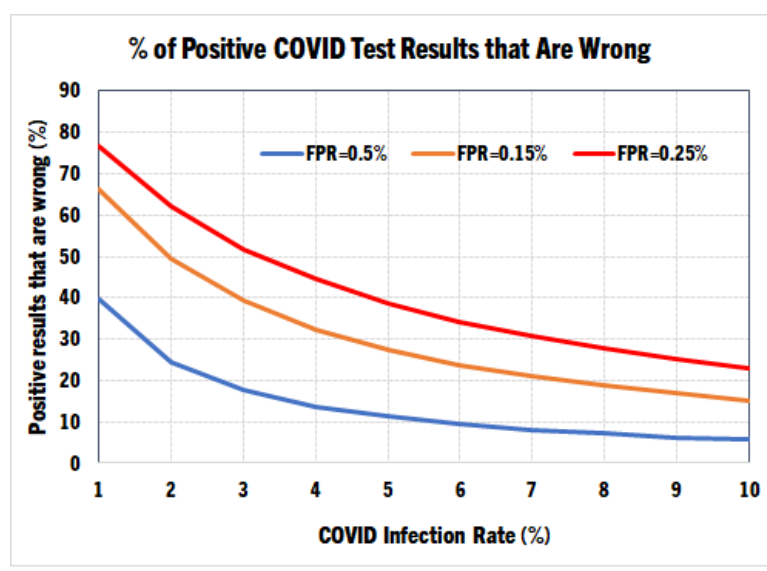
Percentage of negative results that are wrong

$$= \frac{FN}{TN + FN} = \frac{250}{98,010 + 250} = \frac{250}{98,260} = 0.25\%$$

Percentage of positive results that are wrong

$$= \frac{FP}{TP + FP} = \frac{990}{750 + 990} = \frac{990}{1,740} = 56.90\%$$

The graphs below show the calculations for different infection rates (prevalence) and false positive rates under the assumption that the false negative rate is 25%. As the “true” infection rate is higher, the percentage of positive results that are wrong is lower. Intuitively, if all people truly got infected, there will be no positive result that is wrong.



Let us apply it to the US data. Per February 1, 2021, the reported infection rate is 7.95% or 8%. If we assume that the “true” infection rate is 5% and the false positive is 1.5% (it is well within the reported range), then the percentage of positive results that are wrong is 28%.

What is the “true” infection rate of this virus? It is hard to pin it down as we must to consider the asymptomatic cases. However, given the proportion of population tested has rapidly increased, the percentage of unknown asymptomatic cases is likely to be low, unless the testing cannot capture asymptomatic cases. If that is the case, we simply have to use the reported infection rate, 8%, as the upper bound of the “true” infection rate.

Under the assumption of 8% infection rate, the percentage of positive results that are wrong is 19%. Let us combine this with the adjustment made to the number of positive cases after removing the effect of the seasonal flu. The calculations are shown in the following tables. The adjusted infection rates are between 3% and 4%.

Adjusted COVID Positive Cases in the US Per Feb 1, 2021 (in million)	
Number of reported positive cases (A)	26.3
Seasonal flu labeled as COVID cases (B)	10.0
"Net" positive cases (C = A - B)	16.3
Positive cases due to testing errors (D = 19% of C)	3.1
Net adjusted positive cases (E= C - D)	13.2
Population in 2020 (F)	331.0
Adjusted infection rate (E/F)	4%

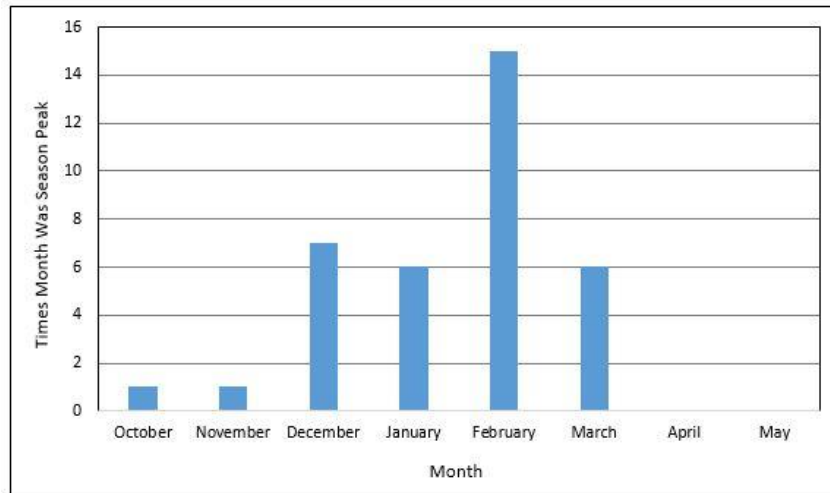
Adjusted COVID Positive Cases in the US Per Feb 1, 2021 (in million)	
Number of reported positive cases (A)	26.3
Positive cases due to testing errors (B = 19% of A)	5.0
"Net" positive cases (C = A - B)	21.3
Seasonal flu labeled as COVID cases (D = 19% of C)	10.0
Net adjusted positive cases (E= C - D)	11.3
Population in 2020 (F)	331.0
Adjusted infection rate (E/F)	3.42%

The Timing

The reported infection rates between November and December 2021 were roughly between 3 to 4%. But the number of cases suddenly jumped sharply by 100% between December 1, 2020 to January 31, 2021. The number of testing during the period also increased greatly by more than 100 million testing. Based on the error rates of the test, the huge increase in the reported positive cases between the period can partly be attributed to false positive results.

Date	Reported Positive Cases	Total Tests
12/1/2020	13.8 M	198.6 M
1/1/2021	20.2 M	252.0 M
2/1/2021	26.3 M	301.7 M

In addition, December and January are typically the months where flu cases are trending to reach the peak in February. This means the flu cases rapidly increase in both months (See graph below). This is what likely happened in the 2020/21 seasonal flu. Given the reported flu cases were unusually much lower than the previous seasons, a vast percentage of seasonal flu has been labeled as COVID cases.



Reported, Adjusted, and Projected Cases

There is a reason to focus on the US data as it has not only the highest number of infected cases, but also one of the countries with the highest testing per capita (population). We can now use the reported and adjusted infection rates to evaluate the projected infection rates widely and scarily reported in spring 2020 that have become the basis for governments around the world to impose draconian policies.

Recall the experts' projections of infection rates were between 40% and 80%. The 80% projection cannot just be dismissed because it is an upper bound. In fact, it was the number projected by Neil Ferguson's team at Imperial College London which became one of the important works that guided the US COVID policy. Other experts tossed out a 60% infection rate, which is the midpoint.

Here is the summary of COVID cases in the US (per February 1, 2021):

Projected infection rate = 60%.

Reported infection rate = 8%.

Adjusted infection rate = 3.5%.

The projected US infection rate from the more likely or adjusted rate is off by 17 folds!

Globally:

Projected infection rate = 60%.

Reported infection rate = 1.32%.

Adjusted infection rate = <1%.

The projected global infection rate from the more likely or adjusted rate is off by 40-60 folds!

(Note: The "true" infection rate will never be known as we do not know the number of asymptomatic cases. But as the number of testing per capita reaches or exceeds 100%, we will be more confident that the unreported numbers of asymptomatic are fairly small. Hence, our assumption of using 8% "true" infection rate in the US is reasonable).

Devastating Effects

The world economy has already been ruined. Millions of people have been left without jobs. The International Labor Organization estimated that global unemployment increased by 33 million in 2020 (which is probably lower than the real number as some of the unemployed workers might have quit the labor force altogether in that year). In 2020, 8.8 percent of global working hours were lost relative to the fourth quarter of 2019, equivalent to 255 million full-time jobs (assuming a 48-hour working week).

Meanwhile, the World Bank estimated that the pandemic-induced global new poor is estimated to be between 119 and 124 million in 2020. In 2021, the estimated COVID-19-induced poor is set to rise to between 143 and 163 million.

These are just snapshots of economic damage out of multitude damaging aspects of the COVID and COVID policies. It is hard to deny that the experts' projections of 40-80% infection rates of the coronavirus have nothing to do with the unprecedented restrictive policies enacted by the governments around the world to curtail the virus. In fact, they served as the basis for the draconian policies.

Can we still trust those experts? In a fair world, we should not trust them to advise anyone even on basic common sense, let alone to advise governments on life and death decision making. Unfortunately, we live in an unfair world. They will be still advising the governments and the government officials will still be happily taking their advice as if nothing wrong is taking place.

Just like economic models or climate models, epidemic models can make terrible projections if they are filled with wrong assumptions and parameters, not to mention intentional bias due to some vested interests. However, for some people including politicians and policy makers, the projections look fancy and authoritative, especially if they are produced by renown experts. "It's science. How dare you to deny it," they said.

But the trouble with being too easily led by models is we can too easily be misled by models.

There are two kinds of experts these days. The first one is who is consistently wrong but has no shame in admitting his/her wrong prediction. The second one is who gives a warning about the wrong predictions, but he or she is shunned by the media, the Big Tech, and the first kind of experts.