

# COVID 19: Trend Analysis and Projection

**15 October 2020**

# Contents

- Proxima Pandemic & Epidemic Management System (PPMS)
- Proxima Virus Spread Assessment Matrix (VAM): Mapping of State & Union Territories
- Comparative Analysis : India and Nations having over 100K COVID Cases worldwide
- COVID 19: Global Mega Cities Performance Review
- Snapshot of Performance of Mega Cities in India
- Demystifying causes for Downward Trend Movement of COVID Cases in India
- Projection: COVID 19: Positive Cases and Mortality: 13 October – 12 November

**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



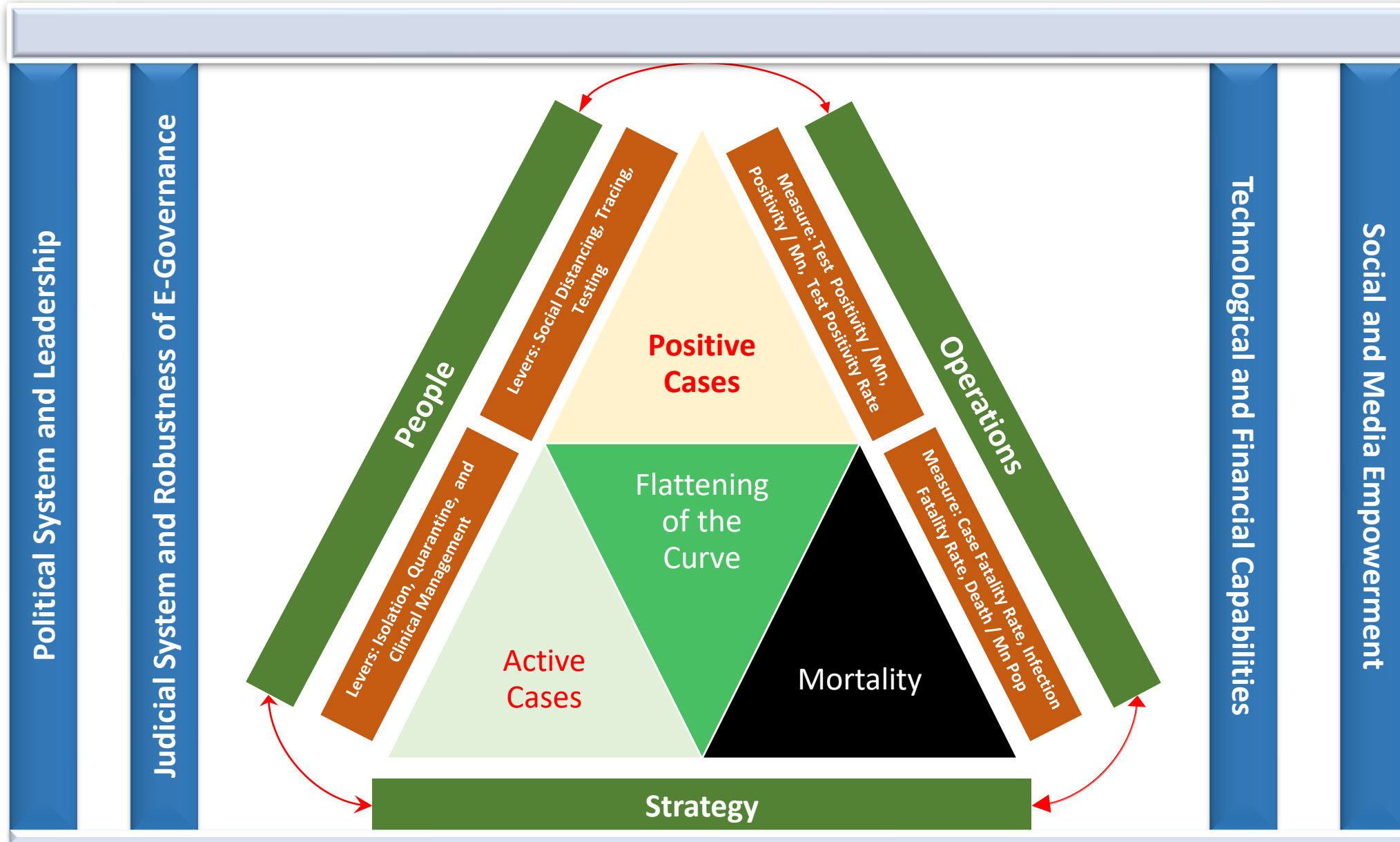
In an Pandemic / Epidemic, the virus spreads linearly and rapidly. The strategy to manage and flatten the growth of the virus depends on various systematic and unsystematic drivers.

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.

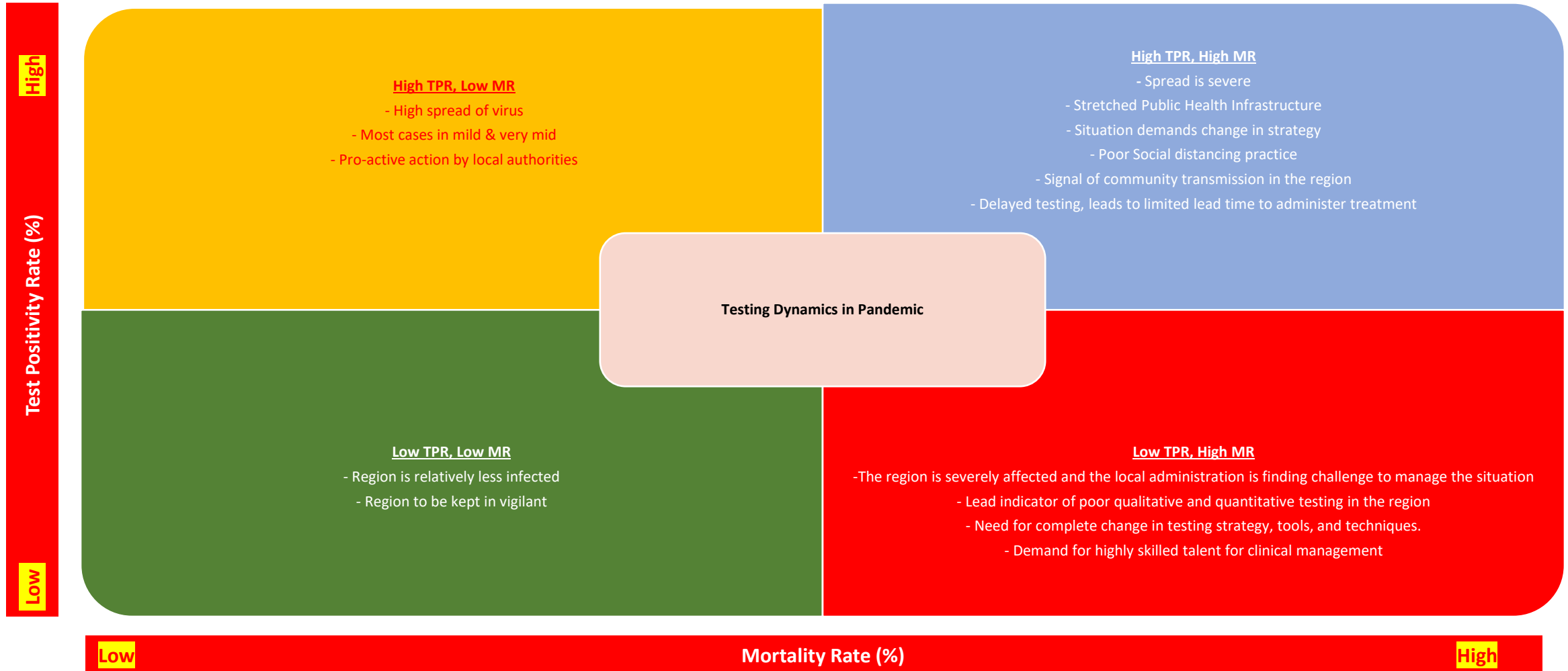
# Proxima Pandemic & Epidemic Management System (PPMS)

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# Proxima Virus Spread Assessment Matrix (VAM)

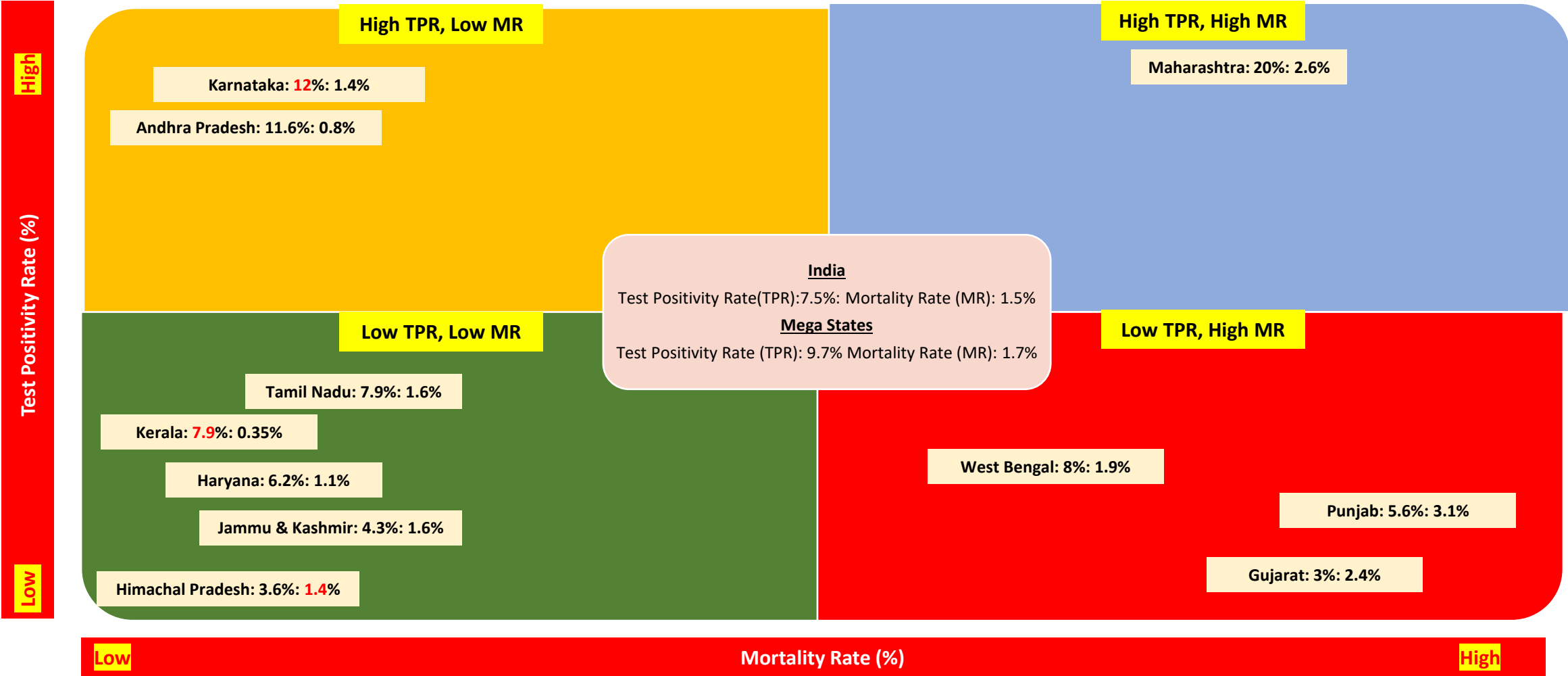
Each position in the matrix demands appropriate strategy and suitable competences to execute effectively





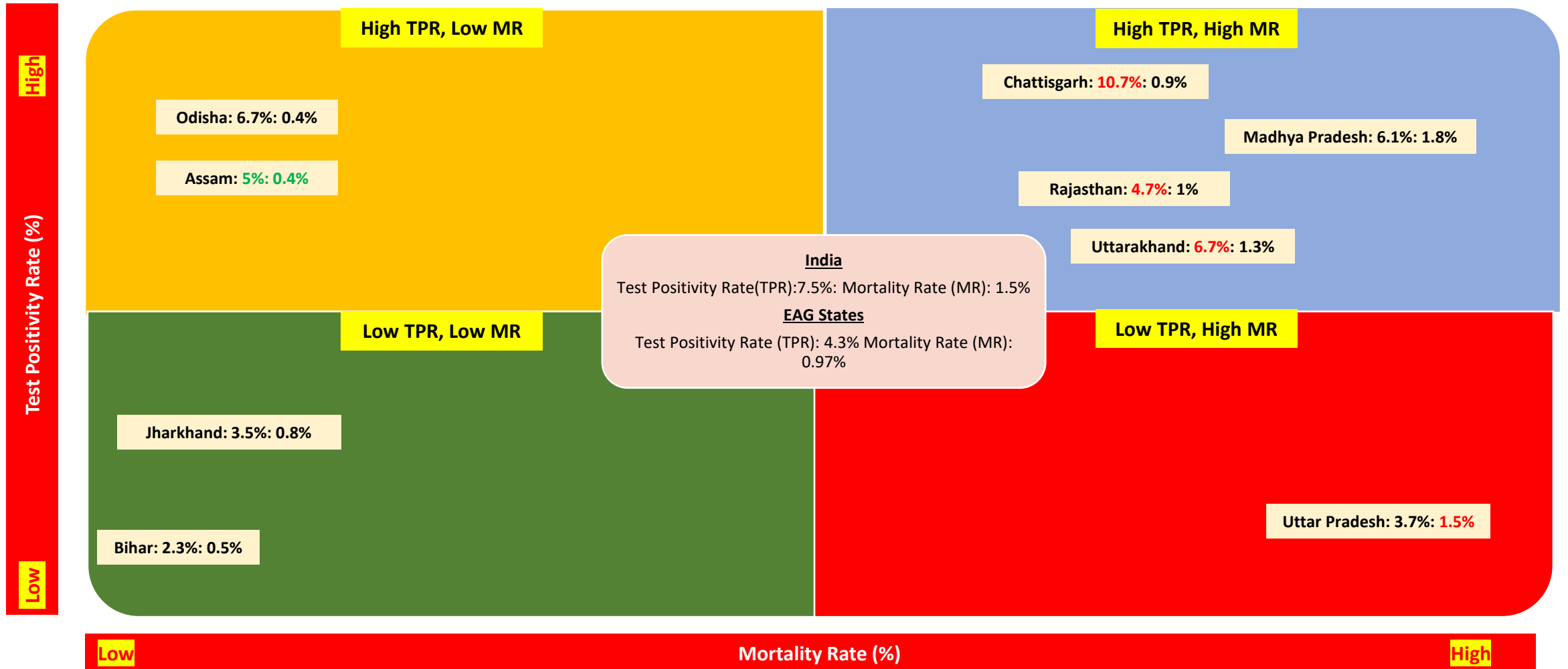
# Mega States: Virus Spread Assessment Matrix (VAM)

Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



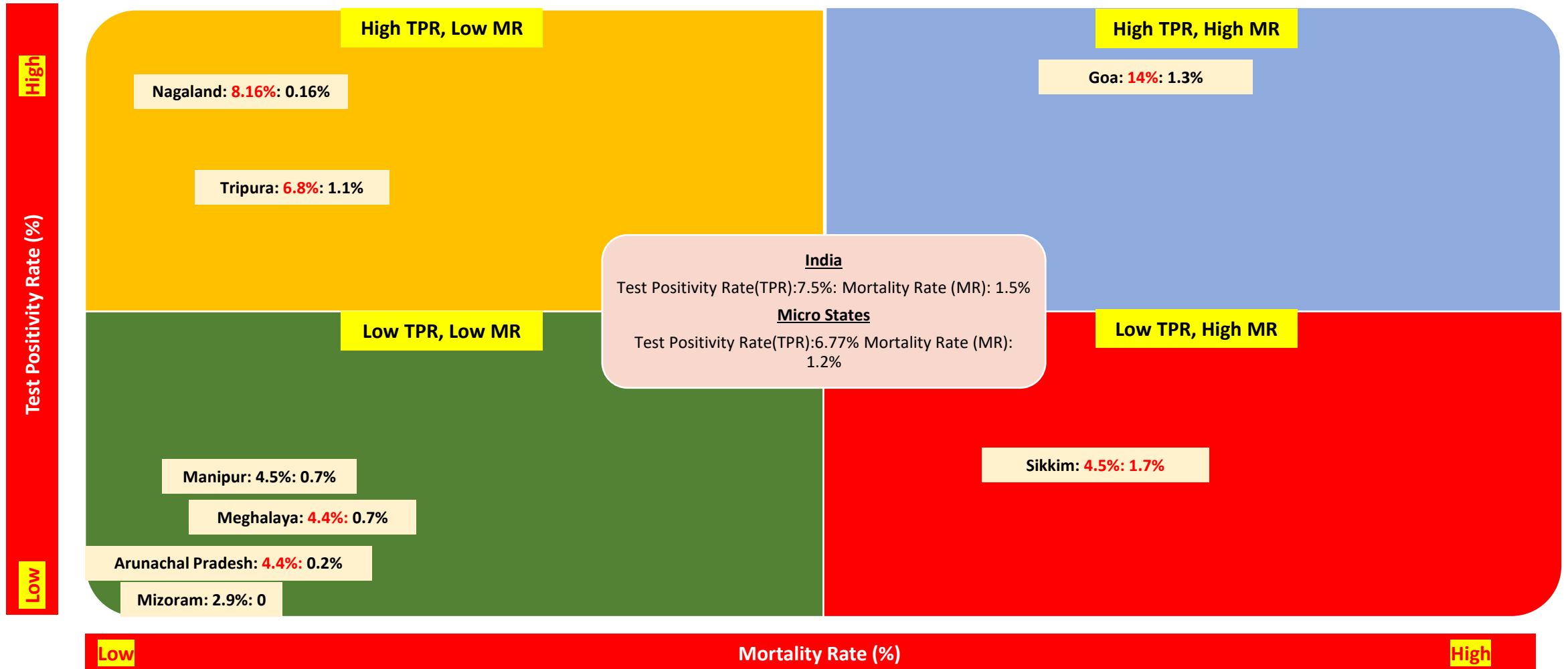
# EAG States: Virus Spread Assessment Matrix (VAM)

Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



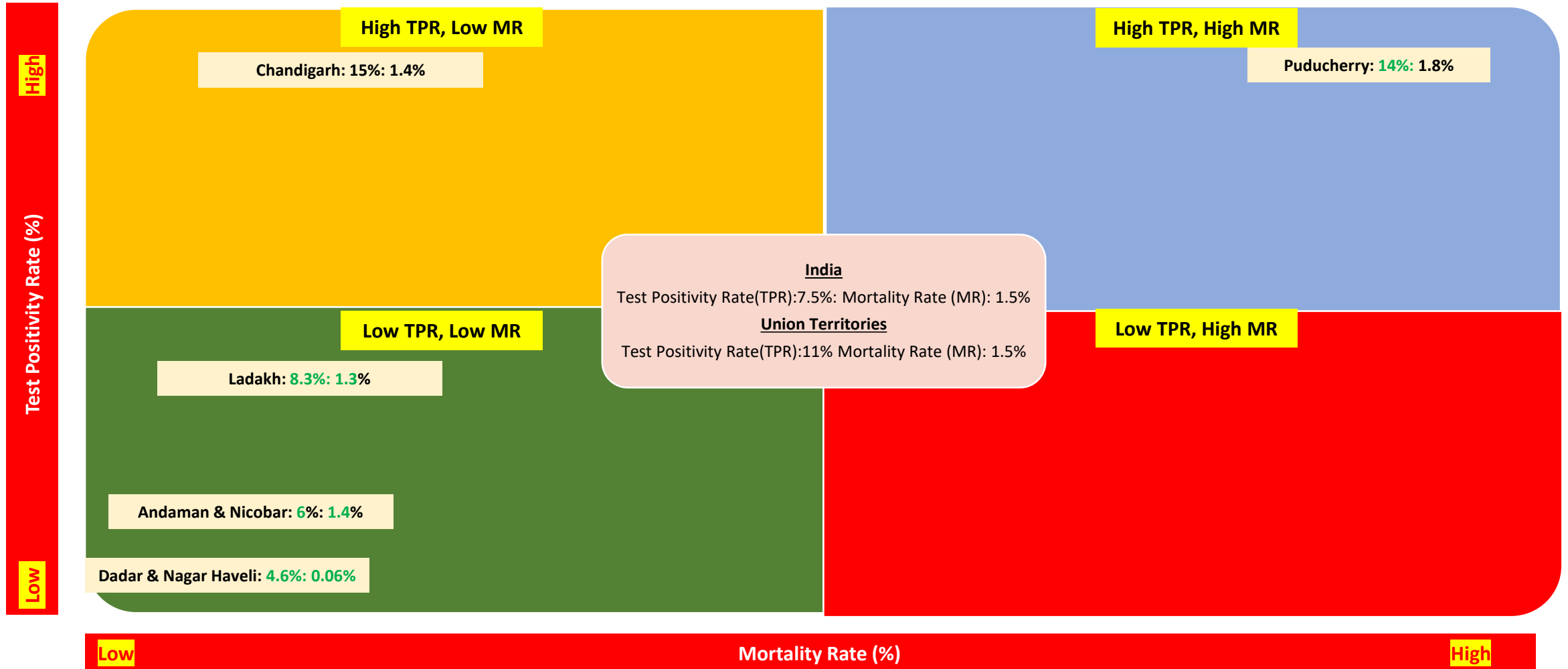
# MICRO States: Virus Spread Assessment Matrix (VAM)

Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



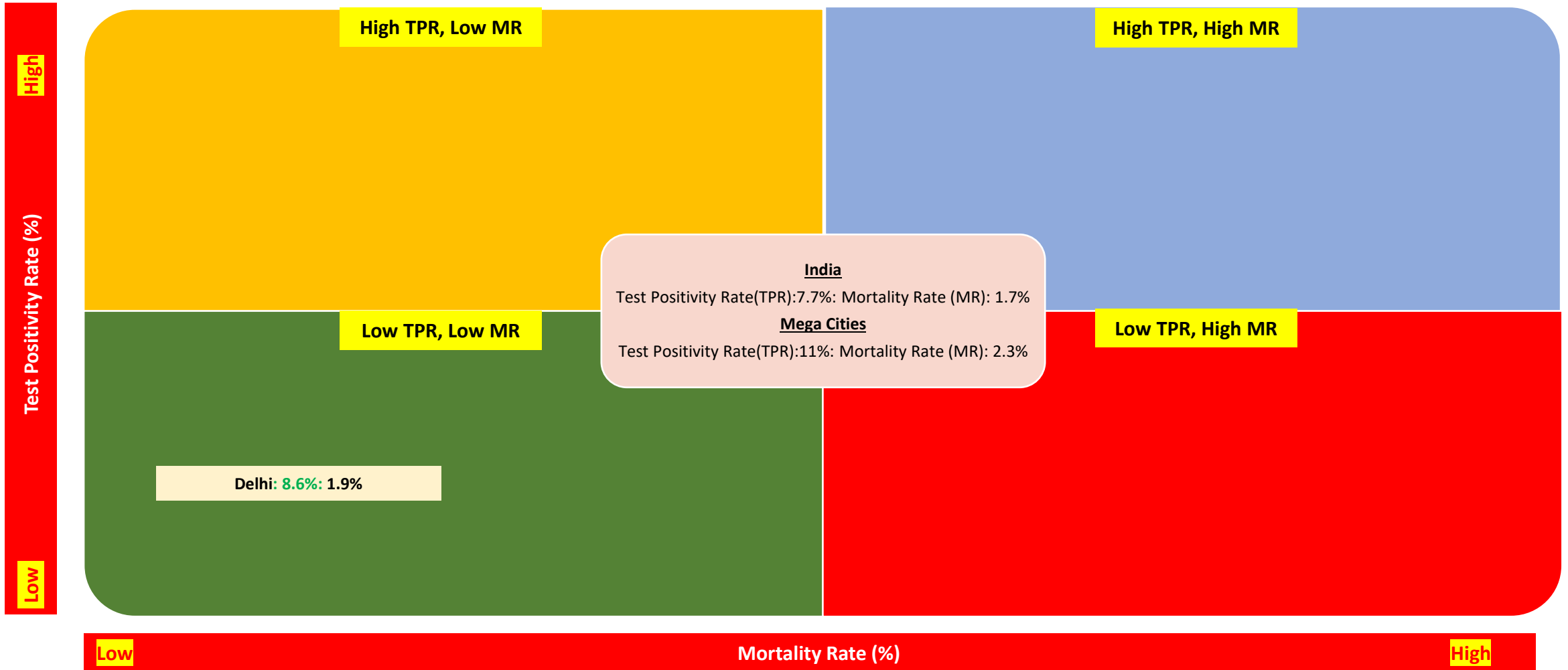
# Union Territories: Virus Spread Assessment Matrix (VAM)

Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



# Delhi: Virus Spread Assessment Matrix (VAM)

Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



# Comparative Analysis : India and Nations having over 100K COVID Cases worldwide



Ranking based on Test Positivity Rate (%)			
Rank	UNDP (Quality of Index Rank)	Country Name	TPR (%)
1	35	UAE	1.0
2	4	Germany	1.8
3	15	UK	2.2
4	13	Canada	2.2
5	49	Russia	2.6
6	29	Italy	2.8
7	59	Turkey	2.9
8	32	Poland	3.5
9	50	Kazakhstan	3.6
10	17	Belgium	4.4
11	36	Saudi Arabia	4.8
12	121	Morocco	5.3
13	52	Romania	5.9
14	26	France	6.0
15	25	Spain	6.3
16	15	USA	6.7
17	10	Netherlands	6.8
18	22	Israel	7.4
19	26	Czechia	7.6
20	129	India	8.1
21	152	Pakistan	8.2
22	106	Philippines	8.2
23	111	Indonesia	8.9
24	147	Nepal	9.4
25	88	Ukraine	10.4
26	65	Iran	11.6
27	42	Chile	12.9
28	57	Kuwait	14.2
29	41	Qatar	15.3
30	113	South Africa	15.7
31	120	Iraq	16.2
32	135	Bangladesh	18.2
33	82	Peru	20.8
34	79	Colombia	21.9
35	67	Panama	22.0
36	89	Dominican Republic	22.8
37	47	Oman	28.3
38	79	Brazil	28.5
39	85	Ecuador	31.5
40	76	Mexico	39.2
41	48	Argentina	40.4
42	114	Bolivia	44.0
43	116	Egypt	77.5

**India is rated 129<sup>th</sup> by UNDP on Quality of Health Index**

**India has relatively performed well so far when compared with other nations having better healthcare infrastructure**

Ranking based on Case Fatality Rate (%)			
Rank	UNDP (Quality of Index Rank)	Country Name	CFR (%)
1	41	Qatar	0.2
2	35	UAE	0.4
3	147	Nepal	0.6
4	57	Kuwait	0.6
5	22	Israel	0.7
6	26	Czechia	0.9
7	47	Oman	1.0
8	135	Bangladesh	1.5
9	36	Saudi Arabia	1.5
10	129	India	1.5
11	50	Kazakhstan	1.6
12	121	Morocco	1.7
13	49	Russia	1.7
14	89	Dominican Republic	1.8
15	106	Philippines	1.8
16	88	Ukraine	1.9
17	152	Pakistan	2.1
18	67	Panama	2.1
19	32	Poland	2.3
20	120	Iraq	2.4
21	113	South Africa	2.6
22	59	Turkey	2.6
23	48	Argentina	2.7
24	15	USA	2.7
25	42	Chile	2.8
26	4	Germany	2.9
27	79	Brazil	3.0
28	79	Colombia	3.0
29	52	Romania	3.5
30	111	Indonesia	3.5
31	25	Spain	3.6
32	10	Netherlands	3.6
33	82	Peru	3.9
34	26	France	4.4
35	13	Canada	5.3
36	65	Iran	5.7
37	116	Egypt	5.8
38	114	Bolivia	6.0
39	17	Belgium	6.2
40	15	UK	6.9
41	85	Ecuador	8.3
42	29	Italy	10.1
43	76	Mexico	10.2

**There are several districts in India which are having TPR and CFR more than the worst affected nations in the world.**

**District specific strategy and planning would yield better results**

Ranking based on Case Recovery Rate (%)			
Rank	UNDP (Quality of Index Rank)	Country Name	CRR (%)
1	41	Qatar	98
2	36	Saudi Arabia	96
3	50	Kazakhstan	96
4	152	Pakistan	95
5	42	Chile	94
6	116	Egypt	93
7	57	Kuwait	93
8	35	UAE	92
9	113	South Africa	90
10	79	Brazil	88
11	82	Peru	88
12	59	Turkey	88
13	47	Oman	87
14	85	Ecuador	87
15	79	Colombia	87
16	129	India	87
17	106	Philippines	86
18	13	Canada	84
19	4	Germany	84
20	121	Morocco	84
21	120	Iraq	84
22	22	Israel	82
23	65	Iran	81
24	48	Argentina	81
25	67	Panama	80
26	89	Dominican Republic	80
27	49	Russia	78
28	135	Bangladesh	78
29	111	Indonesia	77
30	52	Romania	76
31	114	Bolivia	73
32	76	Mexico	73
33	147	Nepal	69
34	29	Italy	67
35	15	USA	65
36	32	Poland	62
37	26	Czechia	48
38	88	Ukraine	43
39	26	France	14
40	17	Belgium	12
41	25	Spain	#VALUE!
42	15	UK	#VALUE!
43	10	Netherlands	#VALUE!

State	District	TPR
Himachal Pradesh	Lahaul and Spiti	40.4
Maharashtra	Raigad	30.7
Maharashtra	Satara	30.1
Maharashtra	Nashik	29.3
Maharashtra	Pune	24.7
Maharashtra	Gondia	24.5
Kerala	Palakkad	24.3
Maharashtra	Jalgaon	23.1

State	District	CFR
Punjab	Fatehgarh Sahib	4.7
Punjab	Sangrur	4.2
Punjab	Tarn Taran (Khadoor Sahib)	4.2
Punjab	Ludhiana	4.2
Punjab	Kapurthala	4.1

State	District	CRR
Kerala	Ernakulam	54
Kerala	Thrissur	57
Kerala	Palakkad	61
Kerala	Kollam	61
Kerala	Kannur	62
Himachal Pradesh	Kullu	62
Kerala	Kozhikode	62
Jammu & Kashmir	Poonch	62
Kerala	Kottayam	64
Gujarat	Aravalli	66

# Comparative Analysis : India and Nations having over 100K COVID Cases worldwide



**In Pandemic, Positivity is DIRECTLY proportional to the Testing.**

**Higher the Testing, Higher will be the number of Positive Cases.**

**Asian nations - India, Nepal, Philippines, Pakistan, Bangladesh, and other nations Testing / Mn Population are relatively low when compared with USA, Russia, Canada, Turkey, UAE, etc.**

**Due to LOW and SLOW testing, India's Positivity / Mn Population is also when compared with most of the affected nations**

Ranking based on Tests Per Million Population (%)			
Rank	UNDP (Quality of Index Rank)	Country Name	TPM (%)
1	35	UAE	1110099
2	22	Israel	434114
3	15	UK	409368
4	15	USA	360418
5	49	Russia	350740
6	17	Belgium	321923
7	25	Spain	312034
8	41	Qatar	298271
9	13	Canada	216505
10	4	Germany	216192
11	29	Italy	209314
12	36	Saudi Arabia	201929
13	42	Chile	194607
14	26	France	189767
15	57	Kuwait	183923
16	50	Kazakhstan	161649
17	10	Netherlands	154950
18	26	Czechia	149808
19	52	Romania	139713
20	59	Turkey	138678
21	67	Panama	126636
22	82	Peru	123641
23	32	Poland	97612
24	79	Brazil	84043
25	79	Colombia	82338
26	121	Morocco	78249
27	113	South Africa	74236
28	47	Oman	73255
<b>29</b>	<b>129</b>	<b>India</b>	<b>64275</b>
30	120	Iraq	61958
31	88	Ukraine	59614
32	65	Iran	51496
33	48	Argentina	49424
34	89	Dominican Republic	47995
35	147	Nepal	40690
36	106	Philippines	37896
37	114	Bolivia	26914
38	85	Ecuador	26376
39	152	Pakistan	17628
40	76	Mexico	16189
41	111	Indonesia	13859
42	135	Bangladesh	12620
43	116	Egypt	1312

Ranking based on Positivity Per Million Population (%)			
Rank	UNDP (Quality of Index Rank)	Country Name	PPM (%)
1	116	Egypt	1017
2	111	Indonesia	1227
3	152	Pakistan	1440
4	135	Bangladesh	2299
5	106	Philippines	3117
6	32	Poland	3442
7	147	Nepal	3821
8	4	Germany	3948
9	59	Turkey	3985
10	121	Morocco	4152
11	13	Canada	4832
<b>12</b>	<b>129</b>	<b>India</b>	<b>5187</b>
13	50	Kazakhstan	5780
14	29	Italy	5950
15	65	Iran	5982
16	88	Ukraine	6198
17	76	Mexico	6349
18	52	Romania	8195
19	85	Ecuador	8314
20	49	Russia	8991
21	15	UK	9085
22	36	Saudi Arabia	9713
23	120	Iraq	10018
24	10	Netherlands	10586
25	35	UAE	10812
26	89	Dominican Republic	10925
27	26	Czechia	11332
28	26	France	11383
29	113	South Africa	11649
30	114	Bolivia	11836
31	17	Belgium	14295
32	79	Colombia	18009
33	25	Spain	19637
34	48	Argentina	19944
35	47	Oman	20725
36	79	Brazil	23961
37	15	USA	24243
38	42	Chile	25200
39	82	Peru	25715
40	57	Kuwait	26093
41	67	Panama	27875
42	22	Israel	32078
43	41	Qatar	45655

Ranking based on Deaths Per Million Population (%)			
Rank	UNDP (Quality of Index Rank)	Country Name	DPM (%)
1	147	Nepal	22
2	152	Pakistan	30
3	135	Bangladesh	34
4	111	Indonesia	44
5	35	UAE	45
6	106	Philippines	58
7	116	Egypt	59
8	121	Morocco	71
9	41	Qatar	78
<b>10</b>	<b>129</b>	<b>India</b>	<b>79</b>
11	32	Poland	80
12	50	Kazakhstan	93
13	26	Czechia	98
14	59	Turkey	105
15	4	Germany	116
16	88	Ukraine	117
17	36	Saudi Arabia	145
18	57	Kuwait	155
19	49	Russia	156
20	89	Dominican Republic	200
21	47	Oman	203
22	22	Israel	220
23	120	Iraq	245
24	13	Canada	254
25	52	Romania	285
26	113	South Africa	300
27	65	Iran	342
28	10	Netherlands	385
29	26	France	502
30	48	Argentina	534
31	79	Colombia	548
32	67	Panama	577
33	29	Italy	599
34	15	UK	631
35	76	Mexico	649
36	15	USA	664
37	85	Ecuador	690
38	42	Chile	698
39	79	Brazil	708
40	25	Spain	708
41	114	Bolivia	711
42	17	Belgium	880
43	82	Peru	1008

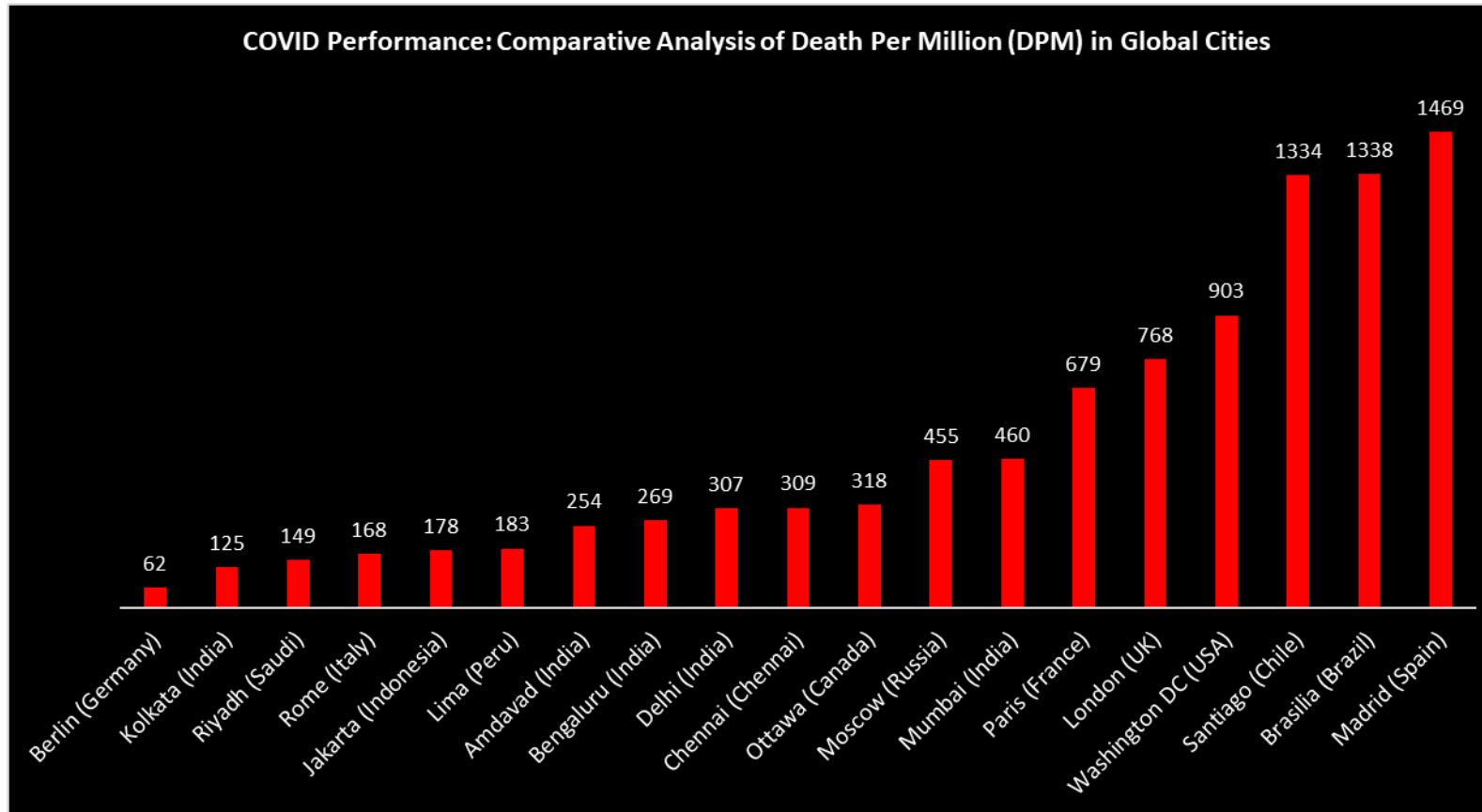
State	District	DPM
West Bengal	Darjeeling	66916
Maharashtra	Pune	33313
West Bengal	Kalimpong	23136
Maharashtra	Raigad	20997
Andhra Pradesh	East Godavari	20438
Gujarat	Chhota Udaipur	20099

State	District	DPM
West Bengal	Darjeeling	894
Maharashtra	Pune	659
Maharashtra	Raigad	508
Maharashtra	Nagpur	493
Maharashtra	Thane	467
Maharashtra	Sangli	465
Maharashtra	Satara	415

# COVID 19: Global Cities Performance Review

## UNDP: Quality of Health Ranking

Germany:	4
Canada:	13
UK:	15
USA:	15
Spain:	25
France:	26
Italy:	29
Saudi:	36
Chile:	42
Peru:	82
Indonesia:	111
<b>India:</b>	<b>129</b>



India's Containment as well as Clinical Management Performance in next 4-6 weeks would determine the severity of the impact



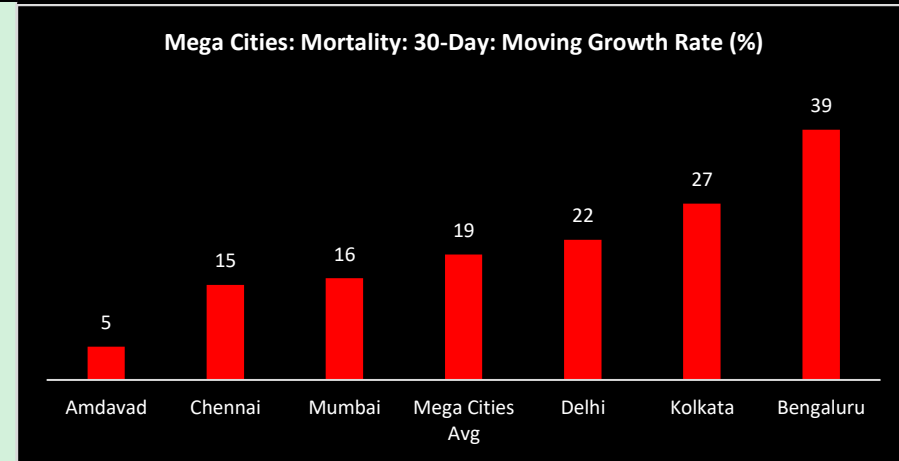
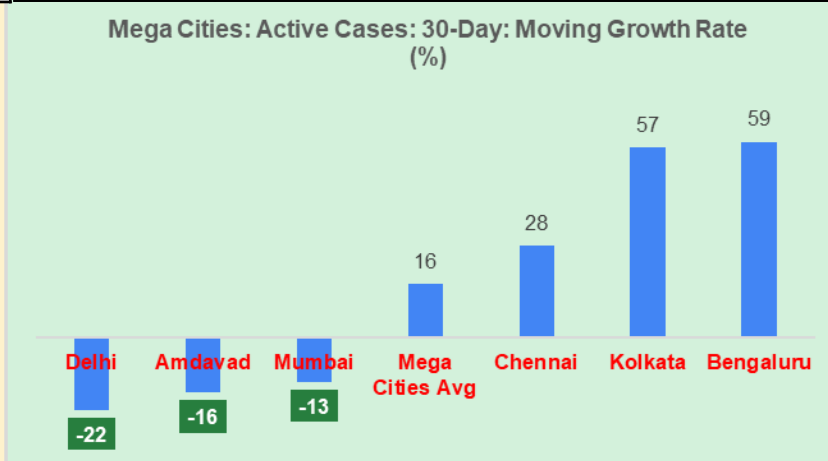
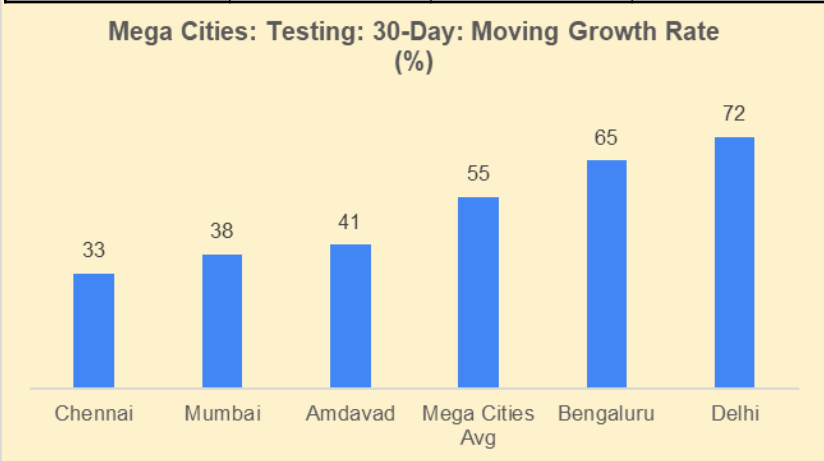
# Mega Cities: Snapshot

- Delhi:** Carried out 15 lacs tests during the period, 44% of total tests conducted by Mega cities. Successful in reducing active cases by over 6K. Good performance.
- Bengaluru:** In spite of ramping up testing by 65%, Active cases surges by 24K. Mortality has also surged by 39%.
- Chennai:** Active Cases surges by 30%. DPM increases to 309, second highest after Mumbai.
- Kolkata:** Active cases surges by 57%. Testing number not disclosed, but increase in number indicates weak containment process
- Mumbai:** Active cases goes down. Good news for both, India and Maharashtra.
- Amdavad:** Relatively in better position on all parameters.

Mega Cities	12-Sep	10-Oct	Change
Delhi	2080000	3570000	1490000
Bengaluru	1190000	1960000	770000
Amdavad	980000	1380000	400000
Chennai	1100000	1460000	360000
Mumbai	890000	1230000	340000
<b>Total</b>	<b>6210000</b>	<b>9600000</b>	<b>3390000</b>

Mega Cities	12-Sep	10-Oct	Change
Delhi	28059	22007	-6052
Mumbai	29176	25352	-3824
Amdavad	4233	3542	-691
Kolkata	4151	6513	2362
Chennai	10648	13580	2932
Bengaluru	40929	64911	23982
<b>Total</b>	<b>117196</b>	<b>135905</b>	<b>18709</b>

Mega Cities	12-Sep	10-Oct	Change
Amdavad	1754	1845	91
Kolkata	1461	1861	400
Chennai	2956	3393	437
Bengaluru	2391	3320	929
Delhi	4715	5740	1025
Mumbai	8109	9391	1282
<b>Total</b>	<b>21386</b>	<b>25550</b>	<b>4164</b>



# Demystifying Downward Trend Movement of COVID Cases in India

1/5 of the total global COVID cases are in India. During the last 4 weeks, global COVID cases trend and India's COVID cases trend moved in opposite directions. Globally, the daily average cases increased by 18%, from 2.7 lacs to 3.2 lacs. Whereas, India's daily average cases decreased by -15%, from 85,000 / day cases to 72,000 / day cases.

Data Analysts and Researchers of Proxima consulting analysed the last 4 weeks testing and positivity pattern in India.

## **Principle:**

In a pandemic when Test Positivity Rate (TPR) of a region is above 5%, the number of positive cases will be directly proportional to the number of testing in a normal condition. Higher the qualitative testing, higher will be the positive cases, vice-versa.

## **Conclusion:**

In August, the 7-Day Moving Growth Rate of Testing was consistent in the range of 18 – 20%. This resulted in increase in daily average number of cases from 64,021 to 92,602.

However, between 01 Sept – 10 October, the 7-Day Moving Growth Rate of Testing halved from 18% to 9%. This resulted in decrease in daily average number of cases from 92,602 to 72,014

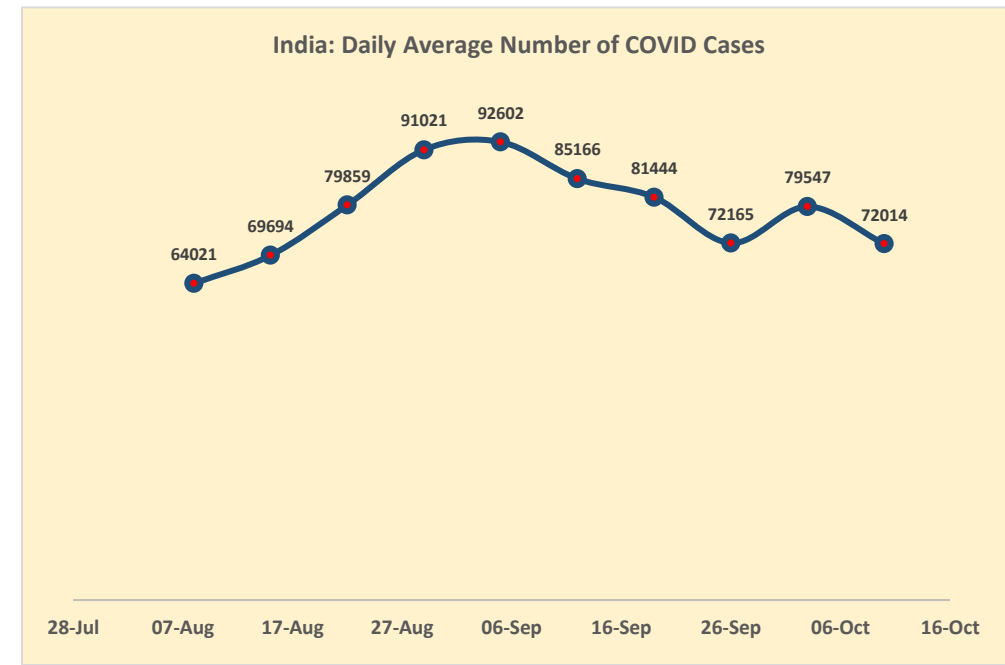
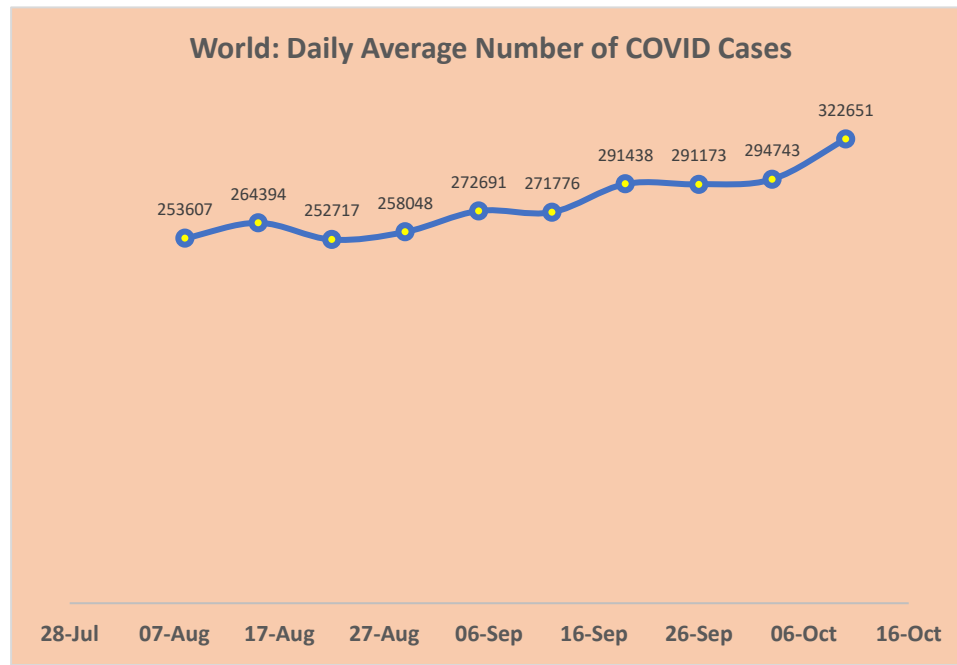
Further, there is a strong correlation between national and state / UTs testing and positivity trend.

## **Risk factors:**

Due to deceleration of testing efforts, India's as well as most of the state TPR continues to be high. There is high probability of increase in number of non-tested infected people moving freely in the country and spreading the virus.

# COVID 19: India & Global COVID Average Daily Cases Analysis

- Since mid of September, globally the average daily number of cases started moving UPWARDS, during the same period, India's daily number of cases started moving DOWNWARDS, opposite direction
- Onset of 2nd or subsequent surges or waves is the result of poor containment management as well as ease of restrictions imposed on people movement.
  - As the UNLOCK mechanism reaches the advance stage, if the containment management is not good enough to block the spread of virus then the surge of positives cases is likely to occur. This is evident with recent trends of France, Italy, UK, Delhi, etc.,

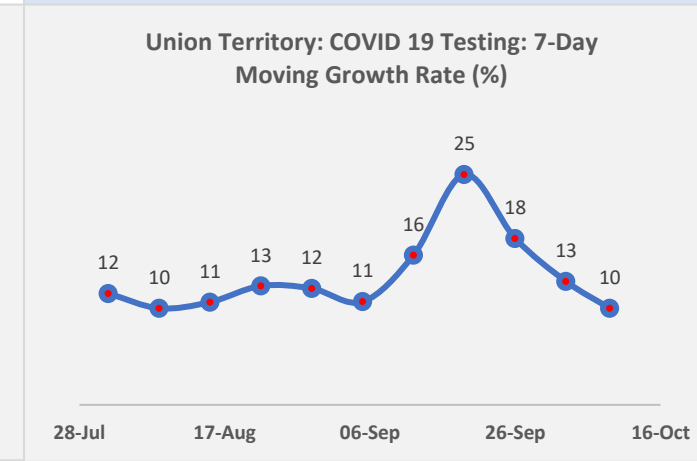
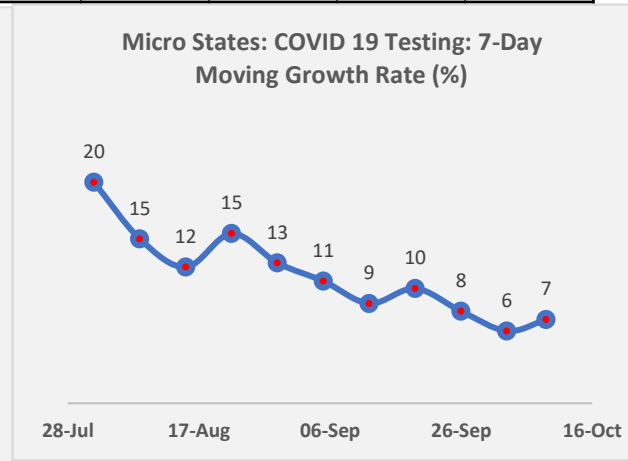
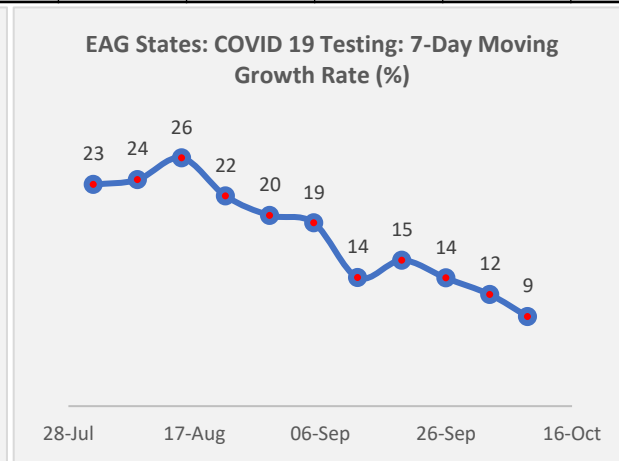
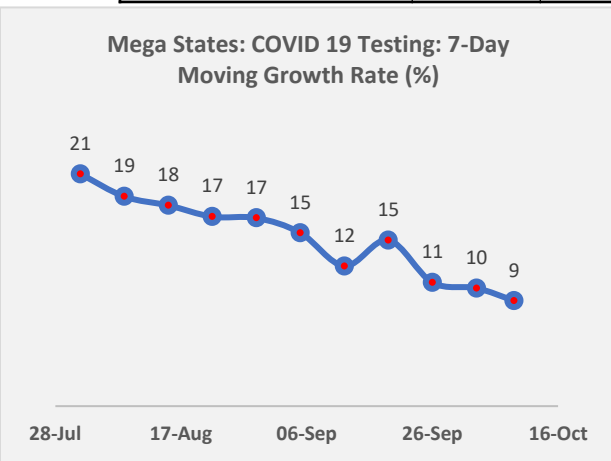
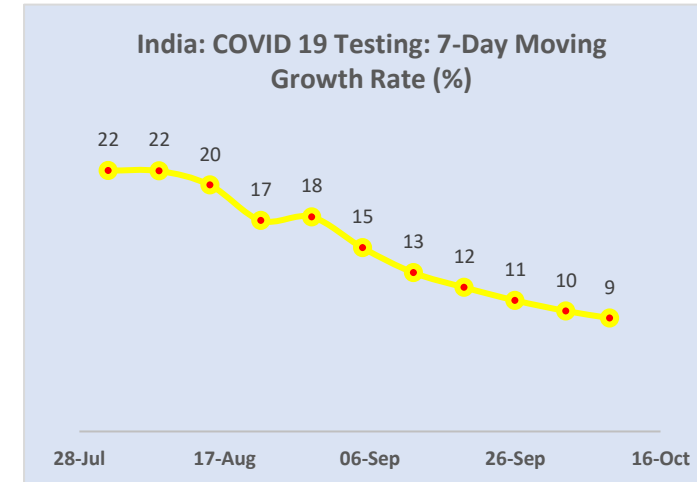


# Testing Pattern: Deceleration: 7-Day MGR Trend

- Since mid of September, all most all states in India reduced the rate of increase of testing. This resulted in relative reduction in number of testing leading to drop in number of new cases.

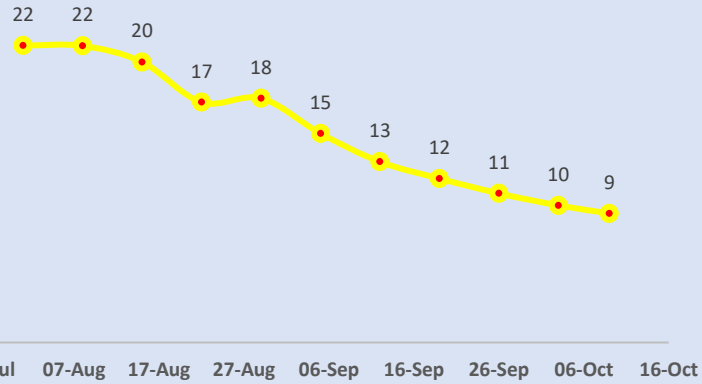
India: COVID Testing										
01-Aug	08-Aug	15-Aug	22-Aug	29-Aug	05-Sep	12-Sep	19-Sep	26-Sep	03-Oct	10-Oct
19821831	24106535	29309703	35292220	41461636	48831145	56260928	63661060	71257836	78992534	86877242

Testing: 7 Day: Moving Growth Rate (%)											
State	01-Aug	08-Aug	15-Aug	22-Aug	29-Aug	05-Sep	12-Sep	19-Sep	26-Sep	03-Oct	09-Oct
Pan India	21	22	22	20	17	18	15	13	12	11	10
EAG States	23	24	26	22	20	19	14	15	14	12	9
Mega States	21	19	18	17	17	15	12	15	11	10	9
Micro States	20	15	12	15	13	11	9	10	8	6	7
Union Territories	12	10	11	13	12	11	16	25	18	13	10



# Correlation Analysis of Testing MGR and Daily Average COVID cases

India: COVID 19 Testing: 7-Day Moving Growth Rate (%)

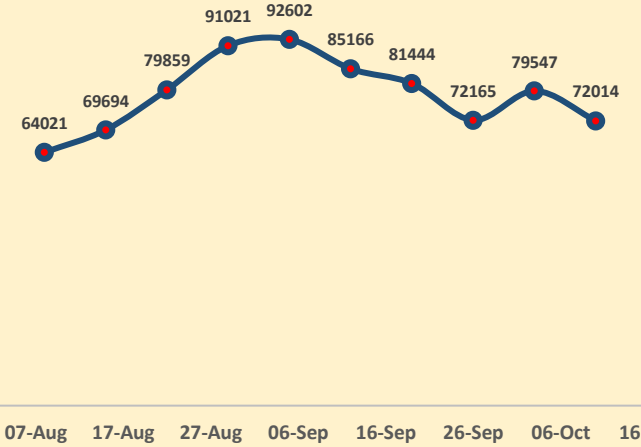


The pattern clearly indicates that, since first week of September, the growth rate of testing has reduced from 18% to 9% on 10<sup>th</sup> October.

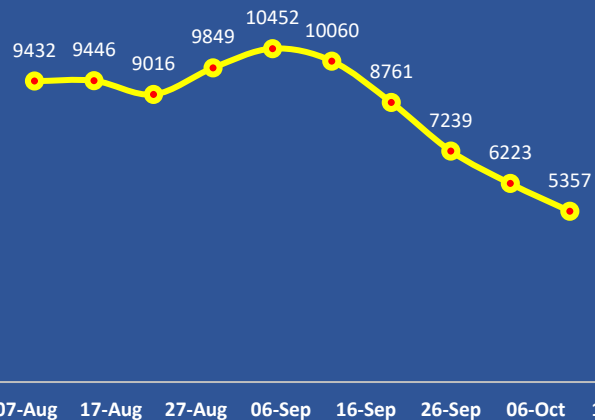
This result in drop in India's daily average number of COVID cases from peak of 92602 to 72014.

The same pattern is visible in case study states – Andhra Pradesh, Maharashtra, and Uttar Pradesh

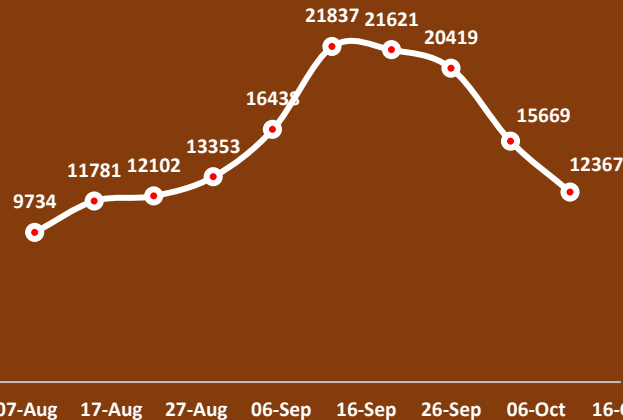
India: Daily Average Number of COVID Cases



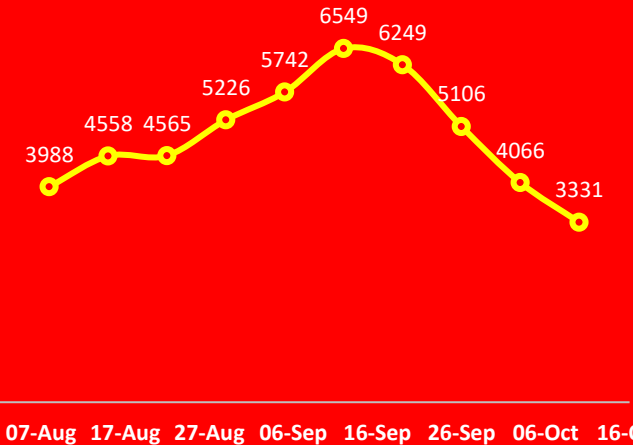
Andhra Pradesh: Daily Average Number of COVID Cases



Maharashtra: Daily Average Number of COVID Cases



Uttar Pradesh: Daily Average Number of COVID Cases



# State / UTs: Testing: 7-Day Moving Growth Rate (MGR) Pattern

## Unmoved Test Positivity Rate

Neither India's TPR or State's TPR has reduced for over 10 weeks.

This clearly indicates that, the prevalence of VIRUS spread continues to be high in India.

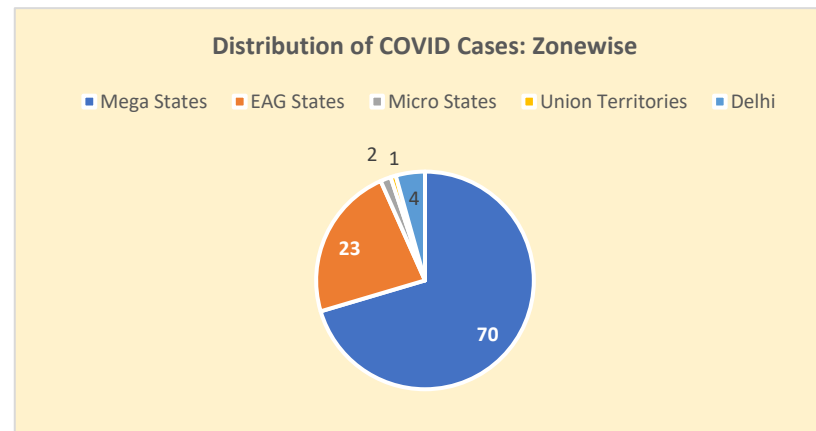
Testing: 7 Day: Moving Growth Rate (%)											
State	01-Aug	08-Aug	15-Aug	22-Aug	29-Aug	05-Sep	12-Sep	19-Sep	26-Sep	03-Oct	09-Oct
Andaman & Nichobar	12	9	5	5	9	18	10	20	10	10	11
Andhra Pradesh	26	20	16	13	13	12	10	13	10	9	8
Arunachal Pradesh	49	21	17	15	14	14	10	10	8	7	7
Assam	22	41	30	16	12	13	8	9	7	17	6
Bihar	30	64	70	45	28	30	21	18	22	13	9
Chandigarh	15	20	20	20	18	18	32	33	20	11	7
Chattisgarh	15	13	13	15	17	17	16	21	13	12	15
Dadra & Nagar Haveli	7	2	4	11	6	5	3	4	6	3	5
Delhi	13	11	11	9	10	13	16	23	15	12	11
Goa	9	11	11	10	8	8	5	6	5	5	4
Gujarat	27	21	32	34	30	23	16	19	12	10	8
Haryana	17	16	14	14	17	15	13	15	11	9	9
Himachal Pradesh	14	10	9	8	10	7	7	9	8	7	6
Jammu & Kashmir	13	9	11	9	10	11	12	16	12	10	8
Jharkhand	21	22	20	23	32	48	22	27	21	16	11
Karnataka	21	20	19	19	17	18	12	14	10	13	13
Kerala	22	21	20	20	19	11	12	16	14	14	14
Ladakh	13	11	10	9	17	2	29	9	10	16	8
Madhya Pradesh	15	12	16	14	14	13	9	10	8	8	12
Maharashtra	19	21	17	15	12	14	11	14	10	10	8
Manipur	11	16	14	14	16	13	10	11	10	8	17
Meghalaya	12	12	5	70	19	11	15	20	8	8	12
Mizoram	8	4	17	25	20	15	5	25	23	13	6
Nagaland	15	15	13	11	7	9	7	5	6	5	4
Odisha	18	20	35	44	35	23	13	17	13	11	9
Puducherry	16	15	17	16	15	14	15	41	27	18	13
Punjab	14	11	15	17	16	14	14	16	12	11	10
Rajasthan	13	10	11	10	9	7	6	9	7	5	5
Sikkim	22	18	8	12	10	6	3	5	5	5	3
Tamil Nadu	19	16	15	14	13	12	10	12	10	9	8
Telangana	36	29	24	22	42	32	25	17	15	13	11
Tripura	26	15	11	10	11	10	11	9	7	5	4
Uttar Pradesh	37	24	23	20	21	19	14	16	13	12	11
Uttarakhand	24	19	25	18	25	18	13	18	12	10	11
West Bengal	16	18	19	19	18	17	12	16	11	10	9

# Projection: 13 October – 12 November

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

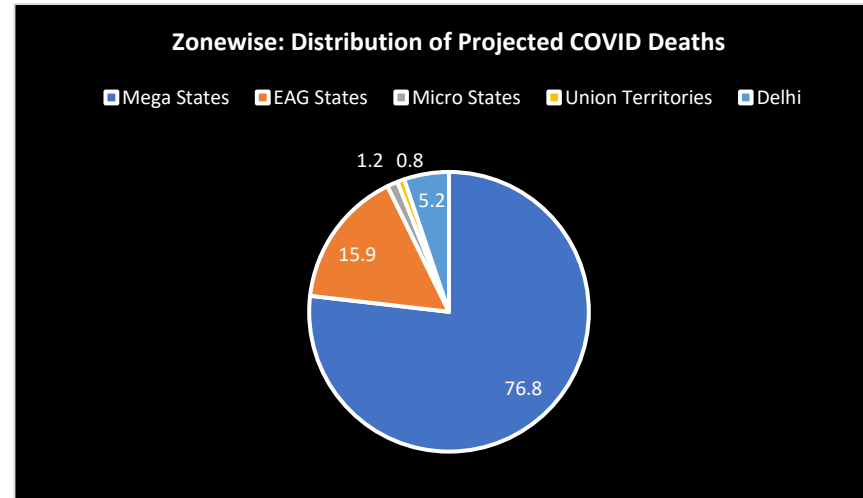
30-Day COVID Cases Growth Projection								
Consolidated	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge Actual of Projected	12 Nov Projections
	Actuals	Projection	Actual		Projections	Actuals		
Mega States	1852408	3245361	3279953	101	5229600	5002180	96	<b>6503100</b>
EAG States	538721	1146000	1065505	93	1765000	1681197	95	<b>2115400</b>
Micro States	32020	61400	66477	108	124700	113834	91	<b>144100</b>
Union Territories	15424	34200	35722	104	59200	57342	97	<b>72400</b>
Delhi	151928	185000	209748	113	330000	311188	94	<b>400000</b>
<b>Total</b>	<b>2590501</b>	<b>4671961</b>	<b>4657405</b>	<b>100</b>	<b>7508500</b>	<b>7165741</b>	<b>95</b>	<b>9235000</b>





# 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
	Actuals	Projection	Actual		Projection	Actuals		Projections
Mega States	39610	68268	61242	90	91525	85942	94	<b>103605</b>
EAG States	5946	11325	10503	93	16950	16468	97	<b>21480</b>
Micro States	185	345	555	161	1067	1076	101	<b>1665</b>
Union Territories	170	389	539	139	1008	878	87	<b>1110</b>
Delhi	4188	4700	4687	100	5500	5809	106	<b>7000</b>
<b>Total</b>	<b>50099</b>	<b>85027</b>	<b>77526</b>	<b>91</b>	<b>116050</b>	<b>110173</b>	<b>95</b>	<b>134860</b>



# 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
	Actuals	Projection	Actual		Projection	Actual		Projections
Andhra Pradesh	281817	580000	547686	94	875000	758951	87	<b>900000</b>
Gujarat	77663	100000	110971	111	150000	152764	102	<b>190000</b>
Haryana	46410	60000	88332	147	160000	143221	90	<b>170000</b>
Himachal Pradesh	3993	7000	8784	125	17000	17578	103	<b>25000</b>
Jammu & Kashmir	28021	50000	50712	101	100000	84031	84	<b>100000</b>
Karnataka	219926	450000	440411	98	700000	717915	103	<b>1000000</b>
Kerala	42885	90000	102255	114	200000	295133	148	<b>660000</b>
Maharashtra	584754	1000000	1015681	102	1750000	1535315	88	<b>1875000</b>
Punjab	30041	62000	74616	120	150000	124535	83	<b>150000</b>
Tamil Nadu	332105	520000	491571	95	675000	661264	98	<b>820000</b>
Telangana *	91361	91361	152602	NA	152600	213084	NA	<b>213100</b>
West Bengal	113432	235000	196332	84	300000	298389	99	<b>400000</b>
<b>Total</b>	<b>1852408</b>	<b>3245361</b>	<b>3279953</b>	101	5229600	<b>5002180</b>	96	<b>6503100</b>

# Mega States: COVID 19: Statewise Mortality Projections

Mega States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov
	Actuals	Projection	Actual		Projection	Actuals		Projections
Andhra Pradesh	2562	6250	4779	76	7000	6256	89	<b>7000</b>
Gujarat	2765	3000	3181	106	3600	3577	99	<b>3900</b>
Haryana	528	700	932	133	1800	1592	88	<b>2000</b>
Himachal Pradesh	18	25	70	280	175	246	141	<b>375</b>
Jammu & Kashmir	527	1500	854	57	1300	1333	103	<b>1700</b>
Karnataka	3832	6700	7067	105	11200	10314	92	<b>12800</b>
Kerala	147	400	411	103	800	1026	128	<b>2000</b>
Maharashtra	19749	31000	28724	93	44000	40514	92	<b>48000</b>
Punjab	771	4000	2212	55	4800	3860	80	<b>4800</b>
Tamil Nadu	5641	9000	8234	91	10500	10314	98	<b>12200</b>
Telangana	693	693	950	NA	950	1228	NA	<b>1230</b>
West Bengal	2377	5000	3828	77	5400	5682	105	<b>7600</b>
<b>Total</b>	<b>39610</b>	<b>68268</b>	<b>61242</b>	<b>90</b>	<b>91525</b>	<b>85942</b>	<b>94</b>	<b>103605</b>

# 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
	Actuals	Projection	Actual		Projection	Actuals		Projections
Assam*	75559	165000	138339	84	215000	195304	NA	<b>195400</b>
Bihar	101906	225000	155445	69	200000	197000	99	<b>230000</b>
Chattisgarh	15045	25000	58643	235	145000	145247	100	<b>225000</b>
Jharkhand	22672	50000	59040	118	110000	93035	85	<b>115000</b>
Madhya Pradesh	44433	75000	83619	111	145000	148298	102	<b>200000</b>
Odisha	57126	120000	143117	119	250000	254662	102	<b>335000</b>
Rajasthan	59979	100000	99036	99	150000	161184	107	<b>225000</b>
Uttar Pradesh	150061	365000	299045	82	500000	439161	88	<b>520000</b>
Uttarakhand	11940	21000	29221	139	50000	47306	95	<b>70000</b>
<b>Total</b>	538721	1146000	1065505	93	1765000	<b>1681197</b>	95	<b>2115400</b>

# 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
	Actuals	Projection	Actual		Projection	Actuals		Projections
Assam	182	400	430	108	900	826	NA	<b>830</b>
Bihar	515	1100	797	72	1100	955	87	<b>1100</b>
Chattisgarh	134	525	518	99	1600	1286	80	<b>2350</b>
Jharkhand	229	500	532	106	900	798	89	<b>1000</b>
Madhya Pradesh	1094	1500	1691	113	2500	2645	106	<b>3600</b>
Odisha	386	800	658	82	1000	1093	109	<b>1500</b>
Rajasthan	862	1200	1207	101	1650	1665	101	<b>2150</b>
Uttar Pradesh	2393	5000	4282	86	6600	6438	98	<b>7700</b>
Uttarakhand	151	300	388	129	700	762	109	<b>1250</b>
<b>Total</b>	<b>5946</b>	<b>11325</b>	<b>10503</b>	<b>93</b>	<b>16950</b>	<b>16468</b>	<b>97</b>	<b>21480</b>

## EAG States: 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
	Actuals	Projection	Actual		Projection	Actual		Projections
Arunachal Pradesh	2658	4500	5825	129	11000	12367	112	19000
Goa	11339	23500	23445	100	45000	38674	86	51000
Manipur	4390	7500	7579	101	11000	13556	123	20000
Meghalaya	1292	2250	3447	153	6000	7771	130	12400
Mizoram	777	1600	1379	86	3700	2184	59	2600
Nagaland	3340	7000	4946	71	10000	7240	72	9500
Sikkim	1148	2000	2026	101	3000	3367	112	4600
Tripura	7076	12200	17830	146	35000	28675	82	25000
<b>Total</b>	<b>32020</b>	<b>60550</b>	<b>66477</b>	<b>110</b>	<b>124700</b>	<b>113834</b>	<b>91</b>	<b>144100</b>

Union Territories	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov
	Actuals	Projection	Actual		Projection	Actual		Projections
Andaman & Nichobar	2306	6500	3494	54	4500	4023	89	4400
Chandigarh	2009	3500	7292	208	17000	13264	78	15500
Dadra & Nagar Haveli	1846	3200	2682	84	3500	3167	90	3500
Ladakh	1909	3000	3228	108	4200	5151	123	7000
Puducherry	7354	18000	19026	106	30000	31737	106	42000
<b>Total</b>	<b>15424</b>	<b>34200</b>	<b>35722</b>	<b>104</b>	<b>59200</b>	<b>57342</b>	<b>97</b>	<b>72400</b>

# EAG States: 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
	Actuals	Projection	Actual		Projection	Actual		Projections
Goa	98	240	276	115	525	511	97	750
Tripura	55	60	182	303	375	314	84	400
Manipur	13	20	44	220	100	93	93	150
Nagaland	7	9	8	89	10	13	130	40
Arunachal Pradesh	5	7	10	143	12	24	200	85
Meghalaya	6	7	24	343	30	64	213	90
Sikkim	1	1	11	1100	15	57	380	150
Mizoram	0	1	0	0	0	0	0	0
<b>Total</b>	<b>185</b>	<b>345</b>	<b>555</b>	<b>161</b>	<b>1067</b>	<b>1076</b>	<b>101</b>	<b>1665</b>

Union Territories	16-Aug	12-Sep		%ge Actual of Projected	12-Oct		%ge og Actual of Projected	12-Nov
	Actuals	Projection	Actual		Projection	Actual		Projections
Puducherry	106	270	365	135	750	565	75	650
Ladakh	10	15	38	253	45	64	142	90
Dadra & Nagar Haveli	2	4	2	50	3	2	67	30
Chandigarh	28	50	83	166	150	192	128	250
Andaman & Nichobar	24	50	51	102	60	55	92	90
<b>Total</b>	<b>170</b>	<b>389</b>	<b>539</b>	<b>139</b>	<b>1008</b>	<b>878</b>	<b>87</b>	<b>1110</b>

## 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](http://www.google.com); [www.wikipedia.org](http://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**