

Projection of the Covid19 cases in India

On 8th June I had done the projection of the Covid 19 cases in India. Every 2 weeks I have been testing / validating the model. Last validation was done 15th July, today being 30th July its time to measure the accuracy of the model once again

Below Link is of my previous article

<https://www.linkedin.com/in/pranjal-mishra-305729152/detail/recent-activity/>

Data Source is "<https://www.worldometers.info/coronavirus/country/india/>"

	Projected Case	Actual Case	Error Percent
June 2nd Week	81515	79149	3%
June 3rd Week	101012	94127	7%
End of June	557700	567000	1.60%
.July 15	905025	937487	3.4
.July 30	1438370	1584384	9.20%
.August 15	2300000	2525222	9.70%

9.7 % error after 10 weeks of doing the projection is still very less. But now the error in the model has slowly moved towards double digit mark but while creating the model I have purpose fully done under prediction(**at least these many cases**) so I will still consider that performance of model is good.

The worry factor for me is that number of cases have consistently more than the projected case From last 4 validation points and any effective vaccine which could be available in India is still 2 months away

Now We are entered the unlock phase 3 from August 8 where the Yoga and Gyms are getting opened and Night Curfew being removed . It may lead to rapid increase in the cases. One week after the unlock phase 3 we can see that there has been a spike in cases in next one week there would be more clarity of the impact on unlock and if the error percent moves above the 15 percent mark then I would be retuning the model (I.e calculating the new values of the K and M) used in the forecasting Equation .

Next testing milestone for this model would be **30 August** where the projected cases would be 3514996

Next Grim Milestone date would be *August last week* when on daily basis India may be reporting **1 Lakh cases Per day**

Is the death Rate actually less than 2 % in India?

Lets try to answer this question. All the news channels , websites, government agencies are reporting death rate as less than 2 %, but I am little amazed how various agencies are doing the calculation . On one hand they say death rate is decreasing and on the other hand absolute number of people succumbing to virus is increasing. India has been reporting on an average 1000 deaths per day as per the data last week

The formula which government has used is **erroneous**. It is using the formula

$$\text{Deaths} \div \text{Total Cases}$$

Where Total Cases (includes active case also)

So at this time (15th Aug) calculation is $49134 / 2525222 * 100 = 1.945 \%$

But actually while calculating the death rate we should **not include the active cases** because from the active cases many people may not survive. So formula should be

$$\text{Deaths} \div \text{Recovered}$$

$$49134 / 1807556 * 100 = 2.72 \%$$

I have not included 717666 cases which are still active. So the actual death percentage is 1 percent more than the number projected by the Government and in India with such a huge population this 1 % difference can create a difference of lakhs in absolute terms

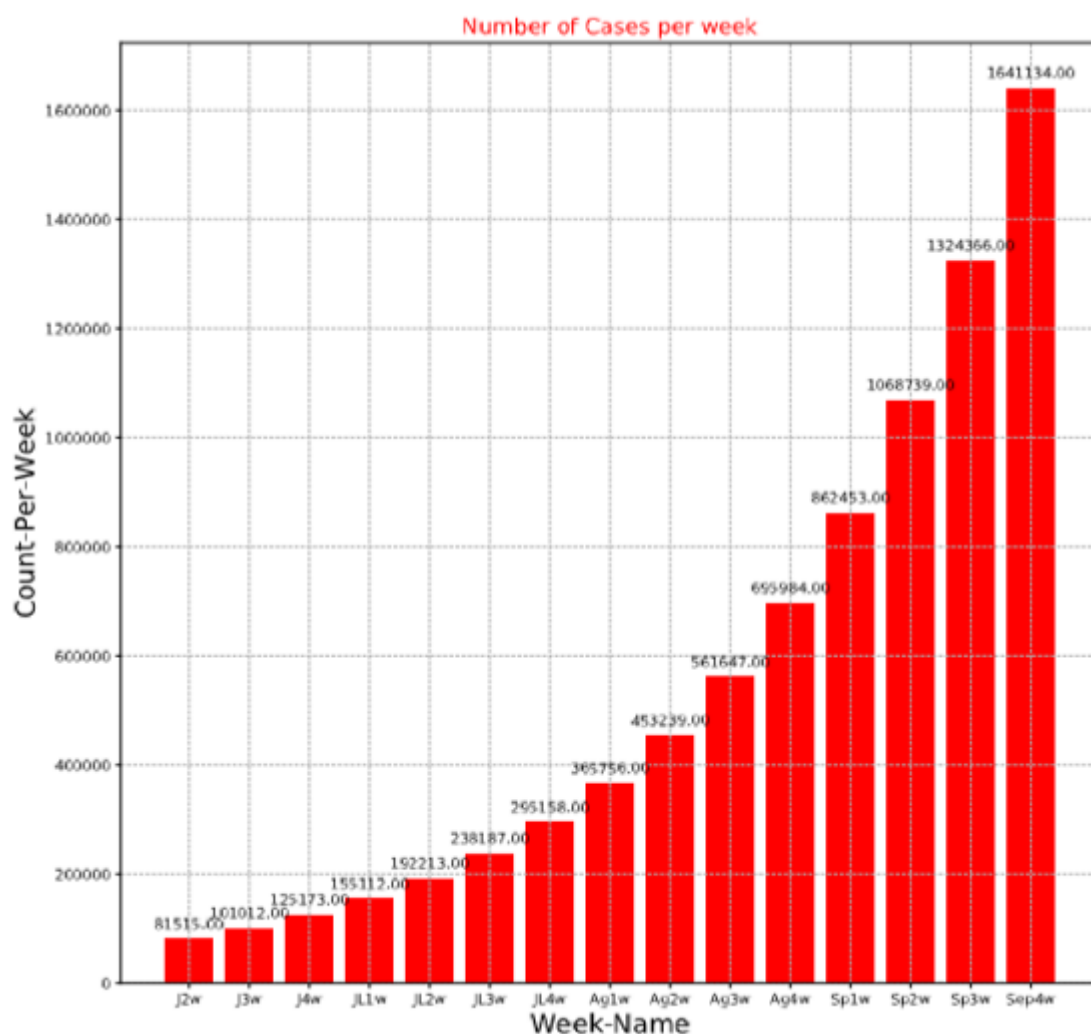
NOTE : My predictions are on the lower side which implies at least and not at most as I don't Want to create any kind of panic among the people. I have purposefully kept the Forecasted number lower

Will it be too late for India if Vaccine comes by year End??

Let's try to answer the above question. India is seeing the exponential growth in Covid cases And it needs Covid vaccine as early as possible. But if the Vaccine comes only by year end on early 2021 it may be too late as around 110 Million Indians would officially be effected by the Corona and around 10 Times would be unofficially effected (those who suffered mild / and were asymptomatic and were unaccounted for). Recent Serosurvey in Delhi and Mumbai has revealed that around 25 % of the population has already been exposed to Covid and has developed the immunity.

So by year end more than 100 Cr people would have already been exposed to this virus and if we assume that once effected by Covid person attends permanent immunity then launching the Vaccine by year end may not be wonderful Idea.

It would be more of a confidence enhancing measure among the masses rather than a **necessity** and would also be a good business for the many pharma companies.



J2w : June Second
week
jL : July
Ag :August
Sp: September

