Risk Analysis of the SARS Covid19 for Orange County:

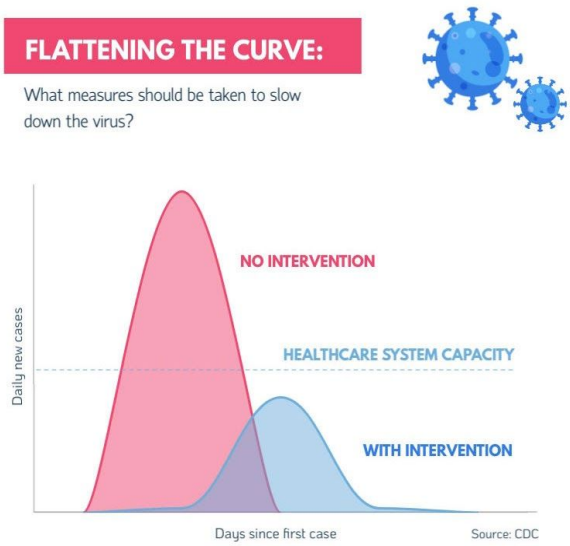
Background:
The SARS Covid19 virus belongs to the Coronavirus family. Viruses that cause primarily respiratory illnesses. The original SARS epidemic (Severe Acute Respiratory Syndrome - also a Coronavirus) lasted a few months from 2002 to 2003 in SE Asia. Perhaps because of its high case fatality rate it didn't spread as a pandemic. Coronavirus existed before SARS 2002, mostly lumped together as the 'common cold'.

**How does Covid19 compare to other viruses we know?**
SARS Covid19 caught many by surprise. SARS & MERS, 2 of Covid19's older siblings, both petered out in a few months and didn't spread too far. Covid19 proved us wrong. It seems to spread like the seasonal flu, only worse. How does the Covid19 compare to SARS, Seasonal flu or Measles?

It is not as easy to compare how contagious a pathogen is. Seasonal flu has been around and there is herd immunity to some degree. Measles is likely the most contagious but over 95% of the population are immuned. Covid19 is likely more contagious than SARS. It's more objective to compare how deadly each infectious agent is. The case fatality rate measures the number of deaths expected per population of infected. Seasonal flu <0.1%; Covid19 1.4 - 2%; WHO in May 2003 estimated SARS case fatality rate at 14-15%; Case fatality rate of Measles is 15%.

**What can we expect moving forward?**
Several things we can say about our experience over the last 4 months. What we see now, and what we can expect.

Sheltering at home & partial shutdown worked to flatten the curve.



‘Flattening the curve’ allowed the healthcare system to not be overwhelmed and bought us time to be better prepared.
Current estimate is <5% of LA County population has immunity. At this rate, herd immunity is not an achievable goal over the next 9 months. Best case scenario is that a vaccine can be widely available in about 9 months. At present, social distancing is working and businesses are prepared.
For LA County with approximately 10 million population. If we allow even 50% of the population to be infected (minimum requirement for herd immunity), and using a case fatality rate of 1.0, that will compute to 50,000 deaths. As of May 27, LA County has 43,000 confirmed cases and 2,000 deaths.
With herd immunity not attainable, a vaccine is at least 9 months away, short of continuous ‘sheltering’ orders and shut down, cases will only expect to rise. The safest period is at the end of a shut down; that’s now. **Risk will likely go up until a vaccine is available.**

**What is the risk of infection in Orange County?**
Overall risk in OC compared to LA is about ⅓. LA compared to NYC is about ¼. OC has 3.2 million people. As of May 31, OC has 5646 confirmed cases and 136 deaths.

If we work backwards from the number of deaths and use a case fatality rate of 1 (low estimate) then we have an estimated 13600 infected individuals or 0.425% of the population infected so far. By March 11, OC reported 5 cases of Covid19, so the virus has been around for just over 11 weeks. Assuming an infected individual can be contagious for 14 days (high estimate). On average, over the last 2 and half months, OC residents have less than .077% chance of being infected.

**What is the estimated fatality for Covid19 in OC for 2020 or until a vaccine is available?**
Averaging out the fatality in OC for the past two & half months and projecting this to the end of the year, I have around 520 deaths for 2020.

To keep things in perspective, traffic related deaths in California for 2018 was 90 per million. Estimated Covid19 deaths in OC for 2020 is 160 per million (520/3.2).

In the end, what is ‘acceptable risk’ is an individual decision. For someone who lost loved ones in a plane crash, flying may seem more dangerous than driving. Objective data may show otherwise. Seniors at residential care facilities are definitely at higher risks. So are people who rely on public transportation, flight attendants and health care workers. For the rest of the population, I’ll say the risk is not much higher than getting in a car.

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