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COVID-19 and Indian States: Spread, Risk and Implications

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Summary

India's three-week stringent countrywide lockdown to curb the spread of COVID-19, introduced from 25 March 2020, has been extended till 3 May 2020. The extension indicates the government's efforts to manage the outbreak as its topmost priority.

This paper studies the spread of COVID-19 within the Indian federation and looks closely at the situation across the country's regions and states. It divides the states according to the degree of spread and nature of risk, and identifies Maharashtra, Delhi and Madhya Pradesh as the three most affected and risk-prone states right now.

There are a number of other states from India's North, West and South, which might either suffer or escape the spread and impact of COVID-19, depending upon their abilities to control it. The performances of these states, populous and significant in the national economy, would determine the scale of COVID-19's impact on human lives and the economy of India. The paper also cautions low-spread states in India's East and Northeast to avoid complacency in fighting COVID-19 and contribute actively to resumption of economic activities.

Introduction

India went into a three-week national lockdown on 25 March 2020 to tackle the onset of the COVID-19. Described as one of the most stringent measures undertaken across the world, the lockdown commenced at a time when the number of confirmed COVID-19 cases in India had crossed 500. Within a week of the lockdown, on 1 April 2020, the number of confirmed cases rose to nearly 2,000. At the end of three weeks, on 14 April 2020, the total number of confirmed increased by almost six-fold to more than 11,000. The continuing increase has led to a further extension of the lockdown till 3 May 2020.

Between 1 and 15 April 2020, the pattern of the COVID-19 outbreak in India has significantly evolved. The disease has now been reported from all across the Indian federation, except Sikkim, Lakshadweep and Dadra & Nagar Haveli.

This paper reviews the situation in India's regions and individual states to gather insights on the nature of the spread of the disease. The spread is geographically classified by distinguishing between states in terms of its degree (high/moderate/low/negligible) and associated risks (high/moderate/low/uncertain) (Table 1). This is followed by a detailed discussion of regional trends.

Table 1: Region/State Classification of COVID-19 Spread and Risk in India

	North	South	East	West	Northeast
High Spread, High Risk	Delhi, Madhya Pradesh			Maharashtra	
High Spread, Moderate Risk	Jammu & Kashmir; Rajasthan, Uttar Pradesh	Andhra, Tamil Nadu, Telangana		Gujarat	
Moderate Spread, Moderate Risk	Haryana, Punjab	Karnataka, Kerala	West Bengal		
Low Spread, Uncertain Risk	Chandigarh, Chhattisgarh, Himachal Pradesh, Ladakh, Uttarakhand		Bihar, Jharkhand, Odisha		Assam
Negligible/Zero Spread	Ladakh		Andaman and Nicobar Islands	Goa, Dadra & Nagar Haveli,* Lakshadweep*	Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Nagaland, Sikkim,* Tripura

Source: Classifications by the author

* *Dadra & Nagar Haveli, Lakshadweep and Sikkim are yet to report any cases. Nagaland has one case, which according to the Ministry of Health and Family Welfare, has been transferred to Assam.*

COVID-19 has spread the fastest in Delhi, Maharashtra and Madhya Pradesh. These are also states with high casualties. In all of these states, confirmed cases are increasing fast; more worryingly, the fatality rate – measured as the number of people dying, as proportion of confirmed cases – has increased during the period 1 to 15 April 2020.

Gujarat, Tamil Nadu, Jammu & Kashmir, Rajasthan, Andhra Pradesh, Telangana and Uttar Pradesh, which figure in the 'high spread, moderate risk' category (Table 1), might experience greater spread and enhanced risk, or lower spread and lesser risk, depending upon their success in containing the outbreak over the next three weeks of lockdown. All these states, despite experiencing sharp spikes in cases, have so far been able to contain the fatality rate, compared to the previous group.

Punjab, Haryana and West Bengal, along with Karnataka and Kerala, are classified as states with 'moderate spread, moderate risk' (Table 1). They have fewer confirmed cases than the previous two categories. However, they stand to exacerbate risks if they lower their guard. For all states in this category, including those in the previous groups, Kerala is a good

example to follow. Kerala has successfully contained the pace of spread, and most importantly, the fatality rate. Karnataka, though, must watch out for a rising fatality rate, notwithstanding its success in limiting number of confirmed cases.

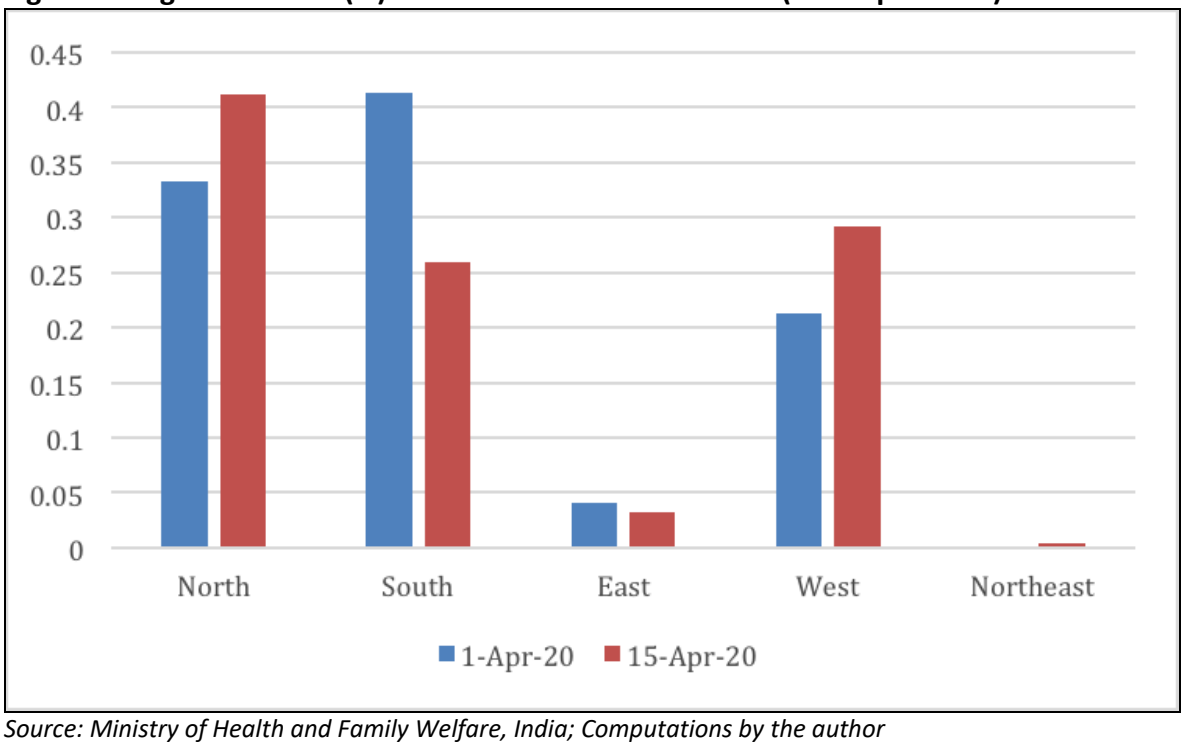
Low spread, and as of now uncertain risk, is the classification for several relatively smaller states from North India, Bihar and Odisha from the East, and Assam in the Northeast (Table 1). Lower confirmed cases, however, should not make states complacent.

Except Assam, the rest of the Northeast, Goa and Andaman & Nicobar Islands (Table 1) have experienced very low spread till now, and are practically COVID-19 free. They are included in the negligible/zero-spread category.

Regional Trends

North India has overtaken the South as the region with the largest number of confirmed cases. Between 1 and 15 April 2020, the share of the Northern region in total confirmed cases in the country increased from 33 per cent to 41 per cent. The corresponding share of the South declined from 41 per cent to 26 per cent during this time (Figure 1). Along with the North, the West experienced a sharp increase in its share of confirmed cases, from 21 per cent to 29 per cent. The Eastern region's share remained by and large unchanged over the period, while that of the Northeast was negligible (Figure 1).

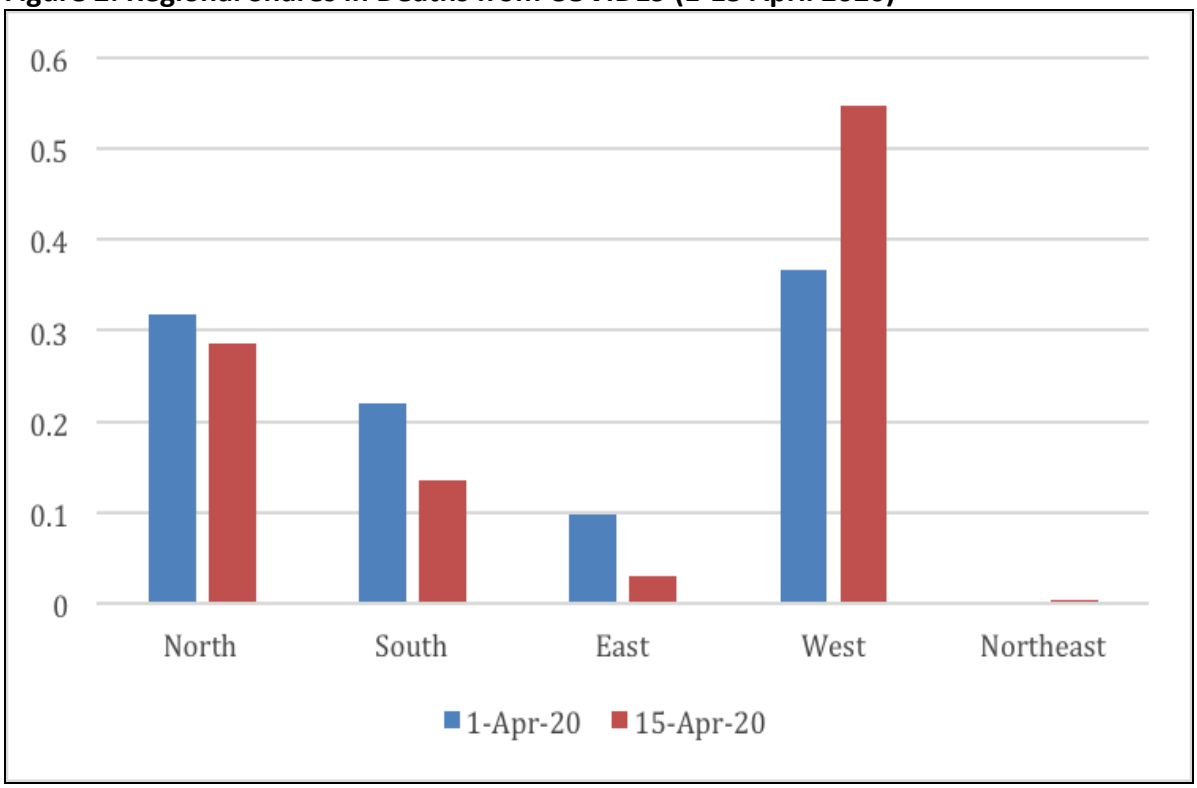
Figure 1: Regional Shares (%) in Confirmed COVID19 Cases (1-15 April 2020)



Source: Ministry of Health and Family Welfare, India; Computations by the author

Along with a rapid rise in confirmed cases during the first fortnight of April 2020, the Western region has experienced a similar increase in its share of deaths. The region currently accounts for 55 per cent of total COVID-19 deaths in India, followed by the North with 29 per cent and the South with 14 per cent (Figure 2).

Figure 2: Regional Shares in Deaths from COVID19 (1-15 April 2020)



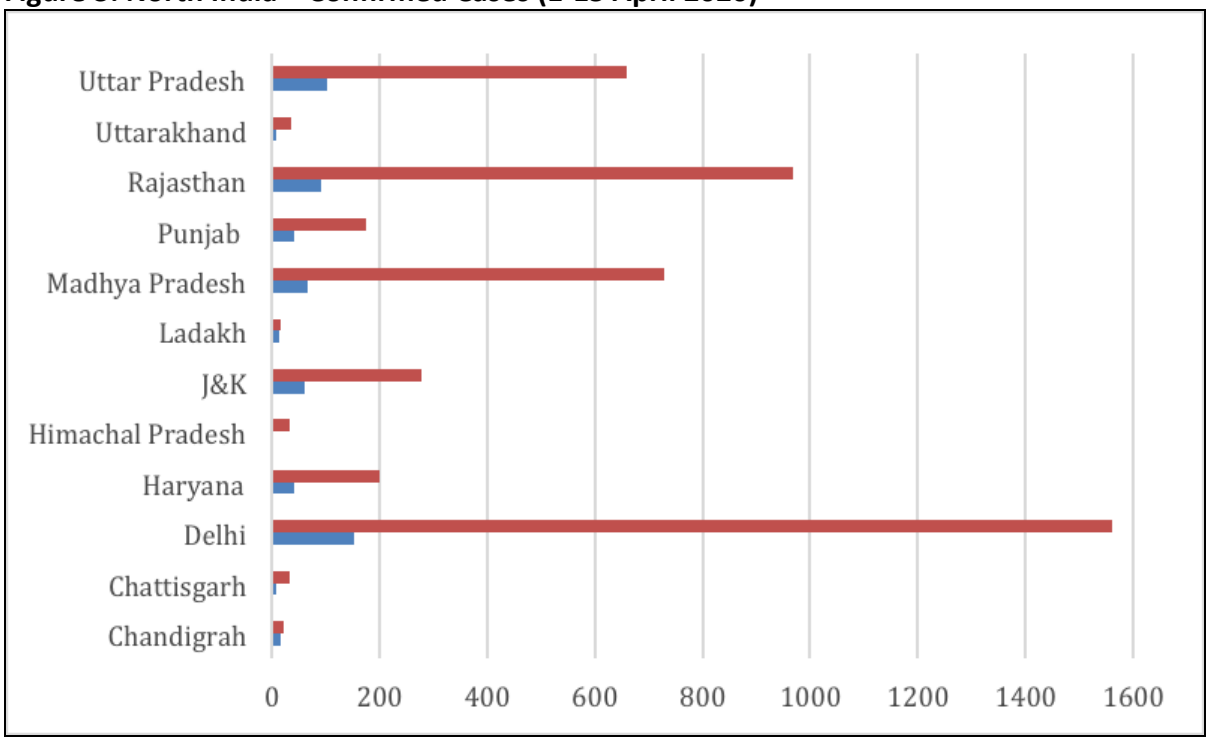
Source: Ministry of Health and Family Welfare, India

A worrying factor for the Western region is its growing differential in fatality rate with respect to other regions. On 1 April 2020, while still ahead of other regions, the West accounted for 37 per cent of total deaths, while the shares of the North and South stood at 32 per cent and 22 per cent respectively. The gap has now considerably widened with both North and South India reducing their shares in total deaths. The Western region has accounted for the bulk of COVID-19 deaths in India during the period 1 to 15 April 2020. The East, in contrast to the other three regions, not only had fewer deaths, and but has also been able to reduce the share.

North India

In the current analysis, North India is the largest among all regions, in terms of number of states, their populations, as well as economic size. As mentioned earlier, Delhi and Madhya Pradesh, are states where confirmed cases have increased the most during the period under review (Figure 3). Cases have also been rising fast in Rajasthan and Uttar Pradesh, and at a somewhat slower pace in Jammu & Kashmir, Haryana and Punjab. The Himalayan foothill states – Himachal Pradesh, Ladakh and Uttarakhand – appear more insulated from the spread till now, as do Chandigarh and Chhattisgarh.

Figure 3: North India – Confirmed Cases (1-15 April 2020)



Source: Ministry of Health and Family Welfare, India

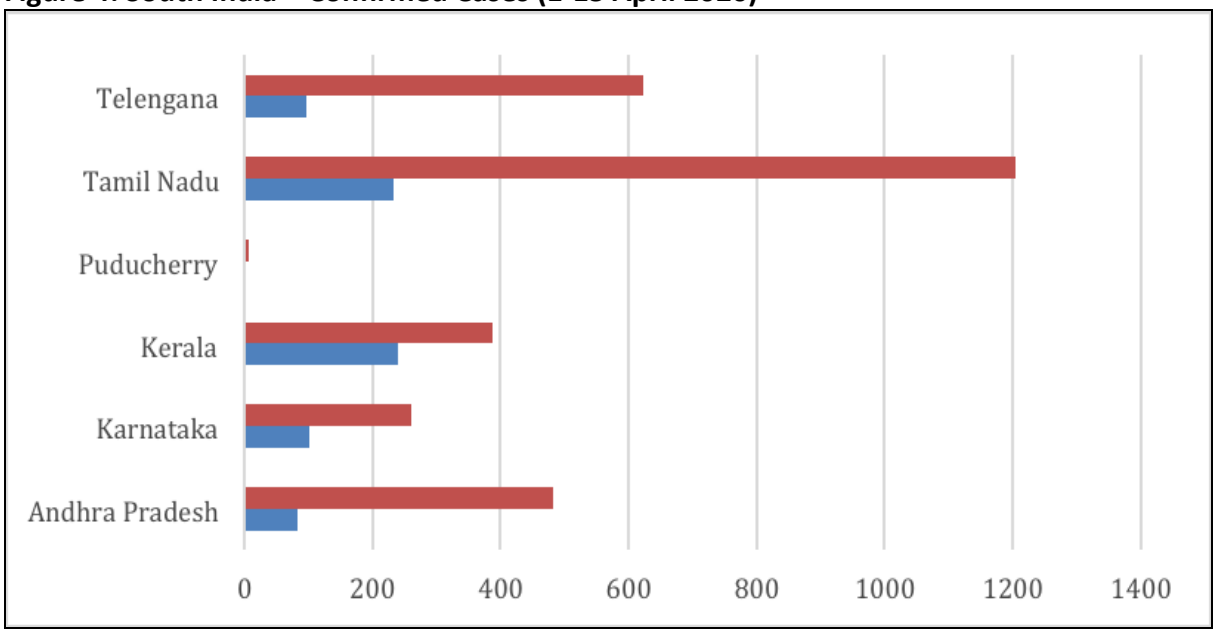
Delhi and Madhya Pradesh are at high risk given the exponential rise in the number of cases, and rising fatality rate. Relative risks might be greater for Madhya Pradesh, given its large size and significant chunk of rural segments, where testing and contact tracing might be relatively limited due to capacity constraints. In this regard, Rajasthan, notwithstanding similar characteristics, has been able to manage the disease better. In spite of having the second largest confirmed cases in the Northern region, it has been able to restrict the fatality rate, at well below one per cent, compared with almost seven per cent for Madhya Pradesh. Punjab, while having a much lower number of cases, has as a fatality rate as high as Madhya Pradesh. Uttar Pradesh, notwithstanding the large vulnerabilities it has, in terms of being the largest state, deficient public health infrastructure and borders with Delhi enabling easy passage of the contagion, has performed better than expectation, as has Haryana. The success of Rajasthan, Uttar Pradesh, Haryana and Punjab in keeping the number of cases within manageable limits might also be due to their effective enforcement of the lockdown, Jammu & Kashmir too seems to have come off the trajectory of the fast rise in cases, it experienced earlier.

South India

Increase in confirmed cases in South India has been mostly due to the spurt in Tamil Nadu, followed by Telangana and Andhra Pradesh (Figure 4). The current analysis classifies all three states in the same group (Table 1) with the coming weeks being crucial for them to curb the spread. The Southern region's sparkling success, and that for the entire country as a whole, has been Kerala. Kerala's ability to steadily reduce the rate of increase in the number of confirmed cases, along with its very low fatality rate, has been significantly responsible for the overall reduction in the share of the region in total cases and number of

deaths. In this respect, Karnataka, might be cause for worry. Its fatality rate of 3.8 per cent is the highest in the region, followed by 2.7 per cent for Telangana. Tamil Nadu, notwithstanding the sharp increase in cases, has a reassuringly low fatality rate. Overall, the South appears to have been relatively successful till now in using the lockdown to keep the spread in relative check.

Figure 4: South India – Confirmed Cases (1-15 April 2020)

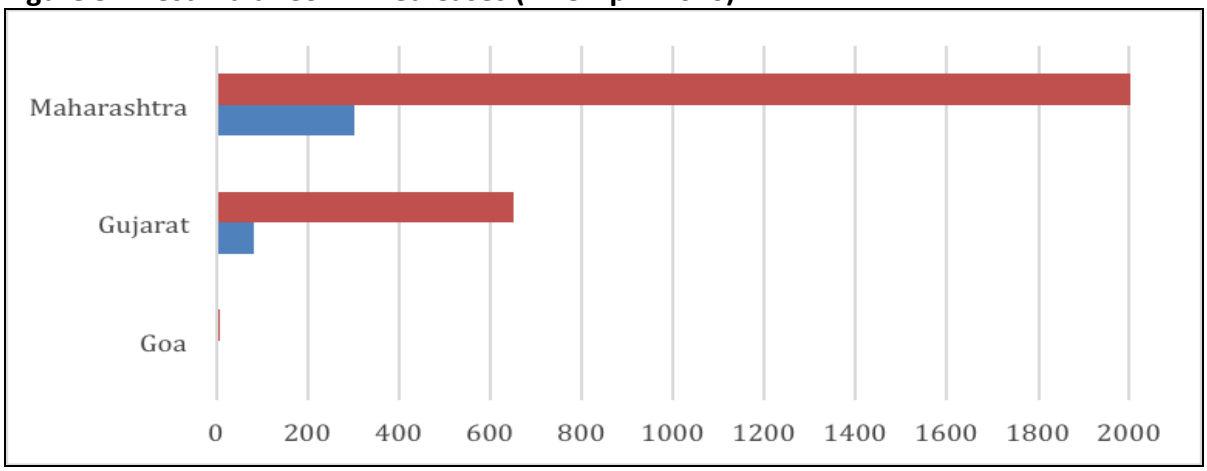


Source: Ministry of Health and Family Welfare, India

West India

Lakshadweep and Dadra & Nagar Haveli – two small Union Territories in India's Western region – are yet to report any confirmed cases, making them part of a select minority of administrative units in India, without COVID-19. Goa, another state on India's western coast, has very few cases and has contained the spread. Nonetheless, the Western region's rising share in total confirmed cases, as well as those dying, is entirely due to the fast spread of COVID-19 in Maharashtra and Gujarat (Figure 5).

Figure 5: West India- Confirmed Cases (1-15 April 2020)



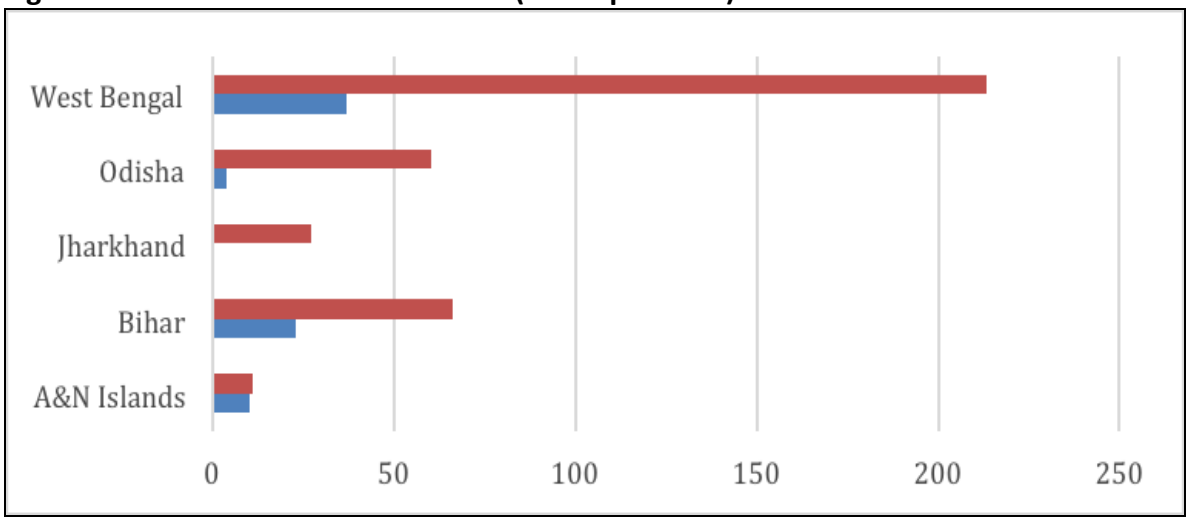
Source: Ministry of Health and Family Welfare, India

Maharashtra is the worst affected state in India. It was so on 1 April 2020, and continues to remain at the top, even on 15 April 2020. The heavy rise in the number of confirmed cases in Maharashtra, which is now getting close to 3,000, draws attention to the challenges the state is facing in tackling the pandemic. Cases are increasing at a fast clip in Gujarat too. It is, however, still a moderate risk state according to this analysis. Compared with its neighbour Maharashtra, Gujarat can derive solace from the fact that its fatality rate is declining, while that of Maharashtra is increasing. From seven per cent earlier, Gujarat's fatality rate has dropped to almost four per cent during the period of this analysis. Over the same period, Maharashtra's fatality rate has increased from three per cent to nearly seven per cent.

East India

Unlike the west coast, which is heavily affected by COVID-19, India's east coast, particularly the parts adjoining the lower and middle Gangetic plains, is relatively less affected (Figure 6). West Bengal, which has the largest incidence of the confirmed infected, still has a much lower number of cases than many other states in the West, South and North. Bihar and Odisha, two other large states in India's East, have less than 100 confirmed cases till now. The low incidence, while reflecting positively on their abilities to contain the spread, particularly during the ongoing lockdown, might also be due to lesser testing and detection. Within the region, West Bengal is at 'moderate' risk like Punjab and Haryana. The remaining states continue to stay in the low spread category.

Figure 6: East India – Confirmed Cases (1-15 April 2020)

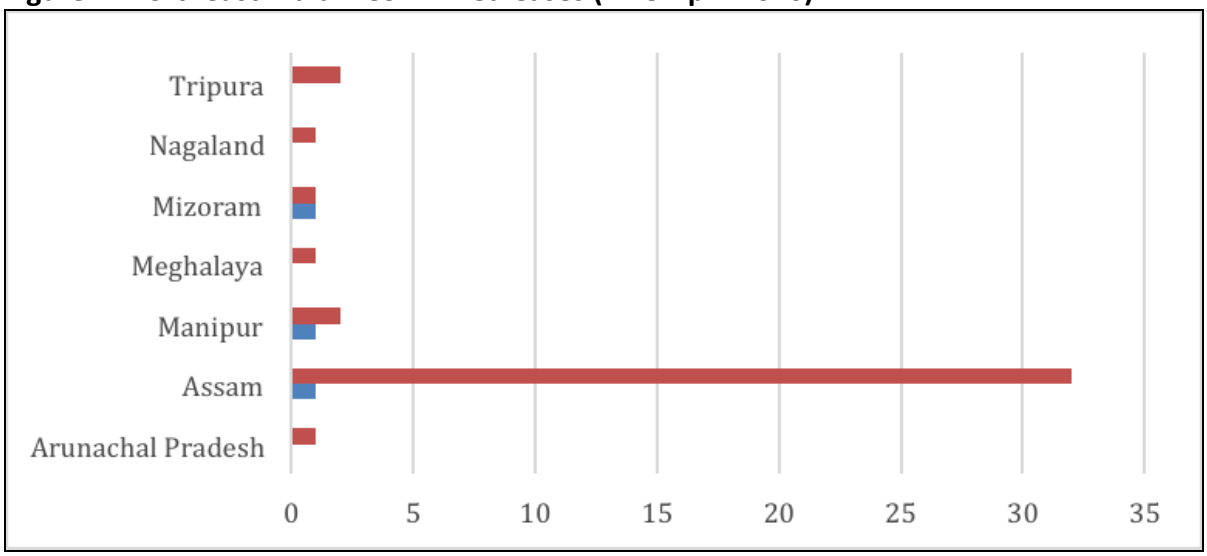


Source: Ministry of Health and Family Welfare, India

Northeast India

Except Assam – the largest state of the region – the rest of the region has hardly experienced COVID-19 (Figure 7). Even Assam has fewer cases than its largest neighbour, West Bengal till now. Sikkim, along with Lakshadweep and Dadra & Nagar Haveli mentioned earlier, remains COVID-19 free till now.

Figure 7: Northeast India – Confirmed Cases (1-15 April 2020)



Source: Ministry of Health and Family Welfare, India

The Prognosis

While Maharashtra in the West remains India's major epicentre of COVID-19, the pandemic has spread to all states of India's Southern region, and has also extended to landlocked hinterland states of the North. With the number of confirmed cases crossing 11,000 and fatalities almost at 400, COVID-19 is as much a threat for India and its people, as it is for the other heavily affected countries in Asia, Europe and the Americas.

India's success in controlling the outbreak depends significantly on two factors. The first is the ability of 'high spread' states – Maharashtra, Delhi, Madhya Pradesh, Gujarat, Andhra Pradesh, Telangana, Tamil Nadu, Jammu & Kashmir, Rajasthan, Gujarat and Uttar Pradesh – in containing the disease. Most of these states are large both in population as well as their contributions to the national economy. Deep, unabated spread of COVID-19 in these states has significant implications for the country's human health and lives, as well as the long-term impact of the pandemic on the economy.

The second crucial factor in India's battle against COVID-19 is the capability of moderate and low spread states in keeping their outbreak curves flat by curbing potential future spikes. If they succeed, then they might be the ones to resume normal functioning earlier than others, and revive economic activity, particularly in agriculture and the rural economy. Food and some other major industrial supply chains in India have been heavily disrupted by the pandemic. Unless some basic economic activity, such as Rabi crop harvesting, doesn't resume soon, the economic damage would begin assuming irreversible proportions. These states have nothing to lose, but much to gain, by continuing their fight against COVID-19.

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