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Value Innovation in Action

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COVID 19: Trend Analysis and Projection

15 September 2020

A Public-Private Partnership Initiative

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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)**

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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

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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

Until Medical science finds the cure, Management Science can reduce the severity by applying appropriate techniques

Proxima Pandemic & Epidemic Management System

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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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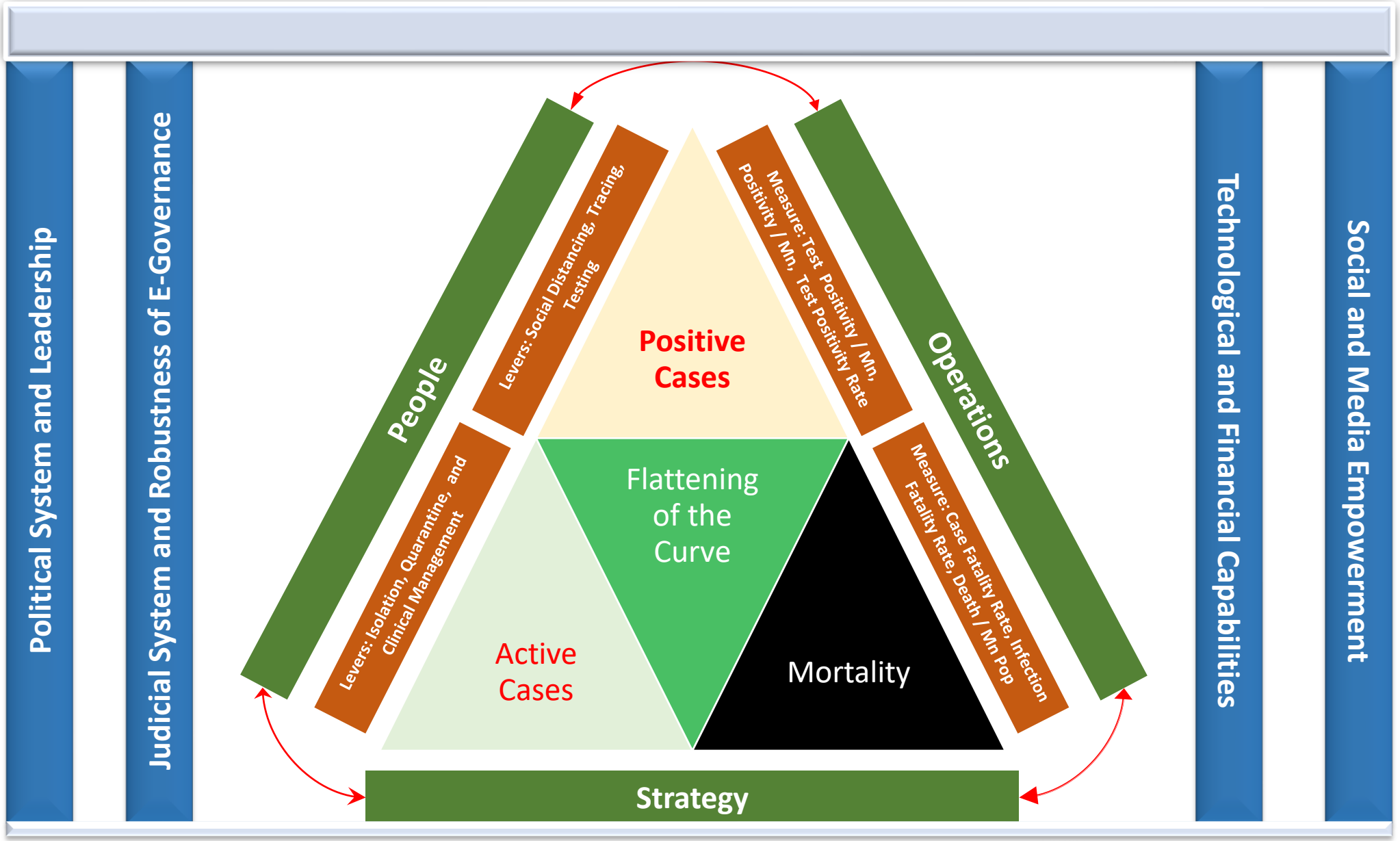

Proxima Virus Spread Assessment Matrix (VAM)

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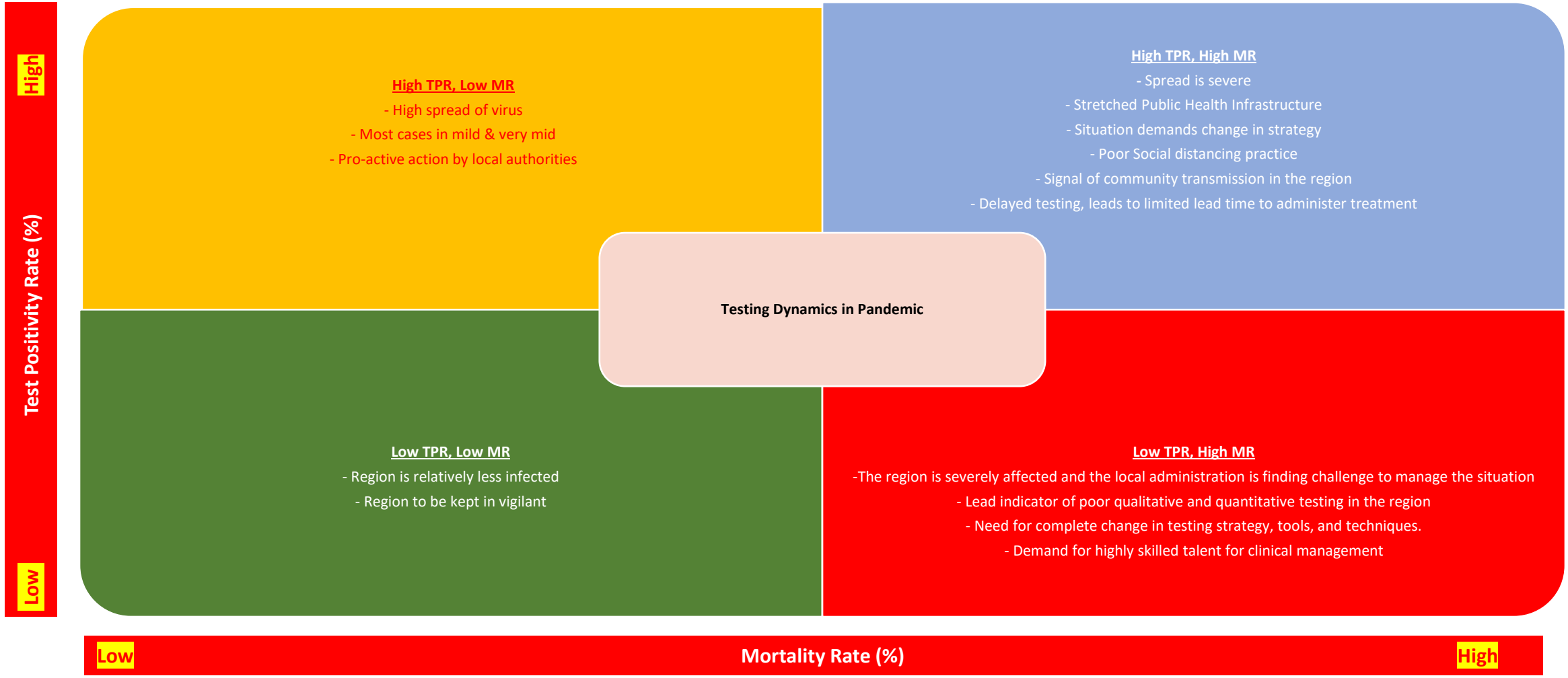
Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



Mega States: Virus Spread Assessment Matrix (VAM)

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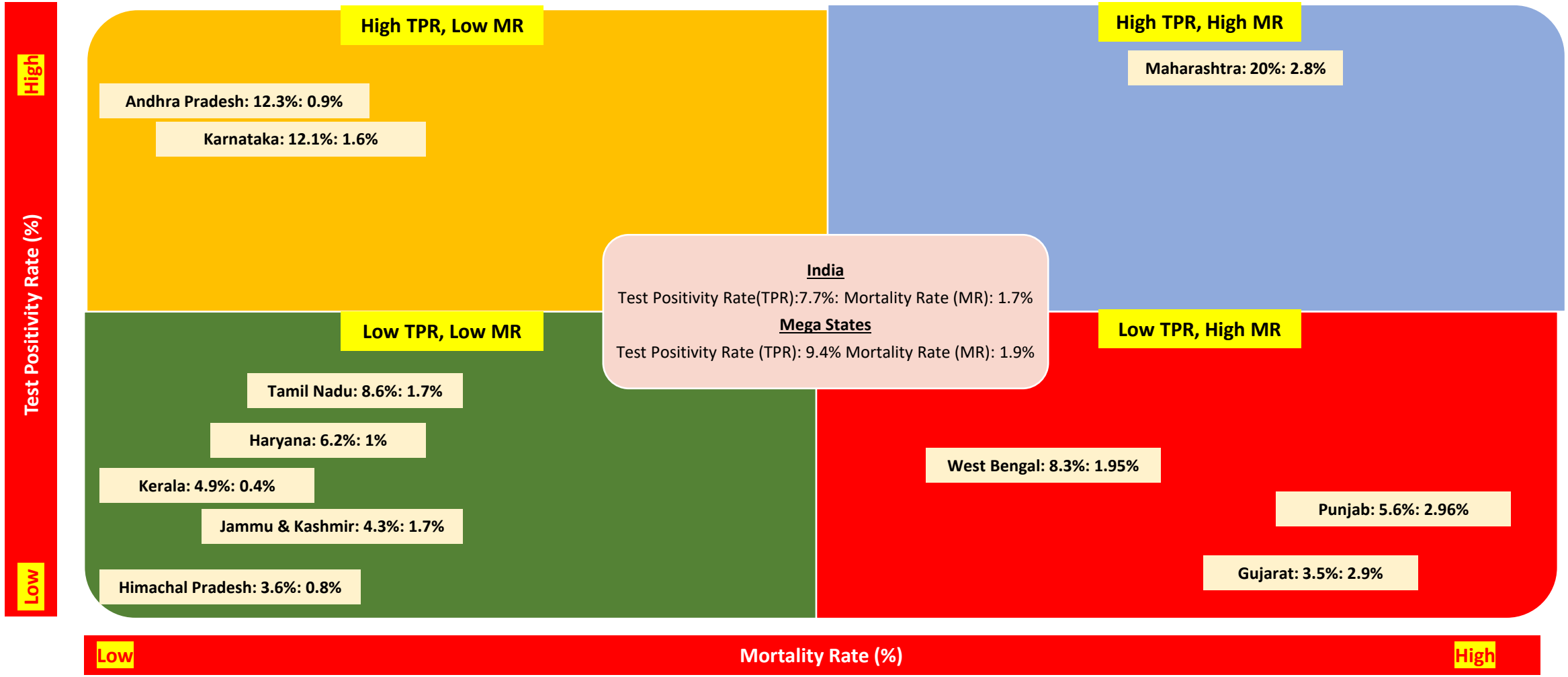

EAG States: Virus Spread Assessment Matrix (VAM)

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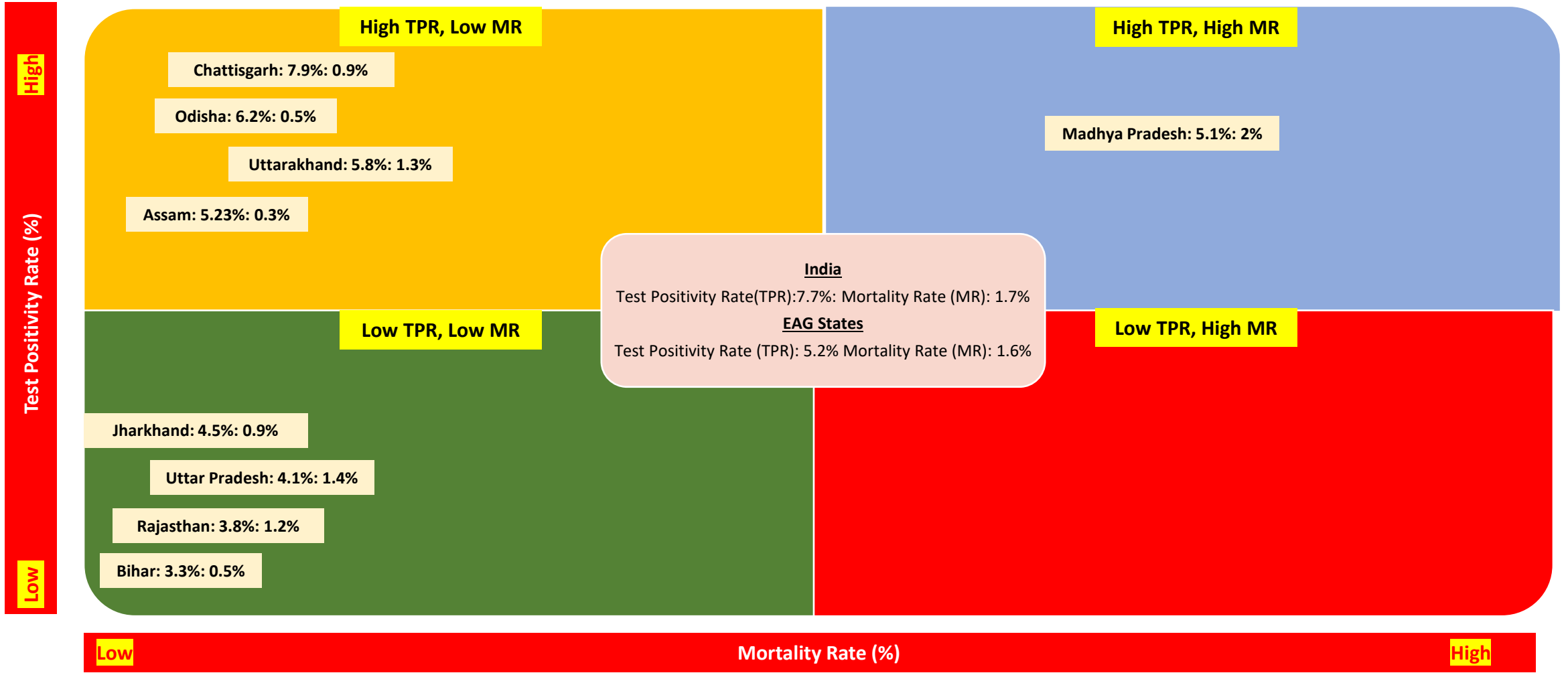

MICRO States: Virus Spread Assessment Matrix (VAM)

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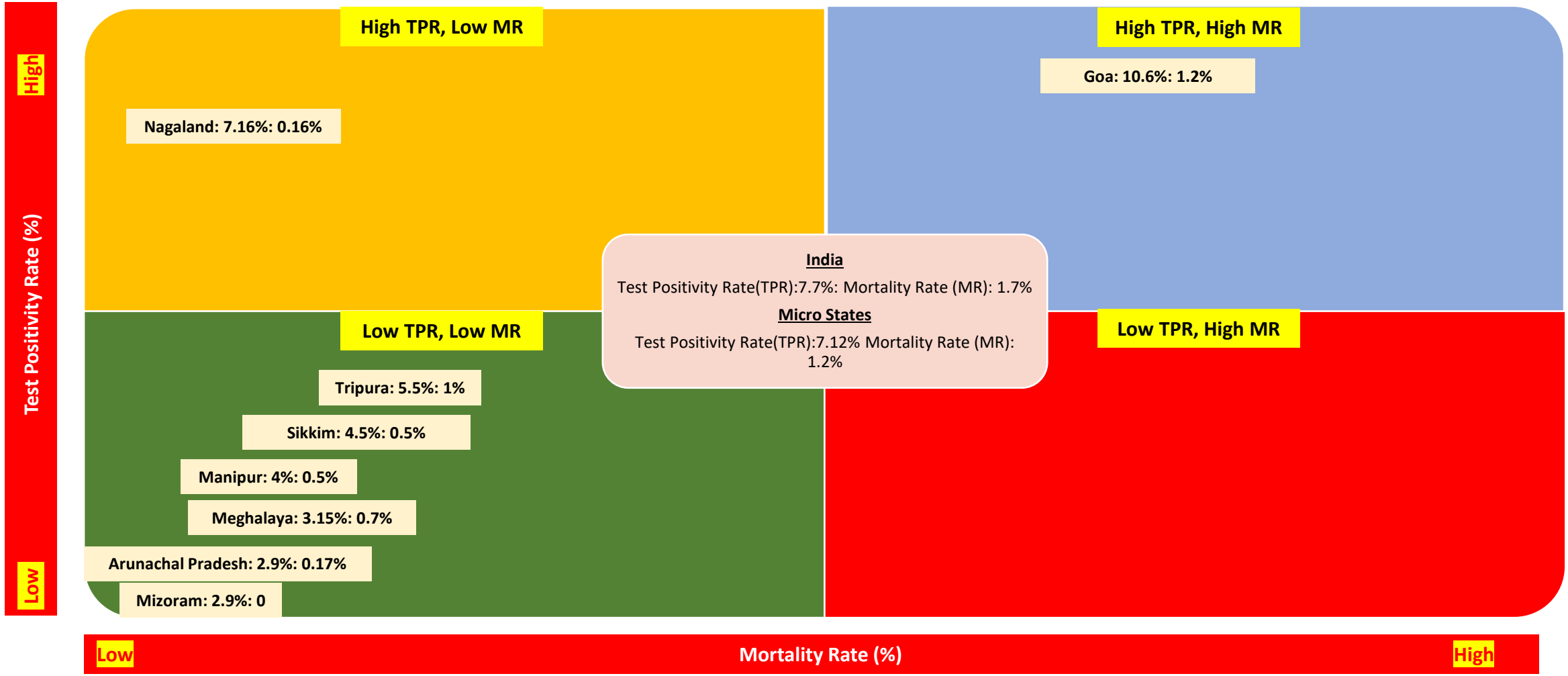
Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



Union Territories: Virus Spread Assessment Matrix (VAM)

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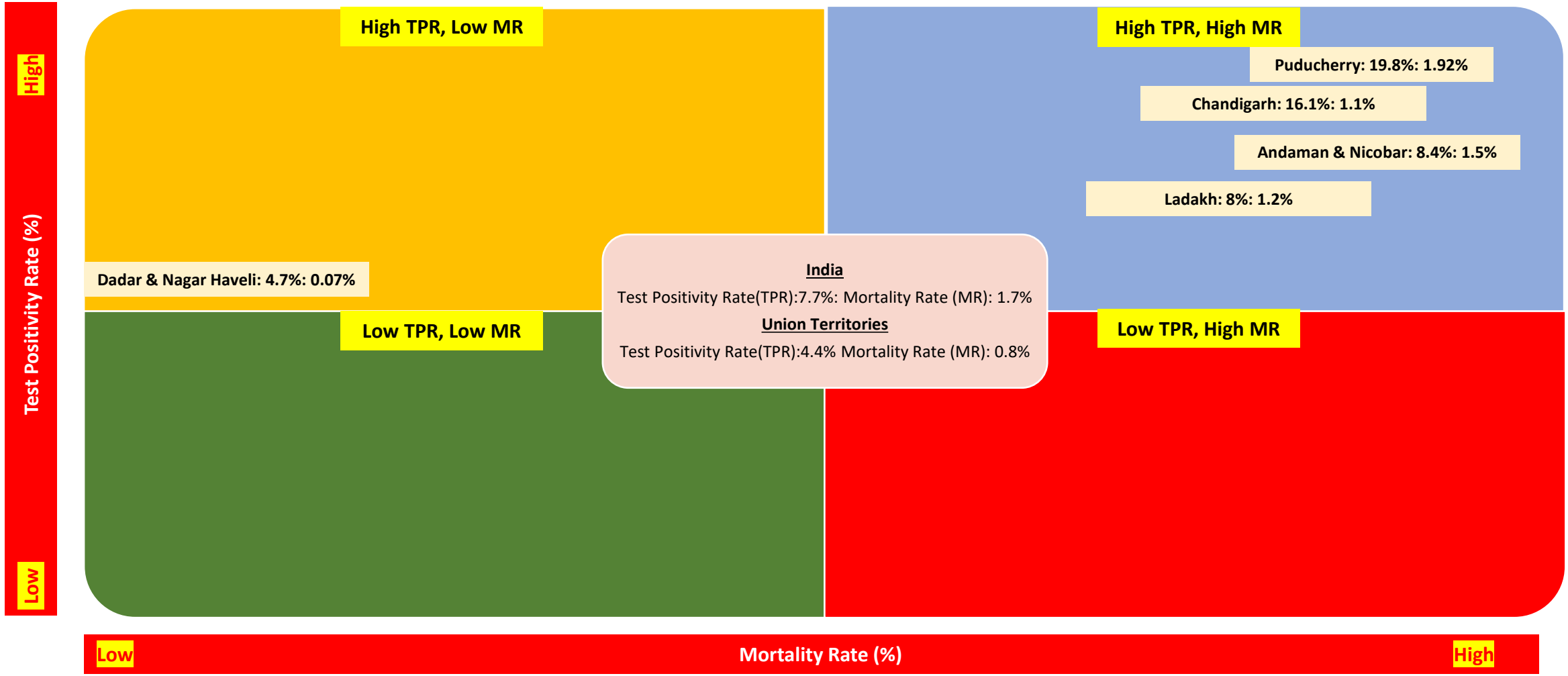
Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



Delhi: Virus Spread Assessment Matrix (VAM)

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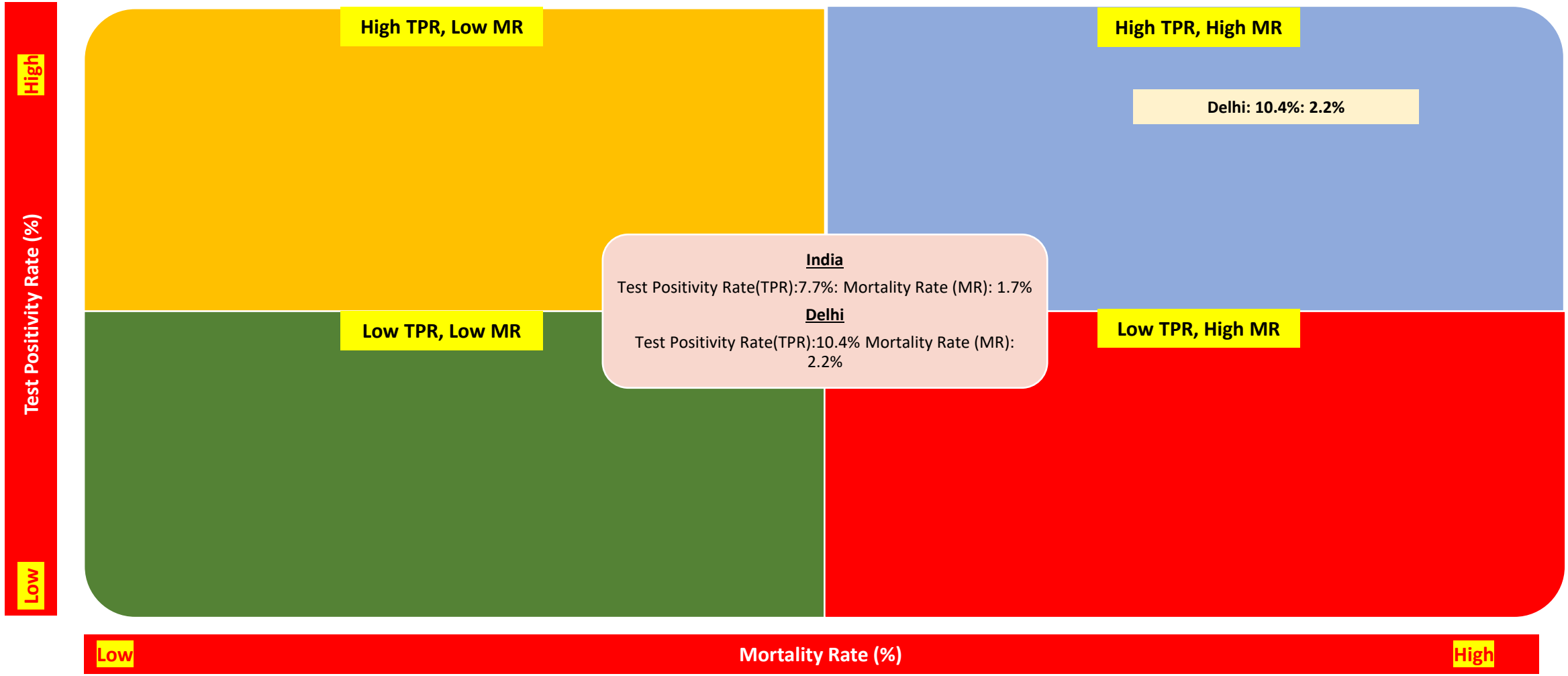
Each position in the matrix demands appropriate strategy and suitable competences to execute effectively



Active Cases in Mega Cities increases by 37% in 4 weeks
Delhi and Mumbai collectively contributes 88% !!

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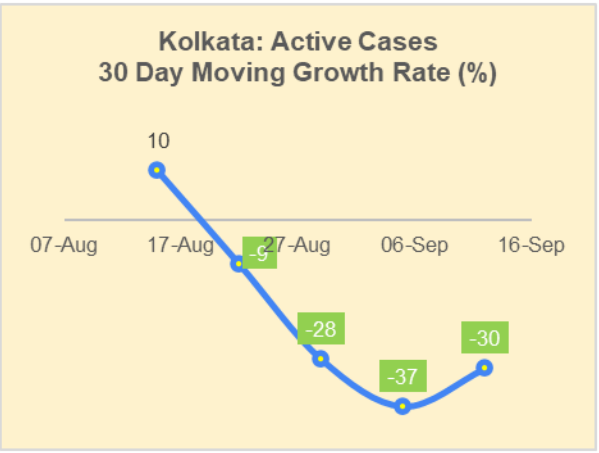
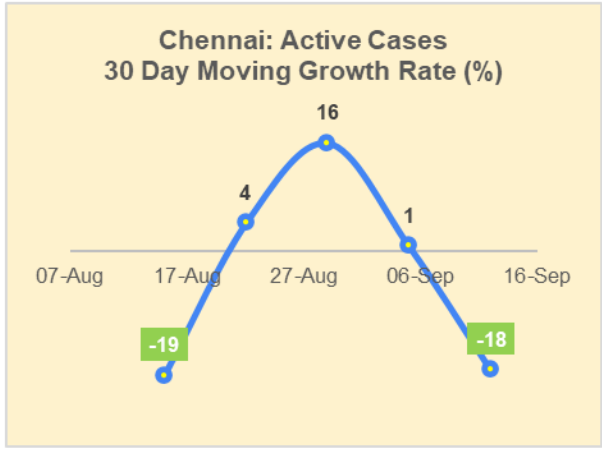
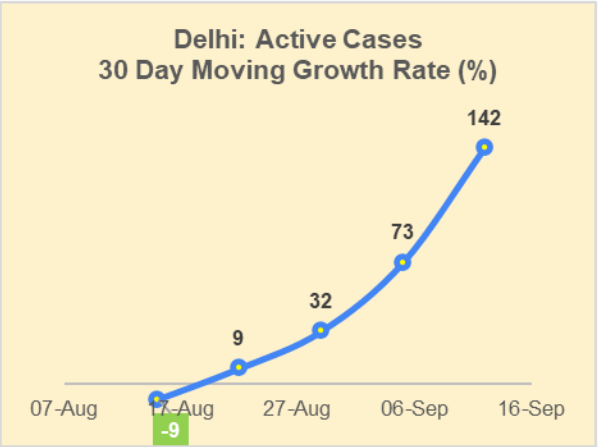
Kolkata & **Chennai** has improved by reducing number of active cases. **Amdavad** seems to be losing the grip, active cases is up

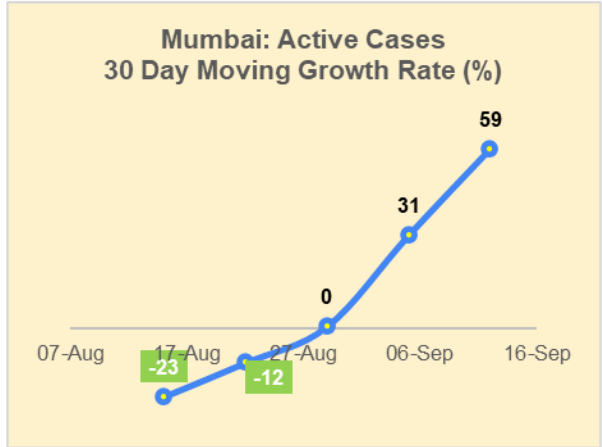
Bengaluru has 35% of the total 1.17 lacs active cases in Mega cities.

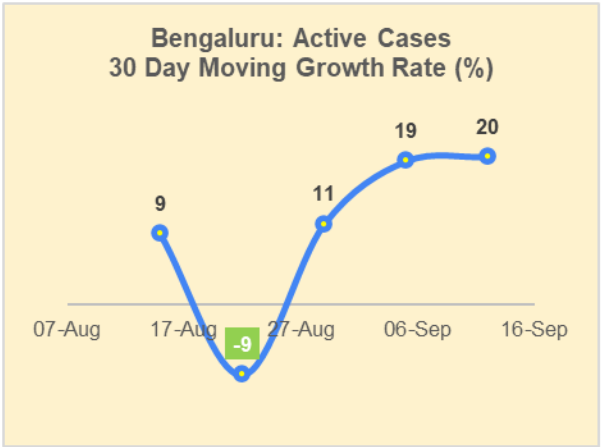


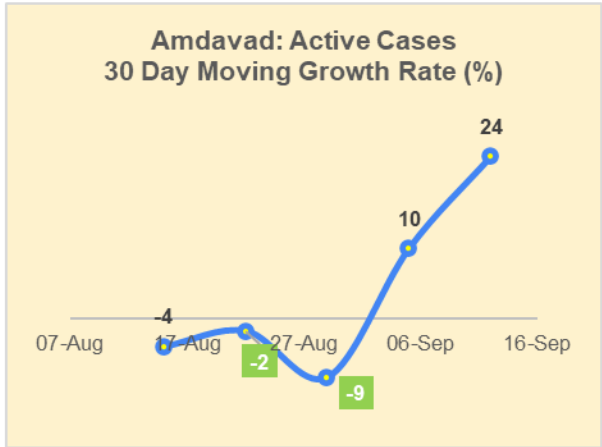
Incremental Growth in Actives Cases in Mega Cities			
Mega Cities	**15-Aug**	**12-Sep**	**Difference**
Delhi	**11489**	**28059**	**16570**
Mumbai	17581	29176	11595
Bengaluru	34858	40929	6071
Amdavad	3477	4233	756
Chennai	11324	10648	-676
Kolkata	**6645**	**4151**	**-2494**
Total	**85374**	**117196**	**31822**











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Projection: 13 September – 12 October

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

PPMS Forecasting Module: Consistent & Accurate in Projecting COVID Cases and Mortality

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26th June:
Cases: 500K
Presentation to Indian Medical Association National Committee:

"….According to the trend, **India is likely to be the most affected nations in the world**, hopefully after USA. Critical Men, Material, and Machine and other resources need to be organized to save lives "

30-Day COVID Cases Growth Projection				%ge Actual of Projected	12-Oct
Consolidated	16-Aug	12-Sep			
	Actuals	Projection	Actual		Projections
Mega States	1852408	3245361	3279953	101	5229600
EAG States	538721	1146000	1065505	93	1765000
Micro States	32020	61400	66477	108	124700
Union Territories	15424	34200	35722	104	59200
Delhi	151928	185000	209748	113	330000
Total	**2590501**	**4671961**	**4657405**	**100**	**7508500**

16th July:
Cases: 1 Mn

India's 150 days of Journey: Voluntary Report submitted to MoHFW, GoI and all State Governments / UTs:

"…. As per our estimate, the total positive cases in India will increase to **2.5 Mn** by 15th August "

India would continue to witness surge in COVID Positive Cases 7.5 Mn – 8 Mn Positive Cases before 12th October

Projected Mortality: 110 – 125K before 12th October

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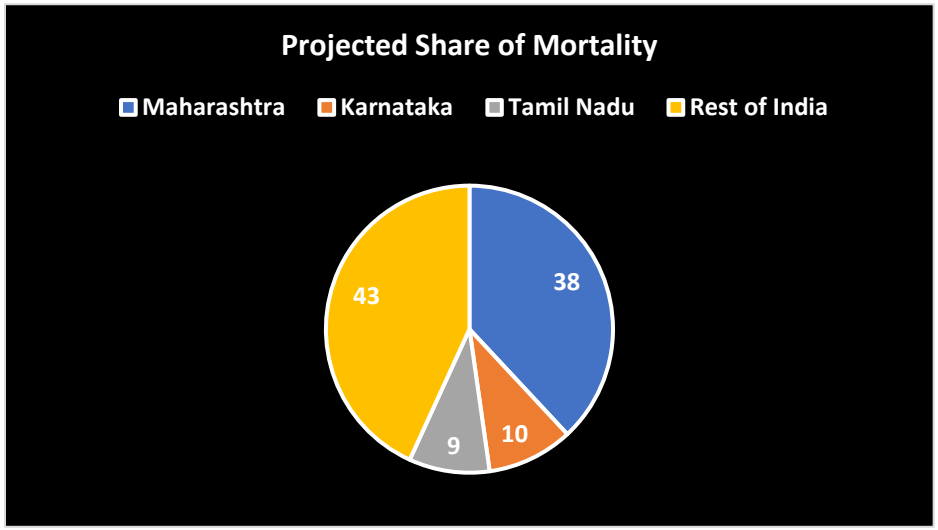
30-Day COVID Mortality Projection				%ge Actual of Projected	12-Oct
Consolidated	16-Aug	12-Sep			
	Actuals	Projection	Actual		Projection
Mega States	39610	68268	61242	90	**91525**
EAG States	5946	11325	10503	93	**16950**
Micro States	185	345	555	161	**1067**
Union Territories	170	389	539	139	**1008**
Delhi	4188	4700	4687	100	**5500**
Total	50099	85027	77526	91	**116050**



Increase in Mortality Rate in Micro States and Union Territories is concerning

Zonewise: State / UTs COVID Positive Cases Projections: BEFORE 12TH October

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Mega States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Andhra Pradesh	281817	580000	547686	94	**875000**
Gujarat	77663	100000	110971	111	**150000**
Haryana	46410	60000	88332	147	**160000**
Himachal Pradesh	3993	7000	8784	125	**17000**
Jammu & Kashmir	28021	50000	50712	101	**100000**
Karnataka	219926	450000	440411	98	**700000**
Kerala	42885	90000	102255	114	**200000**
Maharashtra	584754	1000000	1015681	102	**1750000**
Punjab	30041	62000	74616	120	**150000**
Tamil Nadu	332105	520000	491571	95	**675000**
Telangana	91361	91361	152602	NA	**152600**
West Bengal	113432	235000	196332	84	**300000**
Total	**1852408**	**3245361**	**3279953**	101	**5229600**

Union Territories	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Andaman & Nichobar	2306	6500	3494	54	**4500**
Chandigarh	2009	3500	7292	208	**17000**
Dadra & Nagar Haveli	1846	3200	2682	84	**3500**
Ladakh	1909	3000	3228	108	**4200**
Puducherry	7354	18000	19026	106	**30000**
Total	**15424**	**34200**	**35722**	104	**59200**

EAG States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Assam	75559	165000	138339	84	**215000**
Bihar	101906	225000	155445	69	**200000**
Chattisgarh	15045	25000	58643	235	**145000**
Jharkhand	22672	50000	59040	118	**110000**
Madhya Pradesh	44433	75000	83619	111	**145000**
Odisha	57126	120000	143117	119	**250000**
Rajasthan	59979	100000	99036	99	**150000**
Uttar Pradesh	150061	365000	299045	82	**500000**
Uttarakhand	11940	21000	29221	139	**50000**
Total	**538721**	**1146000**	**1065505**	**93**	**1765000**

Micro States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Arunachal Pradesh	2658	4500	5825	129	**11000**
Goa	11339	23500	23445	100	**45000**
Manipur	4390	7500	7579	101	**11000**
Meghalaya	1292	2250	3447	153	**6000**
Mizoram	777	1600	1379	86	**3700**
Nagaland	3340	7000	4946	71	**10000**
Sikkim	1148	2000	2026	101	**3000**
Tripura	7076	12200	17830	146	**35000**
Total	**32020**	**60550**	**66477**	**110**	**124700**

Zonewise: State / UTs COVID Mortality Projections: BEFORE 12TH October

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Mega States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Andhra Pradesh	2562	6250	4779	76	**7000**
Gujarat	2765	3000	3181	106	**3600**
Haryana	528	700	932	133	**1800**
Himachal Pradesh	18	25	70	280	**175**
Jammu & Kashmir	527	1500	854	57	**1300**
Karnataka	3832	6700	7067	105	**11200**
Kerala	147	400	411	103	**800**
Maharashtra	19749	31000	28724	93	**44000**
Punjab	771	4000	2212	55	**4800**
Tamil Nadu	5641	9000	8234	91	**10500**
Telangana	693	693	950	137	**950**
West Bengal	2377	5000	3828	77	**5400**
Total	**39610**	**68268**	**61242**	**90**	**91525**

EAG States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Assam	182	400	430	108	**900**
Bihar	515	1100	797	72	**1100**
Chattisgarh	134	525	518	99	**1600**
Jharkhand	229	500	532	106	**900**
Madhya Pradesh	1094	1500	1691	113	**2500**
Odisha	386	800	658	82	**1000**
Rajasthan	862	1200	1207	101	**1650**
Uttar Pradesh	2393	5000	4282	86	**6600**
Uttarakhand	151	300	388	129	**700**
Total	**5946**	**11325**	**10503**	**93**	**16950**

Micro States	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Goa	98	240	276	115	**525**
Tripura	55	60	182	303	**375**
Manipur	13	20	44	220	**100**
Nagaland	7	9	8	89	**10**
Arunachal Pradesh	5	7	10	143	**12**
Meghalaya	6	7	24	343	**30**
Sikkim	1	1	11	1100	**15**
Mizoram	0	1	0	0	**0**
Total	**185**	**345**	**555**	161	**1067**

Union Territories	16-Aug	12-Sep		%ge Actual of Projected	12-Oct
	Actuals	Projection	Actual		Projection
Puducherry	106	270	365	135	**750**
Ladakh	10	15	38	253	**45**
Dadra & Nagar Haveli	2	4	2	50	**3**
Chandigarh	28	50	83	166	**150**
Andaman & Nichobar	24	50	51	102	**60**
Total	**170**	**389**	**539**	**139**	**1008**

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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.

3. 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