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STATES' RANKING ON COVID MANAGEMENT, MACRO PARAMETERS & CENTRAL GOVERNMENT SCHEMES: NORTH EAST AT TOP, WHILE WEST BENGAL AND CHATTISGARH AT BOTTOM

India's COVID graph has improved significantly after the peak reached on 16 Sep'20. The daily new cases have declined since then and are now moving around 35,000, while the daily recoveries are higher than new cases. We constructed a two stage least square (2SLS) panel model with the monthly data from April to November 2020, where tests were first regressed on population to arrive at estimated number of tests given the population of a state / population as a control variable which were then used to arrive at the model estimated number of cases for each state. **The results indicate that for India the estimated number of cases is 99.29 lakh which is 4.66 lakh higher than the actual confirmed cases of 94.63 lakh, thus indicating India has done a fairly good job on controlling the spread of the virus. However, state-wise numbers vary widely.**

We have ranked the states on the basis of performance on three broad categories, COVID Management, Macro Parameters (fiscal parameters and CPI) and performance of states on Central Government Schemes. Further, we have combined North East into one. The indicators are identified to have positive or negative impact on states and accordingly they are normalised. Then using Principal Component Analysis the States are ranked for each of the three categories.

Firstly, for assessing COVID management, we primarily used four indicators, namely gap between the actual number of cases and estimated cases based on our model 2 SLS results, possible number of underreporting of cases, recovery rate and death rate. **The results show that North East tops the list followed by Bihar and Uttar Pradesh. Meanwhile, Rajasthan, Maharashtra and Himachal Pradesh are at the bottom of the list.**

Secondly, for **Macro indicators**, the deviation of GST collection from state budget estimates, market borrowing and CPI inflation are used. **Here, North East, Himachal Pradesh and Madhya Pradesh have performed better. While, Bihar, Andhra Pradesh and West Bengal are at the bottom.**

Thirdly, for performance in Central Government schemes, state-wise performance is taken for 5 schemes, One nation one card, PM Svanidhi, PM Samman, ECLGS and PMAY. **Ranking of States on the basis of Central Government schemes indicates Uttar Pradesh, Gujarat and Maharashtra are at the top. Meanwhile, Goa, West Bengal and Chhattisgarh are at the bottom**.

By combining the scores attained on each of the three parameters, states' ranking reveals that North Eastern States are at the top, followed by Uttar Pradesh and Madhya Pradesh. Chhattisgarh, West Bengal and Himachal Pradesh come at the bottom. While Chhattisgarh and West Bengal have fared consistently worse in all 3 parameters, Himachal Pradesh has done quite well in macro management but seems to be lagging in Central Schemes' implementation and COVID Management. In fact, the hilly and unfamiliar terrain of Himachal Pradesh is holding back the recovery rate and that is acting as a huge deterrent to COVID Management. Regarding implementation of Central schemes, again the nature of the state in terms of inhospitable terrain may be acting as a deterrent!

INDIA HAS TACKLED COVID MUCH BETTER CONSIDERING ITS POPULATION

♦ India reached its COVID peak on 16 Sep 2020. The daily new cases have declined since then and are now moving around 35,000, while the daily recoveries are higher than new cases. Since 4th week of March 2020, Government has taken many drastic steps to tackle the spread of COVID-19 virus in the country. It has also motivated states to save their people from infections. India has achieved several milestones in building isolation centers, special COVID-19 hospitals, free testing, door to door contact tracing etc.

♦ To see statistically the state-wise infections, we tested a two stage least square (2-SLS) panel model with 20-major states considering the monthly data from April to November 2020. In this 2SLS regression, we first regressed the state-wise test data on population from Apr'20 to Nov'20 to gauge the number of tests that should have been done given the population difference. In Stage 2, the number of confirmed cases was regressed on estimated test numbers calculated in equation 1 to arrive at model estimate of number of cases if the tests were done in accordance with the population size.

$$T = \alpha + \beta P \mu \quad \text{.....(1)}$$

$$C = \sigma + \rho T + \pounds \quad \text{.....(2)}$$

Where, T = Number of Test, P= Population, C = Confirmed Cases

♦ The estimated model is significant at 5% level and results indicate that for India the estimated number of cases is 99.29 lakh which is 4.66 lakh higher than the actual confirmed cases of 94.63 lakh, thus indicating India has done a good job in controlling the spread of the virus. However, state-wise numbers vary widely.

♦ States including Maharashtra, Karnataka, Andhra Pradesh, Kerala, Chhattisgarh, West Bengal, Delhi and Goa have done badly in managing the pandemic, with estimated cases lower than the actual cases.

COVID-19 Cases: Actual vs Estimated			
	Actual Cases	Estimated Cases	Difference
Andhra Pradesh	868064	677263	190801
Bihar	235616	980524	-744908
Chhattisgarh	237322	183902	53420
Delhi	570374	429091	141283
Goa	47963	38102	9861
Gujarat	209780	530311	-320531
Haryana	234126	250256	-16130
Himachal Pradesh	40518	49983	-9465
Jammu and Kashmir	110224	213610	-103386
Jharkhand	109151	290241	-181090
Karnataka	884897	745977	138920
Kerala	602983	427406	175577
Madhya Pradesh	206128	262079	-55951
Maharashtra	1823896	729832	1094064
Odisha	318725	403844	-85119
Punjab	152091	225347	-73256
Rajasthan	268063	305553	-37490
Tamil Nadu	781915	809069	-27154
Telangana	269816	374147	-104331
Uttar Pradesh	543888	1287184	-743296
Uttarakhand	74795	103368	-28573
West Bengal	483484	401762	81722
North East	318606	488165	-169559
India	9463254	9929420	-466166

'-' : Well Managed '+': Badly Managed

♦ Meanwhile, Uttar Pradesh, Bihar, Gujarat and Jharkhand among others have managed the situation quite well with estimated cases more than their actual cases.

STATES' RANKING BASED ON VARIOUS PARAMETERS

♦ We have ranked the states on the basis of performance on three broad categories, COVID management, macro parameters (fiscal and CPI) and performance of States on Central Government Schemes. Further, we have combined North East into one.

♦ The indicators are identified to have positive or negative impact on states and accordingly they are normalised. Then using PCA analysis the States are ranked for each of the three categories.

♦ For COVID management, we used four indicators. First is the gap between the actual number of cases and estimated cases based on our 2 SLS regression results. States with lower number of actual cases compared to estimated cases are considered better than others. Second indicator is the estimated number of underreporting of cases considering peak recovery rate of 78% for each state. Lower the underreported cases the better the state. Lastly, recovery rate and death rate are used for each state. Higher recovery rate and lower death rate are considered better.

♦ In case of COVID management, North East tops the list followed by Bihar and Uttar Pradesh. Meanwhile, Rajasthan, Maharashtra and Himachal Pradesh are at the bottom of the list.

♦ For macro indicators, 2 fiscal parameters and state-wise CPI are taken. First, gap between the actual GST collection of states is taken from their budgeted estimate. The lower the gap the better the performance of the state. Second, market borrowing of states is taken so far this fiscal. Higher borrowing is considered worse for a State. CPI inflation is also considered in this and lower inflation rate is taken as better.

♦ In case of macro indicators, North East, Himachal Pradesh and Madhya Pradesh have performed better. While, Bihar, Andhra Pradesh and West Bengal are at the bottom.

♦ For performance in Central Government schemes, state-wise performance is taken for 5 schemes.

  ♦ One nation One card- If the state has adopted the scheme it is taken as 1 and 0 otherwise

  ♦ PM Svanidhi scheme - Total amount disbursed under the scheme is taken for each state

  ♦ PM Kisan Samman Nidhi – State-wise total number of beneficiaries are considered

  ♦ Pradhan Mantri Awas Yojana (PMAY) – Central Assistance released is taken for each state

  ♦ ECLGS – Here share of each state is considered in overall disbursed amount based on SBI share

States' Ranking				
State	Covid	Macro	Central Schemes	Combined
North East	1	1	16	1
Uttar Pradesh	3	15	1	2
Madhya Pradesh	15	3	4	3
Gujarat	12	16	2	4
Tamil Nadu	7	11	6	5
Andhra Pradesh	8	21	5	6
Karnataka	11	5	8	7
Telangana	6	17	7	8
Rajasthan	20	4	9	9
Maharashtra	21	12	3	10
Bihar	2	20	11	11
Odisha	4	8	12	12
Jharkhand	5	10	13	13
Punjab	14	6	15	14
Haryana	16	7	14	15
Kerala	18	19	10	16
Uttarakhand	17	9	18	17
Goa	9	13	20	18
Jammu & Kashmir	10	18	19	19
Chhattisgarh	19	14	22	20
West Bengal	13	22	21	21
Himachal Pradesh	22	2	17	22
Source: SBI Research				

♦ Ranking of States on the basis of Central Government schemes indicates Uttar Pradesh, Gujarat and Maharashtra are at the top. While, Goa, West Bengal and Chhattisgarh are at the bottom.

♦ **By combining the scores attained on each of the three parameters, states ranking reveals that North Eastern states are at the top, followed by Uttar Pradesh and Madhya Pradesh. Chhattisgarh, West Bengal and Himachal Pradesh come at the bottom.**

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