

Analysing States' Public Health Response

Introduction

In this report, we seek to analyse the response of individual states to the Covid-19 outbreak. For this purpose, the following responses were covered to arrive at an index:

1. Health expenditure as a percentage of Gross State Domestic Product
2. Per capita expenditure on health
3. Number of beds in the hospital/per capita
4. Testing per million

Additionally, an Index on Average Medical Expenditure and Non-Medical Expenditure on account of hospitalization per hospitalization case for each State/UT has been included to substantiate the analysis.

Methodology Used

Formulae used to calculate individual indexes

- Index for Government Hospital beds = $\frac{(\text{No. of Beds/population}) - \text{Minimum in the sample}}{\text{Maximum in the sample} - \text{Minimum in the sample}}$
- Index for GSDP on health = $(\text{GSDP}/\text{Max in GSDP in the sample})$
- Index for Per Capita Expenditure = $\frac{\text{PCE for the state} - \text{Minimum in the sample}}{\text{Maximum in the sample} - \text{Minimum in the sample}}$
- Index for testing capacity per million = $\frac{\text{Tests/million for the state} - \text{Minimum in the sample}}{\text{Maximum in the sample} - \text{Minimum in the sample}}$
- Average hospitalization expenditure for the states = $\frac{\text{Ln}(\text{expr}) - \text{Ln}(\text{Average})}{\text{Ln}(\text{Maximum}) - \text{Ln}(\text{Minimum})}$

Final index was a weighted average using the indexes arrived at.

Results

As per the index, the **best performing states** should be:

1. Arunachal Pradesh
2. Goa
3. Mizoram
4. Sikkim
5. Assam
6. Jammu and Kashmir
7. Tripura

The **worst-performing states** in terms of public health response would be:

1. Madhya Pradesh
2. Uttar Pradesh
3. Bihar
4. Maharashtra
5. Chhattisgarh
6. Jharkhand
7. Rajasthan

Best Performing UTs

1. Andaman and Nicobar

2. Puducherry
3. Delhi

Summary

1. The states of Arunachal Pradesh, Mizoram and Sikkim and the UTs of Andaman and Nicobar and Puducherry perform well on the **per capita expenditure index**. Bihar, Madhya Pradesh and Uttar Pradesh fare the worst in this regard.
2. In the rankings for **GSDP spent on health**, north-eastern states of Arunachal Pradesh, Nagaland , Meghalaya and Mizoram perform well. Maharashtra and Haryana fare the lowest on this indicator.
3. On the **index on the availability of beds** in government hospitals as per the population of the state reveals, Bihar and Jharkhand fare lowest in this aspect. Sikkim and Puducherry fare well on this index.
4. The **index on tests per million** places Goa, Arunachal Pradesh and Delhi on the top. Madhya Pradesh and West Bengal fare the lowest on this index.
5. On further analysis, we see the North-East region fares best on the index, vis-à-vis other regions. As evident in Chart 1, the south performs better than the north, with the exception of Jammu and Kashmir and Himachal Pradesh. The western states fare better than the eastern region.

Chart 1: Index of Performance

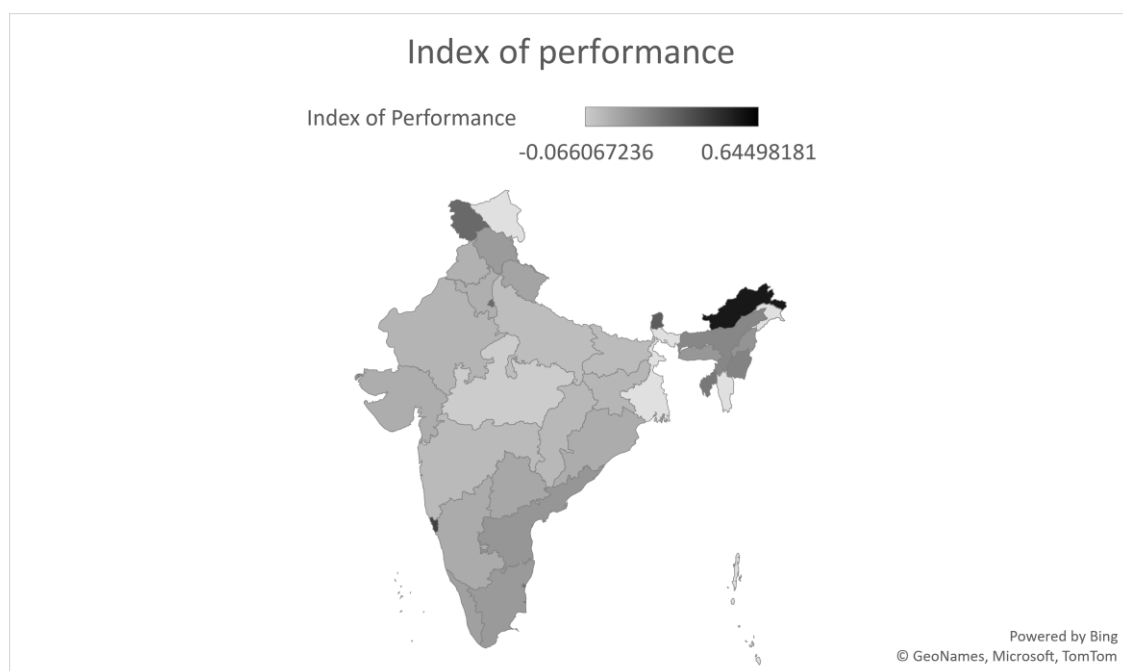


Chart 2

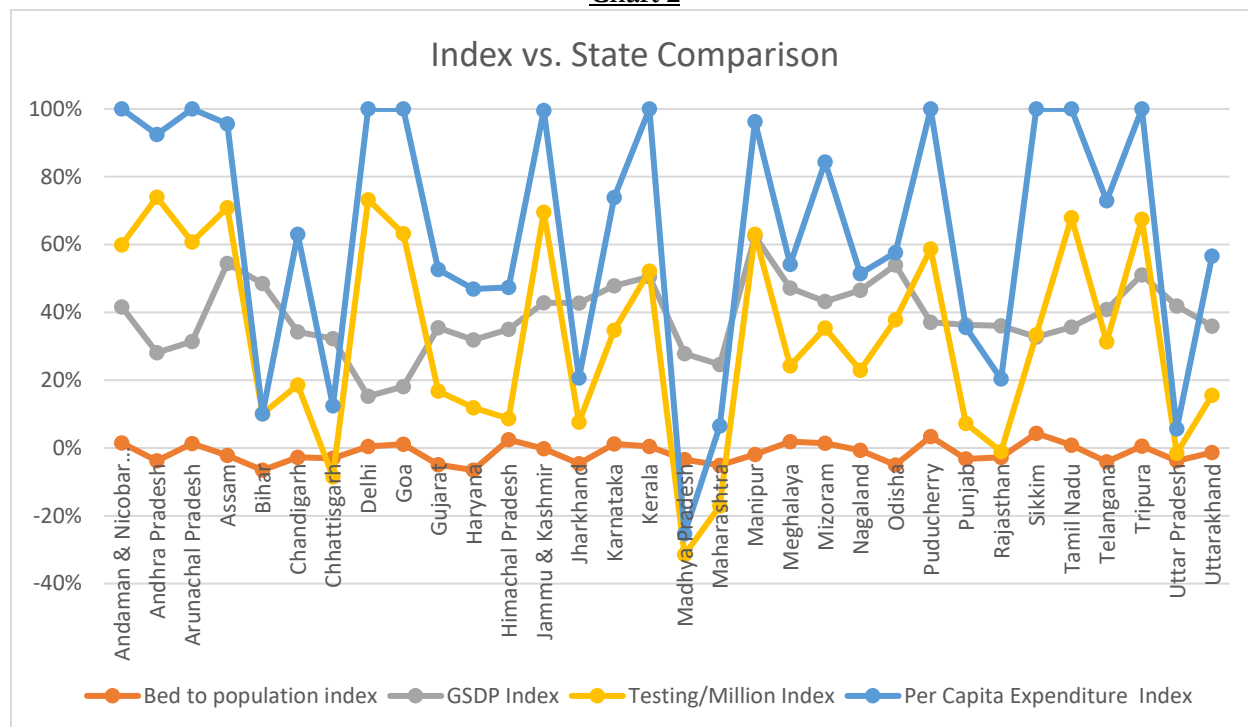


Table 1: State-wise index

State	Bed to population index	GSDP Index	Testing/Million Index	Per Capital Index	Index of Performance
Andaman & Nicobar Islands	0.038	1.000	0.458	1.000	0.645
Andhra Pradesh	-0.018	0.157	0.226	0.091	0.123
Arunachal Pradesh	0.028	0.629	0.612	0.821	0.561
Assam	-0.016	0.423	0.123	0.185	0.174
Bihar	-0.030	0.254	-0.178	0.000	-0.008
Chandigarh	-0.019	0.252	-0.107	0.304	0.106
Chhattisgarh	-0.022	0.254	-0.294	0.151	0.004
Delhi	0.005	0.145	0.570	0.263	0.280
Goa	0.016	0.256	0.677	0.552	0.423
Gujarat	-0.017	0.138	-0.064	0.122	0.042
Haryana	-0.020	0.120	-0.063	0.110	0.034
Himachal Pradesh	0.024	0.321	-0.260	0.381	0.106
Jammu & Kashmir	-0.003	0.470	0.291	0.327	0.279
Jharkhand	-0.023	0.239	-0.177	0.066	0.010

Karnataka	0.004	0.132	-0.037	0.111	0.049
Kerala	0.002	0.178	0.006	0.170	0.089
Madhya Pradesh	-0.022	0.199	-0.378	0.039	-0.066
Maharashtra	-0.020	0.115	-0.161	0.091	-0.002
Manipur	-0.016	0.533	0.005	0.275	0.188
Meghalaya	0.019	0.459	-0.232	0.303	0.117
Mizoram	0.027	0.803	-0.150	0.941	0.403
Nagaland	-0.008	0.568	-0.284	0.343	0.130
Odisha	-0.019	0.228	-0.062	0.076	0.046
Puducherry	0.040	0.407	0.262	0.499	0.318
Punjab	-0.013	0.166	-0.122	0.119	0.030
Rajasthan	-0.019	0.275	-0.263	0.152	0.018
Sikkim	0.053	0.346	0.007	0.812	0.326
Tamil Nadu	0.003	0.141	0.131	0.130	0.107
Telangana	-0.014	0.157	-0.033	0.146	0.062
Tripura	0.005	0.461	0.150	0.296	0.227
Uttar Pradesh	-0.022	0.272	-0.258	0.042	-0.015
Uttarakhand	-0.007	0.203	-0.111	0.223	0.073

Policy

Who regulates drug treatment protocols in India?

The Ministry of Home Affairs through the National Disaster Management Act of 2005 and with the Ministry of Health and Family Welfare through the Epidemic Diseases Act of 1897 are empowered to make laws during public health emergencies. While emergency responses and expedited pathways for regulatory approval are not outlined separately in the Drugs and Cosmetics Act 1940 and Rules 1945, as amended up to 2016, the New Drugs and Clinical Trials (NDCT) Rules 2019 mentions it.

Emergency medical relief division under Directorate General of Health Service, Ministry of Health and Family welfare services is responsible for managing public health emergencies of international/ national concern. EMR division has several expert committees formulating protocol on medicines, diagnosis, rehabilitation and home-based care/treatment. The expert committees under EMR decide which medicine must be prescribed when, as a part of treatment protocol. Department of Pharmaceuticals was also involved in these deliberations, especially at the onset of the pandemic. DGHS releases clinical treatment protocols and guidelines. For testing needs, ICMR looks at the protocol.

Under the Drug and Cosmetics Act, the regulation of manufacturing, sales and distribution of medicines is primarily the responsibility of individual states. In this regard, pharmaceutical companies have suggested it is easier to deal with certain states that have robust and transparent procurement processes and systems in place.

Who regulates vaccine manufacturing, sales and distribution?

In a country like India with a struggling healthcare system and a growing population, vaccines provide individual protection and help reduce disease transmission. Waiting for herd immunity will prove to be costly both in terms of lives and economic costs.

The expert panel tasked with drafting a roadmap for procuring, financing and distributing a potential Covid-19 vaccine has said all procurement will be done centrally. To ensure that those who need it the most get it first, each consignment will be tracked real-time until delivery. States have been asked not to draft guidelines on procurement for the vaccine. India will also be helping its neighbours and development partner nations for delivery of the vaccine by leveraging domestic vaccine manufacturing capacity and engaging with international entities. The Standing Technical Sub-Committee of the National Technical Advisory Group on Immunization (NTAGI) will oversee the process of choosing an effective vaccine.

The Covid-19 vaccine can be delivered using any of the existing delivery platforms used in national immunisation programmes. The committee also considered other issues related to logistics such as cold-chain infrastructure , and how to address equitable access to the vaccine.

India has not struck pre-approval deals with vaccine makers. It is, however, a member of the Covax platform of Gavi, The Vaccine Alliance, WHO and CEPI, and is eligible to receive vaccines covering 20% of its population through this mechanism by the end of 2021.