

## Why we must look beyond the COVID-19 health emergency and prepare for an economic crisis

As much as we are morally bound to reduce the risk of a surge of infections, we are also responsible for averting the humanitarian crisis that deprivation wreaks.



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It is now clear that the COVID-19 pandemic is creating not just a health crisis, but also an economic and humanitarian one. The basic policy choices facing all governments today are these:

1. To enforce a lockdown and societal isolation to reduce the spread of the virus, and thereby try to ensure the demand for hospital beds and equipment (e.g. ventilators) does not overwhelm the available capacity. As an extension, this will lead to fewer fatalities.
2. To avoid or relax, and eventually remove, a lockdown to reduce the massive economic costs it brings. Already, a global recession is imminent. And amidst the pervasive economic insecurity, it is the poorest, including daily-wage earners, who will suffer the worst.

In other words, it boils down to a difficult choice between risking disease and worsening economic deprivation. I hope the approach I propose here will add some value to policy discussions.

The adage “You cannot understand or manage what you cannot measure” becomes cruelly true in this situation. Accurate information, cutting-edge modelling, and the ability to learn from experience - one’s own and others’ - must be at the heart of good policy making even at the best of times. But these fundamentals are crucial during the worst of times.

### **Do we have the right data?**

The greatest bottlenecks to policy decisions are the limitations in tracking the epidemic on three dimensions. I describe each in the table below, along with their characteristics and the inherent limitations to accurate measurement.

Type of Cases	Explanation	Accuracy Concerns	Comments
Confirmed as infected by the novel coronavirus	In the short term, the number of positive cases is an indication of the speed of the spread from day to day. But in the long term, this is of value only as a % of the population, to check for herd immunity and residual risk	<b>Information and modelling-value increases as testing increases. When testing very small numbers of people (a subset of people with clear symptoms only, as in India), this absolute number is of very low value</b>	India has tested ~33 samples/10 lakh population. TN is slightly better at ~40 samples/10 lakh pop. Both are among the lowest in the world. Kerala at > 150 samples/10 lakh population the highest in India
Hospitalised due to COVID-19 (Proxy for severe cases)	Subset of those whose tests have shown the virus is present, and who have symptoms severe enough to require hospital-based care	<b>The reported numbers here will be much more accurate than the previous number. But, in some areas, access to hospitals may be limited by financial or logistical constraints.</b>	Vital indicator for policy making, along with total hospital bed and equipment capacity available But ground reports indicate some cases of COVID-19 are misclassified as other ailments (Lack of test kits, or even active suppression)
Death due to COVID-19	A small proportion (ranging from 0.05% in some models, to 3% in others) of the infected succumb to the infection or worsening of pre-existing conditions	<b>Most accurate estimate of the three. Hard to mask fatality, but still possible to misclassify, and in extreme cases, suppress</b>	Common flu has a fatality rate of around 1% of those infected

The table above (data from two days ago) makes it clear that any official data on the three variables cannot be 100% accurate.

Further, the data available from various countries around the world – including many whose data methods are much more robust and reliable than ours - show such large variations on these variables, and their relative ratios, that they cannot be used to generate a common predictive model globally, let alone for India

It is possible that the environmental conditions in certain countries, and/or their populations' resistance characteristics (ability to withstand infection without significant health effects) greatly change the risk profile of the epidemic. We just can't tell for sure.

But there are two trends of moderate consistency I found by analysing data from different countries. First, the sooner that widespread testing started, and the greater the rate of testing, the lower the rate of positives in general (with some notable exception like Italy which started testing so late that the infection had spread widely by then). Seen another way, countries that had high testing capacity early, could test even those who did not show symptoms. Why is this important? Because it enables the identification of asymptomatic infections & carriers and helps deploy countermeasures that reduce the unwitting spread of the infection. The benefit of this early-detection capability is seen in the substantially lower mortality rates reported by these early-and-high-rate testing countries, despite adopting far lighter, or no, lockdown measures (Singapore, South Korea).

This is why India should have massively scaled-up tagging (identifying those exposed to risk), tracing (identifying all those individuals they came in contact with), and testing (taking samples from all tagged & traced people irrespective of whether they show symptoms or not) several weeks ago. Even now, the more we do, the better we will understand the progression of the infection and the range of health impacts, so that we can plan our policy approach better.

But as of now, our rates of tagging, tracing and testing are so low that they cannot provide any meaningful data on which to base policy. A prime evidence for this is a letter dated 27th March 2020 from the Cabinet Secretaries to all State Chief Secretaries stating that around 15 lakh international passengers arriving in India had not been adequately tagged.

Let's look at this another way. The number of "positive tests" for Tamil Nadu almost doubled in one day to around 225 on 1st April, 2020. As I pointed out in the table, this has some value as a day-to-day comparison. But in the context of Tamil Nadu's population of around 7.5 crore, it changes the "infected rate" from around 0.00016% to about 0.0003% - a meaningless comparison from a long-term perspective, especially when we have tested about 400 samples for

every crore of population. Errors in tracing and sampling will overwhelm any informational value in the number of infections found.

And **given the constraints today** - availability, cost, etc. - it is simply not possible to ramp up our testing rate by the 10 (China) to 300 (South Korea) or more times that would meaningfully improve our ability to model progression and inform policy decisions.

So how can we improve our ability to assess risks and frame policy?

**And if we don't have the right data, then what do we do?**

A lasting lesson from my graduate studies in Operations Research some 30 years ago is that when a problem is too complex to solve directly, there are many ways to at least get a better understanding of the situation. With that approach, I can re-frame the policy decision this way:

*What does the end-stage of this "crisis" look like with respect to infections?*

*Which statistics have the greatest value in helping us determine the least-destructive path from here to that end-stage?*

There are only two possible end-stages to an epidemic: eradication or herd-immunity. As COVID-19 eradication looks almost impossible in the foreseeable future, we must conclude that the only possible end-stage for this epidemic is some form of herd immunity, likely with the aid of a vaccine that may be developed in the next couple of years, thereby reducing the health consequences of the infection to the level of the SARS or the H1N1 virus. So, the policy imperative is to identify the least destructive path - in humanitarian terms - to get to that stage.

The most predictive model would estimate the likelihood of herd immunity by checking the spread of the infection in the population, symptomatic or not. But that would require a level of testing that is simply not possible any time soon, as explained above.

In the absence of adequate data on infections, we could base our policy decisions on two other measures that are easier to track with some confidence: hospitalisation rates and mortality rates

by location, categorised both by cause and in aggregate, relative to the same period over the last few years.

Let's start with the explicit goal of minimising the economic consequences of the crisis, assuming the lockdown will continue for the originally announced 21 days but can be relaxed/lifted thereafter. How far can the lockdown be relaxed on 14th April?

We can remove as many restrictions as possible, without violating the following constraints from the disease prevention imperative:

- Peak demand during infection surges should not overwhelm hospital bed and equipment capacity in each cluster/location, and
- The number of related fatalities must be kept within "acceptable" limits (let us take <1% of those infected, the rate for the common flu, as a starting point)

We don't have the full picture on either of these numbers currently, but we already must have historical data on both hospitalisations and deaths – for each district at least and possibly at a more granular level. I assume the hospital occupancy rates vary across a lot of dimensions in each district and state. But I expect district authorities have, or can easily gather, that data, including cause of admission, for each of the past few years.

Current hospitalisation rates, relative to those from the same period over the past few years, can shed significant light on our risk for each district across the country - more so as we come to the end of the 21-day lockdown. Ideally this should be referenced by type of illness/disease, as well as the total number of cases. But if specifics are not available, the aggregate data will do. If that comparison doesn't show a major variation after three weeks of lockdown - despite the huge contagion risk from migrant workers in the first week due to poor planning - we could consider easing the lockdown in each district where that was the case, in a rapid manner.

The other demographic statistic to consider as a basis for policy decisions is the Crude Death Rate (CDR). This is the rate of deaths per 1,000 average population, from all causes, measured on an annual basis. India's CDR was around 25 per thousand at Independence and has declined

with development to around 7. There are bound to be large variations across the country - developed states like Tamil Nadu will have noticeably lower numbers than under-developed states in the north, as is the case with infant mortality and most other demographic indicators. But, the local authorities (who issue Death Certificates) in each district will have granular CDR data for past years.

Again, comparing the current CDR after the onset of the epidemic to the historical data from recent years on a weekly-matched basis will provide additional insights. To put the numbers in perspective, a CDR of 7 implies more than 90 lakh people died in India last year of all causes, which averages to about 25,000 per day. Conservatively assuming a CDR of around 6.5 for Tamil Nadu, the numbers would be about 4.85 lakh for 2019, at an average of around 1,340 per day.

It is worth keeping these baseline numbers in mind as we process the Government's official numbers on COVID-19 fatalities to date ~50 (India), and 1 (Tamil Nadu) in more than 60 days from the first case registered on January 30th. I assume the official numbers are not reliable, but even if these they were off by a factor of 10, or even 100, they would have to be compared to the 15.6 lakh (India) and 80,000 (Tamil Nadu) deaths that would have been statistically expected during this period.

### **The early signs of an economic collapse: How bad will it get?**

Images and incidents over the last few days suggest the lockdown is causing massive economic disruption, though the magnitude is unfathomable. We do not have adequate real-time data to assess the impact quantitatively. And since a large segment of our economy is informal, the impact will not be accurately measurable soon (as was the case with Demonetization). In Investment Banking, we used comparables to estimate, or validate other estimations of, values that cannot be determined objectively and precisely.

Taking a similar approach, we can say the following for sure:

Globally, the impact of this crisis will be much worse than the Global Financial Crisis of 2008, which was primarily a market-driven crisis. As one data point, consider that the peak rate of

weekly unemployment claims in the US, the epicenter of that crisis, was ~6.5 lakhs then, compared to 66 lakhs last week, AFTER more than 34 lakhs the previous week.

Demonetization, which led to an unprecedented draining of liquidity, was not as abrupt as the hard stop on Economic activity (from agriculture to manufacturing to services) in this case. Include the massive health-care costs of dealing with infections and fatalities, and we can safely assume a reduction of at least 2% of GDP (conservative estimate for Demonetization).

We are in a fundamentally weaker position to absorb/deal with this 2% loss now. Our growth, which was around 7% then, had already slowed to <5% BEFORE the lockdown. Our banks are in worse distress, and our fiscal situation is significantly worse. When we are so constrained, speed of action is of the essence – the sooner we act to stop the economic disruption, the lower the scale and scope of the devastation, and the greater the impact of our actions.

In short, we must turn our focus to relaxing the lockdown in a thoughtful and systematic way, to bring economic activity back to normal as quickly as possible. We need to limit the consequences of what will be the worst global recession of modern times. While no logical person will deny that we must ramp up tagging, tracing and testing, we simply cannot obtain enough data from testing alone in time to base short-term policy decisions on. We must focus on studying past hospitalisation and fatality rates, by district (or town and village, if available), to decide how rapidly we can loosen and remove lockdown restrictions at each location.

As much as policy makers are morally bound to reduce the risk of a surge of infections, they are also responsible to avert the humanitarian crisis that deprivation wreaks.

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