SRI VENKATESWARA INTE
PROGRAM FOR RESEARCH IN CS
(SRI-VIPRA)

SRI-VIPRA

Project Report of 2023: SVP-2351

"Comparative Analysis of the State Government Budgets"

IQAC

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SRIVIPRA PROJECT 2023

Title: Comparative Analysis of the State Government Budgets

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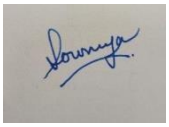
1		J Sowmya	521018	B.A (HONS) ECONOMICS SEM 5	
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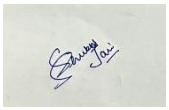
4		Shubhangi Jain	1921038	BSC(H) STATISTICS SEM 5	

Signature of Mentor

Certificate of Originality

This is to certify that the aforementioned students from Sri Venkateswara College have participated in the summer project SVP-2351 titled **"Comparative analysis of state government budgets"**. The participants have carried out the research project work under my guidance and supervision from 15 June, 2023 to 15th September 2023. The work carried out is original and carried out in a hybrid mode.

Signature of Mentor

Acknowledgements

We would like to express our heartfelt gratitude to all those who supported and guided us throughout the process of preparing this report.

First and foremost, we extend our sincere gratitude to our mentor, Mr. Abhishek Malhotra, for his invaluable insights, continuous encouragement, and unwavering support. His expertise and guidance played a pivotal role in shaping this project.

We are also indebted to the faculty at Sri Venkateswara College for providing a conducive learning environment and for their continuous encouragement. Special thanks to our esteemed Acting Principal, Mr. K C Singh, for his vision and commitment to academic excellence.

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INTRODUCTION

The quote by Mahatma Gandhi, "It is health that is real wealth and not pieces of gold and silver," emphasizes the importance of health as a fundamental asset that surpasses material wealth. This sentiment underscores the significance of prioritizing healthcare and well-being in any society, including India.

In India, healthcare is indeed a state subject, meaning that the responsibility for providing healthcare services falls primarily under the purview of state governments. This division of responsibility between the central and state governments is a feature of India's federal structure, where different states have varying degrees of autonomy in managing their healthcare systems.

The social sector expenditure in India encompasses various essential components, including nutrition, water supply, sanitation, housing, and welfare, in addition to healthcare and education. The allocation of funds to these sectors reflects the government's commitment to addressing the comprehensive needs of its population.

According to the National Health Accounts India 2005, state governments are responsible for about two-thirds of the total public spending on health, while the central government accounts for about one-third. This distribution of financial responsibility provides states with greater autonomy and flexibility in shaping their healthcare policies and programs to meet the specific needs of their populations.

However, an important question arises: Does government health expenditure translate into improved health outcomes? This is a critical concern because simply allocating funds does not guarantee effective healthcare delivery or positive health results. It depends on how efficiently the resources are utilized, the quality of healthcare infrastructure, and the implementation of healthcare policies.

Thus this study focuses on state government’s expenditure on the health sector in India. It includes a comparative analysis of budgetary allocations, healthcare infrastructure development, and recommendations for enhancing the quality of healthcare in the country. Such reports and analyses are vital for evaluating the effectiveness of government spending on health and identifying areas for improvement.

LITERATURE REVIEW

The research paper titled **'Spending to grow or growing to spend? Relationship between public health expenditure and income of Indian states' by Khushboo Balani, Sarthak Gaurav, and Arnab Jana** explores the complex relationship between public health expenditure and income at the state level in India. Since healthcare is primarily a state subject in India, understanding the dynamics of health expenditure at the state level is crucial for effective policy-making and resource allocation.

Here are some key points from the research paper:

1. Focus on State-Level Analysis: The paper focuses on 19 states in India and divides them into two categories: 8 underdeveloped states categorized as Empowered Action Group (EAG) states and 11 non-EAG states. This categorization helps in understanding how different states with varying levels of development allocate resources for healthcare.

2. Bidirectional Relationship: Contrary to some previous studies that found a unidirectional relationship between public health expenditure and income, this research reveals a bidirectional relationship in the short run. This means that not only does income affect health expenditure, but health expenditure also has an impact on income levels.

3. Nonlinear Granger Causality Test: The authors used a nonlinear Granger causality test to analyse the relationship between health expenditure and income. This statistical test helps in determining the direction of causality between the two variables.

4. Institutional and Governance Factors: The study takes into account institutional arrangements and the quality of governance as factors influencing the presence of the private health sector. This is crucial because the quality and efficiency of public health spending can vary significantly across states due to governance differences.

The report titled "**Government Health Expenditure in India: A Benchmark Study 2006" by the Economic Research Foundation** appears to provide an in-depth analysis of government spending on health and related areas in India. It examines various parameters, including the growth of total health expenditure, per capita spending by state governments, rural-urban disparities, and health outcomes.

One of the key concerns raised in this report is the increasing dominance of private spending on healthcare by households. This indicates a growing reliance on private healthcare services and infrastructure. Such a trend can have implications for healthcare accessibility and affordability, which are important considerations in the context of public health policy.

RESEARCH OBJECTIVE

The primary objective of this research paper is to comprehensively analyze the state government's expenditure allocations for Healthcare development in order to examine the historical trends and patterns of different healthcare outcomes. The research will help to assess the alignment of budget allocations with the healthcare needs and priorities of individual states and evaluate the mechanisms and institutional frameworks governing the disbursement and utilization of funds, focusing on efficiency, transparency, and accountability. The challenges faced by state governments in managing public healthcare sector through the years of Covid Pandemic and gives an idea of the readiness of the states to tackle if it happens again.

SCOPE OF RESEARCH

The scope of this research paper encompasses various dimensions of state government budgetary allocations for Healthcare sector development in the context of India. Specifically, the research will cover the following areas: The study will analyze budgetary data over a specified period to understand the historical trends and changes in state government allocations for healthcare development. The study considers budgetary data from 2018-19 to 2023-24 for healthcare expenditure by the state governments. The research will examine how budget allocations vary across different states, taking into account the diverse needs and priorities of each state. The study examines all the Indians states, divided into 4 Zones taking their geographical locations into account. Through case studies and empirical analysis, the research will evaluate the outcomes and impacts of state government expenditure on health, including the adequacy of healthcare providers, infrastructure, and improvements in the quality of life for citizens. The research will also consider the role and challenges faced by state governments in managing and executing the Healthcare Development. By addressing these objectives and within this scope, the research aims to provide a comprehensive understanding of the dynamics surrounding state government budgetary allocations to healthcare sector, with a focus on India. This analysis can inform the areas of needed improvement and actions for the betterment of the overall of Public healthcare standing of India.

RESEARCH METHODOLOGY

Data, Sample selection and Time Period:

The comparative analysis is based on secondary data and uses data from the fiscal year 2017-2018 to 2023-24. This analysis attempts to cover the 28 states of India by dividing them into 4 Zones.

Methodology:

The methodology adopted includes simple averages, percentages, and correlation coefficients. The data collected has been analysed using Excel.

1. **State Health Expenditure vs Total Budgeted Expenditure:** We use visual representation in the form of a double-line graph to show the trend of state health expenditure and total budgeted expenditure over the last five years.

2. **Out-of-Pocket Expenditure:** This parameter is analysed by finding the monthly per capita out-of-pocket expenditure on health as a share of monthly per-capita consumption expenditure.

3. Health Expenditure and Public Health Expenditure:

a. Availability of Surgeons, OB&GYN, Physicians, and Paediatricians:
We find the percentage of actual staff in position compared to the supposed required number of workforces in each state and assess how well they fulfil the requirements. A bar graph is used for visual representation.

b. Number of Government Hospitals and Number of Beds:
A double-line graph illustrates the extent of differences in the number of these parameters in each state.

4. **Infant Mortality Rate (IMR):** The rates of each state from 2017 to 2020 have been displayed to show the changes over the years. The percentage decrease until 2020 with respect to 2017 has been calculated to compare the outcomes between states.

5. **Relationship between Per-capita Health Expenditure and State Domestic Product**: The correlation coefficient between both parameters has been computed to observe the nature of the relationship between them. A stronger positive correlation indicates a better relationship.

ZONAL ANAYSIS OF HEALTH EXPENDITURE

According to the national council for applied economic research the Union health budget in India, is currently 0.35% of GDP in 2023-24, down from 0.42% in 2022-23 and 0.56% in 2021-22 through the pandemic. Even before the global pandemic, the figures seem to decline from 64,2% in 2013-14 to 48.2% in 2018-19. The 11th Five Year Plan had suggested scaling up government health spending to at least 2% of the GDP by 2012, which was later re-emphasized by the National Health Policy 2017 to raise public health spending to 2.5% of the GDP by 2025.
The following Zonal Analysis shows detailed analysis of budgetary expenditure and health outcomes as indicators of states divided into 4 zones according to their geographical location.

Zone 1

Includes the states of Tamil Nadu, Karnataka, Kerala, Andhra Pradesh, Telangana, Maharashtra and Goa

This section deals with the Analysis of the states the following states: Tamil Nadu, Karnataka, Kerala, Andhra Pradesh, Telangana, Maharashtra and Goa.
The following variables are broadly used to get a better idea of the Analysis: State Budgeted Health Expenditure, Out of Pocket Expenditure, Infant Mortality Rates, Net State Domestic Product, Per Capita Expenditure of each state. Data is going to be tabulated and graphed for clearer understanding.

State Government Health Expenditure (Budgeted)

- The national health policy 2017 recommended that the state sector health spending should be greater than 8% of the total budgetary expenditure by the year 2020.
- The annual state budgetary allocations towards healthcare have been on the rise and the allocations saw a steep jump in 2021-22 and 2022-23, owing to the pandemic.
- Maharashtra, Tamil Nadu and Andhra Pradesh have been the top spenders of the health sector since 2018-19.
- The data collected from 2018-19 to 2023-24 for the states of Karnataka, Kerala, Tamil Nadu, Goa, Andhra Pradesh, Telangana and Maharashtra shows that the allocations have been met only on three occasions by two states, namely Tamil Nadu (10.33%) for the fiscal year 2018-19 and by Goa for the fiscal years 2023-24 (9.24%) and 2022-23 (9.06%).
- Most of these states were able to maintain an average allocation ranging from 3%-6%.
- In absolute terms for the year 2023-24, Maharashtra recorded the highest allocation of Rs 25015, followed by Tamil Nadu, Andhra Pradesh, Karnataka, Telangana, Kerala and Goa.
- There is a significant jump in public spending in this sector post the implementation of the NHP 2017, although the 8% goal was not achieved uniformly by all the states in comparison, the policy did help push the states to significantly increase their absolute spending on health.

The graphs below show Size of the Budget and the State Government Expenditure on Health (Budgeted) for the states belonging to Zone 1 except for Goa, which has been excluded due to insufficient availability of data.

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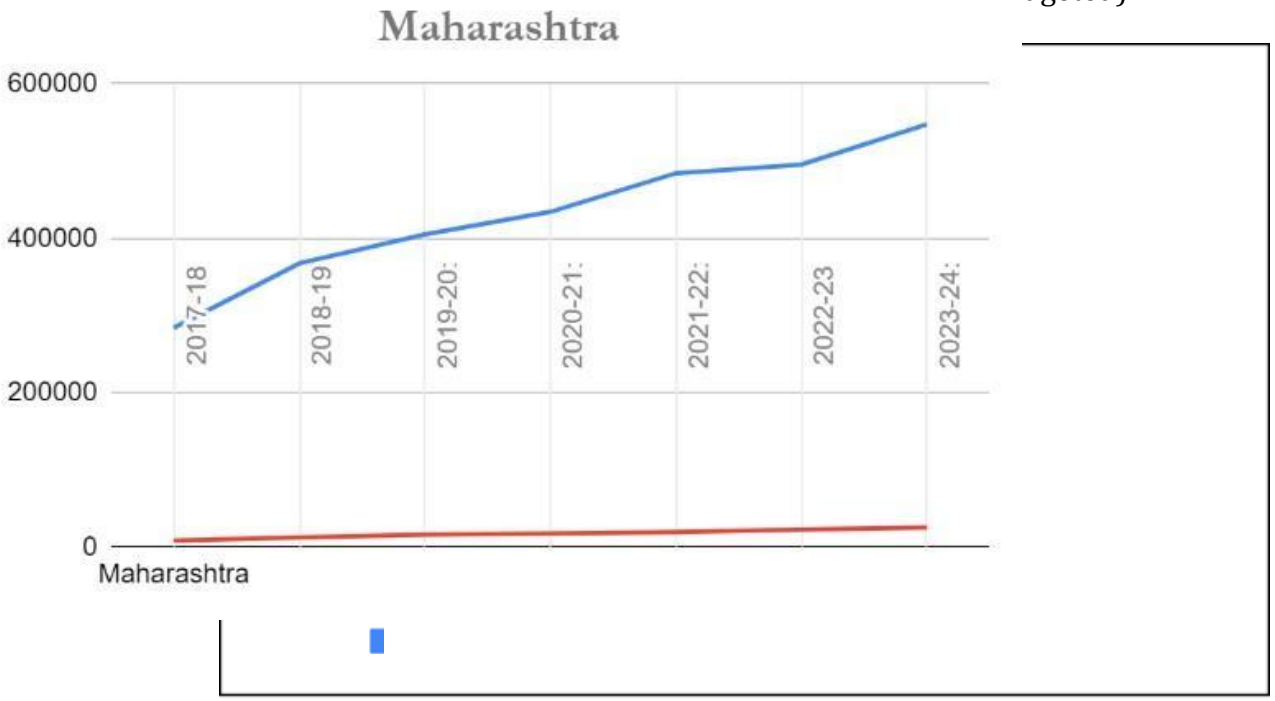
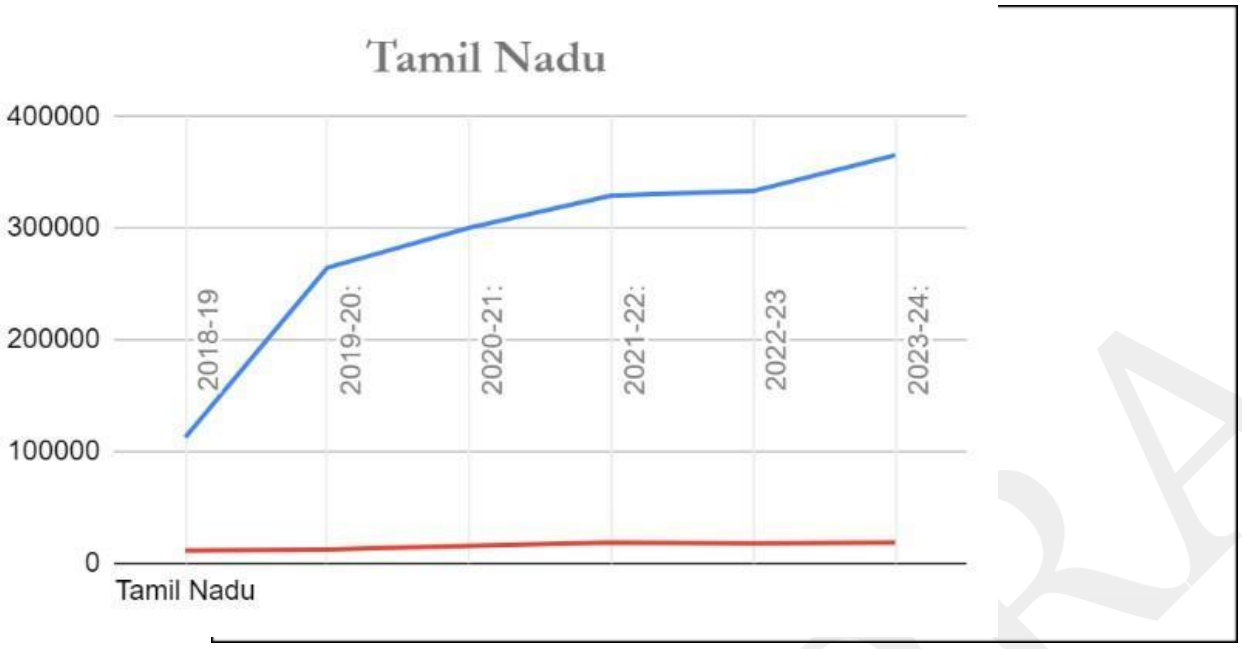


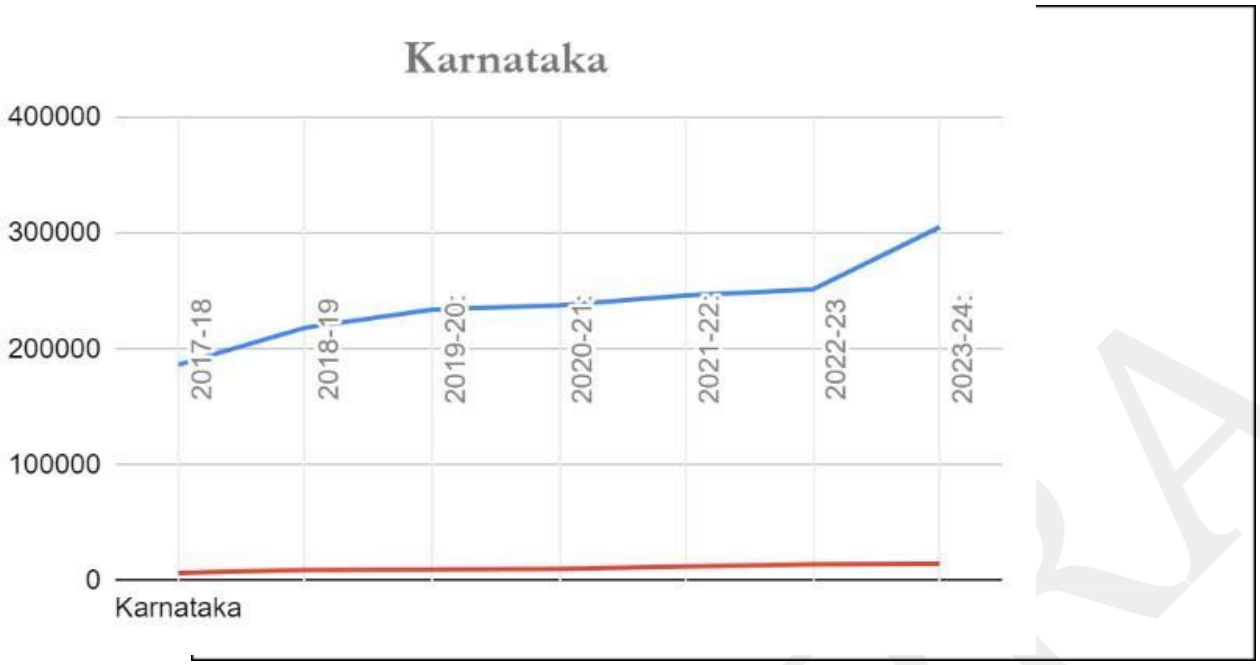


Size of the Budget

udgeted)

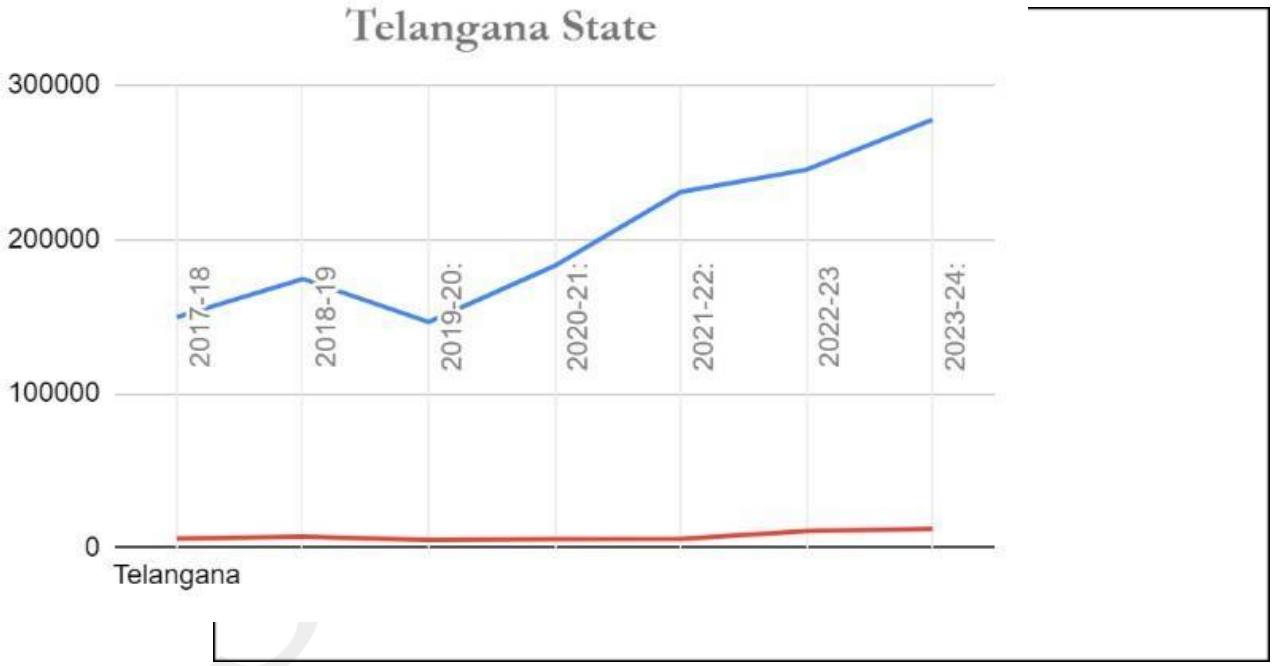
Size of the Budget

State Government Expenditure on Health (Budgeted)



Size of the Budget

State Government Expenditure on Health (Budgeted)



Size of the Budget

State Government Expenditure on Health (Budgeted)

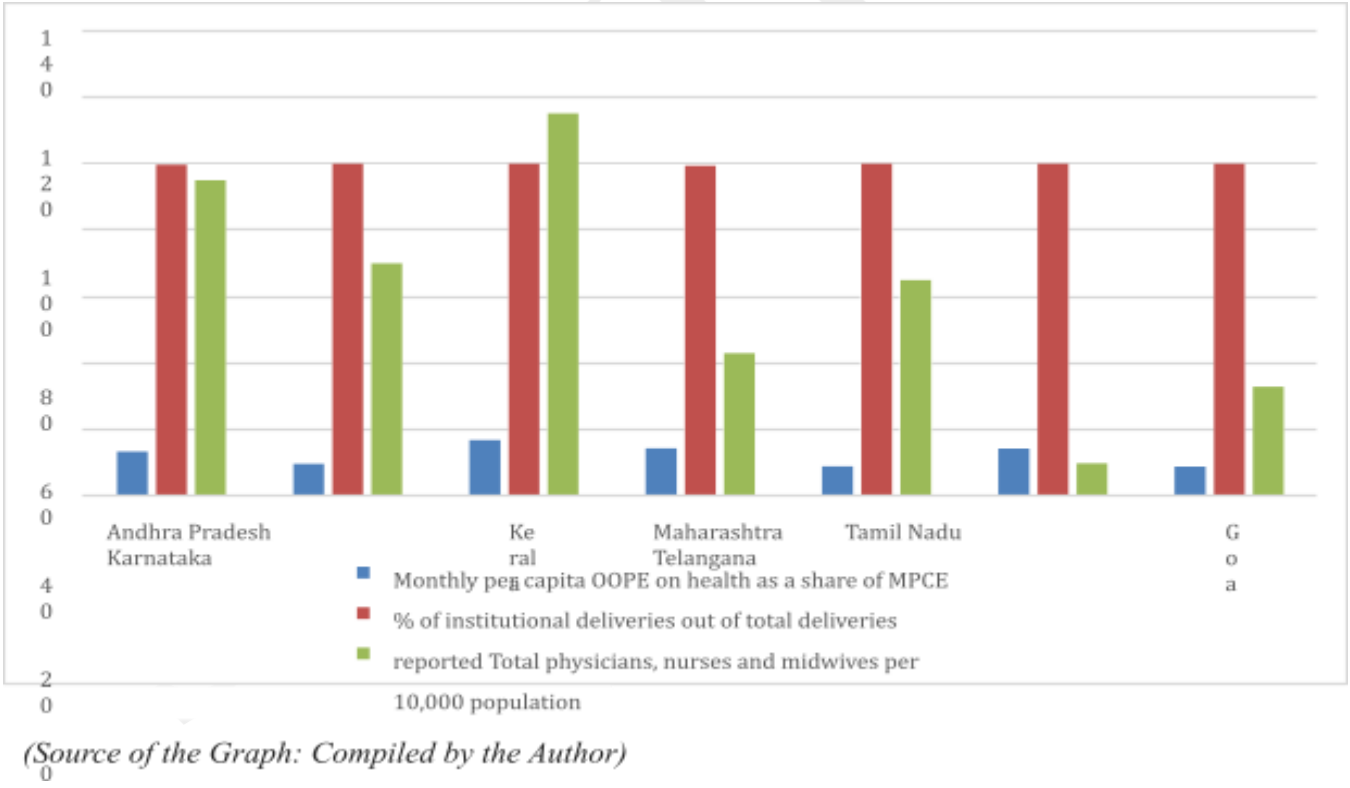
(Source of the Graph: Compiled by the Author)

Out of pocket expenditure

The measure of Out-of-Pocket Expenditure helps estimating how much are households in each state spending on health directly out of their pockets. This occurs when services are neither provided free of cost through a government health facility, nor is the individual covered under any public or private insurance or

Name of the State	Monthly per capita OOPE on health as a share of MPCE	% of institutional deliveries out of total deliveries reported	Total physicians, nurses and midwives per 10,000 population
Andhra Pradesh	13.5	99.6	95
Karnataka	9.8	99.9	70
Keral a	1 7	99.9	115
Maharashtra	14.5	99.3	43
Tamil Nadu	9. 1	99.9	65
Telangana	14.4	99.9	10
Goa		99.9	33

(Source: NITI Aayog)



(Source of the Graph: Compiled by the Author)

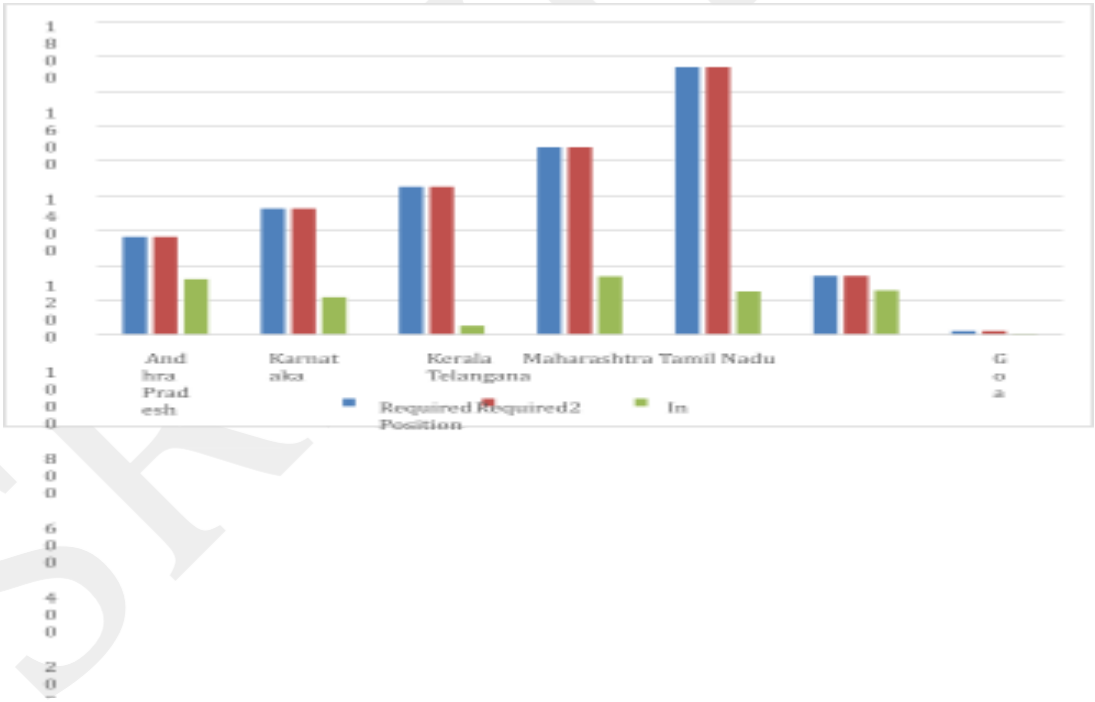
According to the data from Sustainable Development Goals India Index and Dashboard 2020-21, the share of OOPE recorded a decline. A fall in OOPE shows an overall progress towards ensuring financial protection and Universal Health Coverage for citizens.

Health Infrastructure and Public Health Centres:

The RBI's Handbook of Statistics on Indian States tries to capture the serious differences that exist in the requirement and actual availability of Surgeons, OB & GY, Physicians & Paediatricians for the year 2021. The table below is extracted from the source mentioned above:

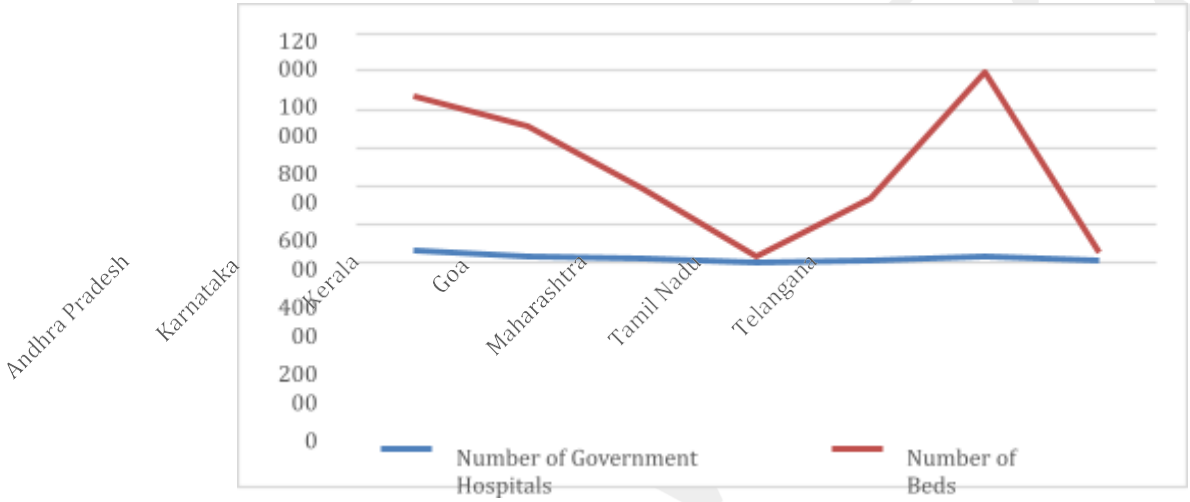
Name of the State	Required	In Position	% of In Position
Andhra Pradesh	564	322	57.09%
Karnataka	728	219	30.08%
Kerala	852	54	6.33%
Maharashtra	1080	337	31.2%
Tamil Nadu	1540	251	16.2
Telangana	340	258	75.88%
Goa	24	5	20.83%

The Data is graphed below:



States	Number of Government Hospitals	Number of Beds
Andhra Pradesh	6234	86721
Karnataka	2842	70474
Kerala	1284	38097
Goa	43	3086
Maharashtra	514	33028
Tamil Nadu	2507	99435
Telangana	677	5094

The above table can be visualized as below:



Infant Mortality Rates

IMR can be used as a measure of efficiency of health expenditure and these rates have been declining since 2015 but dropped significantly and at a faster rate from 2017 to 2020. The table below shows a comparison of the infant mortality rates for the years 2015, 2017 and 2020.

Name of the State	2020	2017	2015	% decrease since 2017
Andhra Pradesh	24	32	37	25
Karnataka	19	25	28	24
Kerala	6	10	12	40
Maharashtra	16	19	21	15.78
Tamil Nadu	13	16	19	18.75
Telangana	21	29	34	27.58

(Source: PIB, Ministry Health and Family Welfare, Posted on February 2022)

Per Capita Health Expenditure and SDP

According to the Report Titled 'Inter-State Equivalisation of Health Expenditures in the Indian Union' authored by M. Govinda Rao and Mita Chaudhary, the per capita health spending by states should have a positive correlation with the per capita GSDP, meaning that states having higher per capita GSDP, have a higher per capita health expenditure.

The per capita health expenditure (state level) of these states for the years 2019-20, 2020-21 and 2021-22 shows a slightly different story and is shown in the table given below:

Year	Andhra Pradesh		Karnataka		Kerala		Maharashtra	
	PCHE	NSDP	PCHE	NSDP	PCHE	NSDP	PCHE	NSDP
2021-22	2668.61	207771	1826.56	278786	2916.27	230601	1340.71	248632
2020-21	2222.14	176707	1548.36	236451	2224.13	205067	1258.95	193121
2019-20	2222.75	169320	1469.26	222002	2056.86	213041	1200.67	196100

Year	Tamil Nadu		Telangana		Goa	
	PCHE	NSDP	PCHE	NSDP	PCHE	NSDP
2021-22	2553.9	241131	1618.81	275443	11569.37	527146
2020-21	2161.62	212174	1577.99	231103	9786.5	431351
2019-20	1727.9	206165	1451.56	231378	9077.26	435949

(Source: RBI Handbook of Statistics on Indian States and Open Budgets India)

There does exist a clear disparity in Inter-state health expenditures, which could be due to differences in the preferences of the states for health services and/or due to differences in the capacity to allocate resources to the health sector. Since health services have nationwide externalities, it is important to ensure that the prescribed minimum level of spending is incurred in each state and this can be facilitated through specific transfers, so that each state is able to meet 8% criteria as mentioned in the National Health policy 2017.

From the table above, the correlation coefficient calculated to check the nature of relationship between the per capita health expenditure and per capita net gross domestic product is shown below

STATE	CCF	Nature
Andhra Pradesh	0.98	Good
Karnataka	0.99	Good
Kerala	0.88	Good
Maharashtra	0.88	Good
Tamil Nadu	0.92	Good
Telangana	0.68	Moderate
Goa	0.94	Good

(Calculations: Compiled by the Author)

In Zone 1, 6 out of the 7 states got the ranking 'Good' which is an indicator of the one of the best performances in relation to any other zone.

Inference

- **EXPENDITURE BY GOVERNMENT:** The 8% target set NHP 2017 was met only on 3 occasions by 2 states, namely Tamil Nadu (10.33%) for the fiscal year 2018-19 and by Goa for the fiscal years 2023-24 (9.24%) and 2022-23 (9.06%). The absolute spending of the zone 1 states has increased even though the target if 8% of State Budget is still far from being achieved.

- **PCHE & SDG:** Six out of seven states of Zone 1 have obtained the ranking 'Good' as they registered a high CCF. The states of zone 1 also registered a high degree of positive association between NSDP and per capita state health expenditure.

- **INFRASTRUCTURE**: In Kerala (6.33%) and Tamil Nadu (16.2%) there is a shortage of medical staff visible while Telangana has been sufficiently staffed at 75%.

- **IMR**: Kerala topped the table with a massive fall of 40% and most of the states did witness a significant fall in their IMR from 2017 to 2020.

Zone 2

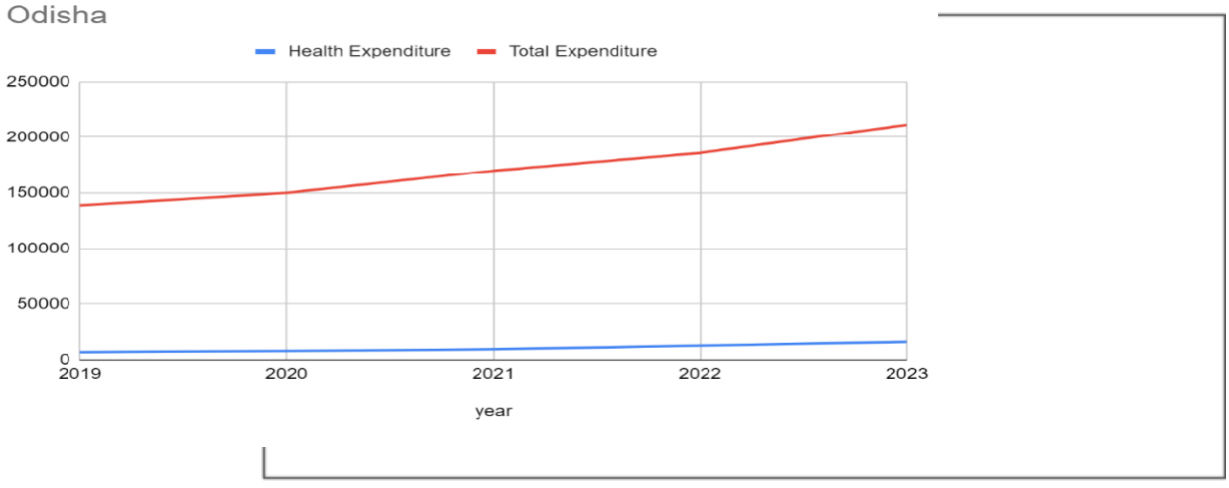
Includes the states of Odisha, West Bengal, Bihar, Jharkhand, Assam, Chhattisgarh and Madhya Pradesh

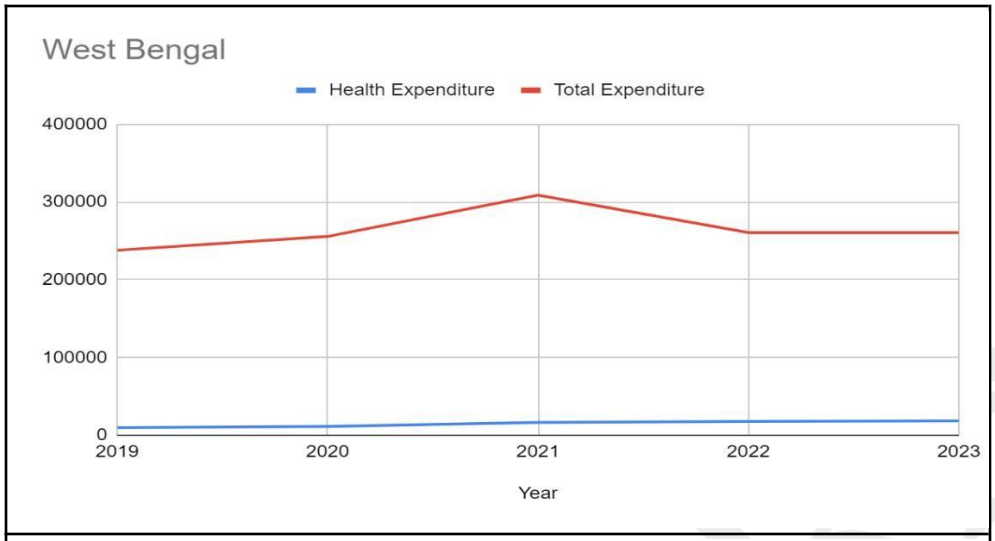
This section deals with the Analysis of Eastern and Central Indian States. The following variables are broadly used to get a better idea of the Analysis: State Budgeted Health Expenditure, Infant Mortality Rates, Net State Domestic Product, Per Capita Expenditure of each state. Data is going to be tabulated and graphed for clearer understanding.
The States include:

- Odisha
- West Bengal
- Bihar
- Assam
- Jharkhand
- Chhattisgarh
- Madhya Pradesh

Expenditure on Health in each State over the years

The annual state budgetary allocations towards healthcare have been on the rise and specifically the allocations saw a steep jump in 2021-22 and 2022-23, owing to the pandemic. The national health policy 2017 recommended that the state sector health spending should be greater than 8% of the total budgetary expenditure by the year 2020. But the data collected from 2018-19 to 2023-24 for the states of Odisha, West Bengal, Bihar, Jharkhand, Assam, Chhattisgarh and Madhya Pradesh showed that the allocations have not been met.
Most of these states were able to maintain their allocation towards healthcare at an average ranging from 0.7%-2.24%. While in absolute terms for the year 2023-24, Bihar recorded the highest allocation of 1.94% of GSDP, followed by Odisha, Jharkhand, Chhattisgarh, Assam, Madhya Pradesh and West Bengal. There is a jump in public spending in this sector post the implementation of the NHP 2017, although the 8% goal was not achieved uniformly by all the states in comparison, the policy did help push the states to significantly increase their absolute spending on health.
The following graphs show the state wise health allocations made over the years:




West Bengal
Health Expenditure
Total Expenditure
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0
2019
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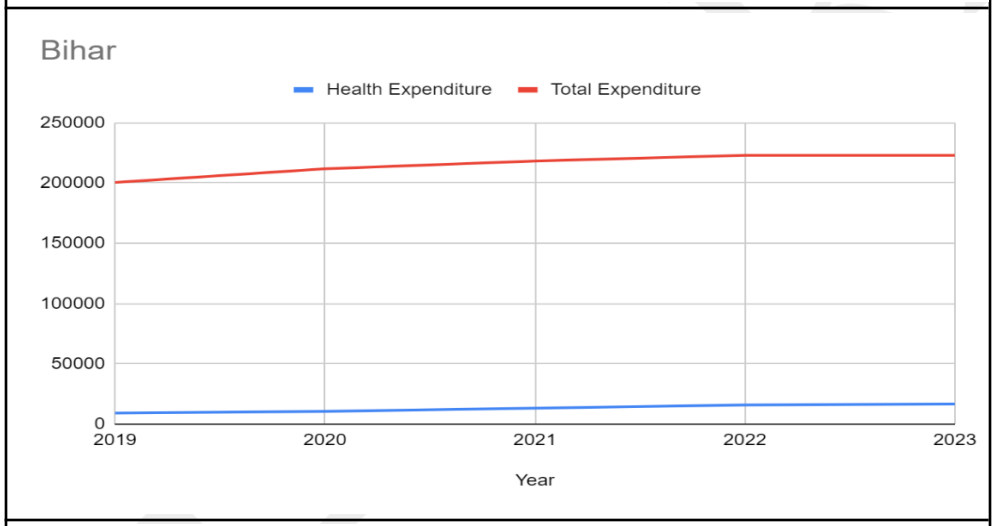
Bihar
Health Expenditure
Total Expenditure
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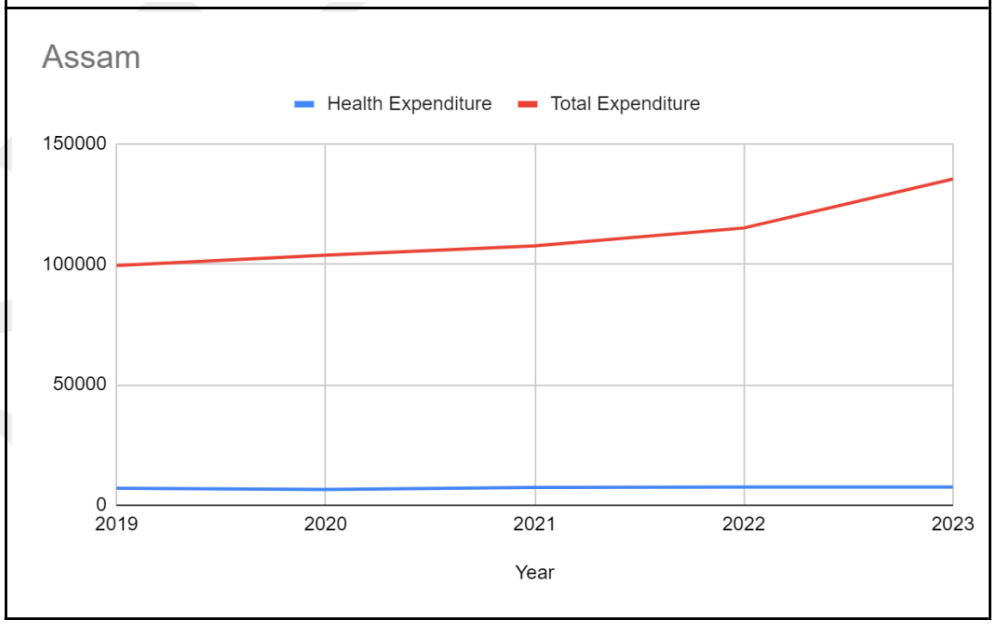
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Health Expenditure
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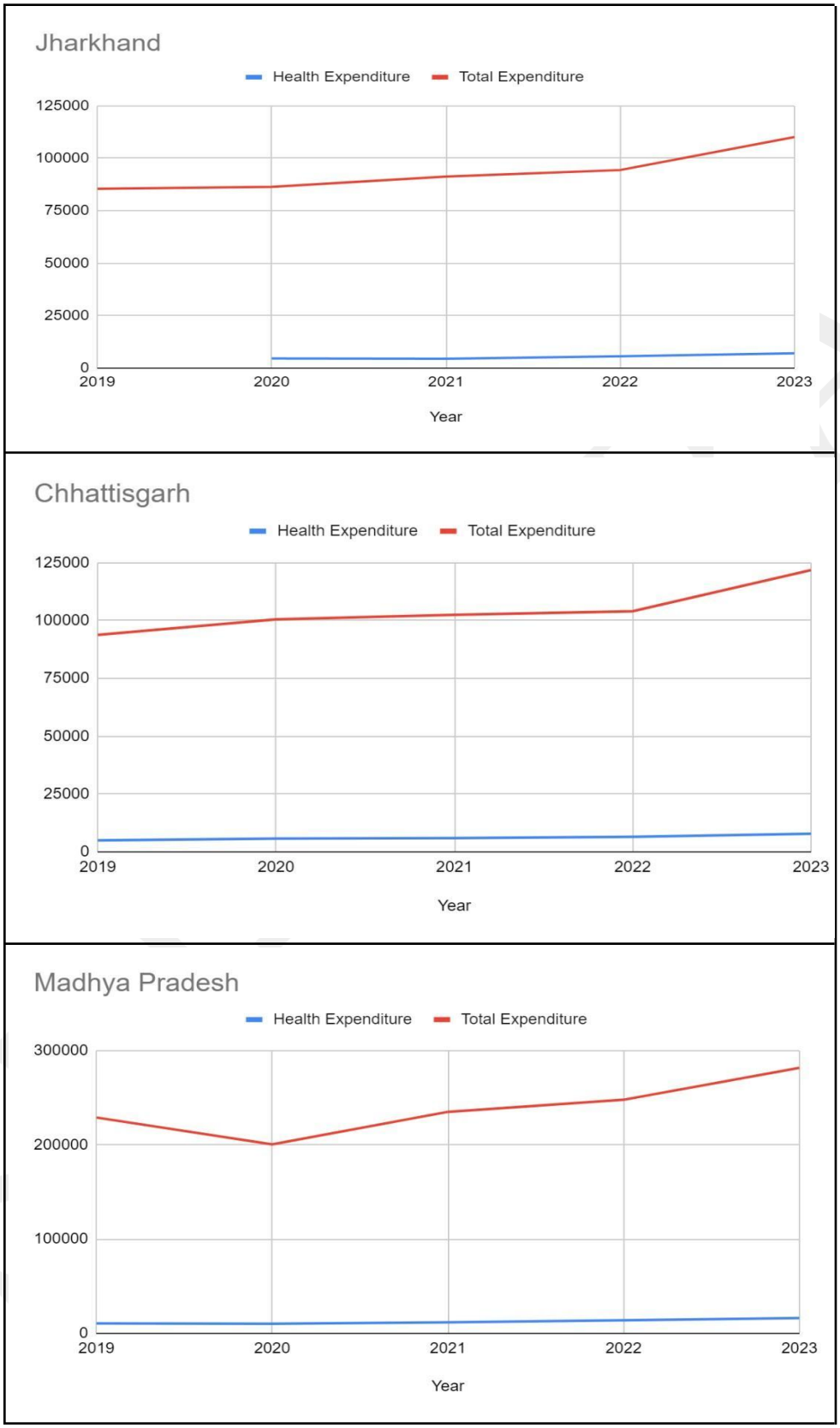


(Source of the Graph: Compiled by the Author)

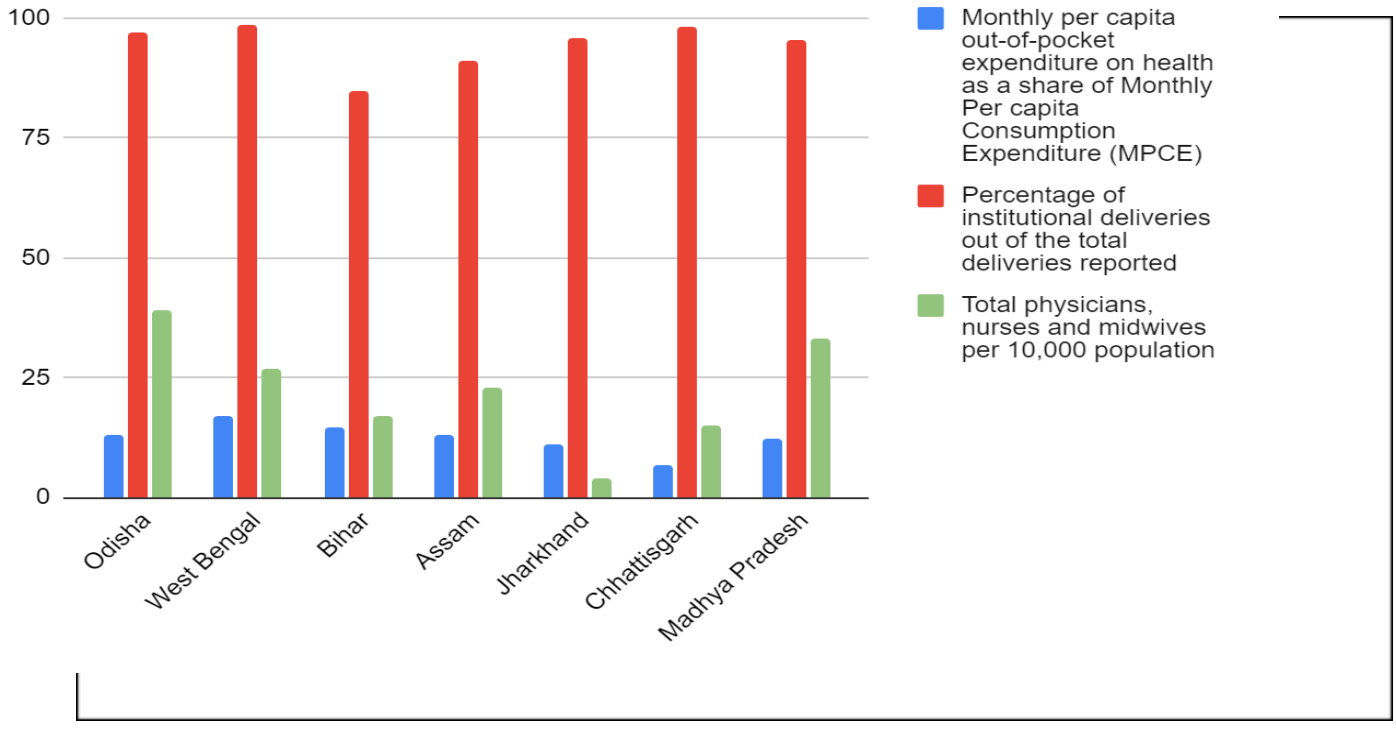
Out-of-Pocket Expenditure

The measure of Out-of-Pocket expenditure can be a good indicator for the comparative analysis. The share of Out-of-Pocket Expenditure (OOPE) in total health expenditure declined from 62.6% to 47.1%. The following table shows the data from the Sustainable Development Goals India -Index and Dashboard 2020-21

States	Monthly per capita out-of-pocket expenditure on health as a share of Monthly Per capita Consumption Expenditure (MPCE)	Percentage of institutional deliveries out of the total deliveries reported	Total physicians, nurses and midwives per 10,000 population
Odisha	13.1	97.2	39
West Bengal	16.9	98.6	27
Bihar	14.5	84.8	17
Assam	12.9	91.1	23
Jharkhand	11	95.8	4
Chhattisgarh	6.6	98.3	15
Madhya Pradesh	12.2	95.6	33

Out-of-Pocket Expenditure and healthcare outcomes

(Source: NITI Aayog)



(Source of the Graph: Compiled by the Author)

Health Infrastructure and Public Health Centers (PHC)

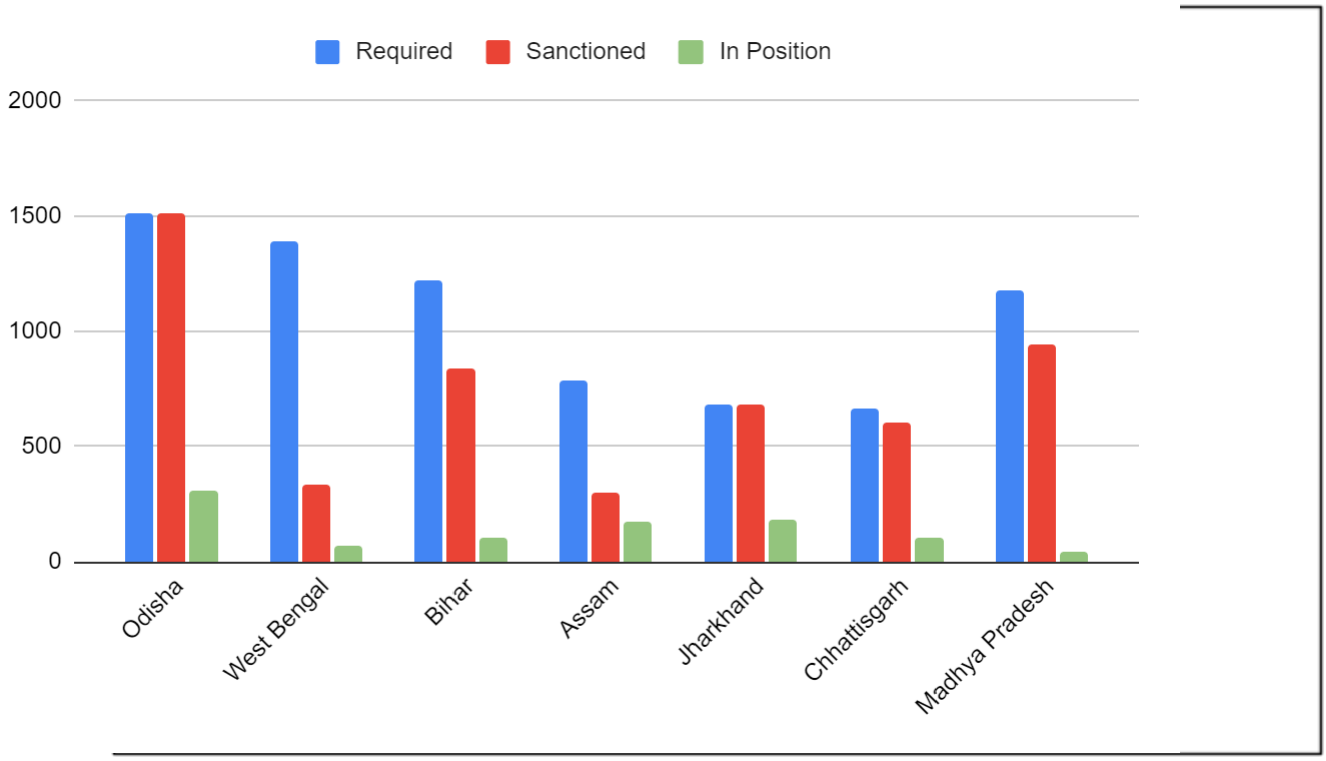
Another parameter we can take under study is the number of **Government hospitals** in each state and the number of **Surgeons, OB&GY, Physicians & Pediatricians** as it tells us about the extent of accessibility and availability of healthcare systems in the state.

States	Required (R)	Sanctioned	In Position (IP)	IP/R %	Conclusion
Odisha	1508	1511	309	20.49	Good
West Bengal	1392	328	67	4.81	Poor
Bihar	1224	836	106	8.66	Moderate
Assam	788	300	174	22.08	Good
Jharkhand	684	684	186	27.19	Good
Chhattisgarh	664	606	104	15.66	Moderate
Madhya Pradesh	1180	945	43	3.64	Poor

No. of Government Hospitals and No. of surgeons and, OB&GY, Physicians & Paediatricians in year 2021

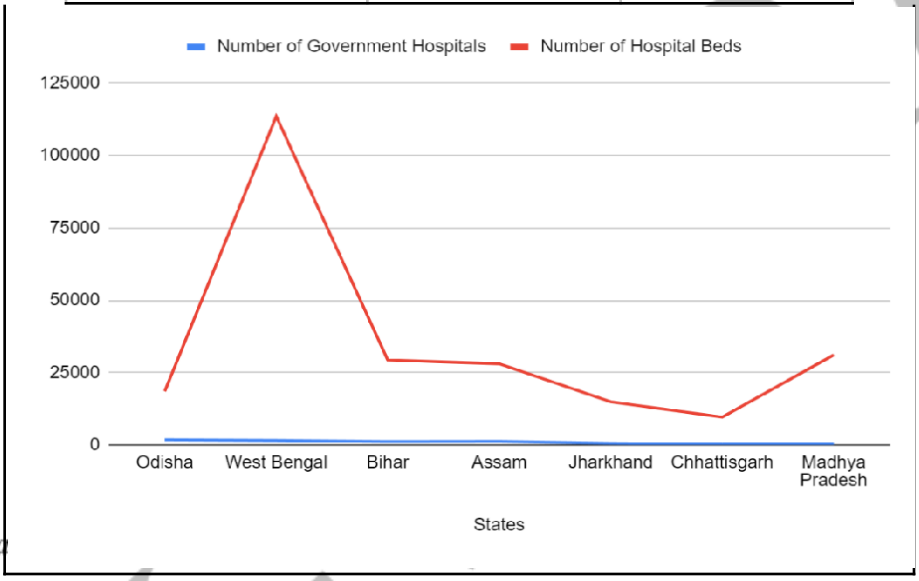
(Source- RBI Handbook of Statistics on Indian States)

The above table can be analyzed by the visual representation:



(Source of the Graph: Compiled by the Author)

States	Number of Government hospitals	Number of Hospital Beds
Odisha	1806	18519
West Bengal	1566	113535
Bihar	1147	29339
Assam	1226	28039
Jharkhand	555	14891
Chhattisgarh	214	9610
Madhya Pradesh	465	31106



(Source- RBI Ha
States)

Infant Mortality Rate

Infant Mortality Rate (IMR) can be used as an indicator whether the efforts of state policies and investments had any effect on the basic aspect of healthcare. These rates have been declining since 2015 but dropped significantly and at a faster rate from 2017 to 2020 in some states. The table below shows a comparison of the infant mortality rates for the years 2017, 2018, 2019 and 2020 with the % decrease of IMR rates respectively.

States	2017	2018	2019	2020	%Dec
Odisha	41	40	38	36	12.20
West Bengal	24	22	20	19	20.83
Bihar	35	32	29	27	22.86
Assam	44	41	40	36	18.18
Jharkhand	29	30	27	25	13.79
Chhattisgarh	38	41	40	38	0.00
Madhya Pradesh	47	48	46	43	8.51

(Source: PIB, Ministry Health and Family Welfare, Posted on February 2022)

Relation Between PCHE and SDP

According to the Report Titled 'Inter-State Equivalization of Health Expenditures in the Indian Union' authored by M. Govinda Rao and Mita Chaudhary, the per capita health spending by states should have a positive correlation with the per capita GSDP, meaning that states having higher per capita GSDP, have a higher per capita health expenditure.

The per capita health expenditure of these states for the years 2018-19, 2019-20 and 2020-21 shows a slightly different story and is shown in the table given below:

State	Odisha		West Bengal		Bihar		Assam	
Year	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**
2018-19	1392.68	98005	932.11	103944	658.63	40715	1582.81	81034
2019-20	1528.54	92486	1007.6	113163	801.14	44230	2051.69	90123
2020-21	1719.68	101501	1161.58	121267	897.3	43605	1869.61	86857

State	Jharkhand		Chhattisgarh		Madhya Pradesh	
Year	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**
2018-19	1033.94	75421	1750.33	98254	1036.09	92486
2019-20	1104.62	75016	1746.48	105089	1293.22	103103
2020-21	1204.89	71071	1986.6	104943	1217.15	104894

PCHE- Per Capita Health Expenditure SDP- Per Capita Net State Domestic Product

(Source: RBI Handbook of Statistics on Indian States and Open Budgets India)

From the table above, the correlation coefficient calculated to check the nature of relationship between the per capita health expenditure and per capita net gross domestic product is shown below

STATE	C.C. F	Nature
ODISHA	0.4724345114	Moderate
BIHAR	0.8368054145	Good
JHARKHAND	-0.9428782977	Bad
WB	0.9731814508	Good
MP	0.9106233968	Good
ASSAM	0.9994627502	Good
CHHATTISGARH	0.4714246792	Moderate

(Calculations: Compiled by the Author)

Inference

EXPENDITURE BY GOVERNMENT: The National Health Policy 2017 advises states to allocate over 8% of their budget to health, but none of the states in Zone 2 have been able to reach the feat. Most of these states were able to maintain their allocation towards healthcare at an average ranging from 0.7%-2.24%.

INFRASTRUCTURE: The healthcare infrastructure in the Zone 2 states is lacking, with staff availability ranging from 3% to 27% of what is required. West Bengal and Madhya Pradesh in particular, have a dire shortage of doctors and surgeons, with 4.81% and 3.64% of positions filled in these critical roles respectively.

IMR: States have reduced their Infant Mortality Rate (IMR) by an average of 13.7% in 2020, lowering the average from 36.85% from 2017. Bihar has seen the highest decrease compared to others, with an 22.86% reduction, while Chhattisgarh has the lowest decrease in IMR.

SDG and PCHE: The aim of calculating this statistic is to identify a positive or negative relationship between the State Domestic Product and Per Capita Health Expenditure, in other words, how much does expenditure on health by a person increases, with increase in the domestic product of the states.
For Jharkhand, this value came out to be negative which implies negative relation between the two.

Zone 3

Includes the states of Haryana, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Punjab, Rajasthan and Gujarat

This section deals with the Analysis of Northern and Western Indian States. The following variables are broadly used to get a better idea of the Analysis: State Budgeted Health Expenditure, Infant Mortality Rates, Net State Domestic Product, Per Capita Expenditure of each state. Data is going to be tabulated and graphed for clearer understanding.
The States include:

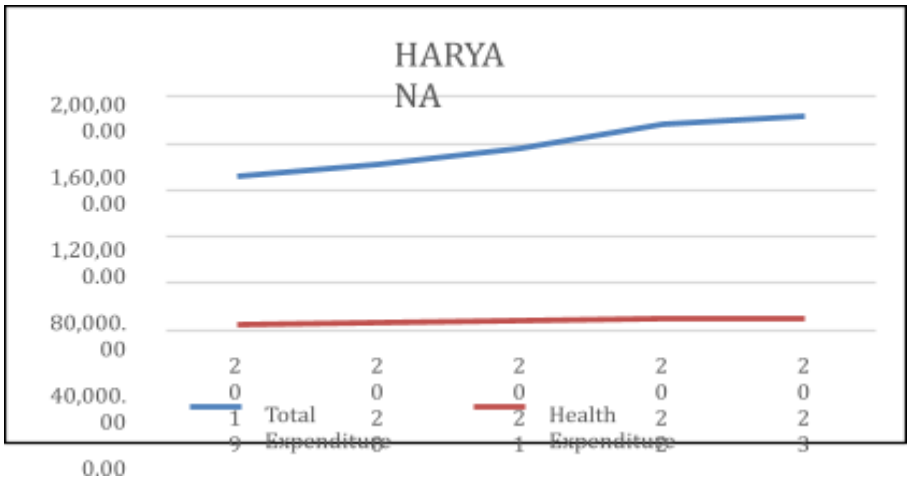
- Haryana
- Uttar Pradesh
- Uttarakhand
- Himachal Pradesh
- Punjab
- Rajasthan
- Gujarat

Expenditure on Health in each State over the years

The annual state budgetary allocations towards healthcare have been on the rise and specifically the allocations saw a steep jump in 2021-22 and 2022-23, owing to the pandemic. The national health policy 2017 recommended that the state sector health spending should be greater than 8% of the total budgetary expenditure by the year 2020. But the data collected from 2018-19 to 2023-24 for the states of Haryana, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Punjab, Rajasthan and Gujarat showed that the allocations have not been met.

Most of these states were able to maintain their allocation towards healthcare at an average ranging from 0.54%-2.00%. While in absolute terms for the year 2023-24, Uttar Pradesh recorded the highest allocation of 1.94% of GSDP, followed by Himachal Pradesh, Uttarakhand, Rajasthan, Haryana, Punjab and Gujarat. There is a jump in public spending in this sector post the implementation of the NHP 2017, although the 8% goal was not achieved uniformly by all the states in comparison, the policy did help push the states to significantly increase their absolute spending on health.

The following graphs show the state wise health allocations made over the years:


HARYANA
2,00,000.00
1,60,000.00
1,20,000.00
80,000.00
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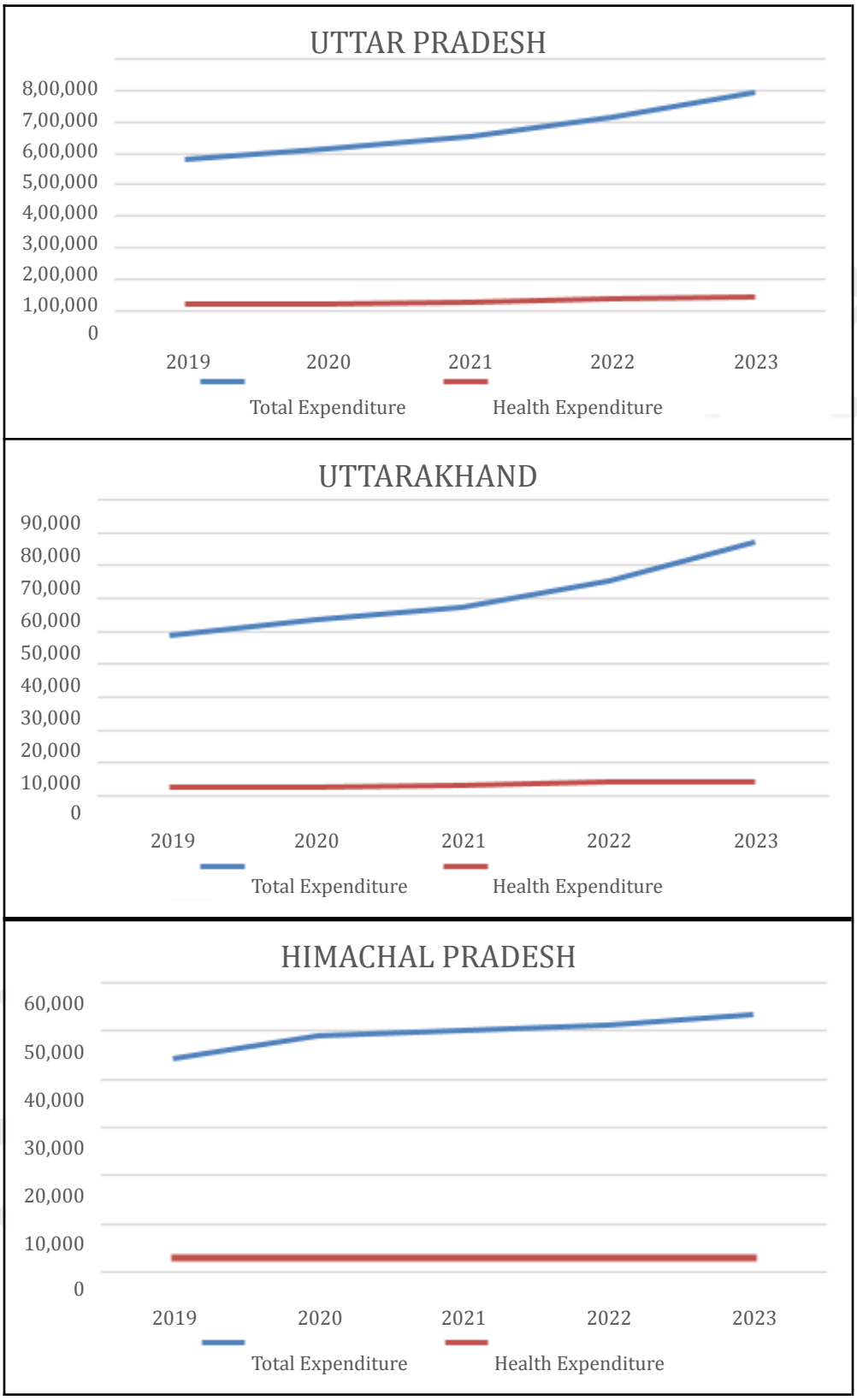
2019
2022
2021
2023
Total Expenditure
Health Expenditure


UTTAR PRADESH
8,00,000
7,00,000
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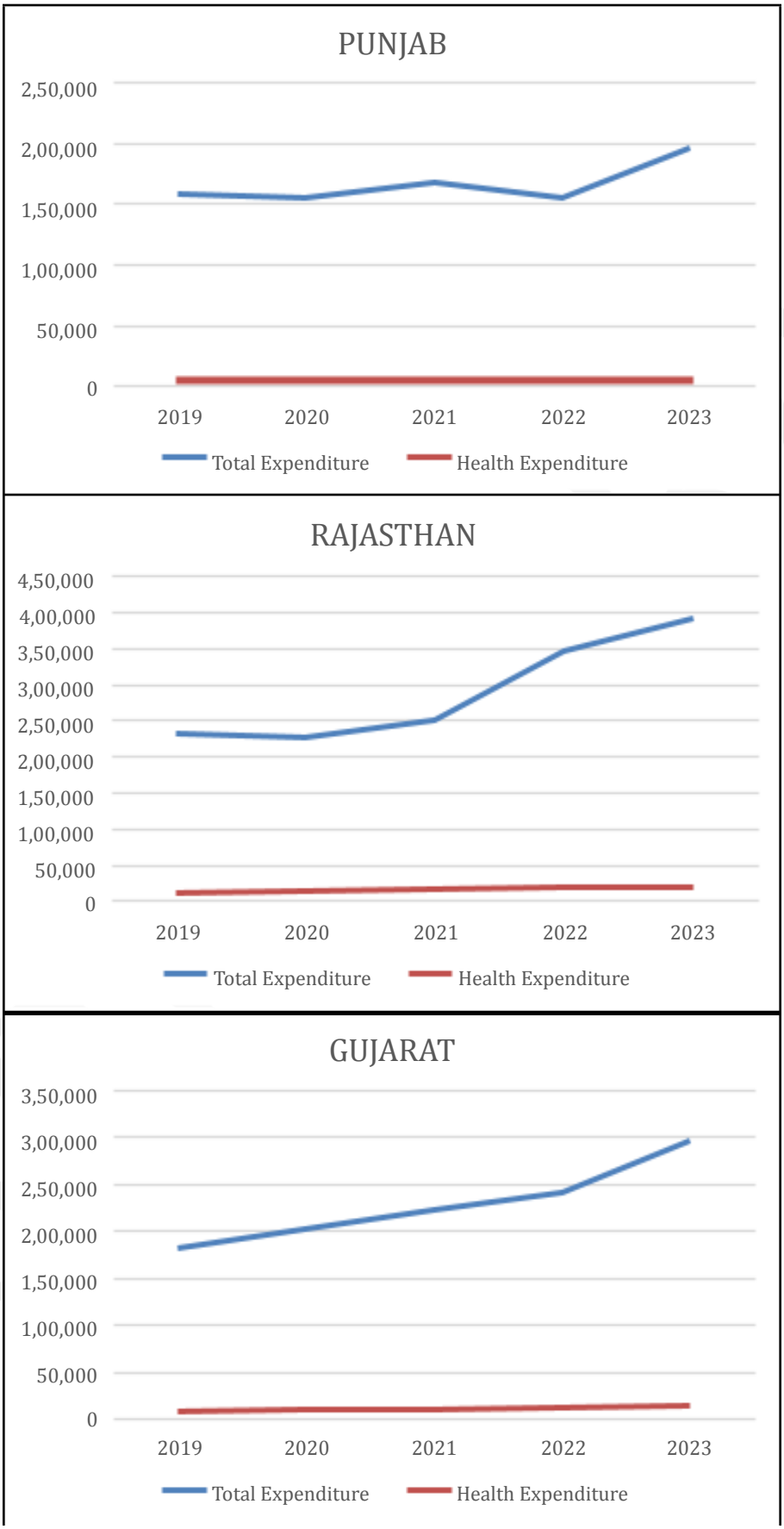
Total Expenditure
Health Expenditure
UTTARAKHAND
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
2019
2020
2021
2022
2023
Total Expenditure
Health Expenditure
HIMACHAL PRADESH
60,000
50,000
40,000
30,000
20,000
10,000
0
2019
2020
2021
2022
2023
Total Expenditure
Health Expenditure

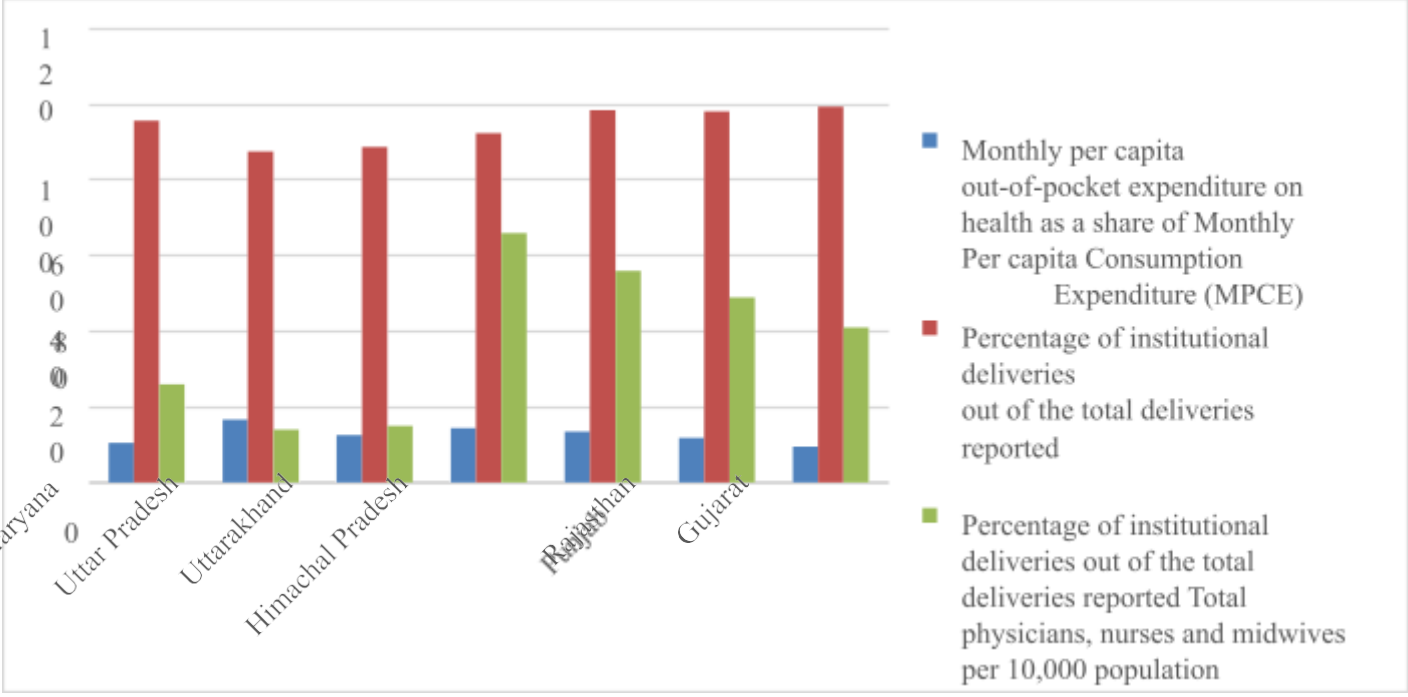


(Source of the Graph: Compiled by the Author)

Out-of-Pocket Expenditure

The measure of Out-of-Pocket expenditure can be a good indicator for the comparative analysis. The share of Out-of-Pocket Expenditure (OOPE) in total health expenditure declined from 62.6% to 47.1%. The following table shows the data from the Sustainable Development Goals India -Index and Dashboard 2020- 21

States	Monthly per capita out-of-pocket expenditure on health as a share of Monthly Per capita Consumption Expenditure (MPCE)	Percentage of institutional deliveries out of the total deliveries reported	Total physicians, nurses and midwives per 10,000 population
Haryana	10.4	95.7	26
Uttar Pradesh	16.6	87.6	14
Uttarakhand	12.5	88.8	15
Himachal Pradesh	14.4	92.4	66
Punjab	13.5	98.5	56
Rajasthan	11.8	98.2	49
Gujarat	9.5	99.5	41



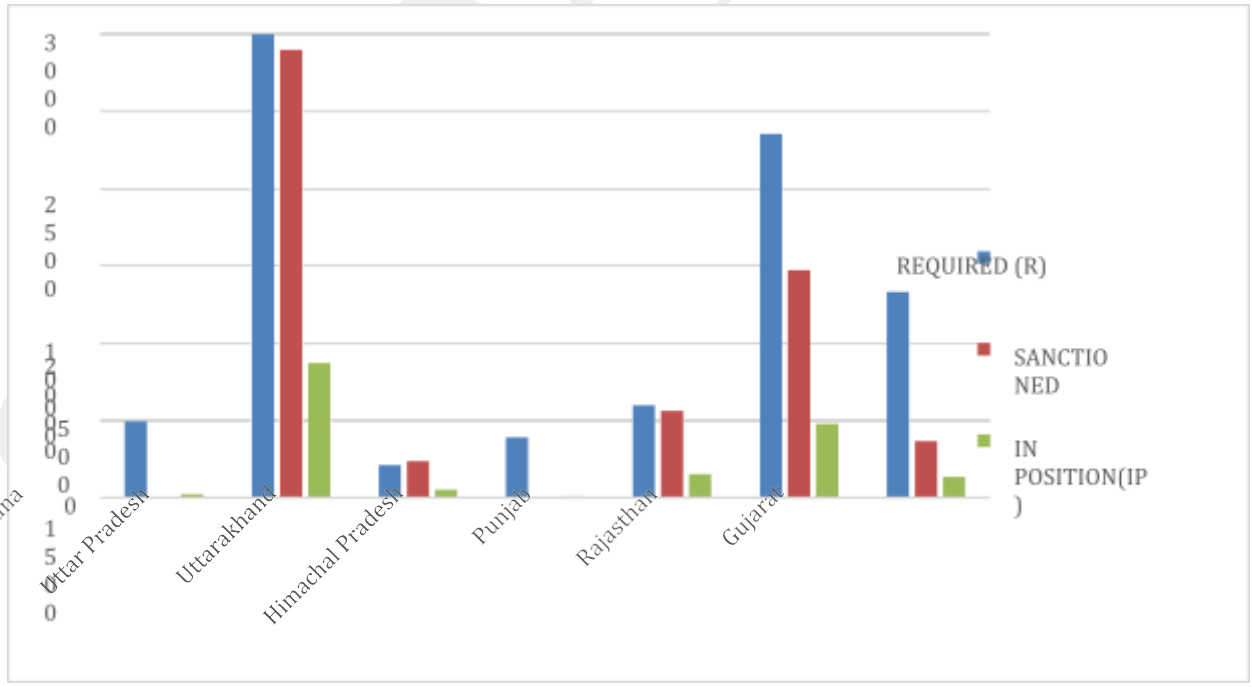
(Source: NITI Aayog)

Health Infrastructure and Public Health Centers (PHC)

Another parameter we can take under study is the number of Government hospitals in each state and the number of Surgeons, OB&GY, Physicians & Pediatricians as it tells us about the extent of accessibility and availability of healthcare systems in the state.

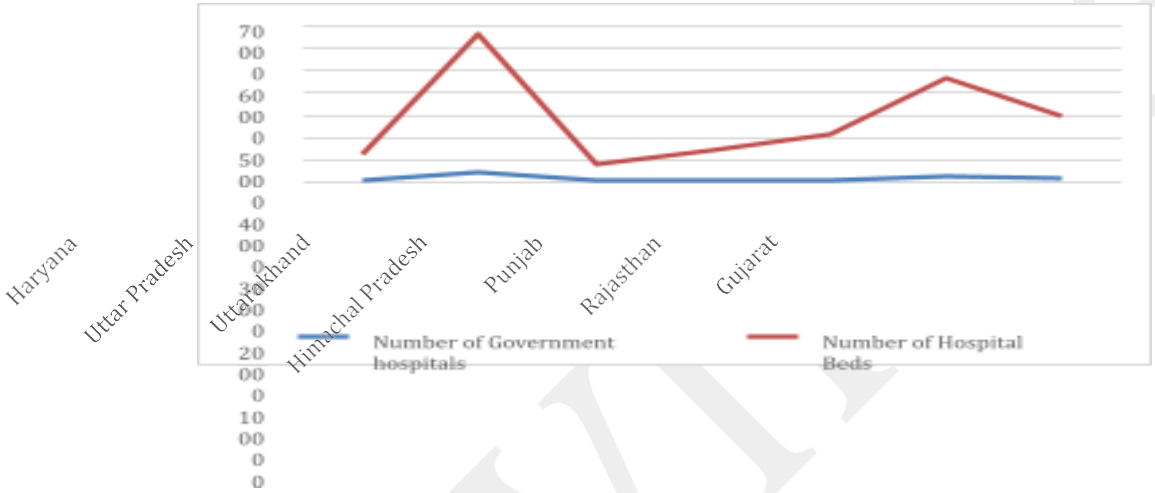
States	Required (R)	Sanctioned	In position (IP)	IP/R %	Conclusion
Haryana	496	0	22	4.435484	Poor
Uttar Pradesh	3012	2902	872	28.95086	Good
Uttarakhand	212	236	52	24.5283	Good
Himachal Pradesh	392	-	8	2.040816	Poor
Punjab	600	562	153	25.5	Good
Rajasthan	2356	1473	479	20.33107	Good
Gujarat	1332	366	135	10.13514	Moderate

The above table can be analyzed by the visual representation:



(Source of the Graph: Compiled by the Author)

States	Number of Government hospitals	Number of Hospital Beds
Haryana	678	12590
Uttar Pradesh	4683	66700
Uttarakhand	618	8106
Himachal Pradesh	822	14782
Punjab	816	21241
Rajasthan	2849	46778
Gujarat	2245	29402



(Source- RBI Handbook of Statistics on Indian States)

Infant Mortality Rate (IMR)

Infant Mortality Rate can be used as an indicator whether the efforts of state policies and investments had any effect on the basic aspect of healthcare. These rates have been declining since 2015 but dropped significantly and at a faster rate from 2017 to 2020 in some states. The table below shows a comparison of the infant mortality rates for the years 2015, 2017 and 2020.

States	2017	2018	2019	2020	%Dec
Haryana	30	30	27	28	6.67
Uttar Pradesh	41	43	41	38	7.32
Uttarakhand	32	31	27	24	25.00
Himachal Pradesh	22	19	19	17	22.73
Punjab	21	20	19	18	14.29
Rajasthan	38	37	35	32	15.79
Gujarat	30	28	25	23	23.33

(Source: PIB, Ministry Health and Family Welfare, Posted on February 2022)

Relation Between PCHE and SDP

According to the Report Titled 'Inter-State Equivalization of Health Expenditures in the Indian Union' authored by M. Govinda Rao and Mita Chaudhary, the per capita health spending by states should have a positive correlation with the per capita GSDP, meaning that states having higher per capita GSDP, have a higher per capita health expenditure.

The per capita health expenditure of these states for the years 2018-19, 2019-20 and 2020-21 shows a slightly different story and is shown in the table given below:

STATE	**Haryana**		**Uttar Pradesh**		**Uttarakhand**		**Himachal Pradesh**	
YEAR	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**
2018-19	1679.03	223015	984.1	62350	2246.83	186207	3528.16	174804
2019-20	1741.36	240507	1104.24	65666	2363.01	188441	3781.13	185728
2020-21	2229.06	235707	1193.61	61666	2368.96	182698	4077.04	183333

STATE	**Punjab**		**Rajasthan**		**Gujarat**	
YEAR	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**
2018-19	1173.19	149974	1672.95	106624	1444.62	197457
2019-20	1271.98	154385	1680.21	115356	1539.46	212428
2020-21	1416.38	149894	1870.07	115933	1625.33	212821

PCHE- Per Capita Health Expenditure **SDP**- Per Capita Net State Domestic Product

(Source: RBI Handbook of Statistics on Indian States and Open Budgets India)

From the table above, the correlation coefficient calculated to check the nature of relationship between the per capita health expenditure and per capita net gross domestic product is shown below:

STATE	C.C.F.	NATURE
Haryana	0.350856	Moderate
Uttar Pradesh	-0.07588	Poor
Uttarakhand	-0.16987	Very Poor
Himachal Pradesh	0.711733	Good
Punjab	-0.12311	Very Poor
Rajasthan	0.57403	Moderate
Gujarat	0.890427	Good

(Calculations: Compiled by the Author)

Inference

- **EXPENDITURE BY GOVERNMENT**: The National Health Policy 2017 advises states to allocate over 8% of their budget to health, but none of the states in Zone 3 have been able to reach the feat.
- **INFRASTRUCTURE**: The healthcare infrastructure in the Zone 3 states are lacking, with staff availability ranging from 2% to 28% of what is required. Himachal Pradesh and Haryana in particular, have a dire shortage of doctors and surgeons, with 2.04% and 4.43% of positions filled in these critical roles respectively.
- **IMR:** States have reduced their Infant Mortality Rate (IMR) by an average of 25.7% in 2020, lowering from 30.57% from 2017. Uttarakhand has seen the highest decrease compared to others, with an 25% reduction, while Haryana has the lowest decrease in IMR.
- **SDG and PCHE:** The aim of calculating this statistic is to identify a positive or negative relationship between the State Domestic Product and Per Capita Health Expenditure, in other words, how much does expenditure on health by a person increases, with increase in the domestic product of the states. For Uttar Pradesh, Uttarakhand and Punjab, this value came out to be negative which implies negative relation between the two.

Zone 4

Includes the states of Arunachal Pradesh, Sikkim, Nagaland, Meghalaya, Mizoram, and Tripura

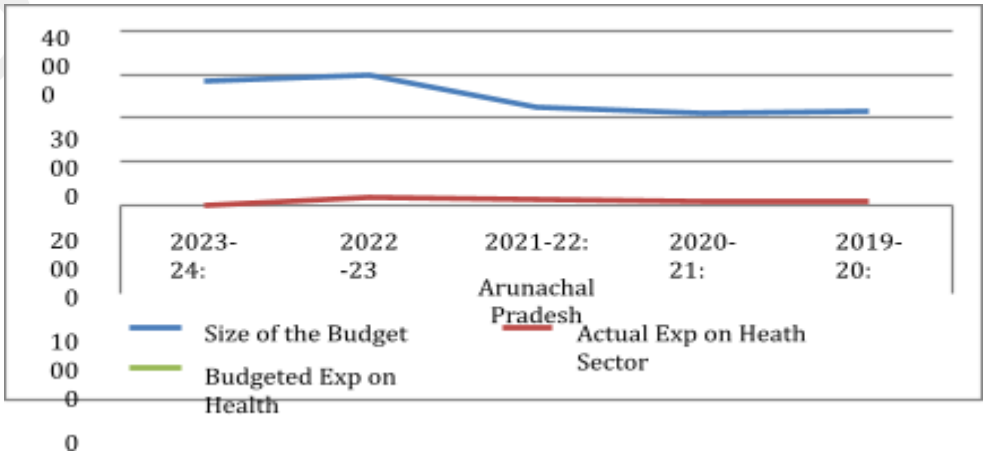
In this report, we'll take a closer look at the healthcare system in the Northeastern states of India. These states are known for their diverse cultures and beautiful landscapes, but they also face unique healthcare challenges. To understand this better, we'll examine some important parameters, such as Total State Expenditure, how much they produce in terms of goods and services (GSDP), how much they earn (NSDP), and what is the Per Capita Expenditure of each state (i.e., how much they spend on healthcare for each person). We'll use tables and graphs to make this information easier to understand. The goal is to provide a clear picture of healthcare in this region, showing what's working well and where there's room for improvement. This report aims to help shape discussions and policies for healthcare in these states.

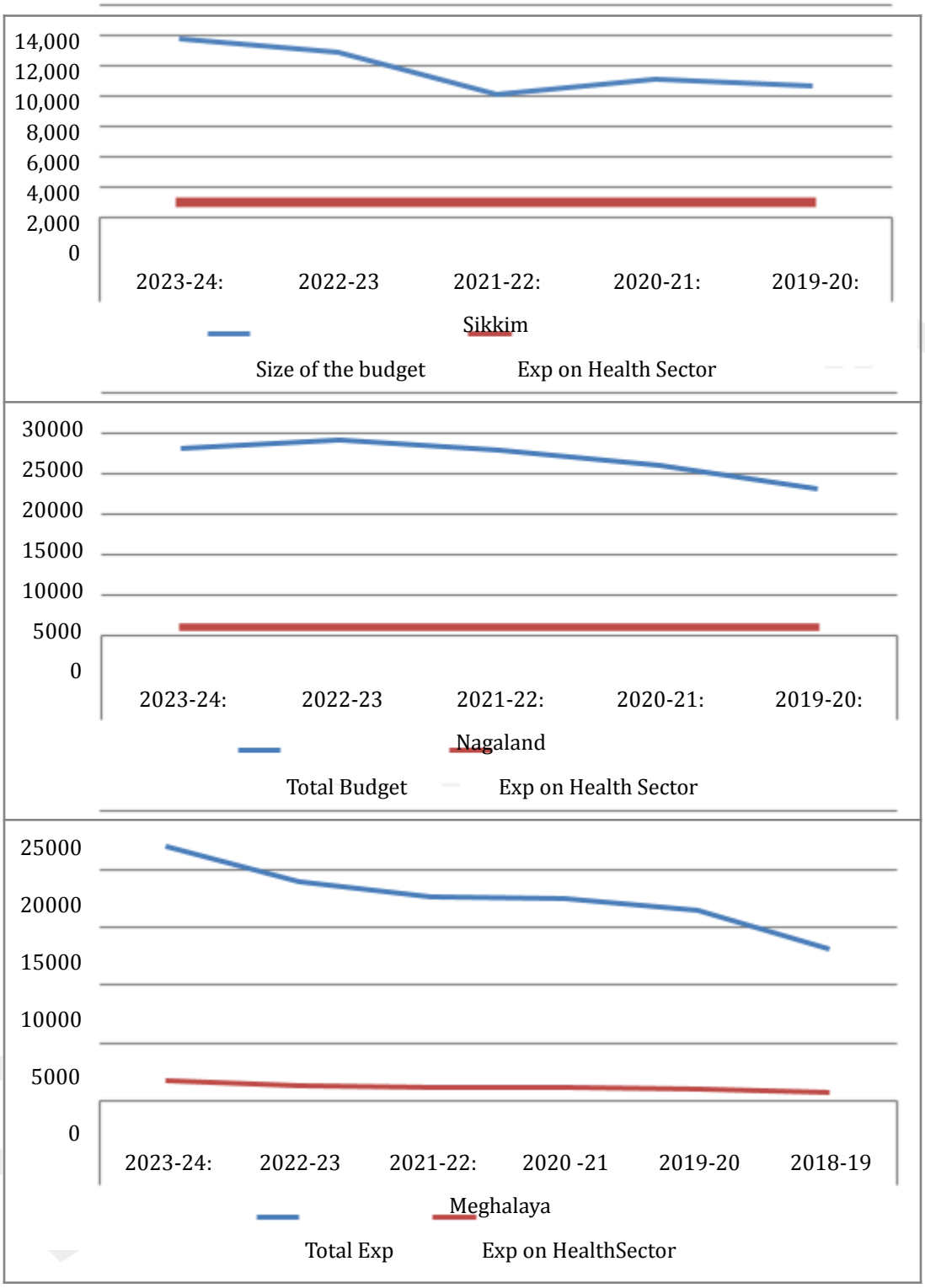
Zonal Analysis of Heath Sectors in India:
North- Eastern States

- Arunachal Pradesh
- Sikkim
- Nagaland
- Meghalaya
- Mizoram
- Tripura
- Following is a complete study of Northeastern States including the Budget, Total Expenditure, Expenditure on Health Sector, SDP and Per Capita Health expenditure

Expenditure on Health in each State over the years:

Analyzing healthcare expenditure over time provides a comprehensive understanding of the region's healthcare system. It reflects the allocation of resources, access to healthcare, quality of care, preventive measures, infrastructure development, health outcomes, equity in healthcare distribution, adaptability to crises, policy effectiveness, and allows for international comparisons. This data is crucial for evaluating the healthcare system's performance and guiding policy decisions to improve healthcare services in the region.
The National Health policy 2017 recommended that state sector health spending should be > 8% of Total Budget Expenditure.




14,000
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2023-24:
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Sikkim
Size of the budget
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2020-21:
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Nagaland
Total Budget
Exp on Health Sector
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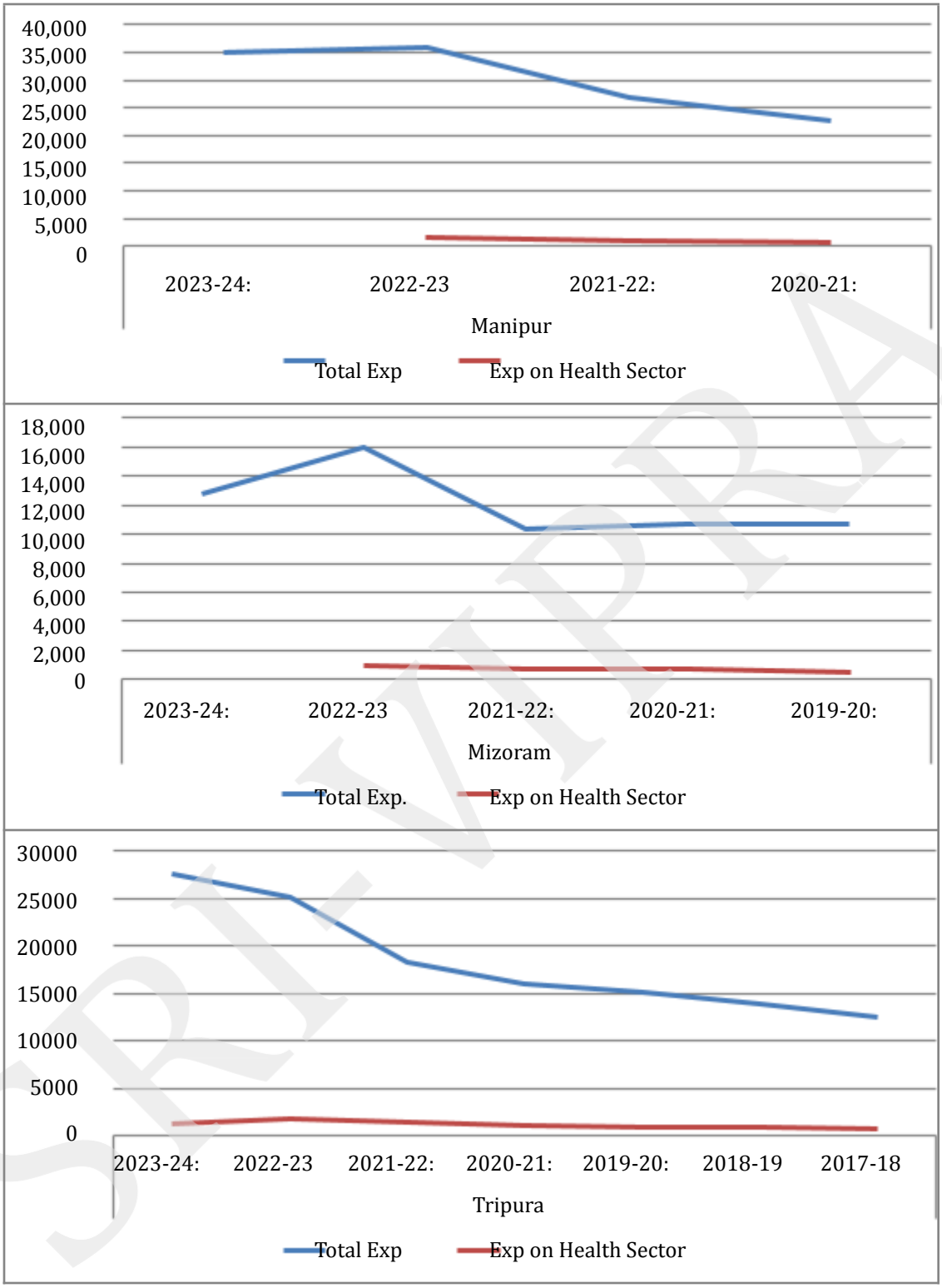
Meghalaya
Total Exp
Exp on HealthSector

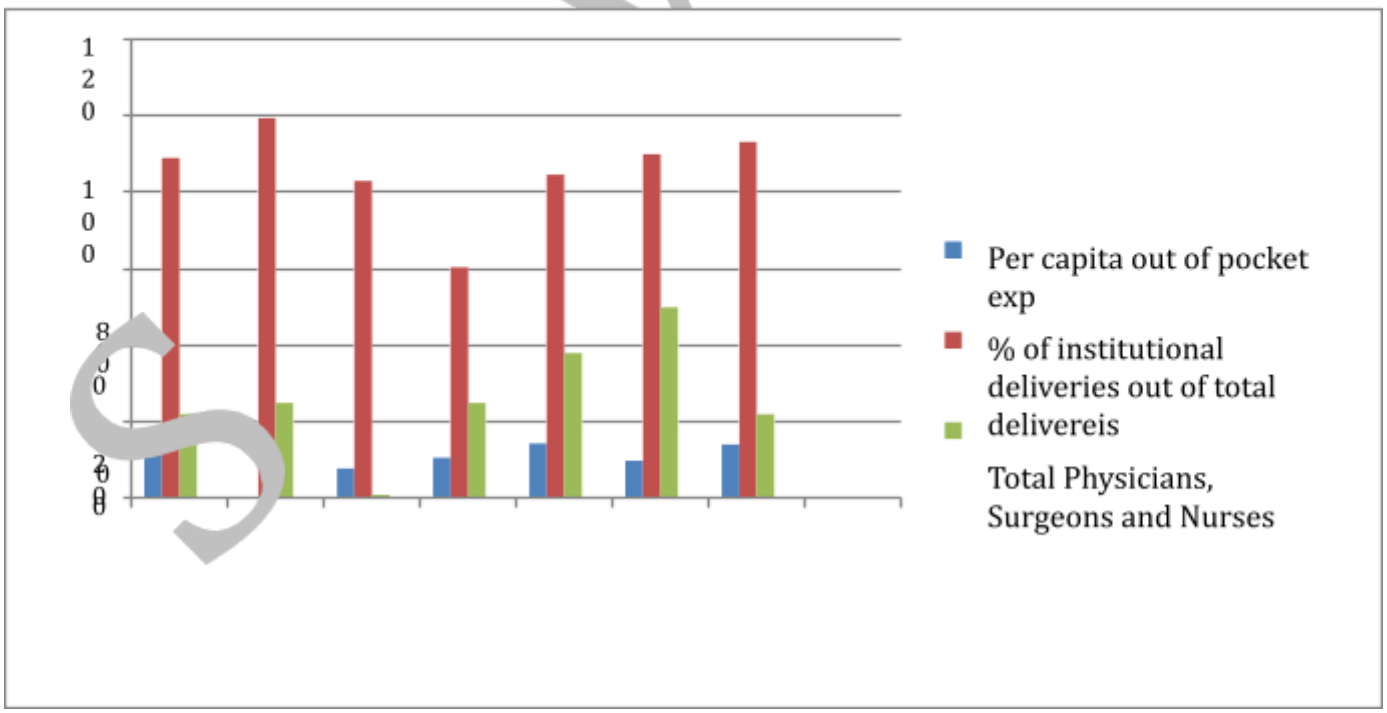


(Source of the Graph: Compiled by the Author)

Out-of-Pocket Expenditure

The measure of Out-of-Pocket expenditure can be a good indicator for the comparative analysis. The share of Out-of-Pocket Expenditure (OOPE) in total health expenditure declined from 62.6% to 47.1%. The following table shows the data from the Sustainable Development Goals India -Index and Dashboard 2020- 21

States	Monthly per capita out-of-pocket expenditure on health as a share of Monthly Per capita Consumption Expenditure	Percentage of institutional deliveries out of the total deliveries reported	Total physicians, nurses and midwives per 10,000 population
Arunachal Pradesh	17	89	22
Sikkim	NA	99.4	25
Nagaland	7.9	83	1
Meghalaya	10.7	60.4	25
Manipur	14.4	84.6	38
Mizoram	9.9	89.9	50
Tripura	14.2	93.2	22



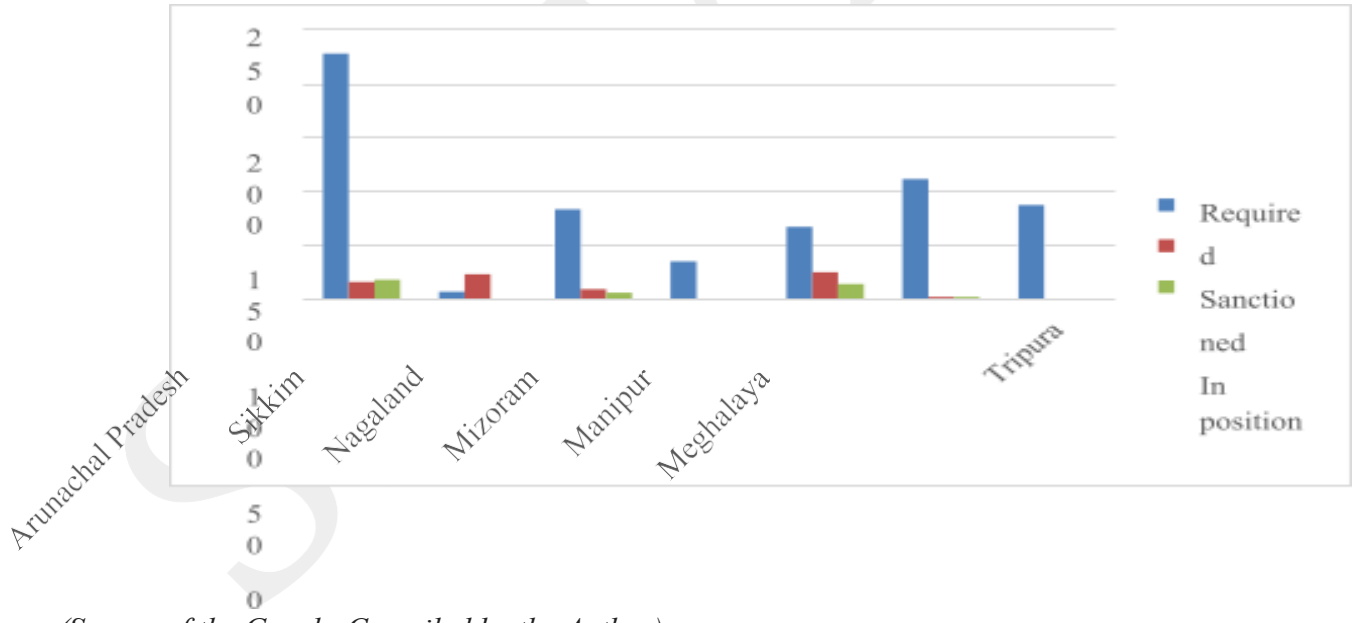
(Source: NITI Aayog)

Health Infrastructure of PHCs

Another parameter we can take under study is the number of **Government hospitals** in each state and the number of **Surgeons, OB&GY, Physicians & Pediatricians** as it tells us about the extent of accessibility and availability of healthcare systems in the following table

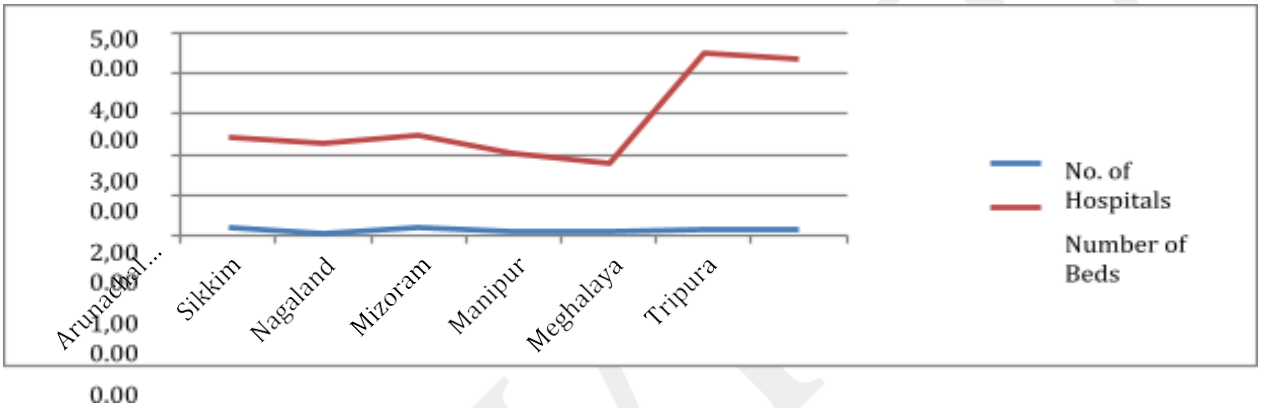
Heath Infrastructure of PHCs					
State	**Required**	**Sanctioned**	**In position**	**%**	**Conclusion**
Arunachal Pradesh	228	17	19	8.3333333	Poor
Sikkim	8	24	0	0	Poor
Nagaland	84	10	7	8.3333333	Poor
Mizoram	36	0	0	0	Poor
Manipur	68	26	15	22.058824	Poor
Meghalaya	112	3	3	2.6785714	Poor
Tripura	88	NA	4	4.5454545	Poor

The above table can be analyzed by the visual representation:



(Source of the Graph: Compiled by the Author)

States	Number of Government Hospitals	Number of Beds
Arunachal Pradesh	218	2404
Sikkim	33	2260
Nagaland	177	2461
Mizoram	99	2022
Manipur	119	1768
Meghalaya	154	4467
Tripura	155	4343



(Source- RBI Handbook of Statistics on Indian States)

Infant Mortality Rate

Infant Mortality Rate (IMR) can be used as an indicator whether the efforts of state policies and investments had any effect on the basic aspect of healthcare. These rates have been declining since 2015 but dropped significantly and at a faster rate from 2017 to 2020 in some states. The table above shows a comparison of the infant mortality rates for the years 2017, 2018 and 2019 and 2020.The percentage decrease since 2017 has also been shown.

	Infant Mortality Rate (per thousand)				
States	**2017**	**2018**	**2019**	**2020**	**%DEC since 2017**
Arunachal Pradesh	42	37	29	21	50
Sikkim	12	7	5	5	58.33333333
Nagaland	7	4	3	4	42.85714286
Mizoram	15	5	3	3	80
Manipur	12	11	10	6	50
Meghalaya	39	33	33	29	25.64102564

Tripura	29	27	21	18	37.93103448

(Source: PIB, Ministry Health and Family Welfare, Posted on February 2022)

Relation Between PCHE and SDP

According to the Report Titled 'Inter-State equalizing of Health Expenditures in the Indian Union' authored by M. Govinda Rao and Mita Chaudhary, the per capita health spending by states should have a positive correlation with the per capita GSDP, meaning that states having higher per capita GSDP, have a higher per capita health expenditure.

The per capita health expenditure of these states for the years 2019-20, 2020-21 and 2021-22 shows a slightly different story and is shown in the table given below:

States	Arunachal Pradesh		Sikkim		Nagaland		Meghalaya	
Year	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**
2019-20	182240	9904	412627	6325.97	122759	3793.91	82653	3045.02
2020-21	192360	6573	412754	8247.49	123385	3938.26	87653	3543.26
2021-22	NA	7338.5	472543	9016.14	160900	4756.91	84638	3760.3

State	Manipur		Mizoram		Tripura	
Year	**SDP**	**PCHE**	**SDP**	**PCHE**	**SDP**	**PCHE**
2019-20	82437	2401.74	153902	4740.34	121456	2409.91
2020-21	87832	2701.28	153902	5189.1	119789	2527.09
2021-22	135244.1	3461.49	144394	5116.79	140803	3027.26

PCHE- Per Capita Health Expenditure **SDP-**Per Capita Net State Domestic Product

(Source: RBI Handbook of Statistics on Indian States and Open Budgets India)

From the table above, the correlation coefficient calculated to check the nature of relationship between the per capita health expenditure and per capita net gross domestic product is shown below

STATE	C.C. F	Nature
Arunachal Pradesh	-1	Poor
Sikkim	0.72185	Moderate
Nagaland	0.78312	Moderate
Meghalaya	0.9212012	Good
Manipur	0.8077135	Good
Mizoram	0.913356	Good
Tripura	0.9478233	Good

(Calculations: Compiled by the Author)

Inference

EXPENDITURE BY GOVERNMENT: The National Health policy 2017 recommended that state sector health spending should be > 8% of Total Budget Expenditure, which has not been the case for any of the Eastern states in the last 4-5 Years except for Meghalaya in the year 2023-24, whose Health sector expenditure stood at 8.2% of the total State Government budget. An important recommendation is to increase the expenditure on health by 1-1.5% for each State

INFRASTRUCTURE: Even though every state needs to make sure that the hospitals are working with 100% availability of doctors, Mizoram and Manipur are the 2 most lacking behind states with 61% and 76% capacity only Also, Sikkim and Mizoram are the only 2 states with less than 100 Hospitals all over state.

IMR: Due to the availability of resources and better medical services, the states have been able to bring down the average IMR from 22.2 to 12 with an average decrease of around 50% since 2017

Mizoram's IMR decreased by 80%, most in these three years and Meghalaya having the most IMR at 29.

SDG and PCHE: The aim of calculating this statistic is to identify a positive or negative relationship between the State Domestic Product and Per Capita Health Expenditure, in other words, how much does expenditure on health by a person increases, with increase in the domestic product of the state.

For AP, this value came out to be negative which implies negative relation between the two. Any number between 0.8-1 is considered a good correlation coefficient, signifying positive growth of health sector in a state.

CONCLUSION

In conclusion, our comprehensive analysis of the health sector in the four distinct zones of India has revealed both challenges and opportunities. While the Northern zone grapples with infrastructure gaps and high disease burden, the Western zone showcases remarkable progress in healthcare accessibility and innovation. In the Southern zone, the focus on preventive care and healthcare delivery models has yielded promising results, and in the Eastern zone, there's a dire need for increased investment and policy reforms to bridge the healthcare divide. The most significant and important issue that is common in all the states is the adequacy of the medical workforce. Subsequently, the number of beds and government hospitals are far from sufficient taking account the population density of the states.

The Zonal Analysis of the states shows that the consistency in expenditure on health is more or less absent in every state and moreover, the correlation between the Per Capita Heath Expenditure and the Gross State Domestic Product is not highly positive in most of the states. The 11th Five Year Plan had suggested scaling up government health spending to at least 2% of the GDP by 2012, which was later re-emphasized by the National Health Policy 2017 to raise public health spending to 2.5% of the GDP by 2025

In the table below, we compare all the states using the criteria we've discussed in this report. This analysis illuminates the states that excel as top performers and those that face significant challenges, thereby offering a clear insight into the spectrum of state performance.

Indicator	Position	State	Comments
Health Expenditure > 8% of Total Expenditure	States that reached the target for any instance	Zone 1- Goa (9.6%,2023-24; 9.24%, 2022-23) Zone 4- Meghalaya (8.2%, 2023-24)	This shows that the Budgeted Expenditure on Health for the past 5 years wasn't > than 8% as it should have been according to the National health policy 2017 in most of the states.
	States that didn't reached the target for any instance	All the other states.	
Monthly Per -Capita Out-of-Pocket Expenditure	Lowest OOPE	Zone 2- Chhattisgarh (6.6)	According to SDG report, states should target to maintain their monthly OOPE at 7.83 to ensure low health poverty.
	Highest OOPE	Zone 1- Kerala (17) Zone 4- Arunachal Pradesh (17)	
Total physicians, nurses and midwives per 10,000 population	Highest in Number	Zone 1- Kerala (115)	Zone 2 and Zone 4 shows drastically low number of physicians, nurses and midwives per 10,000 population
	Lowest in Number	Zone 1- Nagaland (1)	
Infant Mortality Rate since 2017	Highest % decrease	Zone 4– Mizoram (80%)	All states have been able to decrease their IMR by around 30%.
	Lowest % decrease	Zone 2- Chhattisgarh (0%)	

	Highest Positive Coefficient	Zone 1- Karnataka (0.99) Zone 2- Assam (0.99)	All states should work towards maintaining the

Correlation Coefficient b/w PCHE and SDP	Lowest Coefficient	Zone 4- Arunachal Pradesh (-1) Zone 2- Jharkhand (-0.94)	coefficient >0.8 in the coming years
In Position/ Required percentage of Surgeons, OB&GY, Physicians & Pediatricians	Highest number of workforces	Zone 1- Telangana (75%)	Overall increase in healthcare facilities can be accommodated by establishing medical institution and PHCs especially in the Eastern States.
	Lowest number of workforces	Zone 4- Sikkim (0%) Zone 4- Mizoram (0%)	

In the above table, it shows that Zone 1 consisting of Southern States of India are doing comparatively better in the Health Sector taking account the parameters and indicator above. Whereas, the Zone 4 consisting of North Eastern States are struggling to keep up with the needs of the state in accordance of the same parameters and indicators taken under study. Again, the target of 8% Budgeted Expenditure on Health Sector set by the National Health Policy 2017 is yet to reach by all states in common.

By addressing these issues holistically, India can work towards a healthier and more resilient future for all its citizens, regardless of their geographical location. To navigate the complexities of India's diverse health landscape successfully, a multi-faceted approach that prioritizes equitable access, technological advancement, and policy coherence is imperative

Improving healthcare in India involves not only financial investments but also reforms in healthcare delivery systems, training and retention of healthcare professionals, accessibility to healthcare services, and addressing the unique healthcare challenges faced by different regions within the country. Ultimately, the goal is to ensure that every citizen has access to quality healthcare, aligning with the philosophy that health is indeed the real wealth of a nation.

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