

COVID 19: Trend Analysis and Projection

15 November 2020

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Project: Jeevan Raksha is a initiative of Proxima which focuses on Advocacy, Analytics, and Awareness in the area of healthcare

Mission: Actively contribute towards **Right to Health** as constitutional right of Indian citizen

Project: Jeevan Raksha has been in the forefront of providing sharper analytical insights on emerging pattern of COVID 19 in India to the Central / State Government administrations and general public. The contribution is appreciated by many state Governments.

Project: Jeevan Raksha acknowledges the technical support and guidance of Public Health Foundation of India (**PHFI**)



satyam-eva jayate, Truth alone triumphs, was adopted as the national motto of India on 26 January 1950

In COVID management, **Truthiness** in the disclosed data (data integrity) of Testing, Positivity, Recovery, and Fatality; or **truthfulness** of a individual about his/her (including family) health condition, is vital for India's efforts to save lives of the people.

A Robust, universally applicable and Scalable Management System is vital to manage Communicable Disease

The management of communicable diseases without clear medical solutions in the vicinity, requires effective data mining, analysis, and appropriate inferences of the virus spread in order to achieve the following key objectives:

- **Assessment:** Assess and examine the velocity of the virus spread and pattern of infection in the given region.
- **Measurement:** Effectively measure the outcome of the various intervention
- **Forecast:** Based on the various critical data pattern, extrapolate the trend which would facilitate the administration to ramp-up the required resources

Proxima Pandemic & Epidemic Management System



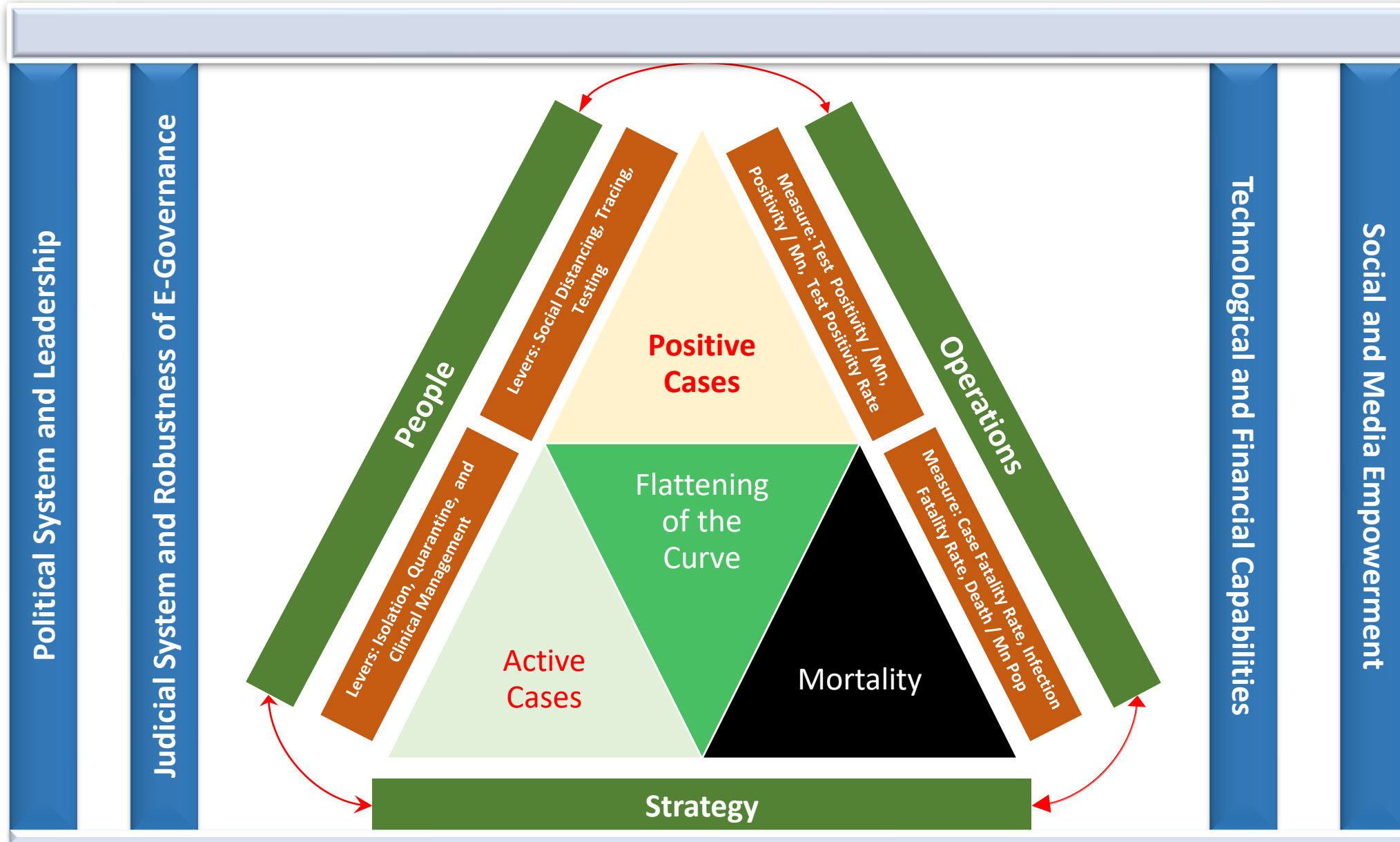
In an Pandemic / Epidemic, the virus spreads linearly and rapidly. The strategy to manage and flatten the growth of the virus depends on various systematic and unsystematic drivers.

Therefore, strategy formulation should factor the following:

- Political System and Leadership; Judicial system and robustness of e-Governance; Technological and financial capabilities; and more importantly social and media empowerment.
- There must be complete synergy between 3 critical processes – Strategy, People, and Operations. In case if any of these processes are weak, then there are chances of ending up with poor results
- The flattening of the curve of virus growth will happen only the levers are used effectively and efficiently.
- Robust review mechanism: The Control rooms must have strong process and systems which provides real-time right and appropriate data and analysis which helps the decisions makers to take appropriate and timely decisions.

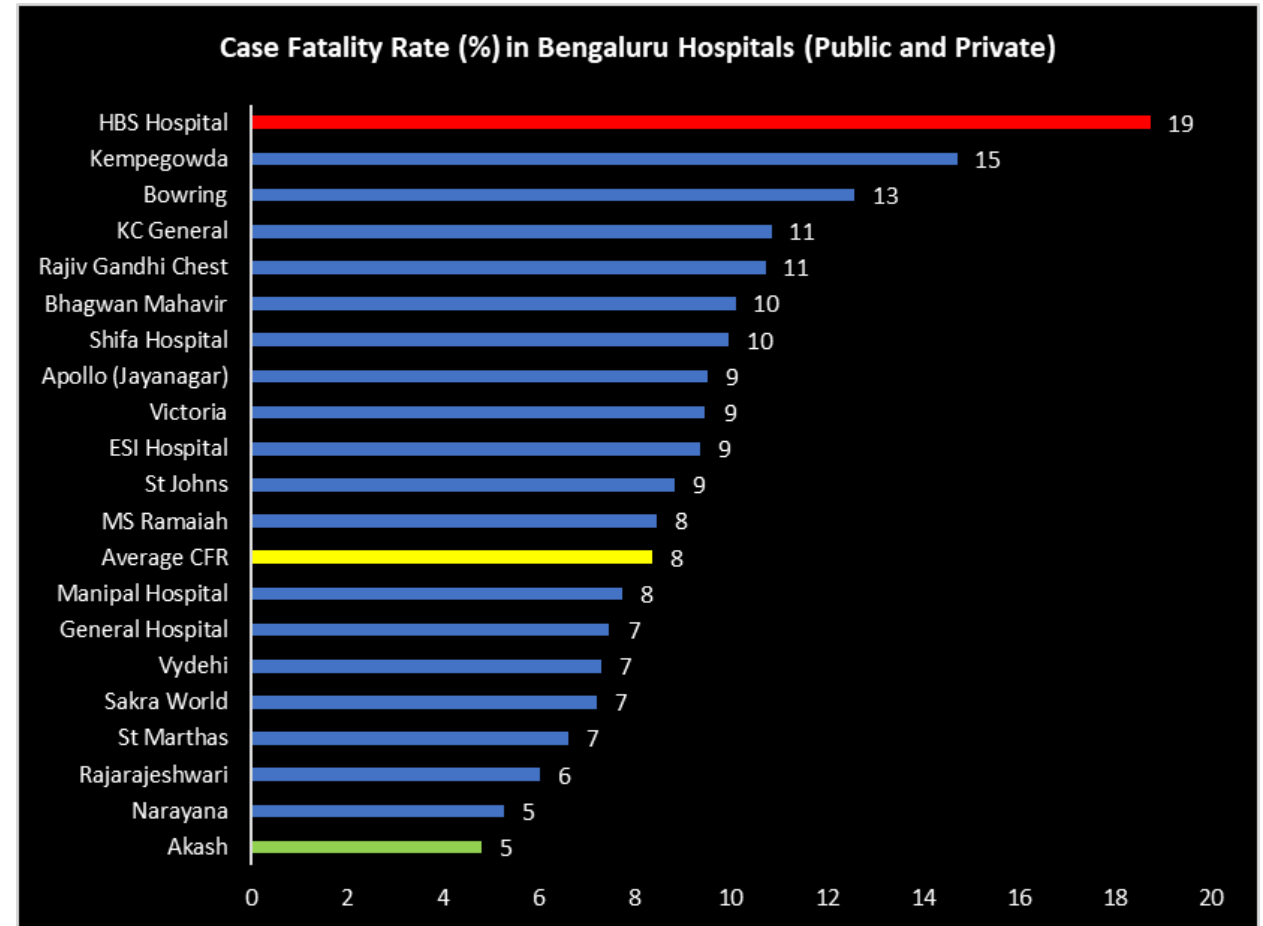
Proxima Pandemic & Epidemic Management System (PPMS)

JEEVAN RAKSHA
PROTECTING LIVES

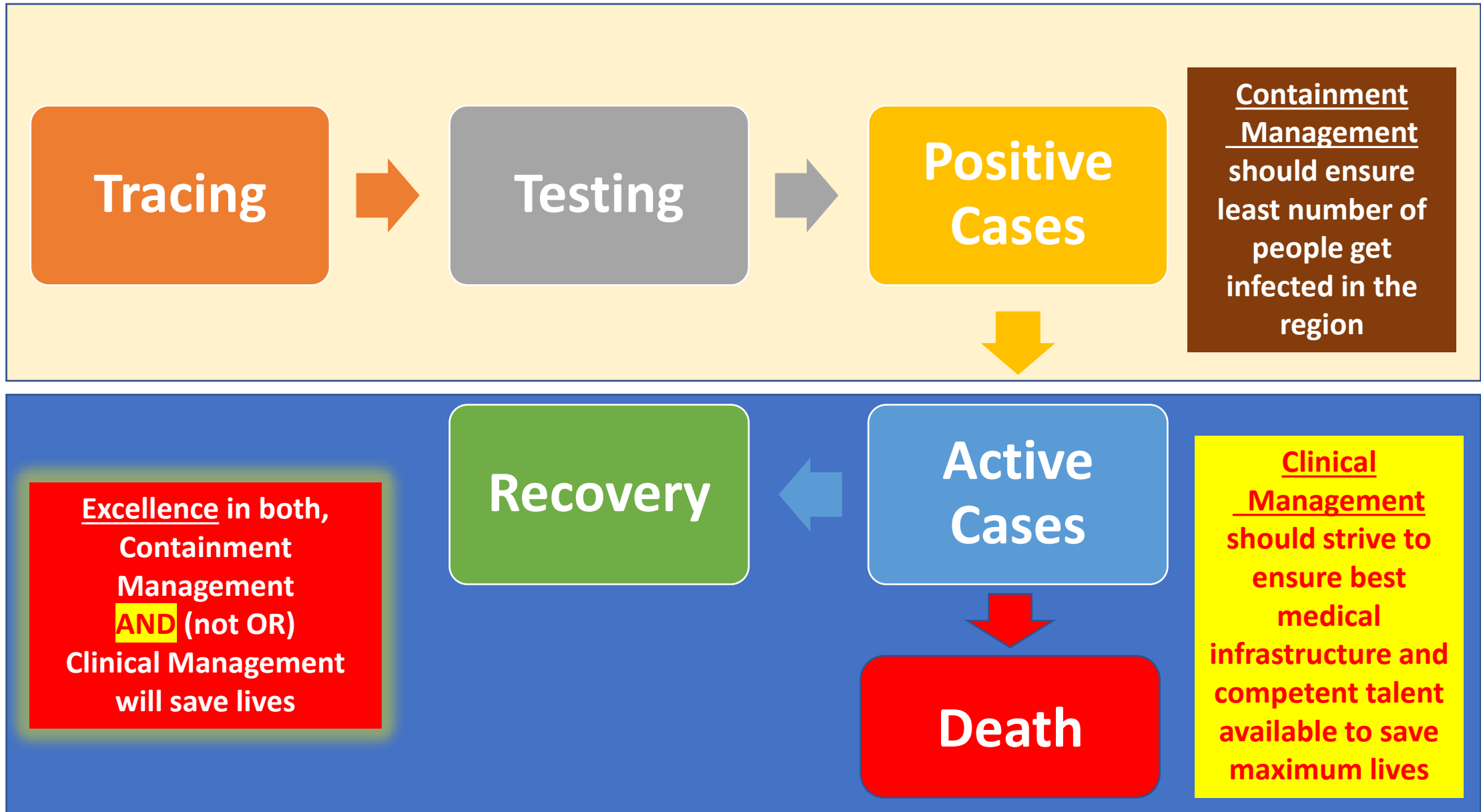


1 Pandemic, 1 City, Varied Results

- What are the reasons for HBS Hospitals to have highest mortality rate of 19%?
- What are the key drivers which ensured Akash Institute of Medical Science to have least Case Fatality Rate of 4.8%?
- Does the hospital has the required ratio of specialists required to treat the COVID critical patients?



Qualitative and Quantitative Testing will determine the fate of the people



Millionaire Club of Nations: Nations which are having over 1 Mn COVID cases.

Currently, there are 10 nations in this group, including India

100K Club of Nations: Nations having over 1 lakh COVID cases. 57 nations are there in this group, including India

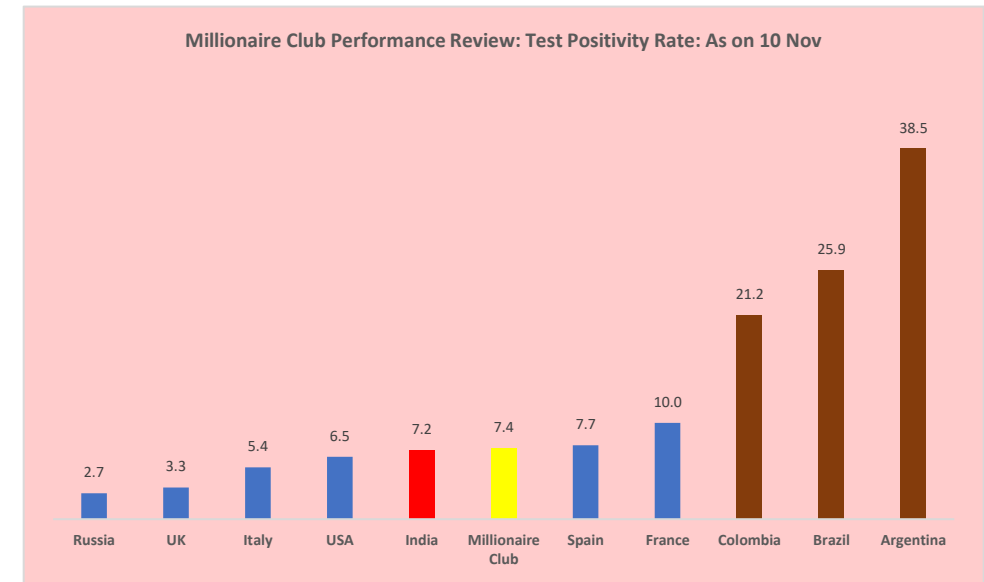
As part of Project: Jeevan Raksha, a comprehensive study of COVID trends in Millionaire Club of nations as well as 100K club of nations and compared India's performance on various key critical parameters of COVID management.

Test Positivity Rate is a measure of Testing Capacity and Quality

Test Positivity Rate (TPR) is a measure of **testing capacity and Quality** which can provide important context about case totals and trends, it is **NOT** a measure of how prevalent the virus is in communities.

Russia, UK, Italy, USA, and India has lesser TPR than Columbia, Brazil and Argentina. Nations having lesser TPR indicates higher testing capacity and vice versa.

Policy decisions related relaxation / lifting of restrictions should not be determined based on TPR alone.



India's Test Positivity Rate (%)

Gross TPR : 7.2%

Effective TPR: 8.9%

In India nearly 20% of total tests conducted include retests as well. Therefore, TPR calculated without removing the number of retests will artificially deflate the TPR value.

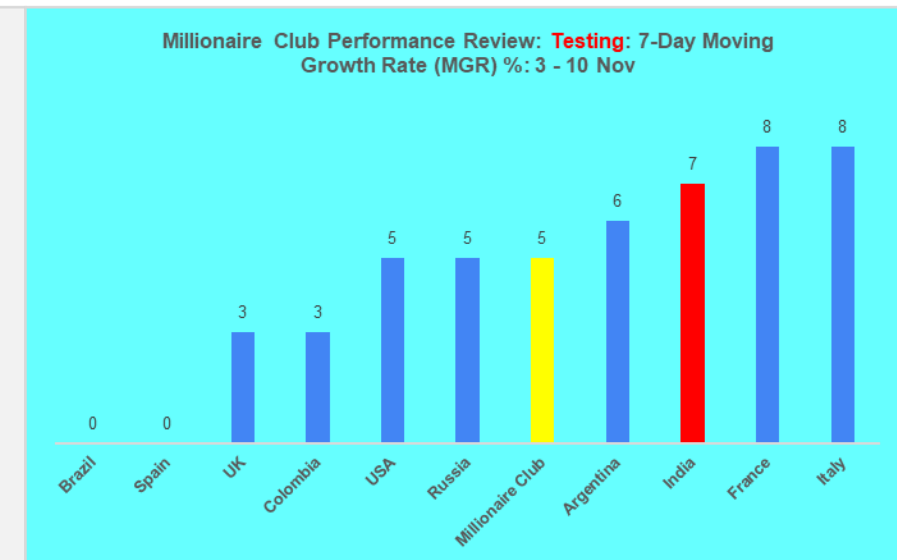
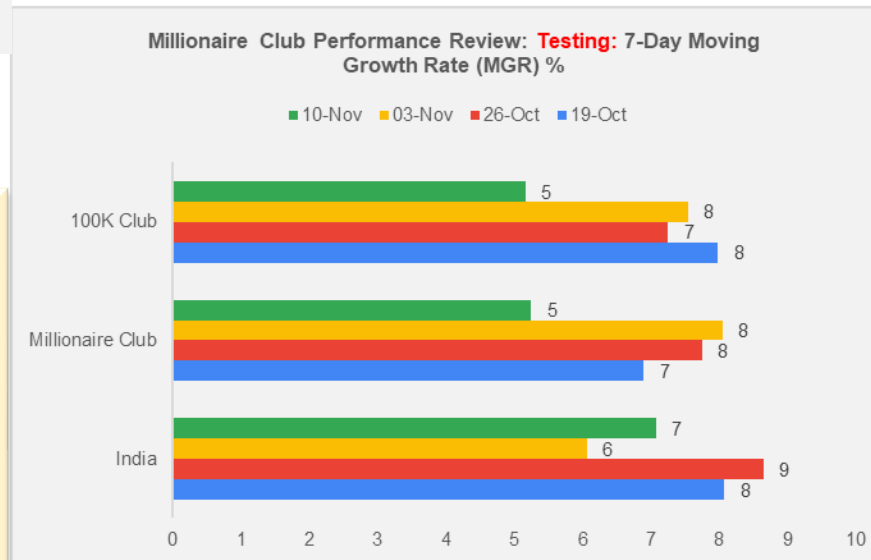
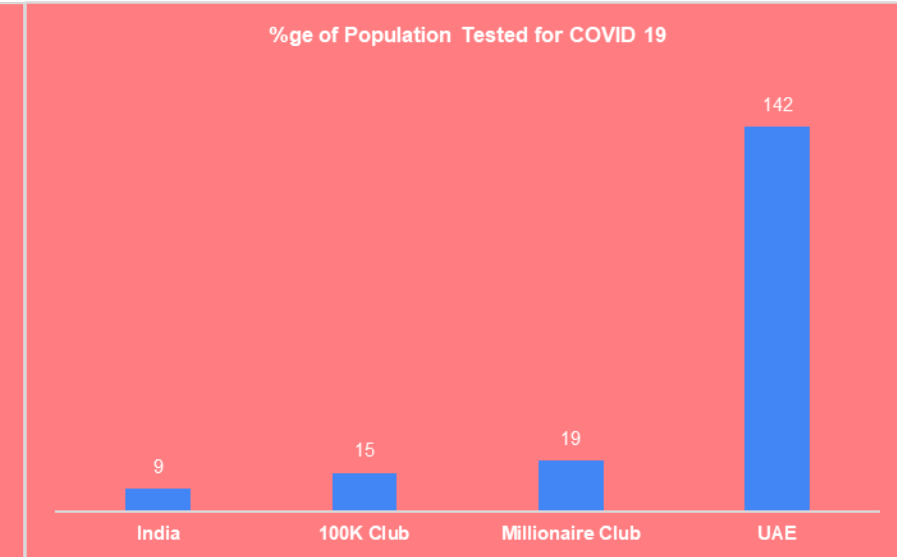
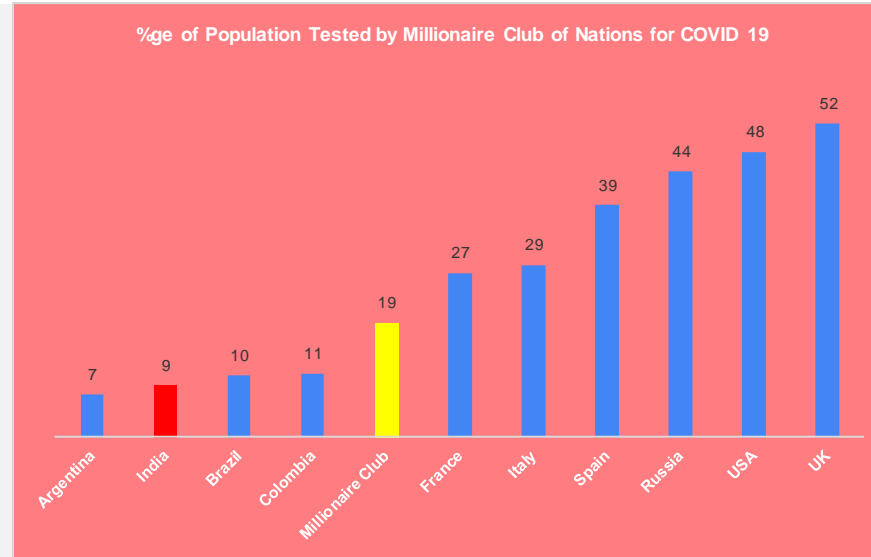
Effective TPR (ETPR): Positive cases divided by net number of Tests (after reducing 20% towards retests from the total tests carried out). ETPR will provide realistic picture of administration's testing capability

India need to adopt appropriate testing strategy which yield better results and not to follow USA or Europe approach



Globally, Testing strategy has FAILED to break the chain or reduce the spread of virus.

- UAE has 10 Mn population, but conducted 1.44 Mn tests. Number of new cases continues on daily basis.
- USA has tested nearly 50% of its population, in November continues to witness every day new highs in number of COVID cases. On 13th Nov, it witnessed 1.83 lacs new cases.
- Europe (Delhi as well) is witnessing sharp resurgence of COVID cases and deaths due to failed containment after achieving substantial control over COVID
- Week-on-Week India is increasing the testing by 8-9%, relatively higher than average testing of Millionaire Club and 100K Club which is increase in the range of 5-7%.

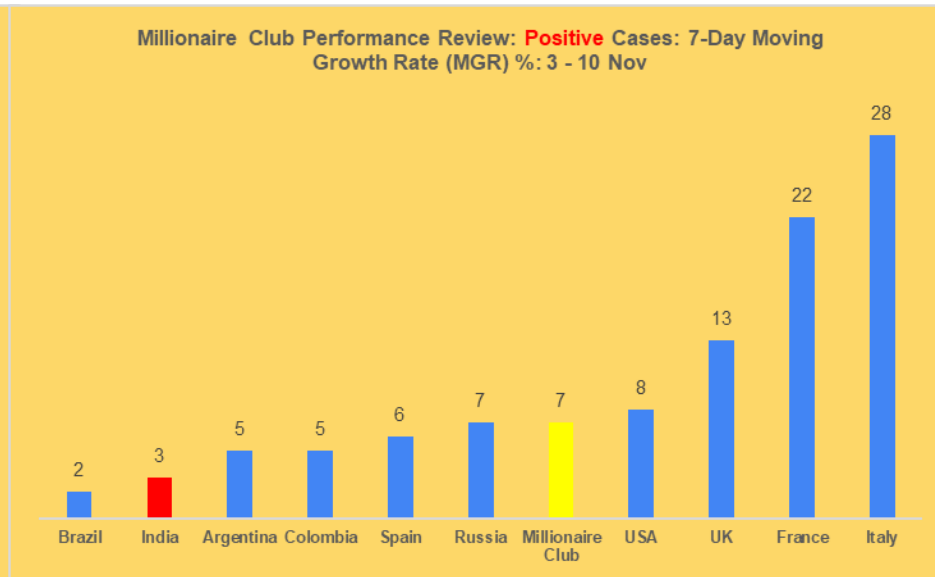
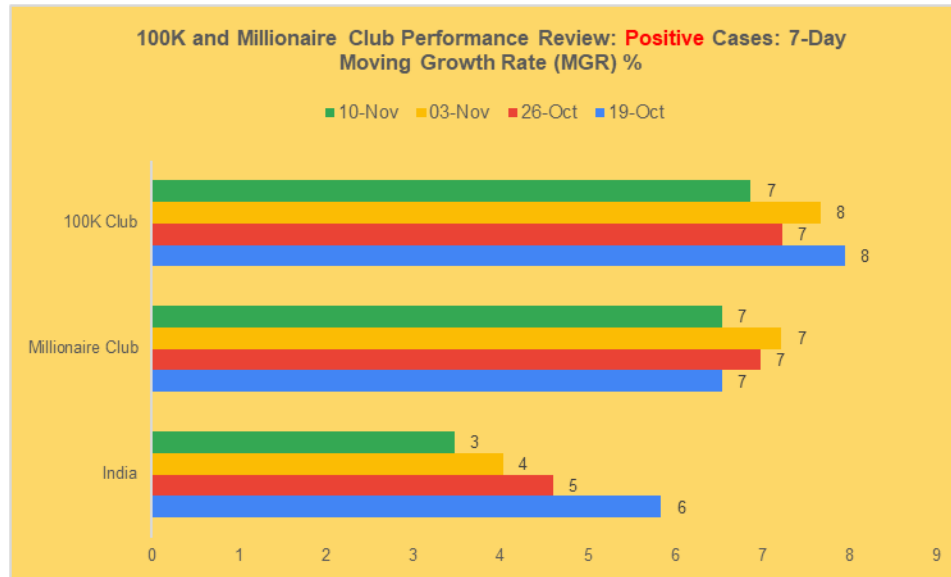


BAN: RAPID ANTIGEN TESTS (RAT)

Nearly 40% of RAT results are FALSE NEGATIVE. Millions of lives are in danger.

Tamil Nadu has demonstrated successfully that 1.43 lakh / Mn tests could be carried at a faster pace by using only RT PCR.

Drop in average number of daily COVID positive cases is due to multiple factors



MGR: Drop in MGR indicates that average daily number of cases is reducing. This also could be reflected as increase in doubling period for positive cases. During 13 Oct – 10 Nov, India’s Week-on-Week MGR is reducing. This indicates drop in average number of daily cases. Whereas in 100K and Millionaire club of nations MGR is higher.

During the week 3 – 10 Nov, MGR of Italy, France, UK, and USA indicates higher daily average number of cases when compared with Brazil, India, Argentina, Columbia, Spain, and Russia which are having lower MGR.

India: Testing, Positivity, and Mortality Pattern								
Month	Tests		Cases	Positivity Rate		Deaths	CFR	DPM
	Gross	Effective		GTPR	ETPR			
July	10532074	8425660	1111263	10.6	13.2	19146	1.7	13
August	23966175	19172940	1990886	8.3	10.4	28879	1.5	48
September	29785207	23828166	2622324	8.8	11.0	33273	1.3	72
October	36777262	29421809	1873130	5.1	6.4	23443	1.3	89
November (Upto 12th)	13214436	10571550	545230	4.1	5.2	6558	1.2	94

In July, every 100 Effective Tests yielded 13.2 positive cases, in November every 100 tests yielded only 5.2% Positive cases.

Indicates-increase in people led precautionary testing, continued high usage of RAT testing, lower momentum of conventional tracing

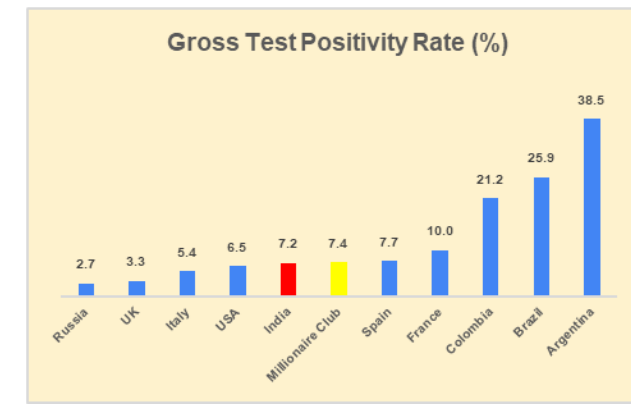
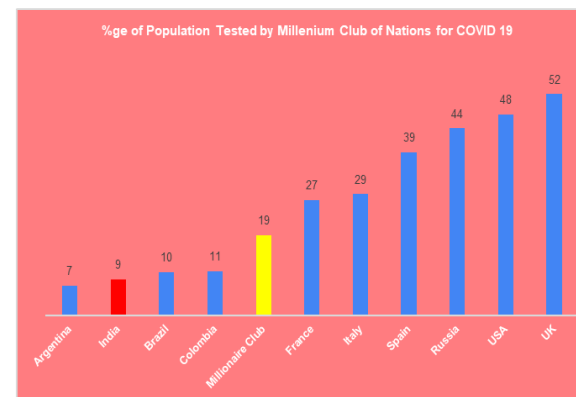
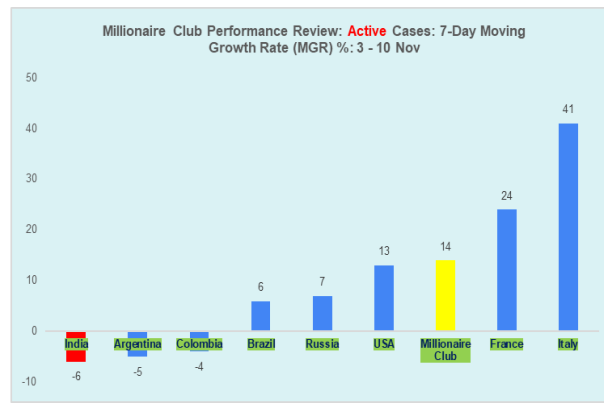
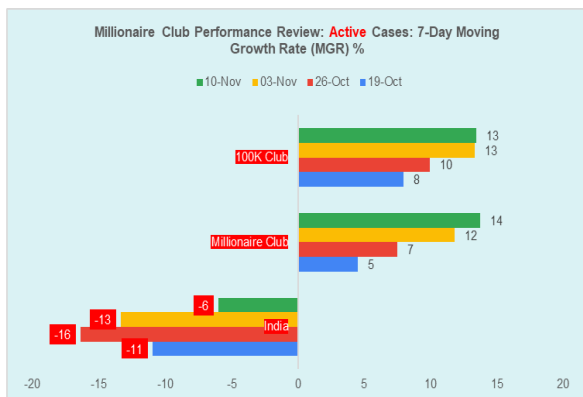
Key Factors for Drop in number of Active cases

Global scenario:

- During the week 3 – 10 November, the Active cases Moving Growth Rate (MGR) of 57 nations having over 100K COVID was 13%. Further, the active cases MGR of 10 nations having over a million COVID cases was 14%. However, India, Argentina, and Columbia registered negative growth of -6%, -5%, and -4% respectively. The key factors are:
 - Quantitative Aspect:** Argentina, India, Brazil, and Columbia have tested 7 – 11% of the population. Whereas, Spain, Russia, USA, and UK have tested 40 – 52% of their total population.
 - Low TPR reflects Poor Quality and high capacity of testing:** For every 100 tests conducted by Russia, UK, Italy, USA, and India the yield (number of positive cases) is in the range of 2.7 – 7.2%. This reflects large number of unwarranted tests are being carried out. The low TPR also indicates that these nations have relative higher capacity.
 - High TPR reflects tests restricted to symptomatic people and low capacity:** Columbia, Brazil, and Argentina are having TPR of 21.2%, 25.9%, and 38.6% respectively. This clearly indicates that these nations are testing only symptomatic people which is resulting in higher yield (more positive cases for every 100 tests conducted). This also indicates that these nations are having relatively lower capacity to increase the testing.

India scenario

- In July, India tested 7680 Tests Per million population. The TPR was 10.6%. In 3 months span, India ramped its testing capacity by 3.5 times. In October, India tested 26820 tests per million population, however the Test Positivity Rate dropped to 5.1%. In July for every 100 COVID tests, 10.6 positive cases were identified, whereas in October, every 100 COVID tests yielded only 5.1 COVID positive patients.
 - In July, India's 0.3% of total population had tested positive for COVID. This has doubled to 0.6% in October.
- The key inferences from the increase in testing and reduced TPR is that, people have started getting tested as precautionary measure as well as for other transactional purposes such as travel, other medical treatment, etc. On the other Government is also aggressively testing at the gross root level. This Government and People combined testing is fueling the testing numbers and also speed of ramping. This might have directly impacted the spread of virus in various severely affected states.



Case Studies

Delhi		
Per Million Population		
Date	Positiviy	Death
01-Aug	7306	213
14-Nov	25769	402

Maharashtra		
Per Million Population		
Date	Positiviy	Death
01-Aug	3505	124
14-Nov	14168	373

Karnataka		
Per Million Population		
Date	Positiviy	Death
01-Aug	1916	36
14-Nov	12730	170

West Bengal		
Per Million Population		
Date	Positiviy	Death
01-Aug	730	16
14-Nov	4302	76

Basic Principle of Pandemic

When a region is in Pandemic, Higher the quality testing, higher will be the positive cases

Andhra Pradesh		
Per Million Population		
Date	Positiviy	Death
01-Aug	2786	26
14-Nov	15824	127

Manipur		
Per Million Population		
Date	Positiviy	Death
01-Aug	891	2
14-Nov	6998	71

Kerala		
Per Million Population		
Date	Positiviy	Death
01-Aug	693	2
14-Nov	14578	52

If the logic for sharp surge in COVID cases is due to increase in testing, then the reason for receding?

Testing is vital. More critical is justification of testing a particular person. Why he/she is being tested - Symptomatic? Contact?

Maharashtra: Slashes Daily Average Testing



- Since August, Positivity and mortality Per million population has increased by nearly 3 times respectively. This continues to increase every day. This indicates high prevalence of virus in the state.
- In the week ending 11 September, 1 in every 4 persons tested was positive for COVID. 26% Gross TPR indicates that the testing was predominantly for symptomatic people.
- In the week ending 2nd October, the average daily number of testing conducted was 97059. Thereafter, the average daily testing has been reduced to 57600.
- The current cumulative Gross TPR of Maharashtra remains at 18% (Effective TPR is 22%). However, the testing yield in October/November has dropped to 8%.

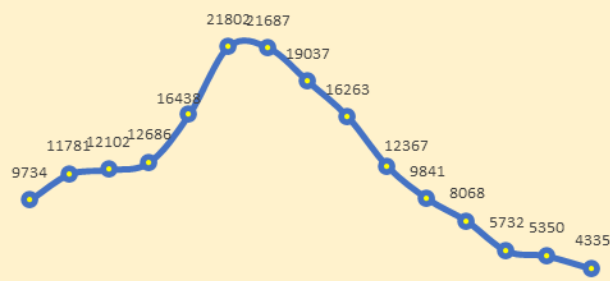
Per Million Population		
Date	Positivity	Death
01-Aug	3505	124
14-Nov	14168	373

Conclusion: Sharp reduction in average number of testing and lower yield indicates that the share of precautionary and other transaction purpose testing by low risk would have increased considerably. Therefore, the TPR has fallen sharply inspite of daily average testing has dropped considerably. There is a likelihood of drop in Government sponsored testing.

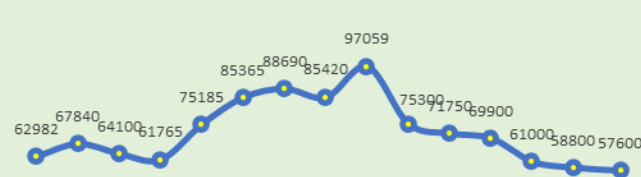
Maharashtra: Analysis of Average Daily COVID Cases, Testing, and Test Positivity Rate (TPR) during August - November

Week Ending ->	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	18-Sep	25-Sep	02-Oct	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	14-Nov
Avg Daily Cases	9734	11781	12102	12686	16438	21802	21687	19037	16263	12367	9841	8068	5732	5350	4335
Avg Daily Testing	62982	67840	64100	61765	75185	85365	88690	85420	97059	75300	71750	69900	61000	58800	57600
Gross TPR	15	17	19	21	22	26	24	22	17	16	14	12	9	9	8
Remarks	Testing ramped from daily 62K to 97K, high yield. Good qualitative and quantitative testing									Drastic slowdown of testing from peak 97K / Day to 57K / Day					

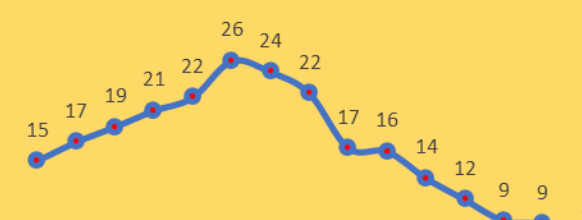
Maharashtra: Average Daily COVID Cases Pattern (August - November)



Maharashtra: Average Daily COVID Testing Pattern (August - November)



Maharashtra: Gross Test Positivity Rate (%) (August - November)



28-Jul 17-Aug 06-Sep 26-Sep 16-Oct 05-Nov 25-Nov

28-Jul 17-Aug 06-Sep 26-Sep 16-Oct 05-Nov 25-Nov

28-Jul 17-Aug 06-Sep 26-Sep 16-Oct 05-Nov 25-Nov

Andhra Pradesh: Testing Yield drops from 16% to 2%

- Since August, Positivity and mortality Per million population has increased by 10 times and 5 times respectively. This continues to increase every day. This indicates high prevalence of virus in the state.
- The current Gross TPR (GTPR) of Andhra Pradesh is 9.4% and Effective TPR (ETPR) is 12%.
- The average daily testing has been maintained at 65,000 – 70,000
- In August and September, the test yield was 16-17% which resulted in average daily cases around 9000 – 9500. Whereas in November, the test yield has dropped to 2%, which means every 100 tests is yielding only 2 COVID cases. The increase in testing reflects the enhanced testing capacity of the state. However, the reduced testing yield reflects deteriorating quality of testing.

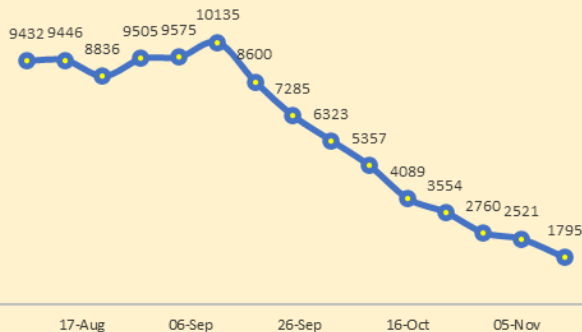
Conclusion: Due to increase in testing of low-risk and irrelevant people, the average daily cases has dropped from peak of 10135 to 1795.

Per Million Population		
Date	Positivity	Death
01-Aug	2786	26
14-Nov	15824	127

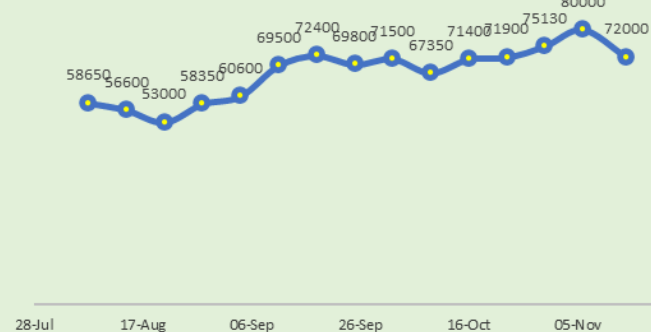
Andhra Pradesh: Analysis of Average Daily COVID Cases, Testing, and Test Positivity Rate (TPR) during August - November

Week Ending ->	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	18-Sep	25-Sep	02-Oct	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	14-Nov
Avg Daily Cases	9432	9446	8836	9505	9575	10135	8600	7285	6323	5357	4089	3554	2760	2521	1795
Avg Daily Testing	58650	56600	53000	58350	60600	69500	72400	69800	71500	67350	71400	71900	75130	80000	72000
Gross TPR	16	17	17	16	16	15	12	10	9	8	6	5	4	3	2
Remarks	Qualitative and Quantitative Testing. Higher yield					Incremental increase in testing is very minimal / nil. High number of low risk and unwarranted people tested									

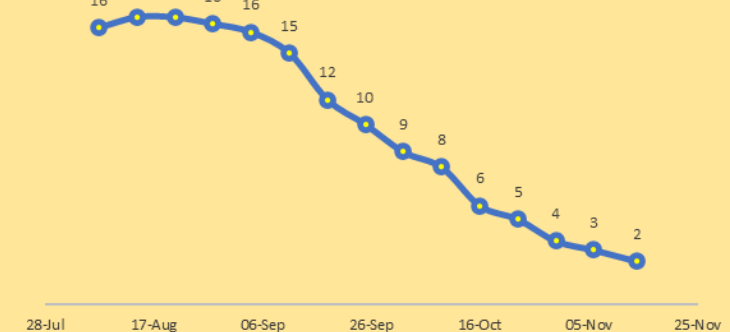
Andhra Pradesh: Average Daily COVID Cases Pattern (August - November)



Andhra Pradesh: Average Daily COVID Testing Pattern (August - November)



Andhra Pradesh: Gross Test Positivity Rate (%) (August - November)



Karnataka: Testing Yield drops from 14% to 2%



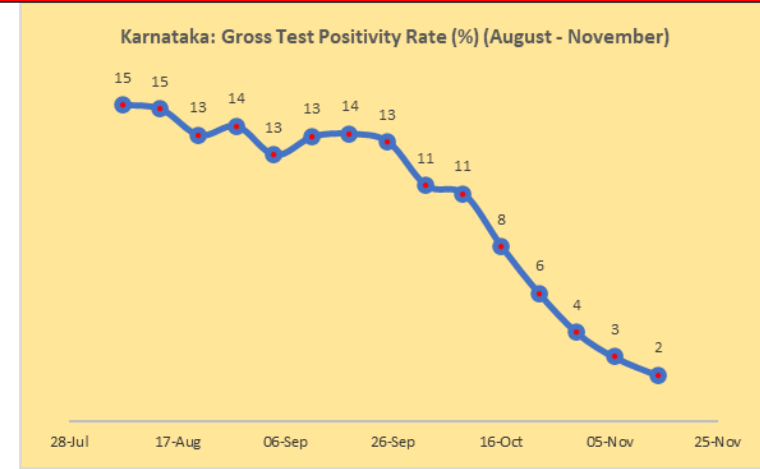
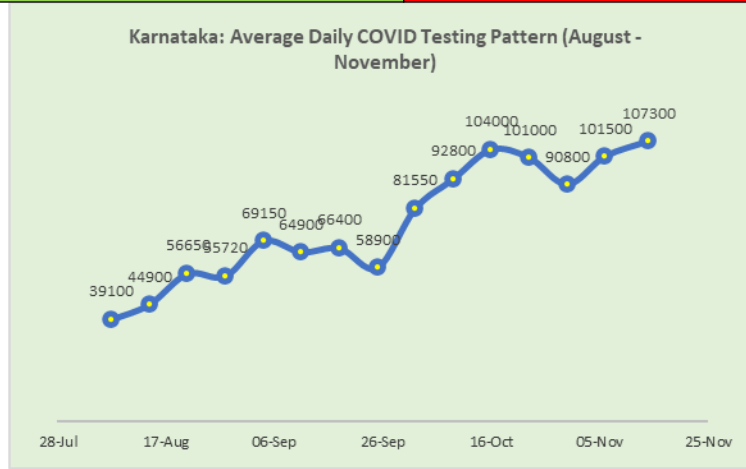
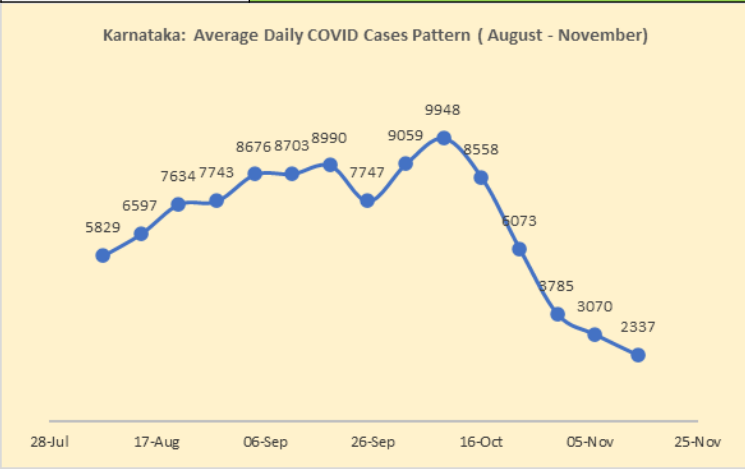
- Since August, Positivity and mortality Per million population has increased by 10 times and 5 times respectively. This continues to increase every day. This indicates continued prevalence of virus in the state.
- The current Gross TPR (GTPR) of Karnataka is 9.2% and Effective TPR (ETPR) is 11%.
- The average daily testing has been ramped from 40K to 107K
- In September, the test yield was 14% which resulted in average daily cases around 8000 – 9000. Whereas in November, the test yield has dropped to 2%, which means every 100 tests is yielding only 2 COVID cases.

Per Million Population		
Date	Positivity	Death
01-Aug	1916	36
14-Nov	12730	170

Conclusion: There is increase in Government sponsored testing as well as people led precautionary testing. Therefore, the number of testing has increased considerably and yield has also dropped to 2% in the week ending 14th November.

Karnataka: Analysis of Average Daily COVID Cases, Testing, and Test Positivity Rate (TPR) during August - November

Week Ending ->	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	18-Sep	25-Sep	02-Oct	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	14-Nov
Avg Daily Cases	5829	6597	7634	7743	8676	8703	8990	7747	9059	9948	8558	6073	3785	3070	2337
Avg Daily Testing	39100	44900	56650	55720	69150	64900	66400	58900	81550	92800	104000	101000	90800	101500	107300
Gross TPR	15	15	13	14	13	13	14	13	11	11	8	6	4	3	2
Remarks	Qualitative and Quantitative Testing. Higher yield							Testing ramp-up continued, but more number of low risk and unwarranted people tested							



Kerala: Trend of People led voluntary testing



- Since August, Positivity and mortality cases / Mn has increased by over 25 times reflects the continued severity of COVID in the state.
- In August, the gross TPR was 3.1 (ETPR is 3.88%). This has increased to 9.6% (ETPR is 12%). This reflects that state is increasingly testing more of symptomatic and also testing capacity limitation.
- In the week ending 09 October, the average daily testing was 60,200 which yielded 7800 cases at GTRP of 16%. Over the subsequent weeks, the daily testing have been reduced to around 54,000 and also testing yield has dropped to 11% from 16%.

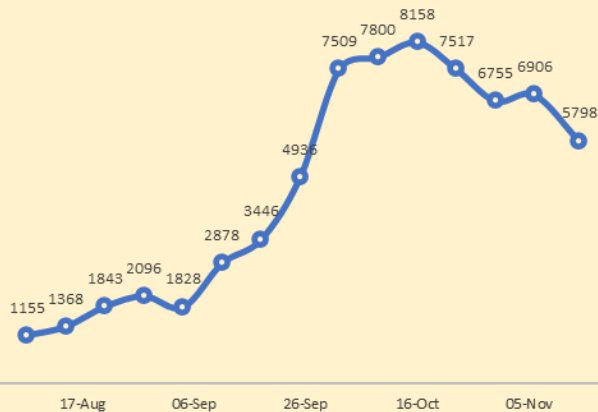
Per Million Population		
Date	Positiviy	Death
01-Aug	693	2
14-Nov	14578	52

Conclusion: The trend indicates that people led testing would have increased considerably in October/November for precautionary purposes.

Kerala: Analysis of Average Daily COVID Cases, Testing, and Test Positivity Rate (TPR) during August - November

Week Ending ->	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	18-Sep	25-Sep	02-Oct	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	14-Nov
Avg Daily Cases	1155	1368	1843	2096	1828	2878	3446	4936	7509	7800	8158	7517	6755	6906	5798
Avg Daily Testing	23050	26325	32600	36000	26330	37350	40350	45900	56000	60200	51050	54850	53200	57200	53600
Gross TPR	5	5	6	6	7	8	9	11	13	13	16	14	13	12	11
Remarks	Avg Daily Testing doubled from 23K to 51K. High Yield. Good qualitative and quantitative testing											Increase in testing stagnant. Drop in yield			

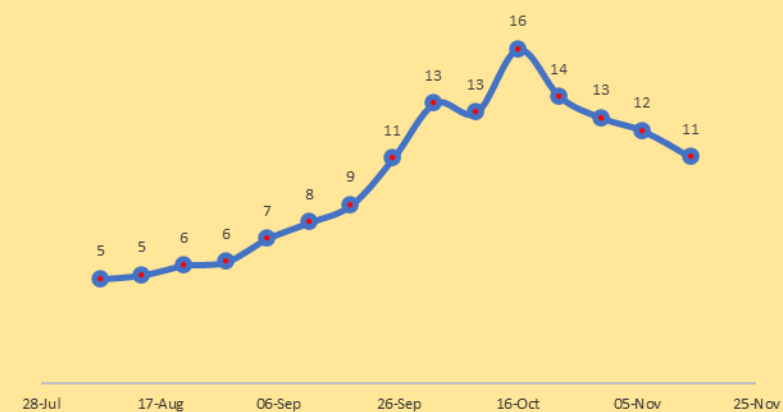
Kerala: Average Daily COVID Cases Pattern (August - November)



Kerala: Average Daily COVID Testing Pattern (August - November)



Kerala: Gross Test Positivity Rate (%) (August - November)



Delhi: Cost of high leveraging of Rapid Antigen Test, Low Testing

- Since August, Positivity and Mortality Per Million has trebled and doubled respectively. Also, Delhi's DPM is more than 4 times of national DPM of 93.
- Delhi is among those states which has highly leveraged on unreliable Rapid Antigen Tests which has false negativity upto 40%.
- In spite of surge in average daily COVID cases in October and November, the daily testing has been lower than the peak average daily testing of 58300 conducted during the week ending 18 September.
- The cumulative (since the detection of first case), the Gross TPR in August was 13% (ETPR of 16.2%). This has dropped to 8.9% (ETPR of 11%) in November. This indicates that in spite of improved testing bandwidth, the state did not increase testing

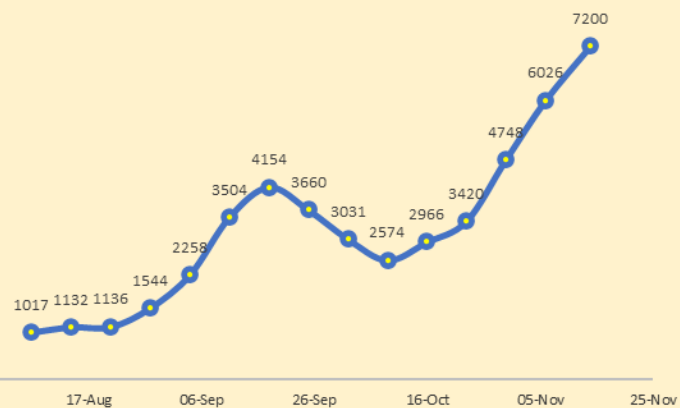
Per Million Population		
Date	Positivity	Death
01-Aug	7307	213
14-Nov	25769	402

Conclusion: Increase in TPR and positive cases indicates that almost all testing carried out is for symptomatic people only.

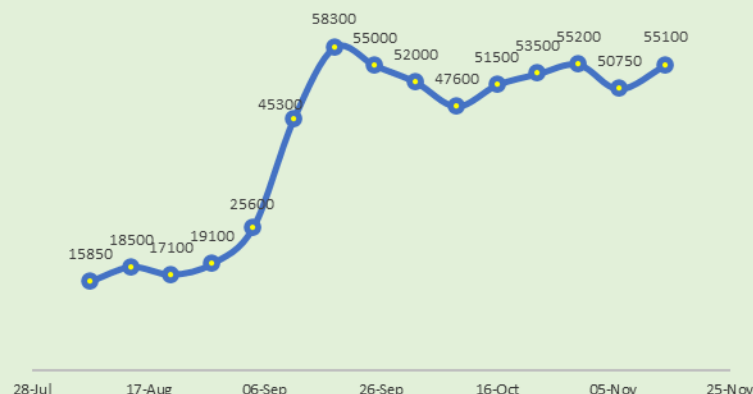
Delhi: Analysis of Average Daily COVID Cases, Testing, and Test Positivity Rate (TPR) during August - November

Week Ending ->	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	18-Sep	25-Sep	02-Oct	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	14-Nov	
Avg Daily Cases	1017	1132	1136	1544	2258	3504	4154	3660	3031	2574	2966	3420	4748	6026	7200	
Avg Daily Testing	15850	18500	17100	19100	25600	45300	58300	55000	52000	47600	51500	53500	55200	50750	55100	
Gross TPR	6	6	7	8	9	8	7	7	6	5	6	6	9	12	13	
Remarks	Testing increased by 3.5 times, 15K/Day to 55K. Poor yield. Inconsistent testing quality								Testing # stagnant around 50K inspite of surge in COVID cases and deaths							

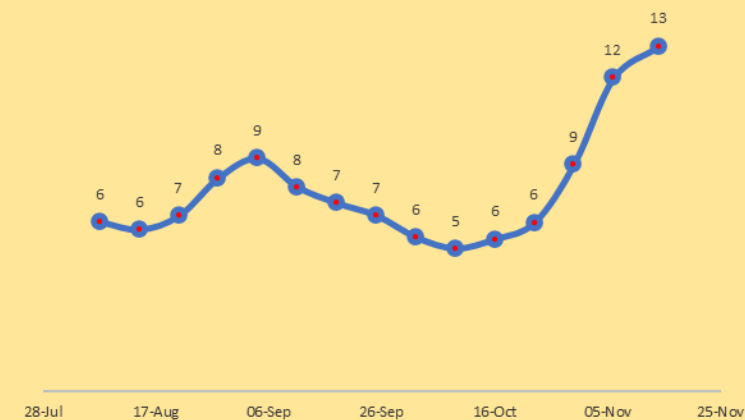
Delhi: Average Daily COVID Cases Pattern (August - November)



Delhi: Average Daily COVID Testing Pattern (August - November)



Delhi: Gross Test Positivity Rate (%) (August - November)



West Bengal: Static COVID Operation, but Positivity and Mortality continues to increase



- In 100 days, death toll has increased 4.5 times. 1627 people had died until 1st August due to COVID. On 14th November, death toll has increased to 7610
- Continues to operate in a standardised manner wherein there is not much improvement in testing or TPR.

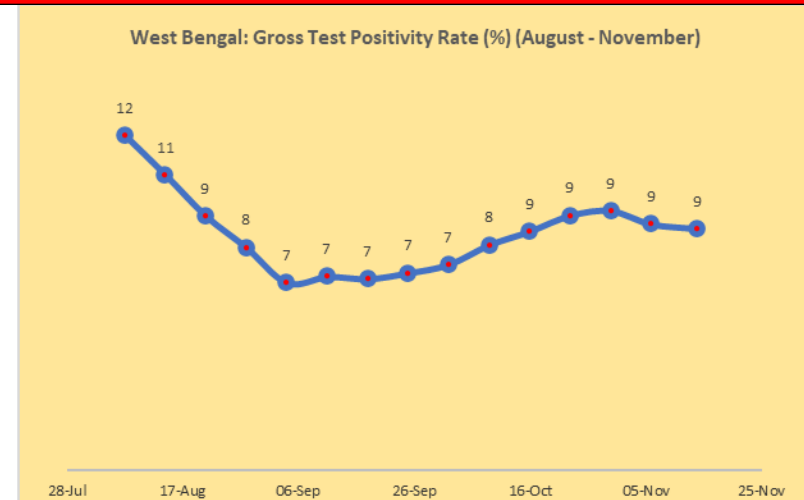
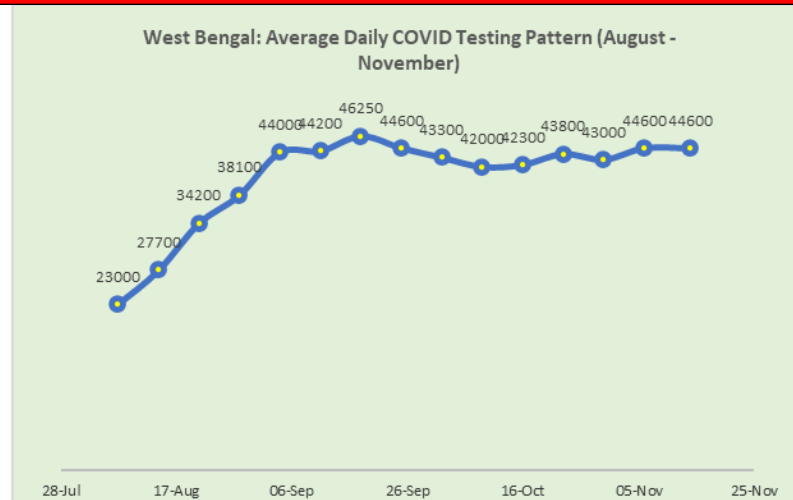
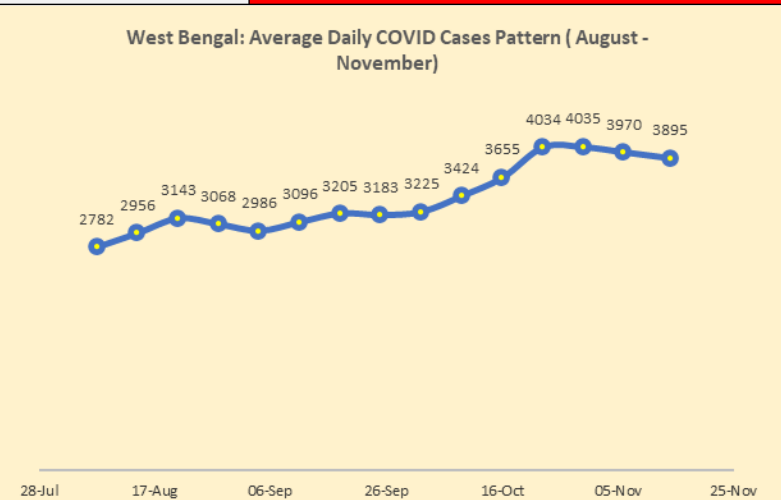
Conclusion: The rigid approach towards COVID management has led to continued increase in positive cases and deaths in the state. The state approach for COVID management should be dynamic by nature so that pro-active actions are taken to curb the growth of the virus in the state.

Per Million Population		
Date	Positivity	Death
01-Aug	730	16
14-Nov	4302	76

West Bengal: Analysis of Average Daily COVID Cases, Testing, and Test Positivity Rate (TPR) during August - November

Week Ending ->	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	18-Sep	25-Sep	02-Oct	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	14-Nov
Avg Daily Cases	2782	2956	3143	3068	2986	3096	3205	3183	3225	3424	3655	4034	4035	3970	3895
Avg Daily Testing	23000	27700	34200	38100	44000	44200	46250	44600	43300	42000	42300	43800	43000	44600	44600
Gross TPR	12	11	9	8	7	7	7	7	7	8	9	9	9	9	9

No qualitative and quantitative improvement in Testing since September



Manipur: Weak Containment and Clinical Management led to increase in mortality



- Since August, Positivity and Mortality per million population has increased by 10 and 35 times.
- The state has only one Pulmonologist. This reflects that the state is not equipped with competent Doctors who could treat the critical COVID patients. The Central Government need to support the state by temporarily deploying competent medical staff to Manipur.
- Since August, The average daily cases has nearly doubled from 120 to 220
- The average daily Testing in the week ending 9th October was 5300. This has been reduced to 1900
- The Gross TPR during the week ending has increased to 12%. This reflects that the state is testing more of symptomatic cases and also facing to increase the testing capacity.
- Due to reduced testing, mortality in the state has surged due to lack / delayed testing of the infected people

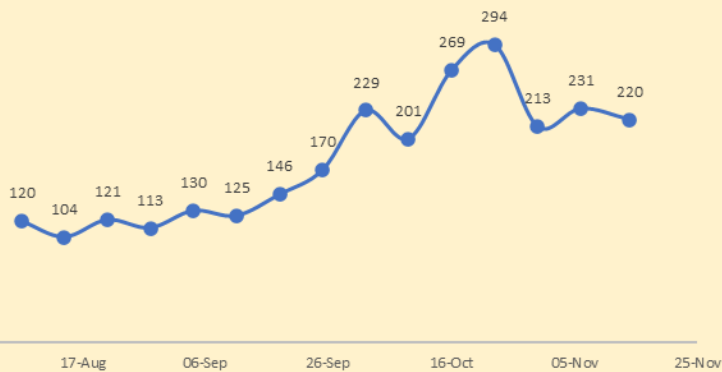
Per Million Population		
Date	Positivity	Death
01-Aug	891	2
14-Nov	6998	71

Conclusion: Reducing testing when the positive cases and deaths are increasing reflects urgent need for change in strategy to save lives.

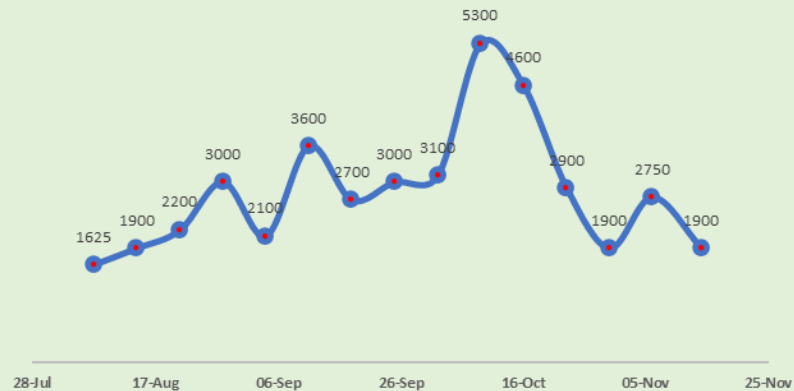
Manipur: Analysis of Average Daily COVID Cases, Testing, and Test Positivity Rate (TPR) during August - November

Week Ending ->	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	18-Sep	25-Sep	02-Oct	09-Oct	16-Oct	23-Oct	30-Oct	06-Nov	14-Nov
Avg Daily Cases	120	104	121	113	130	125	146	170	229	201	269	294	213	231	220
Avg Daily Testing	1625	1900	2200	3000	2100	3600	2700	3000	3100	5300	4600	2900	1900	2750	1900
Gross TPR	7	5	6	4	6	3	5	6	7	4	6	10	11	8	12
Remarks	Average daily cases has almost doubled due to poor quality and inconsistent testing														

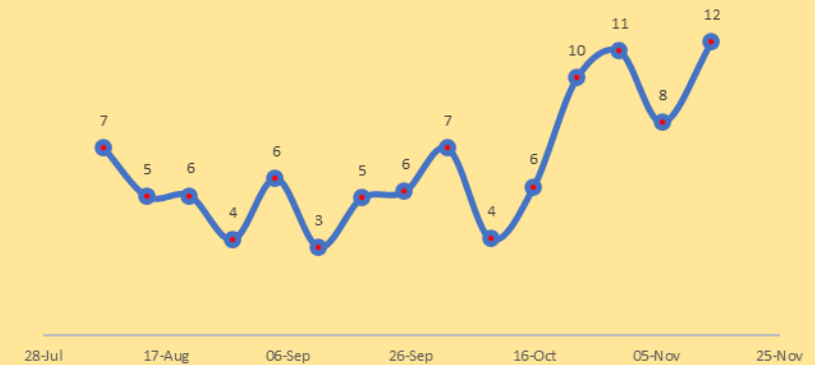
Manipur: Average Daily COVID Cases Pattern (August - November)



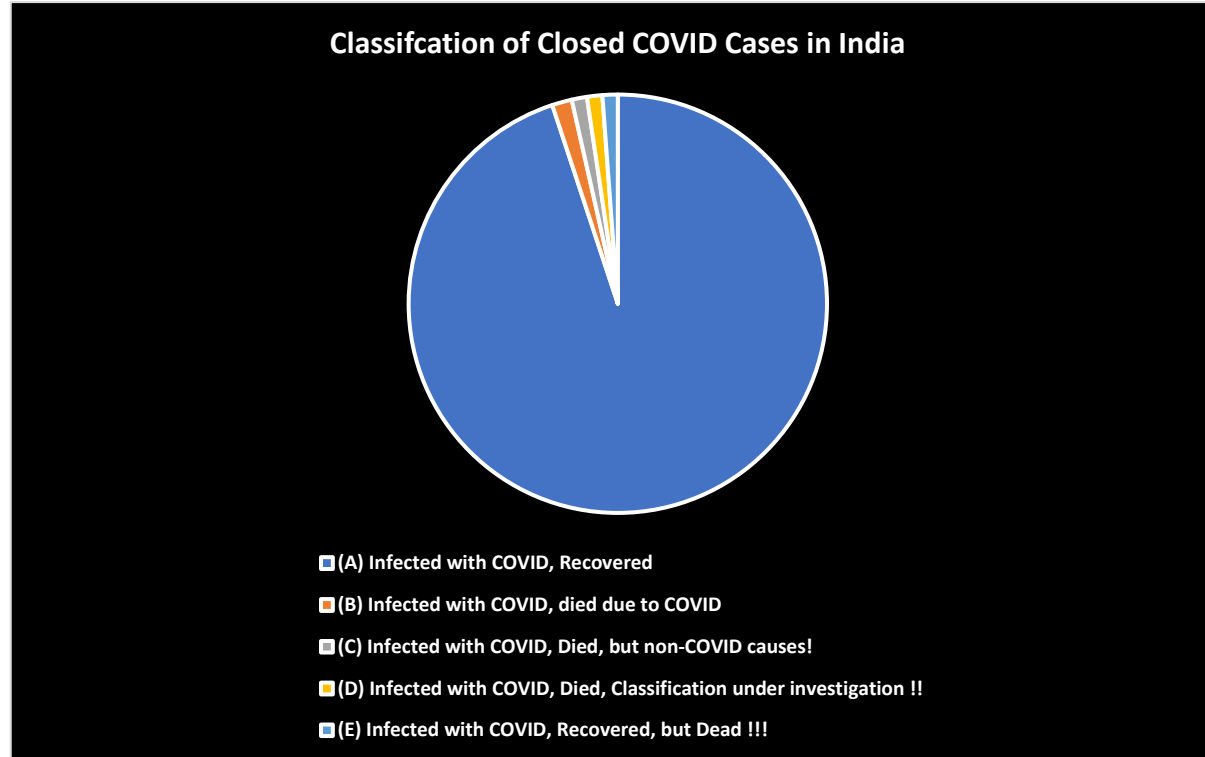
Manipur: Average Daily COVID Testing Pattern (August - November)



Manipur: Gross Test Positivity Rate (%) (August - November)

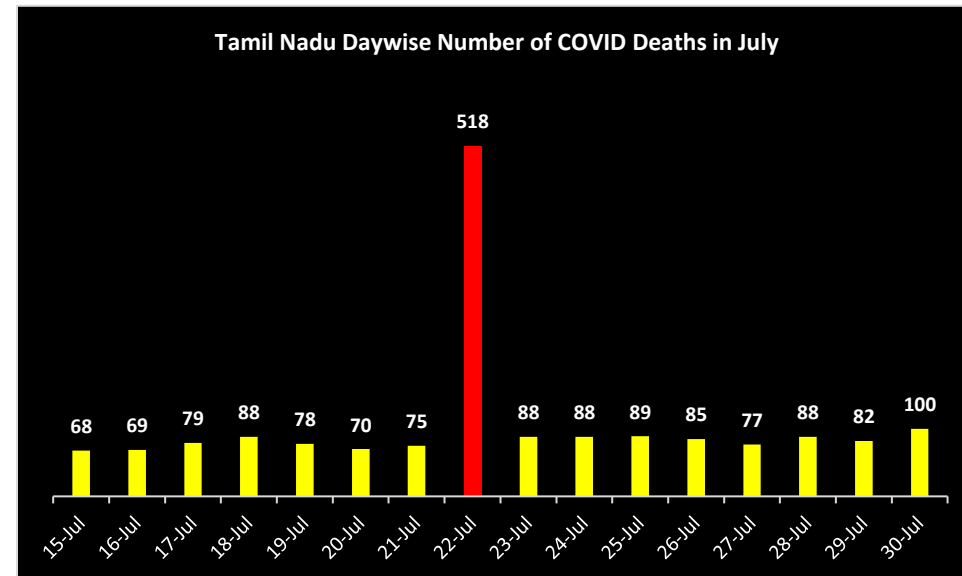
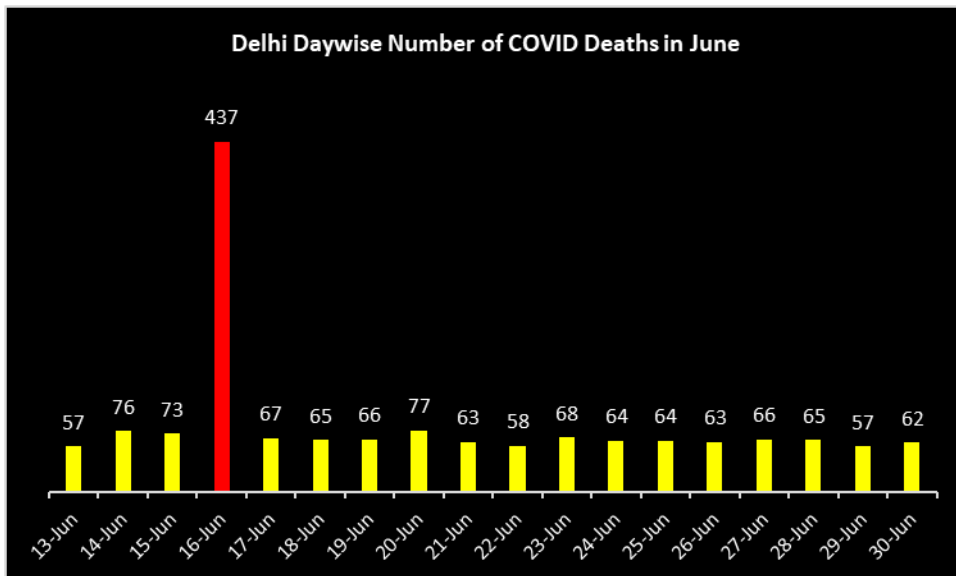
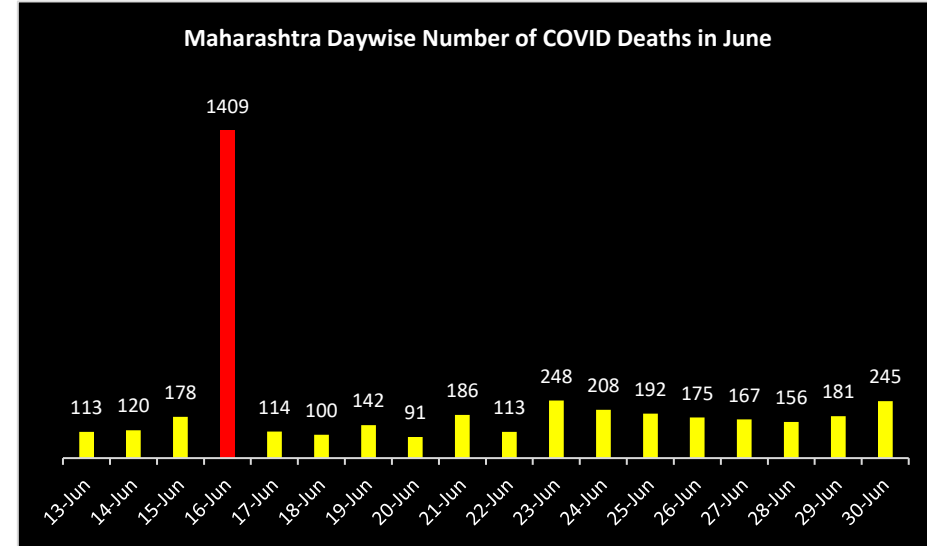
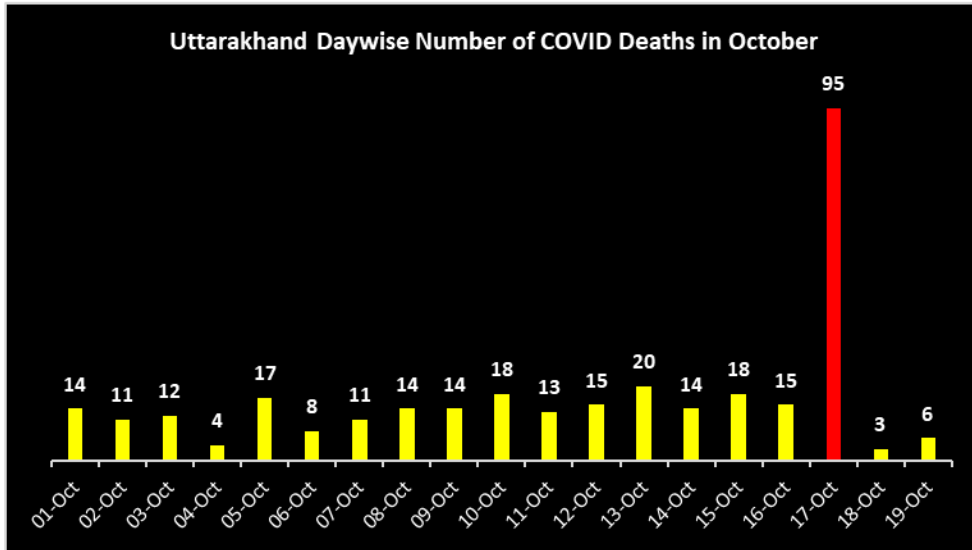


COVID Governance: Accounting of COVID Death Process need immediate streamlining



- Category A and B are official declaration of COVID recovery and deaths respectively
- COVID Deaths in Category – C, D, and E are yet to be accounted.

Sharp spike in Number of COVID Deaths on a single day is due to reconciliation of death toll



Kerala: Need to consider reconciling of COVID Deaths toll



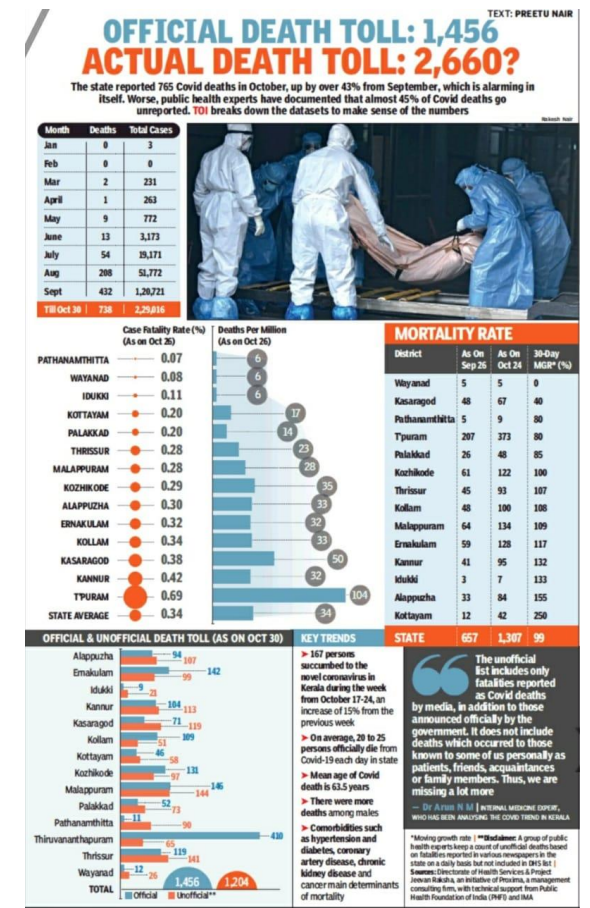
According to the media reports, the Government of Kerala point of view for not adding some of the deaths of COVID patients are as follows:

- COVID is not the cause of death in more than 30 % of people who test positive
- There is high chance of false positives and this step is being taken to rule out false positives. Family needn't live with the stigma that a person in the family died of COVID
- Almost every death is now being tested for Covid and majority of them have co-morbidities. They would have died of co-morbidities and not really Covid

0.6% of total population in India have tested positive till date and over 95% of them have fully recovered. There is no social stigma attached to it. It is a delusion.


A person is declared dead when the blood circulation and breathing, the two criteria necessary to sustain the lives of human beings and of many other organisms, ceases to function. Therefore there is no difference in the death process between COVID infected patients and non-COVID patients.

Ideally, all COVID infected patient death should be added to the official COVID death numbers. Kerala need to consider evaluating the option of reconciling the death numbers in line with other states such as Maharashtra, Delhi, and Tamil Nadu.



Karnataka: Need to revisit its methodology of reporting of COVID Deaths

Snapshot of COVID Deaths in Karnataka	
Total COVID Deaths as on 14th November	11529
Death of COVID positive patients due to Non-COVID deaths *^	1631
Total COVID Deaths in Karnataka as on 14th November	13160
<p>* For 59 days since 25 August, precisely 19 deaths are added daily in this category. Further, the number of deaths indicated in this category are excluded from the total declared number of COVID deaths in the state.</p>	
<p>^ A person is declared dead when the blood circulation and breathing, the two criteria necessary to sustain the lives of human beings and of many other organisms, ceases to function. Therefore there is no difference in the death process between COVID infected patients and non-COVID patients. Karnataka need to consider evaluating the option of reconciling the death numbers in line with other states such as Maharashtra, Delhi, and Tamil Nadu. Also, the Government could consider removing this category from the bulletin</p>	



GOVERNMENT OF KARNATAKA
DEPARTMENT OF HEALTH & FAMILY WELFARE
NOVEL CORONA VIRUS (COVID-19)
MEDIA BULLETIN


DATE: 15-11-2020

The first case of Novel Corona Virus infection, which has caused a pandemic resulting in catastrophic health implications and human miseries throughout the globe, was detected in state on 08.03.2020. It was a case of international traveler returning to Bengaluru Urban. Since then the state has relied on 5Ts of tracing, testing, tracking, treatment and technology to tackle COVID-19. A robust surveillance system with elaborate contingency plan is in place for limiting the spread of the disease.

1	Today's Discharges	2363
2	Total Discharges	822953
3	New Cases Reported (14.11.2020, 00:00 to 23:59)	1565
4	Total Active Cases	27146
5	New Covid Deaths	21
6	Total Covid Deaths	11529
7	Death of Covid Positive Patient due to Non-Covid cause	19
8	Total Positive Cases	861647
9	Admitted in ICU (among total active cases)	746
10	Positivity rate for the day (14.11.2020, 00:00 to 23:59)	1.57%
11	Case fatality rate (CFR) for the day (14.11.2020, 00:00 to 23:59)	1.34%

Particulars	Today's	Cumulative
A Total Passengers screened at Air ports	529*	234142
B Contacts traced in the last 14 days		
• Primary		188124
• Secondary		203225
C Persons in Home Quarantine in the last 07 days		38074

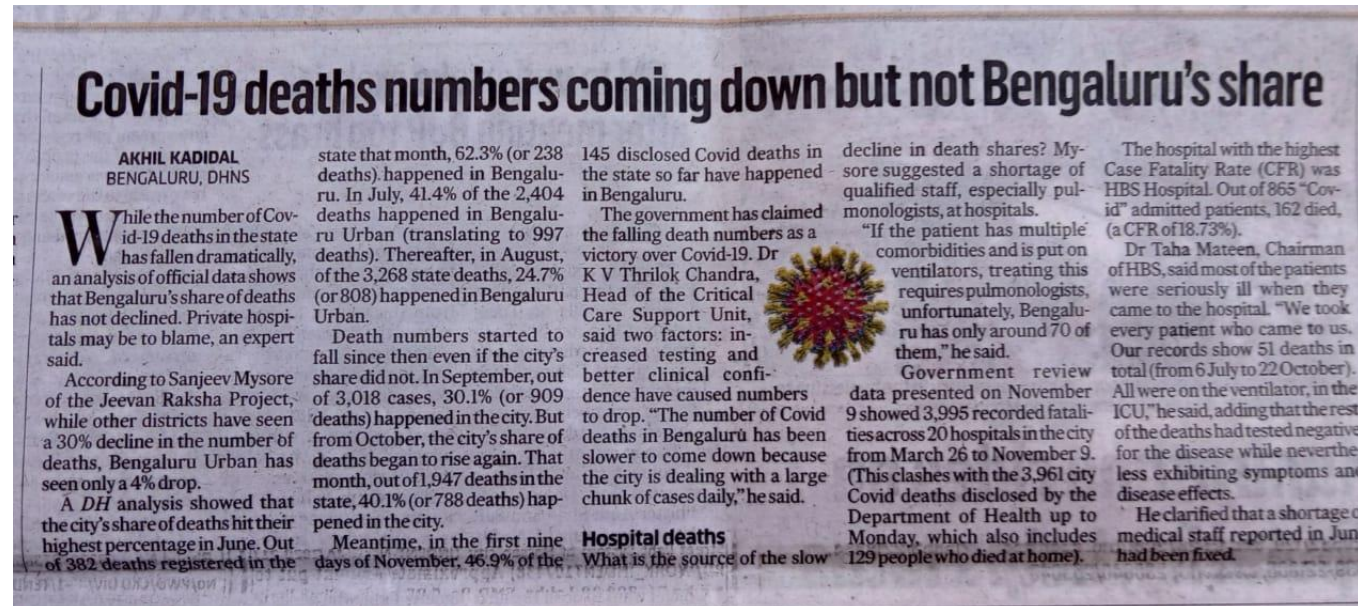
*Date: 14.11.2020.



Date: 15-11-2020 Page 1 of 12

According to Karnataka Government official published data,

@ HBS Hospital, Bengaluru, almost 1 in every 5 COVID patients admitted have died, but hospital denies



According to BBMP War room Notification dated 9th November: Total 865 COVID patients had got admitted at HBS Hospital, of which, **162 died**. The Case Fatality Rate is 18.73%, highest among all hospitals in Bengaluru.

"Most of the patients were seriously ill when they came to the hospital. We took every patients who came to us. **Our record shows 51 deaths in total** (from 6 July to 22 October). All were on the ventilator, in the ICU. The rest of the deaths had tested negative for the disease while nevertheless exhibiting symptoms and disease effects..." Dr Taha Mateen, Chairman, HBS Hospital

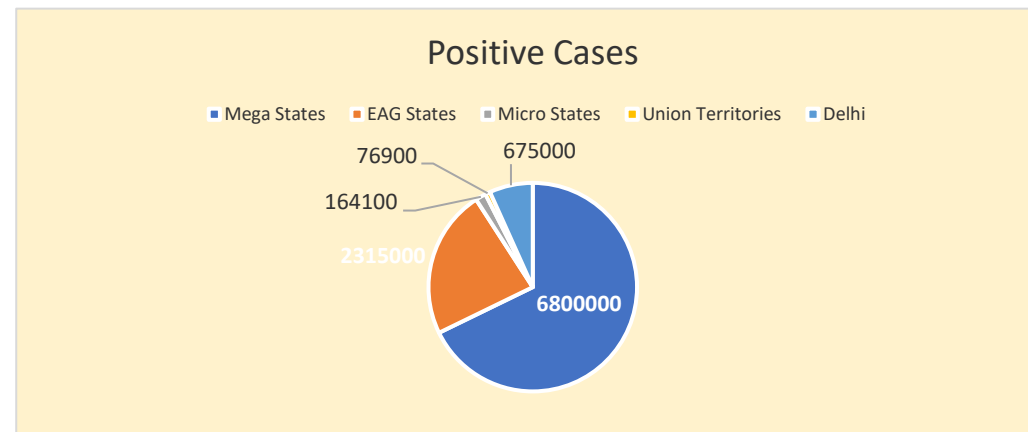
According to HBS Hospital, Out of 162 COVID patients who died in the hospital, 111 of them had tested Negative for COVID !!

Projection: 13 November – 12 December

The projection is an effort to help the Central and State Government to examine and initiate necessary steps by effectively mobilising the required resources and achieve the core objective of reducing mortality.

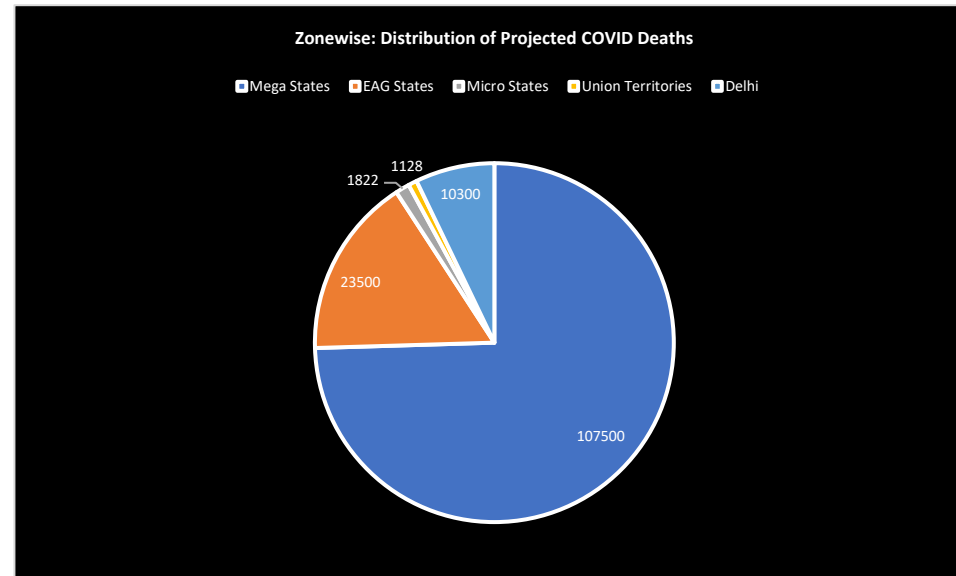
COVID 19: Positive Cases Projections: India and Zones

30-Day COVID Cases Growth Projection											
Consolidated	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge Actual of Projected	12-Nov		%ge Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projections	Actuals		Projections	Actuals		
Mega States	1852408	3245361	3279953	101	5229600	5002180	96	6503100	6025325	93	6800000
EAG States	538721	1146000	1065505	93	1765000	1681197	95	2115400	2027541	96	2315000
Micro States	32020	61400	66477	108	124700	113834	91	144100	142017	99	164100
Union Territories	15424	34200	35722	104	59200	57342	97	72400	66713	92	76900
Delhi	151928	185000	209748	113	330000	311188	94	400000	467028	117	675000
Total	2590501	4671961	4657405	100	7508500	7165741	95	9235000	8728624	95	10031000



COVID 19: Mortality Projections: India and Zones

30-Day COVID Mortality Projection											
Consolidated	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actuals		Projections	Actual		
Mega States	39610	68268	61242	90	91525	85942	94	103605	98276	95	107500
EAG States	5946	11325	10503	93	16950	16468	97	21480	20597	96	23500
Micro States	185	345	555	161	1067	1076	101	1665	1501	90	1822
Union Territories	170	389	539	139	1008	878	87	1110	1003	90	1128
Delhi	4188	4700	4687	100	5500	5809	106	7000	7332	105	10300
Total	50099	85027	77526	91	116050	110173	95	134860	128709	95	144250



Mega States: COVID 19: Statewise Positive Cases Projections

Mega States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projecti on	Actual		Projection	Actual		Projection s	Actual		
Andhra Pradesh	281817	580000	547686	94	875000	758951	87	900000	849705	94	900000
Gujarat	77663	100000	110971	111	150000	152764	102	190000	184964	97	220000
Haryana	46410	60000	88332	147	160000	143221	90	170000	193111	114	280000
Himachal Pradesh	3993	7000	8784	125	17000	17578	103	25000	28183	113	50000
Jammu & Kashmir	28021	50000	50712	101	100000	84031	84	100000	100968	101	120000
Karnataka	219926	450000	440411	98	700000	717915	103	1000000	855912	86	925000
Kerala	42885	90000	102255	114	200000	295133	148	660000	508257	77	660000
Maharashtra	584754	1000000	1015681	102	1750000	1535315	88	1875000	1736329	93	1850000
Punjab	30041	62000	74616	120	150000	124535	83	150000	139869	93	160000
Tamil Nadu	332105	520000	491571	95	675000	661264	98	820000	752521	92	810000
Telangana	91361	91361	152602	NA	152600	213084	NA	213100	254666	NA	290000
West Bengal	113432	235000	196332	84	300000	298389	99	400000	420840	105	535000
Total	1852408	3245361	3279953	101	5229600	5002180	96	6503100	6025325	93	6800000

Mega States: COVID 19: Statewise Mortality Mortality Projections



Mega States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actuals		Projections	Actual		
Andhra Pradesh	2562	6250	4779	76	7000	6256	89	7000	6837	98	7150
Gujarat	2765	3000	3181	106	3600	3577	99	3900	3785	97	3950
Haryana	528	700	932	133	1800	1592	88	2000	1979	99	2450
Himachal Pradesh	18	25	70	280	175	246	141	375	405	108	650
Jammu & Kashmir	527	1500	854	57	1300	1333	103	1700	1566	92	1800
Karnataka	3832	6700	7067	105	11200	10314	92	12800	11474	90	12000
Kerala	147	400	411	103	800	1026	128	2000	1797	90	2600
Maharashtra	19749	31000	28724	93	44000	40514	92	48000	45682	95	49000
Punjab	771	4000	2212	55	4800	3860	80	4800	4412	92	5200
Tamil Nadu	5641	9000	8234	91	10500	10314	98	12200	11440	94	12150
Telangana	693	693	950	137	950	1228	129	1230	1393	NA	1550
West Bengal	2377	5000	3828	77	5400	5682	105	7600	7506	99	9000
Total	39610	68268	61242	90	91525	85942	94	103605	98276	95	107500

EAG States: COVID 19: Statewise Positive Cases Projections

EAG States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actuals		Projections	Actual		
Assam	75559	165000	138339	84	215000	195304	NA	195400	209835	107	215000
Bihar	101906	225000	155445	69	200000	197000	99	230000	225500	98	245000
Chattisgarh	15045	25000	58643	235	145000	145247	100	225000	207740	92	265000
Jharkhand	22672	50000	59040	118	110000	93035	85	115000	105493	92	112000
Madhya Pradesh	44433	75000	83619	111	145000	148298	102	200000	180997	90	210000
Odisha	57126	120000	143117	119	250000	254662	102	335000	305986	91	335000
Rajasthan	59979	100000	99036	99	150000	161184	107	225000	219327	97	285000
Uttar Pradesh	150061	365000	299045	82	500000	439161	88	520000	505424	97	565000
Uttarakhand	11940	21000	29221	139	50000	47306	95	70000	67239	96	83000
Total	538721	1146000	1065505	93	1765000	1681197	95	2115400	2027541	96	2315000

EAG States: COVID 19: Statewise Mortality Projections

EAG States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actuals		Projections	Actual		
Assam	182	400	430	108	900	826	NA	830	958	115	1050
Bihar	515	1100	797	72	1100	955	87	1100	1167	106	1350
Chattisgarh	134	525	518	99	1600	1286	80	2350	2527	108	3100
Jharkhand	229	500	532	106	900	798	89	1000	917	92	1000
Madhya Pradesh	1094	1500	1691	113	2500	2645	106	3600	3065	85	3350
Odisha	386	800	658	82	1000	1093	109	1500	1536	102	2000
Rajasthan	862	1200	1207	101	1650	1665	101	2150	2032	95	2400
Uttar Pradesh	2393	5000	4282	86	6600	6438	98	7700	7302	95	8000
Uttarakhand	151	300	388	129	700	762	109	1250	1093	87	1250
Total	5946	11325	10503	93	16950	16468	97	21480	20597	96	23500

COVID 19: Micro States & UTs Positive Cases Projections

Micro States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actual		Projections	Actual		
Arunachal Pradesh	2658	4500	5825	129	11000	12367	112	19000	15701	83	17700
Goa	11339	23500	23445	100	45000	38674	86	51000	45605	89	50000
Manipur	4390	7500	7579	101	11000	13556	123	20000	21211	106	29000
Meghalaya	1292	2250	3447	153	6000	7771	130	12400	10512	85	13300
Mizoram	777	1600	1379	86	3700	2184	59	2600	3242	125	4300
Nagaland	3340	7000	4946	71	10000	7240	72	9500	9615	101	10300
Sikkim	1148	2000	2026	101	3000	3367	112	4600	4369	95	5500
Tripura	7076	12200	17830	146	35000	28675	82	25000	31762	127	34000
Total	32020	60550	66477	110	124700	113834	91	144100	142017	99	164100

Union Territories	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actual		Projections	Actual		
Andaman & Nicobar	2306	6500	3494	54	4500	4023	89	4400	4507	102	5000
Chandigarh	2009	3500	7292	208	17000	13264	78	15500	15543	100	18500
Dadra & Nagar Haveli	1846	3200	2682	84	3500	3167	90	3500	3273	94	4400
Ladakh	1909	3000	3228	108	4200	5151	123	7000	7211	103	10000
Puducherry	7354	18000	19026	106	30000	31737	106	42000	36179	86	39000
Total	15424	34200	35722	104	59200	57342	97	72400	66713	92	76900

COVID 19: Micro States & UTs Mortality Projections

Micro States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actual		Projections	Actual		
Goa	98	240	276	115	525	511	97	750	656	87	800
Tripura	55	60	182	303	375	314	84	400	356	89	400
Manipur	13	20	44	220	100	93	93	150	207	138	300
Nagaland	7	9	8	89	10	13	130	40	50	125	60
Arunachal Pradesh	5	7	10	143	12	24	200	85	47	55	60
Meghalaya	6	7	24	343	30	64	213	90	98	109	100
Sikkim	1	1	11	1100	15	57	380	150	85	57	100
Mizoram	0	1	0	0	0	0	0	0	2	#DIV/0!	2
Total	185	345	555	161	1067	1076	101	1665	1501	90	1822

Union Territories	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov		%ge og Actual of Projected	12 Dec Projections
	Actuals	Projection	Actual		Projection	Actual		Projections	Actual		
Puducherry	106	270	365	135	750	565	75	650	607	93	650
Ladakh	10	15	38	253	45	64	142	90	89	99	100
Dadra & Nagar Haveli	2	4	2	50	3	2	67	30	2	7	3
Chandigarh	28	50	83	166	150	192	128	250	244	98	300
Andaman & Nichobar	24	50	51	102	60	55	92	90	61	68	75
Total	170	389	539	139	1008	878	87	1110	1003	90	1128

Data source and disclaimer

1. The data collated and analysed based on secondary data. The primary sources are:
<https://www.mohfw.gov.in/> <https://www.covid19india.org/> www.google.com; www.wikipedia.org;
<https://www.worldometers.info/coronavirus/#countries>
2. Updated testing data of 4 mega cities (Ahmedabad, Bengaluru, Chennai, Delhi, and Mumbai) are available in the public domain. Whereas, updated testing data of Kolkata and Hyderabad is not to be found by our researchers. The analysis of average testing data has limitation with respect to data of 5 mega cities. Therefore, readers of this report need to factor the same for further inferences.
3. Information related to current status of Telangana and its districts are not available in the public domain. Therefore, readers of this report need to factor the same for further inferences.
4. The user of this presentation is advised to revalidate the shared data from authorised public institutions.

For more details, send email to:

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Thank you