

Working Paper 07

**The First Wave of the COVID-19 Pandemic in Kerala - A State  
Capacity Perspective**

Sneha P., Kadambari Shah, Vibhav Mariwala, Ashwin Varghese and Mehul Das

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## Suggested Citation

Sneha P., Shah K., Mariwala V., Varghese A. and Das M. (2021) “The First Wave of the COVID-19 Pandemic in Kerala - A State Capacity Perspective”, IDFC Institute Working Papers

## **Abstract**

This paper discusses Kerala’s response to the COVID-19, particularly in the first wave of the pandemic. It addresses why the state is particularly economically and demographically vulnerable to a public health crisis. Through a scan of government guidelines, daily advisories, state news and social media, the paper analyses over 200 governmental measures taken in the first 100 days and how these measures potentially impacted transmission and other outcomes. Further, it describes the historical and contemporary political and social factors that have enabled the state to build its capacity for disaster preparation and response. Finally, it examines what has changed in the consequent waves of the pandemic and discusses the replicability of the “Kerala model”.

**Key Words:** Kerala, COVID-19 Response, State Capacity, Local Government Bodies

## **Acknowledgements**

We are grateful to Niranjana Rajadhyaksha and Vikram Sinha for their editorial guidance and inputs. This paper benefited greatly from the insights of our interviewees Nidheesh MK (ex-Livemint), Dr. Santhosh Mathew (Bill and Melinda Gates Foundation), Aishwarya Dongre (IPS, Government of Kerala), S.M. Vijayanand (IAS, Government of Kerala), Sanjay Vijaykumar (CoronaSafe), Bodish Thomas (CoronaSafe), Amruta Vijay (CoronaSafe), Aparna S (CoronaSafe) and their teams. We are grateful to Anahita Shah for her research assistance and meticulous response tracking and the team at Urban Expansion Observatory for their assistance with data extraction. Thank you to Ashwin MB, Sharmadha Srinivasan, Vaidehi Tandel, Rajeswari Parasa, Sridhar Ganapathy, Armaan Tandon who worked on putting together some of the data referenced in this paper. Finally, we would like to thank Tanvi Ravel Mehta, Reuben Abraham, Gyanendra Badgaiyan for their comments and suggestions and Anushka Bhansali and Preksha Jain for their editorial assistance.

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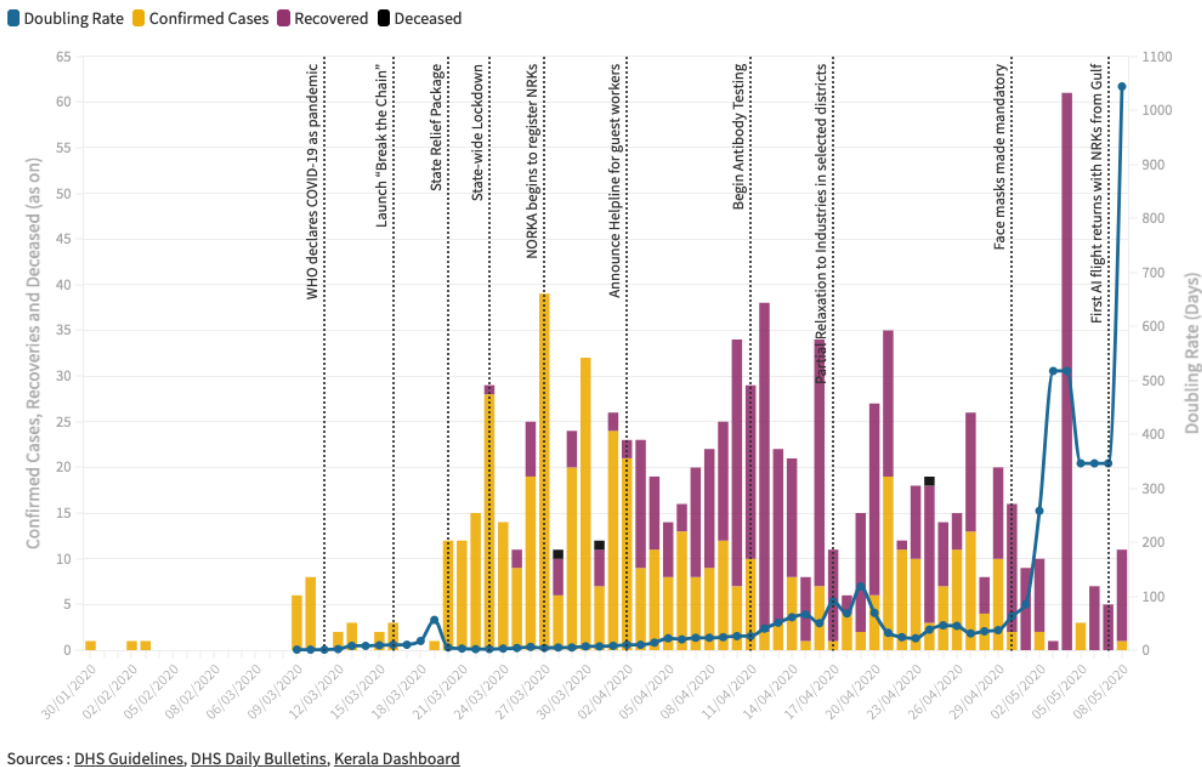
## List of Abbreviations

ADS	Area Development Society
APA	American Psychological Association
ASHA	Accredited Social Health Activist
CCC	COVID-19 Care Centers
CFLTC	COVID-19 First Line Treatment Centers
CM	Chief Minister
CMDRF	Chief Minister's Distress Relief Fund
CMO	Chief Minister Office
COVID-19	Coronavirus disease of 2019
DHS	Directorate of Health Services
GDP	Gross Domestic Product
GoK	Government of Kerala
GST	Goods and Services Tax
HDI	Human Development Index
IAS	Indian Administrative Service
ICMR	Indian Council of Medical Research
IDFC	Infrastructure Development Finance Company
IEC	Information Education and Communication
IIPS	International Institute of Population Sciences
INC	Indian National Congress
INR	Indian Rupee
KSM	Kudumbashree State Mission

LGB	Local Governing Body
LSG	Local Self Government
MLA	Member of Legislative Assembly
MP	Member of Parliament
MPLADS	Members of Parliament Local Area Development Scheme
NCD	Noncommunicable diseases
NFHS	National Family Health Survey
NHP	National Health Profile
NITI	National Institute for Transforming India
NRK	Non-Resident Kerala-ites
PPE	Personal Protective Equipment
PTI	Press Trust of India
RBI	Reserve Bank of India
RT-PCR	Reverse Transcription–Polymerase Chain Reaction
SDRF	State Disaster Response Fund
SRS	Sample Registration System
TNM	The News Minute
UDF	United Democratic Front
USD	US dollar
WHO	World Health Organization

## 1. Introduction

On 30 January 2020, Kerala became the first Indian state to report a case of the novel coronavirus. However, four days before this, the Government of Kerala (GoK) had already released its nCorona guidelines that established case definitions, screening and sampling protocol, hospital preparedness, triage and surveillance. It later expanded its guidelines to include local testing labs (DHS, 2020a). These measures delayed transmission from imported cases until the 40th day (9 March 2020), when Kerala saw its first cluster outbreak in Pathanamthitta district.



*Figure 01: Case Trajectory and Major GoK Policy Measures (30 January to 8 May 2020)*

On 11 March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. Within five days, GoK initiated a public health campaign called ‘Break the Chain’ to communicate information on hygiene and physical distancing. Two days later, an INR 20,000 crore relief package was announced, days before a national relief package was instituted. Then, on 22 March 2020 (Day 51), GoK announced a state of “calamity”. It imposed a statewide lockdown the following day, a day before the national lockdown. On 28 March 2020, Kerala reported its first COVID-19 death; GoK issued advisories on the creation of First-Line Treatment Centres and Corona Care Centres, and mental health guidelines. By 4 April 2020 (Day 66), GoK had quarantined over 170,000 individuals, a majority of its infected population. Arguably, these

measures reduced the burden on hospitals which, at its first peak in mid-April, were admitting 200 symptomatic patients per day.

By the end of April, Kerala made wearing face masks in public mandatory. On 6 May 2020 (Day 98), Kerala's doubling rate<sup>1</sup> was as high as 346 days. What followed were two days of zero reported cases, marking the end of the first wave of the pandemic. The next day, the first repatriation flight with Non-Resident Kerala-ites (NRKs) returned with 359 expats from Abu Dhabi and Dubai, initiating the second wave of the virus through imported transmissions.

Kerala's response to the first wave pandemic follows the legacy of the 'Kerala Model', a term coined in the 1990s to describe the state's growth and development. Economist Amartya Sen asserts that this model is worth emulating because of its emphasis on "human capabilities", which has transformed a poor state into a region with first-world literacy rates and health outcomes (Sharma, 2016). Kerala has been lauded for its high literacy rate and life expectancy, accessible healthcare and effective public service delivery, despite its constrained financial resources (Kurien, 1995). As per 2018 figures, Kerala has the highest Human Development Index in the country (Indiastat, 2018). Kerala is also home to India's best practices for healthcare (NITI Aayog, 2019). In other words, the 'Kerala Model' reflects high levels of state capacity. The definitions of state capacity are many and vary across contexts. For this paper, we focus on the state's capabilities to provide for its citizens by delivering public goods and services, such as healthcare and education, and to do so within an equitable and sustainable economic and social framework.

## 1.1. Motivation

Existing literature highlights the role of the state in applying effective policies while dealing with natural disasters and pandemics (Kahn, 2005). However, robust state capacity is not only needed to deal with crises, but also to provide good quality of life. This view is in contrast to conventional definitions which define state capacity as the state's ability to have a monopoly on violence (Akbar and Ostermann, 2015; Acemoglu et al., 2015). From the 1980s onwards, over 90% of Kerala's villages had access to clean drinking water, electricity, primary and secondary education, and health dispensaries within two kilometres of one's house, all of which point to the state's ability to provide for its citizens (Kurien, 1995). The high demand for welfare services goes beyond the individual caste and cultural identities (Singh, 2015).

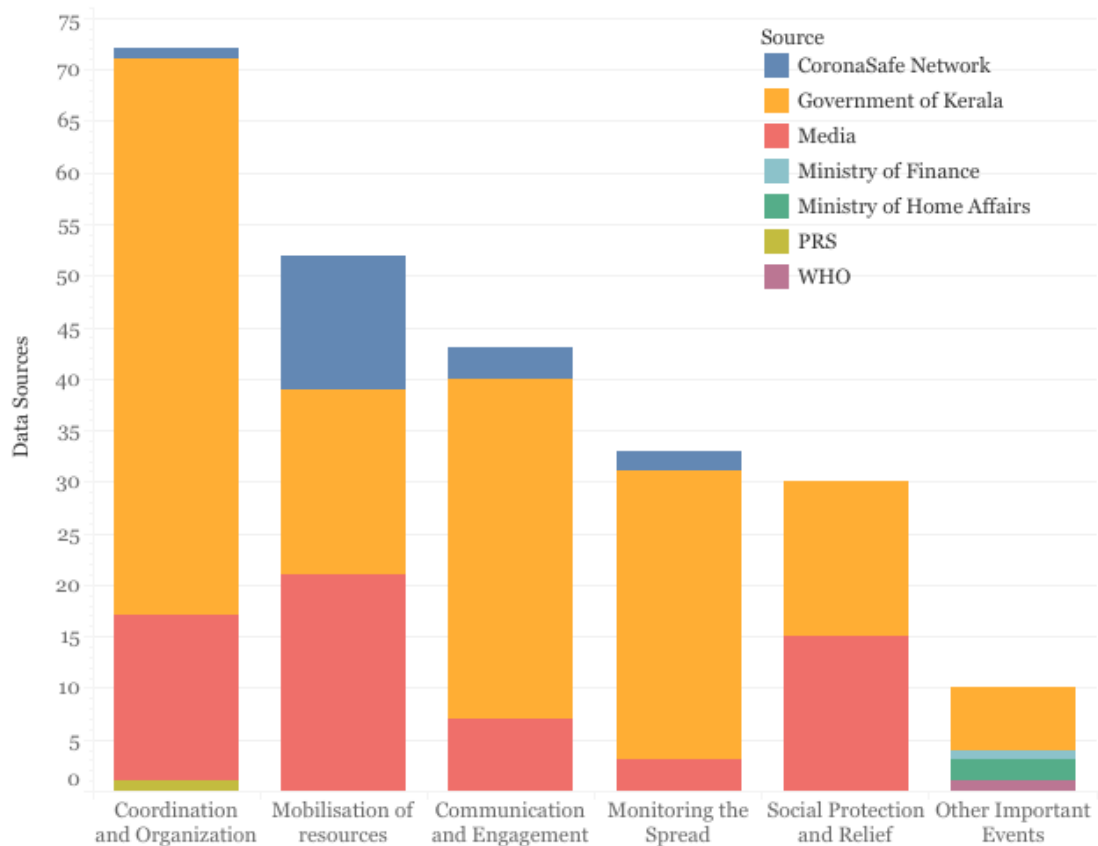
Previous crises in Kerala, such as the 2018-2019 floods and the Nipah outbreak, prepared its response to COVID-19. Some elements that contributed to the state's success include its efforts in early action, decentralising power to local governments, ensuring coordination mechanisms and mobilising community groups and citizens. Further, GoK established protocols for coordination and communication. Designing such strategies requires the assistance of experts who might not be part of the state apparatus. Kerala's state capacity facilitated coordination between the CMO, the Cabinet, local governments and experts in designing COVID-19 responses. The state's structured response was crucial in the early days of the current pandemic, especially since, as we later discuss,

Kerala is economically, socially and demographically more vulnerable to disasters than other states.

However, since mid-June, Kerala's caseload has been rising, possibly due to the state reopening its borders, and because a large number of NRKs were evacuated back to the state, raising doubts about the sustainability of Kerala's initial COVID-19 response. At the time of writing this paper, Kerala has seen a significant level of community transmission. While researchers have pointed out that there has been systemic under-reporting in the fatality rates, estimating it at 0.64%<sup>2</sup> (Kurian, 2020) as opposed to officially reported 0.35%<sup>3</sup>, the figure is still much lower than the national average of 1.47%<sup>4</sup> suggestive of better patient care than other parts of the country (COVID19India.org). Though, the scope of this paper is largely limited to Kerala's first wave of COVID-19 cases, we explore these recent trends in some detail toward the end of the paper.

## 1.2. Scope and Methodology

Through a scan of Kerala's daily advisories and government websites, and news/social media, we [documented](#) 200+ GoK measures taken in the first 100-day period. Figure 02 below maps the various documentation sources referred to for this paper across six categories of measures, coordination measures, resource mobilisation measures, communications, monitoring, social protection and other national/international responses. A large number of these documents were sourced from official government sources, particularly the Kerala Directorate of Health Services.



**Figure 02** : Sources of Data

We also analysed state and district level data on various indicators, sourced from the [GoK COVID-19 dashboard](#). Finally, we interviewed a number of observers and stakeholders in the response process. Overall, this paper aims to address the following questions:

1. What is the nature of vulnerability in Kerala to natural disasters? (Section 2)
2. What are the public health measures that the Kerala government adopted during the first wave of the pandemic? (Section 3)
3. How did these measures impact transmission? (Section 3)
4. What are the historical and contemporary social factors that have enabled Kerala to prepare for and respond to disasters? (Section 4)
5. What has changed in the consequent waves of the pandemic? Is the Kerala model sustainable and replicable? (Section 5)

Some caveats to note before proceeding — Most of the analysis in this paper has taken place while pandemic is still ongoing, this is a significant limitation of this paper. That is, the COVID-19 related recommendations of this paper benefit from limited hindsight and are evolving in nature. Second, the story of Kerala’s human development is not complete without also describing the political factionalism and labour market discontents of the state. While we touch upon some of these issues in Section 4, for the sake of brevity, we have not explored how these limitations of the “Kerala model” can or have undermined pandemic response, especially in the long run. For example, we do not focus on the political scandals that erupted in the state during the first wave, which may have played a role in the state response during the consequent waves. Third, although a number of our interviewees have corresponded or closely worked with Local Government Bodies (LGB), we were unable to interview LGB leaders for this paper.. Finally, we have primarily relied on state government data, while analysing case fatalities and other indicators, which as researchers have pointed out, is prone to exclusion errors.

## **2. Overview of the State and its Vulnerability**

Despite its institutional preparedness relative to the rest of India, there are a number of demographic factors that make Kerala particularly vulnerable during an emergency such as a pandemic or natural disaster.

### **2.1 Demographics and Morbidity**

Kerala has a fertility rate of 1.8 (SRS Statistical Report, 2017), which is below replacement rate and one of the slowest decadal population growth rates in the country (4.9% vs. 17.7% nationally). As a result, it has one of the oldest populations in the country (as shown in Figure 03) with 13.7% of individuals over the age of 60. The corresponding figures for Tamil Nadu, Maharashtra and Gujarat are 10.9%, 9.5% and 9.3% respectively ([Census, 2011](#)). Given that individuals over 60 tend to be more vulnerable to COVID-19, this puts the state at higher risk of co-morbidities and case fatalities compared to other states.

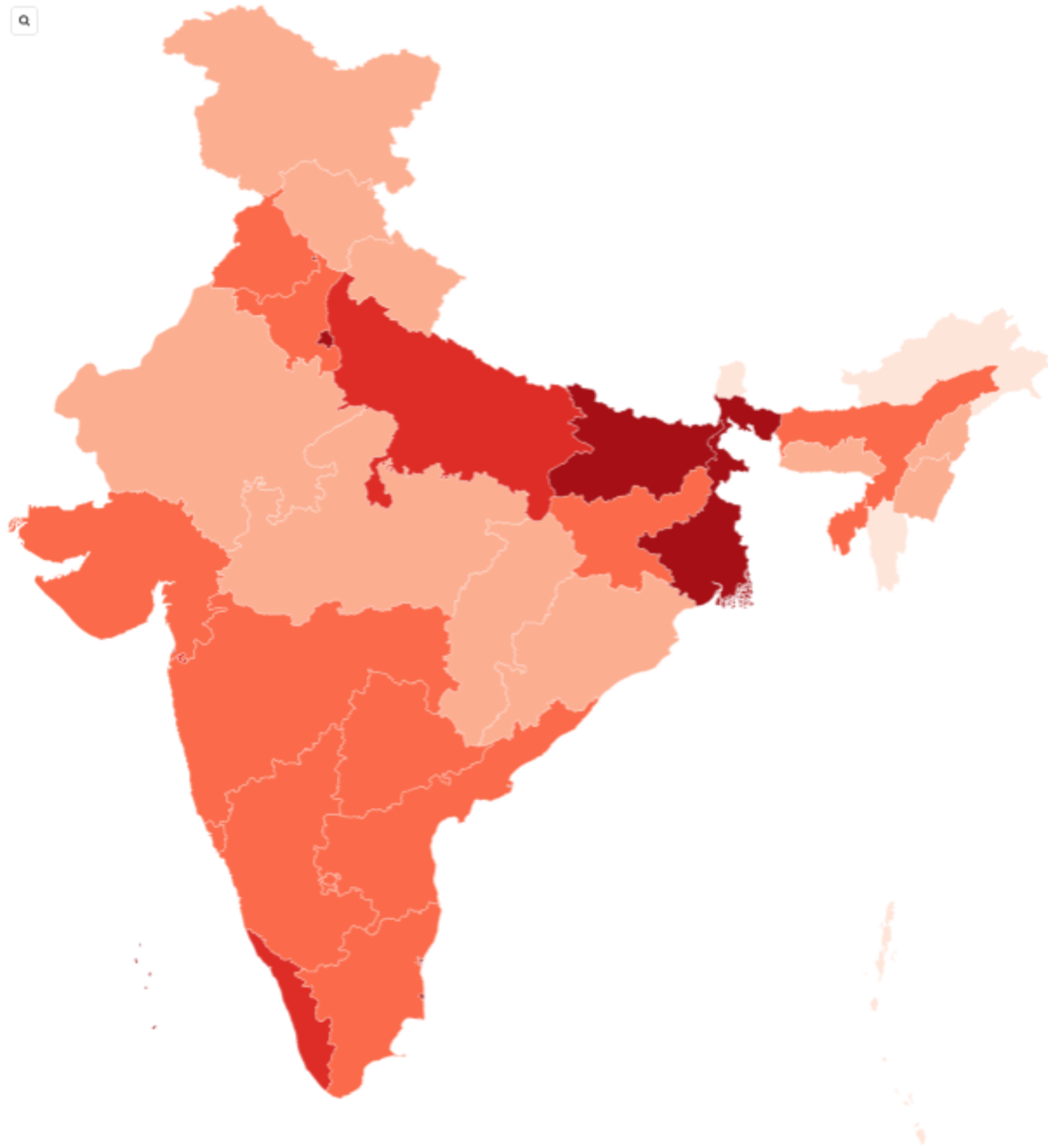


Kerala also has high levels of morbidity arising from non-communicable diseases, accounting for 52% of deaths, as opposed to 42% in India ([State Planning Board, 2019](#)). One in five adults has diabetes and one in three adults has hyper-tension, almost double the national rate, and incidence of cancer and strokes is much higher than in the rest of India ([AMCHSS, 2016-17](#)).

## **2.2. Urbanisation and Density**

Kerala is also a highly urbanised state with 47.7% of its population living in urban centres versus the national average of 33%. Kerala thus has one of the highest population densities in the nation (860 people per km<sup>2</sup>) (Figure 04), much higher than neighbouring states (555 people/sq. km in Tamil Nadu and 319 people/ sq. km. in Karnataka).

**Population Density**  
By State



Source: [Census 2011](#), [Telengana State Portal](#)

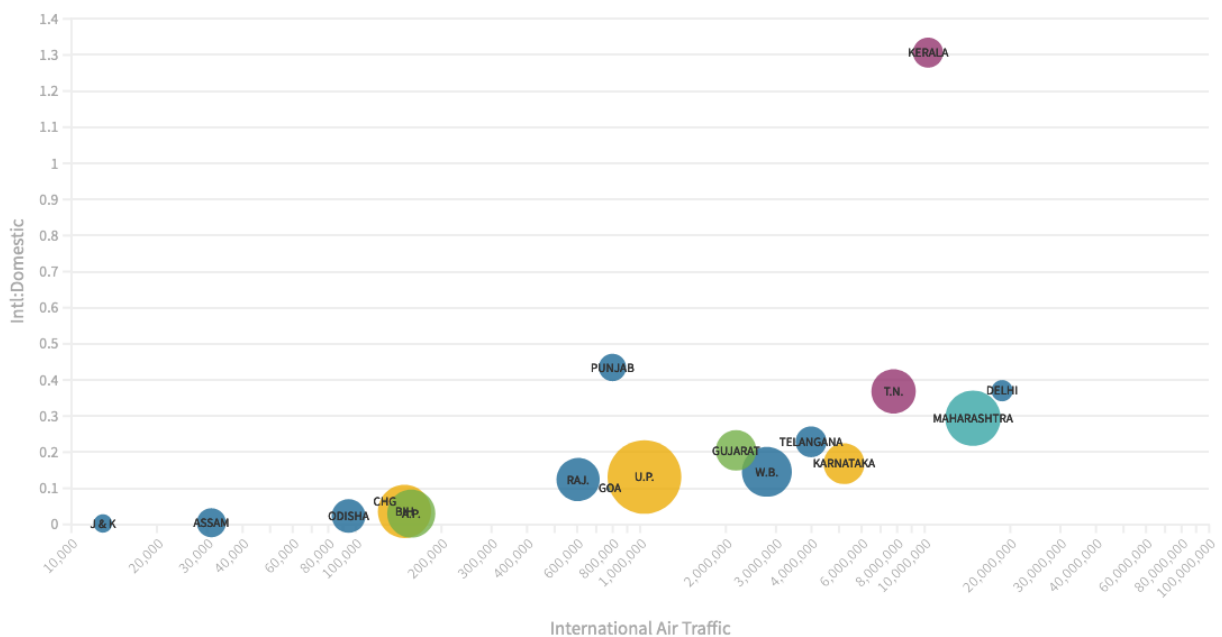
[Figure 04](#): Population density by State

## 2.3 Emigration and Immigration

Over 2 million emigrants have left Kerala to work abroad. Almost [90% of them](#) are in the Gulf nations (Rajan, 2020), though there are significant Keralite populations in North America and Europe. In 2018-19, Kerala had over 10 million people pass through its four international airports, the third-highest rate in the country, despite the state’s relatively small size. Its neighbours, Tamil Nadu and Karnataka, have lower international air traffic rates despite having larger cities and bigger emigrant populations ([Airport Authority of India, 2020](#)).

### International Air Traffic

Number of Intl. Aiports ● 1 ● 2 ● 3 ● 4 ● 5



Source: [Airports Authority of India](#)

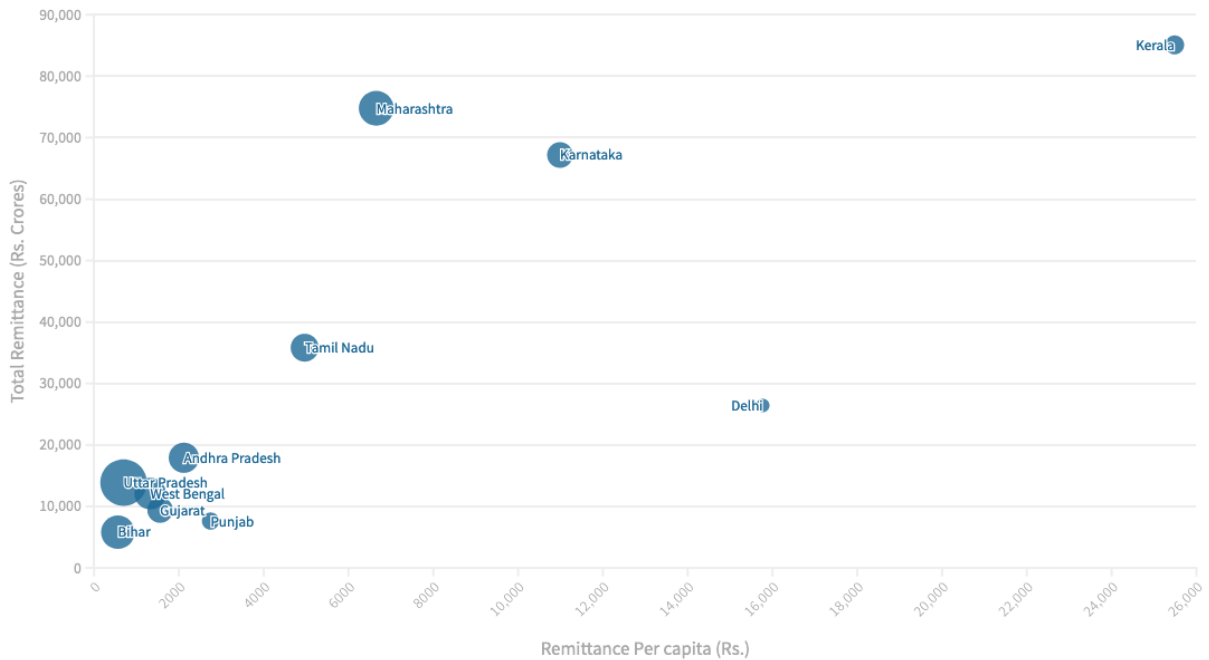
**Figure 05:** International air traffic of different States

With a large number of Keralites having emigrated and the aging demographic, Kerala has become one of the leading destinations for internal immigration, both from nearby states like Karnataka and Tamil Nadu as well as from Northern states like Uttar Pradesh and Bihar. There are an estimated 3.5 million internal migrants in Kerala (World Bank, 2020). More than 25% of Kerala’s working age male population comprises migrants.

## 2.4 Economic Vulnerability

Kerala is heavily economically dependent on remittances and tourism. The state receives over INR 30,000 crore ([Rajan, Zachariah, 2020](#)) in household remittances annually, up from INR 3,500 crore in 1998. It receives over INR 85,000 crore in total remittances, close to an eight-fold increase since 2000. These remittances are received by over 16% of households, and form 19.3% of State Domestic Product (*ibid*). Per capita remittances were seven times higher than the national average and higher than other states with large migrant populations, such as Maharashtra and Tamil Nadu. The pandemic affected the livelihoods of NRKs abroad and the salary level in Kerala could not match what they were getting abroad (Nidheesh M. K., 2020)<sup>5</sup>. Moreover, tourism accounts for 10% of Kerala’s GDP and 23.5% of its employment ([Nair, Dhanuraj, 2018](#)). The cessation of international and domestic travel put these jobs and consequently incomes at risk.

**Remittances Per Capita**



Source: RBI

**Figure 06: Remittances per Capita**

Despite the spate of crises that Kerala has endured in the past five years alone (floods, Nipah, landslides etc), Centre-state financial support has been minimal. The central government had delayed transfers of Goods and Services Tax (GST) revenues owed to states in August-September 2019, resulting in what the Kerala Finance Minister called a “fiscal crisis” in December 2019, with a shortfall of INR 1,600 crore in GST revenues to the state. Fiscal decentralisation has not occurred as rapidly as political decentralisation, and as of 2019, all Indian states depended on the central government for more than half their revenues ([Seetharaman, 2019](#)). Even during the pandemic, it

was only because of extensive lobbying that the state government could receive the GST revenues that it was due from December 2019 to February 2020. When the central government shared revenues for states' disaster management relief funds in April 2020, Kerala only received INR 157 crore out of the total pool of INR 11,092 crores ([Ohri, 2020](#)). Kerala, as of June 2020, had a shortfall of INR 8000 crore in its expected income ([Nair, 2020](#)).

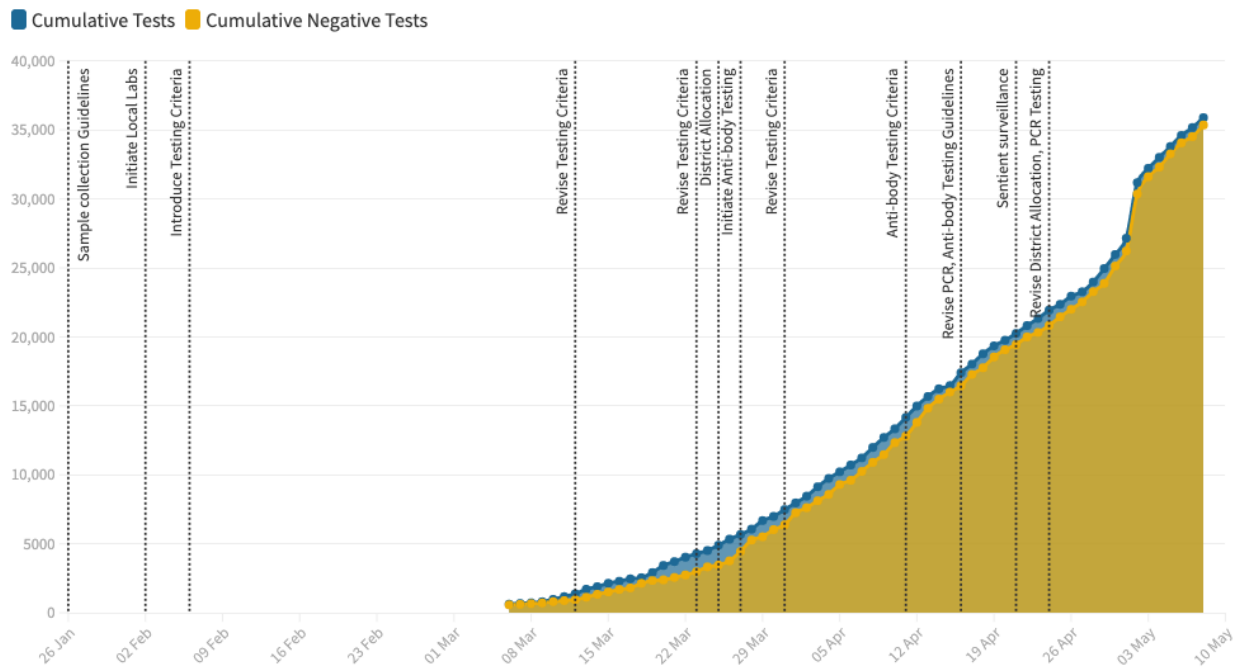
### **3. Viral Trajectory and Public Health Response**

“Trace, Quarantine, Test, Isolate and Treat” has been Kerala’s primary health response strategy (Indian Express, 2020a). Early definitions for suspect case, laboratory confirmed case, high risk contacts and low risk contact, resulted in Kerala adopting a [matrix](#) for screening, testing, quarantine, isolation and discharge of individuals as early as 26 January 2020 (DHS, 2020a). Based on caseload and capacity, guidelines were continuously revised and updated up to six times within the period of our study ([1 February](#), [6 February](#), [19 February](#), [12 March](#), [23 March](#), [31 March](#) 2020, DHS, 2020b).

#### **3.1 Public Health Responses during the First Wave**

##### *3.1.1. Early Screening and Strategic Testing*

Kerala began screening passengers from specific countries as early as 23 January 2020, and regularly issued specific screening criteria for airports ([15th March](#) and [19 March](#) 2020, DHS, 2020b) and railway stations (Kerala Police, 2020a). Initially, GoK’s approach to testing focussed on those who were symptomatic and vulnerable, primarily because of a lack of testing kits (Indian Express, 2020a). During the first wave, Kerala carried out over 35,000 tests with test positivity under 1% (see Figure 07).



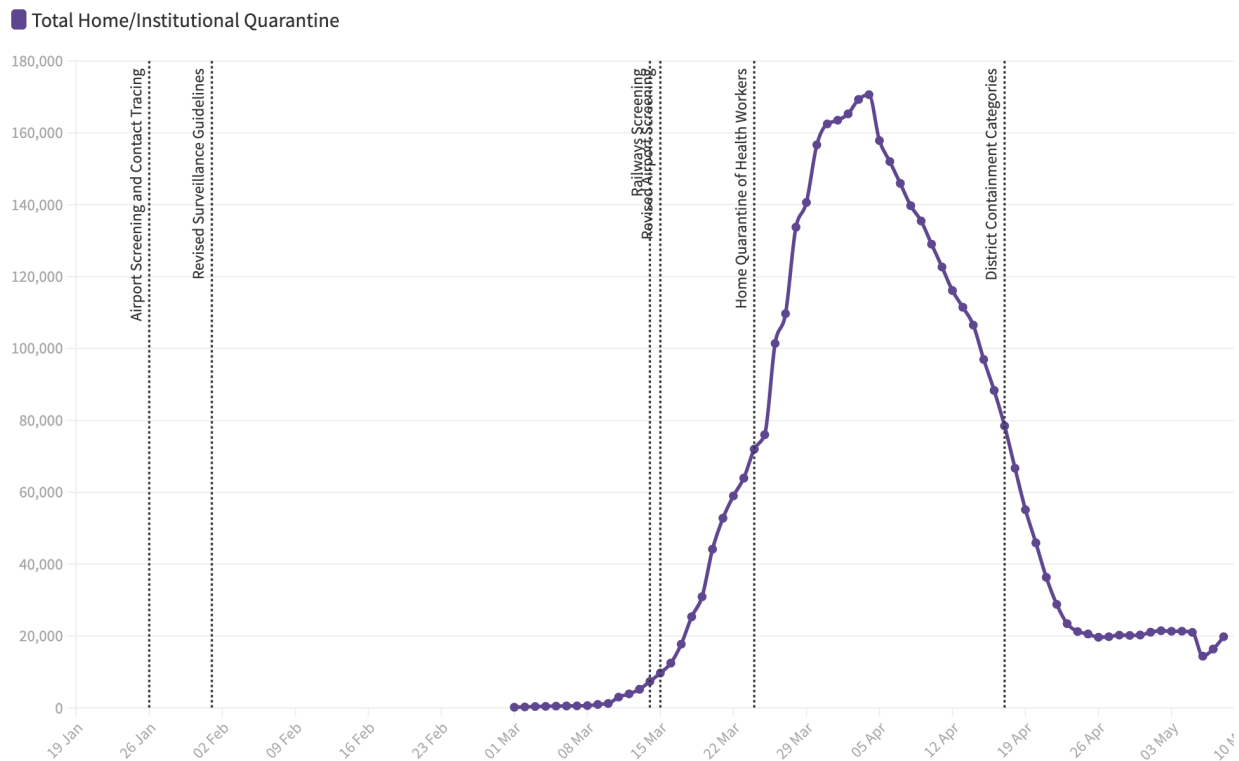
Source: DHS Guidelines, DHS Daily Bulletins, Kerala Dashboard

*Figure 07: Cumulative (Routine RT-PCR) Tests and Negative Results Against GoK Testing Policy Measures*

Each district was allocated local testing labs (DHS, 2020a). Later, walk-in sample kiosks were initiated to enable safe sample collection (Unnithan, 2020). By mid-April 2020, an institute in Kerala developed its own low cost diagnostic kit, but as of [https://app.flourish.studio/visualisation/3509933/October 2020](https://app.flourish.studio/visualisation/3509933/October%202020), this is pending Indian Council of Medical Research (ICMR) approval (Babu, 2020a). By the end of April 2020, GoK began sentinel surveillance, through rapid antibody testing, and testing a sample of vulnerable people (DHS, 2020a) (Ghanekar, 2020).

### 3.1.2 Tracing and Containment

Contact tracing was a crucial part of GoK’s strategy in the first wave. For instance, nearly 160 contacts of the first three Wuhan returnees were identified and isolated (Indian Express, 2020a).



Sources : DHS Guidelines, DHS Daily Bulletins, Kerala Dashboard

*Figure 08: Cumulative Home/Institutional Quarantine Against GoK Containment Policy Measures*

Authorities combined datasets so that they could not only identify returnees from their last airport of departure, but from their origin airport of departure (for instance, not only tracking those who returned to Kerala from Dubai, but also those who transited in Dubai from other originating cities such as New York or Rome). Subsequently, GoK published the location of incoming passengers who were not appropriately screened at the airport. The intention was to help in contact tracing, but because patient privacy could not always be maintained, the stigmatisation of families with cases increased ([Babu, 2020b](#)).

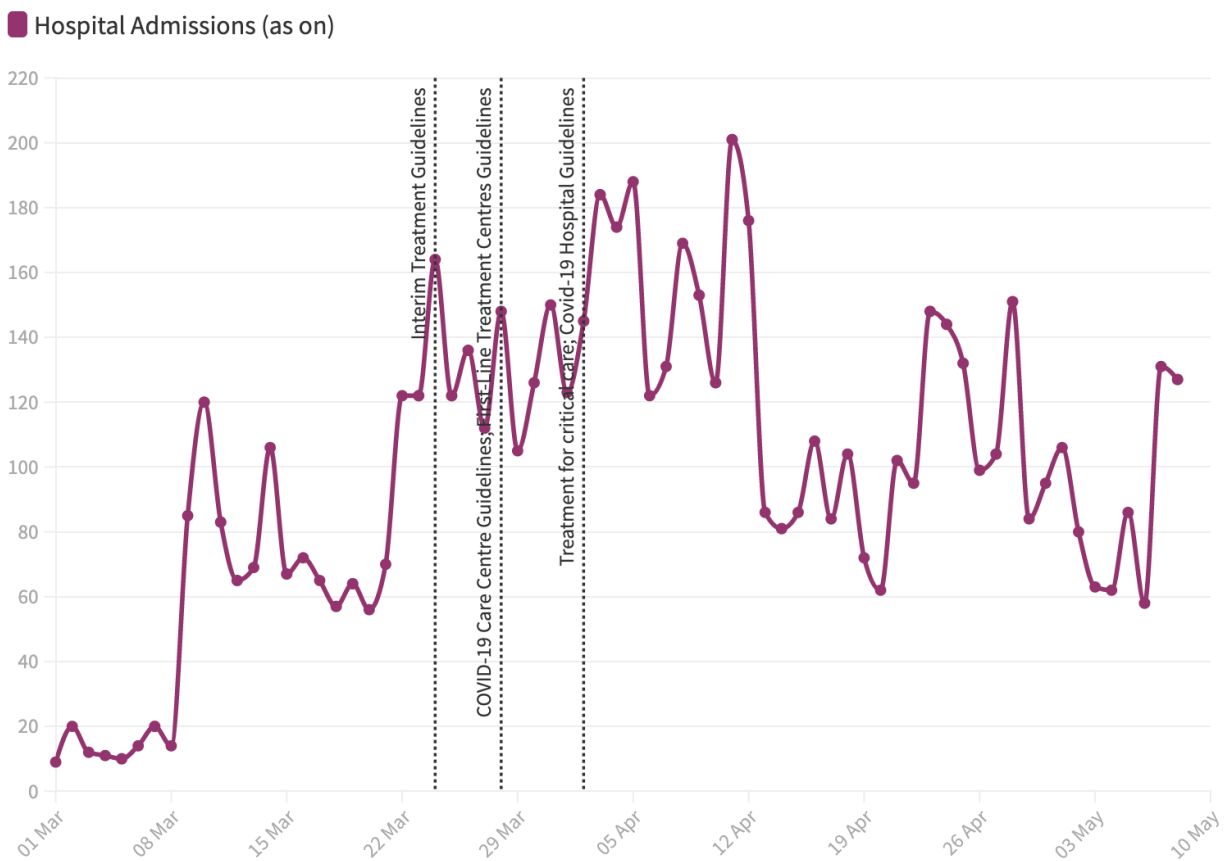
Surveillance efforts also included in-depth interviews with patients, and field surveillance (DHS 2020a) and (Gopika, 2020). Field surveillance was often carried out by Accredited Social Health Activist (ASHA) workers, Anganwadi, Kudumbashree workers and other community volunteers, reiterating the cross-community response to COVID-19.

Guidelines were instituted for monitoring those under quarantine through telephone and in-person check-ins to ensure that they had access to food and healthcare (Anandan, 2020) -- a difficult task given that at its peak, over 170,000 persons were in home quarantine.

### 3.1.3 Treatment and Care

On 24 March, GoK introduced [interim treatment protocols](#) based on three categories of patients, classified symptomatically into mild, moderate and critical. The guidelines discussed how to identify and prescribe medication in each category. GoK released advisories specifically for [first line treatment](#) and [critical care patients](#) (DHS, 2020a).

One of GoK’s flagship measures, later replicated across the country, was the development of the COVID-19 Care Centers (CCC) in repurposed spaces like schools for incoming travellers, and COVID-19 First Line Treatment Centers (CFLTC), which were set up for the treatment of mild and moderate symptomatic persons. These centres were the primary model for institutional care that was later replicated in many states.



Sources : DHS Guidelines, DHS Daily Bulletins, Kerala Dashboard

*Figure 09: Hospital Admission of Symptomatics Against GoK Treatment Policy Measures*

Infrastructure mobilisation for these centres was characterised by early planning and preparedness (Coronasafe, 2020). This included mapping existing availability, human resource calculations, preparing an ambulance network and monitoring supplies of medical items such as oxygen and

protective gear (DHS, 2020a), (Shaji, 2020). The state also expanded internet bandwidth, prolonged the open hours of its Primary Health Centres and strategically capitalised on digital solutions to provide telemedicine services (TNM, 2020). Kerala augmented its human medical resources, by enlisting retired and volunteer doctors and framing special recruitment measures for health inspectors at district and state level (PTI & ET, 2020), (DHS, 2020a).

### *3.1.4 Mental Healthcare*

To address the surge in mental health issues related to the virus, GoK increased the number of available counsellors in the Kerala Health Department by 1,050. It adopted an inter-departmental approach by streamlining different mental health services such as District Mental Health Program (DMHP) and DISHA, a 24x7 helpline, and also recruiting more counsellors (John, Indhusmati, Maria N., 2020). The state government also devised mental health guidelines for different groups, such as the elderly, caregivers and frontline workers.

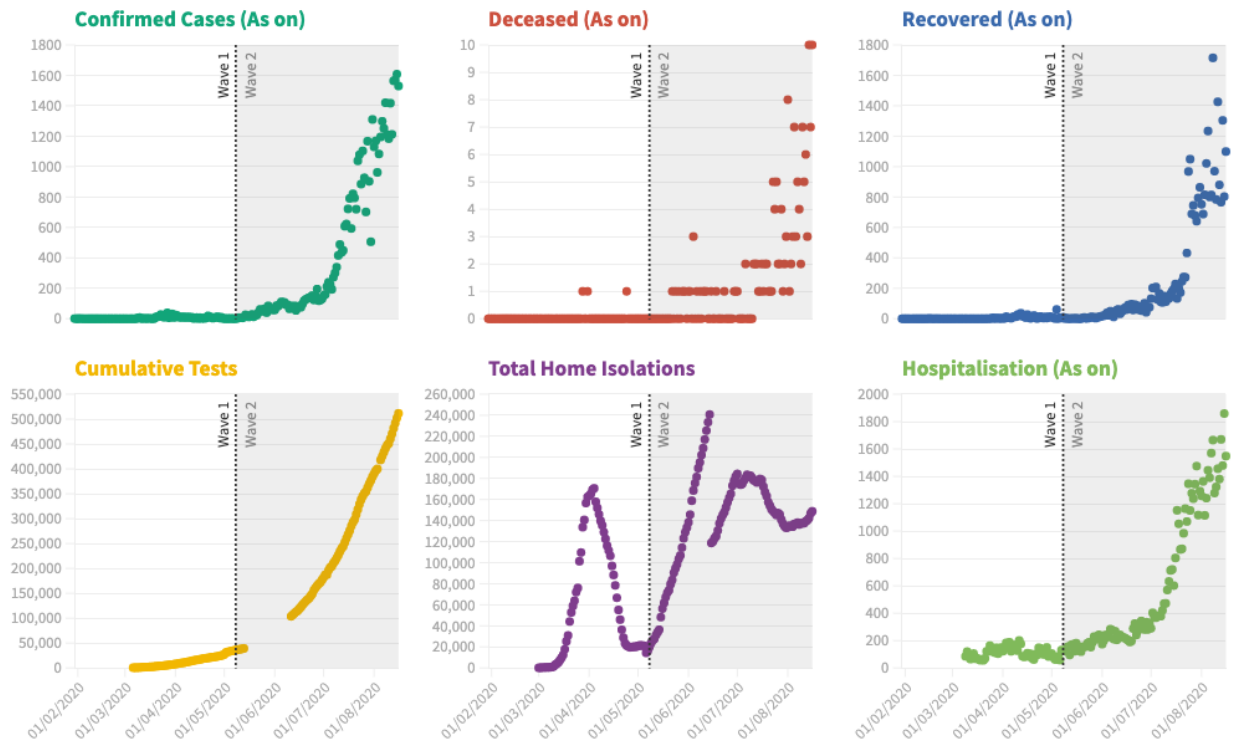
The GoK Dashboard has a specific page for monitoring psycho-social needs by tracking the various types of conditions that individuals have been reporting from depression to feeling stigmatised to anxiety and more. The dashboard tracks the number of calls made to the state's helplines and provides targeted services to vulnerable groups, such as children with special needs, elderly living alone, migrant workers and others.

## **3.2. Comparison of Public Health Responses**

### *3.2.1 Inter-period Variation*

Using data from the [Kerala COVID-19 dashboard](#), we examine day-wise state level data on virus transmission (confirmed cases, recoveries, deaths) and policy interventions (testing, home/institutional quarantine and hospital admissions), and how the numbers varied over time. There are marked differences between the first 100 days, or the first wave, and the following wave(s). We consider the second 100-day period for comparison, i.e. from 9 May to 16 August 2020. We characterise this period of 100 days as the *second* wave of the pandemic brought about by imported transmissions by returning NRKs.

As can be seen in Figure 09, death rates have remained fairly low, despite a significant rise in cases. While the figure below only reports routine and private Reverse Transcription–Polymerase Chain Reaction (RT-PCR) test numbers<sup>6</sup>, GoK had also begun other forms of antibody and rapid tests during the second wave, including the less reliable rapid antigen test. By the end of the first wave, as borders reopened, the total number of people under home quarantine increased.



Source: Kerala Dashboard

**Figure 10** : Trends in cases and institutional measures

As evident from Table 01, cumulative cases grew exponentially from 503 to nearly 43,000 over the first and second wave period. Though testing, quarantining and hospitalisation (of symptomatics) grew on an overall basis, on closer examination, all these measures actually fell significantly on a per-detected case basis, indicating Kerala was hitting its capacity constraints.

	First Wave (100th Day)	Second Wave (200th Day)
Cumulative Cases	503	43912
Active Cases (As on)	16	15349
Cumulative Deaths	3	153
Death Rate	0.60%	0.35%
Cumulative Tests (Routine)	35886	511471
Tests per detected case	71	12
Total Home Isolations (Up to)	19810	148793
Number Isolated per active case	1238	10
Cumulative Hospitalisations	6728	59852
Hospitalisation per detected case	13	1

Table 01: *Inter-wave comparison on select indicators*

To examine this inter-wave difference, we check the correlations between the policy response indicators and confirmed cases. Although the first three cases registered in Kerala were in January 2020, the first cluster of six cases only took place in early March 2020, with zero cases in the interim. Our data analysis therefore begins from this first week of March, which is also when Kerala began to release daily numbers on tests, quarantine and hospitalisations<sup>7</sup>. We use data up to the 200th day (16 August 2020) and correlate case rates to testing, home isolation and hospital admission numbers two days later. That is, we try to determine whether an increase in cases corresponds to a change in policy two days later.

	Time Period	Testing (Routine PCR) (2 days later)	Home Isolation (2 days later)	Hospital Admission (2 days later)
Confirmed Cases	1st Wave	<b>-0.07</b>	<b>0.35**</b>	<b>0.75**</b>
		(0.58)	(0.00)	(0.00)
Confirmed Cases	2nd Wave	<b>0.78**</b>	<b>-0.17</b>	<b>0.99**</b>
		(0.00)	(0.08)	(0.00)

Table 02 : *Correlation Coefficients of case rates and policy indicators (2 days later)*

As seen in Table 02, testing was relatively low in the first wave, and did not significantly correlate with case numbers. As mentioned earlier, this was in line with Kerala’s restrained testing approach, which might have hampered case detection in the early days of the second wave, as not all returning expats were tested on arrival. However, testing picked up and began to significantly respond to growing case rates. Home isolation was significantly responsive to case rates in the first wave but this relationship is no longer visible in the second wave, indicating another reason for the rapid transmission during this period. Finally hospital admission of symptomatic cases has remained a significant policy response in the first and second wave, potentially explaining the low fatality rate in the state.

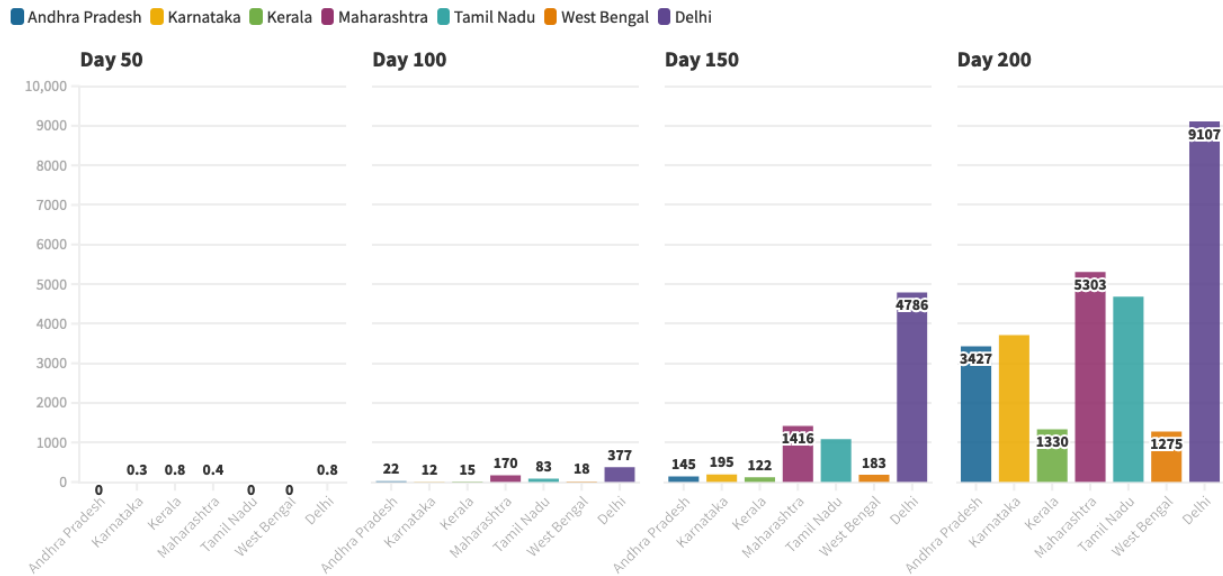
It is important to note that while these regressions provide qualitative insight into what might have changed between the first and second wave, with the transmission reacting to policy and policy reacting to the transmission, a dynamic model with a longer time series would be required to make any causal claims about policy responsiveness and policy impact.

### *3.2.2. Inter-state Variation*

In this section, we compare the first and second wave of the virus in Kerala to the other states<sup>8</sup>. As seen in Figures 10 and 11, compared to other states, Kerala has relatively low case and death rates *per million* population over the 200-day period. Kerala has also had the lowest test positivity rate (Table 03), which could indicate that other states were not testing adequately. Further, the case fatality rate in Kerala was also well below the other states.

## Cases and Deaths per Million Kerala vs. Selected States

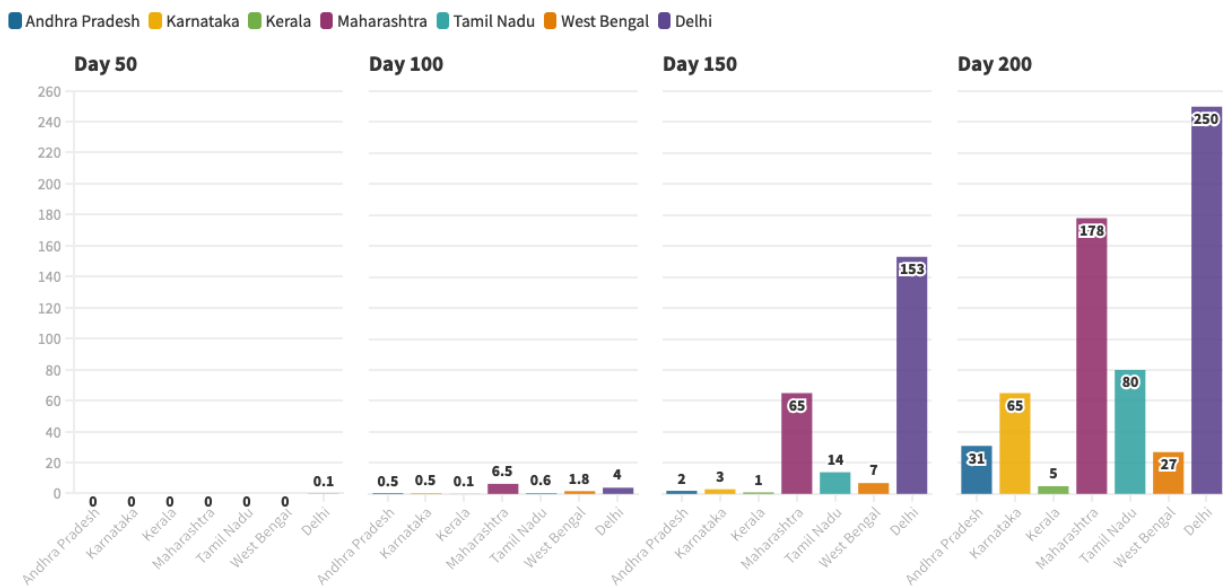
Cases per Million



Source: [Covid19India.org](https://covid19india.org), [Census 2011](https://census2011.in)

## Cases and Deaths per Million Kerala vs. Selected States

Deaths per Million



Source: [Covid19India.org](https://covid19india.org), [Census 2011](https://census2011.in)

**Figure 11.:** Cases and Deaths per Million in Comparison States

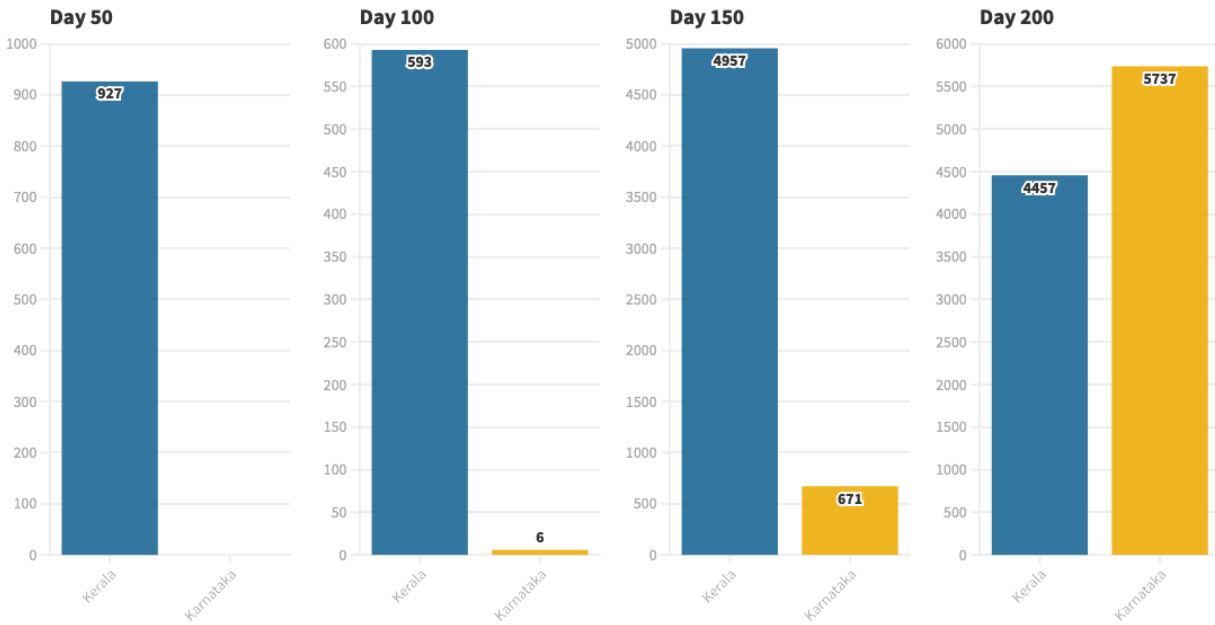
State	Cumulative Positivity Rate		Cumulative Case Fatality Rate	
	Day 100	Day 200	Day 100	Day 200
Andhra Pradesh	1.20%	10.10%	2.20%	0.90%
Karnataka	0.80%	11.10%	4.00%	1.70%
Kerala	1.30%	3.80%	0.80%	0.40%
Maharashtra	9.50%	18.80%	3.80%	3.40%
Tamil Nadu	0.80%	9.10%	2.40%	1.70%
West Bengal	1.60%	8.90%	27.60%	2.10%
Delhi	7.80%	11.70%	1.10%	2.80%

**Table 03:** Positivity Rate and Case fatality rate (Source: Covid19India.org)

Karnataka is an interesting comparison point for Kerala, since it replicated multiple aspects of Kerala’s response to COVID-19. Data at state levels shows that while Kerala outperformed Karnataka on tests and home isolations (per million) during the first wave, Karnataka has rapidly caught up and outpaced the state in both quarantines and tests per million at the end of the second wave.

Home Quarantine (per million) ▾

■ Kerala ■ Karnataka



Source: [Kerala COVID19 Dashboard](#), [Karnataka COVID19 Portal](#)

Tests (per million) ▾

■ Kerala ■ Karnataka

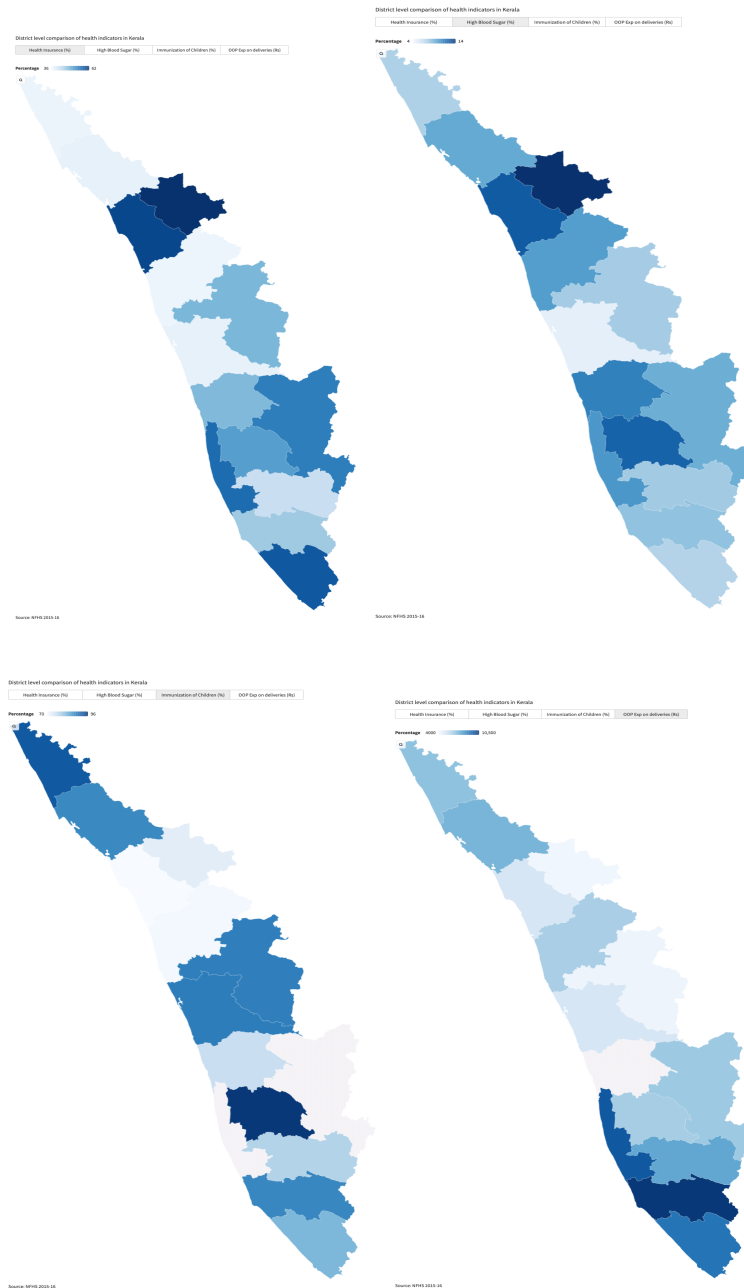


Source: [Kerala COVID19 Dashboard](#), [Karnataka COVID19 Portal](#)

**Figure 12:** *Karnataka versus Kerala on Testing and Isolation*

### 3.2.3. Inter-district Variation

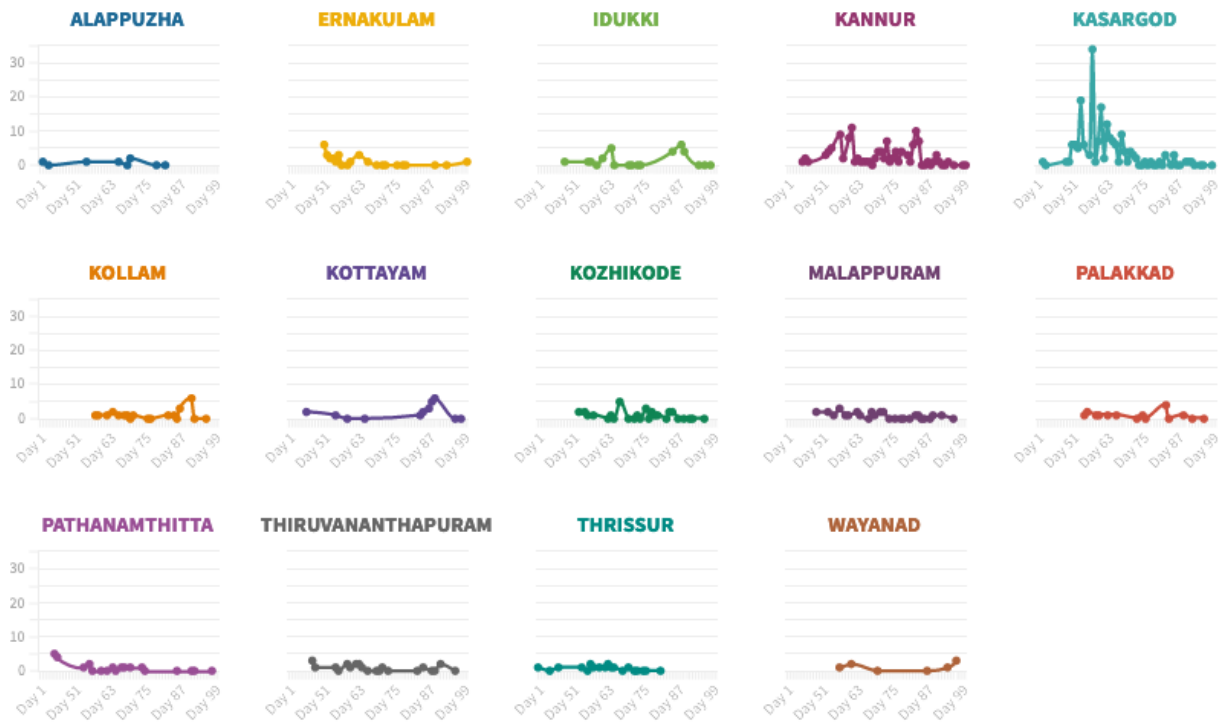
Inter-district variation in response is important in the context of Kerala. In general, public health indicators across the state vary from district to district, as you can see in Figure 13 below.



**Figure 13:** District-level variation in Health Indicators

As is apparent in Figure 14, the case trajectory within Kerala also varied across districts. While Thrissur district registered the first three cases, it did not later experience any other outbreaks within this period. Similarly, Patanamthitta, the site of the first outbreaks, had relatively few cases in the following days and weeks. It was the districts of Kasargod and Kannur that experienced a prolonged outbreak over the latter half of this first wave, each registering a total of 178 and 118 cases respectively.

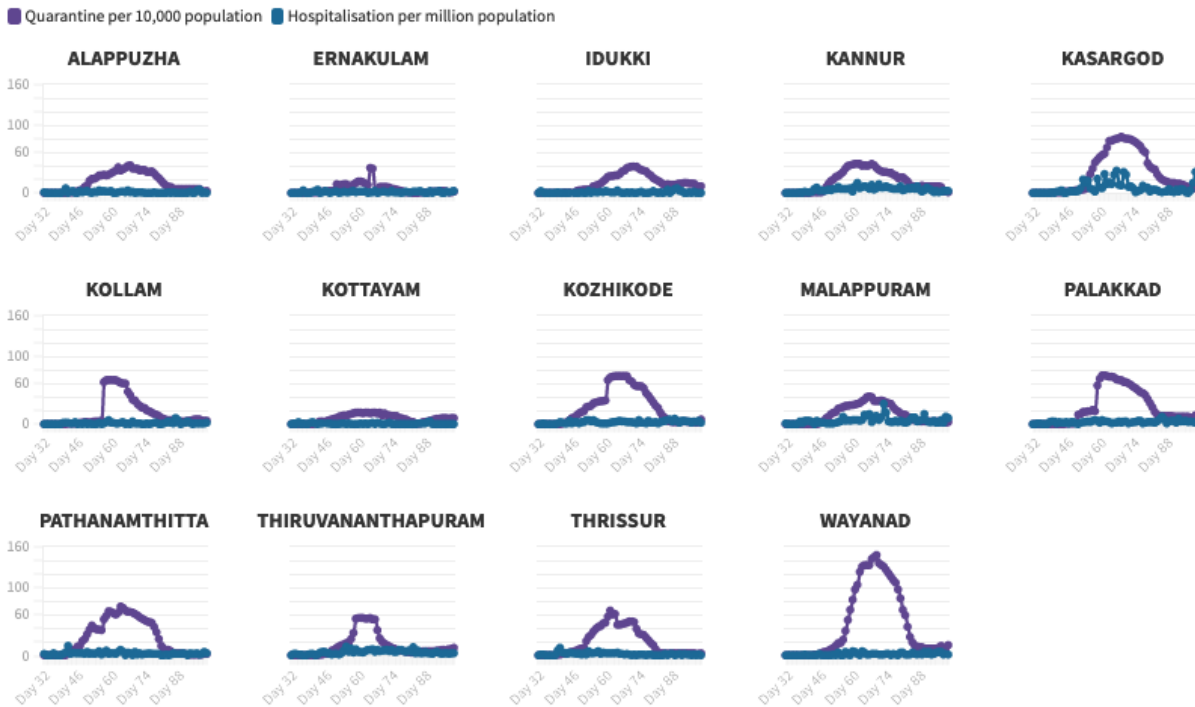
**District level Case Variation**



Source: Kerala Dashboard

**Figure 14. :** Inter-district variation in case trajectories

### District level Quarantining and Hospitalisation Variation



Source: Kerala Dashboard

**Figure 15. :** District level institutional effort

Similarly, containment measures also varied by district, as can be observed in Figure 15. For instance, as a result of the high case rates in Kasargod, district-specific containment measures such as a [triple lockdown](#) were adopted. Technological monitoring tools and telemedicine apps were developed specifically for Kasargod. Kasargod also admitted several more symptomatic persons for hospital observation (per million) than other districts in the state.

Wayanad, the least populous district, quarantined the most people per 10,000 persons. This response has been attributed to the efforts of doctor-turned-IAS officer Adeela Abdulla who prioritised quarantining efforts and enforcement through multiple methods, including [delayed geofencing](#) (Cris, 2020).

With the help of a volunteer-driven, open-source network called CoronaSafe (discussed in Section 4.1), Ernakulam saw the design and testing of a technological platform for relief coordination between primary, secondary and tertiary care centres, ambulance networks and health workers on resource availability and patient flow. The development of this platform took place through an intensive consultative process, with at least six governmental authorities, and multiple

scenario-building exercises and [mock drills](#). Ultimately, GoK authorised this platform to be adopted in all districts (GoK, 2020a).

This observed district level variation is indicative of the degree of freedom that district level officials had to raise and supplement state capacity through independent efforts.

#### **4. Kerala’s Success: A Holistic Approach to Development**

*“It is as though there is a path dependency at work but one that is set in motion not only by accidents of history, accumulation of capital or the will of entrepreneurs or enlightened elite but by a rational, progressive, public minded people and their self-organizing energy.”*

- Anuradha Kalhan in Kochi, the Outlier, *A Brief History of Poverty Alleviation in Neoliberal Times* 2019

The origin of Kerala’s state capacity lies in the state’s political and social history marked by social movements, religious and gender inclusion, devolution of power and fiscal planning and citizen engagement. In the following sections, we describe these important historical and social factors, followed by its implications for disaster management and scope for improvement.

##### **4.1. Social consciousness, Mobilisation and Institutional Legitimacy**

The history of social mobilisation in the state predates the communist movement with Ezhava mobilisations in the late 19th and early 20th centuries and a revolt by Travancore agricultural workers in 1907-08 (Oomen, 2009). The reluctance of the Indian National Congress’ (INC) to involve themselves in anti-feudal movements (Isaac, 1986), compounded with differences between the INC and the Congress Socialist Party in Kerala in 1939 led to their separation and the creation of the Communist Party. A primary aim of the communist leaders was to “develop political consciousness” through the creation of libraries, reading rooms and night schools (Lal, 2016). Theorists later established a connection between this political awareness and the demand for healthcare as a right (Nag, 1989).

Although the following decades saw periods of intense political competition, there was continuity in the social approach by successive governments regardless of political affiliation (World Bank, 2020) because of the public demand and electoral salience of basic social services. This policy continuity cultivated public trust and consequently citizen engagement, which is largely politically agnostic, perhaps explained by a persistent focus on citizen rights and public goods (Heller, 2020). One such focus of multiple Kerala governments has been to give institutional legitimacy to community action groups. For example, Kudumbashree Mission (KSM), initiated in 1998, is a community-based decentralised movement focussed on below poverty line households<sup>9</sup>. The KSM aims to reduce poverty by engaging women in economic activities (Pat, 2005). Today, it covers over 50% of households in Kerala, has over five million members (Arun and Devi, 2011) and is able to mobilise rapidly because it has been institutionalised into each level of the government with

neighbourhood groups, Area Development Societies (ADS) and community development societies (Williams et al, 2012) (Mohan, 2020).

Observers believe that KSM now needs to focus on developing economically sustainable business ventures that are less subject to vested interests (Arun et al, 2011). Additionally, while the participation of marginalised communities in certain positions has been mandated, the movement is still subject to caste hierarchies (Prakkanam and Devika, 2014). Despite these shortcomings, the Kudumbashree movement played a significant role in the pandemic. As of 23 September, it had manufactured over 9,000 litres of hand sanitizer, 69+ lakh cotton masks, set up 1,144 community kitchens, established a programme to contact elderly citizens in quarantine and those who live alone, and had 360 community counsellors to provide mental services ([Kudumbashree, 2020](#)). In addition to KSM workers, the COVID-19 response included ASHA and Anganwadi workers, and other community action groups.

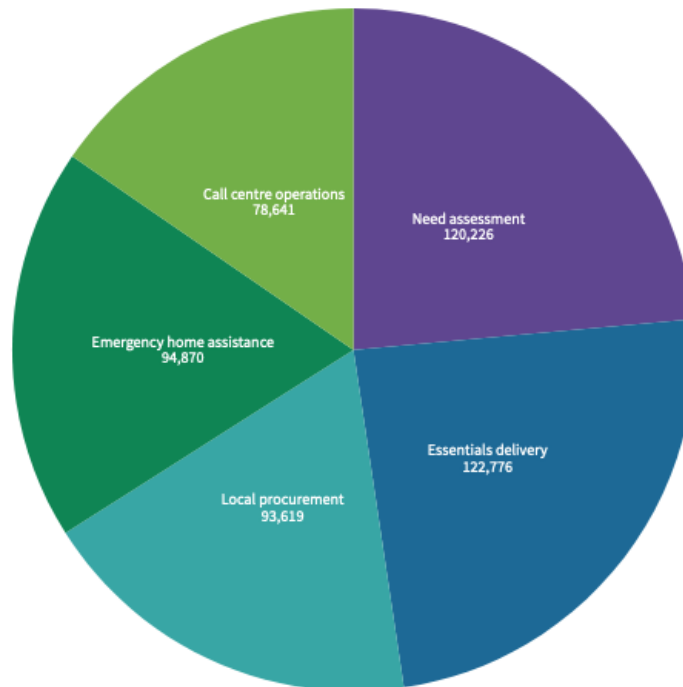
### ***Participatory response through Community action***

This ability for rapid community mobilisation has been integral to Kerala's disaster response. The 2018 floods saw a spontaneous creation of community groups for relief efforts and rescue operations. LGBs organised 600 fishing boats to rescue over 100,000 stranded people, opened relief camps in a variety of venues and organised food and relief materials.

What sets apart Kerala's volunteer response is not just the volume of participation and effort but also the way the state prepares and facilitates these efforts. The recent Kozhikode plane crash saw rapid rescue efforts from civilians, which was regarded as a key reason for the low death toll. In fact, the neighbourhood had participated in mass training in trauma care and mock drill air crashes organised by the district government (Padanna, 2020). These rescue efforts also came at great personal risk to these volunteers and as many as 26 volunteers tested positive (PTI & Scroll, 2020).

For COVID-19 response, GoK set up the [Sannadhasena Platform](#). As on 10 September 2020, 3,61,495 volunteers have registered. Most of these volunteers are in their 20s, but the force also includes over 13,000 volunteers above the age of 50. Figure 16 below describes the various functions that are carried out by volunteers. The state also gave citizens access to the volunteers near them through a phone application called [Kerala Superheroes](#), reporting locational information of ambulance drivers, delivery crew and medical personnel.

### Volunteer Force in Kerala COVID-19 Response



Source: [Kerala Dashboard](#)

**Figure 16** : COVID-19 volunteers and their various functions

The aforementioned CoronaSafe network was also a volunteer effort. Initially founded by a group of technologists, the network worked with the district government and grew into a larger multidisciplinary effort with doctors, philanthropists and so on. The platform created more than 20 dashboards for GoK in seven different languages, focussing on informational guides, medicine and food delivery, care, logistics, e-passes, etc.

#### 4.2. Devolution and Planning: Functions, Functionaries and Financing<sup>10</sup>

EMS Namboodiripad, Kerala’s first communist chief minister envisioned a Kerala that would decentralise resources and power (Isaac, 1986) through a series of land reforms and social reforms (Radhakrishnan, 1983). Over the years, decentralisation took the form of administrative devolution of power to gram panchayats and district councils. In 1994, the INC-led United Democratic Front (UDF) coalition passed Panchayati Raj Acts in line with the 73rd and 74th Constitutional Amendments. These acts decentralised powers to LGBs in the area of poverty eradication (Arun et al, 2011). Under the ‘People’s Plan’ of the Left government, 30% to 45% of planning expenditure was devolved to panchayats, leading to a “new civic culture” (Heller, 2016), increasing local government untied grants from INR 30 crore in 1995 to INR 140 crore in 1996 (Sharma, 2003). Today, under the state’s 13th Five-Year Plan, 25% of all expenditure goes to LGBs in untied funds. The state also devolves 35%-40% of its local government budget to spending that does not require

prior approval (Chakraborty, 2009). Moreover, each district in Kerala has to submit its own Five-Year Plan to the state government, with budgetary allocations. Barring a few areas, such as an upper limit on road expenditure, the LGBs have autonomy on how these funds are allocated. They are also well-staffed and well-resourced. Terms of reference of functionaries are well defined making it easy for them to be held accountable by the state..

Kerala's state government cannot centralise power easily and is restricted in its ability to dismiss or transfer local government officials. This structure promotes autonomy, which ensures that local leaders can stay in office for the duration of their tenure with limited interference from the state government. In doing so, they are able to form relationships which help mobilise communities to respond to a crisis, and are held accountable to the public as opposed to higher levels of government. In contrast, the state of Maharashtra had centralising provisions that allow the state to rapidly intervene in local government matters, taking control of their administration, and transferring officials across jurisdictions. For example, in the midst of the pandemic, the Municipal Commissioners of Mumbai, Navi Mumbai, and Pune were removed from office by the state government (Kumar, 2020).

In the 2020-2021 budget, GoK allotted INR 11,000 crore to local governments, 8.19% of total expenditure (GoK, 2020b). Some scholars have pointed out there is further scope for decentralisation. B.A. Prakash (2018) highlights that the state's mechanism for granting funds should be based on the current year's funding rather than previous years' funding. Similarly M.A. Oommen (2014) reports a downward trend in allocations - state transfers to local governments fell from 29% in the late 1990s to 14% in 2010-11.

### ***Coordination and Cross-sector Consultation***

Kerala's experience with decentralising decision making and coordinating across a network of governmental bodies was a critical enabler of its COVID-19 response. The government was able to rapidly mobilise its functionaries into different working groups and evolve a consultative decision-making process that also included external stakeholders (experts, political opposition, volunteers etc.) (Vishvanathan, 2020).

District governments and local government bodies were involved from the very [beginning](#) of the first wave (DHS, 2020). [24/7 Control rooms](#) were created at the state and district levels on 1 February. Following this, [state level control rooms](#), state medical boards and [rapid response teams](#) were constituted for managing surveillance, call centre, human resources etc. (Figure 17). There were also rapid response teams convened at the district and [institutional level](#).



**Figure 17:** Various GoK and external COVID-19 Coordinating bodies and their composition

The high level coordination committees included the state management committee (chaired by the CM), crisis management committee (chaired by the Chief Secretary) and a War Room at the Secretariat (World Bank, 2020). The external expert groups met twice a day; one of these meetings was with the Health Minister ([Nidheesh M. K., 2020b.](#)). Uniquely, GoK worked across party lines, promising joint efforts with opposition leaders at district and ward level ([TNM, 2020](#)).

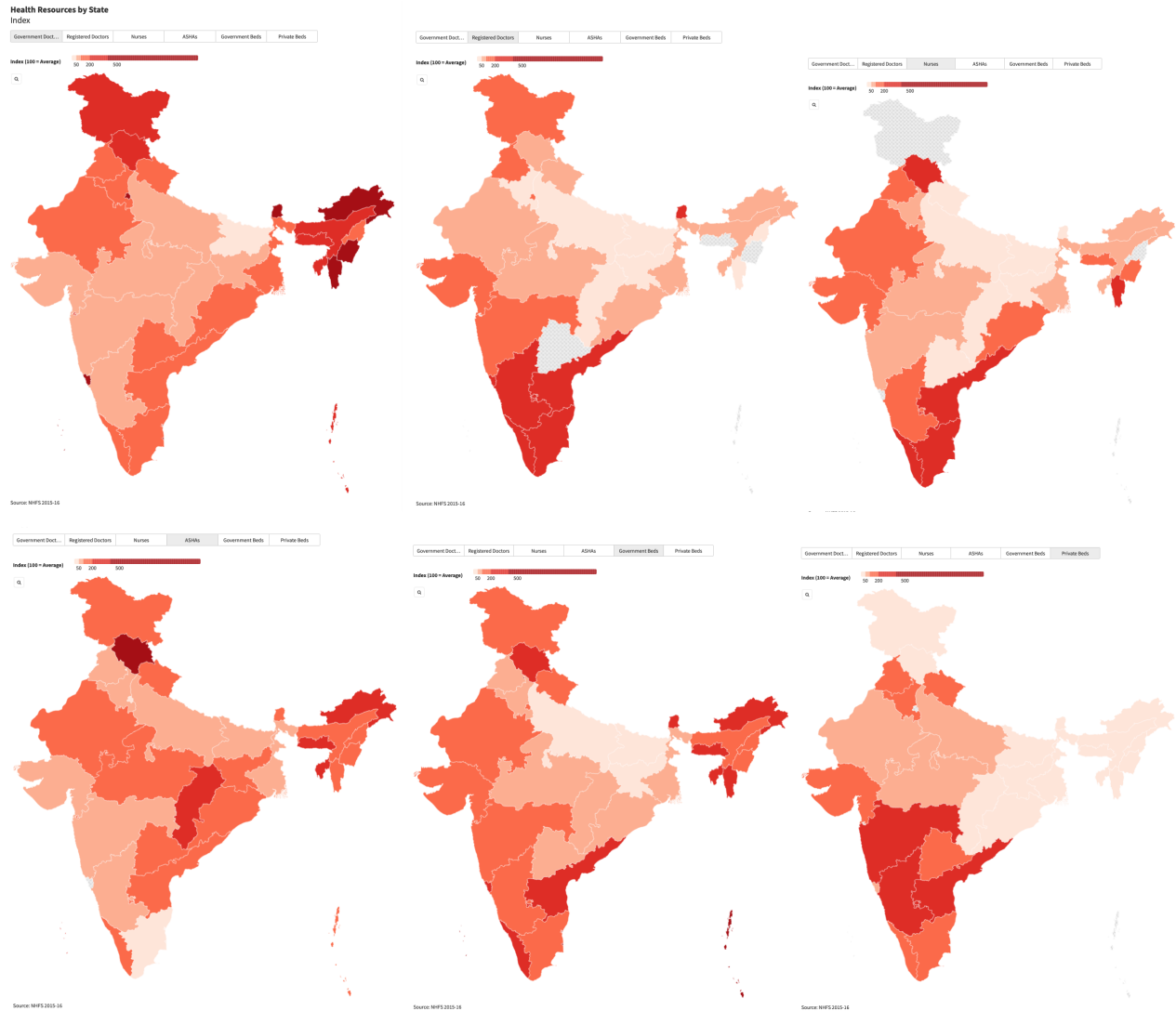
Similar coordination arrangements were made at district levels. For example, in Wayanad, Arogya Jagratha Samithi was convened which would make daily calls to check on people in quarantine.

These calls were followed up by daily visits by a team called the ‘Golden 5’ comprising an ASHA worker, an Anganwadi worker, KSM ADS member, ward member and health worker (Cris, 2020).

### **4.3. Demand for Public Health and Health-Seeking Behaviour**

Kerala’s public healthcare system originated in the 19th century when the Maharaja of Travancore set up the state’s first dispensary. By 1940, it had the highest proportions of beds per person nationally (Isaac and Sadanand, 2020). After Kerala state was formed in 1957, the communist government invested heavily in health and education. From 1960 to 1970, approximately 10% of the state’s expenditure was directed towards healthcare, versus 8% nationally (Isaac and Sadanand, 2020) and this trend has continued.

Despite its worrying morbidity patterns, Kerala’s public health systems fare better than other states on several indicators. For instance, 83% of infants are vaccinated in Kerala versus 63% nationally ([IIPS, 2016](#)). Kerala also outperforms many other states in healthcare capacity (see Figure 18). There are more doctors and nurses per capita than the national average and almost double the amount of government hospital beds ([NHP, 2019](#)). The healthcare-seeking behaviour of Keralites is also better - for example, 48% of households have health insurance, compared to 26% nationally. ([IIPS, 2016](#)). Institutional health seeking behaviour is so pronounced, that public health experts often worry that in Kerala, citizens opt for hospital care at the onset of mild symptoms, and this is what inspired the creation of the CCCs and FLTCs in the first place<sup>11</sup>.



**Figure 18:** *State-wise comparison of Health Resources*

In late 2019, the Aardram mission was launched, aiming to make public health an attractive option to citizens, relative to private care. Local governments led this in collaboration with the Health Department, taking measures such as converting Primary Health Centres to Family Health Centres, equipping government hospitals with the latest technology (World Bank, 2020) and targeting diseases common among tribes people, coastal folk and migrant labourers (Maya, 2019).

Further, continuity of non-COVID-19 essential healthcare was an important part of the state’s four-pronged response strategy based on the principle of equity (World Bank, 2020) and has been a testament to its state capacity. The state issued special guidelines for conducting [immunisation](#) and [tuberculosis testing](#) over the lockdown period (DHS, 2020), appointed officers for Non-Communicable Disease (NCD) monitoring and initiated doorstep delivery of NCD drugs for self-quarantined households (World Bank, 2020).

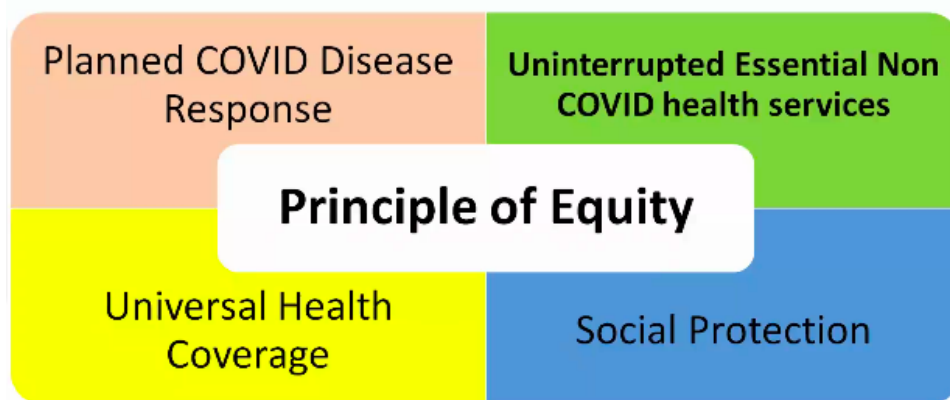


Figure 19 : GoK’s Response Strategy as per Department of Health (Source: World Bank, 2020)

### ***Health Communication and Transparency***

During the 2018 Nipah virus outbreak, the initial term used for home quarantine was *veettutatankal*, which translates to ‘home arrest’. Having foreseen the potential consequences of this negative connotation, the health minister called a meeting of journalists to rephrase the term which was then modified to *veettukarathal* which translates to ‘home care’.

The COVID-19 outbreak saw a similar timely collaboration between the government and the media. Journalists were promised complete transparency from GoK in return for the assurance that only official figures would be reported. The government worked extensively to remove stigma surrounding the virus while reassuring those infected that their needs would be met in a government quarantine facility (Varma, 2020).

Regular press briefings were held by the CM and Health Minister where citizens were briefed about the actions that were taken by the government and assured comfortable quarantine arrangements (Jalan and Sen, 2020). A [daily bulletin](#) was initiated by the Directorate of Health, carrying information about confirmed cases, quarantine figures, tests, contact tracing efforts, new protocols and other information relevant to public health. Over time, these bulletins also began to include

district level information and hospital availability data. In April, a [COVID-19 dashboard](#) was set up to provide historical and daily numbers all on pandemic indicators.



Figure 20: IEC Material from Kerala's [Break the Chain Campaign](#)

As part of the ‘Break the Chain’ campaign mentioned earlier, credible health information from central and global sources like WHO was translated. Importantly, this information was disseminated creatively through methods including posters, [quizzes](#), animated videos, [FAQs](#) and celebrity endorsements. Media surveillance teams were convened at the district level to monitor misinformation and escalate cases to the police’s cyber security cell (Shan, 2020). More recently, an anti-fake news division was set up at the state level.

#### 4.4. Inclusion through Matriliny, Malayalam and Religious Plurality

Travancore and Cochin, the princely states, were highly progressive in education, abolishing school fees for girls and making school free for all disadvantaged castes (Jeffrey, 1987), and promoting vernacular education in the 19th and early 20th centuries. In 1930, the average literacy rate in Kerala was more than double the national average of 8%, with Kochi the highest at 34%. Additionally, religious competition resulted in multiple religion or caste identity-led support organisations, which provided resources to the state’s people, including health and education (Oomen, 2009).

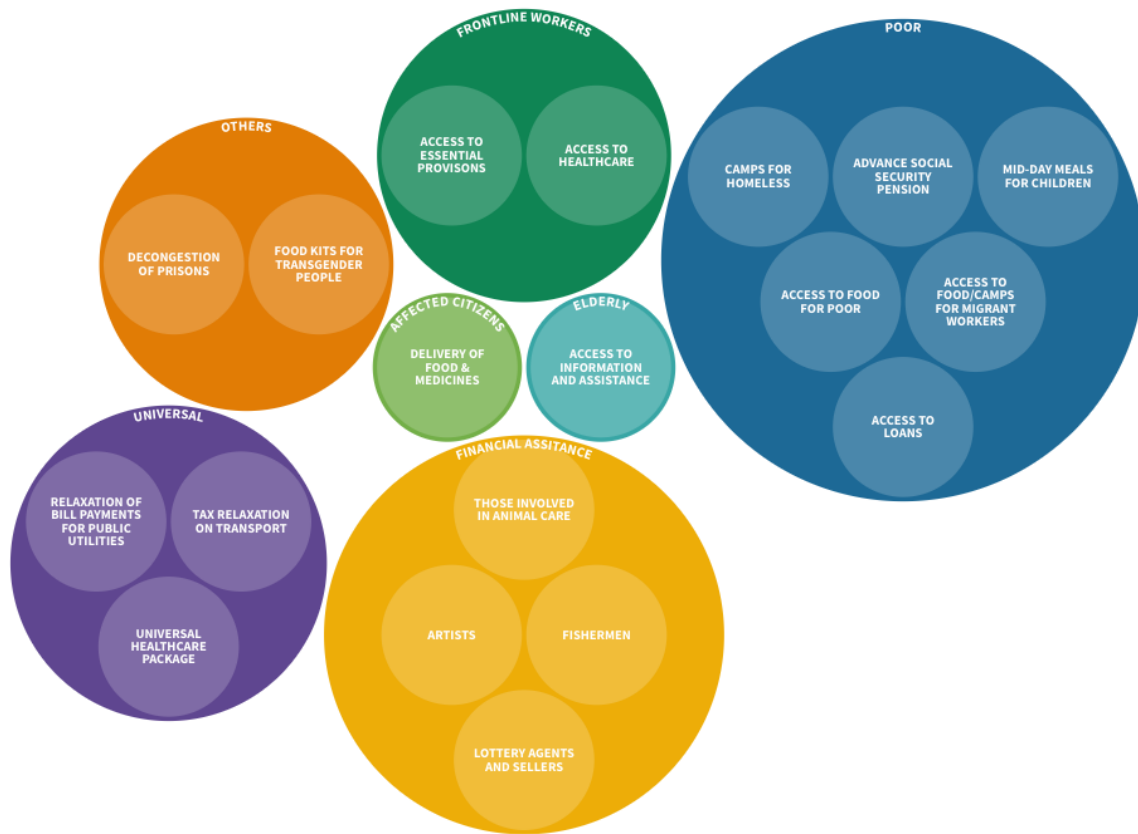
The near ubiquity of Malayalam as a spoken language in the state has been accounted one of the reasons for sustained religious tolerance and plurality (Oomen, 2009). Inversely, the lack of access to Malayalam has been a hindrance for underserved communities like Kerala’s urban slums (Devika, 2016) and tribal populations.

While the matrilineal system in some communities such as the Nairs has been widely touted, the system itself has been criticised for being patriarchal (Aravamudan, 2017). A limited reading of conventional indicators of gender empowerment reveals an incomplete picture as the state does not fare well on indicators such as gender-based violence, moral policing, crimes against women, mental health and incidence of suicide (Bhaskaran, 2011) (Tharayil, 2014). Indeed, the deep-rooted patriarchal notions in the state were on full display during the Sabarimala controversy. Scholars note that apart from reservations and resource transfer, projects will need to be formulated and implemented in ways that address patriarchal power (Kudoth and Mishra, 2011).

### ***Social Protection during the Pandemic***

Social protection was central to GoK's response and several measures were taken specifically in the interest of vulnerable groups (World Bank, 2020). The government's INR 20,000 crore [economic relief package](#), two-thirds of its annual plan, focussed largely on poor and vulnerable sections of the population (Sabith, 2020).

This social protection plan emphasised providing quick financial assistance through measures such as access to loans through Kudumbashree (INR 2,000 crore), advance payments of pension, injecting money into rural employment generation (INR 2,000 crore) and a INR 500 crore health package ([CMO Twitter, 2020](#)). The state also focussed on the welfare of vulnerable citizens by providing [mid-day meals](#) to children at home, a [24-hour call centre](#) to assist the elderly and [relief camps](#) for migrant workers (Rakesh, 2020) (The Hindu, 2020). The CM reassured workers that “no one will starve during lockdown” and that “[community kitchens are providing free cooked meals](#)”, disseminating information to them in their local languages. The workers were well taken care of in camps, with less than 5% returning home, in sharp contrast to other states ([Vijayan, 2020](#)).



**Figure 21:** Social Protection measures

GoK also created a WhatsApp helpline to report domestic violence (PTI & Livemint, 2020). In addition to virtual classrooms for children, online schooling sessions have been initiated for tribal students in their native languages (Athira, 2020). GoK supported frontline healthcare workers by providing [electronic resources](#) for training and spending 10% of State Disaster Response Fund (SDRF) on procuring effective PPE and promoting local manufacturing through KS networks (Shaji, 2020).

## Section 5: Current Situation and Policy Recommendations

At the end of these first 100 days, Kerala had fewer than 30 active cases remaining (of a total of around 500) and local transmission was barely 10% of the total caseload. Today, the situation is starkly different. As of 6 April 2021, the state has had 11,37,591 total cases, with 28,370 being active cases (as compared to the national figures of 1,26,86,593 total cases and 7,85,691 active cases)<sup>12</sup>.

Several factors have contributed to this new scenario. First, imported cases rose sharply, leading to both community transmission and cluster transmission. Shortly after Day 100 in our analysis, Vande Bharat flights began to evacuate Indians stranded outside the country. With the uncertainty

of the pandemic, loss of jobs and health concerns, a large number of NRKs migrated back temporarily or permanently. By June 2020, officials began observing positive cases which were not linked to those with travel history. This trend extended to fatalities as well, where those without virus symptoms were found to be COVID-19 positive posthumously. International and domestic travel led to cluster transmission. As of 1 September 2020, around 200 such clusters have been identified in various areas ranging from coastal villages to the hilly areas, from markets to old-age homes and factories.

Second, as we discussed in Section 3.2.1, while total testing increased, testing per new confirmed case fell. The risk assessment and quarantining of persons at borders and airports was not carried out as effectively as was in the first wave, thereby exposing the state to imported transmissions.

Third, while Kerala was a step ahead of the central government in locking down the state, it was also a step ahead in opening up. Weddings and funerals – first banned and later allowed – became sources of COVID-19 outbreaks, as did the celebration of festivals such as Onam. Lockdown fatigue also began to set in. Frontline workers and functionaries who had worked intensive shifts for months on end found themselves exhausted.

Fourth, a number of political and legal developments in June and July played a role in shifting the government's focus away from COVID-19, perhaps compromising the response process. While Kerala does perform well on state capacity indicators, it is important to note that this model is not foolproof when it comes to the state's political factionalism.

Another oft-observed shortcoming of the Kerala model is its economic sustainability. State GDP is estimated to have shrunk 10% due to the pandemic, and the state will face a fiscal crisis because of lost tax revenues and delayed GST revenues (IANS, 2020). In total, the estimated loss to Kerala because of Covid-19 spending from March to May 2020 is INR 80,000 crore. While the sizable initial relief package gave citizens much-needed respite, with so many NRKs at the brink of losing their former employment, the state needs to now focus on developing local economic opportunities for this population. One possibility is for the state to develop expertise in particular service industries; for example, Kerala has already demonstrated its capabilities in eco-tourism and medicine.

Although the current situation is in stark contrast to the early months of the pandemic, it does not take away from Kerala's initial response and early success in 'flattening the curve'. Case fatality rate continues to be low compared to other states and the state has already vaccinated over 10% of its population with the first dose<sup>12</sup>.

### *Policy Recommendations*

Listed below is a summary of policy recommendations from Kerala's experience:

- ***Devolution of power and resources:*** Empowering LGBs with financial and human resources, as well as political support, proved invaluable to the state's response. Local governments across the country can be strengthened via devolution of powers.
- ***Coordination mechanisms:*** Kerala's early success can be attributed to its high level of coordination both across and between different levels of government. The state quickly set up intra- and inter-government control rooms, committees and task forces to mitigate the spread of the virus. Streamlining coordination and collaboration at the government level will be beneficial to any state looking to build its capacity.
- ***Engaging experts:*** Drawing on expertise outside government and giving them the autonomy to innovate and pilot solutions is also an important facet of capacity building. States may not and need not have a priori knowledge on various issues, but enabling easy access to expertise allows governments to quickly address knowledge gaps in periods of crisis.
- ***Communication and transparency:*** Effective communication is key to fostering trust in state-citizen relationships, particularly among vulnerable groups. Further, communication needs to be accompanied by transparency to maintain trust. This includes publishing regular information and case statistics in an accessible form.
- ***Forward-looking approach and early action:*** Kerala took preemptive and preventive actions even before cases arose, demonstrating institutional preparedness for disasters. Social protection measures were central to this approach.

The Kerala model is not just the sum of the policy actions described in Section 3 and the contextual history described in Section 4, but an interplay between these factors that may or may not be exactly replicable in other contexts. The actions and overall role of LGBs and their functionalities in the COVID-19 response, for instance, would have not been possible without the years of decentralisation and devolution that preceded it. However, a number of other policy actions are indeed feasible for implementation in other contexts without Kerala's exact preconditions, as they largely rely on contemporaneous resources availability and leadership. This is particularly the case with the early public health measures of airport screening, tracing and containment, volunteer-driven social protection efforts and enabling access to expertise.

## Endnotes

1. Calculated using a 3 day moving average in day wise growth of cumulative confirmed cases
2. As on 11th November 2020
3. Accessed 16th November 2020
4. Accessed 16th November 2020
5. Nidheesh M.K. (2020, August 22). Personal Interview
6. Because of data reporting inconsistencies, the testing numbers (routine and private PCR tests) have been reported with a short gap in June.
7. Cases, recoveries, deaths and hospitalisations are measured on an “as on the day” basis. As the government does not publish information about day wise entries and exits from quarantine, and we are only informed about the total number isolated up to a given day. In order to address reporting errors and smoothen the variable trends, we take three-day moving averages of all the variables in our analysis. This is calculated as an average of current, first lagged and first lead value.
8. Choice of states was determined as follows. Tamil Nadu, Karnataka and Andhra Pradesh are three Southern states that have comparatively high ranks in the Human Development Index (HDI). Maharashtra and Delhi in addition to high HDI have more air traffic than Kerala. West Bengal, like Kerala, has a communist socio-political legacy.
9. The BPL criteria is determined by 9 risk factors as determinants of poverty. If a household scores 4 or more out of 9, it is considered a BLP. The factors include Ownership of land, adequate shelter, drinking water, number of meals per day, household headship, literacy, alcohol addiction earnings and social grouping.
10. Nidheesh M.K. (2020, August 22). Personal Interview
11. CoronaSafe Team (2020, October 6). Personal interview
12. Accessed from Kerala Dashboard and COVID19India.org on 6th April 2021

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