



# Political Business Cycle In presence of Exogenous Shock (Covid-19): A Case Study of Bihar

Abhinav

Vivek Kumar

**About the Author:-** Both **Abhinav** and **Vivek Kumar** had done Master's in Economics from Ashoka University and are currently working as an independent researcher based in **Delhi, India.**

## Abstract

The term political business cycle is used to describe the stimulation of economy just before an election in order to improve the prospect of incumbent government getting re-elected. Various studies in the political economy have covered this interesting interaction of tactical redistribution, political business cycles and voting behavior.

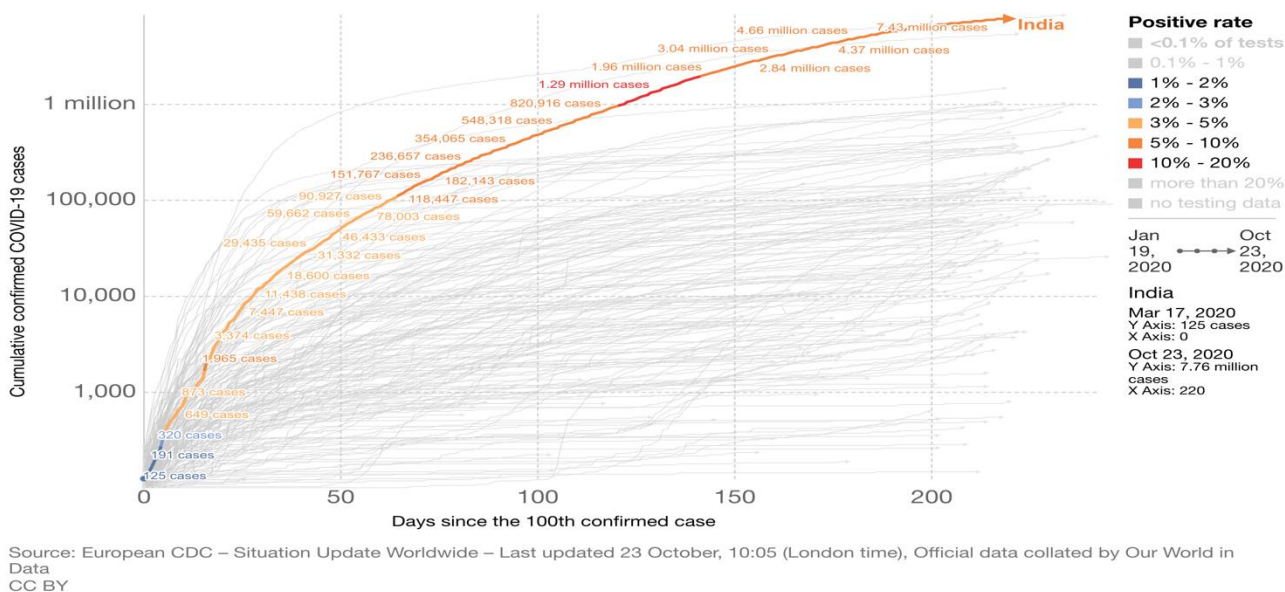
In this study we have observed the strategic response of Bihar Government to the exogenous shock of Covid-19 keeping in mind the upcoming assembly elections in the state. We have observed that how election in state of Bihar pushed the performance of the health institutions of the state despite lagging behind in per capita health infrastructure as compared to other states. In our findings we have observed that Bihar has outperformed in managing COVID-19 pandemic compared to other states when measured by the size of economy, recent election in states, Population, Area and better Health infrastructure in terms of number of beds and doctor's availability.

**Keyword:** - Covid-19, Election Year, Political Business, Death rate, Recovery rate, Test per million, Health infrastructure, Voting behavior

## Introduction

Coronavirus disease (COVID-19) has emerged as the one of the biggest pandemics since Spanish flu (1919) which had affected people at large scale. It is an infectious disease caused by a newly discovered coronavirus. The first case of COVID-19 originated in Wuhan City, China, in December 2019. It was reported that it may have originated from the wet market and later in January its genetic sequence was shared publicly. All available evidence to date suggests that the virus has a natural animal origin and is not a manipulated or constructed virus or biological weapon as claimed by many people around the world. The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales, this makes its spread rate very high.

Soon after its outbreak it became a global issue of concern both on political as well as health front. Different countries took different scientific approach to curtail it. The countries which were most affected after China are USA, Italy, Brazil, India and some other countries in Europe and Asia.



**Fig.1** this figure shows the increase in total number of cases in different countries of the world. Here India has the second largest number of COVID-19 cases.

**Few measures which every country took based on the guidelines from WHO are: -**

- Reduce human to human transmission of virus by reducing secondary infections among close contacts and health care workers, preventing transmission amplification events, and preventing further international spread.
- Identify, isolate and provide early care for patients, including optimized care for infected patients.
- Identify and reduce transmission from the animal sources if any.

- Address crucial unknowns regarding clinical severity, extent of transmission and infection, treatment options, and accelerate the development of diagnostics, therapeutics and vaccines.
- Communicate and update information about critical risk and event information to all communities and counter misinformation.
  - Minimize social and economic impact on countries and community through multisectoral partnerships.
  - Provide intensive care to the patients who are vulnerable and old.

India also took several measures starting early with the travel ban to foreign countries and then severe lockdown from 23<sup>rd</sup> march which lasted for more than two months. During the lockdown a huge number of daily wage workers, labors who had migrated to other parts of the country for work returned back to their home states. A large chunk of the population returned to the state of Bihar and UP. So for the government in these states it was not only important to save them from COVID-19 but to also provide food, shelter, transport and financial support so that they can sustain their livelihood. Indian government took the help of technology to alert the citizens about spread of COVID-19. Some these measures were developing application named 'Aarogya Setu' to trace contacts of COVID-19 positive, giving real time information about the beds and ICU available in the hospitals etc. After this different State governments took different strategies to curtail COVID-19 pandemic. In this paper we try to analyze the strategic response of Bihar government to the exogenous shock keeping incoming elections in mind.

### Research Question

This paper aims to study about the interaction between elections and politics with the economy in the presence of some exogenous shock (Covid-19) pandemic. The main focus of this paper is on the ways of tactical redistribution (Cox and Mccubbins 1986, Dixit and Londregan 1998), political business cycles (Nordhaus 1975, Rogoff and Sibert 1988, Rogoff 1990, Alesina 1987), and the economic voting behavior and pattern of the voter in response to actions carried out by politicians just before election (Ferejohn 1986). Political business cycles examine the presence of election cycles in the economic outcomes. In this paper we are trying to see the interaction between governance and elections in the presence of exogeneous shock in context of "Bihar".

### Motivation

Political economist and analyst in India have focused more on the models of strategic and opportunistic behavior by the governments in power. They have examined the presence of election cycles in tax collections, government expenditures and deficits i.e., whether the government tries to reduce (increase) taxes (expenditures) in the election year while models of strategic behavior tries to look at the pattern of political redistribution i.e., who are the ultimate

beneficiaries of these actions, a particular community, caste, the longtime supporters or swing voters.

## Literature Review

Theoretical background of political cycles, economic voting theories and tactical distribution are reviewed with accompanying analysis of empirical papers which test these theories.

### Theories of Tactical Redistribution

The two commonly used frameworks for analyzing this behavior have been the Cox and McCubbins (1986) and Dixit and Londregan (1998) models. While in both of these theories they assume that the incumbent politician attempts to redistribute state resources to maximize votes; the manner in which this is carried out differs across these two theories. Cox and McCubbins (1986) view the electoral politics as a redistributive game in which candidates' strategies are proposed redistributions of welfare among the various groups in their constituencies. By modeling this as a redistributive game, the authors attempt to analyze the stability of electoral coalitions by examining which groups expect to gain from the candidates' decisions. Dixit and Londregan (1998) consider the interaction between redistributive politics at central and local levels in a federal system and characterize the factors influencing success in redistributive politics. Redistribution has an ideological (egalitarian) dimension as well as a tactical (electoral politics) dimension. Redistribution is used to earn the support of groups of voters who are rather indifferent between party ideologies.

### Political Cycle Theories

Studies relating elections and voting behavior to economic policies can be widely classified into two strands of literature. Political cycles examine the presence of cycles in policy instruments such as taxes, transfers and expenditures prior to an election, while studies on voting behavior examine the effect of policies on the voting behavior of the electorate. Nordhaus (1975) was one of the early pioneers of the class of political business cycles brought about by manipulations in monetary policy.

### Conceptual Framework

In this paper we will try to analyze the impact of COVID-19 on Bihar a state of India and response of state government as compared to other states of India. To analyze and compare the impact and response we have taken data of COVID-19 pandemic of different states which includes data on number of Tests, Recoveries and Deaths. We have taken these parameters for analysis because according to the guidelines of WHO, early detection of cases helps in better treatment of the person and thus reduce the chances of causality. So, number of tests done for COVID-19 by different states is an important parameter to measure the response.

To analyze the response of the Bihar government We have compared these number with other states of India based on Size of Economy, Recent Election in the states, Population, Area and

better Health infrastructure in terms of number of beds and doctor's availability. We have selected the states in each category based on recent available data from different sources.

## Data

We used the COVID-19 daily data from online sources (<https://www.covid19india.org/>) which has variables for Total cases, Tests done, Deaths and Recovery for different states. We merged the population data for each state to find out the test done per million population for COVID-19. We have used Tableau software for the analysis of daily COVID-19 data and finding results.

## Findings

India is second most affected country from COVID-19 in the world after USA. Even in terms of daily increase in number of COVID-19 cases it is second highest in world. New cases are coming from all corners of the country. But among them states like Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu are severely affected.

The focus of our analysis is based on Bihar because of the fact that it is an Election year for the state.

Confirmed cases and Test per million for COVID-19 cases in different states till Oct 25th

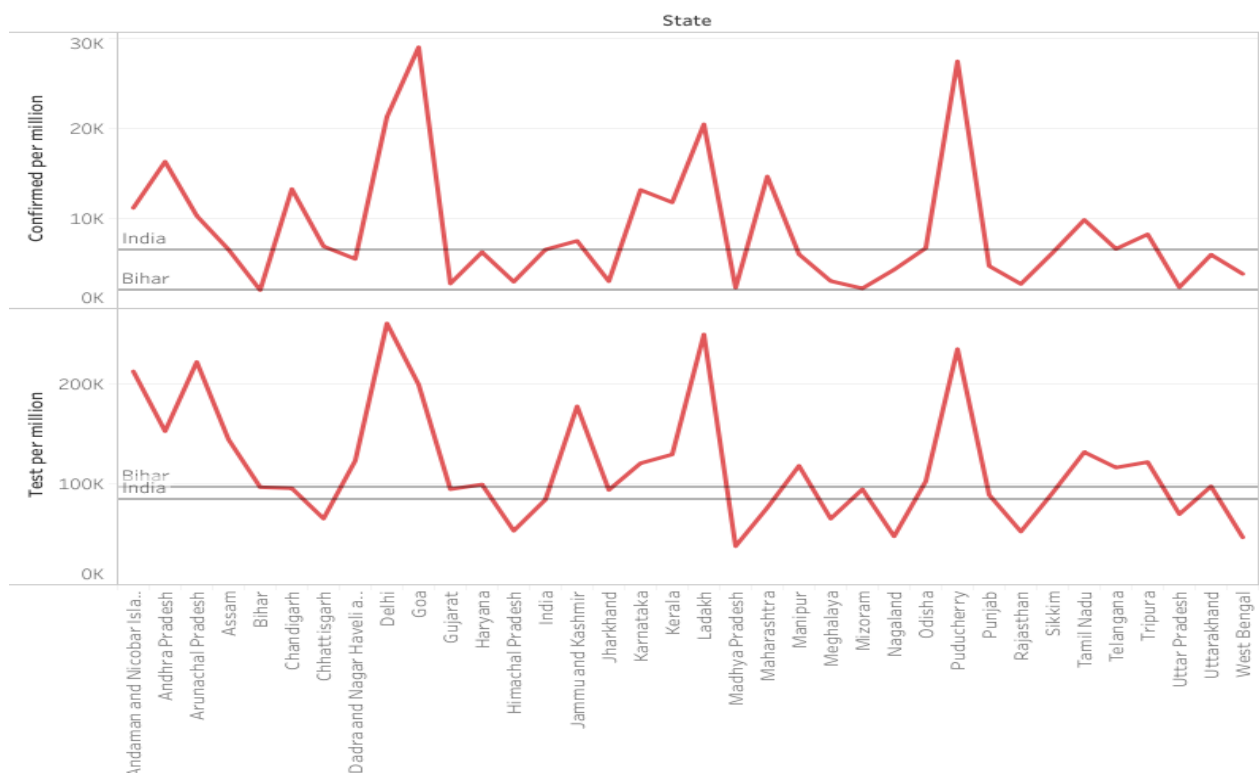


Fig-2. Shows the number of confirmed cases and tests per million for all the states.

In figure 2 we have taken cases in Bihar as a base line and India as an average line to compare the cases with other states. Here we can see that in terms of tests per million population Bihar has tested 97,016 which is far more than that of national average 84,670. Whereas in case of number of confirmed cases it has 2038 cases per million population which is much less as

compared to national average of 6532. This shows that in spite of low rate of COVID-19 positive cases Bihar has done comparatively better in testing as compared to national average.

Recovery and Death rate from COVID-19 in different states till Oct 25th

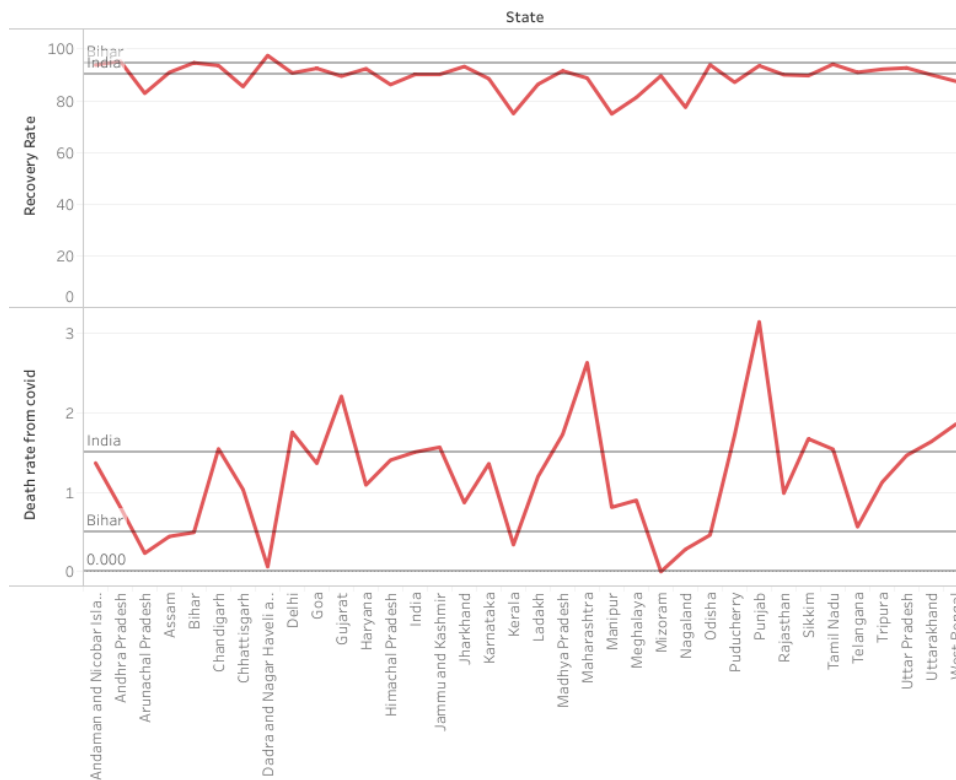


Fig.3 Death rate and Recovery rate of all the Indian states from COVID-19, Bihar has lowest death rate 0.49% among all the major states and highest recovery rate of 94.70%.

State	SUM(Confirmed per million)	SUM(Death rate from covid)	SUM(Recovery Rate)	SUM(Test per million)
Andhra Pradesh	16,278.25	0.81621	95.3599	152,699.56
Arunachal Pradesh	10,270.09	0.23221	82.9006	221,643.43
Assam	6,542.77	0.44375	90.9786	144,567.24
Bihar	2,038.36	0.49436	94.6878	97,016.09
Delhi	21,244.77	1.75463	90.7468	259,972.80
Goa	28,961.74	1.36357	92.5382	199,068.25
Gujarat	2,765.95	2.20670	89.5168	95,016.07
Haryana	6,244.37	1.09094	92.4058	99,692.20
Himachal Pradesh	2,967.40	1.40403	86.2445	53,662.40
India	6,531.79	1.50498	90.2004	84,670.31
Jharkhand	3,021.87	0.86873	93.2689	94,260.65
Karnataka	13,140.41	1.35834	88.5436	120,821.10
Kerala	11,762.27	0.33925	75.0539	129,569.78
Madhya Pradesh	2,302.85	1.72497	91.5563	38,301.57
Maharashtra	14,638.75	2.63000	88.7986	76,609.38
Punjab	4,708.88	3.14375	93.5824	89,344.33
Rajasthan	2,716.95	0.98742	90.0630	52,853.59
Sikkim	6,174.49	1.67109	89.7347	91,384.05
Tamil Nadu	9,827.22	1.54075	94.1425	131,918.21
Telangana	6,606.44	0.56518	91.0176	116,549.19
Uttar Pradesh	2,353.56	1.46341	92.7278	70,194.43
Uttarakhand	5,964.04	1.63577	90.0490	97,891.67
West Bengal	3,831.24	1.85501	87.5597	47,091.61

Fig.4 This shows the summary statistics of COVID-19 cases for all the states.

The death rate in Bihar from Covid-19 stands at 0.49% whereas national average for the same is at 1.505%. Whereas Bihar has recovery rate of 94.70% as compared to national average of 90.20%. This shows that early measures taken in terms of high testing rate helped in early

detection and better treatment of patient on time which resulted in low death rate and high recovery rate.

After comparing with the national average cases, we tried to look at the data of COVID-19 response by all major states. For this analysis we categorized the states into 5 groups namely Economy, Better health Infrastructure, Size of population and Area of the state and Recent Election held. We compared states in these category with Bihar.

### **1. How Bihar did when compared with economically advanced states?**

States like Maharashtra, Tamil Nadu, Gujrat, Karnataka, Uttar Pradesh, West Bengal, Rajasthan, Andhra Pradesh, Kerla, Madhya Pradesh, Haryana and Delhi are better in terms of economy than that of Bihar.

#### **Present state of Bihar Economy**

According to the reports of NITI Aayog in FY18 Maharashtra, Tamil Nadu, Gujrat, Karnataka and Uttar Pradesh had contributed to almost half of the country's GSDP from FY12 to FY18 while states like Jharkhand, Andhra Pradesh, Gujrat, Tripura and Bihar were the five fastest growing state with an annual growth rate of 10 percent. In terms of per capita NSDP (at constant price) Bihar has the lowest NSDP among all major states and around 35% of population still lives below poverty line and has lowest share of banking outlet. In terms of Sustainable Development Goals (SDG's) which measures on 17 different indicators. The composite scores of all these measures are taken to measure the development of states. Kerala with the score of 70 out of 100 has topped the list while Bihar with score of 50 is at the bottom and way below the national average score of 60.

#### **How Bihar has done when compared with developed states in managing COVID-19?**

We took the data of these states to compare the measures taken by different states. We found that in terms of Tests per million of population states like Andhra Pradesh, Assam, Delhi, Kerla and Tamil Nadu did better than that of Bihar which has done on average 97016 test per million population, but when compared in absolute numbers only Uttar Pradesh has tested more for COVID-19 than that of Bihar which has almost twice population size as compared to Bihar. All the states which tested more than that of Bihar had high positivity rate. Ironically, Maharashtra being the best economy among all states and in spite of high positivity and death rate has tested way below the national average.

COVID-19 Test per million for different states with Bihar as Base

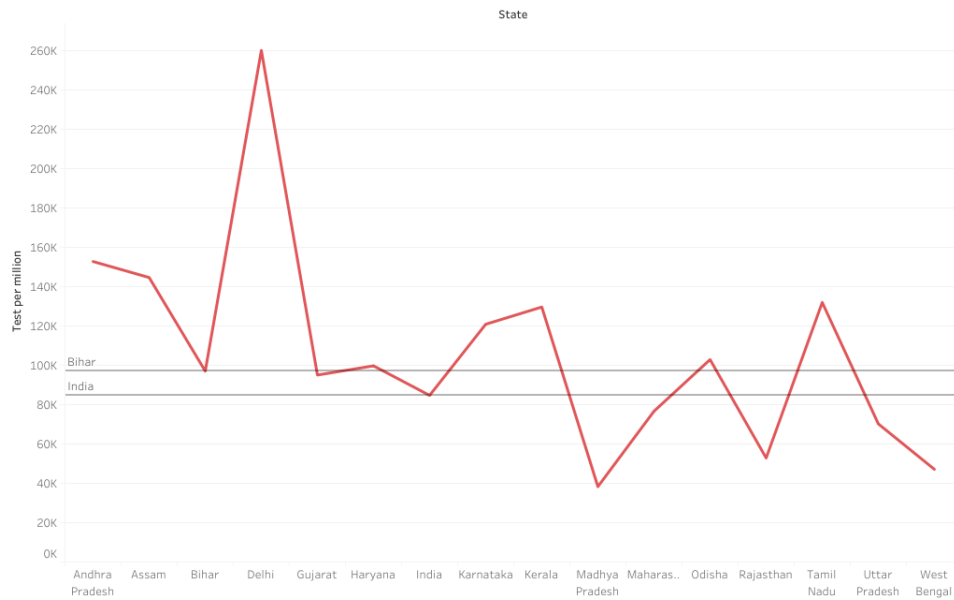


Fig.5 It shows the test per million of population for the states better in economy as compared to Bihar (97106 tests) and National Average (84670) tests.

COVID-19 Confirmed cases per million for different states with Bihar as Base

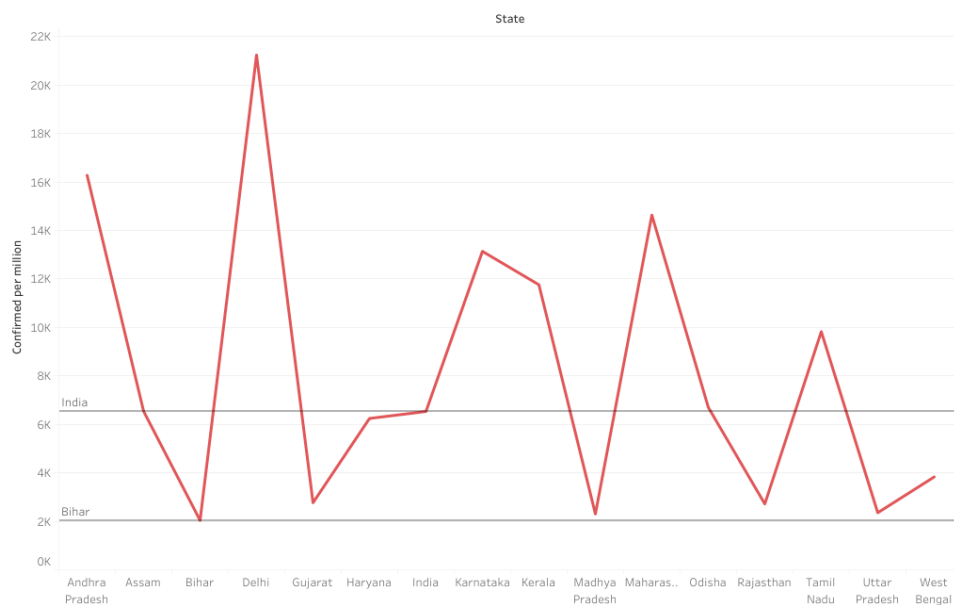


Fig. 6 shows the confirmed cases per million (Positivity rate) for the states Bihar (2038) has the lowest positivity rate among all major states while the national average is 6532 positive cases per million.



Death and Recovery rate for different states from COVID-19

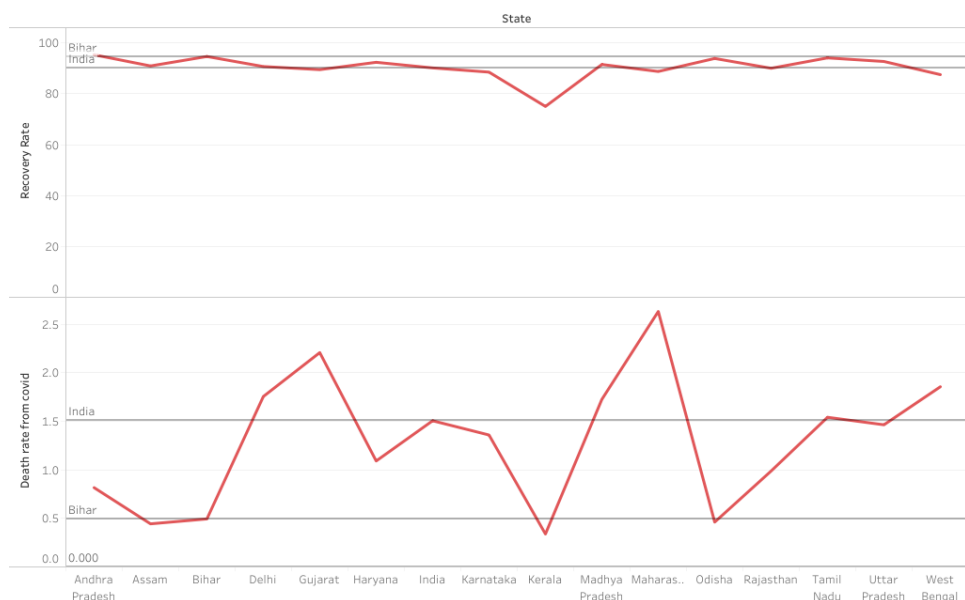


Fig.7 This figure shows the death and recovery rate for the states. Two horizontal lines passes through the graph, one shows the states compared with Bihar and other line shows the national average for the same. Among all the major economies Kerala (0.34%), Assam(0.44%) and Odisha(0.46%) has lower death rate as compared to Bihar. While with 94.70% Bihar has highest recovery rate among all states.

Thus this analysis shows that inspite of having lowest ranking in most of the economic parameters among all the major economies of India, Bihar has done comparatively larger number of testing for Coronavirus which has lead to higher recovery and low death rate in the state.

## How Bihar has done when compared with the states which has undergone recent Assembly Elections in managing COVID-19?

States which has gone through election in 2019 and 2020 with Bihar

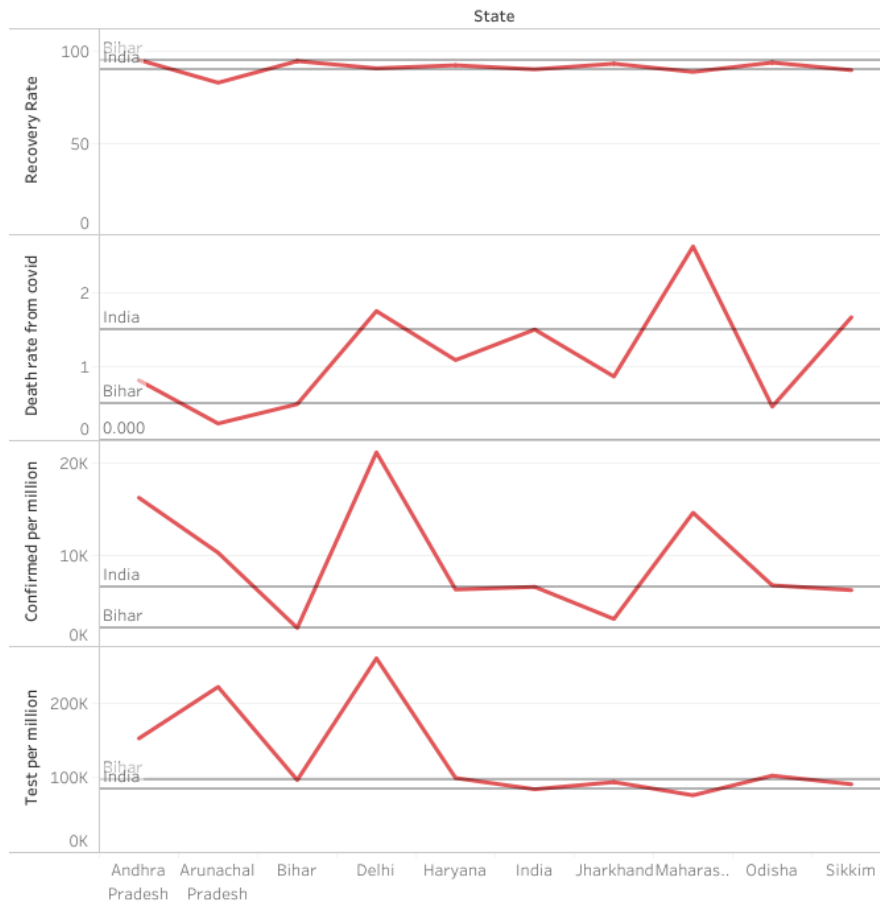
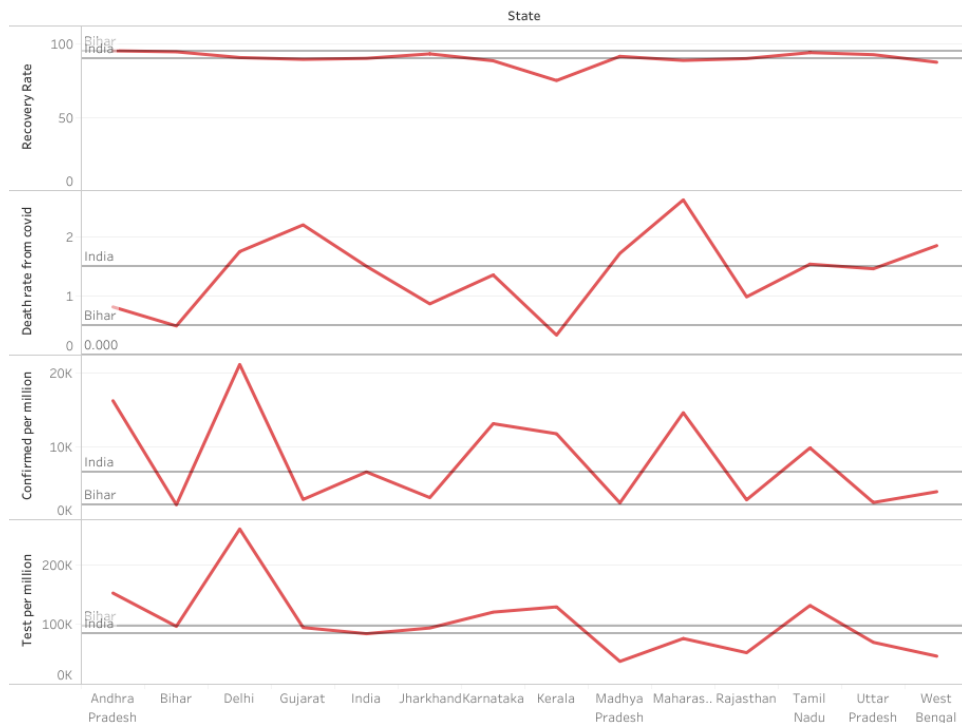


Fig.8 shows states which had election just before COVID-19 and their response

As discussed earlier different research has shown that in democratic setup of governance election matters, that is why government takes extra measures and precautions in the election year. Bihar is the lone state which is going into election in mid of pandemic the other states for which data has been taken had election just before pandemic outbreak. Among all the states which had recent assembly election only Arunachal Pradesh (221643) and Delhi (259973) had done testing to a greater number of people than that of Bihar (97016). Although the positivity and death rate in Bihar is well below these states. Among all these states Maharashtra has performed worst in all measures.

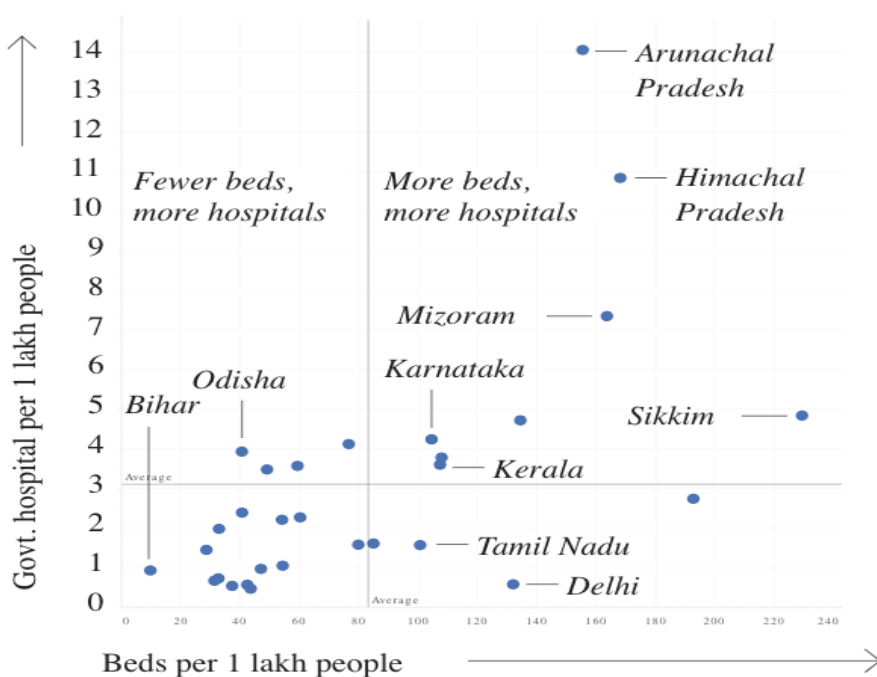
# How Bihar has done when compared with the states which has better Health Infrastructure in managing COVID-19?

States which has better Health Infrastructure as compared to Bihar



**Fig. 9** States With better Health facilities (I.e. doctors/beds per 1000 population) it explains the Tests, Death, Recovery and positivity rate of all these states. Bihar has performed far better than that of national average and has lowest death and high recovery rate.

What is the status of beds and hospitals in States?



Better Health infrastructure suggest better capability of states in handling the health-related issues. Bihar is the state which has lowest number of Doctors and hospital beds availability. According to the 2018 Niti Aayog Health Index, Bihar has second lowest ranking among all major states after Uttar Pradesh with the score of 32.11. While Kerala has best health facility among all states and topped the 2018 Health Index with the score of 74.01. On average there are one doctor for every 29000 people and one hospital bed for around 9000 people in Bihar. Among, other indicators like Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR) Bihar’s performance is worst among all major states in India. Bihar with birth rate of 3.3 percent has highest birth rate in India. Even among other socio-economic indicators like education, availability of safe drinking water and Per capita Income Bihar has worst performance among all states. When compared with the states which had better health infrastructure as compared to Bihar, Bihar has done better on all parameters in measures taken for COVID-19 when compared with better equipped states.

### How Bihar has done when compared with the states which has high population and area in managing COVID-19?

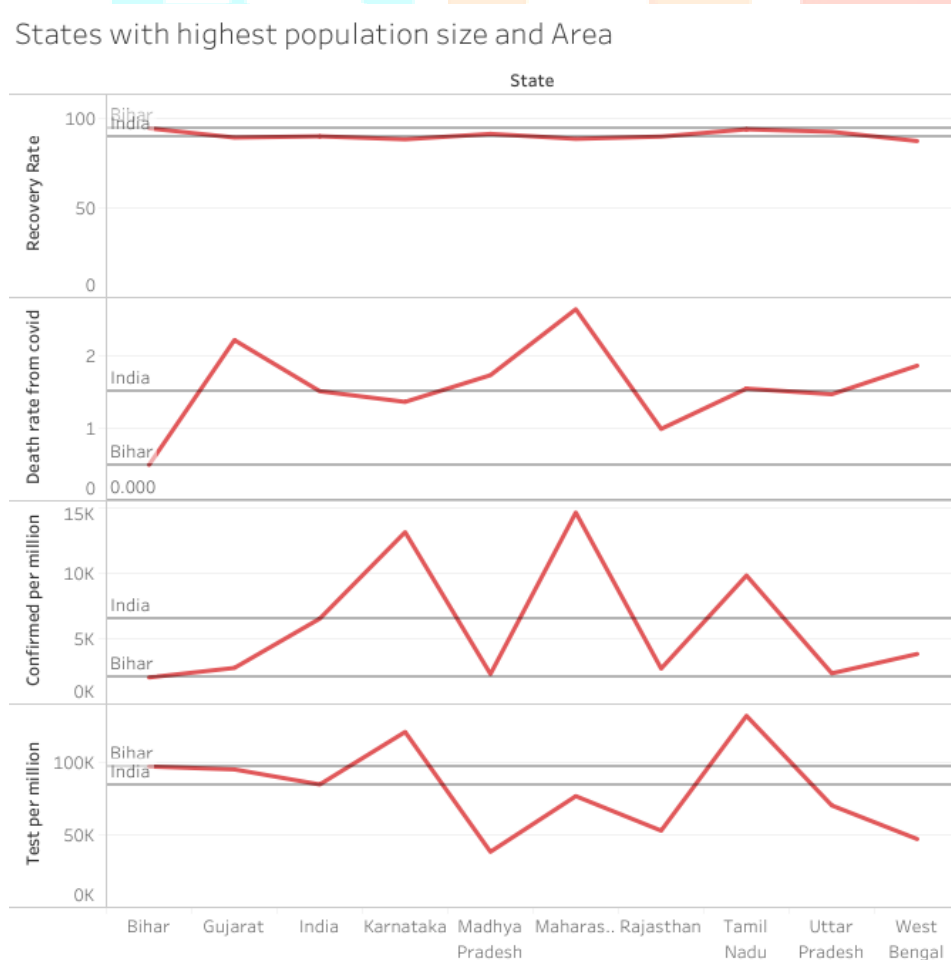


Fig.10 Shows the response to COVID-19 By states with highest population and Area

We took population and area as a factor because higher population states have higher chances of COVID-19 spread also it requires more time and testing capability. States with larger area has similar problem as it increases in administration cost and time to tackle the issue. Bihar is the third largest state in terms of population and twelfth largest in terms of area. With the population density of 1106 it has highest population density among all major states. Given the crumbling health infrastructure and population density, In normal circumstances Bihar would have seen high COVID-19 positive cases but when we compare it among all major states in terms of area and population only Tamil Nadu and Karnataka has done better in number of tests but these states had higher positivity and death rate as compared to Bihar.

## Conclusion

We have shown that state of Bihar which has assembly election due in October 2020 has outperformed other states in terms of Covid testing and related outcomes. Despite being a small economy, high population density and poor availability of per capita public health infrastructure, the performance of Bihar in managing COVID-19 till date has turned out to be better when compared with other states. This also reflects the strategic response of the state government to the exogeneous shock keeping in mind of the upcoming assembly elections. On the other hand, Maharashtra in spite of being the best economy and having better health infrastructure has performed worst among all major states in response to COVID-19. One reason for this may be that it has underutilized its potential because the state has gone through assembly election in 2019 and the elected government is in no hurry to compete others.

## References

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7431238/>
- <http://statisticstimes.com/economy/gdp-growth-of-indian-states.php>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7431238/#app1>
- [https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1060&context=econ\\_diss](https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1060&context=econ_diss)
- <https://www.tandfonline.com/doi/full/10.1080/00220380600682116?scroll=top&needAccess=true>
- <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200423-sitrep-94-covid-19.pdf>
- [https://www.nhp.gov.in/nhpfiles/national\\_health\\_policy\\_2017.pdf](https://www.nhp.gov.in/nhpfiles/national_health_policy_2017.pdf)
- <https://www.covid19india.org/>
- <https://www.tandfonline.com/doi/full/10.1080/00220380600682116?scroll=top&needAccess=true>

Cox, Gary W. and Mathew D. McCubbins. 1986. Electoral politics as a redistributive game. The Journal of Politics 48, no. 2: 370-389

Dixit, Avinash and John Londregan. 1998. Fiscal federalism and redistributive politics. Journal of Public Economics 68, no. 2: 153-180.

Ferejohn, John. 1986. Incumbent performance and electoral control. Public Choice 50, no. 1: 5-25.

Nordhaus, W. D. 1975. The political business cycle. The Review of Economic Studies 42, no. 2: 169.

Rogoff, K. 1990. Equilibrium political business cycles. The American Economic Review 80, no. 1: 21

Thomas, S. J. 1989. Do incumbent campaign expenditures matter? The Journal of Politics 51, no. 4: 965.

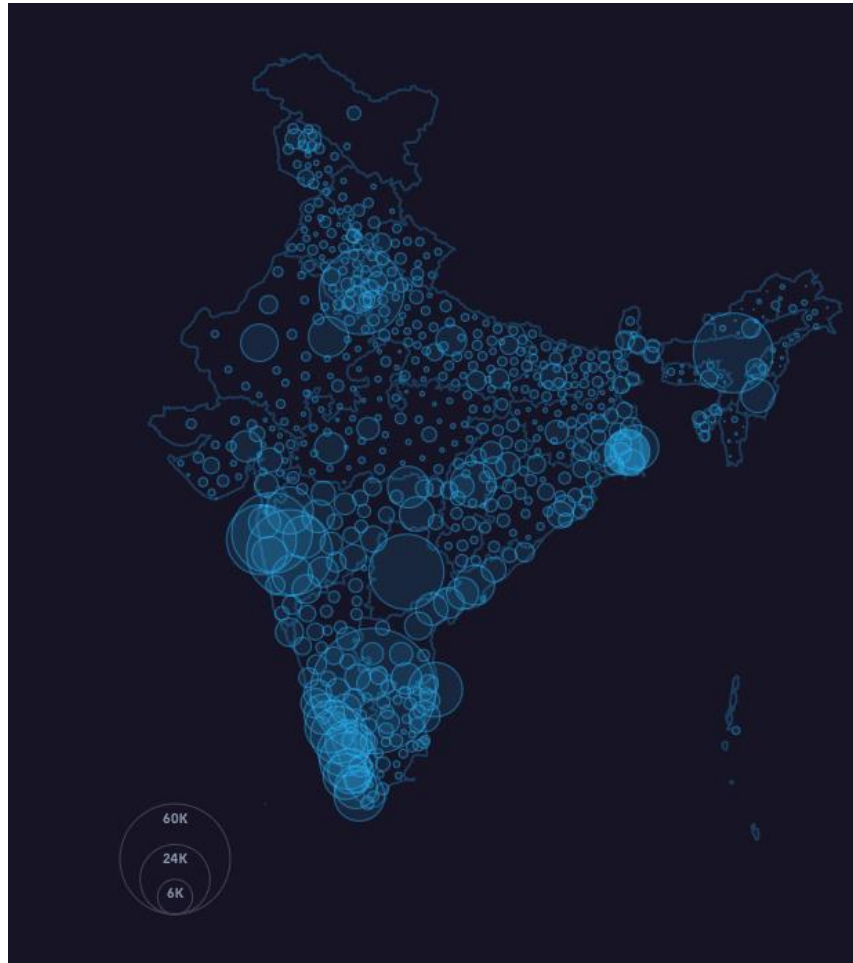
Virmani, Arvind. 2004. Economic growth, governance and voting behavior: An application to Indian elections. Working Paper No.138, Indian Council for Research on International Economic Relations  
Virmani, Arvind. 2004. Economic growth, governance and voting behavior: An application to Indian elections. Working Paper No.138, Indian Council for Research on International Economic Relations

ArthNiti, volume-3, Jan, 2020 [https://niti.gov.in/sites/default/files/2020-01/Arthniti\\_newsletter\\_29th\\_Jan.pdf](https://niti.gov.in/sites/default/files/2020-01/Arthniti_newsletter_29th_Jan.pdf)

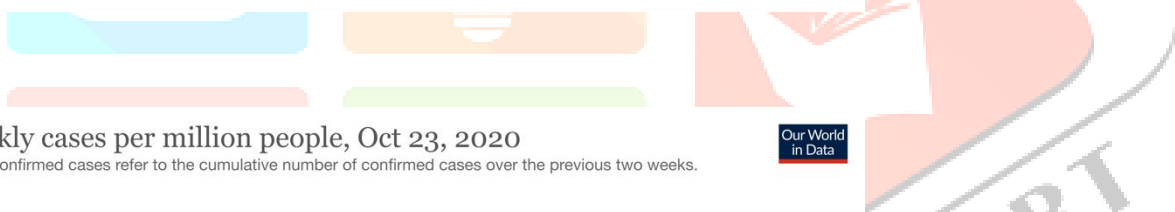
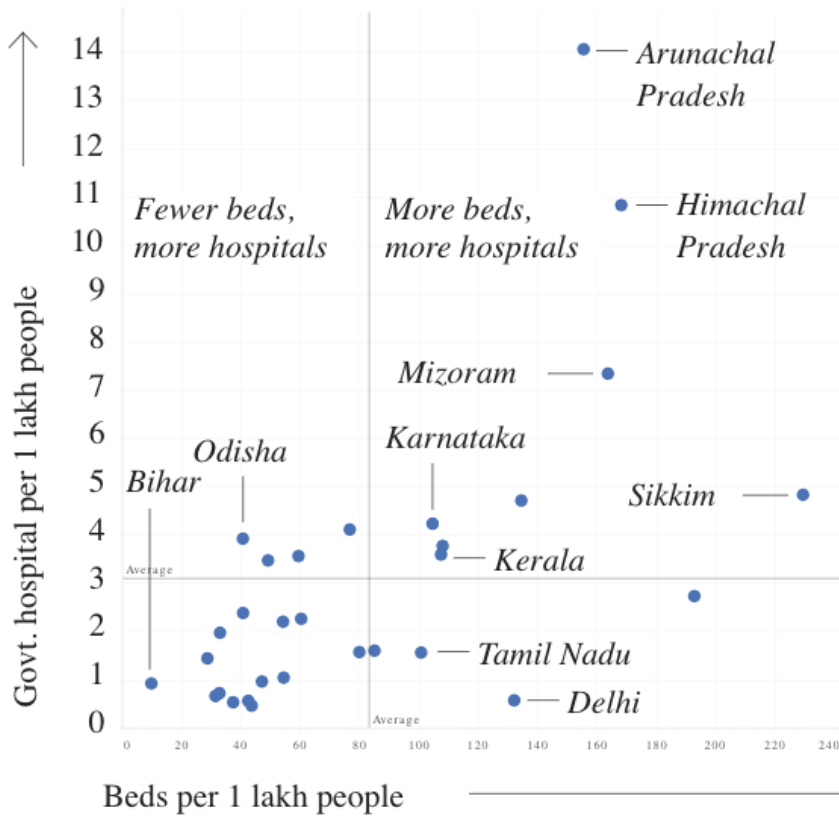
Health Index June, 2019. Niti  
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Appendix: -



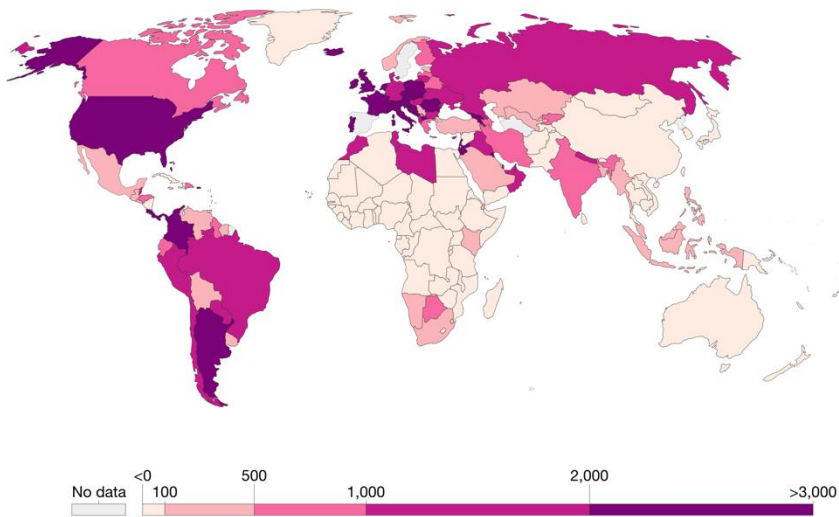
What is the status of beds and hospitals in States?



Biweekly cases per million people, Oct 23, 2020

Biweekly confirmed cases refer to the cumulative number of confirmed cases over the previous two weeks.

Our World in Data

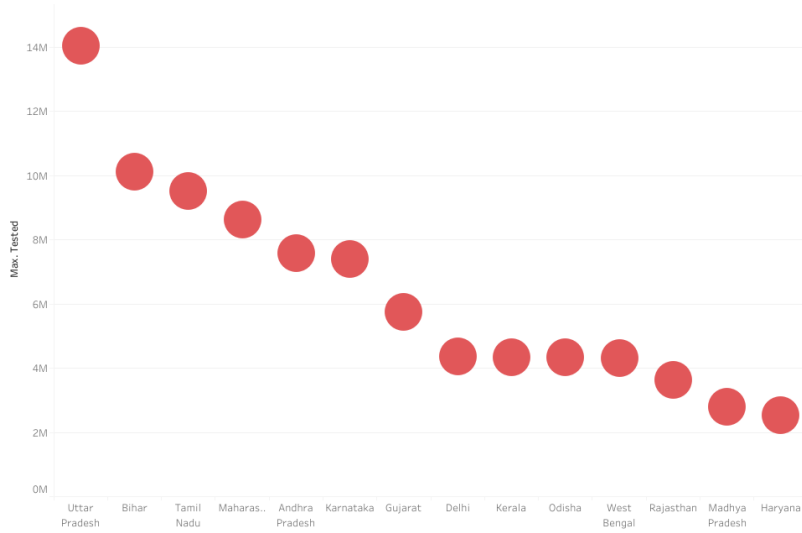


Source: European CDC – Situation Update Worldwide – Last updated 23 October, 10:05 (London time)

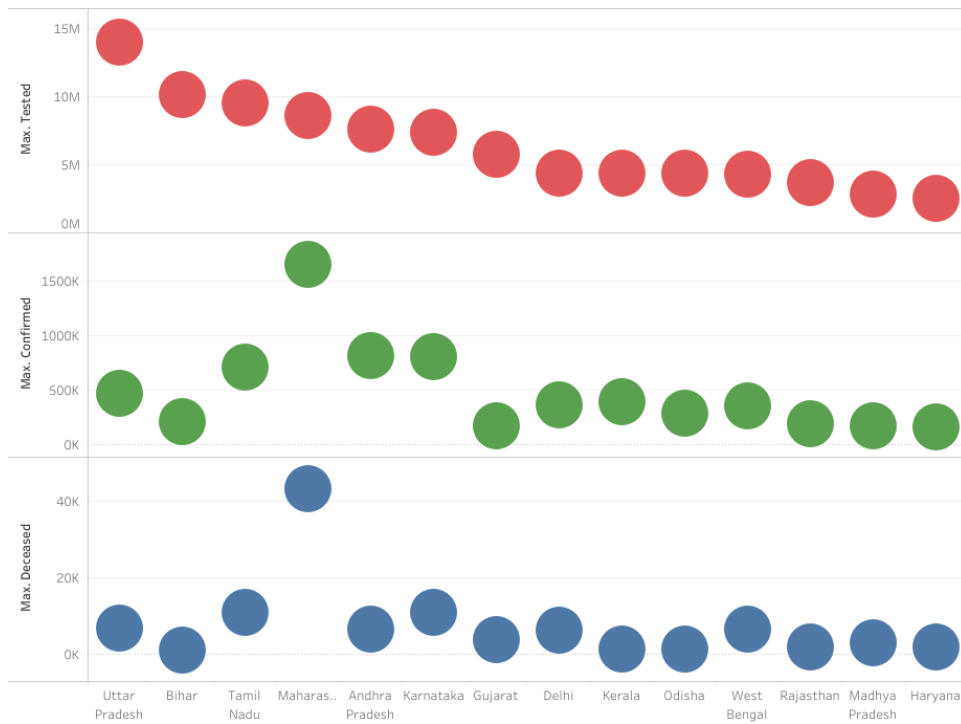
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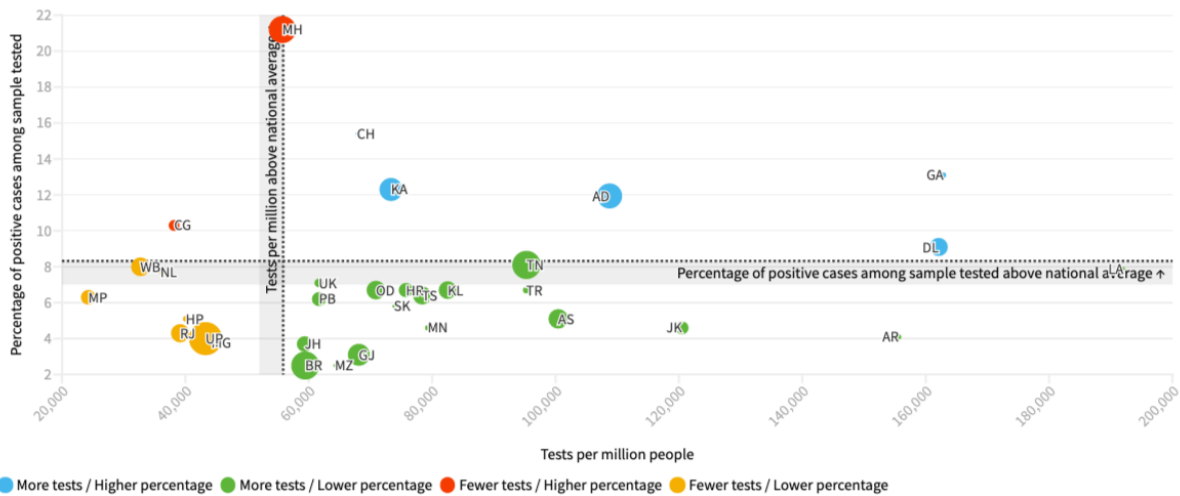
Test done for COVID by different states till OCT 25



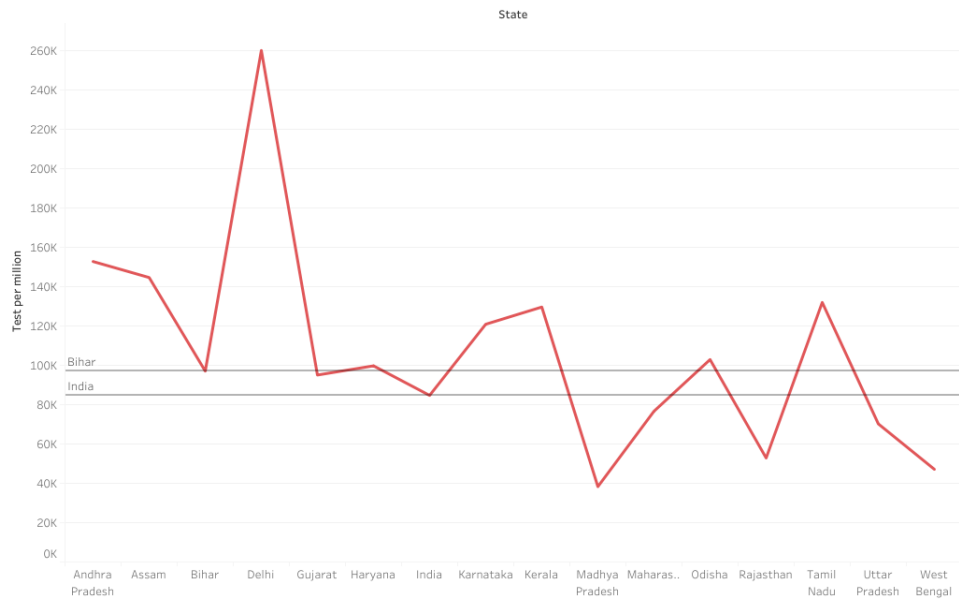
COVID cases in states till OCT 25



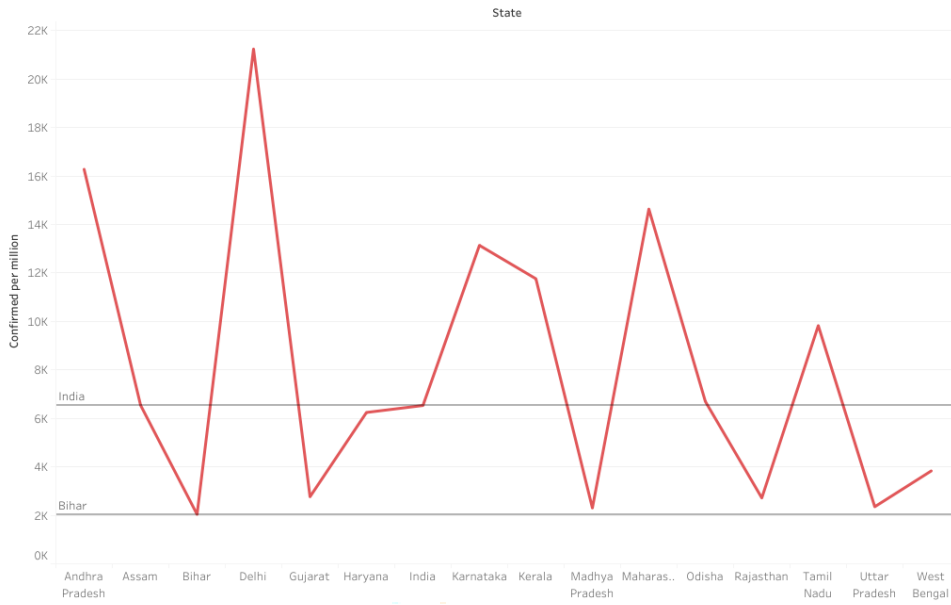
State	Total Cases	Total Active	Total Recovered	Total Deaths
Maharashtra	1,638,961	140,194	1,455,107	43,660
Andhra Pradesh	804,026	31,469	765,991	6,566
Karnataka	798,378	86,749	700,737	10,892
Tamil Nadu	706,136	31,787	663,456	10,893
Uttar Pradesh	468,238	27,681	433,703	6,854
Kerala	386,087	97,417	287,265	1,405
Delhi	352,520	26,467	319,828	6,225
West Bengal	345,574	36,807	302,340	6,427
Odisha	279,582	16,269	262,031	1,282
Telangana	230,274	19,937	209,034	1,303
Bihar	211,443	10,879	199,521	1,043
Assam	203,966	20,271	182,793	902
Rajasthan	184,422	17,100	165,496	1,826
Chhattisgarh	174,591	23,899	148,899	1,793
Madhya Pradesh	166,298	11,477	151,946	2,875
Gujarat	166,254	13,887	148,685	3,682
<b>Total</b>	<b>7,863,983</b>	<b>668,280</b>	<b>7,076,492</b>	<b>119,211</b>



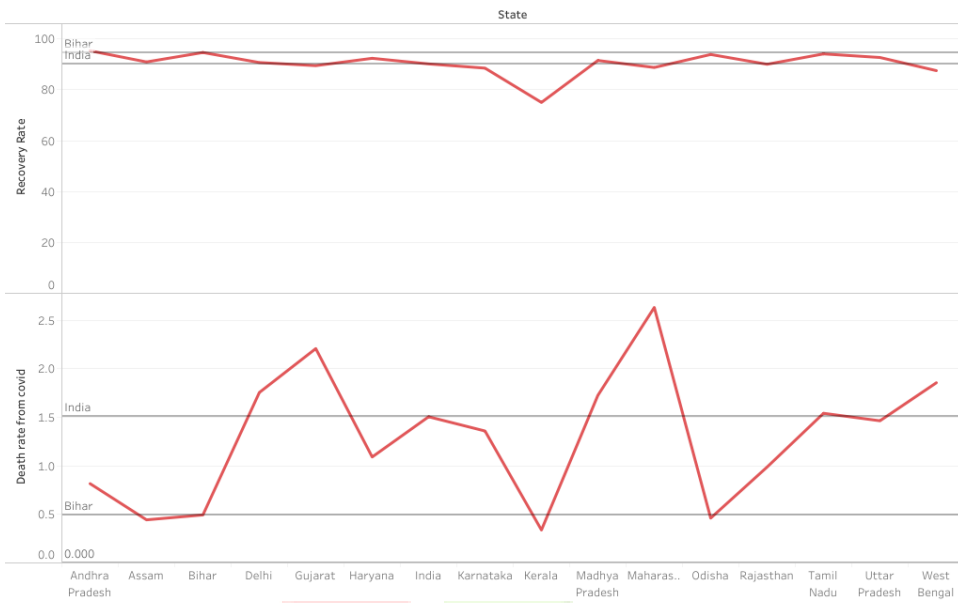
COVID-19 Test per million for different states with Bihar as Base



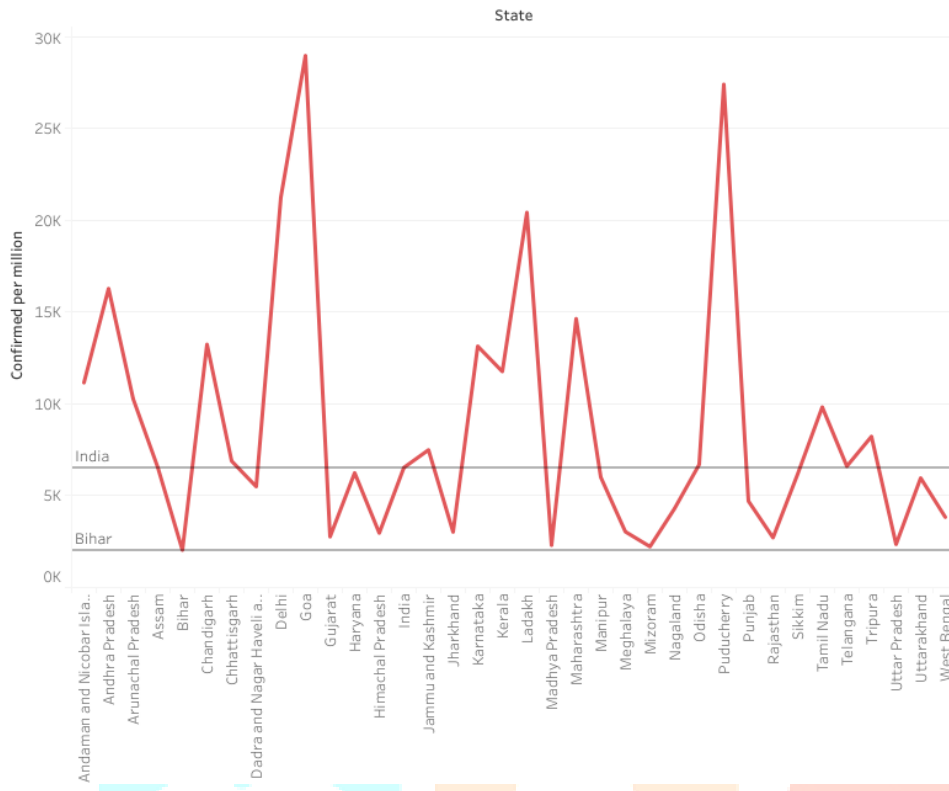
COVID-19 Confirmed cases per million for different states with Bihar as Base



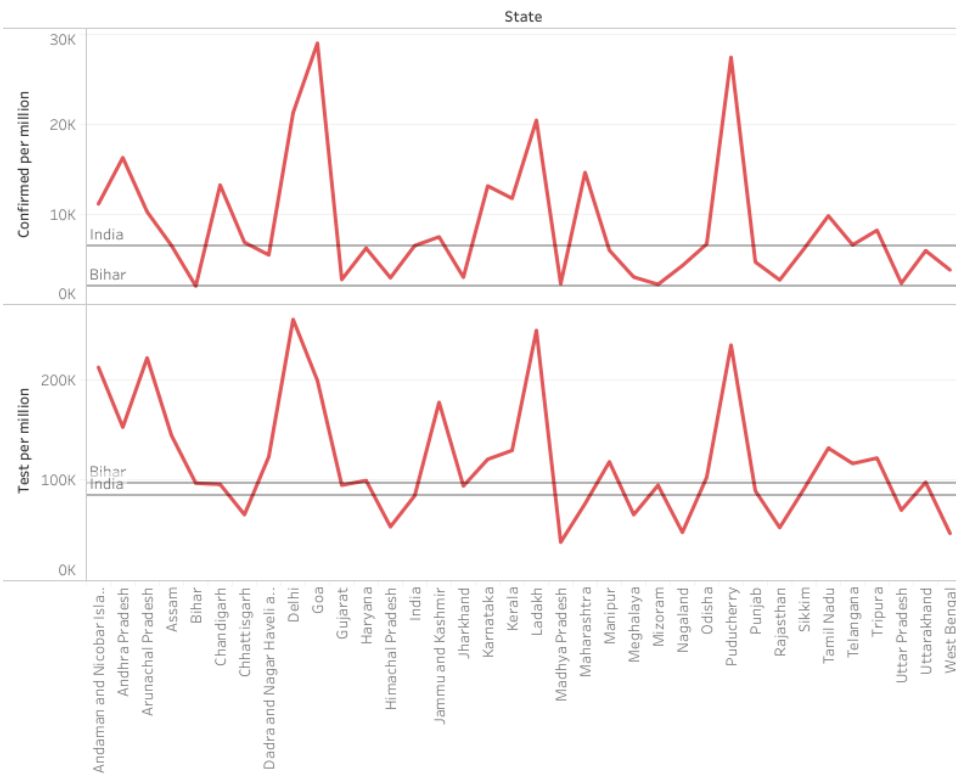
Death and Recovery rate for different states from COVID-19



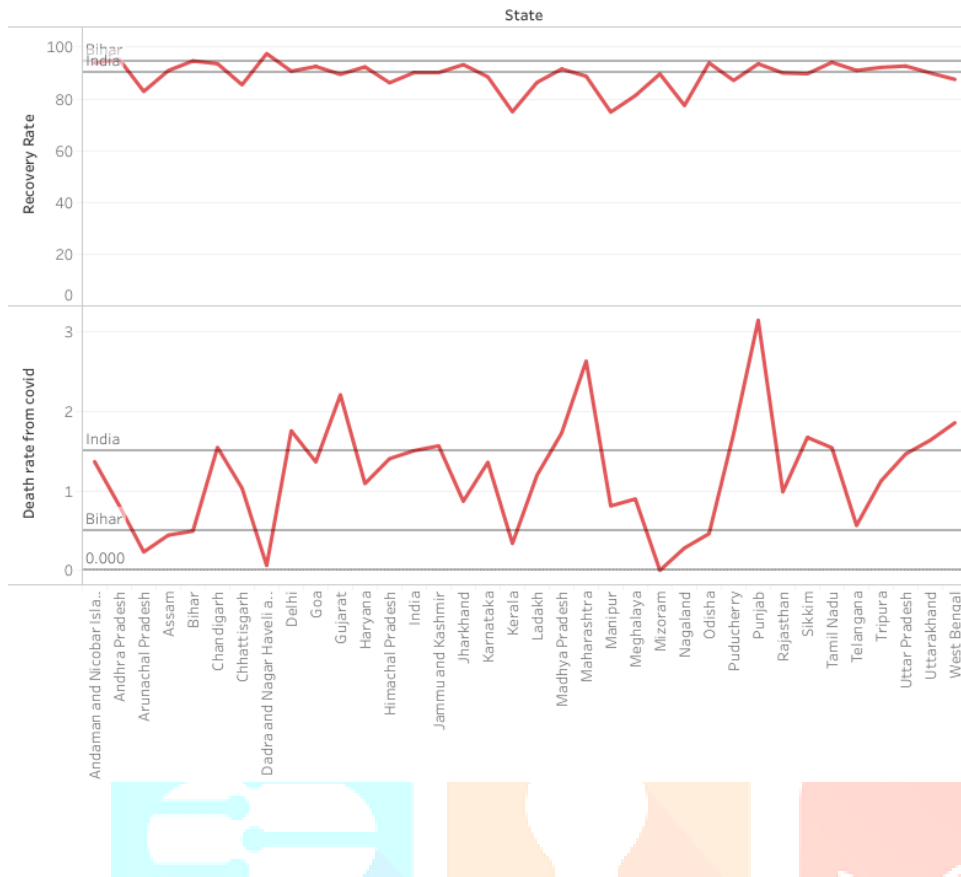
Confirmed COVID-19 cases for different states till Oct 25th



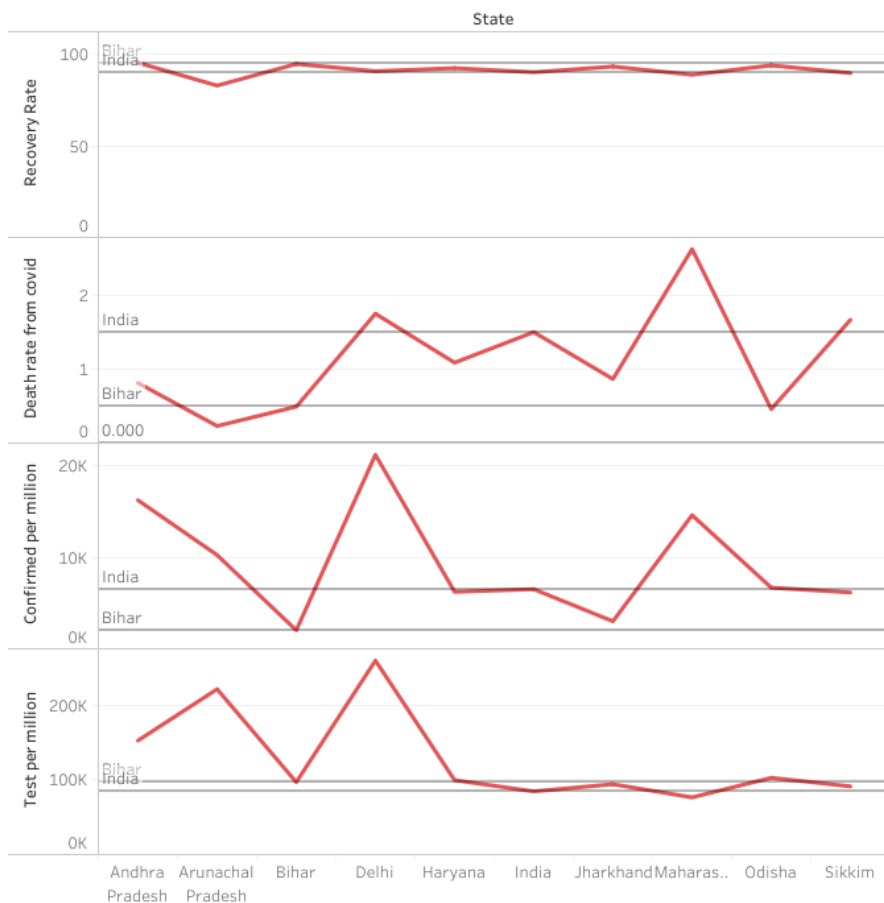
Confirmed cases and Test per million for COVID-19 cases in different states till Oct 25th



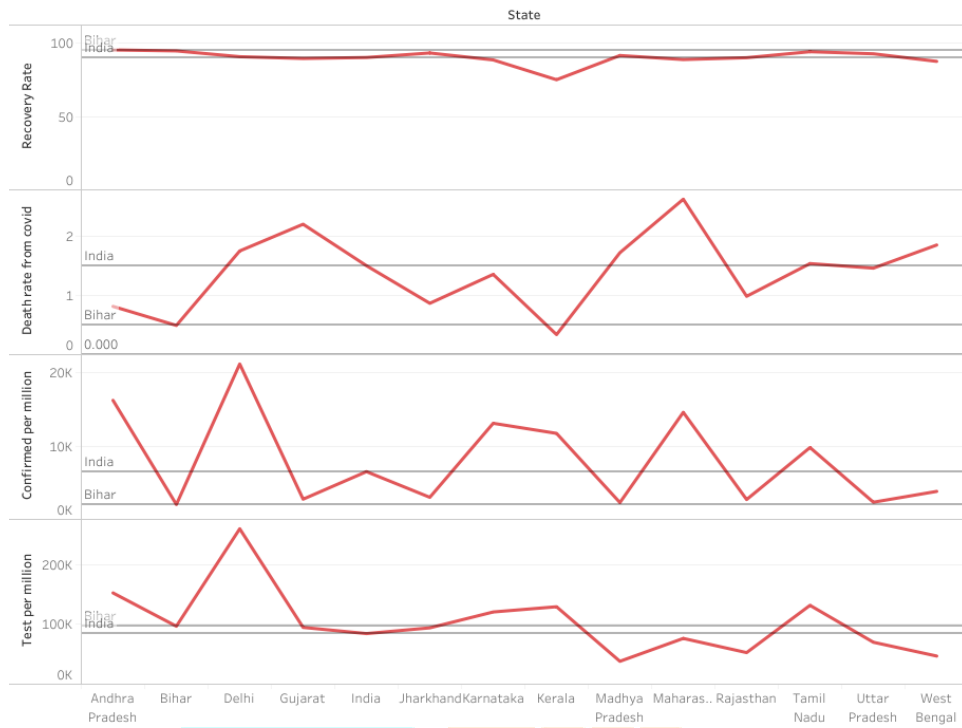
Recovery and Death rate from COVID-19 in different states till Oct 25th



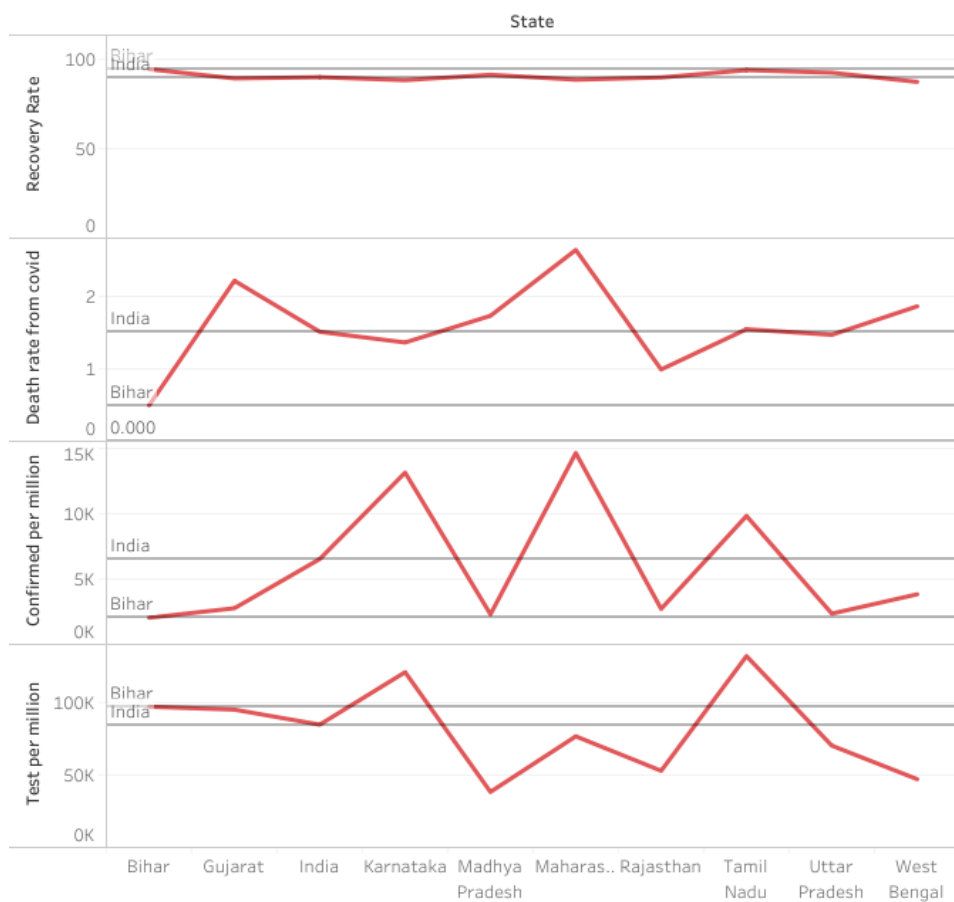
States which has gone through election in 2019 and 2020 with Bihar



States which has better Health Infrastructure as compared to Bihar



States with highest population size and Area



State	Summary			
	SUM(Confirmed per million)	SUM(Death rate from covid)	SUM(Recovery Rate)	SUM(Test per million)
Andhra Pradesh	16,278.25	0.81621	95.3599	152,699.56
Arunachal Pradesh	10,270.09	0.23221	82.9006	221,643.43
Assam	6,542.77	0.44375	90.9786	144,567.24
Bihar	2,038.36	0.49436	94.6878	97,016.09
Delhi	21,244.77	1.75463	90.7468	259,972.80
Goa	28,961.74	1.36357	92.5382	199,068.25
Gujarat	2,765.95	2.20670	89.5168	95,016.07
Haryana	6,244.37	1.09094	92.4058	99,692.20
Himachal Pradesh	2,967.40	1.40403	86.2445	53,662.40
India	6,531.79	1.50498	90.2004	84,670.31
Jharkhand	3,021.87	0.86873	93.2689	94,260.65
Karnataka	13,140.41	1.35834	88.5436	120,821.10
Kerala	11,762.27	0.33925	75.0539	129,569.78
Madhya Pradesh	2,302.85	1.72497	91.5563	38,301.57
Maharashtra	14,638.75	2.63000	88.7986	76,609.38
Punjab	4,708.88	3.14375	93.5824	89,344.33
Rajasthan	2,716.95	0.98742	90.0630	52,853.59
Sikkim	6,174.49	1.67109	89.7347	91,384.05
Tamil Nadu	9,827.22	1.54075	94.1425	131,918.21
Telangana	6,606.44	0.56518	91.0176	116,549.19
Uttar Pradesh	2,353.56	1.46341	92.7278	70,194.43
Uttarakhand	5,964.04	1.63577	90.0490	97,891.67
West Bengal	3,831.24	1.85501	87.5597	47,091.61

