CSRN

India Response Report

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Published:

October 2021

1. Introduction

Since January 2020, the world has been suffering because of the devastation caused by the COVID-19 pandemic. It has led to wide-ranging repercussions that have, and will likely continue to hamper the day-to-day functioning of countries across the world for years to come. India has faced a particularly challenging situation in this regard, where the virus has been impacting millions ever since. This report will look at an overall perspective of how the virus has affected the country, the statistics from official government sources to substantiate the issue at hand, as well as a thorough analysis of the economic, socio-cultural, educational, and environmental elements of the situation. It will also examine the government's response to the pandemic through its measures such as restrictions, lockdowns, vaccination, etc. The report mainly focuses on the second wave that was faced by the country earlier this year, during the months of February-July, 2021. The data and updates included in the report are till the 21st of June, 2021.

2. Profile of India

The Republic of India is the most populous democracy in the world, and the second-most populous country overall, housing over 1.2 billion people. The secular nation is in South-East Asia, stemming from the historic Indus Valley Civilization. It houses the most ancient scriptures of Hinduism, Buddhism and Jainism, and is rich in intellectual fields of mathematics, astronomy, music and the fine arts. It is one of the most geographically and ethnically diverse countries, with over 22 regional languages. Despite a history of imperialism by the British Empire, circa 2017 India's economy is the sixth largest by nominal GDP and third largest by purchasing power parity. However, it still faces challenges of poverty, governmental corruption, inadequate public healthcare and remnants of an ancient caste system. The Indian government has recently come under fire from some domestic and most international press organizations for its handling of the COVID-19 crisis. TIME magazine[1], NYT[2], and Al Jazeera[3] have been some organizations that have produced critical pieces on India's response (or lack thereof) to the pandemic.

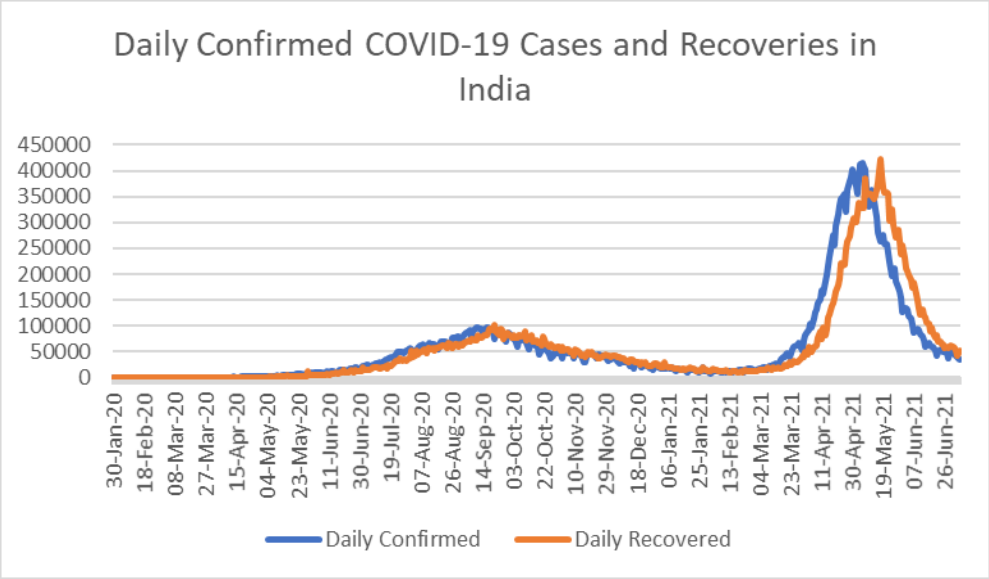
3. COVID-19 India Cases, Recoveries, and Deaths Data Analysis

To understand the COVID pandemic in India through a data-driven lens, we will look at data provided by a national network of volunteers that aggregate and verify data from state bulletins and official handles in real-time. The result is a time-series dataset on cases, recoveries, and vaccinations – which we have found to match the numbers provided by the Indian Government. In situations where the two sources have not matched, we have found the former stating even higher numbers than the latter. The following report aims to shed some light on the geographical trends underpinning the initial spread of COVID in India, peak points during both the first and second wave, as well as state-level responses to the pandemic (in terms of vaccination).

It is worth noting that the dataset, while vetted by a network of non-government volunteers, is ultimately and primarily based on the figures provided by the Indian Government, which brings about potential issues regarding its reliability. For example, there have been instances of undercounting due to the omittance of deceased patients with co-morbidities. Such limitations decrease the value of our analysis, consequently the value of the insights drawn and these limitations must be kept in mind whilst reading the report.

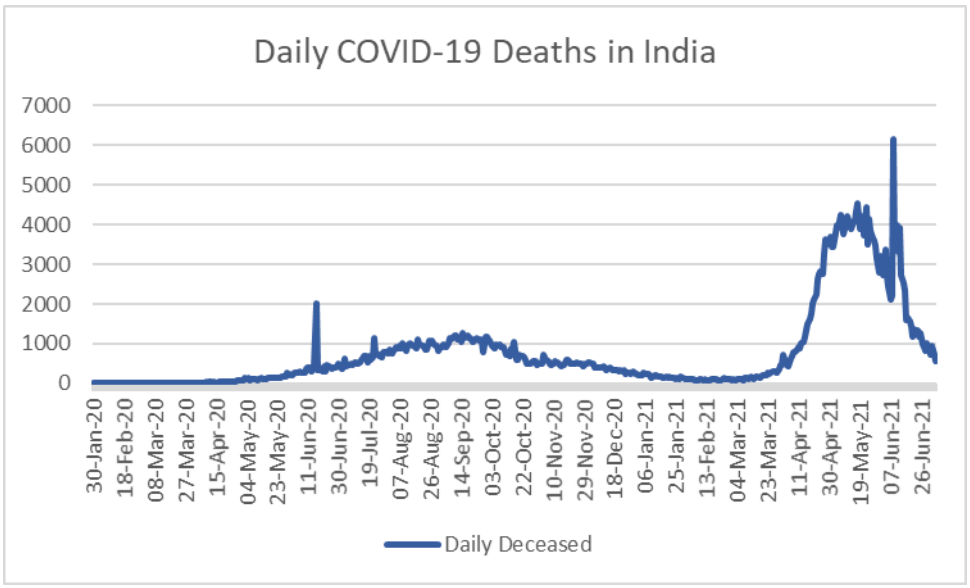
3.1 High Level Overview

We begin by looking at the daily rate of COVID cases, recoveries, and deaths. Given that daily confirmed cases and recovery rates have been at a much larger scale than daily death rates; we will begin by looking only at these two and then look at death rates in isolation.



Looking at the graph above, we see a significant difference in the peaks (approx. 4x), which highlights the second wave's severity compared to the first. Another point to note is that, compared to the first wave, we see a significant time lag in the case rate curve (blue) and the recovery rate curve (orange), indicating a longer recovery time in the future than expected.

Having looked at the daily case and recovery rates, let us now look at daily death rates. As mentioned before, compared to the first two, daily death rates have been much lower, which we see once we visualise the data:

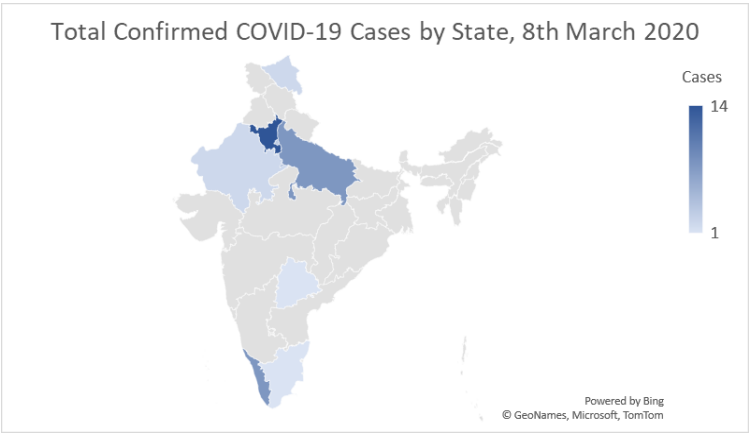


Across both graphs, we can loosely divide the timeline into three sections:
(i) the initial spread of the pandemic (approx. 30th January 2020 to 31st May 2020)
(ii) the first wave (approx. 31st May 2020 to 31st January 2021)
(iii) the second wave (approx. 28th February 2021 to present).

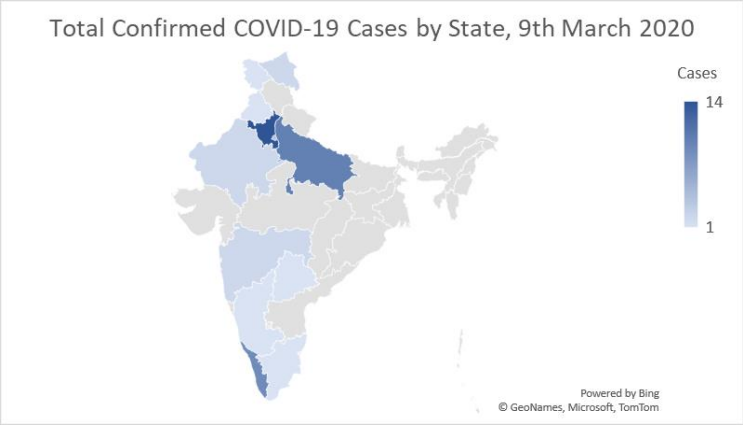
Looking at section (i), we see that this area is unexplained by either graph, as they do not give us much insight (which is expected, given that the disease was spreading back then). We can further explore this period by looking into each state and construct a timeline of how COVID-19 spread across India, which set the stage for the first wave.

3.2 Timeline of Key Events of Initial Spread of COVID-19

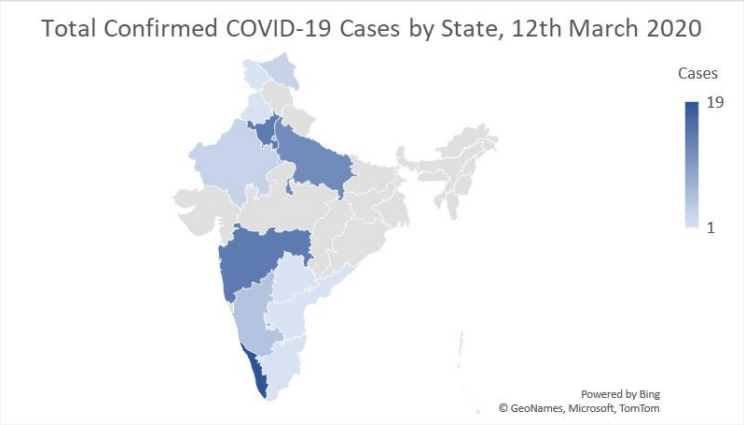
On 30th January 2020, the first case appeared in Kerala. However, confirmed cases only began to gain traction on 8th March 2020:



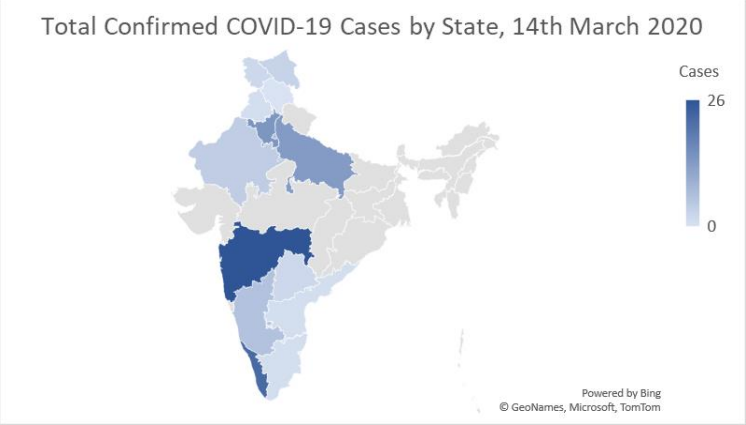
At this initial point, confirmed cases were primarily limited to some northern and southern states. However, the next day (9th March 2020), these 'clusters' from both ends of the map began to move towards the centre, with confirmed cases appearing in lower northern states (Punjab), higher southern states (Karnataka), and western states (Maharashtra):



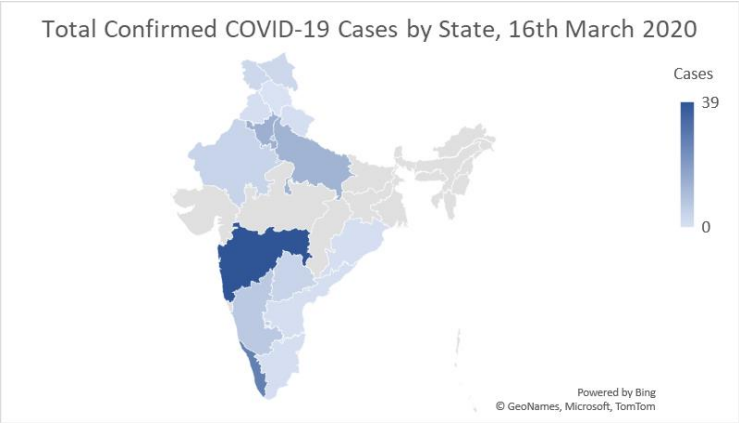
By 12th March 2020, all southern states (except Goa) now had confirmed cases:



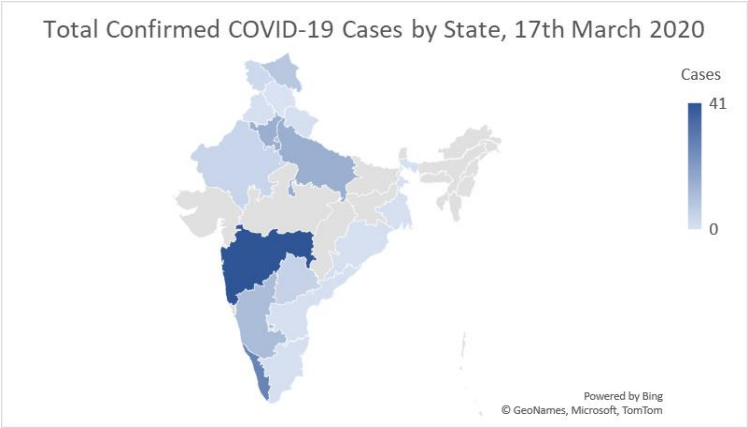
On 14th March 2020, cases began spreading to more northern states (such as Himachal Pradesh). Furthermore, this point also saw Maharashtra overtaking Kerala in confirmed cases of the first time, after which Maharashtra continued to (and continues to) lead in confirmed cases nationally:



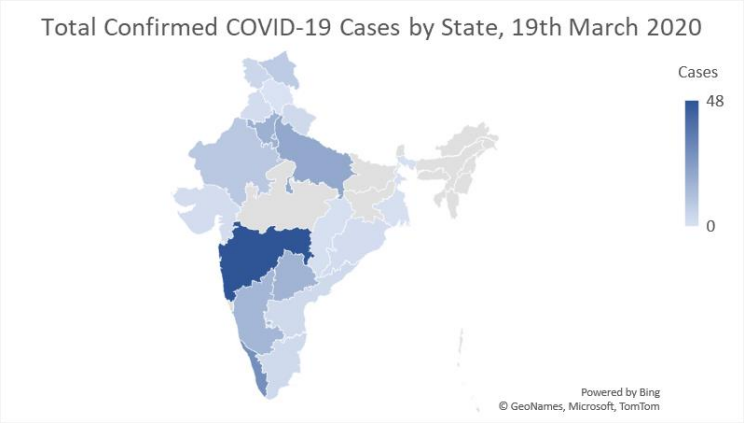
With the first confirmed cases appearing in Uttarakhand on 16th March 2020, all northern states now had confirmed cases:



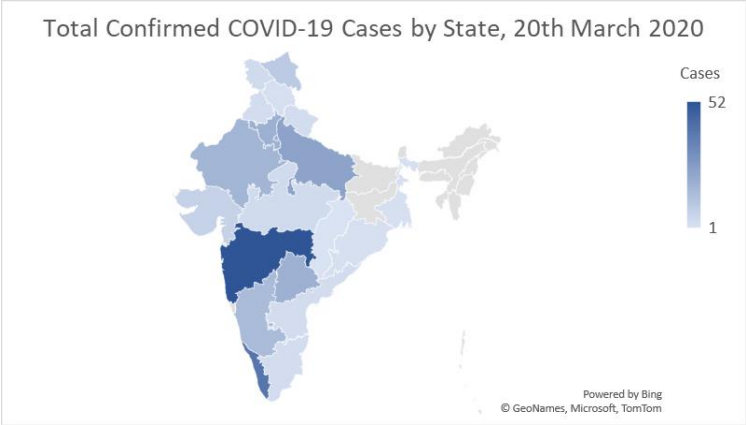
The following day (17th March 2020), cases began spreading to eastern states (Odisha and West Bengal):



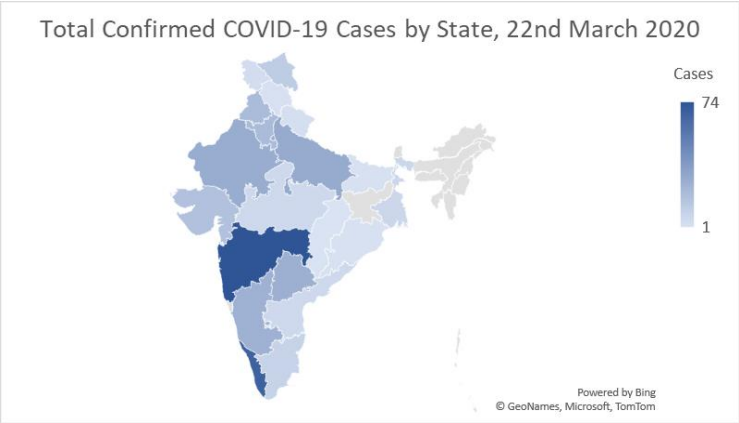
By 19th March 2020, with the first confirmed cases appearing in Gujarat, all western states now had confirmed cases. Simultaneously, cases also spread to more central states (Chhattisgarh):



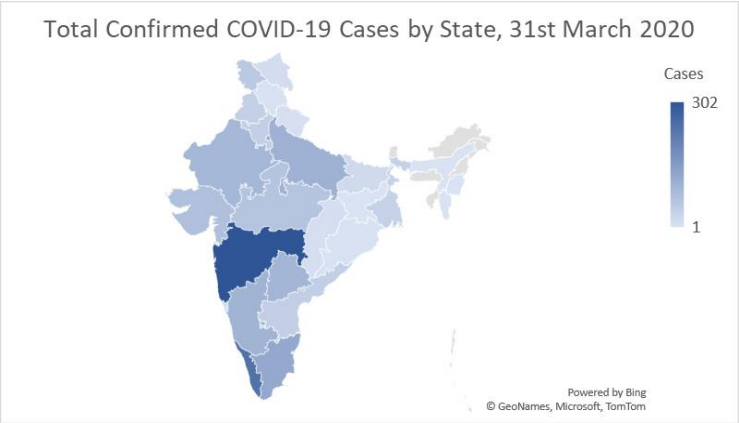
The next day (20th March 2020), the first confirmed cases appeared in Madhya Pradesh, hence making the eastern region the last region to have confirmed cases in every state:



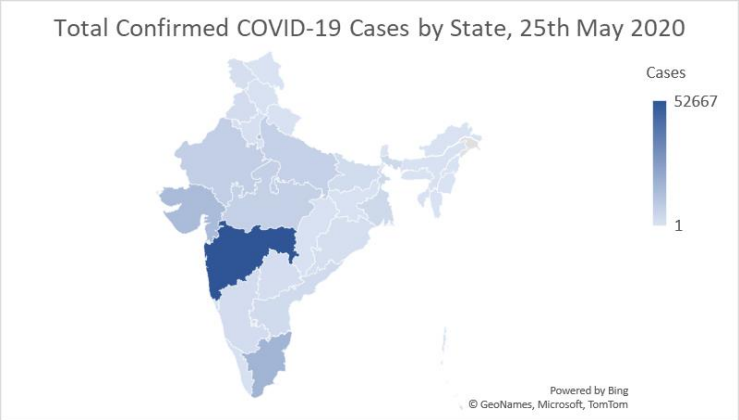
On 22nd March 2020, confirmed cases began spreading to central eastern states (Bihar):



By 31st March 2020, all states west of Bangladesh had confirmed cases:



Finally, only by 25th May 2020 did every state have at least one case. Note how quickly it took for the pandemic to spread among the southern, northern, western, and central regions, compared to the eastern region:

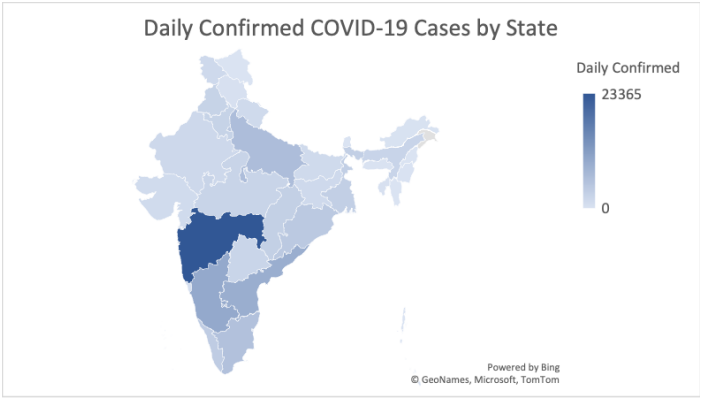


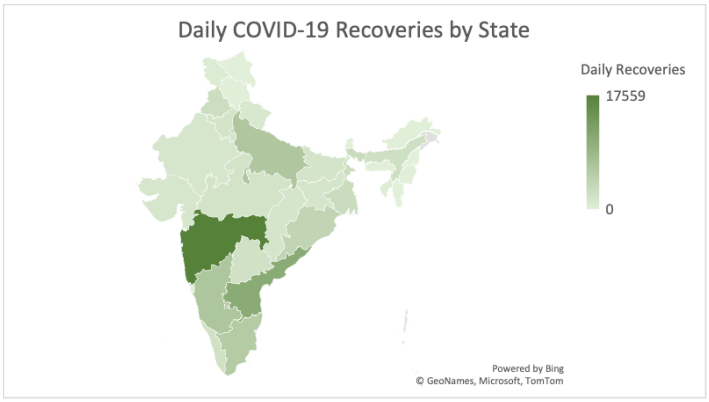
Note: the original dataset combines data from the union territories Dadra and Nagar Haveli, as well as Daman and Diu, into one data point. However, the heatmapping software on which the following graphs were made requires this data to be segregated into the two regions. As such, trying to assume a certain split (e.g. 50-50) would decrease the accuracy/validity of the analysis, and hence they were omitted.

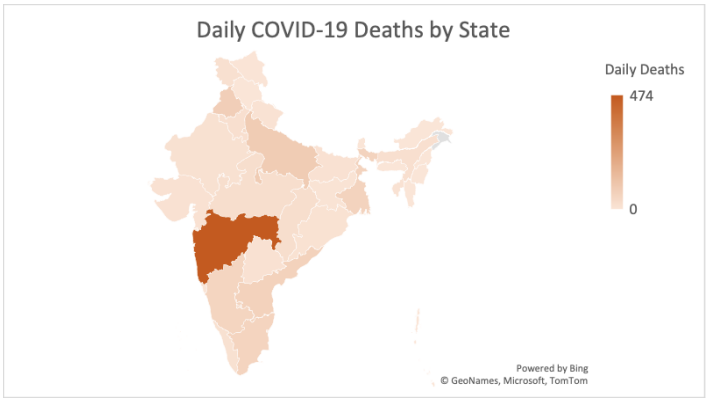
Furthermore, there were several entries that were labelled as "State Unassigned", which for obvious reasons, could not be included on these maps.

The following section of the report will assess and examine the path that COVID has taken in India at 3 points in time. The state of COVID at each of these points in time will be examined using heat maps which have been produced from the use of government data on the number of cases, recoveries and deaths on that particular day. Using these heat maps, comparisons and differences will be drawn from the data to expose trends and anomalies between the states at each stage. The first two sets of heat maps examine the state of COVID in India during the peaks of the respective waves of infection. The final set of heat maps reveals the current situation of COVID in India.

3.3 Peak of COVID-19 during the 'First Wave' – 16th September 2020







The figures above are taken from the day of the 16th of September 2020, what is considered to be the 'peak' of the first wave of COVID in the country. These heat maps reveal the spread of COVID across the country in what was the less deadly wave compared to the 'tsunami' of cases and deaths associated with the second wave in mid-2021.[4] It has been suggested that the reason for India's relative success in keeping the pandemic under some control during this first wave compared to other countries was due to the imposition of strict measures from an early stage. Many point to the nationwide lockdown that was imposed from the 25th of March 2020.[5] Although, the imposition of such a strict lockdown at short notice left many of India's internal migrant workers stranded, who number approximately 40 million.[6] This in turn led to a mass migration of these workers, moving from states such Uttar Pradesh and Bihar which account for more than 80% of the workers in this sector back to their home states.[7] This led to many of these workers, who were carrying the virus, to pass it to their communities at home, which, on the whole, were in rural areas of neighboring states.[8] It is possible that this mass migration may be responsible for the higher proportion of cases and deaths in states such as Punjab and West Bengal.

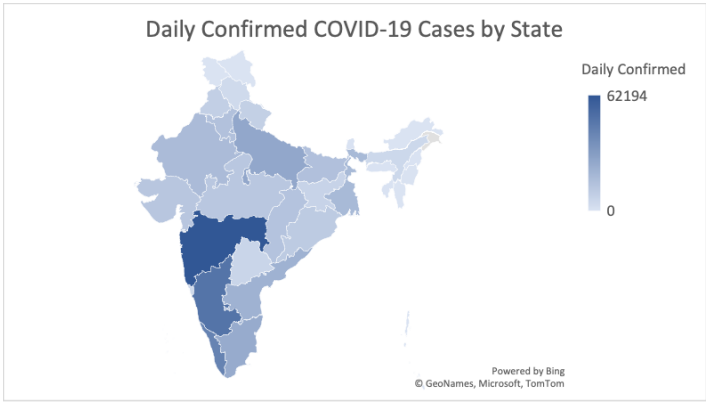
The heat maps show a clear outlier in cases, recoveries, and deaths, that being the state of Maharashtra which can be considered the epicenter of the pandemic in this wave as well as the second - as we shall see. The state is home to the largest city in India, Mumbai, as of 2011.[9]

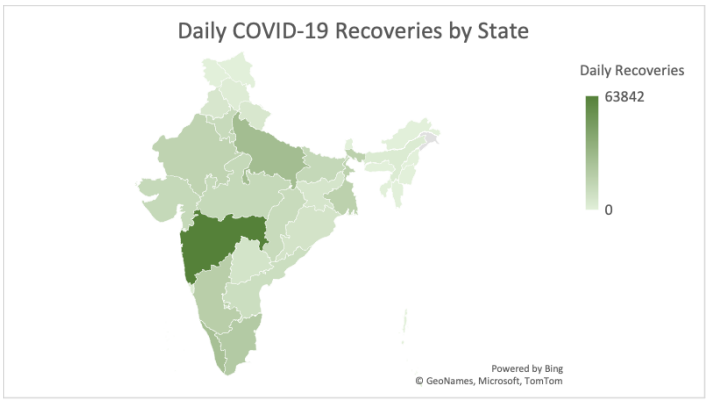
The heat map also reveals that the Southern portion of India was hit worse by the virus than the Northern states as a whole. Although, as is visible, there are a couple of anomalies to this. These are the states of Delhi and Uttar Pradesh. The state of Delhi most likely had a bad outbreak due to the

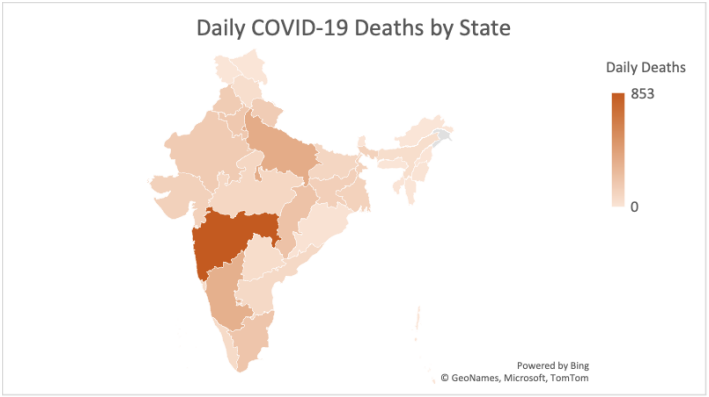
high urban proportion of its inhabitants (97.5%)[10], whereas Uttar Pradesh has the highest population of any Indian state at almost 200 million.[11] These two variables allow for a higher rate of transmission of the COVID virus within the community.

This heat map also clearly displays the high number of recoveries in the states where cases were high. Unlike the second wave below, as a result, deaths remained relatively low in comparison.

3.4 Peak of COVID-19 during the 'Second Wave' – 6th May 2021







The figures above are taken from the day of the 6th of May 2021, what is considered to be the 'peak' of the second wave of COVID in the country. These heat maps reveal a much more widespread and intense wave than the prior one in September the year previous.

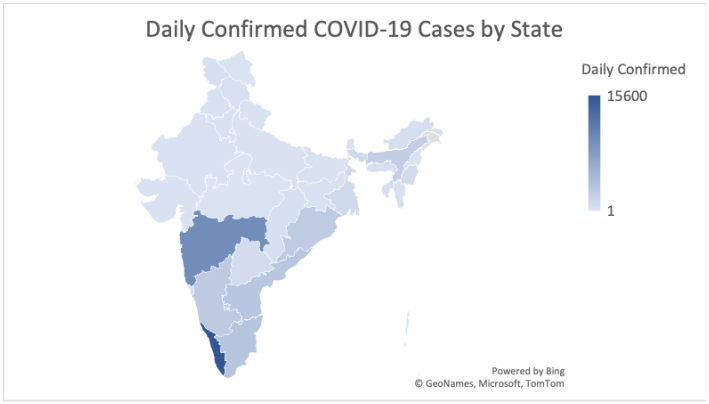
The heat map showing the daily cases is particularly revealing. Compared to the first wave, it is clear that each state had significantly more COVID cases. Although the second wave was much more widespread than the first wave, it is apparent that the pandemic had concentrated itself primarily in the southern states of India, including Maharashtra, Karnataka, and Kerala.

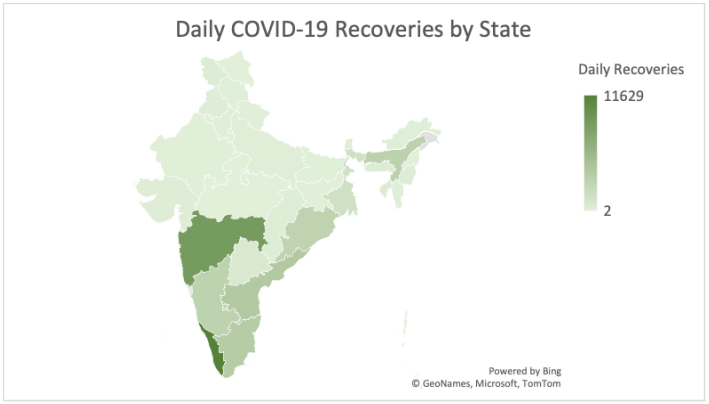
Interesting to note is Maharashtra in both the first and second wave of the pandemic, which experienced the largest proportion of cases and deaths in each case. It has been suggested by some reports that the reason why Mumbai has remained as the epicenter of the pandemic in the country is because of the highly and densely populated slums in the southern portion of the city.[12] The nature of the slums in the city leads to a lack of social distancing due to the close proximity of housing, a lack of provision for clean water and a lack of medical supplies such as masks to prevent the spread of the virus. In India, slums make up 17% of the total urban population across the entire country, whereas in Mumbai slums make up 42% of households.[13] This suggests a correlation between a higher proportion of cases and deaths on a statewide level to a higher urban population living in slums.

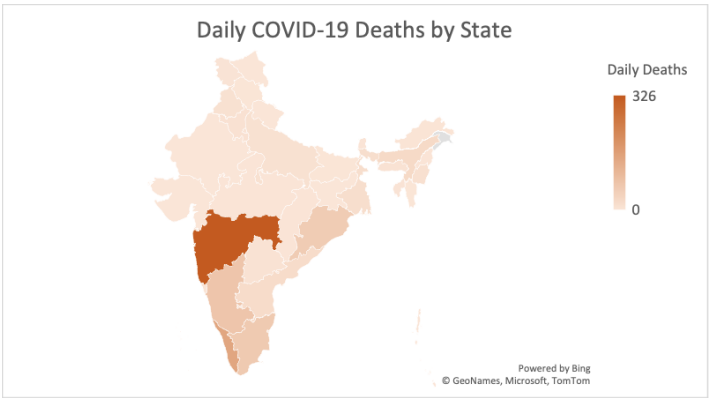
It is also worth comparing the 'recoveries' heat map between the first and second wave as well. In the second wave, there were significantly less people recovering from the virus compared to the first wave. As will be explained in greater depth later in the report, this is due to the fact that hospitals became overwhelmed in the second wave of the pandemic. Shortages of hospital beds, oxygen and delays in hospital admissions resulted in a large number of people being unable to receive treatment, hence leading to less recoveries in the second wave compared to the first wave.[14]

Drawing these conclusions, it informs the view of the daily 'deaths' count. There is a strong correlation, as to be expected, between the number of 'cases' to the number of deaths. As expected, Maharashtra and Uttar Pradesh had particularly high death counts during the second wave for the reasons that were explained above. There is an outlier to this rule, though, and that is the state of Kerala. As can be seen from the heat maps, although it had a large proportion of cases, it had a relatively low number of deaths. According to the Indian government, the death rate in the state during this period was around 0.4%, one of India's lowest.[15] There is a reason for its success in keeping deaths down during this wave. From the outset, the state set up 'war rooms' in each district of the state, which was used to keep close monitoring of oxygen supplies, the number of hospital beds, and other key factors which could affect the success of the response from the state government.[16] These war rooms made sure that the state had a steady supply of oxygen to anticipate the spike in cases along with state officials working closely with doctors on the ground. In addition to this, the state has more than 250 hospital beds per 100,000 people, which is about 5 times higher than the average for India. It also had more doctors per person than most states in the country.[17] The state recently has been able to keep deaths relatively low despite a high spike in cases, as will be discussed below.

3.5 Current COVID-19 Situation – 7th July 2021







The figures above are taken from the day of the 7th of July 2021. This is an up-to-date heat map revealing the current state of COVID in India.

Similar to the other sets of heat maps, Maharashtra is once again the epicentre of the pandemic. After the state experienced a surge of cases in May 2021, leading to a high number of deaths during the month of June in the same year, both cases and deaths have been reducing since, although they still remain high.[18] The other state where cases are particularly concentrated is Kerala, which has seen a surge of cases in recent weeks. According to Indian Medical Association state secretary Dr Gopikumar

P., cases have increased in the country due to a "low number of testing and poor tracing measures".[19] It is still unclear whether the state has reached the peak of the surge or if its case numbers may continue to grow. Despite the surge in cases, the state has done well in keeping the numbers of deaths low, as displayed by the heat map - this is true especially when compared to Maharashtra. The reason for this was explained in the section above regarding the second wave in India.

Although the southern region of India is, on the whole, still recovering from a recent wave of cases, the eastern and some parts of the north-eastern region have recently been particularly hard hit by the virus. The heat map reveals a steady number of cases as well as deaths still being recorded in Odisha and Andhra Pradesh in the east, along with Assam in the northeast. These states saw a steep surge in cases towards mid-May 2021, which continued into June of the same year.[20] It is understood that the primary culprit for the sudden rise in infections is due to the development of a new strain of the virus, which is now referred to as the 'Delta Plus' variant.[21] It is still unknown to a great extent how the variant differs to the 'Delta' variant; however, India has labelled the new variant as a 'variant of concern', meaning the variant will have one (or more) of the following characteristics: [22]

- Increased transmissibility
- Stronger binding to receptors of lung cells
- Potential reduction in monoclonal antibody response

At the moment, the state of Andhra Pradesh is towards the latter end of its recovery as the number of cases and deaths are continuing to decrease at a steady rate[23]. The state of Odisha in the eastern region provides a different story. Although cases are reducing at a relatively steady pace, the death rate has been increasing on average every week since mid-April.[24] At the moment, it is unclear when this rate will begin to decrease. Although, we can speculate that it may reach its peak and consequently decrease within the course of the next two weeks due to the average time between onset of symptoms and death being 7 to 10 days.[25]

The state of Assam is experiencing a similar situation to Andhra Pradesh where, on the whole, both cases and deaths are steadily decreasing and will continue to do so for the foreseeable future.[26] The rest of the northeast region has recovered from the sudden surge of cases to a greater extent than Assam, which is why the heat maps show a lighter shade in the cases and deaths maps when compared to Assam. As for the rest of India - in particular the north and central regions of the country - cases remain low, and as a result, so do deaths.

4. Impact of COVID-19 in India

The pandemic has had several impacts on the citizens of the country and the nation as a whole, this section focuses on the repercussions of COVID-19 in India, in terms of socio-economic factors, employment, socio-cultural factors, education, and environmental aspects of India during the pandemic.

4.1 Socio-Economic Impact of COVID-19

Since the pandemic hit India, in 2020, the country and the government has taken several decisions to reduce the impact of the pandemic, these include social distancing norms, lockdowns, self-isolation, travel bans and restrictions. There has been an impact on all economic sectors, led to a reduction in workforce, job loss and disruption of livelihood. From environment to education to tourism, no sector has been spared. Due to school closure, there has been a disruption of normal life of children. There is an increased demand for not only medical supplies, food sector and a decreased demand for commodities and manufactured products.

GDP and Growth of the Economy: Reserve Bank of India (RBI) in its recent projection of India's real GDP growth pegged it at 10.5% whereas International Monetary Fund (IMF) pegged it at 12.5% for FY22 in April 2021.[27] The government has released data showing that India's economy has contracted in the past year, and is at a 40-year low. There is growing poverty, rural unemployment, decrease in wages, and there has been a need for urgent government intervention.[28]
IMF has revised India's output growth forecast for next year from 11.5% to 12.5%. There is also a prediction that GST collections will fall below Rs 1 trillion in July.[29] On the other hand, they were at a record high in April at Rs 1.41 trillion and fell down to Rs. 1.02 trillion in May. [30] There has been an impact on real estate and house prices, and demand has crashed along with the average house price being expected to stagnate this year. [31]

Historically, pandemics have accentuated the impact of socio-economic inequalities, and COVID-19 is no exception:

Greater financial difficulties were associated with significantly greater odds of non-accessibility to healthcare (12 times), inappropriate health provisions (11 times) as well as discontinuity of care (15 times).[32] Greater financial stress which has been exacerbated by the pandemic due to unemployment and job uncertainty predicted poorer mental health, higher anxiety, depression, and stress.[33]

The lockdown further leads to a stress on the supply chains in the country and has further affected most informal sectors and daily wage workers. Due to the restrictions set in place for the movement of only essential services, many e-commerce websites stopped selling non-essentials and decided to only focus on critical supplies.[34]

Stock Markets: Even the stock markets experienced a significant drop, with the Central government encouraging local governments to adopt more targeted approach to soften the economic blow due to the disastrous second wave. The Nomura India Business Resumption Index (NIBRI) that tracks high-frequency economic indicators fell down rapidly during May 2021. [35]

Manufacturing: Even the manufacturing sector saw a crash during the second wave of the pandemic with March 2021 IHS Markit India Manufacturing Purchasing Managers' Index (PMI) at 55.4 from 57.5 from February 2021 and with a small improvement to 55.5 in April 2021. [36] India's service sector witnessed a fall as it was at a three-month low in April due to reduced operations and business closures. The Purchasing Managers' Index (PMI) declined to 54 in April from 54.6 in March. [37] Even the insurance sector saw a massive rise in claims as the COVID-19 cases saw an increase. As per data by the General Insurance Council (GIC), the insurance industry registered 10.07 lakh claims worth Rs 14,738 crore until April 7, 2021. [38]

Some groups have been more vulnerable during the pandemic like households with single women, people with disabilities and those with people from transgender communities.[39]

The second wave even hit the rural economy as the cases spread to the villages and towns and pressurized the fragile healthcare sector. This affected the agricultural supply chains, the rural demand and consumption because the Marginal Propensity to Consume is higher in rural areas.[40]

Food Production, Prices and Insecurity: Not only in terms of medical infrastructure and demand, supply chains across the nation were impacted severely. Like, agricultural supply chains and harvest were affected because migrant labourers returned home as the lockdown set in. This included the issue of transportation of the harvest because of the government-imposed travel restrictions. Poultry and milk farmers also needed more support as the issues of market access and connectivity were widely prevalent. [41]

The supply of food was disrupted to a greater extent when COVID-19 cases are higher on a state and local level. The correlation between COVID-19 exposure and supply disruption disappears when we instead define exposure at the district-level and remains small and not statistically significant when we exploit only within-state variation. These results suggest that the strong relationship between supply disruptions and COVID-19 exposure is not driven by local reactions. Instead, the pattern of results is more consistent with supply disruptions being driven by state-led reactions, with states with more COVID-19 cases reacting more aggressively[42]

Consumer food prices in most urban areas have risen, driven by increased frictions in the supply chain in the form of limited availability of labor, higher transportation costs and uncertainty around logistics[43]
Under the national lockdown, people in urban areas were more likely to be vulnerable to food insecurity than those in rural areas. This is true for especially those, who were dependent on wage employment. Meanwhile, in rural areas, the collapse in producer prices and farmers' difficulty in selling their produce implies lower prices and greater availability of a variety of foods[44]
Some of the largest food and beverage producers in India are located in the Western and Central provinces of the country - Maharashtra and Punjab each produce 24.14% of the country's food and beverages, with Gujarat producing 20.69% and Uttar Pradesh producing 17.24%.[45] Given that some of the largest producers of food are in the Western zone of the country, this will have significant economic implications for the farmers in these regions. This is because many have not been able to successfully transport their goods due to lockdowns and restrictions on travel, it is possible that the livelihoods of some of these rural workers may be put in jeopardy as a result.

Poverty: Nearly 75 million people fell into poverty in India as per the Pew Research Centre which led to a 60% rise in global poverty. [46] Almost 32 million Indians could no longer be considered as middle class as per the Pew Research Centre.[47]

Tourism: The impact was felt in the tourism sector equally severely; with visas suspended and tourist destinations being closed down, the tourism value-chain suffered extreme losses and it is expected that the industry will be impacted for a several years to come with slow recovery.[48]

4.2 Employment

Due to different restrictions and lockdowns being imposed across the country during the first and second wave and with cases blowing out of proportion, businesses, commercial establishments and several other services were either shut down or were turned into work from home jobs except the essential services and front-line workers as defined by the government. Unemployment has been on the rise, entering double digits in May 2021, there has been a loss of jobs, decrease in wages and loss of income and livelihoods. [49]

A report and survey by the Hunger Watch Report has shown that unemployment persisted for six months after the lockdown last year in India, resulting in a drop in income level across all informal sectors. According to the survey, more than 27% of the households surveyed had no source of income six months after the lockdown was implemented. About 43% of respondents had no income in April-May [50]Only about 3% of those who had no income in April-May had returned to pre-lockdown income levels in October, while 56% of those who had no income in April-May appeared to have no job even in October.[51] 71% said that their consumption of nutritious foods had deteriorated[52]

The economy of the country contracted by 7.3% in 2020-21 which was the worst performance for India in over four decades.[53] The unemployment levels in the country for the month of May were over 10% where post the second wave, the levels saw an improvement with the rural areas faring better than the urban after the country saw relaxation in restrictions. [54]The rate fell down to 8.7%. Data from the Centre for Monitoring Indian Economy (CMIE) suggested that urban unemployment fell to 9.7% in the week of June 13 where the monthly rate for May stood at 14.7%.[55] The monthly rural employment stood at 10.63% in May whereas it dropped to 8.23% in the week ending June 13. [56] It must be noted that the rise in unemployment was lower compared to 2020, when the pandemic began, and lockdowns were imposed. [57] The Labor Force Participation rate is the other reason for unemployment as it remained almost stagnant where in April it stood at 39.98% and around May end only slightly increased to 40.1%. [58] India's Debt to GDP ratio also shot up to 90% as per the International Monetary Fund (IMF) leading to an impact on the government's fiscal position. [59]

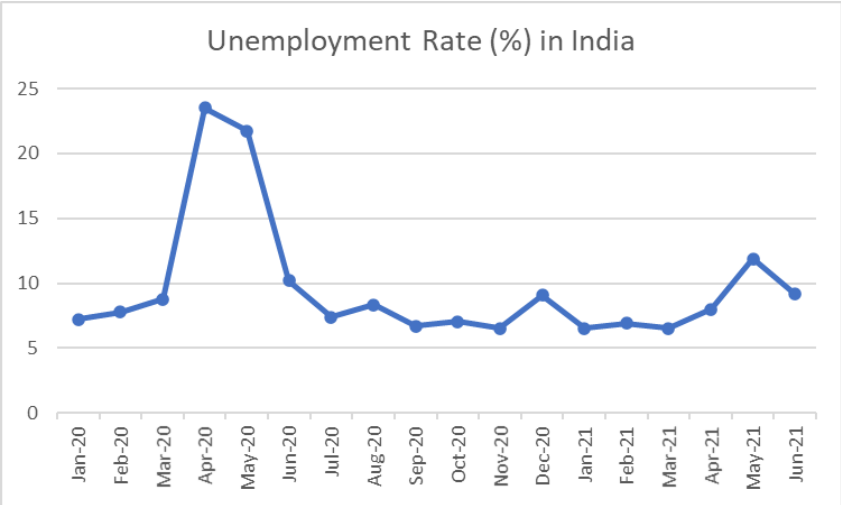


Figure: Unemployment Rate in India during the pandemic

As in the figure above, the data for unemployment by the Centre for Monitoring Indian Economy (CMIE)[60] depicts that the levels were the highest during the months of April and May 2020, reaching 23.52% and 21.73%, this was when the pandemic had struck the country and restrictions and lockdowns were imposed. But, with the easing of restrictions in the later months, the rate fell down. Eventually, when the second wave hit India, the rates started to increase drastically with them being 7.97% in April 2021 and later 11.9% in May 2021.

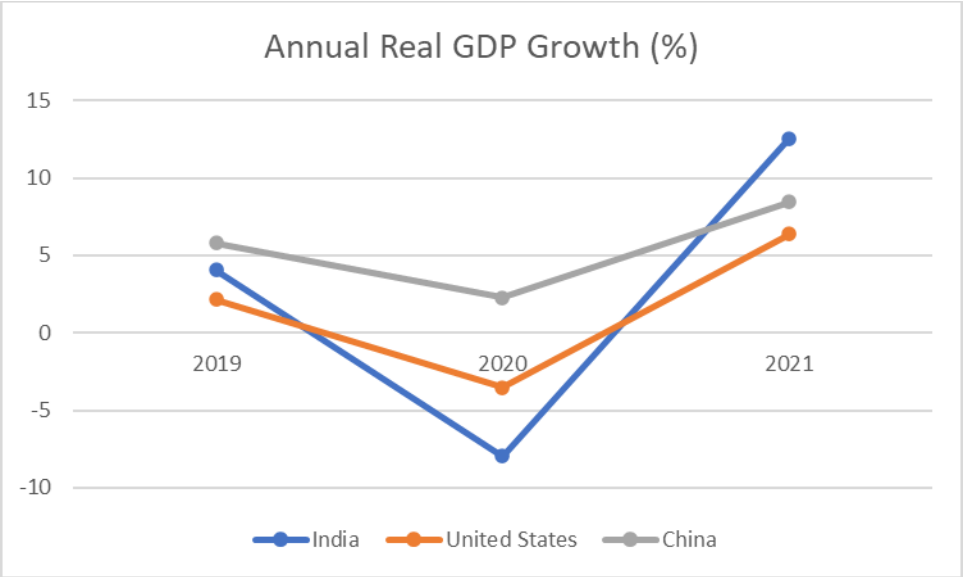


Figure: Annual Real GDP growth (in %age)

The above graph depicts the annual Real GDP Growth in %age for the years 2019, 2020 and 2021, i.e. before the pandemic in 2019, when the pandemic hit us – in the first wave in 2020, and the second wave in 2021. The data has been taken from the International Monetary Fund, World Economic Outlook.[61] The three countries taken into consideration here are China, the United States of America and India. China and the United States are here to understand how the economy of India has performed in comparison to the other countries.

In 2019, the GDP growth in all the countries was positive, with China at 5.822%, India at 4.062% and the lowest in the United States of America at 2.161%.

Further, it can be seen that the GDP contracted the most in 2020 when the pandemic damaged the economies in most countries and stood at (-)7.965% for India, (-)3.505% for the United States of America and 2.27% for China because of a sudden shock to the economy owing to the pandemic.

For 2021, the GDP growth has been estimated at 12.546% for India which is the highest among the emerging and advanced economies but this was before the second wave struck the country and led to fresh restrictions and significant rise in cases. For China and the United States of America as well, we can an increase in the GDP growth rate at 8.437% and 6.386% because of economic recovery.

4.3 Supply Chain

COVID-19 disrupted the supply chains of almost all sectors, here we will analyses the response of the states towards the supply chains of food, medical supplies, hospital beds, doctors and oxygen.

4.3.1 Medical Equipment

The Commerce Ministry has stated that oxygen production has increased from 5,700 MT per day in August 2020 to 9,446 MT per day in May 2021. The Ministry noted that the production capacity also increased from 6,817 MT per day to 7,314 MT per day, and capacity utilization has also gone up from 84% to 129% during this period.[62]

Northern States

- **Uttarakhand –** The central government increased Uttarakhand's oxygen quota and allowed the state to use medical oxygen that was generated in the state itself.[63] The state government also requested the assistance of industrialists residing there, under CSR (corporate social responsibility) initiatives, such as urging Mahindra to donate 1,000 oxygen cylinders, 1,000 oxygen concentrators, 10 medical oxygen generators, 500 BiPAPs and 500 CPAP monitors among other equipment.[64]

Central States

- **Madhya Pradesh –** The state received 656 MT from the Central government, through special trains run by the Indian Railways.[65] The government of Madhya Pradesh increased production of Remdesivir in the state and invited quotations from global manufacturers for drugs like Injection Amphotericin B (Liposomal), Tab. Posaconazole and Injection Posaconazole.[66]
- **Uttar Pradesh –** The state government offered an incentive to those industries producing medical equipment by approving a scheme to offer a subsidy of 25% or Rs 10 crore (whichever was lower) of the total expenditure.[67] The state government also invited bids for 350 oxygen plants to prepare for the 3rd wave.[68]
- **Chhattisgarh –** Chhattisgarh started producing 388.8 MT (megatons) of liquid oxygen daily, not only meeting their own daily demand (160 MT), but also producing an excess (228.8 MT), which they were able to transport to other states like Madhya Pradesh and Maharashtra.[69]

Eastern States

- **Bihar –** The central government assigned Bihar a quota of 194 MT medical oxygen per day.[70] The state government recruited 1000 extra doctors to handle the 2nd wave.[71] They also flew in 10,000 testing kits from Pune.[72]
- **Jharkhand –** The state government implemented plans to increase oxygen beds from 250 to 10,000[73] and launched project 'Sanjeevani Vaahan', vehicles that would provide oxygen cylinders to hospitals around the clock[74]. Jharkhand also received 90 ventilators, 90 oxygen cylinders, 150 oxygen concentrators, 3200 Remdesivir vials and 212 BiPAP machines from foreign aid. [75] The above was allocated to Jharkhand by the central government and were part of the donations received from the UK, Ireland, Romania, Russia, UAE, US, Taiwan, Kuwait, France, Thailand, Germany and many other countries to help India fight the 3rd wave.[76]
- **Odisha –** The state government added 18,000 oxygen cylinders to their present stock of 27,000 and bought 20,000 B-type oxygen cylinders and 10,000 jumbo cylinders from the Centre.[77] They also decided to offer incentives to manufacturers of medical oxygen and drew up plans for 11 oxygen plans in industrially backward districts, with an investment

of Rs 70-80 lakh per unit.[78] The central government supplied 150-160 MT of oxygen to the state per day.[79]

- **West Bengal –** By May, the state government was distributing upwards of 400,000 PPE kits, 300,000 N95 masks, 2,000,000 ply disposable masks, 772,958 green masks(reusable), 150,000 gloves (in pairs) and 100,000 sanitizers in all their districts, daily.[80] To facilitate provision of oxygen cylinders, the state government has a dedicated website that gives the details of oxygen suppliers according to the district. With the increase in cases of Mucormycosis related to COVID, the state government also issued a guideline for the drug Amphotericin to be sold directly to the hospitals/nursing homes only and not to individual patients.[81] This order would help regulate the supply of Amphotericin and prevent hoarding of the drug. To ensure uninterrupted supply of oxygen, a State Monitoring Committee on Supply, Delivery and Use of Medical Oxygen at Patient Level was formed, who would routinely visit hospitals to deal with issues regarding oxygen supply and take measures accordingly.[82]

North-Eastern States

- **Assam -** The state government also announced a policy that offered free power to all oxygen plants.[83] It also imported 50,000 PPE kits directly from China[84] and also became the medical oxygen hub for all north-eastern states, by procuring liquid oxygen from outside the region and storing it in facilities accessible to all other north-eastern states.[85]
- **Arunachal Pradesh –** The state government invited quotations from oxygen cylinder suppliers to deal with the oxygen shortage in the state.[86]
- **Manipur -** The state government requested the help of the private sector in arranging for necessary medical equipment.[87]
- **Mizoram -** Mizoram received 150 oxygen cylinders from Taiwan and 60 oxygen concentrators from Ireland.[88] Lunglei, a district in Mizoram, also received 6 oxygen concentrators from MOFA (Medical Oxygen for All Foundation), New Delhi, as well as 1500 PPE kits, 1500 N-95 masks and 100 oximeters from Vision IAS Academy in Delhi.[89]
- **Nagaland -** In May, the state government said that they have 1588 types of oxygen available in the state, with 980 cylinders at Chumoukedima and another 800 estimated to reach the state from Ahmedabad.[90] Oxygen plants at Kohima, Mokokchung and Dimapur also became operational with other plants were in the process of being set up.[91] The state government also made available 1500 oxygen cylinders for its COVID-19 health facilities.[92]

Over 70 plants around the country have been mobilized in the month of May, 2021 to rush medical oxygen to states facing massive shortage after a surge in COVID-19 patients experiencing breathlessness due to a resurgence of the virus. [93] This centralized oxygen supply plan maps out oxygen sources and supply networks for Maharashtra, Gujarat, Delhi, Uttar Pradesh, Madhya Pradesh, Karnataka, Andhra Pradesh, Telangana, Chhattisgarh, Rajasthan, Chandigarh, Haryana, Punjab, Uttarakhand, Himachal Pradesh, Jammu & Kashmir, Goa, Tamil Nadu and Kerala.[94]

There is a mismatch between the states that produce oxygen and the states that consume it. One-third of the total production is concentrated in East India, while 60% of the demand for oxygen is in the North and South of the country, which results in transportation challenges.[95] Transportation has been severely restricted as a result of the pandemic which has shown that there have been chokepoints in which oxygen supplies either cannot get to their intended destination quick enough, or they are simply unable to reach their destination due to local lockdown related restrictions and obstacles.

Prior to the centralized oxygen supply plan for India, there were numerous cases where areas with high population density had hospitals which came close to, or indeed did, run out of oxygen supplies for the patients. In Uttar Pradesh some hospitals even put "oxygen out of stock" signs. Smaller medical facilities and hospitals were hit worse by the lack of oxygen supply than the major hospitals, which spelled worse fortune for rural areas.[96]

Some organized criminals have used the pandemic to scam individuals and health organizations, and it is quite possible that this could continue post-pandemic as well. The New Delhi police alone have arrested more than 210 people on allegations of cheating, hoarding, criminal conspiracy or fraud in connection with COVID-19 related scams, recently. Similarly, the police in Uttar Pradesh have arrested 160 people.[97] However, this new centralized supply plan for oxygen has already been successful to some extent in supplying the right amount of oxygen to the areas which needed it the most. This assumption is made on the basis that the supply chain does not have any weak links, and it is possible that in future a weak link in the chain may arise.

4.3.2 COVID-19 Facilities

The Western administrative zone has 1 bed for every 576 people[98]
The Central administrative zone has 1 bed for every 795 people[99]
The Northern administrative zone has 1 bed for every 611 people[100]
The Southern administrative zone has 1 bed for every 358 people[101]
The North Eastern administrative zone has 1 bed for every 999 people[102]
On an average in the country as a whole, there is 1 bed for every 637 people[103]

In the Western administrative zone, there are 33 health workers for every 100,000 people[104]
In the Central administrative zone, there are 27.3 health workers for every 100,000 people[105]
In the Northern administrative zone, there are 33 health workers for every 100,000 people[106]
In the whole of India, there are 29.1 health workers for every 100,000 people[107]

Northern States

- **Uttarakhand –** The Defense Research and Development Organization (DRDO) set up two 500 bed facilities.[108] The state government also converted 300 Ayush hospitals into 24x7 COVID care units.[109] The state government also made available 5156 beds without oxygen, 6498 beds with oxygen, 1531 ICU beds and 757 ventilators.[110]

Central States

- **Chhattisgarh –** The state government reopened the quarantine centers that had been used in the first wave.[111] 11 testing facilities were established, with daily testing increasing to 70,000 from 22,000 per day.[112] The state government also established 8 dedicated COVID hospitals with 1750 beds in total and 22 dedicated COVID health centers with 1586 beds in total.[113]
- **Madhya Pradesh –** The state government established 1715 fever clinics around the state for COVID-19 testing.[114] The state government also offered private hospitals extra space to increase facilities for COVID-19 patients.[115]
- **Uttar Pradesh –** The state government converted 45 hospitals into COVID-19 facilities, with the chief minister making additional 100 bed facilities available for use.[116] Ambulance

rates were also fixed by the state government, to ensure that everyone was able to make use of the service.[117]

Eastern States

- **Bihar –** The state government set up 504 COVID-19 care centers to deal with the caseload.[118]
- **Jharkhand -** The state government set up 578 COVID-19 care centers to deal with the pandemic, which included 9374 beds without oxygen support, 9392 beds with oxygen support, 728 ICU beds with ventilators and 2230 beds without ventilators.[119]
- **Odisha -** The state government has 7 dedicated COVID Health Centers, with a cumulative 926 beds, of which 422 are oxygen supported. The state government also has 26 COVID dedicated hospitals, with a total of 4470 beds, of which 2786 are oxygen supported.[120]
- **West Bengal -** The state has 620 COVID hospitals, which includes those run by the government, private hospitals and satellite facilities run by hospitals and safe homes and has a total COVID bed capacity of 39126.[121] The state government also has a dedicated website to provide ambulances as and when needed by the public.[122]

North-Eastern States

- **Assam -** There are a total of 283 dedicated COVID Health Centers in the state, which include both government and private hospitals.[123] The state government also gave ambulance status to all those vehicles carrying Nitrogen, Argon and Oxygen.[124]
- **Manipur –** There are 12 dedicated COVID-19 facilities in the state with around 200 beds in total for COVID-19 patients.[125]
- **Meghalaya -** There are 29 COVID facilities in the state, mostly situated in Shillong, the state capital, with a total of 54 beds without oxygen support, 959 with oxygen support and 138 ICU beds, making the cumulative number of beds to 1151.[126]
- **Mizoram –** The state government has provided for 21 COVID-19 care facilities with a total of 390 beds.[127]
- **Nagaland -** There are 12 COVID care facilities available, with 581 beds available in total, 6 of which are oxygen supported and 50 of which are ICU beds. These facilities have 17,568 PPE kits and 25,849 N95 masks available.[128]
- Tripura – The state government has provided 48 COVID-19 facilities, with a total of 3470 beds.[129]
- **Sikkim –** The state government has provided 21 COVID-19 care facilities, of which 10 are temporary/converted facilities.[130]

The Western region of India has a mixed record in terms of the number of hospital beds that it is able to provide. For example, the Western administrative zone (which contains Mumbai) has more than the national average of beds. It must be kept in mind that urban areas such as Mumbai and Delhi will tend to struggle with hospital bed shortages due to the surges of COVID-19 cases in urban areas relative to rural areas[131]

Despite urban areas being short of hospital beds due to their greater exposure to acute rises in cases of COVID-19, rural areas have such a short supply of hospital beds that usually they are just as, if not affected to a greater extent by such shortages

The Indian rural health care system is a three-tier system comprising Sub-Centers, Primary Health Centers (PHC), and Community Health Centers (CHC). There is currently a shortfall in healthcare facilities: 18% at the Sub-Centre level, 22% at the PHC level and 30% at the CHC level (as of March 2018). Although the number of facilities has increased over the years, the workforce availability is substantially below the recommended levels as suggested by the World Health Organization.[132]
The Western portion of the country as a whole has a total of 31.1 health workers for every 100,000 people in India, better than the average for the country but it does not mean that the Western half of the country is better suited to dealing with the COVID crisis.

Although it means that there are, overall, more medical practitioners to help cope with the more severe COVID-19 cases, as urban areas such as Mumbai and Delhi have had larger surges of cases due to the fact that they are urban areas, hence have a larger chance of transmission between individuals.
The State focus has been on curative care, whereas poor infrastructure and poor coordination between the line departments makes it difficult to tackle public health emergencies such as COVID-19. The health care system is not adequate or prepared to contain COVID19 transmission in the rural areas, especially in many northern Indian States because of the shortage of doctors, hospital beds and equipment, especially in the densely populated underserved states.[133]

The state governments should focus on creating a centralized system/website where information about bed availability and contact details for the COVID-19 care centers is readily available. While the central government does have a website that makes the above information available to the public, it only does so for the major cities in the country, which creates an information gap. To improve upon this, the central government should organize the resources by state and district, so that everyone can make use of the facility.

The state governments should maintain the COVID-19 facilities and health infrastructure that they set up for the 2nd wave to ensure they have the necessary infrastructure to deal with the 3rd wave.

4.4 Socio-cultural

The pandemic has led to several socio-cultural impacts as well with a rise in hate towards minority groups and the vulnerable communities in terms of religion, gender, sexuality, ethnicity, etc.

During the pandemic another issue that the government had to face was hesitancy the citizens such as non-cooperation by the citizens to get tested or to isolate. The citizens have not disclosed the travel history and given the complete details when asked by the government due to the societal fear. Along with this, there have been cases of extreme hostility against the frontline workers like doctors, nurses and other healthcare workers. The fear and uncertainty instilled in people and calling these professionals responsible for anything happening to the family members or during the treatment has led to several conflicts and creating a worrying scenario. There have been instances of harassment and attack towards them. At times, healthcare workers have also been asked to vacate their houses because they were more susceptible to the virus. This was done not just by the landlords but also by the neighbors and society members. [134]
The pandemic led to immense problems for those from lower income groups and communities. There were several groups and NGOs involved in community service, supporting them but even they were hackled and abused. [135] Along with this, during the lockdown was imposed in the country, people

engaged in panic buying and stocking up of grocery and other essential items resulting in shortage which affected the entire society. [136]

The World Economic Forum (WEF's) Global Gender Gap Report 2021 estimates that the time it will take to close the global gender gap – in health, education, politics and economics – has increased 99.5 years to 135.6 years in India.[137] India has also slipped 28 places in the WEF's Global Gender Gap Index to 140 of the 156 countries that were ranked. [138]India's female workforce is amongst the lowest in the world, at 22.3% and the pandemic has further increased unemployment which in turn has increased the gender gap in India[139]

During the pandemic; widespread illiteracy, poverty, open defecation, etc. are certain health and social factors can also add to the woes of an already aggravated situation as it can worsen the outbreak even further. This includes widespread misconceptions, superstitions and misinformation which regularly made rounds on social media. The pandemic also saw several violations of the regulations set in place due to religious and political proceedings.[140] The government has failed at resolving these issues including vaccine take-up as well. The government has only be focusing on the supply, availability and diplomacy of vaccines and ignoring the hesitancy of vaccine administration among citizens. As per the COVID-19 Symptom Survey (CSS) in India by Facebook, there is around 28.7% of vaccine hesitancy across states and Union territories. This is even more prevalent in remote areas with limited connectivity and in rural areas. It is important to achieve universal vaccination and to uphold human rights. The need of the hour is community engagement, trust building measures, and there have also been demands to invoke the Compulsory Vaccination Act of 1892 for making vaccination compulsory by law. [141]

The pandemic resulted in an increase in domestic violence, abuse and threats. The vulnerable groups and communities became more marginalized to violence. [142] This also included a severe impact on the mental health and well-being of individuals.

4.5 Education

The pandemic led to school closure and the beginning of virtual learning which impacted students coming from all walks of life, in both rural and urban areas. About 320 million learners have been affected in India and there are numerous students who have not got an opportunity to attend offline university and have not stepped foot in college since March 2020. With learning turning virtual, not all institutions could adapt to online education and the transition was inefficient, leading to a shutdown for some of them.[143] Both, students and teachers had to transition to this new normal and it was equally challenging for everyone to familiarize themselves with the new digital setup. Even the parents found it difficult to switch to digital gadgets during a time when incomes were lower and they could not provide for the digital gadgets needed to conduct online learning.[144] About 1.5 million schools have closed down and education has become digital where only 24% of the households have access to the Internet in urban areas and in rural areas only 4% households.[145] About 286 million students from pre-primary to secondary levels have been affected as per UNICEF.[146] Along with these issues, the budget for digital e-learning has been slashed from Rs. 604 crores to Rs. 460 crores in 2020-21. [147] Along with the issue of the internet, frequent power cuts and electricity are an issue that the students and teachers had to grapple with. As per the 2017-18 survey by the Ministry of Rural Development, only 47% of households in India receive more than 12 hours of electricity and more than 36% of the schools operate without electricity.[148] Other barriers included budgetary constraints, unavailability of

digital devices and gadgets and its increased expense, lack of technical know-how and support, lack of training for the teachers as well as students. This also included lack of technical infrastructure to conduct the online classes. [149]

The pandemic proved that online teaching is not a perfect substitute of offline learning. This is largely because offline teaching helps develop interpersonal communication skills, social skills that are needed for holistic growth of an individual. [150] The pandemic saw a massive growth for EdTech companies as for Massive Open Online Courses (MOOC), India has emerged as the second biggest market in the world.[151] Another problem that the teachers faced was that they had to switch to other alternative jobs as they either lost their jobs or saw a cut in their salaries. [152] The students struggled because in government schools in India as the mid-day meal provision was beneficial for several students which post COVID-19 led to issues like malnourishment and deprivation of nutritious meals. [153]

Whenever the situation permits, the transition to school-based learning will require a well formulated roadmap to ensure it is safe. This will include social distanced teaching and staggered presence of students. Although, this has given an opportunity for rebuilding the educational infrastructure of the country as it increased the digital use, digital literacy, ease in distance learning improved use of electronic media and more information sharing than before.[154] It helped innovate, improve learning and transmission of knowledge. This was aided by the move towards blended mode of learning, introduction of webinars, virtual classrooms, digital exams and technology.[155]

4.6 Environmental Impact

The European Space agency revealed a significant reduction in Nitrogen Dioxide (NO2) levels in the Indian atmosphere which are generally emitted into the atmosphere through vehicular exhausts, power plants and industrial sites.[156]

Articles and reports in dailies and other electronic media also reveal the improvement in the quality of a number of major rivers in India including Ganga, Cauvery, Sutlej and Yamuna. The primary cause is lack of industrial effluents entering the rivers due to the lockdown situation[157].

As per experts, due to excessive pollution across cities in the country, the impact of COVID-19 could be more since the lungs have been weakened leading to more impact.[158] There are several ailments that result from air pollution like asthma, diabetes, etc. which are co-morbidities, leading to high risks to COVID-19. As per a paper, chronic exposure to particulate matter is likely linked to approximately 15% of the worldwide COVID-19 related deaths. [159]Although there is only preliminary research undertaken but it has been concluded that with better and improved air quality, the impacts of the pandemic might reduce. Pollution must be reduced once lockdowns and restrictions are lifted. [160]Another preliminary paper by the World Bank found that in India about 1% increase in long-term exposure to particulate matters leads to an increase in COVID-19 related deaths by almost 5.7% points. Apart from the public health measures, certain urgent interventions like promoting cleaner fuel sources to reduce the pollution. [161]

In the rural areas, there has been a 46% increase in the biomedical waste between April and May 2021. [162] India recorded 12 out of the 15 warmest years between 2006 and 2020, leading to the warmest decade. [163]During the pandemic, the use of single-use masks, PPE kits, gloves, wipes are on the rise and this has further led to an increase in the use of plastics. [164] There have been several disasters and

threats to the environment because of not paying heed to the norms, regulations and poor safety standards.[165]

5. India's COVID-19 Response

5.1 Lockdowns: State-wise View

With the central government not declaring a national lockdown, every state government-imposed restriction depending on the situation in their respective states during the second wave of the pandemic in the country specifically (February-July).[166]

Northern States

- **Uttarakhand:** Lockdown was imposed in the state on 11th May.[167] The lockdown was extended by a week on 28th June, with a few relaxations being announced, like gyms being allowed to operate at 50% capacity and markets allowed to open for six days.[168]
- **Haryana**: Lockdown was imposed in the state on May 3rd and has been extended eight times.[169] The Haryana government extended the lockdown in the state till 5th July, with shops, malls and restaurants being allowed to open from 10am to 8pm, at 50% capacity. [170]
- **Himachal Pradesh**: Curfew was imposed on May 7th amidst the rising cases in the state.[171]The state government extended the statewide curfew till 14th June, with shops being allowed to open between 9am to 2pm on weekdays.[172]
- **Punjab**: Lockdown was imposed on May 3rd in the state[173] The state government extended the lockdown till 30th June[174] and then 10th July, allowing bars to open at 50% capacity.[175]
- **Rajasthan**: The state government imposed a lockdown on May 10th [176] and restrictions were slowly eased on 10th June, with shops being allowed to open between 6am to 4pm and the continuation of the weekend curfew.[177]
- **Chandigarh**: Lockdown was imposed in the union territory on May 1st.[178] These restrictions were only eased on June 7th owing to the drop in cases, with shops and malls being allowed to open from 10am to 6pm and the continuation of the night curfew.[179]
- **Delhi**: Lockdown was imposed in the city on 9th May[180] with restrictions only being eased on 27th June, with malls and shops being allowed to open till 8pm.[181]
- **Ladakh:** Lockdown was imposed on 30th April[182] and some restrictions were eased on 7th June, but night curfew continued.[183]
- **Jammu and Kashmir**: Lockdown was imposed on 1st May[184] and only eased on 20th June.[185]

Central States

- **Chhattisgarh:** Lockdown was imposed on 9th April in the state[186] and was extended on 1st June with shops being allowed to open in districts with a positivity rate below 5%.[187]
- **Madhya Pradesh:** The state government imposed a weekend lockdown on 8th April[188], which was converted to a full lockdown on 8th May owing to the rise in cases.[189] The restrictions were eased on 27th June, with shops being allowed to open, but the night curfew was kept in place to prevent rise in cases in the state.[190]

- **Uttar Pradesh:** Lockdown was imposed in the state on 30th April, owing to the rise in cases.[191] The lockdown was eased from 21st June, with shopping malls and restaurants being allowed to function at a 50% capacity.[192]

Eastern States

- **Bihar:** Lockdown was imposed in the state on 5th May and relaxations were announced on 9th June owing to the dip in cases, with shops being allowed to open till 5pm.[193] The night curfew, which was in place from 7pm to 5am, was still kept to prevent a rise in cases again.[194]
- **Jharkhand:** Lockdown was imposed in the state on 22nd April and were extended till July 1st due to fears over the Delta variant.[195]
- **Odisha:** Lockdown was imposed in the state on 5th May.[196] Lockdown was relaxed partially from 17th June in 17 districts where the positivity rate was less than 5%.[197]
- **West Bengal:** Lockdown was imposed in the state on 15th May and restrictions were further extended to 30th June with few relaxations.[198] This was further extended to 15th July; however, gyms, malls and restaurants were allowed to open with various restrictions in place.[199]

North-Eastern States

- **Assam:** Lockdown was imposed in the state on 16th May.[200] Lockdown was extended till 30th June and those districts that reported more than 10 cases in seven days would become containment zones.[201]
- **Arunachal Pradesh:** Night curfew was imposed in the state from 10th May with the Capital Complex region (Itanagar, Naharlagun, Nirjuli and Banderdewa) being placed in lockdown for seven days.[202] Lockdown was extended in seven districts (Tawang, Lower Subansiri, Namsai, Upper Subansai, Lohit, Anjaw and the Capital region) till 7th June.[203]
- **Manipur:** Night curfew was imposed in the state from 8th May.[204] The curfew was extended in the valley area and the two hill districts till 30th June.[205]
- **Meghalaya:** The state government imposed a lockdown in the East Khasi Hills district till 7th June.[206] The state government imposed a lockdown in the entire state from 7th June to 14th June owing to the rise in cases.[207]
- **Mizoram:** The state government imposed a lockdown in Aizawl on 10th May and was extended till 6th June.[208] This was further extended to 21st Jun, with only shops selling essential commodities being allowed to open every day.[209]
- **Nagaland:** Lockdown was imposed in the state from 14th May.[210] This lockdown was further extended to 11th June owing to the rise in cases.[211]
- **Tripura:** The state government imposed a curfew in Agartala and 11 other districts on 16th May and were extended till 25th June.[212] This was further extended to 3rd July.[213]
- **Sikkim:** Lockdown was imposed on 17th May.[214] The lockdown was extended till 21st June with some relaxations like stand-alone shops being allowed to open.[215]

Western States

- **Maharashtra:** Lockdown was imposed on 14th April.[216] Restrictions were relaxed and then tightened again on 28th June, with the entire state going into Level 3 of the 5-level plan set out by the government, with shops being allowed to open till 4pm on weekdays, owing to the rise in Delta Plus cases.[217]
- **Goa:** Lockdown was imposed in the state on 29th April.[218] The lockdown was extended till 5th July, with shops being allowed to open till 3pm.[219]

- **Gujarat:** Lockdown was imposed in 29 cities across the city on 27th April.[220] Restrictions were eased on 11th June as cases began to drop, with shops and restaurants (at 50% capacity) being allowed to open till 7pm and the night curfew was continued.[221]
- **Dadra and Nagar Haveli:** No lockdown was imposed.
- **Daman and Diu:** No lockdown was imposed.

Southern States

- **Andhra Pradesh:** Lockdown was imposed in the state on 5th May.[222] The state government announced relaxation in curbs in those districts where positivity rate was less than 5%, from 1st July.[223]
- **Karnataka:** Lockdown was imposed in the state on 10th May.[224] Lockdown restrictions were eased in 23 districts by 21st June where the positivity rate was below 5%.[225]
- **Kerala:** Lockdown was imposed in the state on 8th May.[226] The lockdown was extended till 1st July owing to a rise in cases.[227]
- **Tamil Nadu:** Lockdown was imposed in the state from 10th May.[228] While the state government relaxed lockdown curbs in Chennai, Kanchipuram, Tiruvallur and Chengalpattu owing to the drop in cases, but lockdown was extended in the rest of the state till 5th July.[229]
- **Telangana:** Lockdown was imposed in the state from 12th May.[230] The decline in cases caused the state government to lift lockdown restrictions completely from 20th June.[231]
- **Andaman and Nicobar Islands:** The district administration imposed a night curfew from 10th April, [232] while a full lockdown was imposed on 24th May.[233]
- **Lakshadweep:** Lockdown was imposed on 24th May in the union territory and once the number of cases had fallen, relaxations were announced on 21st June.[234]
- **Puducherry:** Lockdown was imposed on 10th May in the union territory.[235] The lockdown was extended till 21st June with restaurants and bars being allowed to open at 50% capacity.[236]

5.2 Vaccines

The vaccines that are currently available for use in the vaccination drive are Covishield, Covaxin and Sputnik V.

5.2.1 Covishield

This is the Oxford-AstraZeneca vaccine that is being manufactured by the Serum Institute of India (SII) which is the world's largest vaccine manufacturer by volume. It has been made using a weakened version of the common cold virus called adenovirus from chimpanzees, along with that, about 20% of the virus's instructions are deleted.[237] After this, like any other vaccine, it induces the immune system to create antibodies against the virus.[238] The vaccine was earlier administered in two doses with a gap of 4-8 weeks which has now been extended to 12-16 weeks. This was because as per the government, the incoming information from trials scientific data has proven it to be more efficacious.[239] Although, this move has been questioned by experts and scientists.[240] The efficacy of the vaccine is around 70.42%. [241]

5.2.2 Covaxin

This vaccine is manufactured by Bharat Biotech, is an inactivated vaccine made up of killed coronaviruses injected into the body.[242] This vaccine further destroys the ability of the virus to multiply

in the body and helps create antibodies against the vaccine and increases immunity.[243] The vaccine is administered four weeks apart with its interim efficacy being 81%.[244] The main issue with administering Covaxin is the prevailing skepticism because the vaccine was approved for emergency use while in its third phase of trials. The drug regulator and manufacturer defended Covaxin saying it was safe and provides an immune response. The vaccine has been rejected for its emergency use in the United States of America due to insufficient data available regarding its trial. The data of the trials is likely to be published in July 2021. As of now Covaxin remains unrecognized in several countries. Meanwhile there are also trials of Covaxin being held on children between the ages of 12-18 years. [245]

5.2.3 Sputnik V

The recently approved vaccine to be used in India is Sputnik V, a Russian vaccine by Moscow's Gamaleya Institute, which is like Covishield. It has an efficacy rate of 92%.[246] It uses a cold type of virus that injects a small fragment of coronavirus and helps the body recognize the threat and thus produces antibodies. Sputnik is different because it uses two slightly different shots which are administered 21 days apart, giving a boost to the immune system. The vaccine will be made available in India by a Hyderabad based pharmaceutical company called Dr. Reddy's Laboratories by the Russian Direct Investment Fund which is marketing the vaccine. Vaccine production of Sputnik V has also been ramped up across the country after a soft launch in Hyderabad but the registration on CoWin has still not begun. [247]

5.2.4 Others

Apart from this, there are several other vaccines in process in India like ZyCov-Di by Ahmedabad-based Zydus-Cadila, vaccine by Hyderabad-based Biological E, a private company in collaboration with US-based Dynavax and Baylor College of Medicine, along with the production of Johnson & Johnson. A nasal vaccine by Bharat BioTech, HGCO19, India's first mRNA vaccine, another SII vaccine made in collaboration with American vaccine development company Novavax.[248]

5.2.5 India's Vaccine Policy

There has been a frequent change in the vaccine policy of India taking account of the situation, the second wave, and other factors.

5.2.5.1 1st/ 2nd Wave

The policy followed in the first two phases of the vaccination drive in the country was that the two vaccines in use - Covishield, and Covaxin were supplied by the Central government to the States free of cost. Further, these vaccines were provided to the private hospitals at a cost. [249]

5.2.5.2 3rd Wave

This was changed in the third phase, with the vaccine manufacturers supplying 50% of their monthly manufactured doses to GoI and the rest to state governments, in open markets and private sector (based on the contracts between the private sector and the vaccine manufacturers) at a cost under the Liberalized Pricing and Accelerated National COVID-19 Vaccination Strategy.[250] This strategy, as per the Ministry of Health and Family Welfare, is based on end-to-end planning, promotes domestic R&D, manufacturing, and efficient administration of vaccination. This strategy has been formulated to vaccinate the majority of citizens in collaboration with the states and Union territories. The vaccination

strategy has been devised to firstly cover the vulnerable groups. The center is also in touch with each vaccine manufacturer to lead a better public-private collaboration.[251]

5.2.5.3 Criticism of Vaccine Policy

The Liberalized Pricing and Accelerated National COVID-19 Vaccination Strategy has been under scrutiny because of several reasons, specifically because this policy greatly differed from the one followed in the first two phases of the vaccination policy. This was due to the mandatory registration requirement on the Co-Win portal to book vaccine slots, while in the initial phases walk in registration was possible, hence leading to an availability of vaccines only to those who are technologically literate. Along with this, an issue was raised due to the differential pricing of the vaccines for the receivers of the vaccine, namely the Centre, State governments and the private sector, and the requirement of payment for vaccines for some beneficiaries (18-44 years) and free for the rest.[252] This policy also does not give priority to those with co-morbidities, diseases, those with disabilities and the other vulnerable groups of the society.[253] Even the overall vaccination fell during the time with a decline in daily vaccination rates. Experts have said that this happened as a result of the change in policy due to a substantially lower participation of the private sector. This was also the time with an irregular supply of vaccines and very high demand.[254]

In the third phase the cost of vaccines in the private sector has also increased from around Rs. 250 ($3.5) to now Rs. 700-900 ($9.5-$12) for Covishield and Rs. 1250-1500 ($17-$20.5) for Covaxin. Private hospitals were earlier allowed to only charge Rs. 100 ($1.36) which would be the service and vaccine administering cost over the vaccine charges (which included GST, transportation, storage costs and the cost of wastage of vaccines) but eventually the prices increased to Rs.250-300 ($3.41-$4).[255] These high costs have also led to a worry regarding diversion of vaccines to the private sector due to higher profits for manufacturers. Due to shortages and large number of orders for the vaccines, inequity is widely present due to the fact that corporate giants are being favored in the private sector for vaccination distribution and the small private hospitals being left out. This is also visible in the rural areas and smaller cities where the shortage and unavailability of vaccines is even more widely present. This has led to an increase in the urban-rural divide.[256] There are nine big corporate giants that are currently procuring almost half of the vaccines available to the private sector, which again largely deliver to the large metro-cities. [257]

5.2.5.4 Change in Vaccine Policy

With the latest address of Prime Minister Narendra Modi to the citizens on the 7th of June 2021, India decided to bring a change in its vaccination policy from 21 June, 2021, post which every citizen above the age of 18 years will get vaccinated free of cost.[258] This comes after intense criticism of the vaccination policy being followed by the government, and after the Supreme Court questioned the Central government to provide a roadmap on the availability of vaccines till the end of the year and called the strategy being followed arbitrary and irrational. The Court also asked the Centre to provide relevant data about the vaccination of the rural population and questioned that why those between the ages of 18-44 years have to pay for vaccination irrespective of a massive allocation of funds for vaccination in the budget. Along with the above, there were eyes raised on the issue of profiteering by the private hospitals, that can buy vaccines at high costs and further, sell them to those citizens who can afford them.[259]Under this New Vaccine Policy, this can be availed only at vaccination centers run

by state governments and the central government. India will also shift back to a centralized procurement of vaccines with 75% being procured by the central government and 25% by private hospitals.

With the new vaccine policy, the shared responsibility of states and center will come to an end. The states will receive the vaccines from the center for free and will no longer negotiate with the manufacturers. Previously the government supplied doses to the private sector, but that will come to an end with the new policy. [260] For private health centers and hospitals, a service charge will be capped at Rs 150 over and above the price of the vaccine with a maximum price of vaccines being Rs. 780 for Covishield, Rs 1,410 for Covaxin, and Rs 1,145 for Sputnik V. This was done to avoid overcharging by the private sector for the vaccines as the prices remain exorbitant, one of the highest across the world.[261]

This new vaccine policy will also help release states of the burden to procure vaccines, logistics along with the financial burden as they were having to pay more than the center. [262] The Centre has also facilitated the supply of vaccines to the small private centers and the payment for these vaccines has been decided to take place via the National Health Authority's electronic platform. [263]

For citizens, this new policy is only slightly different because previously only frontline workers, healthcare workers and those aged 45+ could be vaccinated at the central government run centers. This will change as now all adults above the age of 18 years can be vaccinated free of cost at the state and central government centers. Apart from giving priority to the vulnerable groups, this policy will also prioritize the vaccination of those who are due to get their second dose. [264]

Another change that can be noted under the new policy to help the economically weaker sections of the society to get vaccinated at private health centers is the use of non-transferable electronic vouchers or the Lok Kalyan electronic vouchers which has been approved by the Reserve Bank of India.[265] To address the issue of inequity in vaccination in private sectors, from June 21, the Centre will also investigate equitable distribution and regional balance based on the aggregate demand of the vaccines to help smaller and remote private hospitals. [266]

5.2.6 Problems with Vaccine Supply

5.2.6.1 Shortages of Vaccines

Ever since the vaccination program began in India, shortages of vaccines have always been in question due to delay in ramping up of the production by the manufacturers, placing of orders, and poor planning to cater to the domestic needs. This has also led to questions on sustaining exports alongside domestic needs. There were no advance purchase agreements along with no liquidity to increase production. Although now these manufacturers have ramped up their monthly productions to some extent.[267] SII aims to produce 100 million doses per month from June onwards, and Bharat Biotech aims to increase its capacity to 80 million doses per month from August.[268] These shortages have also been because of the raw material shortages after US President Joe Biden invoked the US Defense Production Act (DPA) which gave priority access to US manufacturers. Later on, the US gave access to certain specific raw materials to SII but not to all.[269] Along with the above, this also led to a delay in commencing the Phase

IV of vaccination in several states like Delhi, Punjab, Tamil Nadu.[270] In some other cases, many states like Maharashtra, Karnataka, etc. had to halt the program altogether for those between the ages of 18-44 years.[271]

Along with this, a massive drop in vaccinations per day was seen in the month May, at a time when the pandemic was around its peak and also during the period where the drive was opened to all adults above the age of 18 years. In the first 10 days of May, only 1.7 million doses were administered per day on an average which was far lower than the 2.4 million doses administered in the previous 10-day period on an average.[272]This was also due to the drop in vaccine supply by the central government and low vaccination on the two Sundays of the period.[273]

5.2.6.2 Wastage of Vaccines

A big reason to worry during the vaccination program in India has also been the wastage of vaccines which is also now a criterion for allocation. As directed by the Ministry of Health and Family Welfare, those states which do not bring down the overall wastage to the national average could face cuts in the fortnightly allocation of vaccines for the 45+ age group, as per reports from mid-May. Although, under the vaccination policy wastage is accounted for in cases of transporting, breakage, improper administration, etc.[274] The national average stands at 6.3%, with Jharkhand and Chhattisgarh wasting the highest as per the Health Ministry as of May 25th.[275] The states have been asked to prepare plans for vaccination and aim to bring down the wastage to 1%.[276] Approximately, 50% of the vaccines across the globe are wasted as per World Health Organization (WHO).[277] These wastages are also due to the hesitancy of people to get vaccinated and fewer people showing up to get vaccinated leading to eventual wastage of the vaccines. This also includes further reluctance to get Bharat BioTech's Covaxin. States like Kerala and Odisha on the other hand have reported negative wastage due to proper training and complete utilization of even the extra vials (to account for wastage) in the dose.[278]

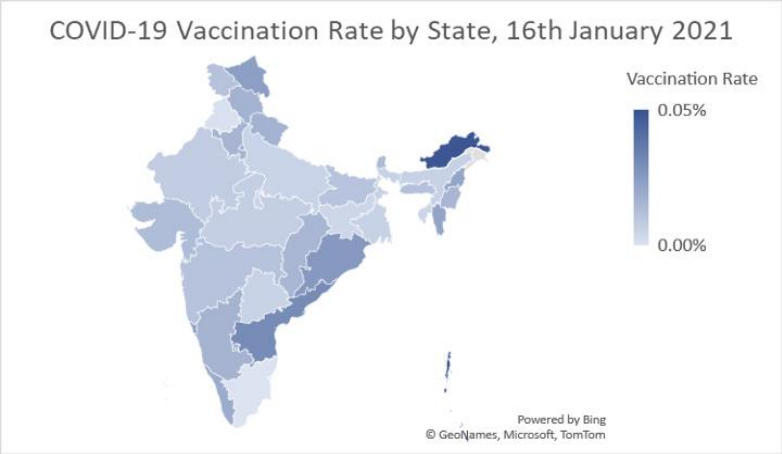
5.2.7 Foreign Vaccines

Facing the deadly second wave, countries have stepped up to help India in various ways where an essential factor here is the vaccination program. Apart from the indigenous vaccines, India is also seeking imports of vaccines from different countries. Vaccines like Pfizer and Moderna also soon might be available for administration in India. Before the new vaccine policy was introduced by the government, the state governments tried to procure the foreign manufactured vaccines and global tender of vaccines, but, these pharmaceutical companies refused to deal with the state governments individually.[279] They also stated that they will only deal with the central governments and supra-national organizations, and that their supply books were full.[280] Foreign vaccines have also been given approval by The Drugs Controller General of India (DGCI) without domestic clinical trials which is a big step towards mass vaccination in the country. The trials won't be required for those vaccines which have been certified by the National Control Laboratory (NCL) of the origin country.[281]

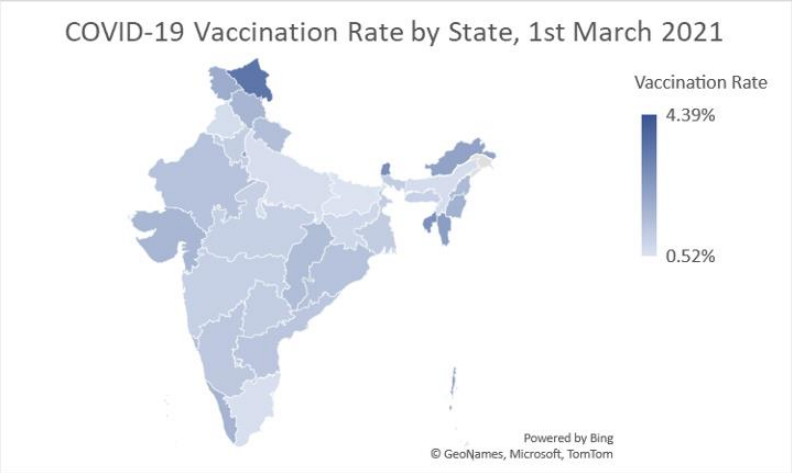
5.2.8 Vaccine Response of Individual States to the Pandemic

We consider the State/Union Territory (UT) wise population data (from 2020) and the latest vaccination data from all states and UTs (from 16th January, 2021 to 21st June 2021). By looking at the number of vaccination doses administered in each state/UT, we can gain a fair understanding of India's vaccination efforts. But, given that some states have larger populations than others (along with other external factors), the raw vaccination numbers are likely to be skewed, thus decreasing the value of our insights. To address this, we can instead look at vaccination rates (i.e. total vaccination doses administered divided by the state population), as this will give us a more effective measure by which we can compare the responses of each state. Thus, the raw vaccination numbers from the Ministry of Health and Family Welfare, GoI[282] were divided by 2020 estimates of state populations provided by the Unique Identification Authority of India[283], to give us the vaccination rate.

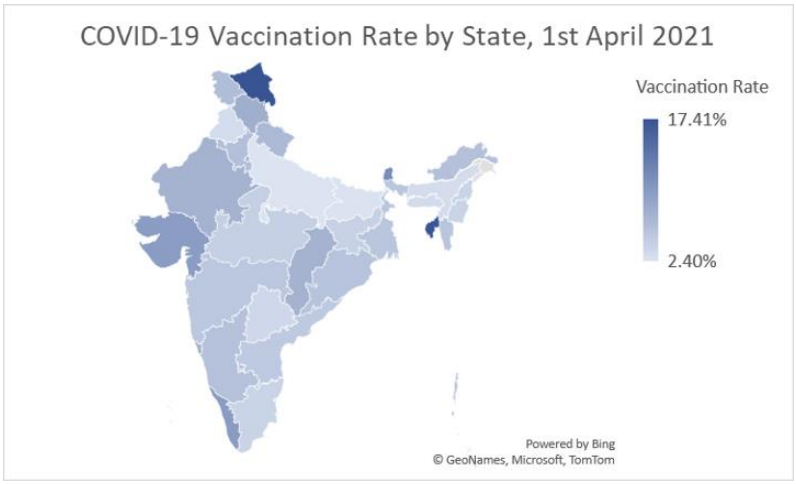
Phase I of vaccination in the country began from 16th of January 2021, which catered to healthcare and the frontline workers. On the first day of the pan-India vaccination drive, Andaman and Nicobar Islands and Arunachal Pradesh recorded the highest vaccination rate in the country at 0.05%. On the other hand, Uttar Pradesh and Andhra Pradesh recorded the highest number of vaccinations on day 1, with 21.2k and 18.4k doses, respectively. The State/UT with the lowest vaccinations on the first day was Lakshadweep with only 21 doses administered. The number of total vaccines administered across the country on the first day was 1.91 lakhs.



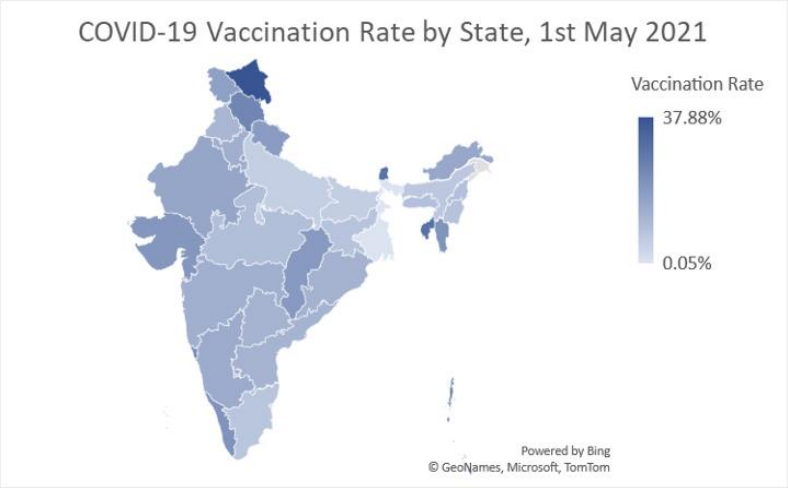
Phase II of the vaccination drive started on the 1st of March 2021, for people aged 60+ years and those with comorbidities above the age of 45 years. During this time, the UTs Lakshadweep and Ladakh recorded the highest vaccination rate, at 4.39% and 3.48%, respectively. The states following them were Sikkim at 2.81%, and Tripura at 2.73%. Uttar Pradesh with 14.88 lakh doses and Maharashtra with 12.37 lakh doses recorded the highest number of overall vaccinations. The lowest number of vaccination doses was recorded by Lakshadweep at 3k doses, overall. The total number of vaccines administered till the first day of Phase II in India was 1.48 crores.[284]



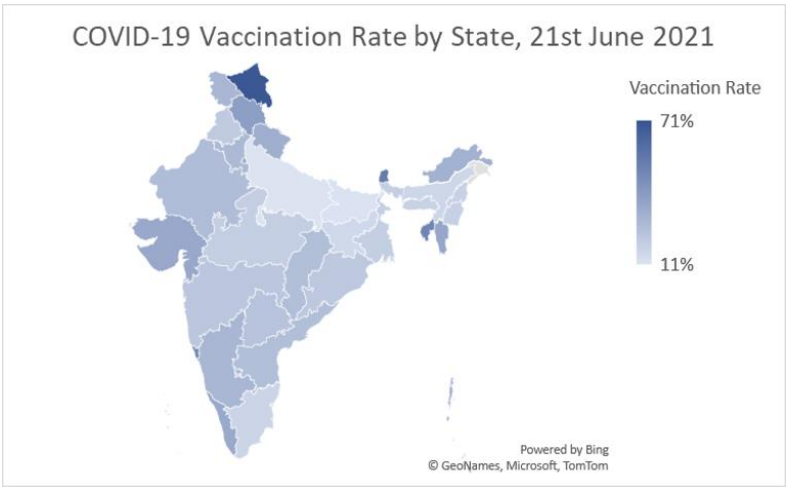
Phase III of the drive began on the 1st of April, 2021, for those above the age of 45 years. Ladakh, with 17.41%, and Tripura, at 17.26%, recorded the highest vaccination rate. Maharashtra, with 65 lakh doses, and Gujarat, with 61 lakh doses, maintained the top two spots in total vaccinations doses when the third phase began. The lowest number of total doses administered was recorded by Lakshadweep, at 7k. Till the first day of phase III of the vaccination, the total number of vaccines administered in India was approximately 6.87 crores.



Phase IV of the drive began on the 1st of May, 2021, and the vaccination was opened for all adults above the age of 18 years. Ladakh and Lakshadweep recorded the highest number of vaccinations, at 37.88% and 32.05%, respectively. In the fourth phase of the vaccination, Maharashtra, with about 1.6 crore doses, and Rajasthan, trailing behind at 1.3 cr. doses, were the states with the highest number of total vaccinations across the country. Lakshadweep, at 23k doses, was the UT with the lowest number of vaccine doses administered. Till the first day of Phase IV of the vaccination programme in India, the total number of vaccine doses administered was 15.68 crores.[285]



The latest data used in this response report is from 21st June, 2021 with the vaccination rate at 71% for Lakshadweep, 69% for Ladakh, for Sikkim at 54%, and Goa at 49%, respectively. Maharashtra and Uttar Pradesh recorded the highest number of total vaccines administered, at approximately 2.8 cr. and 2.63 cr. doses, respectively. Lakshadweep recorded the lowest vaccinations, with 51.9k vaccines administered till the 21st of June. Total vaccinations across the country stood at 28.87 cr.[286]



On this day, as per the government, India created a world record for administering the highest number of vaccine doses in a single day, above 80 lakhs.[287] According to the government, this was because starting June 21st, the new vaccine policy was rolled out where the Central government took back the charge from the States for the procurement of vaccines from the manufacturers, and now, Centre will supply the vaccine to the States for free. Although, as per data, this has been questioned because some states recorded fewer vaccinations in the past few days, before June 21st, when several states registered record high numbers which led to a criticism that this spike might have been artificially manufactured. Another reason for this might also be because now the vaccines reserved for the beneficiaries above 45 years can be administered to those between the ages of 18-44 years.[288]

When we compare the total number of vaccine doses administered, Maharashtra has been the top performing state across the country. As per the Maharashtra government, it is the only state where more than 50 lakh citizens have been administered both doses (which is higher than any other state) and more than 2 crore citizens have been administered at least one dose of the COVID-19 vaccine.[289] On the other hand, Lakshadweep has had the highest vaccination rate, despite the fact that the UT has administered the lowest number of vaccine doses. We can see a stark difference between the vaccination rates and the total vaccine doses administered overall in states. This is due to the fact that states with large populations like Uttar Pradesh, Bihar, etc. have contributed to high number of total doses, but at the same time have very poor vaccination rates.

Please Note: A portion of Arunachal Pradesh has been shaded in grey by the heatmapping software itself, due to the border dispute currently happening in the region.

5.3 Other Measures

5.3.1 Fiscal Measures

India's central government fiscal support measures can be divided into two broad categories: (i) above-the-line measures which include government spending (about 3.5 percent of GDP, of which about 2.2 percent of GDP is estimated have been utilized in the past fiscal year), foregone or deferred revenues (about 0.3 percent of GDP falling due within the past fiscal year) and expedited spending (about 0.3 percent of GDP falling due within the past fiscal year); and (ii) below-the-line measures designed to support businesses and shore up credit provision to several sectors (about 5.3 percent of GDP).[290]

On February 1, 2021 the central government budget for FY2021/22 was tabled in the parliament. The budget expanded spending on health and wellbeing, including a provision for the country's COVID-19 vaccination program (350 billion Rs). In April 2021, in response to the recent surge in infections, the central government announced that free food grains will be provided to 800 million individuals in May and June (with a cost of about 260 billion rupees), similar to the additional food rations provided in 2020 (which had expired in November 2020).[291] The central government also extended a scheme for providing interest-free loans to states for capital expenditure to FY2021/22 (150 billion rupees) and expedited the release of Disaster Response Fund to state governments (from June to May). Finally, customs duties and other taxes on vaccines, oxygen and oxygen-related equipment were waived to boost their availability.[292]

5.3.2 Relief Measures Announced by the Government [293]

- **Loan Guarantee Scheme**: A total of Rs 1.1 lakh crore has been allocated to sectors affected by COVID-19, wherein Rs 50,000 crore is allocated to the health sector for scaling up health infrastructure and Rs 60,000 crore is allocated to other sectors. Further, maximum loan amount for the health sector is Rs 100 crore, with the interest rate cap being 7.95 percent. The interest rate cap for other sectors is at 8.25 percent.
- **Emergency Credit Line Guarantee Scheme (ECLGS):** Credit line given as part of Aatmanirbhar Bharat Package has been extended by another Rs 1.5 lakh crore, with the overall cap increasing from Rs 3 lakh crore to Rs 4.5 lakh crore.

- **New Credit Guarantee Scheme:** This scheme focuses on provide loans to small borrowers, via Micro Finance Institutions (MFIs), where the maximum loan to individuals will be Rs 1.25 lakh at an interest rate below 2 percent – as prescribed by the RBI. For any new loan taken out, stressed borrowers except non-performing assets will now be covered. The loan duration will be for three years.
- **Scheme to revive Tourism:** Financial support will be extended to more than 11,000 registered tourist guides and Travel & Tourism Stakeholders (TTS). Under this, TTS will get up to Rs 10 lakh loan, while Licensed Tourist guides will get up to Rs. 1 lakh loan. This scheme is intended to help the tourism stakeholders survive the second wave of COVID-19.
- **Tourist Visas:** Once tourist visa issuance is resumed, the first 5 lakh tourist visas are to be issued totally free of charge. This will apply till March 31, 2022 or till the first 5 lakh tourist visas get covered, whichever is earlier. One tourist can avail the benefit only once.
- **Aatmanirbhar Bharat Rozgar Yojana:** The scheme, launched to incentivize job creation and restoration, has now been extended from June 30, 2021 to March 31, 2022. More than 21.4 lakh people of nearly 80,000 establishments have already benefited from the scheme
- **Subsidy For Farmers:** Farmers to get additional protein-based fertilizer subsidy of nearly Rs 15,000 crore.
- **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKY)**: Free food grains will be provided to the poor from May to November 2021 (as provided last year). The approximate cost of this is Rs 94,000 crore, making the total cost of PMGKY nearly Rs 2.28 lakh crore.
- **Funds Allocated for Public Health**: Rs 23,220 crore allocated for public health, with sharp focus on child and pediatric care. The amount is to be spent in this financial year itself. The scheme will include human resource augmentation to rope in medical students, nurses; strengthening of infra like ICU beds, ambulances, O2 supply, equipment, and medicines.
- **Special Variety of Crops:** 21 climate-resilient and bio-fortified special varieties of are going to be released by the Indian Council of Agricultural Research. These crops will have high nutritional content, without having to add supplements, will greatly help farmers increase income. It signals a shift from yield to nutrition and climate-resilience.
- **Revival Package for NEAMC**: North Eastern Agricultural Marketing Corporation will also receive a Rs 77.45 crore revival package for financial restructuring and fund infusion. This is aimed to help plan and give higher price to farmers by bypassing middlemen.
- **National Export Insurance Account to Get Support:** NEIA will get additional financial support over 5 years. This will allow the NEIA to under-write additional project exports worth Rs 33,000 crore and will immediately ramp up India's capacity to extend cover to project exports.
- **Export Credit Guarantee Corporation to Get Support**: Equity is to be infused into the Export Credit Guarantee Corporation, to provide credit insurance services for merchandise exports. This will enable ECGC to extend insurance cover up to Rs 88,000 Crore for merchandise exports.
- **Bharat Net Project to Get Support**: More than Rs 19,000 crore additional outlay is planned for Bharat Net Project which will enable extension of Bharat Net broadband connectivity to all remaining villages. Notably, more than 1.56 lakh out of 2.5 lakh gram panchayat are already connected or service-ready.

- **Production Linked Incentive Scheme:** This scheme that focuses on incentivizing large-scale electronics manufacturing, has been extended by one year. Thus, investments made in 2020-21 will continue to be covered.
- **Reform Based Result Linked Power Distribution Scheme:** This scheme will get a total allocation of Rs. 3.03 lakh crore for power infrastructure creation and upgradation. It consists state-specific intervention and will include 25 crore smart meters, 10,000 feeders and 4 lakh km of low-tension overhead lines.
- **New Process for PPP Project:** This will consist of 'Appraisal, Approval, Monetization' for speedy clearances, to bring in private sector efficiency and streamline the process, in place of long and multi-level approval process. This will be for core infrastructure projects, including through Infrastructure Investment Trusts.

5.3.3 Campaign Run by Government to Raise Awareness

The central government launched a campaign called Jan Andolan that focused on raising awareness for appropriate COVID-19 behavior like wearing masks, maintaining social distancing and washing hands regularly.[294] It was launched in October 2020 and encouraged public participation by asking every citizen to take a pledge to follow COVID-19 appropriate behavior.[295] The campaign was heavily advertised using banners and posters in public places, actors, media campaigns, hoardings, mobile vans and TV ads.[296]

6. Analysis and Suggestions

- It is suggested that states continue to lift restrictions in a phased manner, even if case numbers become low, and focus on opening commercial and industrial sectors first. Adherence to social distancing and other COVID-19 behavior should be strictly encouraged and large gatherings should be regulated. Until the majority of the population is vaccinated, lifting restrictions completely would hasten the beginning of the 3rd wave in India.

- The New Vaccine Policy, with the central government taking responsibility over vaccine supply should be continued to ensure fair distribution of vaccines in every state. Storage and transportation of vaccine doses should be done carefully to ensure minimum wastage of vaccines. The central government should ensure complete transparency in their plans to procure and distribute vaccines to improve public confidence in vaccinations. The government should also focus on fast-tracking approvals of Pfizer, Moderna and other vaccines approved by the WHO to ensure stocks to vaccinate the sizeable population.

- Along with this, the government must also look at the prevalent digital divide in the country which prevents the technologically backward citizens to register themselves and book slots. The on-spot registration option in this regard is a welcoming move. But more volunteers and administration must also support people and get them registered for vaccination. India also needs to focus on developing the infrastructure in rural areas and villages. Along with this, a proper plan needs to be devised for these areas so that they are not left out due to the prevalent urban-rural divide. Hence, more vaccination centers also need to be set up so that even people in remote locations aren't left out.

- The central government should also ensure that the common people receive the benefit of the relief measures they have announced. To do so they should focus on simplifying the bureaucracy and red-tapism around these schemes, ensure that these measures are being properly implemented and widely publicize them.

7. Conclusion

The second wave has tested the country, more than ever, of its preparedness to deal with such a dire condition. While the government is trying to vaccinate the majority of the population as soon as possible still, it has faced numerous implementational gaps and loopholes. To make matters worse, despite decreasing daily cases indicating the end of the second wave, there is news of a potential third wave that might hit the country as soon as August.[297] Experts believe the peak of the third wave to be sometime around the month of October.[298] The need of the hour is for a swift vaccination program, being prepared beforehand with enough medical supply stock such as oxygen, and trying to mend all those areas where the country faltered and could have done better to support its citizens. On the longer term, policies need to be clearly thought out, in order to prevent the devastating situation that took place during the second wave.

8. References

[1] Chowdhury, Debasish Roy. "Modi Never Bought Enough COVID-19 Vaccines for India. Now the Whole World Is Paying." *Time*, Time, 28 May 2021, time.com/6052370/modi-didnt-buy-enough-covid-19-vaccine/.

[2] Gamio, Lazaro, and James Glanz. "Just How Big Could India's True Covid Toll Be?" *The New York Times*, The New York Times, 25 May 2021, www.nytimes.com/interactive/2021/05/25/world/asia/india-covid-death-estimates.html?referringSource=articleShare.

[3] Sharma, Saurabh. "Tales from an INDIAN CREMATORIUM." *Coronavirus Pandemic | Al Jazeera*, Al Jazeera, 27 June 2021, www.aljazeera.com/features/2021/6/27/india-covid-crisis-the-crematorium-workers.

[4] Jain, Vijay Kumar, et al. Differences between First Wave and Second Wave of COVID-19 in India, US National Library of Medicine National Institutes of Health, www.ncbi.nlm.nih.gov/pmc/articles/PMC8106236

[5] Eysenbach , Gunther, and Guy Fagherazzi. COVID-19 in India: Statewise Analysis and Prediction, US National Library of Medicine National Institutes of Health, Aug. 2020, www.ncbi.nlm.nih.gov/pmc/articles/PMC7431238/.

[6] Patel, Dr Champa. "COVID-19: The Hidden Majority in India's Migration Crisis." 12 July 2020, https://www.chathamhouse.org/2020/07/covid-19-hidden-majority-indias-migration-crisis.

[7] ibid

[8] Gupta, Devarupa, et al. "COVID-19 Outbreak and Urban Dynamics: Regional Variations in India." *Springer*, https://link.springer.com/article/10.1007/s10708-021-10394-6.

[9] "Provisional Population Totals, Census of India 2011." Govt. of India , https://www.censusindia.gov.in/2011-prov-results/paper2/data_files/India2/Table_2_PR_Cities_1Lakh_and_Above.pdf.

[10] "Census Report ." *Govt. of India* , https://www.censusindia.gov.in/2011census/PCA/PCA_Highlights/pca_highlights_file/India/Chapter-1.pdf.

[11] "Census Report, Cities with Population Higher than 1000,000." Govt. of India , https://www.censusindia.gov.in/2011-prov-results/paper2/data_files/India2/Table_2_PR_Cities_1Lakh_and_Above.pdf.

[12] Gandhi, Sahil, et al. "Are Slums More Vulnerable to the COVID-19 Pandemic: Evidence from Mumbai." 16 Apr. 2020, https://www.brookings.edu/blog/up-front/2020/04/16/are-slums-more-vulnerable-to-the-covid-19-pandemic-evidence-from-mumbai/.

[13] ibid

[14] Mohan, Rohini. "Shortage of Hospital Beds and Oxygen as India Battles Second Covid-19 Wave." *Straits Time*, 19 Apr. 2021, https://www.straitstimes.com/asia/south-asia/shortage-of-hospital-beds-and-oxygen-as-india-battles-second-wave.

[15] Bhagat, Shalini Venugopal . "As India Stumbles, One State Charts Its Own Covid Cours." *Nytimes*, 25 May 2021, https://www.nytimes.com/2021/05/23/world/asia/coronavirus-kerala.html.

[16] ibid

[17] ibid

[18] "Maharashtra COVID 19 Cases." Govt.Inida, https://www.covid19india.org/state/MH.

[19] S, Unnikrishnan. "Maharashtra COVID 19 Cases." Indian Express, 8 July 2021, https://www.newindianexpress.com/states/kerala/2021/jul/08/renewed-covid-spike-where-did-kerala-go-wrong-2327036.html.

[20] "COVID 19 Cases ." Govt. of India, https://www.covid19india.org/.

[21] "Delta plus Variant of SARS-CoV-2: How Does It Compare with the Delta Variant?" *Medicalnewstoday*, https://www.medicalnewstoday.com/articles/delta-plus-variant-of-sars-cov-2-how-does-it-compare-with-the-delta-variant.

[22] "Delta plus Variant of SARS-CoV-2: How Does It Compare with the Delta Variant?" Medicalnewstoday,https://www.medicalnewstoday.com/articles/delta-plus-variant-of-sars-cov-2-how-does-it-compare-with-the-delta-variant.

[23] "COVID 19 Cases of Andhra Pradesh ." *Govt. of India* , https://www.covid19india.org/state/AP.

[24] ibid

[25] Faes, Christel, et al. "Time between Symptom Onset, Hospitalisation and Recovery or Death: Statistical Analysis of Belgian COVID-19 Patients." *US National Library of Medicine National Institutes of Health*, 17 Oct. 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7589278/.

[26] "COVID 19 Cases in Assam." *Govt. of India*, https://www.covid19india.org/state/AS.

[27] Srivastava, D. K. "India's Economic Challenges Resurface amidst the Second Wave of COVID-19." EY, EY, 26 Apr. 2021, www.ey.com/en_in/tax/economy-watch/india-economic-challenges-resurface-amidst-the-second-wave-of-covid-19.

28 Inani, Rohit, and IndiaSpend. "How Second Wave of COVID-19 Has Decimated India's Rural Economy- India News , Firstpost." Firstpost, 7 June 2021, www.firstpost.com/india/how-second-wave-of-covid-19-has-decimated-indias-rural-economy-9689231.html. ; Bose, Indrishka. "Indian Economy Contracts 7.3% in FY21, Worst in 40 Years." Https://Www.outlookindia.com/Outlookmoney/, 31 May 2021, www.outlookindia.com/outlookmoney/expenses/indian-economy-contracts-73-in-fy21-worst-in-40-years-7494.

[29] ibid

[30] Staff, Scroll. "GST Collection in June Falls to Rs 92,849 Crore, Slides under Rs 1 Trillion after Eight Months." Scroll.in, Scroll.in, 6 July 2021, scroll.in/latest/999456/gst-collection-in-june-falls-to-rs-92849-crore-slides-under-rs-1-trillion-after-eight-months. ; Seth, Dilasha. "GST Collections Fall to an 8-Month Low in May; Exceed Rs 1 Trillion-Mark." Business Standard, Business-Standard, 5 June 2021, www.business-standard.com/article/economy-policy/gst-collections-fall-to-an-8-month-low-may-exceed-rs-1-trillion-mark-121060501171_1.html.

[31] ETMarkets.com. "Sectors That Will Be the Worst Affected by Covid 2.0 - Riding the Wave." The Economic Times, 25 May 2021, economictimes.indiatimes.com/markets/stocks/news/sectors-that-will-be-the-worst-affected-by-covid-2-0/covid-and-indias-economic-growth/slideshow/82929943.cms.

[32] Raman, Rajiv, et al. "Impact on Health and Provision of Healthcare Services during the COVID-19 Lockdown in India: a Multicentre Cross-Sectional Study." BMJ Open, British Medical Journal Publishing Group, 19 Jan. 2021, bmjopen.bmj.com/content/11/1/e043590.

[33] ibid

[34] M. , Sandeep Kumar, et al. "Social Economic Impact of COVID-19 Outbreak in India." International Journal of Pervasive Computing and Communications, 17 July 2020, www.emerald.com/insight/content/doi/10.1108/IJPCC-06-2020-0053/full/html.

[35] Sultana, Nasrin. "Covid Second Wave Drags Business Resumption: Nomura." Mint, 11 May 2021, www.livemint.com/economy/covid-second-wave-drags-business-resumption-nomura-11620720834500.html. ; ETMarkets.com. "Sectors That Will Be the Worst Affected by Covid 2.0 - Riding the Wave." The Economic Times, 25 May 2021, economictimes.indiatimes.com/markets/stocks/news/sectors-that-will-be-the-worst-affected-by-covid-2-0/covid-and-indias-economic-growth/slideshow/82929943.cms.

[36] ibid ; "India Manufacturing PMI2012-2021 Data: 2022-2023 Forecast: Calendar: Historical." India Manufacturing PMI | 2012-2021 Data | 2022-2023 Forecast | Calendar | Historical, tradingeconomics.com/india/manufacturing-pmi.

[37] Mishra, Asit Ranjan. "Services Activity Slips in Apr as Second Wave Impacts Ops." Mint, 5 May 2021, www.livemint.com/economy/pmi-services-drops-to-three-month-low-in-april-11620193234851.html. ; ETMarkets.com. "Sectors That Will Be the Worst Affected by Covid 2.0 - Riding the Wave." The Economic Times, 25 May 2021, economictimes.indiatimes.com/markets/stocks/news/sectors-that-will-be-the-worst-affected-by-covid-2-0/covid-and-indias-economic-growth/slideshow/82929943.cms.

[38] Ibid ; Manikandan, Ashwin, and ET Bureau. "Insurers Could Face Billions of Dollars in Fresh Covid-19 Claims - The Economic Times." The Economic Times, The Economic Times, 13 Apr. 2021, https://economictimes.indiatimes.com/industry/banking/finance/insure/insurers-could-face-billions-of-dollars-in-fresh-covid-19-claims/articleshow/82038324.cms.

[39] Service, Express News. "Unemployment Persisted Even Six Months after Lockdown: Report- The New Indian Express." The New Indian Express, The New Indian Express, 8 May 2021, https://www.newindianexpress.com/nation/2021/may/08/unemployment-persisted-even-six-months-after-lockdown-report-2299923.html.

[40] Inani, Rohit, and IndiaSpend. "How Second Wave of COVID-19 Has Decimated India's Rural Economy-India News , Firstpost." Firstpost, 7 June 2021, www.firstpost.com/india/how-second-wave-of-covid-19-has-decimated-indias-rural-economy-9689231.html.

[41] M. , Sandeep Kumar, et al. "Social Economic Impact of COVID-19 Outbreak in India." International Journal of Pervasive Computing and Communications, 17 July 2020, www.emerald.com/insight/content/doi/10.1108/IJPCC-06-2020-0053/full/html.

[42] Lowe, Matt, et al. "India's Food Supply Chain During the Pandemic." Harvard Business School, Working Paper 21-070, Harvard Business School, 3 Dec. 2020, https://www.hbs.edu/ris/Publication%20Files/WP21-070_572ec13b-a24f-44bb-a76d-c61f54c7d154.pdf.

[43] NARAYANAN, SUDHA. Ifpri.org, International Food Policy Research Institute, 20 July 2020, http://www.ifpri.org/blog/how-indias-agrifood-supply-chains-fared-during-covid-19-lockdown-farm-fork

[44] ibid

[45] Memon, Shafique Ul Rehman, et al. "Investigation of COVID-19 Impact on the Food and Beverages Industry: China and India Perspective." *MDPI*, Multidisciplinary Digital Publishing Institute, 12 May 2021, https://www.mdpi.com/2304-8158/10/5/1069.

[46] KOCHHAR, RAKESH. "India's Middle Class Shrinks amid COVID-19 as China Sees Less Change | Pew Research Center." Pew Research Center, https://www.facebook.com/pewresearch, 18 Mar. 2021, https://www.pewresearch.org/fact-tank/2021/03/18/in-the-pandemic-indias-middle-class-shrinks-and-poverty-spreads-while-china-sees-smaller-changes/. ; Inani, Rohit, and IndiaSpend. "How Second Wave of COVID-19 Has Decimated India's Rural Economy-India News , Firstpost." Firstpost, 7 June 2021, www.firstpost.com/india/how-second-wave-of-covid-19-has-decimated-indias-rural-economy-9689231.html.

[47] ibid

[48] M. , Sandeep Kumar, et al. "Social Economic Impact of COVID-19 Outbreak in India." International Journal of Pervasive Computing and Communications, 17 July 2020, www.emerald.com/insight/content/doi/10.1108/IJPCC-06-2020-0053/full/html.

[49] ibid

[50] Express News Service. "Unemployment Persisted Even Six Months after Lockdown: Report- The New Indian Express." The New Indian Express, The New Indian Express, 8 May 2021, https://www.newindianexpress.com/nation/2021/may/08/unemployment-persisted-even-six-months-after-lockdown-report-2299923.html. ; Goel, Srishti. "Unemployment Persists Even 6 Months after COVID Lockdown; Study Shows Steep Fall in Income." Republic World, Republic World, 8 May 2021, https://www.republicworld.com/india-news/general-news/unemployment-persists-even-6-months-after-covid-lockdown-study-shows-steep-fall-in-income.html.

[51] ibid

[52] ibid

[53] Inani, Rohit, and IndiaSpend. "How Second Wave of COVID-19 Has Decimated India's Rural Economy-India News , Firstpost." Firstpost, 7 June 2021, www.firstpost.com/india/how-second-wave-of-covid-19-has-decimated-indias-rural-economy-9689231.html.

[54] Centre for Monitoring Indian Economy Pvt. Ltd. "Employment Rate Continues to Fall." CMIE, 7 June 2021, www.cmie.com/kommon/bin/sr.php?kall=warticle&dt=20210607151754&msec=740. ; India Today Web Desk. "Unemployment Rate Falls as States Start Easing Covid-19 Restrictions – Business News." India Today, India Today, 15 June 2021, https://www.indiatoday.in/business/story/unemployment-rate-falls-as-states-start-easing-covid-19-restrictions-1815128-2021-06-15.

[55] ibid

[56] ibid

[57] ibid

[58] India Today Web Desk. "India May See 10% Unemployment Rate in May as Covid Lockdowns Hit Jobs - Business News." India Today, India Today, 28 May 2021, https://www.indiatoday.in/business/story/covid-19-india-may-see-10-unemployment-rate-in-may-as-local-lockdowns-hit-jobs-1808181-2021-05-28. ; Vyas, Mahesh. "15 Million Jobs Lost in May 2021." CMIE, 1 June 2021, www.cmie.com/kommon/bin/sr.php?kall=warticle&dt=20210601180645&msec=766#:~:text=In%20May%202021%2C%20India's%20labour,8%20per%20cent%20in%20April.

[59] Inani, Rohit, and IndiaSpend. "How Second Wave of COVID-19 Has Decimated India's Rural Economy-India News , Firstpost." Firstpost, 7 June 2021, www.firstpost.com/india/how-second-wave-of-covid-19-has-decimated-indias-rural-economy-9689231.html. ; Pti, PTI. "During COVID-19 Pandemic, India's Debt to GDP Ratio Increased from 74% to 90%, Says IMF." The Hindu, The Hindu, 8 Apr. 2021, www.thehindu.com/business/during-covid-19-pandemic-indias-debt-to-gdp-ratio-increased-from-74-to-90-says-imf/article34268953.ece.

[60] "Unemployment Rate in India." Unemployment, Centre for Monitoring Indian Economy Pvt. Ltd., unemploymentinindia.cmie.com/.

[61] "Download Entire World Economic Outlook Database, April 2021." IMF, WORLD ECONOMIC AND FINANCIAL SURVEYS, www.imf.org/en/Publications/WEO/weo-database/2021/April/download-entire-database.

[62] "Key Steps Taken to Increase Availability, Streamline Distribution of Oxygen: Government." The Economic Times, PTI, 10 May 2021, economictimes.indiatimes.com/news/india/key-steps-taken-to-increase-availability-streamline-distribution-of-oxygen-government/articleshow/82524548.cms. ; "Centre Undertakes Multiple Initiatives to Enhance Oxygen Availability, Distribution and Storage Infrastructure;" Press Information Bureau, PIB Delhi , 10 May 2021, pib.gov.in/PressReleasePage.aspx?PRID=1717459.

[63] Neeraj Santoshi, "Centre finally lets Uttarakhand use locally made oxygen to meet state quota", Hindustan Times, May 26 2021, https://www.hindustantimes.com/cities/dehradun-news/centre-finally-lets-uttarakhand-use-locally-made-oxygen-to-meet-state-quota-101622008093061.html

[64] Sanjay Singh, "Uttarakhand's coronavirus woes continue", The Economic Times, 10th May 2021, https://economictimes.indiatimes.com/news/india/uttarakhands-coronavirus-woes-continue/articleshow/82513127.cms?from=mdr ; PTI. "U'khand CM Seeks Help of Industrialists in Fighting Shortage of Medical Equipment." The Week, The Week, 15 Dec. 2020, www.theweek.in/wire-updates/business/2021/05/06/des74-ukd-virus-industry.html.

[65] Bhavyata Kagrana, "Oxygen Express Crosses Milestone of Delivering 25,000 MT of LMO Amid COVID-19 Crisis", Republic World, 6th June 2021, https://www.republicworld.com/india-news/general-news/oxygen-express-crosses-milestone-of-delivering-25000-mt-of-lmo-amid-covid-19-crisis.html ; "Southern Railway Welcomes You." Southern Railway Welcomes You, Southern Railways , 9 June 2021, https://sr.indianrailways.gov.in/view_detail.jsp?lang=0&dcd=10396&id=0,4,268.

[66]COVID-19 Directorate Order, "Global notice inviting offer for supply of drugs for COVID-19 management", 25th May 2021, http://health.mp.gov.in/en/corona-virus

[67] Express News Service, "Uttar Pradesh Cabinet approves 25% subsidy for new units making medical equipment", The Indian Express, 16 May 2021, https://indianexpress.com/article/cities/lucknow/uttar-pradesh-cabinet-approves-25-subsidy-for-new-units-making-medical-equipment-7316826

[68] Samarth Shrivastava, "UP invites bids for 350 oxygen plants to prepare for possible third Covid wave", India Today, Lucknow, 1 June 2021, https://www.indiatoday.in/coronavirus-outbreak/story/up-invites-bids-for-350-oxygen-plants-to-prepare-for-possible-third-covid-wave-1809282-2021-06-01

[69] Indian Express Online. "How Chhattisgarh Overcame Its Oxygen Shortage | Oxygen Crisis in India." YouTube, Indian Express Online, 29 Apr. 2021, https://www.youtube.com/watch?v=Cr36Bc-xx7g.; "388.88 MT of Oxygen Being Produced Daily in Chhattisgarh: CM Bhupesh Baghel - The Economic Times Video | ET Now." The Economic Times, Economic Times, 23 Apr. 2021, https://economictimes.indiatimes.com/news/india/388-88-mt-of-oxygen-being-produced-daily-in-chhattisgarh-cm-bhupesh-baghel/videoshow/82218043.cms.

[70] Amitabh Srivastava, "Covid second wave: Bihar's oxygen plan**",** India Today, Patna, 26 April 2021,

https://www.indiatoday.in/india-today-insight/story/covid-second-wave-bihar-s-oxygen-plan-1795244-2021-04-26 ; Swaroop, Vijay. "Bihar Steps on the Gas to Beat Oxygen Crisis." Hindustan Times, Hindustan Times, 5 May 2021, www.hindustantimes.com/cities/others/bihar-steps-on-the-gas-to-beat-oxygen-crisis-101620228395768.html.

[71] Amitabh Srivastava, "Bihar's desperate Covid fight", India Today, Patna, 9 May 2021, https://www.indiatoday.in/india-today-insight/story/bihar-s-desperate-covid-fight-1800569-2021-05-09

[72]Rajesh Kumar Thakur, "Bihar: Sufficient medical equipment, committed workforce will defeat COVID-19, says top official", New Indian Express, 30th March 2021, https://www.newindianexpress.com/nation/2020/mar/30/bihar-sufficient-medical-equipments-committed-workforce-will-defeat-covid-19-says-top-official-2123503.html.

[73] ASRP Mukesh, "Jharkhand to manufacture oxygen flow meters to tackle Covid crisis: CM", Times of India, 11 May 2021, https://timesofindia.indiatimes.com/city/ranchi/state-to-manufacture-oxygen-flow-meters-to-tackle-cov-crisis-cm/articleshow/82532486.cms

[74] Express News Service, "'Sanjeevani Vaahan' to deal with oxygen crisis at Covid hospitals in Jharkhand", New Indian Express, 4 May 2021, https://www.newindianexpress.com/nation/2021/may/04/sanjeevani-vaahan-to-deal-with-oxygen-crisis-at-covid-hospitals-in-jharkhand-2298329.html

[75] Nikhila Henry and Mohammad Sartaj Aslam, "Foreign COVID Aid: Maharashtra, Jharkhand Struggle for Fair Share", The Quint, 22 May 2021, https://www.thequint.com/coronavirus/foreign-aid-maha-jharkhand-get-a-fraction-in-talks-with-centre#read-more.

[76] Special Correspondent, "Coronavirus - All foreign aid allocated to States: Centre", The Hindu, 6 May 2021, https://www.thehindu.com/news/national/covid-19-global-aid-allocated-to-states-says-centre/article34493426.ece

[77] Sujit Kumar Bisoyi, "Odisha government bid to ramp up production of medical oxygen, cylinders", Times of India, 12 May 2021, https://timesofindia.indiatimes.com/city/bhubaneswar/odisha-government-bid-to-ramp-up-production-of-medical-oxygen-cylinders/articleshow/82568553.cms ; Express News Service. "COVID Crisis: Oxygen Is Available in Odisha but Where Are the Cylinders?" The New Indian Express, The New Indian Express, 9 May 2021, www.newindianexpress.com/states/odisha/2021/may/09/covid-crisis-oxygen-is-available-in-odisha-but-where-are-the-cylinders-2300307.html.

[78] Ibid.

[79] Deeksha Bharadwaj, "Oxygen demand rises in southern states, Odisha and Assam", Hindustan Times, 21 May 2021, https://www.hindustantimes.com/india-news/oxygen-demand-rises-in-southern-states-odisha-and-assam-101621556557264.html

[80] Daily Logistics Supply in West Bengal for COVID-19, 9 May 2021, https://www.wbhealth.gov.in/uploaded_files/corona/For_Upload_Unit_wise_Cumulative_Logistics_Supply_(From_CMS)_for_COVID-19_as_on_09.05_.2020_.pdf

[81] Directorate of Health Services, Govt. of West Bengal, 2 June 2021, https://www.wbhealth.gov.in/uploaded_files/corona/Advisory_on_Amphotericin_B.pdf

[82] Directorate of Health Services, Government of West Bengal, 12 May 2021, https://www.wbhealth.gov.in/uploaded_files/corona/Order_for_State_Committee_on_Oxygen.pdf

[83] Umanand Jaiswal, "Assam govt announces free power supply to oxygen plants", Telegraph India, Guwahati, 20 May 2021, https://www.telegraphindia.com/north-east/coronavirus-outbreak-assam-government-announces-free-power-supply-to-oxygen-plants/cid/1816107

[84] Utpal Parashar, "Covid-19: Assam becomes first state to import PPE kits directly from China", Hindustan Times, 15 April 2021, https://www.hindustantimes.com/india-news/covid-19-assam-becomes-first-state-to-import-ppe-kits-directly-from-china/story-TEemFb6kizgU1ceOrioeFI.html

[85] Bikas Singh, "Assam, Meghalaya agree on Assam acting as oxygen hub for whole north east", Economic Times, 18 May 2021, https://economictimes.indiatimes.com/news/india/assam-meghalaya-agree-on-assam-acting-as-oxygen-hub-for-whole-north-east/articleshow/82742074.cms?from=mdr

[86] Government of Arunachal Pradesh – Notice inviting quotation, 8 May 2021 https://covid19.assam.gov.in/wp-content/uploads/2021/05/Order-for-Designated-Cremation-ground-Dated-08-05-21.pdf

[87] Government of Manipur – Letter Requesting Help from Private Sector, 25 May 2021, http://nrhmmanipur.org/wp-content/uploads/2021/05/Scan-25-May-2021.pdf

[88] Ratnadip Choudhury, "Mizoram Receives Oxygen Concentrators, Cylinders From Taiwan And Ireland", NDTV, 8 May 2021, https://www.ndtv.com/india-news/mizoram-receives-oxygen-concentrators-cylinders-from-taiwan-and-ireland-2437450

[89] Henry L Khojol, "COVID-19: Lone Mizoram district receives outside aid", EastMojo, 5 June 2021, https://www.eastmojo.com/mizoram/2021/06/05/covid-19-lone-mizoram-district-receives-outside-aid/. ; "Mizoram: Lunglei district receives aid for Covid-19 treatment", Northeast Now, 5 June 2021, https://nenow.in/north-east-news/mizoram/mizoram-lunglei-district-receives-aid-for-covid-19-treatment.html ; "CSR Kaltlangin Lungleiah Medical Equipments Lo Thleng - Lunglei DC in H&FW Hotute Hnenah Hlan." DIRECTORATE OF INFORMATION & PUBLIC RELATIONS, DIRECTORATE OF INFORMATION & PUBLIC RELATIONS, 2021, https://dipr.mizoram.gov.in/post/csr-kaltlangin-lungleiah-medical-equipments-lo-thleng-lunglei-dc-in-hfw-hotute-hnenah-hlan.

[90] Medolenuo Ambrocia, "No need to worry, Nagaland has sufficient oxygen: COVID-19 spokesperson", EastMojo, 25 May 2021, https://www.eastmojo.com/nagaland/2021/05/25/no-need-to-worry-nagaland-has-sufficient-oxygen-covid-19-spokesperson/

[91] Thejoto Nienu, "Nagaland Health minister calls for concerted effort to fight Covid-19 second wave", Eastern Mirror, 4 June 2021, https://easternmirrornagaland.com/nagaland-health-minister-calls-for-concerted-effort-to-fight-covid-19-second-wave/

[92] ibid

[93] Vishnoi, Anubhuti, and ET Bureau. "Centralised Oxygen Supply Plan Ready for 19 States, Union Territories - The Economic Times." The Economic Times, The Economic Times, 23 Apr. 2021, https://economictimes.indiatimes.com/news/india/centralised-oxygen-supply-plan-ready-for-19-states-uts/articleshow/82202874.cms.

[94] ibid

[95] ibid

[96] Moole, Janhavee. "A Nightmare on Repeat - India Is Running out of Oxygen Again - BBC News." BBC News, BBC News, 23 Apr. 2021, https://www.bbc.com/news/uk-56841381.

[97] Kumar, Hari, et al. "A Desperate India Falls Prey to COVID Scammers - The Economic Times." The Economic Times, The Economic Times, 17 May 2021, https://economictimes.indiatimes.com/news/india/a-desperate-india-falls-prey-to-covid-scammers/articleshow/82698790.cms.

[98] Kapoor, Geetanjali, et al. "COVID-19 in India : State-Wise Estimates of Current Hospital Beds, Intensive Care Unit (ICU) Beds and Ventilators." *CDDEP*, Princeton University, 20 Apr. 2020, https://cddep.org/wp-content/uploads/2020/04/State-wise-estimates-of-current-beds-and-ventilators_24Apr2020.pdf.

[99] ibid

[100] ibid

[101] ibid

[102] ibid

[103] "Census of India Website : Office of the Registrar General & Census Commissioner, India." Census of India Website : Office of the Registrar General & Census Commissioner, India, Census of India, https://censusindia.gov.in/2011census/population_enumeration.html.

[104] ibid

[105] ibid

[106] ibid

[107] Karan, Anup, et al. "Size, Composition and Distribution of Human Resource for Health in India: New Estimates Using National Sample Survey and Registry Data." BMJ Open, British Medical Journal Publishing Group, 1 Apr. 2019, bmjopen.bmj.com/content/9/4/e025979.

[108] Press Release from Ministry of Defence, 2 June 2021, https://pib.gov.in/PressReleasePage.aspx?PRID=1723653

[109] Shivani Azad, "Uttarakhand to convert 300 Ayush hospitals into 24X7 Covid care units", Time of India, 20 May 2021, https://timesofindia.indiatimes.com/city/dehradun/uttarakhand-to-convert-300-ayush-hospitals-into-24x7-covid-care-units/articleshow/82778333.cms

[110] Uttarakhand Government Resource, Department of Medical Health & Family Welfare https://covid19.uk.gov.in/bedssummary.aspx

[111] "Nearly 50% villages in Chhattisgarh are now Corona-free", Times of India, 28 May 2021, https://timesofindia.indiatimes.com/city/raipur/nearly-50-villages-in-chhattisgarh-are-now-corona-free/articleshow/83030069.cms.

[112] Ibid ; ANI. "9,462 Villages in Chhattisgarh 'Corona-Free'." ANI News, ANI , 27 May 2021,

www.aninews.in/news/national/general-news/9462-villages-in-chhattisgarh-corona-free20210527175007/.

[113] Chhattisgarh Government Resource for COVID-19 Facilities, http://cghealth.nic.in/cghealth17/Information/content/CORONA/DedicatedCOVIDHospitals.pdf

[114] "How Madhya Pradesh plans to become COVID-19 free by May 31?", CNBC TV18, 25 May 2021, https://www.cnbctv18.com/healthcare/how-madhya-pradesh-plans-to-become-covid-19-free-by-may-31-9422081.htm

[115]"Madhya Pradesh government offers space to private hospitals for Covid-19 treatment", Mint, 12 April 2021, https://www.livemint.com/news/india/madhya-pradesh-govt-offers-space-to-private-hospitals-for-covid-19-treatment-11618221315937.html

[116] Avaneesh Mishra, "With active cases nearing 10,000, Uttar Pradesh govt again notifies 45 hospitals as Covid facilities", Indian Express, Lucknow, 1 April 2021, https://indianexpress.com/article/cities/lucknow/with-active-cases-nearing-10000-uttar-pradesh-govt-again-notifies-45-hospitals-as-covid-facilities-7253603/

[117] Neha Shukla, "Covid-19: Uttar Pradesh govt fixes fare for ambulance services", Times of India, 2 June 2021, https://timesofindia.indiatimes.com/city/lucknow/covid-19-uttar-pradesh-govt-fixes-fare-for-ambulance-services/articleshow/83177165.cms

[118] Bihar Health Department COVID-19 Beds Availability, https://covid19health.bihar.gov.in/DailyDashboard/BedsOccupied

[119] Jharkhand Government Resource for COVID-19 Bed Availability, http://www.amritvahini.in/DashBoardNHM.aspx

[120] Odisha Government Resource for COVID-19 Bed Availability, https://health.odisha.gov.in/pdf/List-COVID-facilities-State-Odisha.pdf

[121] West Bengal Government Resource for Bed Availability, https://excise.wb.gov.in/chms/Portal_Default.aspx

[122] West Bengal Ambulance Provider Resource, https://excise.wb.gov.in/chms/Public/Page/CHMS_Public_MIS_Ambulance.aspx

[123] Government of Nagaland COVID-19 Bed Availability, http://nhmnagaland.in/Notification_file_path/Dedicated%20COVID%20Hospitals%20in%20Nagaland.pdf

[124] "Coronavirus | Assam gives ambulance status to oxygen carriers", The Hindu, Guwahati, 21 April 2021, https://www.thehindu.com/news/national/other-states/coronavirus-assam-gives-ambulance-status-to-oxygen-carriers/article34379459.ece

[125] Government of Manipur COVID-19 Bed Availability, http://nrhmmanipur.org/?page_id=2602

[126] Government of Meghalaya Resource COVID-19 Bed Availability, http://meghalayaonline.gov.in/covid/images/materials/covidupdate.pdf

[127] Government of Mizoram Resource COVID-19 Bed Availability https://www.nhmmizoram.org/page?id=202

[128] Government of Nagaland Rseource COVID-19 Bed Availability, http://nhmnagaland.in/Notification_file_path/Dedicated%20COVID%20Hospitals%20in%20Nagaland.pdf

[129] Government of Tripura Resource COVID-19 Bed Availability, https://covid19.tripura.gov.in/Bed_Availability_Status.html

[130] Government of Sikkim Resource COVID-19 Bed Availability, https://www.covid19sikkim.org

[131]Shelar, Jyoti. "Mumbai's Health Infrastructure Falls Short as Patients Go after Private Medical Care | Mumbai News - Hindustan Times." Hindustan Times, Hindustan Times, 14 Apr. 2021, https://www.hindustantimes.com/cities/mumbai-news/mumbais-health-infrastructure-falls-short-as-patients-go-after-private-medical-care-101618340683425.html.

[132] Kumar, Anant et al. "COVID-19: Challenges and its consequences for rural health care in India." Public health in practice (Oxford, England) vol. 1 (2020): 100009. doi:10.1016/j.puhip.2020.100009

[133] MITRA, SHOUVIK. "The Implications of COVID-19 for Rural India." India Development Review, India Development Review, 25 Mar. 2021, idronline.org/the-implications-of-covid-19-for-rural-india/.

[134] Javadekar, Dr Prachee, and Dr Harshada Vaidya Kannur. "The Social Impact of COVID-19 on India." The Bridge Chronicle, The Bridge Chronicle, 1 May 2021, www.thebridgechronicle.com/opinion/social-impact-covid-19-india-49313.

[135] ibid

[136] ibid

[137] "Global Gender Gap Report 2021 - Insight Report." *World Economic Forum*, World Economic Forum, 2021, http://www3.weforum.org/docs/WEF_GGGR_2021.pdf.

[138] ibid

[139] ibid

[140] P., Mufsin P. P. P., and Muhsin P. P. P. P. . "Sociocultural and Religious Factors Complicate India's COVID-19 Response." The Diplomat, The Diplomat, 25 Mar. 2020, thediplomat.com/2020/03/sociocultural-and-religious-factors-complicate-indias-covid-19-response/.

[141] Tarfe, Akshay. "How India's Covid-19 Communication Strategy Is Failing to Combat Vaccine Hesitancy." The Indian Express, The Indian Express, 3 June 2021, indianexpress.com/article/opinion/how-indias-covid-19-communication-strategy-is-failing-to-combat-vaccine-hesitancy-7342890/.

[142] M. , Sandeep Kumar, et al. "Social Economic Impact of COVID-19 Outbreak in India." International Journal of Pervasive Computing and Communications, 17 July 2020, www.emerald.com/insight/content/doi/10.1108/IJPCC-06-2020-0053/full/html.

[143] Rawal, Mukesh. "An Analysis of COVID-19 Impacts On Indian Education System." *Dr. D. Y. Patil College of Education*, Educational Resurgence Journal Volume 2, 5 Jan. 2021, https://coed.dypvp.edu.in/educational-resurgence-journal/documents/jan-2021/35-40.pdf.

[144] Pothula, Vijaya Mary. "COVID-19's Impact on Education in India: It's Not All Bad News." Global Sisters Report, Global Sisters Report, 4 Feb. 2021,

www.globalsistersreport.org/news/ministry/column/covid-19s-impact-education-india-its-not-all-bad-news.

[145] Deka, Kaushik, and Shelly Anand. "Covid-19 Fallout: The Impact on Education in India." India Today, India Today, 4 Jan. 2021, www.indiatoday.in/magazine/news-makers/story/20210111-school-of-hard-knocks-1755078-2021-01-03. ; "Education." UNICEF India, UNICEF India, 15 July 2021, www.unicef.org/india/what-we-do/education. ; Press Trust of India. "Just 24% of Indian Households Have Internet Facility to Access E-Education: UNICEF - Hindustan Times." Hindustan Times, Hindustan Times, 27 Aug. 2020, https://www.hindustantimes.com/education/just-24-of-indian-households-have-internet-facility-to-access-e-education-unicef/story-a1g7DqjP6lJRSh6D6yLJjL.html.

[146] Ibid ; "Rapid Assessment of Learning during School Closures in the Context of COVID-19 | UNICEF India." UNICEF, UNICEF, https://www.unicef.org/india/reports/rapid-assessment-learning-during-school-closures-context-covid-19.

[147] Deka, Kaushik, and Shelly Anand. "Covid-19 Fallout: The Impact on Education in India." India Today, India Today, 4 Jan. 2021, www.indiatoday.in/magazine/news-makers/story/20210111-school-of-hard-knocks-1755078-2021-01-03. ; Jajodia, Bishakha. "Dawn of Digital Education in Government Schools." IndianFolk, IndianFolk, 22 Mar. 2021, https://www.indianfolk.com/dawn-digital-education-government-schools/.

[148] Rawal, Mukesh. "An Analysis of COVID-19 Impacts On Indian Education System." *Dr. D. Y. Patil College of Education*, Educational Resurgence Journal Volume 2, 5 Jan. 2021, https://coed.dypvp.edu.in/educational-resurgence-journal/documents/jan-2021/35-40.pdf.

[149] ibid

[150] India Today Web Desk. "Challenges in Indian Education System Due to Covid-19 Pandemic - Education Today News." India Today, India Today, 10 May 2021, https://www.indiatoday.in/education-today/featurephilia/story/challenges-in-indian-education-system-due-to-covid-19-pandemic-1800822-2021-05-10.

[151] Deka, Kaushik, and Shelly Anand. "Covid-19 Fallout: The Impact on Education in India." India Today, India Today, 4 Jan. 2021, www.indiatoday.in/magazine/news-makers/story/20210111-school-of-hard-knocks-1755078-2021-01-03.

[152] Pothula, Vijaya Mary. "COVID-19's Impact on Education in India: It's Not All Bad News." Global Sisters Report, Global Sisters Report, 4 Feb. 2021, www.globalsistersreport.org/news/ministry/column/covid-19s-impact-education-india-its-not-all-bad-news.

[153] ibid

[154] ibid

[155] Pothula, Vijaya Mary. "COVID-19's Impact on Education in India: It's Not All Bad News." Global Sisters Report, Global Sisters Report, 4 Feb. 2021, www.globalsistersreport.org/news/ministry/column/covid-19s-impact-education-india-its-not-all-bad-news.

[156] Lokhandwala, Snehal, and Pratibha Gautam. "Indirect Impact of COVID-19 on Environment: A Brief Study in Indian Context." PubMed Central (PMC), Sept. 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7299871/.

[157] ibid

[158] Worland, Justin. "Climate's Impact on India's COVID-19 Crisis | Time." Time, Time, 6 May 2021, https://time.com/6046334/india-covid-19-climate-change/.

[159] ibid

[160] Datta, Dr. Satabdi. "India's Environmental Laws and COVID-19." Green Economy Coalition, Green Economy Coalition, 24 July 2020, www.greeneconomycoalition.org/news-and-resources/indias-environmental-laws-and-covid-19.

[161] Worland, Justin. "Climate's Impact on India's COVID-19 Crisis | Time." Time, Time, 6 May 2021, https://time.com/6046334/india-covid-19-climate-change/.

[162] DTE Staff. "State of India's Environment In Figures: Rural India Worst Hit by COVID-19 Second Wave." Down To Earth | Latest News, Opinion, Analysis on Environment & Science Issues | India, South Asia, Down To Earth, 4 June 2021, https://www.downtoearth.org.in/news/environment/state-of-india-s-environment-in-figures-rural-india-worst-hit-by-covid-19-second-wave-77280 ; Mordani, Sneha. "46% Increase in Covid Biomedical Waste in April-May, Says Report - Coronavirus Outbreak News." India Today, India Today, 12 June 2021, https://www.indiatoday.in/coronavirus-outbreak/story/46-increase-in-covid-biomedical-waste-april-bihar-karnataka-1813935-2021-06-12.

[163] ibid

[164] Ankit, Kumar, A., Jain, V. et al. Environmental impact of COVID-19 pandemic: more negatives than positives. Environmental Sustainability (2021). https://doi.org/10.1007/s42398-021-00159-9

[165] ibid

[166] "Covid-19 Second Wave: Here's a List of States That Have Imposed Full Lockdown." *The Indian Express*, 9 May 2021, indianexpress.com/article/india/covid-19-second-wave-heres-a-list-of-states-that-have-imposed-lockdowns-7306634/.

[167] Writer, Staff. "Uttarakhand Imposes One-Week Complete Lockdown amid Covid Surge. Details Here." *Mint*, 9 May 2021, www.livemint.com/news/india/uttarakhand-imposes-one-week-complete-lockdown-amid-covid-surge-details-here-11620575642240.html.

[168] "Uttarakhand Extends Covid Curfew by One Week with Some Relaxations." *Latest News by Times Now News*, www.timesnownews.com/india/article/uttarakhand-extends-covid-curfew-by-one-week-with-some-relaxations/776887.

[169] "Haryana Extends Lockdown till July 5, Relaxations Allowed Earlier to Continue." Edited by PTI, *The Economic Times*, 27 June 2021, economictimes.indiatimes.com/news/india/haryana-extends-lockdown-till-jul-5-relaxations-allowed-earlier-to-continue/articleshow/83892590.cms.

[170] ibid

[171] Ranjan, PTI. "Himachal Pradesh Lockdown: 10-Day Restrictions Imposed from Friday to Check Covid Spread." *English*, 6 May 2021, www.indiatvnews.com/news/india/himachal-pradesh-lockdown-date-guidelines-rules-covid19-cases-shimla-702779.

[172] "Himachal Pradesh Extends 'Corona Curfew' Till June 14." Edited by Shubhangi Gupta, *India News, Breaking News | India.com*, 5 June 2021, www.india.com/news/india/himachal-pradesh-lockdown-2021-news-today-june-5-2021-corona-curfew-extended-till-june-14-shimla-news-jai-ram-thakur-check-details-4718111/.

[173] "Punjab Imposes Lockdown-like Curbs till May 15; Check out What's Allowed, What's Not." *Business Today*, 3 May 2021, www.businesstoday.in/coronavirus/story/punjab-imposes-lockdown-like-curbs-till-may-15-check-out-what-allowed-what-not-294969-2021-05-03.

[174] Bureau, "Punjab Extends Lockdown till June 30, Allows Reopening of IELTS Coaching Centres- Check Guidelines Here." *Zee News*, Zee News, 26 June 2021, zeenews.india.com/india/punjab-extends-lockdown-till-june-30-allows-reopening-of-ielts-coaching-centres-check-guideline-here-2371905.html.

[175] Pakrasi, Susmita. "Punjab Allows Bars, Pubs to Open from Today: Check Full List of Guidelines Here." *Hindustan Times*, 1 July 2021, www.hindustantimes.com/cities/chandigarh-news/punjab-allows-bars-pubs-to-open-from-today-check-full-list-of-guidelines-here-101625107538805.html.

[176] Ani. "Rajasthan Imposes Lockdown from May 10 to 24 amid Surge in Covid-19 Cases." *Business Standard*, Business-Standard, 7 May 2021, www.business-standard.com/article/current-affairs/rajasthan-imposes-lockdown-from-may-10-to-24-amid-surge-in-covid-19-cases-121050700063_1.html.

[177] Correspondent, Special. "Rajasthan Modifies Lockdown to Ease Restrictions." *The Hindu*, The Hindu, 8 June 2021, www.thehindu.com/news/national/other-states/rajasthan-modifies-lockdown-to-ease-restrictions/article34757011.ece.

[178] "Lockdown Imposed In Chandigarh Amid Surge In COVID-19 Cases." *NDTV News*, 30 Apr. 2021, www.ndtv.com/chandigarh-news/lockdown-imposed-in-chandigarh-amid-surge-in-covid-19-cases-2425630.

[179] "Chandigarh Unlock: Bars, Restaurants, Gyms to Open with 50% Capacity, Here's What Else Is Allowed." Edited by Karishma Jain, *DNA India*, 8 June 2021, www.dnaindia.com/india/report-chandigarh-unlock-relaxations-whats-allowed-whats-not-bars-restaurants-gyms-to-open-with-50-percent-capacity-2894226.

[180] Correspondent, Special. "COVID-19 Surge: Lockdown in Delhi Extended for Another Week." *The Hindu*, The Hindu, 16 May 2021, www.thehindu.com/news/cities/Delhi/covid-19-surge-lockdown-in-delhi-extended-for-another-week/article34571027.ece.

[181] "Delhi Unlock: Govt Eases Curbs, Check What Will Remain Open from Tomorrow." Edited by Sneha, *Mint*, 27 June 2021, www.livemint.com/news/india/delhi-unlock-with-further-easing-of-curbs-check-what-will-remain-open-from-tomorrow-11624751658011.html.

[182] "Now, All J&K Districts to Go under Lockdown." *Hindustan Times*, 29 Apr. 2021, www.hindustantimes.com/cities/chandigarh-news/now-all-j-k-districts-to-go-under-lockdown-101619726804002.html.

[183] Joshi, Poorva. "Gradual Unlock in Leh to Start from June 7 amid Dip in New Covid Cases." *English*, 6 June 2021, www.indiatvnews.com/news/india/gradual-unlock-in-leh-to-start-from-june-7-amid-dip-in-new-covid-cases-709630.

[184] Ashiq, Peerzada. "Jammu and Kashmir Re-Opens Partially after 31-Day Lockdown." *The Hindu*, The Hindu, 31 May 2021, www.thehindu.com/news/national/other-states/jammu-and-kashmir-re-opens-partially-after-31-day-lockdown/article34690808.ece.

[185] PTI. "J&K Entends Closure of Educational Institutions till July 15." *The Indian Express*, 28 June 2021, indianexpress.com/article/education/educational-institutions-in-j-k-to-remain-closed-till-july-15-7379214/.

[186] TNN, "Chhattisgarh Extends Lockdown till May 31: Raipur News - Times of India." *The Times of India*, TOI, timesofindia.indiatimes.com/city/raipur/chhattisgarh-extends-lockdown-till-may-31/articleshow/82675862.cms.

[187] Mishra, Ritesh. "Chhattisgarh Extends Covid Lockdown with Limited Relaxations in Some Areas." *Hindustan Times*, 1 June 2021, www.hindustantimes.com/india-news/chhattisgarh-extends-covid-lockdown-with-limited-relaxations-in-some-areas-101622534817115.html.

[188] "MP Govt Imposes Lockdown in All Urban Areas from Friday 6 Pm-Monday 6 Am, Containment Zones in Main Cities." *Latest News by Times Now News*, 8 Apr. 2021, www.timesnownews.com/india/article/mp-govt-imposes-lockdown-in-all-urban-areas-from-friday-6-pm-monday-6-am-containment-zones-in-main-cities/742527.

[189] "MP Lockdown: Full Lockdown Imposed in State till May 15, Essential Services to Continue; Check Details Here." *Jagran English*, 6 May 2021, english.jagran.com/india/madhya-pradesh-lockdown-news-coronavirus-restrictions-janata-curfew-live-news-shopping-malls-weekly-markets-cinema-halls-bhopal-indore-ujjain-covid-guidelines-10026426.

[190] "MP Unlock: Sunday Lockdown Lifted in Madhya Pradesh; Night Curfew To Remain in Place." Edited by Kritika Bansal, *India News, Breaking News | India.com*, 27 June 2021, www.india.com/news/india/mp-unlock-sunday-lockdown-to-be-lifted-in-madhya-pradesh-night-curfew-to-remain-in-place-4771048/.

[191] Writer, Staff. "Full Lockdown in Uttar Pradesh from Tomorrow. Details Here." *Mint*, 29 Apr. 2021, www.livemint.com/news/india/full-lockdown-in-uttar-pradesh-from-tomorrow-details-here-11619680956752.html.

[192] Bose, Joydeep. "UP to Ease Covid-19 Curfew from Monday, New Guidelines Issued. All Details Here." *Hindustan Times*, 20 June 2021, www.hindustantimes.com/cities/lucknow-news/up-to-ease-covid-19-curfew-from-monday-new-guidelines-issued-all-details-here-101624169416571.html.

[193] PTI. "Covid 19: Bihar to Unlock from June 9; Night Curfew to Remain in Place." *The Economic Times*, 8 June 2021, economictimes.indiatimes.com/news/india/covid-19-bihar-to-unlock-from-june-9-night-curfew-to-remain-in-place/articleshow/83334850.cms.

[194] ibid

[195] "Covid Roundup: Bengal to Prioritise Covid Jabs for Mothers, Jharkhand Extends Restrictions and More: India News - Times of India." *The Times of India*, TOI, 23 June 2021,

timesofindia.indiatimes.com/india/covid-roundup-india-reports-40-cases-of-delta-plus-variant-jharkhand-extends-restrictions-and-more/articleshow/83780782.cms.

[196] Mohapatra , Debabrata. "Odisha Lockdown News: 14-Day Lockdown in Odisha from May 5: Bhubaneswar News - Times of India." *The Times of India*, TOI, 2 May 2021, timesofindia.indiatimes.com/city/bhubaneswar/14-day-lockdown-in-odisha-from-may-5/articleshow/82352596.cms.

[197] Debabrata Mohanty. "Odisha to Relax Lockdown Partially from June 17." *Hindustan Times*, 16 June 2021, www.hindustantimes.com/india-news/odisha-to-relax-lockdown-partially-from-june-17-101623840071613.html.

[198] *Govt. of WB*, 14 June 2021, https://wb.gov.in/upload/MCLNEWS-210614124306465.pdf.

[199] "West Bengal Govt Extends COVID Lockdown till July 15 with Relaxations: Salons, Gyms Allowed to Open [DETAILS]." *Latest News by Times Now News*, 28 June 2021, www.timesnownews.com/india/west-bengal/article/west-bengal-govt-extends-covid-lockdown-till-july-15-with-relaxations-salons-gyms-allowed-to-open-details/777086.

[200] "Lockdown in Assam: Tougher Curbs Imposed as Cases Surge - What's Open, What's Not." Edited by Karishma Jain, *DNA India*, 15 May 2021, www.dnaindia.com/india/report-lockdown-in-assam-tougher-curbs-imposed-as-cases-surge-whats-open-whats-not-2890471.

[201] Centre, National Informatics, "SOP for Restricting Movement of Individuals from 5 PM to 5 AM with Effect from 28th June till Further Notice Dated 26-06-21 – Covid 19 Dashboard." *Government of Assam*, covid19.assam.gov.in/covid_asm_advisory/sop-for-restricting-movement-of-individuals-from-5-pm-to-5-am-with-effect-from-28th-june-till-further-notice-dated-26-06-21/.

[202] "Arunachal Pradesh Imposes Night Curfew for Entire Month." *Business Today*, 7 May 2021, www.businesstoday.in/latest/economy-politics/story/arunachal-pradesh-imposes-night-curfew-for-entire-month-295239-2021-05-07.

[203] ANI, and ANI. "Covid-19: Arunachal Pradesh Extends Lockdown in 7 Districts till June 7." *The Economic Times*, 31 May 2021, economictimes.indiatimes.com/news/politics-and-nation/covid-19-arunachal-pradesh-extends-lockdown-in-7-districts-till-june-7/videoshow/83121197.cms.

[204]"Covid Surge Forces Manipur Administration to Impose 24-Hour Curfew in 7 Districts Starting Today till May 17." *Latest News by Times Now News*, 8 May 2021, www.timesnownews.com/india/article/covid-surge-forces-manipur-administration-to-impose-24-hour-curfew-in-7-districts-starting-today-till-may/754429.

[205] Salle, Vangamla. "Manipur Govt Extends Curfew in 7 Districts till June 30. See Details." *EastMojo*, 11 June 2021, www.eastmojo.com/manipur/2021/06/11/manipur-govt-extends-curfew-in-7-districts-till-june-30-see-details/.

[206] Nath, Hemanta Kumar. "Meghalaya Imposes Covid-19 Lockdown till June 14." *India Today*, 5 June 2021, www.indiatoday.in/coronavirus-outbreak/story/meghalaya-covid-19-lockdown-extension-east-khasi-hills-1811193-2021-06-05.

[207] ibid

[208] "Mizoram Extends Lockdown in Aizawl till June 6." *The New Indian Express*, The New Indian Express, 29 May 2021, www.newindianexpress.com/nation/2021/may/29/mizoram-extends-lockdown-in-aizawl-till-june-6-2309255.html.

[209] "COVID-19: Mizoram Govt Extends Lockdown in Aizawl till June 21." *The Economic Times*, 12 June 2021, economictimes.indiatimes.com/news/india/covid-19-mizoram-govt-extends-lockdown-in-aizawl-till-june-21/articleshow/83468139.cms?from=mdr.

[210] Nath, Hemanta Kumar. "Nagaland Imposes Week-Long Lockdown from May 14 amid Covid-19 Surge." *India Today*, 11 May 2021, www.indiatoday.in/coronavirus-outbreak/story/nagaland-imposes-lockdown-from-may-14-1801515-2021-05-12.

[211] Nath, Hemanta Kumar. "Nagaland Govt Extends Total Lockdown in the State till June 11." *India Today*, 28 May 2021, www.indiatoday.in/coronavirus-outbreak/story/complete-lockdown-extended-in-nagaland-till-june-11-1808249-2021-05-28.

[212] India, Press Trust of. "Covid-19 Curfew Extended in Tripura till June 25." *India Today*, 18 June 2021, www.indiatoday.in/coronavirus-outbreak/story/covid-19-curfew-extension-tripura-agartala-1816770-2021-06-19.

[213] Panday, Chandan. "Tripura: Curfew Restrictions Extended in Agartala, 10 Civic Bodies." *EastMojo*, 26 June 2021, www.eastmojo.com/tripura/2021/06/26/tripura-curfew-restrictions-extended-in-agartala-10-civic-bodies/.

[214] Giri, Pramod. "Sikkim to Impose Week-Long Lockdown from May 17." *Hindustan Times*, 14 May 2021, www.hindustantimes.com/india-news/sikkim-to-impose-week-long-lockdown-from-may-17-101621012020341.html.

[215] Dhungel, Pankaj. "COVID-19: Sikkim Extends Lockdown with Some Relaxations till June 21. See Details." *EastMojo*, 12 June 2021, www.eastmojo.com/sikkim/2021/06/12/covid-19-sikkim-extends-lockdown-with-some-relaxations-till-june-21-see-details/.

[216] "Maharashtra Lockdown: Day 1 of Janta Curfew, Ground Report." *The Economic Times*, 15 Apr. 2021, economictimes.indiatimes.com/news/politics-and-nation/covid-19-15-day-janta-curfew-starts-in-maharashtra-ground-report/videoshow/82079044.cms.

[217] Kamath, Naresh. "Covid in Maharashtra: Stricter Curbs from Monday." *Hindustan Times*, 27 June 2021, www.hindustantimes.com/cities/mumbai-news/covid-in-maharashtra-stricter-curbs-from-monday-101624817587961.html.

[218] "Goa Imposes Complete Lockdown from 7 Pm on April 29 till May 3 Morning amid COVID-19 Surge." *Latest News by Times Now News*, 28 Apr. 2021, www.timesnownews.com/india/article/goa-imposes-complete-lockdown-from-april-29-evening-till-may-3-morning-amid-covid-surge/750443.

[219] "Goa Lockdown: COVID-19 Curfew Extended till July 5 - What's Allowed, What's Not." *DNA India*, 28 June 2021, www.dnaindia.com/india/report-goa-lockdown-covid-19-curfew-extended-till-july-5-goa-chief-minister-pramod-sawant-announced-what-s-allowed-what-s-not-2897697.

[220] "Gujarat Lockdown: Night Curfew Imposed in These 29 Cities. What's Open, What's Shut: Full List Here." *India News, Breaking News | India.com*, 27 Apr. 2021, www.india.com/news/india/gujarat-lockdown-night-curfew-imposed-in-29-cities-himmatnagar-palanpur-navsari-valsad-timings-whats-open-what-shut-full-list-4618421/.

[221] Patro, Sheetal, and Srishty Choudhury. "Gujarat Unlock News: As COVID-19 Restrictions Ease from Today Know What Is Open, Timings." *DNA India*, 11 June 2021, www.dnaindia.com/india/report-gujarat-unlock-news-as-covid-19-restrictions-ease-from-today-know-what-is-open-timings-in-ahmedabad-gandhinagar-2894751.

[222] "Partial Lockdown To Be Imposed in Andhra Pradesh For 2 Weeks. Check Date, Timings." Edited by Kritika Bansal, *India News, Breaking News | India.com*, 3 May 2021, www.india.com/news/india/lockdown-news-andhra-pradesh-partial-curfew-date-timings-coronavirus-guidelines-4636277/.

[223] Apparasu, Srinivasa Rao. "Andhra Pradesh Further Relaxes Lockdown in 8 Districts." *Hindustan Times*, 28 June 2021, www.hindustantimes.com/india-news/andhra-pradesh-further-relaxes-lockdown-in-8-districts-101624870032176.html.

[224] Correspondent, Special. "Coronavirus: Karnataka Imposes Lockdown for 14 Days Starting from May 10." *The Hindu*, The Hindu, 7 May 2021, www.thehindu.com/news/national/karnataka/coronavirus-karnataka-imposes-lockdown-for-14-days-starting-may-10/article34508344.ece.

[225] PTI. "Karnataka Lockdown News: Karnataka Relaxes Covid-19 Restrictions in 6 More Districts: Bengaluru News - Times of India." *The Times of India*, TOI, 21 June 2021, timesofindia.indiatimes.com/city/bengaluru/karnataka-relaxes-covid-19-restrictions-in-6-more-districts/articleshow/83718645.cms.

[226] "Complete Lockdown Imposed in Kerala From May 8 to May 16 - Here's What's Allowed, What's Not." Edited by Nivedita R, *India News, Breaking News | India.com*, 6 May 2021, www.india.com/kerala/complete-lockdown-imposed-in-kerala-from-may-8-to-may-16-heres-whats-allowed-whats-not-4643548/.

[227] "Kerala Extends Lockdown: New COVID-19 Restrictions from July 1 [DETAILS]." *Latest News by Times Now News*, 29 June 2021, www.timesnownews.com/india/kerala/article/kerala-extends-lockdown-new-covid-19-restrictions-from-july-1-details/777819.

[228] Desk, The Hindu Net. "Tamil Nadu Lockdown Rules: What's Allowed and What's Not." *The Hindu*, The Hindu, 8 May 2021, www.thehindu.com/news/national/tamil-nadu/tamil-nadu-lockdown-rules-whats-allowed-and-whats-not/article34513085.ece.

[229] "Tamil Nadu Govt Eases Covid Restrictions, Lockdown to Continue till 5 July." *India Today*, 28 June 2021, www.indiatoday.in/india/video/tamil-nadu-govt-eases-covid-restrictions-1820224-2021-06-28.

[230] Reddy, Ravi. "Telangana to Impose Lockdown from May 12." *The Hindu*, The Hindu, 11 May 2021, www.thehindu.com/news/national/telangana/telangana-to-impose-lockdown-from-may-12/article34534083.ece

[231] Reporter, Staff. "A Week into Unlock, Decline in COVID Cases Continues." *The Hindu*, The Hindu, 28 June 2021, www.thehindu.com/news/national/telangana/a-week-into-unlock-decline-in-covid-cases-continues/article35006021.ece.

[232] "Several States Impose Lockdown, Night Curfew to Curb Covid-19; All You Need to Know: India News - Times of India." Edited by Shubhangi Gupta, *The Times of India*, TOI, 13 Apr. 2021, timesofindia.indiatimes.com/india/several-states-impose-lockdown-night-curfew-to-curb-covid-19/articleshow/82008208.cms.

[233] Ians. "Total Lockdown in South Andaman District From Monday Amid COVID Surge." Edited by Shubhangi Gupta, *India News, Breaking News | India.com*, 23 May 2021, www.india.com/news/india/total-lockdown-in-south-andaman-district-from-monday-amid-covid-surge-4685122/.

[234] India, Press Trust of. "Lakshadweep Administration Eases Coronavirus Lockdown Curbs as Cases Dip." *Business Standard*, Business-Standard, 21 June 2021, www.business-standard.com/article/current-affairs/lakshadweep-administration-eases-coronavirus-lockdown-curbs-as-cases-dip-121062101061_1.html.

[235]"Puducherry Govt Imposes Lockdown for 14 Days from May 10 amid Surge in Covid-19 Cases [DETAILS]." *Latest News by Times Now News*, 8 May 2021, www.timesnownews.com/india/puducherry/article/puducherry-govt-imposes-lockdown-for-14-days-from-may-10-amid-surge-in-covid-19-cases-details/754622.

[236] Dominique, Bosco. "Puducherry Lockdown News: Puducherry Extends Lockdown with Relaxations, Permits Reopening of Restaurants and Bars on Some Premises: Puducherry News - Times of India." *The Times of India*, TOI, 15 June 2021, timesofindia.indiatimes.com/city/puducherry/puducherry-extends-lockdown-with-relaxations-permits-reopening-of-restaurants-and-bars-on-some-premises/articleshow/83543670.cms.

[237] Desk, DH Web. "All You Need to Know about SII's Covishield and Bharat Biotech's Covaxin." *Deccan Herald*, DH News Service, 16 Jan. 2021, www.deccanherald.com/national/all-you-need-to-know-about-sii-s-covishield-and-bharat-biotech-s-covaxin-939302.html.

[238] "Moderna, Covovax, Biological E: What We Know about India's New Covid Vaccines." *BBC News*, BBC, 29 June 2021, www.bbc.com/news/world-asia-india-55748124.

[239] Bureau, Our. "Increase Gap between Covishield Doses to 12-16 Weeks, Says Expert Govt Panel." *@Businessline*, The Hindu BusinessLine, 14 May 2021, www.thehindubusinessline.com/news/increase-gap-between-two-doses-of-covishield-to-12-16-weeks-pregnant-women-can-choose-vaccine-panel/article34548676.ece.

[240] "Decision to Increase Gap between Covishield Doses Based on Scientific Data: Harsh Vardhan." *The Indian Express*, 16 June 2021, indianexpress.com/article/india/gap-between-covishield-doses-increased-on-scientific-evidence-harsh-vardhan-7361220/.

[241] *Govt. of India*, 3 January 2021, https://www.icmr.gov.in/pdf/press_realease_files/HFW_DCGI_energency_use_authorisation_03012021_2.pdf ; Also see Huzar, Timothy. "COVID-19: Scientists Outline the Failure of Vaccine Rollout in India." *Medical News Today*, MediLexicon International, 4 June 2021, www.medicalnewstoday.com/articles/why-covid-19-vaccines-should-be-free-for-all-in-india.

[242] Bose, Joydeep. "Why Was Bharat Biotech's Covaxin Not Approved in US? Here's What We Know so Far." Edited by Meenakshi Ray, *Hindustan Times*, 11 June 2021, www.hindustantimes.com/india-news/why-

was-bharat-biotech-s-covaxin-covid-19-vaccine-not-approved-in-us-here-s-what-we-know-so-far-101623387176530.html.

[243] Huzar, Timothy. "COVID-19: Scientists Outline the Failure of Vaccine Rollout in India." *Medical News Today*, MediLexicon International, 4 June 2021, www.medicalnewstoday.com/articles/why-covid-19-vaccines-should-be-free-for-all-in-india.

[244] "Covaxin Has 81% Efficacy, Says Bharat Biotech: What Does It Mean." Edited by Sameer, *Hindustan Times*, 4 Mar. 2021, www.hindustantimes.com/india-news/covaxin-has-81-efficacy-says-bharat-biotech-what-does-it-mean-101614833555283.html.

[245]"Clinical Trial in US, EUA in Canada: What's next for Bharat Biotech's Covaxin." Edited by Poulomi Ghosh, *Hindustan Times*, 13 June 2021, www.hindustantimes.com/india-news/clinical-trial-in-us-eua-in-canada-what-s-next-for-bharat-biotech-s-covaxin-101623588615606.html.

[246] Schraer, Rachel. "Russia's Sputnik V Vaccine Has 92% Efficacy in Trial." *BBC News*, BBC, 2 Feb. 2021, www.bbc.com/news/health-55900622#:~:text=Russia's%20Sputnik%20V%20coronavirus%20vaccine,protection%20against%20hospitalisation%20and%20death.

[247]Livemint. "Sputnik V Vaccine Production Scaled up in Delhi, Other Cities: Dr Reddy's." *Mint*, 16 June 2021, www.livemint.com/news/india/sputnik-v-covid-vaccine-production-scaled-up-in-delhi-other-cities-cowin-registration-not-open-yet-dr-reddys-11623855128081.html.

[248] "Moderna, Covovax, Biological E: What We Know about India's New Covid Vaccines." *BBC News*, BBC, 29 June 2021, www.bbc.com/news/world-asia-india-55748124.

[249] Staff, FP. "COVID-19 Vaccination Phase 2 to Begin on 1 March; Cost of Vaccine at Private Hospitals to Be Decided Soon-India News , Firstpost." *Firstpost*, 26 Feb. 2021, www.firstpost.com/india/covid-19-vaccination-phase-2-to-begin-on-1-march-cost-of-vaccine-at-private-hospitals-to-be-decided-soon-9348871.html.

[250] Writer, Staff. "COVID Vaccination for All above 18 Yrs from 1 May: Pricing to Supply Explained." *Mint*, 19 Apr. 2021, www.livemint.com/news/india/from-1-may-people-above-18-can-get-covid-vaccine-pricing-to-supply-explained-11618843095156.html.

[251] *Govt. of India*, 21 April 2021, https://www.mohfw.gov.in/pdf/LiberalisedPricingandAcceleratedNationalCovid19VaccinationStrategy2042021.pdf ; Also see "India Announces next Phase of Covid-19 Vaccination, All above 18 Yrs Eligible." Edited by Aparna Banerjea, *Mint*, 19 Apr. 2021, www.livemint.com/news/india/india-announces-next-phase-of-covid-vaccination-all-above-18-yrs-eligible-11618839943036.html.

[252] Barnagarwala, Tabassum. "9 Pvt Hospitals Corner 50% Doses, Raise Questions of Vaccine Equity and Access." *The Indian Express*, 5 June 2021, indianexpress.com/article/india/covid-vaccine-doses-private-hospitals-coronavirus-cases-7344769/.

[253] Mahapatra, Dhananjay. "Covid Vaccine: Supreme Court Pulls up Centre on Covid Vaccination Policy: Key Points: India News - Times of India." *The Times of India*, TOI, 3 June 2021,

timesofindia.indiatimes.com/india/centres-paid-vaccination-policy-for-18-45-years-age-group-arbitrary-irrational-says-sc/articleshow/83172112.cms.

[254] Sharma, Nidhi, and Divya Rajagopal. "Daily Covid Vaccinations Fall to Two-Month Low after Policy Tweak." *The Economic Times*, 6 May 2021, economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/daily-covid-19-vaccinations-fall-to-two-month-low-after-policy-tweak/articleshow/82423117.cms?from=mdr.

[255]Nagarajan , Rema. "Covid Vaccine INDIA: At Rs 700-RS 1,500, Price of Covid Vaccine in India's Private Sector among COSTLIEST: India News - Times of India." *The Times of India*, TOI, 10 May 2021, timesofindia.indiatimes.com/india/at-rs700-rs1500-price-of-covid-vaccine-in-indias-private-sector-among-costliest/articleshow/82509814.cms.

[256] ibid

[257] Staff, Wire. "As Private Hospitals Scoop UP Vaccines, Urban-Rural Access DIVIDE Widens Further." *The Wire*, 6 June 2021, thewire.in/health/private-hospital-groups-sweeping-vaccines-further-widens-urban-rural-access-divide.

[258] M, Kaunain Sheriff. "India Covid-19 Vaccination POLICY EXPLAINED: Here Is All You Need to Know." *The Indian Express*, 20 July 2021, indianexpress.com/article/explained/coronavirus-vaccination-policy-cost-availability-vaccine-explained-7349406/.

[259] Mahapatra, Dhananjay. "Covid Vaccine: Supreme Court Pulls up Centre on Covid Vaccination Policy: Key Points: India News - Times of India." *The Times of India*, TOI, 3 June 2021, timesofindia.indiatimes.com/india/centres-paid-vaccination-policy-for-18-45-years-age-group-arbitrary-irrational-says-sc/articleshow/83172112.cms.

[260] Kulkarni, Ashish. "India's New Vaccine Policy Makes Welcome Improvements – but Big Questions Still Remain." *Scroll.in*, Scroll.in, 11 June 2021, scroll.in/article/997231/indias-new-vaccine-policy-makes-welcome-improvements-but-big-questions-still-remain.

[261] "Centre Caps COVID-19 VACCINE Rates in Private Hospitals, Here's How Much They Will Cost Now." *The Indian Express*, 9 June 2021, indianexpress.com/article/india/covid-vaccine-covaxin-covishield-sputnik-price-7349950/.

[262] Saran, Shyam Saran, et al. "Centre to Encourage Use of RBI-Approved ELECTRONIC Vouchers to Help Vaccination of Poor." *ThePrint*, 8 June 2021, theprint.in/india/centre-to-encourage-use-of-rbi-approved-electronic-vouchers-to-help-vaccination-of-poor/674003/.

[263] M, Kaunain Sheriff. "Production Ramped UP, 13.5 CRORE Jabs Will Be Available in July." *The Indian Express*, 20 June 2021, indianexpress.com/article/india/production-ramped-up-13-5-cr-jabs-will-be-available-in-july-7366917/.

[264] M, Kaunain Sheriff. "India Covid-19 Vaccination POLICY EXPLAINED: Here Is All You Need to Know." *The Indian Express*, 20 July 2021, indianexpress.com/article/explained/coronavirus-vaccination-policy-cost-availability-vaccine-explained-7349406/.

[265] Kulkarni, Ashish. "India's New Vaccine Policy Makes Welcome Improvements – but Big Questions Still Remain." *Scroll.in*, Scroll.in, 11 June 2021, scroll.in/article/997231/indias-new-vaccine-policy-makes-welcome-improvements-but-big-questions-still-remain.

[266] "Covid Vaccination Guidelines: Centre Releases Revised Guidelines for National COVID VACCINATION Programme, to Be Implemented from JUNE 21: India News - Times of India." *The Times of India*, TOI, 8 June 2021, timesofindia.indiatimes.com/india/centre-releases-revised-guidelines-for-national-covid-vaccination-program-to-be-implemented-from-june-21/articleshow/83333937.cms.

[267] Online, FE. "Covid-19: Why India Is Facing Vaccine Shortage." *The Financial Express*, The Financial Express, 10 May 2021, www.financialexpress.com/lifestyle/health/covid-19-why-india-is-facing-vaccine-shortage/2248748/.

[268] Menon, Shruti. "India Coronavirus: Can All Adults Get Vaccinated in 2021?" *BBC News*, BBC, 1 June 2021, www.bbc.com/news/world-asia-india-55571793.

[269]Roy, Avik. "How Biden Admin Changed Stance on Supply of Vaccine Raw Materials to India." *Hindustan Times*, 26 Apr. 2021, www.hindustantimes.com/india-news/how-biden-admin-changed-stance-on-supply-of-vaccine-raw-materials-to-india-101619422507220.html.

[270] Correspondent, Special. "Coronavirus: Amid Shortage, States Postpone COVID-19 Vaccine Rollout for 18-45 Age Group." *The Hindu*, The Hindu, 1 May 2021, www.thehindu.com/news/national/covid-19-vaccination-for-people-above-18-years-deferred-in-several-states/article34449148.ece.

[271] Correspondent, HT. "After Maharashtra, Karnataka Suspends Covid Vaccines for 18-44 from Friday." *Hindustan Times*, 12 May 2021, www.hindustantimes.com/cities/bengaluru-news/karnataka-running-out-of-vaccines-suspends-jabs-for-18-44-from-friday-101620839264973.html.

[272] Radhakrishnan, Vignesh, and Sumant Sen. "Data: Daily COVID-19 Vaccination Pace at Record Low in May Even as Centre Opens up Doses for Adults." *The Hindu*, The Hindu, 13 May 2021, www.thehindu.com/data/data-daily-covid-19-vaccinations-drop-in-the-first-10-days-of-may-even-as-states-have-used-most-of-their-supplies/article34550893.ece.

[273] ibid

[274] Correspondent, Special. "Coronavirus: States, Centre Spar over Vaccine Wastage." *The Hindu*, The Hindu, 28 May 2021, www.thehindu.com/news/national/coronavirus-states-centre-spar-over-vaccine-wastage/article34661604.ece.

[275] Ray, Kalyan. "Jharkhand Wastes 37% of Its Covid-19 Vaccines; 30% in Chhattisgarh." *Deccan Herald*, DH News Service, 25 May 2021, www.deccanherald.com/national/jharkhand-wastes-37-of-its-covid-19-vaccines-30-in-chhattisgarh-990020.html.

[276] Correspondent, Special. "Coronavirus: States, Centre Spar over Vaccine Wastage." *The Hindu*, The Hindu, 28 May 2021, www.thehindu.com/news/national/coronavirus-states-centre-spar-over-vaccine-wastage/article34661604.ece.

[277] Timsit, Annabelle. "How Many Covid Vaccines Go to Waste?" *Quartz*, Quartz, 28 May 2021, qz.com/2013918/some-countries-are-wasting-more-covid-19-vaccines-than-others/.

[278]Sharma, Nidhi. "Covid Vaccine Wastage of 1o States Higher than National Average." *The Economic Times*, 16 May 2021, economictimes.indiatimes.com/news/india/vaccine-wastage-of-1o-states-higher-than-national-average/articleshow/82666707.cms.

[279] "Pfizer Will Supply Covid Vaccine Only to CENTRAL Govt, Says Company." Edited by Aparna Banerjea, *Mint*, 24 May 2021, www.livemint.com/news/india/pfizer-will-supply-covid-vaccine-only-to-central-govt-says-company-amid-requests-by-states-11621856102606.html.

[280] Goswami, Sweta, and Rhythma Kaul. "No Deals with States, SAY Pfizer, Moderna." *Hindustan Times*, 24 May 2021, www.hindustantimes.com/india-news/no-deals-with-states-say-pfizer-moderna-101621900338001.html.

[281]"Pfizer, Moderna Vaccines May Soon Be Available in India." *The Economic Times*, 2 June 2021, economictimes.indiatimes.com/industry/healthcare/biotech/pharmaceuticals/pfizer-moderna-vaccines-may-soon-be-available-in-india/articleshow/83167202.cms?from=mdr.

[282] "Ministry of Health and Family Welfare, Government of India." *Govt. of India* , https://www.mohfw.gov.in/.

[283] "State/UT Wise Aadhaar Saturation (Overall) - All Age Groups." *Govt. of India UIDAI*, 31 Dec. 2020, https://uidai.gov.in/images/state-wise-aadhaar-saturation.pdf.

[284] "Cumulative Coverage Report of COVID-19 Vaccination." Ministry of Health and Family Welfare, Government of India., 1 Mar. 2021, https://www.mohfw.gov.in/pdf/CumulativeCovidVaccinationCoverageReportDay44ason1stMarchat7am1.pdf.

[285] "Cumulative Coverage Report of COVID-19 Vaccination." *Ministry of Health and Family Welfare, Government of India.*, 1 Mar. 2021, https://www.mohfw.gov.in/pdf/CumulativeCovidVaccinationCoverageReportDay44ason1stMarchat7am1.pdf.

[286] "Cumulative Coverage Report of COVID-19 Vaccination." *Ministry of Health and Family Welfare, Government of India.*, 1 Mar. 2021, https://www.mohfw.gov.in/pdf/CumulativeCovidVaccinationCoverageReportDay44ason1stMarchat7am1.pdf.

[287] "India Administers over 80 Lakh COVID-19 Vaccine Doses, HIGHEST SINGLE-DAY Jabs in World." *The Economic Times*, 21 June 2021, economictimes.indiatimes.com/news/india/india-vaccinates-record-75-lakh-people-on-day-1-of-new-vaccine-regime/articleshow/83718606.cms.

[288] Sharma, Supriya. "How India Created a 'World Record' for Highest Number of Vaccinations in a Single Day." *Scroll.in*, Scroll.in, 23 June 2021, scroll.in/article/998156/how-bjp-ruled-states-engineered-a-new-world-record-for-vaccinations.

[289]Upadhyay, Pankaj. "Maharashtra Leads India's COVID Vaccination Drive with More than 2.5 Crore Doses Administered." *India Today*, 10 June 2021, www.indiatoday.in/coronavirus-outbreak/vaccine-updates/story/maharashtra-leads-india-covid-vaccination-drive-2-5-crore-doses-1813420-2021-06-11.

[290] "Policy Responses to covid19." *IMF*, www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#I.

[291] ibid

[292] ibid

[293] Anand, Kshitij. "Gold Price Today: Yellow Metal Trades Higher, May Face Resistance Above Rs 47,000." *Moneycontrol*, MoneyControl, 1 July 2021, www.moneycontrol.com/news/business/markets/gold-price-today-yellow-metal-trades-higher-may-face-resistance-above-rs-47000-7111121.html.

[294] "MyGov Pledge." *GOVT. of India*, https://pledge.mygov.in/janandolan-covid/.

[295] "Press Information Bureau Government of India Ministry of Information & Broadcasting." *GOVT. of India*, 7 Apr. 2020, https://pib.gov.in/Pressreleaseshare.aspx?PRID=1662449.

[296] ibid

[297] Sharma, Mihir. "Why India Can't Figure out What a Third Wave of Covid Will Look Like." *ThePrint*, 10 Aug. 2021, theprint.in/opinion/why-india-cant-figure-out-what-a-third-wave-of-covid-will-look-like/712172/.

[298] Desk, India.com News. "Third Wave of Corona May Hit India This Month, Likely to Peak in October: Experts Who Predicted Second Wave." Edited by Surabhi Shaurya, *India News, Breaking News | India.com*, 2 Aug. 2021, www.india.com/news/india/third-wave-of-corona-in-india-latest-news-today-2-august-2021-third-wave-of-corona-may-hit-india-this-month-likely-to-peak-in-october-1-5-lakh-cases-a-day-experts-india-covid-lockdown-latest-update-4858145/.