In a free society, the decision of life returning to normal in the face of a disease or virulent outbreak does not ultimately reside in the hands of government but in the societal determination of willingness to accept risk.

Every year society accepts the risk of the seasonal flu which can claim up to 80K lives. What conditions form the mindset of society to accept this risk? One is the availability of a vaccine (which is taken by less than 50% of adults), the CFR of 0.1% and the sense that one can protect themselves and assess their own risks based on staying away from folks whom they believe might have the flu. The people who can transmit the normal flu normally have active symptoms and there’s an assumption that most of these folks stay home when sick (which is iffy at best). Another factor is the sense that if one does gets sick, they can seek and receive effective treatments. This is supported by a mindset the flu won’t overwhelm our health care system because the flu season is roughly 7-8 months and even when an area has an outbreak, the system can generally keep up with it. However, with the annual death count of between 20 and 80 thousand, one has to question societies acceptance of the risk.

To summarize, the main factors that reduce risk to allow normal life to go on are the availability of a vaccine and the low impact of contracting the virus due to a low CFR (supported with effective treatments for those who develop symptoms including hospital care if necessary) and the development of a herd immunity that protects those who are vulnerable. The other factor may be one of perceived risk. If the death count from any annual flu lead every news casts multiple times per day, would the number seeking a vaccine or social isolation increase?

So, let’s assess those factors. Vaccines are in early trials and won’t be available to guide our near-term decisions. And while the final story on COVID-19 is yet to be written, there is evidence (<https://www.nejm.org/doi/full/10.1056/NEJMe2002387>) to suggest the CFR will be closer to a severe case of seasonal flu (e.g. 2019) than originally thought and modeled. However, the contagion rate of asymptomatic individuals is much higher (the actual number is not knowable yet) and there is not yet a proven effective treatment although there are ongoing trials. As such, the outbreaks tend to place a much higher stress on the locality impacted over a shorter period of time than the seasonal flu.

Another significant factor is our ability to avoid contact with those inflicted with the flu vs COVID19. Indication are that a significant percentage of those infected with COVID19 are asymptotic but still able to transmit the virus. Also, the length of time an infected person is asymptotic yet contagious can be days if not weeks. Thus, the contagious appear healthy and can infect others whose contraction of the disease could be much more severe if not fatal. Unlike the flu whose symptoms set in quickly and are obvious thus easily avoided a healthy person can’t always avoid contact with someone infected with COVID19.

Let’s discuss lock downs and their impact. Lock downs can be effective to buying time to develop more effective testing and treatments and also protect the health care system from becoming overloaded when an outbreak occurs. But lock downs are not shown to effectively reduce the probability of a future outcome once society reopens. And lock-downs work against the development of herd immunity. However, lockdowns may be the only effective way to avoid those that would other wise appear asymptotic.

Countries like Taiwan and S. Korea utilized early border closures to minimize the seeding of the virus and aggressive testing and enforced isolation to control spread without disrupting society. While this has shown to be extremely effective for an initial containment, sustaining this implies that these border controls and surveillance techniques remain in place until a vaccine or effective treatment options become available. Sweden has very few cases of seeding and has been largely unimpacted. This will change if the disease enters from external sources at a future date. (Note, the Swiss do not travel in the winter, with summer approaching travel will become more common thus the infection rate among the Swedes may swell.)

Locking down an area which has a low number of cases accomplishes little because the threat of infection comes from outside that area and not from with-in. However, in the early days of the virus in a population, low number of cases and asymptomatic carriers look very similar. Thus, keeping a population isolated for the gestation period of the virus from higher infected areas is critical if one is to determine the actual infection rate for a population.

Locking down an area which has an outbreak can temporarily reduce the stress of that outbreak on the health care system. However, doing so in the short term can keep the mortality rate to a minimum by eliminating deaths due to lack of health care. Nonetheless, unless a sufficient herd immunity is developed or the risk of introducing new cases is reduced, re-opening that area may lead to future outbreaks until a vaccine is developed or effective anti-virals are found.

Given this, what is necessary to reduce societal risk to get life back to normal? Locking down a country until a vaccine is available is not feasible. More likely is the introduction of an anti-viral that can be used prophylactically.

The first factor to reduce risk is testing to identify and isolate those who have it and surveillance testing in areas so people can assess their risk of contraction in that area. It also implies having tight external (i.e. border) controls to limit the introduction of new cases. Also, tests that identify those who have immunity (previously infected and recovered) can identify those that are no longer at risk. Those that are immune can safely leave lock-down and also help with those that are sick.

A second factor is the development of effective early treatments or anti-viral that eliminate or minimize the risk of infection. In this way people’s fear of contracting the virus will be reduced knowing that they can prevent infection or recover without serious consequences.

A third factor to reduce risk is to strongly protect those who are vulnerable (isolation of the few instead of the many) which means targeted isolation until a vaccine or prophylactic treatment is available for this population or the risk of the virus has passed. In this way people can not only assess their own risk, but also reduce the risk of impacting someone more likely to have a negative outcome.

Given this, what is available in the near-term to make risk visible and managing it?

* Implementing expanded surveillance and serological testing
* Stronger protection and support for those who are vulnerable.
* Quick detection and isolation of new cases
* Swarming areas which show signs of an outbreak on the horizon

This pivots from a strategy of isolating the many to strongly protecting the few. This combination can perhaps lower the risk profile that leads to society returning to some degree of normalcy until a vaccine or prophylactic treatment is available.

Summary

Recently, the following metrics were published for the Netherlands and Iceland.

A screenshot of a cell phone

Description automatically generated

The testing strategy for the Netherlands was to focus testing on the symptomatic while the testing in Iceland focused on testing the entire population. From the delta in the data between the two countries, we can see that the Netherlands have an over representation of the symptomatic and an under representative of the asymptomatic. Since Iceland is testing everyone, there data is more reflective of reality.   
  
If this graph is representative of other countries, It may identify the main threat of COVID-19. You can see from Iceland (testing everyone), and the Netherlands (testing the symptomatic) that from the age 50 and below, you are missing half of the population infected.

With the flu, you become symptomatic quickly and can self-isolate and others can avoid you. If half of the population of COVID is asymptotic, they don’t know they are sick, and others can’t avoid them. They are the ones that are spreading the virus.

Once you include the asymptomatic in the population, you will see the overall mortality rate will drop significantly. The key to containing the virus is to develop a testing strategy for everyone 50 and below so you can isolate those that test positive and are symptomatic

Until you do, half of the infected in that population will spread the virus. A 2 to 4-week population-wide lockdown will help dampened down the spread, but that is not sustainable. We need to test everyone below 50 and isolate the carriers.  Then we can get back to work.