TAKSHASHILA INSTITUTION

Working Paper – July 2018

A Qualitative and Quantitative Analysis of Public Health Expenditure in India: 2005-06 to 2014-15[1]

Working Paper 2018-01

July 24, 2018

By Pavan Srinath | Pranay Kotasthane | Devika Kher | Aashish Chhajer

Advisor: Dr. M Govinda Rao, Member, Fourteenth Finance Commission, and former Director, National Institute of Public Finance and Policy.

This paper can be cited as "*Pavan Srinath, et al, 2018, A Qualitative and Quantitative Analysis of Public Health Expenditure in India: 2005-06 to 2014-15, The Takshashila Institution, July, 2018*"

TABLE OF CONTENTS

List of Tables

List of Figures

Acknowledgements

The authors would like to thank Dr M Govinda Rao for his untiring and extensive support on both the research, as well as access to data and people;

Dr Mita Choudhury at the National Institute for Public Finance and Policy (NIPFP) for her invaluable help in understanding health expenditures, as well as sharing data;

Mr Diwan Chand at NIPFP for help with the institutional databank; Mr Asif Khan at the NIPFP library for access to archives;

Mr Arvind Srivastava IAS (Principal Secretary, Finance, Government of Karnataka) and Dr Bhanumurthi (Health Directorate) for access to Karnataka's budgetary processes;

Mr Angam Chand Singh (IAAS, Principal Accountant General, Social Services, Government of Karnataka) and Mr Srinivas (Audit Bhavan, Government of Karnataka) for their help in understanding the finance accounts, and for sharing local government expenditure details;

Mr Revendra T (PhD candidate at Indian Institute of Science, Bengaluru) for his help in data modelling;

Dr Sudhanshu Kumar at the National Institute for Public Finance and Policy (NIPFP) for his help in panel data analysis;

Mr TK Jose IAS (Principal Secretary, Local Self Government, Kerala) for his help with the Kerala local self-governments' expenditure on health;

Mr Khalil at the Institute for Social and Economic Change, Bangalore, for data support with the Karnataka budget;

And the authors' colleagues at the Takshashila Institution for their support and accommodation.

Abbreviations

AIIMS	All India Institute of Medical Sciences
AFS	Annual Financial Statement
AYUSH	Ayurveda, Unani, Siddha and Homeopathy
CAG	Comptroller and Auditor General of India
CAGR	Compound Annual Growth Rate
CGA	Controller General of Accounts, Government of India
CHC	Community Health Centre
DDG	Detailed Demand for Grants
FFC	Fourteenth Finance Commission
GiA / G-i-A	Grants-in-Aid
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HFW	Health and Family Welfare
HSC	Health Sub-Centre
JIPMER	Jawaharlal Institute of Postgraduate Medical Education and Research
LSG	Local Self-Government
MDWS	Ministry of Drinking Water and Sanitation
MOFHW	Ministry of Health and Family Welfare
MOSPI	Ministry of Statistics and Programme Implementation
MPH	Medical and Public Health
MWCD	Ministry of Women and Child Development
NFHS	National Family Health Survey
NIPFP	National Institute of Public Finance and Policy
NHM	National Health Mission
NRHM	National Rural Health Mission
NUHM	National Urban Health Mission
PHI	Primary Health Institutions
PHC	Primary Health Centre
PIP	Programme Implementation Plan (of NHM/NRHM)
PSU	Public Sector Undertaking
ROP	Record of Proceedings (of NHM/NRHM)
RSBY	Rashtriya Swasthya Bima Yojana
SC	Sub-Centre
TFC	Thirteenth Finance Commission
WSS	Water Supply and Sanitation
WATSAN	Water Supply and Sanitation

Executive Summary

Health policy is an essential pillar of human welfare. Given the high degree of externality, the State has to play a significant role in health and healthcare provision. Unfortunately, evidence shows that public spending on healthcare in India is low and out of pocket spending by people is more than four times the government spending. While the low level of public spending on health is a known fact, reliable data on the actual public expenditure on health and its trend over time is not easily accessible. The National Health Accounts, the most authoritative and comprehensive source of health expenditure information in India, is highly infrequent. The subsequent use of partial data sets available on public health expenditures leads to flawed policymaking and less than desirable public health outcomes.

The objective of this study is to compile a comprehensive dataset of public expenditure on health and related areas at Union and State levels as well as in different States on a comparable basis over the time-period 2005-06 to 2014-15. The study will also outline challenges in data collection and data comparability so that further research in this area can improve on the estimates of public health expenditure.

Based on the data collected, the study goes on to make these preliminary observations on health expenditures in India.

1. From the analysis of public expenditure in India, it is found that India spent only 1.41 per cent of its GDP on health and allied fields in 2005-06, which increased to 1.62 per cent in 2010-11 and then reduced again to 1.40 per cent in 2014-15. Of this, States contributed between 70 and 75 per cent of the overall public expenditure on health and allied fields.

2. In 2014-15, major States spent anywhere between Rs 617 and Rs 2,026 per capita on health and allied subjects. Less populated, hilly or small Indian States spent between Rs 2,289 and Rs 7,409 per person. The per capita expenditure on health and allied subjects was correlated to per capita state GSDPs. During the time period 2005-06 to 2014-15, the study finds that expenditure inequality, which showed a declining trend, still remains very high.

3. States with better basic health outcome indicators such as Infant Mortality Rates (IMR) also show higher per capita expenditures. In other words, the states with poor health indicators continue to spend low levels of per capita expenditures. Inequality between states in health outcomes has not reduced, and a major cause is the continuing inequality in public health expenditure.

4. Centrally Sponsored Schemes have been unable to ensure minimum standards of per capita health expenditure, nor are the transfers progressive or redistributive. The study has examined the responsiveness of State governments' own expenditures on health to specific purpose transfers for the same, and finds that Centrally Sponsored Schemes in health and allied fields end up substituting States' own expenditure on health instead of stimulating the states' own expenditures on health.

5. After the recommendations of the Fourteenth Finance Commissions came into effect, overall central transfers to States, particularly the untied transfers increased. This increase in untied transfers led the Union government to cut down expenditure on plan and non-plan grants. However, this study finds that the increase in overall central transfers has not come at the cost of Union government's grants for the health sector: 13 out of 15 major States showed increases in Union government grants for health sector in the first year of the FFC period. Further, there was a wide variation in how States responded to these grants: while Tamil Nadu increased its overall public health expenditure by a mere 8 per cent, the corresponding increase for Jharkhand was 65 per cent.

1. Introduction

Investment in social and physical infrastructure positively affects the poor directly and indirectly in multiple ways. Infrastructure development is one of the major factors contributing to economic growth and employment generation directly and by creating externalities for investment in the private sector.[2] Investment in social infrastructure and human development enhances productivity through better education, improved workforce, skill development, lower absenteeism, greater mobility, faster demographic transition, increased participation of women in workforce, and better targeting of social security and welfare schemes[3].

As in all developing countries, the government has a predominant role in creating generalised externalities by making investments in both physical infrastructure and human development. Specifically, the Constitution has assigned both Union and State governments significant roles in the provision and regulation of services with significant externalities. The objective is to empower the governments to provide meritorious services with high degrees of externalities to people in adequate quantities at affordable costs[4].

One of the most important pillars of social infrastructure and human development is healthcare. In India, the Constitution assigns a predominant role in providing social infrastructure to the States. More specifically, Entry 6 of the State List in the Seventh Schedule of the Constitution assigns legislative responsibility to the States on matters related to "Public health and sanitation; hospitals and dispensaries". Similarly, Entry 17 assigns the responsibility for water supplies to the States. Other interrelated matters such as medical education and medical professions are placed in Entries 25 and 26 of the Concurrent List.

However, States are not the only players in the public health sector. The Union government intervenes in the health sector in two ways. First, in establishing and funding institutions of national importance and institutions of scientific or technical education such as the All India Institutes of Medical Sciences (mentioned as Entries 63, 64 and 65 in the Union List). As explained earlier, medical education and matters relating to (including regulation of) medical professionals is placed in the Concurrent List (Entries 25 and 26). Second, in addition to the direct spending, the Union government can give specific purpose grants to the States to ensure a given minimum standard of healthcare throughout the country. Healthcare is a meritorious service with significant inter-state

externalities and ensuring universal access to minimum standards of the service is important in a democratic polity. It is important from the viewpoint of equity as lack of healthcare facilities has been found to be one of the major causes of poverty.

With this in mind, the Union government has been intervening in the health sector through various specific purpose transfers such as on the National Rural Health Mission (NRHM) and other smaller schemes. Launched in 2005, the NRHM has expanded substantially over the years, and in recent times, it has come to constitute an important element of health expenditure in Indian States. In 2010-11, the scheme constituted about two-thirds of the total health spending by the Central government, and has been a focus of discussions on health sector policies of the country[5]. Besides NRHM, expenditures on health are incurred by the Union government departments such as Defence and Railways and other Union government enterprises and parastatals. In addition to the Union government's role, decentralisation has meant that health expenditures in some States are directly incurred by some urban and/or rural local bodies.

Given that all three levels of governments are involved in the provision of health services, it is important to understand public expenditure on health in greater detail — the levels, trends, and the distribution across States. This is especially important because India's health infrastructure is characterised by low levels of public spending making it imperative to target expenditures in places (States) where they are needed the most. Despite its importance, comparable data on healthcare expenditure across different States and over time is simply not available for a variety of reasons including multiple departments spending on the sector, changes in budgetary practices over time as well as varying decentralisation practices across different States. The study attempts to develop a comprehensive, comparable dataset of public health expenditures in India over the last decade: 2005-06 to 2014-15 and undertake some preliminary analysis based on this dataset.

The paper has twelve sections. In the second section, the objectives of this study are listed. The third section explains the challenges faced during data collection and in data comparability. The fourth section expands on the methodology used to analyse the data and the relevant sources for the data. Sections five to ten present a comprehensive analysis of the public health expenditure data gathered in this exercise. Section eleven lists the issues encountered. Finally, the conclusion summarises our major findings.

2. Objective

This study's main contribution is the creation of a systematic database containing estimates of health expenditures across the country, comparable over time and across States. Specifically, we set out to undertake the following:

1. Provide comprehensive and comparable data on healthcare spending in different States and its trend over the last decade in per capita terms, and as percentage of the Gross State Domestic Product (GSDP).

2. Report the share of health-related expenditure in total expenditures in different States.

3. Evaluate the impact of Union government grants to States in the health sector and whether it has led to an increase in the expenditure on health or has only resulted in the State governments substituting their own expenditures when Union grants are received. This will also help understand whether the grant design is appropriate or requires revision.

4. Aid in recommending ways to design efficient health transfer methods.

5. Evaluate data on central government spending on health as a fraction of total Union government expenses and as a fraction of GDP. This would take into account the fraction devoted to salaries and to the Union government schemes in States, total spend as a fraction of allocations over time and amounts devoted to primary health care (PHCs and CHCs).

6. Basing on State government expenditures for different States on health through various relevant heads such as health, nutrition, water and sanitation and others, evaluate State government spending on health as a fraction of the total Union government expenditures and as a fraction of the State GDP. This would take into account State expenses through its own allocations, Union government money through consolidated fund and direct provision to various programmes, fraction devoted to salaries, total expenses as a fraction of allocations over time to highlight the efficiency of spending and amounts devoted to primary health care (PHCs and CHCs).

7. Evaluate how the 14th Finance Commission affected the above allocations.

3. Challenges of data collection and data comparability posed by public health expenditures

This section lists down the problems with the prevailing set of healthcare expenditure data and the challenges that researchers and policymakers face in analysing public expenditure data on healthcare while compiling comparable data across States and over time. This also underlines a major shortcoming in the existing research that uses data provided in budget documents under the major heads relating to medical and public health for analyses. The objective is that, with these challenges in mind, further research in this area will be able to improve on the estimates of public health spending that we have managed to obtain.

3.1 Multiplicity of governments, agencies, and departments

The primary estimation challenge is that public spending on medical and public health is incurred by a multiplicity of government levels, agencies and departments. As a social service, the health sector is a primary responsibility of State governments according to the Constitutional assignment. However, State governments are not the only agencies spending on public health. Health functions such as "population control and family planning", "legal, medical and other professions", and "lunacy and mental deficiencies" are entries in the Concurrent List[6].

Thus, the Union government also spends a substantial amount on public health. Much of this expenditure is in the form of transfers for Centrally Sponsored Schemes such as National Health Mission (previously, NRHM). Similarly, institutions declared to be of national importance by the Parliament, such as All India Institute of Medical Sciences (AIIMS), and institutions for professional and technical training and research are in the domain of the Union government.

Separately, many of these expenditures occur outside of the health ministry at the Union level and health departments at State levels. For example, public expenditure on drinking water, sanitation and nutrition occurs outside the Ministry of Health. Moreover, the Ministry of Defence and the Ministry of Railways also finance and run institutions that deal with healthcare.

Next, there is the additional complexity of local government spending on health. In States like Karnataka and Kerala, the State government expenditure includes

transfers to Rural and Urban Local Bodies for health spending. Some local bodies also incur health expenditure from their own resources.

Figure 1 below depicts the sources of public health expenditures in India[7]. As there are several intergovernmental transfers through various routes, coming up with a robust estimate of expenditure needs a careful exclusion so as to circumvent any overestimation.

Notionally, all States now follow the same accounting practices from the major head to the minor head levels, which should make aggregation of comparable data easy. But that's where the similarities end. There is no consistency in the expenditures listed under the sub-minor heads, detailing heads, and object heads, making comparison difficult.

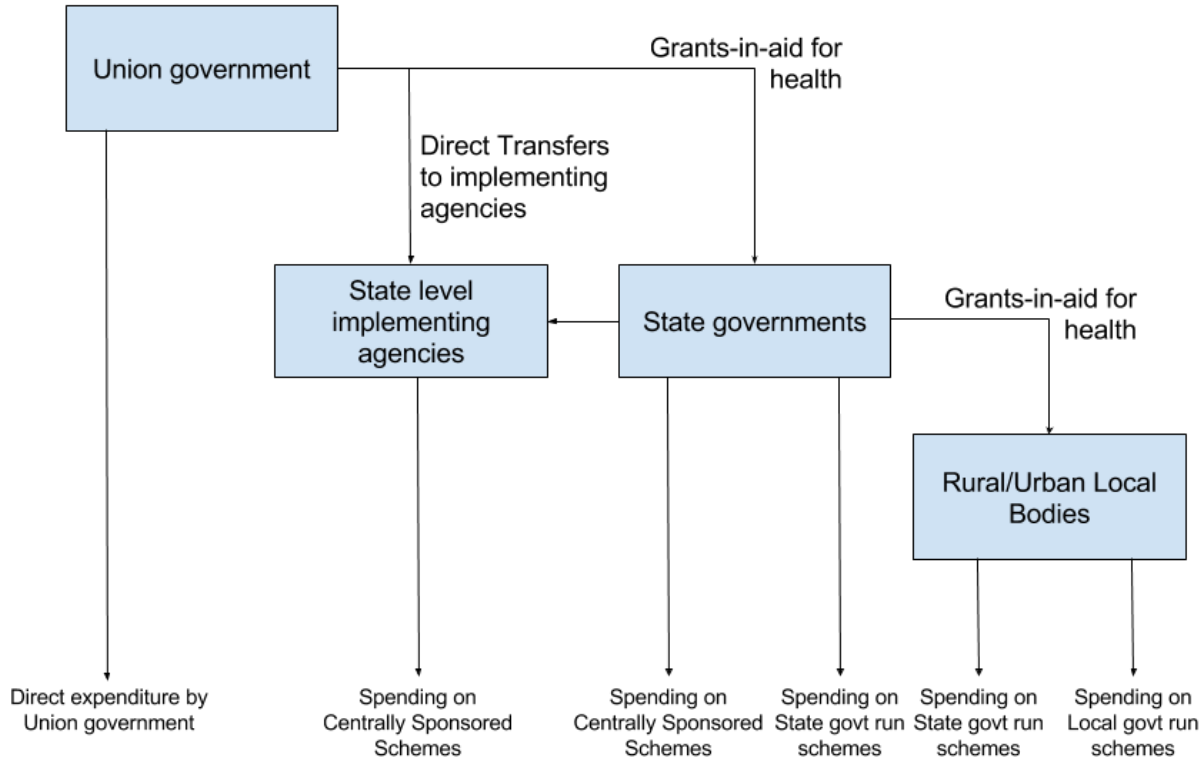

Figure 1: Structure of public health expenditures in India relevant for the period 2005-06 to 2014-15

3.2 The case of autonomous implementing agencies

Prior to 2004-05 the grants for various Central schemes were given to the States and formed part of the States' consolidated funds. With substantial increase in

central grants for NRHM and other central schemes and scaling up of donor funded projects, several agencies and autonomous implementing agencies got set up at the State level for implementing programmes. In order to reduce delays in the transfer of funds at the level of implementation the Union government started giving grants to these agencies directly bypassing the States[8]. Of course, this also served the electoral objective of the ruling party/coalition at the centre to claim its ownership to the projects with the people.

With these implementing agencies in place, the Union government bypassed the State treasury route and started disbursing direct transfers to these autonomous agencies instead. The States were, however required to include their matching portions in their budgets as these are shared cost programmes. However, based on the recommendation of the High Level Expert Committee on Efficient Management of Public Expenditures, the practice was changed and the grants for the central schemes were routed though the States from 2014-15 budget[9]. Such changes in accounting practices do not provide a complete picture of public spending on health in different states and therefore vitiate comparability.

3.3 The fiscal decentralisation challenge

Some of the States such as Kerala and Karnataka have been at the forefront of fiscal decentralisation. In keeping with the spirit of the 73rd and 74th amendment of the Constitution, they have substantially devolved the implementation functions in regard to some of the developmental activities, including healthcare, to the urban and rural local governments. Since the expenditure on health is not shown under the relevant budget head but is clubbed under "Compensation and Assignment to Local Bodies", the data from State budgets do not accurately reflect spending on healthcare. In order to get accurate information, it is necessary to get access to the details of the transfers from the State governments to local governments. If one has to analyse expenditures on specific services within the health sector, such as preventative and curative aspects or salary and non-salary components, it is necessary to get the details of expenditures by the urban and rural local bodies. This is virtually impossible as the States do not compile and maintain the accounts of transfers or the accounts of all rural and urban local bodies by sector and sub-sector, beyond what is incurred via specific transfers from State governments. The State government of Kerala, in fact, gives 25 per cent of the plan expenditures as untied funds to the local governments which spend them according their own priorities. Hence, in order to get a clear picture of

spending on healthcare, we have to get the details of all local government expenditures in Kerala. Apart from Kerala and Karnataka, Orissa and Madhya Pradesh are two other States where we find that significant expenditures have been incurred through local governments.

3.4 Comparability issues with expenditures on salaries and primary health institutions

Finance accounts of States, which is the primary source for this study, only mention the salaries of State government employees. Local government employees in healthcare are excluded, as well those of autonomous bodies like public hospitals and medical colleges, depending on the State. Further, the National Health Mission, a Centrally Sponsored Scheme, does not employ State government employees but pays salaries, emoluments, incentives, awards, stipends to hired full-time staff and part-time workers. This makes calculating the salary component of public health expenditures, a complicated exercise. Reported summary salary expenses in government documents is a severe underestimate of the true salary and human resources related expenses.

Similarly, there is no uniformity on the question of what constitutes as expenditure on primary health institutions. Some States follow unconventional nomenclature for health institutions. For example, Jammu & Kashmir government incurs expenditure on Mobile Medical Units and Medical Aid Centres for providing primary health services.

Some of the expenditure on primary health institutions is directly from the National Health Mission and hence faces the double-counting issue. There are also differences in practices over inclusion of spending on procured drugs and instruments as part of the primary health institutions' expenditure.

3.5 Lack of data digitisation

Finally, none of the data is digitised by State or Union governments, and at best, PDFs are available online. Bulk of the budgetary data needs to be accessed from physical copies of budgets, which is not easily available.

Many of the challenges mentioned above could have been solved if India had annual National Health Accounts (NHA), which make the data internationally comparable, and also include private expenditure. However, the last NHA exercise

that India undertook was in 2013-14, which was released as late as August 2016[10]. Before 2013-14, this exercise was undertaken in 2004-05[11].

4. Methodology and Sources

This section describes the data collection methodology and sources we have used for estimating public health expenditure.

4.1 Determining the boundaries for public health expenditure

Section 3 listed some data comparability and collection challenges due to the involvement of a multitude of agencies, ministries, and governments in financing public health. Hence, it is important to specify upfront our methodology for what constitutes public health expenditure and what doesn't. For this study, we have focused on a functional classification of public health expenditure. Our estimates also include expenditure on critical health-related functions that fall outside the existing administrative domain of Ministry of Health and Family Welfare. For instance, we have included governmental expenditure on drinking water, nutrition, and sanitation in order to derive holistic public health expenditure figures.

According to this framework, we define our public health expenditure categories as follows:

1. Expenditure on "Health" includes revenue and capital expenditures on the budget major heads "Medical and Public Health" and "Family Welfare".

2. Expenditure on "Health and Allied Fields" includes all expenditures listed in (1) in addition to revenue and capital expenditures on the budget major heads "Water Supply and Sanitation" and "Nutrition".

However, our methodology excludes some categories of health expenditures given below:

1. Union Government Schemes (Employee): This includes expenditure by Ministry of Defence, Ministry of Railways, Department of Posts, and Department of Atomic Energy on their employees along with Central Services Medical Attendance (CSMA). For example, according to the latest NHA data, the estimated expenditure under this scheme was Rs 7,911 crores in the year 2013-14[12] (4.8 per cent of the total public expenditure on health and allied fields that year).

2. Social Health Insurance (SHI): This includes expenditures of Central Government Health Scheme (CGHS), Employee State Insurance Scheme (ESIS), Ex-servicemen Contributory Health Scheme (ECHS). For example, according to the latest NHA data, the estimated expenditure under this scheme was Rs 12,139 crores in the year 2013-14[13] (7.4 per cent of the total public expenditure on health and allied fields that year).

3. Government Based Voluntary Health Insurance Schemes: This includes expenditures under all health insurance schemes implemented by Union and State. For example, according to the latest available NHA data, estimated expenditure under this scheme is Rs 4,757 crores for the year 2013-14[14] (2.9 per cent of the total public expenditure on health and allied fields that year).

4. Public Enterprises and parastatals' Financing Schemes: Large enterprises in the public sector like Steel Authority of India limited, National Thermal Power Corporation have their own network of health facilities through which they provide healthcare services to the employees and their dependents. These facilities are financed through the enterprises themselves. For example, according to the latest available NHA data, the estimated expenditure under this scheme was Rs 10,203 crores in 2013-14[15] (6.2 per cent of the total public expenditure on health and allied fields that year).

5. Out of Pocket Payments in Government Hospitals: Government Hospitals collect fees for various inpatient and outpatient services. We do not consider these fee amounts collected as part of public health expenditure.

The figure below is a graphical representation of the boundaries of public health expenditure considered for this project.

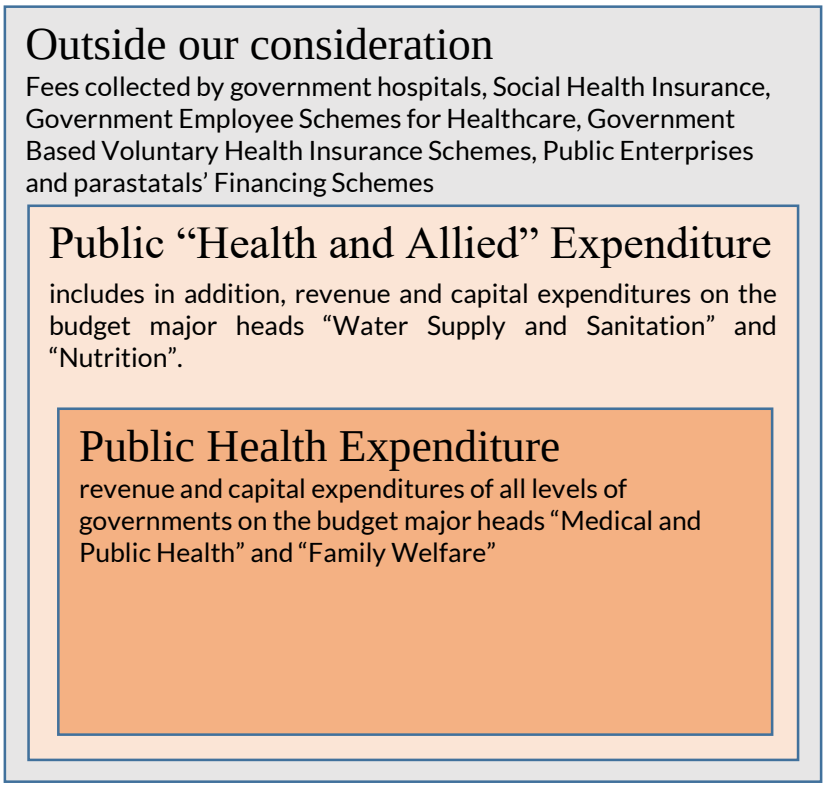

Figure 2: Boundaries of Public Expenditure on Health

4.2 State governments' expenditures

Annual data on health expenditure is available from two sources: one, the audited Finance Accounts compiled by the Comptroller and Auditor General of India (CAG); and two, budget documents released by the finance departments of States. For this study, Finance accounts are the primary source of all major head, sub-head and minor-head-wise expenditure and receipts across all States. The CAG website shares the annual finance accounts of all State governments, allowing for easy public access[16].

Annual Finance Accounts for Goa, Delhi and Pondicherry are not available online, and were accessed from the NIPFP library for the years that were available. For the year 2015-16 and to plug data gaps, budget documents were utilised when Finance Accounts were not released or were inaccessible. For example, Annual Finance accounts for West Bengal are not available for 2013-14 and 2014-15 as the accounts were not tabled in the West Bengal Assembly, and are hence not available for public access. To the extent possible, some data was instead taken from the budget documents of West Bengal.

Finance Accounts provide information on receipts and expenditures up to the minor-head level. Departmental 'Detailed Demand for Grants' (DDG) for most States provide information up to the object head level, three levels deeper than minor heads. DDGs were used to find information that was not available in Annual Finance Accounts of the State Governments.

Most annual finance accounts were accessed online, and some pre-tabulated information on expenditure by major heads was obtained from the National Institute of Public Finance and Policy (NIPFP). Budget documents were accessed online to the extent available. About 20-22 of the 30 States have shared their full budget documents online, though most do not share the files for more than a year or two. Some annual finance accounts were accessed from the NIPFP library, and the bulk of the budget documents were accessed from the library as well.

4.3 Union Government Expenditures

Union government expenditures on health and allied fields were obtained from the Union annual finance accounts from the Controller General of India (CGA) website[17].

As highlighted earlier, in the study period 2005-06 to 2013-14, a large share of the specific purpose transfers from Union to States in the form of Centrally Sponsored Schemes/Central Plan Schemes were directly transferred to implementing agencies in the States (known as the "non-treasury route", and avoided going through the State budget (or the "treasury route"). For example, the Union Ministry of Health and Family Welfare transfers its NRHM releases for Karnataka to the "Karnataka Health & Family Welfare Society" which will subsequently devolve that money to district-level societies. Similar societies or organisations have been set up in all States for many of the social sector schemes and transfers.

This mechanism has subsequently been changed from 2014-15 onwards, where all transfers now take place via the treasury route.

All transfers and expenditures that take place via the treasury route get accounted and audited by the CAG on a routine basis, and presented in the Annual Finance Accounts of the States. The direct transfers are only audited on a case-by-case basis by the CAG, and the implementing agencies' accounts are independently audited by privately hired auditors under prescribed guidelines. These audited

accounts are not publicly available, nor are they accessible from the Union ministries.

However, since 2009-10, most Annual Finance Accounts of States report unaudited figures of Government of India's direct releases to implementing agencies[18], and these have been used in the study[19]. For the period before 2009-10, all data on State-wise releases for NRHM and other health-related direct transfers was obtained from the MoHFW (Ministry of Health & Family Welfare)[20].

The bulk of the non-health ministry direct transfers comes from the Ministry of Drinking Water & Sanitation (earlier: The Department of Drinking Water & Sanitation under the Ministry of Rural Development). Complete and comparable State-wise releases (actuals) are available for water & sanitation schemes only between 2010-11 and 2014-15.

4.4 Expenditure incurred through implementing agencies

4.4.1 National Health Mission (formerly, National Rural Health Mission)[21]

The National Health Mission (formerly, National Rural Health Mission) has an independent system of accounting that does not follow the State budget heads. NRHM/NHM are typically administered by State-level societies which then devolve the funds to district-level societies to spend money on a range of health-related activities. NRHM's reporting of budget allocations had a variable and non-comparable format till the year 2009-10, after which a reasonably standardised system of reporting budget allocations is now available for most States.

Funds for the NRHM/NHM span four major heads and NRHM combines them seamlessly: 2210, 2211, 4210, 4211. For the bulk of the study period, the mechanism of planning and reporting expenditure on NRHM is as follows:

- The State level implementing agency creates a "Programme Implementation Plan" or PIP where it tables a demand for NRHM grants, following the programme guidelines. These documents are available online.
- The NRHM secretariat in consultation with the State agency prepares a "Record of Proceedings" (ROP) document after receiving the PIP, in which the Government of India awards allocations against the requests, individually denying, approving or modifying each budget head, along with comments. The ROP documents are available online.

- The ROP creates an overall budget for the following funds:
    - The unspent opening balance of the society at the start of the year.
    - The allocation for transfers from the Union government for NRHM (or the 'Total Resource Envelope').
    - State's share of expenditure
    - Performance incentives
- In recent years, we also see some States filing supplementary PIPs and receiving supplementary ROPs against them, with additional allocations therein.
- Based on the ROP, the Government of India is expected to release the funds in instalments. The sum of this over a year is called "GoI Releases", and varies from the allocation. The society spends the funds over the year and reports the unspent expenditures in the next PIP.
- The implementing agencies are independently audited and audit documents prepared, however, these audit documents are not available in public.
- As a social sector scheme, implementing agencies are allowed to keep unspent expenses in a year as an opening balance for the next year's accounts. The next year's allocations, releases and target-setting are done while factoring in the funds left in the opening balance.

Thus, while the releases of funds by Union and State governments are counted as expenditures on their part, it need not translate automatically to expenditure on the ground – with the balance remaining unspent with the implementing agencies.

4.4.2 Other schemes

Apart from NHM, there are other health schemes such as the National AIDS mission, as well as water & sanitation schemes such as the Swachh Bharat Abhiyan, the National Rural Drinking Water Programme; and nutrition schemes like ICDS (Integrated Child Development Scheme). For health schemes, data was obtained from Appendix V of the Finance Accounts from 2009 onwards, and was

obtained from Dr Mita Choudhury (NIPFP) for previous years. Each of the schemes often has its own implementing agency and a corresponding entry in the finance accounts.

For water and sanitation schemes, data was taken from 2010 onwards from the Ministry of Drinking Water and Sanitation's data portal.[22]

4.5 Expenditure on Primary Healthcare

One of the major aims of this study is to get an estimate of the overall public expenditure on primary health institutions in India. Public health service delivery in India happens through a three-tier system. For the purposes of this study, we have estimated expenditures on primary healthcare by collecting spending on the following institutions:

- Health Sub Centres (SCs), with each covering a population of about 5,000 in the plains and about 3,000 in hilly and difficult terrain. Only paramedical staff is available in these sub-centres.
- Primary Health Centres (PHCs) which are the first points of contact with a doctor, with each covering about 30,000 people in the plains and about 20,000 in hilly and difficult terrain.
- Community Health Centres (CHCs) which provide secondary care and are organised at the block levels[23].

This study also includes expenditures on Family Welfare Centres (under major-head 2211) in the overall expenditure on "Primary Health Institutions", as they often see cross-budgeting. Notionally, expenditures on PHCs and CHCs have their own minor heads, i.e.:

2210-03-103 for PHCs;

2210-03-104 for CHCs;

2211-00-101 for Sub-Centres;

4210-03-103 for capital expenditure on PHCs; and

4210-03-104 for capital expenditure on Sub-Centres.

However, less than half the States show all of their expenditure on PHCs and CHCs under those minor heads. Instead, here are a few sample challenges encountered while trying to calculate expenditure on primary health institutions:

4.5.1. Tamil Nadu

Tamil Nadu has created health sub-Centres for *adi-dravidar colonies* under 2211-00-793-SA, the sub-plan for the *adi-dravidar* community living in Tamil Nadu. Tamil Nadu is also unique in introducing wings for Ayurveda / Unani / Siddha and other alternative systems of medicines at the Primary Health Centre-level, and has separate budget heads under 2210-04 (AYUSH).

All these budget heads have been included in Tamil Nadu's expenditure on Primary Health Institutions.

4.5.2. West Bengal

West Bengal has an active Externally Aided Project called *DFID Assisted Programme for Health System Development Initiative*, which includes expenditures on improving and deepening the PHC and CHC system in the State. However, there are no explicit budget heads for expenditures on PHCs and CHCs as opposed to other elements of the State's health system. All activities are jointly listed under 2210-03-789-SP-007, 2210-03-796-SP-008, 2210-03-800-SP-012 – essentially, under the SC sub-plan, ST Sub-plan and 'Other expenditure' minor heads under rural health.

Such budget heads which only have a proportion of their expenditure on PHCs, CHCs and SCs have not been included in our calculation.

4.5.3. Karnataka

In most States, PHCs and CHCs expenditures also include budget heads for medicines that are consumed by the primary health institutions. However, in Karnataka, all drug procurement by the government healthcare system is centralised into one agency called the Karnataka State Drug Logistic & Ware Housing Society (2210-01-104-0-01) which is tasked with collating the drug needs of all government health institutions from PHCs and CHCs to hospitals and specialist units – and then procuring the same and distributing it to the respective institutions. Thus, expenditure on the drug logistic & warehousing society becomes an in-kind subsidy on drugs for the health institutions including PHIs.

Since the drug society's expenditures cannot be split into that of PHCs and CHCs using the budget documents, its expenditures have not been included in the calculation of Karnataka's expenditure on PHIs.

4.5.4. Uttar Pradesh

Revenue expenditure for PHIs under Major Head 2210 could not be located even though the corresponding capital expenditure under Major Head 4210 is clearly outlined. One of the possibilities could be that PHIs under 2210 have been subsumed under the major head 2211, as part of rural/urban family welfare Centres. This assumption needs confirmation. We tried to obtain clarification from the Uttar Pradesh health department on this issue, but failed.

4.4.5. Jammu & Kashmir

J&K follows an unconventional nomenclature for health institutions. Apart from CHCs, PHCs and Health Sub-Centres, expenditures incurred on Medical Aid Centres, Subsidiary Health Centres, and Dispensaries have also been included in calculating the PHI expenditure for the purposes of this study.

4.5.6. Meghalaya

The Meghalaya budget documents include expenditure on "Upgradation of CHCs to hospitals" under the budget head 4210. For the purposes of this study, we have excluded such expenditures as hospitals will perform functions beyond primary health.

Overall, in this study, all identifiable primary health institution-related expenditures have been included by using custom data collection templates for each State, so long as those budget heads correspond to an expenditure that is purely devoted to primary health institutions. If a budget head mixes expenditures towards PHIs and other health institutions such as tertiary hospitals, then such budget heads have been dropped from inclusion in this study.

4.5.7. PHIs under NHM

We have also included primary health institutions established under NHM.

4.6 Calculating Expenditures on Salaries

Salary expenditures for State government employees are a summation of multiple object heads. The salary expenditures typically include the following object heads:

- Pay – Officers
- Pay – Staff
- Interim Relief
- Dearness Allowance
- Other Allowances
- Medical Allowance
- Reimbursement of Medical Expenses

The object heads for these are not standardised across States, nor are all of them necessarily split into separate object heads.

The Twelfth Finance Commission felt that State Finance Accounts need to be more amenable to analysis and comparison, and thus recommended that the finance accounts need to start having appendices for the overall salary expenditure, subsidies and other components of expenditure at the major head level. Thus, salary expenses are available in the Appendix I of States' Annual Finance Accounts since 2005-06 for most States, and since 2006-07 or 2007-08 for a few States.

However, it should be noted that the appendix gives an account of the total salaries of State government employees – but not of the salaries of autonomous institutions who receive grants from the State government, nor of local bodies which receive grants from the State government.

For NRHM, calculating salary expenditures was not a straightforward exercise. NRHM evolved its own set of accounting codes, which were continuously tweaked and improved between 2006-07 and 2013-14. Further, the reporting standards also improved in the same period. It was found that using the given level of granularity in accounting for older years led to a significant under-estimate of both salary and PHI-related expenditure from NRHM. Thus, the ratio of salary and

PHI expenditures to overall NRHM expenditures for 2013-14 was used to estimate the expenditure under the same heads for previous years.

Table 1. Disparate sources of salary expenditure in health at the State level

#	Salary component	Details
1	Government employee salary expenditures	Salary expenditures of listed, official government employees working in the relevant departments. Includes pay, interim relief, allowances, and medical reimbursements.
2	Salary expenditures of Grantee Autonomous Institutions	Budgetary grants towards salaries of autonomous institutions like governmental medical colleges, hospitals and others.
3	Other government salary expenditures including local bodies	Salary component of grants to local bodies on health, nutrition, etc. Budgetary expenditure on incentives for ASHA workers and other informal hires.
4	NRHM/NHM salary expenditures	Most staff are contractual in nature. Salary expenditures in the form of staff salaries, emoluments, contractual payments, awards, and incentives.

Many States have moved beyond having all expenditures fall under line departments and their subsidiaries, and instead foster autonomous institutions which operate independently. Most autonomous institutions come under the budget heads 2210/4210, and are usually medical colleges, super-speciality hospitals and other organisations. For example, most medical colleges in Karnataka, hospitals like the Kidwai Institute of Oncology, etc. are all autonomous institutions. These autonomous institutions receive grants for specific expenditures for salaries, construction of capital assets, and towards other maintenance expenditure.

The grants-in-aid-salaries can be as high as 30% of the overall salary expenditure of a State under the head 2210, for a State like Karnataka.[24]

Grants-in-Aid in States have a separate object code that varies across States. (For example: Rajasthan (93), Karnataka (101), Gujarat (3131), Punjab (31)). However, Grants-in-Aid-Salaries appear to have received their own separate object code around 2009-10 in most States. For example, the object code 311 (Grants-in-Aid-Salaries) was used in a form distinguishable from 310 (Grants-in-Aid) since 2009-10. Similarly, in Gujarat the object code 3131 was preceded by a blanket 3100 (Grants-in-Aid) code before 2008-09.

Thus, in this study, Grants-in-Aid-Salaries have been manually computed for all States from the detailed demand for grants, in all the States where they exist, from the year 2009-10.

4.7 Local Government Expenditures

The four States where there are significant health expenditures at the local government levels were analysed separately. Details of these four States are given below.

4.7.1. Kerala

The State of Kerala is far more fiscally decentralised, having fostered bottom-up participatory planning within the State for several years now. Within the health sector, the Kerala government continues to spend via the usual budget heads like 2210 and 2211, including funds for PHCs (especially doctors' salaries, etc.). Kerala also does not provide much by way of specific purpose transfers to panchayats and Municipal Councils in health. PHCs are typically controlled by Gram Panchayats and CHCs by Block Panchayats.

Instead, Kerala gives large amounts of general purpose transfers to local bodies, some of which can be used for health and other expenditures:

- Development fund (against a decentralised 'plan' which includes local schemes developed in the gram panchayat / block or district panchayat. If health is featured in the local plan, then additional resources can be devoted to health from the local body, including for purchase of equipment at a PHC, new building construction and more.
- Maintenance funds (non-road): includes funds for maintenance and upkeep of PHCs at the Gram Panchayat level.
- Some amount of the expenditures on Anganwadi and ASHA workers and honorariums for other nutrition-related activities are also borne by LSGs (Local Self Governments).
- LSGs also receive devolved funding from NRHM for certain local activities.

Kerala has an "Information Knowledge Mission" dedicated to running a system of accounts and payments for all local bodies in the State. The Information

Knowledge Mission maintains a database that can disaggregate local body expenditures in health, water & sanitation and other sectors. LSGs' expenditure on health in Kerala is thus unique in adding significantly to the State budget on health and related expenditures.

4.7.2. Karnataka

All health institutions with 30 beds or less in Karnataka are managed by the Zilla and Taluk Panchayats across the State of Karnataka. The State budget provides large block grants to ZPs, TPs and GPs – both general and specific purposes within, say, the health sector. The State budget presents a separate set of "ZP Sector" books which contain the Budget Estimates (only) for each component of the block grants. This includes specific components on PHCs and CHCs, as well as on salaries.

Though the ZP sector contains only budget estimates and not actual expenses of the detailed heads and object heads, it is found that the variation between the two at the block grant (minor head) level is less than 0.5%. Thus, estimates of the actual expenditure at the detailed level have been calculated by scaling the estimates accordingly.

Karnataka is unique in having salary expenditure at the district level which contributes to about ~30% of the overall salary expenditure at the State level with another 30% for Grants-in-Aid Salaries. Salary expenditures at the district level have been compiled for all years from 2009-10 to 2014-15 thanks to the Principal Accountant General's office's support.

4.7.3. Orissa

Orissa has a separate "District Sector" apart from the "State Sector" in the State budget, and some of the health-related expenditures happen within the district sector.

All data can be taken directly from the district sector section of the budget as the Detailed Demand for Grants documents provide this information.

4.7.4. Madhya Pradesh

Madhya Pradesh awards large block grants to ZPs and TPs for health-related expenditures. However, the State budget provides all relevant details and break-

up of the grants which can be obtained direct from budget documents (Detailed Demand for Grants).

4.8 Collecting GDP and GSDP estimates

GDP data was collected from the Economic Survey 2016[25]. For the study period, there are two separate GDP series, a 2004-05 series and a second 2011-12 series. Neither is available for the full study period. GDP data from the 2004-05 series was used for the years 2005-06 to 2010-11. GDP data from the 2011-12 series was used for the years 2011-12 to 2014-15.

The Central Statistical Office (CSO) is yet to provide GDP data for previous years using the 2011-12 series, where a change in methodology has made it difficult to obtain comparable data for older years. The new GDP series data have created a controversy since their release, and one report shows that extending the new series backwards has resulted in significant changes in GDP values. [26]

GSDP numbers obtained from NITI Aayog[27] (compiled by MOSPI): For the period under consideration, all States' GSDP data is available under the 2004-05 series.

To conclude this section on challenges of data collection, information on the sources of data is summarised in Table 2 below.

Table 2. Sources of information for building a public health expenditure dataset

#	Item	Data Source	Details
1.1	**UNION GOVERNMENT EXPENDITURE**		
1.1.1	2210 - Medical and Public Health	Finance Accounts, CAG, Government of India	Obtained from Statement No. 9, Detailed Account of Revenue Expenditure by Minor Heads and Capital Expenditure by Major Heads
1.1.2	2211 - Family Welfare		
1.1.3	2215 - Water Supply and Sanitation		
1.1.4	2236 - Nutrition		
1.1.5	4210 - Capital Outlay on Medical and Public Health		
1.1.6	4211 - Capital Outlay on Family Welfare		
1.1.7	4215 - Capital Outlay on Water Supply and Sanitation		
1.1.8	4236 - Capital Outlay on Nutrition		
1.2	**COMBINED BUDGETARY EXPENDITURE OF STATE GOVERNMENTS (Including 3601 Grants)**		
1.2.1	Health & Family Welfare	State Finance Accounts, CAG	Budget heads 2210 to 6236 were collected for each State, and then State totals were calculated in the Raw Dataset, and then summed up for all States. Data excludes all Union Territories
1.2.2	Water Supply and Sanitation		
1.2.3	Nutrition		
1.3	**Direct Transfers of Central Plan to Autonomous Agencies**		
1.3.1	2210 - Medical and Public Health	Expenditure Budget Volume I, Union Budget	
1.3.2	2211 - Family Welfare		
1.3.3	2215 - Water Supply and Sanitation		
1.3.4	2236 - Nutrition		
1.4	**Grants-in-aid to States under State/Central Plan**		
1.4.1	Medical and Public Health	Expenditure Budget Volume II, Govt of India	Collated from departmental 'Demand for Grants' in Expenditure Budget Volume II
1.4.2	Family Welfare		
1.4.3	Water Supply and Sanitation		
1.4.4	Nutrition		
1.6	**India Population (Crores)**	Census 2001 and Census 2011	Data interpolated between 2001 and 2011 assuming exponential growth of population. Same growth rate used to project population till 2014-15.
1.7	**India GDP (Current Prices, Rs Crores)**	Table 1.6 and 1.7, Statistical Appendix, Economic Survey of India 2016	The same base year or methodology of calculation is not available for the entire study period. 2011-12 series data is used for 2011-12 onwards, and the 2004-05 series data is used for previous years.
1.8	**India Budget Size (Rs Crores)**	Budget at a Glance, Union Budget	
1.9	**Infant Mortality Rate (per 1000 live births)**	NFHS 3 and 4	NFHS 3 provides data from 2005-06, coinciding with the start year of the study period. NFHS 4 provides data from 2015-16, one year later than the end of the study period.

5. Analysis of Health Expenditure in India: Volume of Expenditures

Our estimates suggest that in 2014-15, the total public expenditure on health was 0.91 per cent of GDP (Table 3). This includes revenue and capital expenditure on family welfare, medical and public health – including expenditures by the Union government and all State governments. This "Health" expenditure is in accordance with the definitions specified in *Section 4.1*.

If one adds public expenditure on nutrition, water supply and sanitation to health expenditures, the total public expenditure on "Health and Allied Fields" rises to 1.40 per cent of the GDP in 2014-15.

Table 3. Public expenditure on health and related fields in India, as a percentage of GDP

	2005-06*	2006-07*	2007-08*	2008-09*	2009-10*	2010-11*	2011-12	2012-13	2013-14	2014-15
Health	0.83	0.84	0.85	0.92	0.97	0.94	0.92	0.93	0.90	0.91
Water Supply & Sanitation	0.46	0.44	0.48	0.47	0.47	0.43	0.39	0.40	0.37	0.32
Nutrition	0.12	0.13	0.14	0.16	0.18	0.19	0.19	0.19	0.18	0.17
Total Health & Allied Fields	1.41	1.40	1.47	1.55	1.62	1.55	1.51	1.52	1.45	1.40

*GDP data for 2005-06 to 2010-11 from the 2004-05 series, and for subsequent years from the 2011-12 series. See section 4.8 for more details.

Table 3 provides a first look at the trends in public expenditure on health and allied fields. Starting from 1.41 per cent of GDP in 2005-06, expenditures climbed up till 1.62 per cent in 2009-10, before falling steadily back to 1.40 per cent in 2014-15. Corresponding to this, health expenditures varied from 0.83 per cent of GDP in 2005-06, rising to 0.97 per cent of GDP in 2009-10, and falling back to 0.91 per cent in 2014-15. Further, water supply and sanitation expenditures have dropped quickly from 2010-11 onwards from over 0.47 per cent of GDP down to 0.32 per cent.

Choudhury and Nath (2012)[28] note that several governmental documents argue for raising the level of public expenditure on health between 2 and 3 per cent of GDP, including the Approach Paper to the 12th Five Year Plan (2012-2017), Programme Implementation Framework of the National Rural Health Mission (NRHM), and other documents. This typically refers to public expenditure on health alone, and does not include water and sanitation, or nutrition.

Whether a target of 2 or 3 per cent is chosen, this report provides evidence that public expenditure on health is found to be declining for multiple reasons. Increases in public expenditure on health and allied fields was unable to keep pace with the growth of India's GDP after 2009-10. Beyond this, public expenditure on water and sanitation has declined more than other components, going from 0.49 per cent of GDP in 2007-08 & 2008-09 to only 0.32 per cent in 2014-15.

On an absolute basis, India's governments combined, spent over 1.74 lakh crore rupees in 2014-15 on health and allied fields, a 3.3-fold increase in nominal terms in a decade. In real terms (deflated using the GDP deflator) expenditures increased by over 1.8 times in the decade. On a per capita basis, public expenditure in India on health and allied fields was Rs 1,338 in 2014-15, with Rs 870 on health, Rs 303 on water and sanitation and Rs 166 on nutrition per person.[29]

The Constitution of India entrusts the primary responsibility of health to State governments. However, the Union government has taken a more active role in health since the late nineties and the early 2000s, where it started providing specific purpose transfers and grants under Centrally Sponsored Schemes on health, nutrition, water and sanitation.

Choudhury, et al note[30] that the Union government focuses on health issues that are considered national priorities, as well as on issues that have significant inter-state externalities. Till the mid-nineties, they note that the Union government primarily focused on family planning, national-level institutes like AIIMS, select disease control programmes, and regulatory bodies around medicine and health. Since then, the focus has expanded to include maternal and child health – culminating in the National Rural Health Mission starting in April 2005. The NRHM – now the National Health Mission or NHM, also involved the Union government focusing on primary and secondary healthcare[31].

Union government's share in health expenditure increased from 15 per cent of the total ? in the nineties to about 30 per cent by 2005, which is when this paper's study period begins. In health alone, the ratio of Union to State expenditures started at 27:73 in 2005-06, increased to 30:70 in 2008-09, and dropped back down to 25:75 in 2014-15. Tables 4 and 5 show the share of Union and State government expenses on health and allied fields both in absolute terms and as a percentage share of the total.

Table 4. Expenditure shares of Union and State Governments in India on Health & Allied Fields including intergovernmental transfers (in Rupees Crores, Current)

		2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
1	Union Government - Direct Expenditure	3,345	4,051	7,314	10,918	14,511	14,148	13,896	13,010	12,106	12,472
2	Union Government - Direct Transfers to Implementing Agencies at the State Level	5,740	6,818	7,172	6,818	9,516	15,651	17,033	20,527	23,810	0
3	Union Government - Grants-in-Aid to State and UT Budgets on health and allied subjects ("Treasury Route")	5,013	5,110	7,205	8,024	6,194	5,028	6,026	6,573	5,896	31,772
4	State Governments' Own Expenditure	38,066	44,155	51,611	61,728	74,983	86,184	94,587	1,11,235	1,21,489	1,30,147
5	**Total Public Expenditure (1+2+3+4)**	**52,164**	**60,134**	**73,302**	**87,488**	**1,05,204**	**1,21,011**	**1,31,542**	**1,51,345**	**1,63,301**	**1,74,391**
6	Total Budgetary Expenditure at the State Level (Sum of all States) (3+4)	43,079	49,265	58,816	69,752	81,177	91,212	1,00,613	1,17,808	1,27,385	1,61,919
7	Total Expenditure at the State Level (including Direct Transfers to Implementing Agencies) (Sum of all States) (2+3+4)	48,819	56,083	65,988	76,570	90,693	1,06,863	1,17,646	1,38,335	1,51,195	1,61,919
8	Ratio of Union to State Expenditure	***27:73***	***27:73***	***30:70***	***29:71***	***29:71***	***29:71***	***28:72***	***27:73***	***26:74***	***25:75***

Apart from direct expenditure by the Union government, it also provided grants to States – both to State budgets, and directly to implementing agencies at the State level. Further to this, State governments make their own budgetary allocations from their funds above and beyond what the Union government allocates and transfers to them.

In health and allied expenditure, Union government expenditure accounted for 25 per cent of the total in 2014-15. Of this, grants to state governments accounts for 18.2 percentage points in 2014-15. Thus, 92.8 per cent of total public expenditure

in India is spent at the state level. Even this is a floor value, as the remaining funds include allocations to national medical institutions that provide health services for the State they are located in. For example, AIIMS provides health facilities for residents of Delhi and nearby regions, JIPMER for Pondicherry and nearby regions of Tamil Nadu, and so on.

Table 5. Expenditure shares of Union and State Governments in India on Health and Allied Fields including intergovernmental transfers (as a percentage of total public expenditure)

		2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
1	Union Government - Direct Expenditure	6.4	6.7	10.0	12.5	13.8	11.7	10.6	8.6	7.4	7.2
2	Union Government - Direct Transfers to Implementing Agencies at the State Level	11.0	11.3	9.8	7.8	9.0	12.9	12.9	13.6	14.6	0.0
3	Union Government - Grants-in-Aid to State and UT Budgets on health and allied subjects ("Treasury Route")	9.6	8.5	9.8	9.2	5.9	4.2	4.6	4.3	3.6	18.2
4	State Governments' Own Expenditure	73.0	73.4	70.4	70.6	71.3	71.2	71.9	73.5	74.4	74.6
5	**Total Public Expenditure (1+2+3+4)**	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
6	Total Budgetary Expenditure at the State Level (Sum of all States) (3+4)	82.6	81.9	80.2	79.7	77.2	75.4	76.5	77.8	78.0	92.8
7	Total Expenditure at the State Level (including Direct Transfers to Implementing Agencies) (Sum of all States) (2+3+4)	93.6	93.3	90.0	87.5	86.2	88.3	89.4	91.4	92.6	92.8

Indian States together spend about three rupees on health and allied fields for every rupee spent by the Government of India. However, national news and focus remains on flagship missions by the Government of India including the National Health Mission, the National Rural Drinking Water Programme, Swachh Bharat Mission and others. Union government expenditure on health and allied fields is

only a quarter of the total public expenditure, having declined from a high of 30 per cent in 2007-08.

Within health expenditure (excluding nutrition and water and sanitation), policy documents such as the Rajya Sabha departmental standing committee[32] continue to advocate for a 40:60 split in expenditure on health between the Union and State governments. The Union government's share of health expenditure has decreased from a high of 34.5 per cent in 2007-08 to 28.2 per cent in 2014-15.

Both, the absolute levels of public expenditure, as well as the Union government's share of expenditure appear to be sub-par on health and allied fields. One report of the health and family welfare departmental standing committee of Rajya Sabha (2016)[33] laid out how health and family welfare expenditure by the Union government over the twelfth five-year plan is just 46.6 per cent of the plan outlay – showing the massive deficit between set targets of expenditure, and reality.

Spending on health and allied fields shows a remarkable variation across India's States (Tables 6 and 7). Among major States[34], Rajasthan had the highest per capita expenditure on health and allied fields – at Rs 2,026 per person in 2014-15. This was over three times that of the per capita expenditure of Bihar, which was at Rs 617 for the same year. Rajasthan, Gujarat and Tamil Nadu have the highest per capita expenditure on health and allied fields in 2014-15, with Bihar, Uttar Pradesh and Jharkhand having the lowest. In 2005-06, Haryana, Rajasthan and Gujarat showed the highest expenditure per capita, with Bihar, West Bengal and Madhya Pradesh being the lowest.

The smaller, hilly States are more sparsely populated than most major States – and have different challenges in deploying State infrastructure and services on health. Thereby, they incur different costs, and the Union government plays a larger role in expenditure on what are called 'Special Category States'.

Table 6. Total Public Expenditure on Health and Allied Fields at the State Level (Rupees per capita)

		2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
	Major States										
1	Andhra Pradesh	408	515	666	954	1,002	1,116	1,229	1,340	1,466	NA
2	Bihar	203	234	273	285	342	390	454	530	618	617
3	Chhattisgarh	436	502	606	699	776	778	974	1,018	1,139	1,386
4	Gujarat	541	632	704	859	1,039	1,310	1,243	1,614	1,704	1,871
5	Haryana	728	882	1,135	1,339	1,572	1,592	1,606	1,619	1,823	1,695
6	Jharkhand	414	529	676	759	700	785	934	968	840	912
7	Karnataka	431	441	616	686	946	1,119	1,355	1,438	1,392	1,598
8	Kerala	505	571	847	866	1,014	1,008	1,330	1,492	1,634	1,641
9	Madhya Pradesh	317	317	389	404	545	754	830	915	1,066	1,015
10	Maharashtra	507	524	594	586	675	844	986	1,054	1,093	1,169
11	Orissa	361	410	585	707	720	778	842	890	1,170	1,159
12	Punjab	519	502	567	605	667	877	994	1,127	1,111	1,095
13	Rajasthan	563	684	801	1,031	1,184	1,125	1,333	1,469	1,806	2,026
14	Tamil Nadu	535	550	613	786	1,009	1,357	1,382	1,536	1,865	1,827
15	Uttar Pradesh	324	421	401	423	506	525	469	633	675	694
16	West Bengal	263	284	347	432	598	655	736	794	875	956
	Other States										
1	Arunachal Pradesh	2,532	2,960	3,542	3,087	4,473	4,589	5,452	6,478	7,697	7,409
2	Assam	387	474	584	784	1,231	1,109	1,523	1,511	1,413	1,522
3	Himachal Pradesh	1,439	1,932	1,955	2,216	2,437	3,091	2,822	3,169	3,472	3,522
4	Jammu and Kashmir	1,256	1,616	1,919	1,533	2,504	2,392	3,018	2,775	3,034	2,898
5	Manipur	899	1,539	1,438	1,735	2,195	3,333	2,970	2,602	2,758	3,286
6	Meghalaya	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,807
7	Mizoram	2,611	2,795	3,511	3,244	5,690	4,723	4,439	5,071	5,551	5,403
8	Nagaland	1,327	1,647	3,586	3,066	2,081	2,439	2,623	3,009	2,622	2,709
9	Sikkim	2,600	2,732	2,868	3,745	4,227	4,455	5,797	6,160	5,357	5,223
10	Tripura	945	912	953	1,328	1,750	1,644	2,203	2,274	2,863	2,706
11	Uttarakhand	906	990	1,045	1,175	1,100	1,356	1,572	1,674	1,868	2,289
12	Goa	2,137	2,246	2,373	3,266	3,640	3,861	4,498	4,149	4,400	4,502
13	Puducherry	NA	NA	NA	NA	NA	3,220	3,553	3,116	3,618	3,531

Table 7. Total Public Expenditure on Health and Allied Fields at the State Level
(as a percentage of GSDP)

		2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
	Major States										
1	Andhra Pradesh	1.28	1.39	1.50	1.85	1.76	1.61	1.57	1.52	1.48	NA
2	Bihar	2.21	2.12	2.24	1.89	2.01	1.86	1.84	1.80	1.81	1.56
3	Chhattisgarh	1.83	1.71	1.74	1.69	1.86	1.57	1.65	1.52	1.54	1.67
4	Gujarat	1.21	1.23	1.20	1.33	1.39	1.47	1.23	1.47	1.36	1.30
5	Haryana	1.55	1.61	1.79	1.79	1.74	1.54	1.38	1.24	1.24	1.05
6	Jharkhand	1.98	2.33	2.41	2.63	2.18	1.95	2.18	2.05	1.58	1.52
7	Karnataka	1.23	1.10	1.30	1.28	1.64	1.61	1.78	1.66	1.38	1.40
8	Kerala	1.22	1.24	1.63	1.45	1.49	1.32	1.48	1.50	1.45	1.29
9	Madhya Pradesh	1.68	1.47	1.64	1.42	1.69	2.05	1.98	1.87	1.84	1.52
10	Maharashtra	1.08	0.95	0.93	0.85	0.87	0.90	0.96	0.92	0.84	0.82
11	Orissa	1.64	1.57	1.79	1.90	1.78	1.60	1.56	1.46	1.78	1.56
12	Punjab	1.24	1.04	0.99	0.93	0.92	1.07	1.08	1.11	0.99	0.90
13	Rajasthan	2.45	2.52	2.63	2.91	2.95	2.24	2.20	2.17	2.46	2.52
14	Tamil Nadu	1.34	1.16	1.15	1.30	1.40	1.56	1.40	1.40	1.50	1.29
15	Uttar Pradesh	2.00	2.32	1.98	1.83	1.89	1.74	1.39	1.67	1.64	1.51
16	West Bengal	0.97	0.93	1.00	1.10	1.32	1.26	1.25	1.19	1.13	1.10
	Other States										
1	Arunachal Pradesh	7.84	8.48	8.77	6.54	7.30	6.28	6.31	6.91	7.26	6.14
2	Assam	1.85	2.12	2.40	2.87	3.85	2.99	3.72	3.40	2.79	2.64
3	Himachal Pradesh	3.41	4.14	3.78	3.54	3.39	3.64	2.97	2.96	2.92	2.67
4	Jammu and Kashmir	4.56	5.36	5.85	4.16	5.95	4.80	5.22	4.31	4.19	4.03
5	Manipur	3.61	5.70	4.88	5.58	6.40	8.88	6.60	5.11	4.85	5.18
6	Meghalaya	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.10
7	Mizoram	8.27	8.09	8.87	6.91	10.68	7.38	6.51	6.20	5.57	4.45
8	Nagaland	4.24	4.84	5.14	3.85	4.37	4.64	4.28	4.39	3.42	3.15
9	Sikkim	7.47	7.33	6.72	6.90	4.15	3.66	4.01	3.66	3.16	2.63
10	Tripura	3.26	2.86	2.80	3.44	4.04	3.31	4.01	3.69	3.97	3.22
11	Uttarakhand	2.77	2.50	2.15	2.01	1.51	1.59	1.61	1.57	1.56	1.72
12	Goa	2.19	2.06	1.90	2.09	2.11	2.00	1.86	1.80	1.70	1.54
13	Puducherry	NA	NA	NA	NA	NA	3.35	3.44	2.75	2.65	2.19

After 2013-14, the ninth year in this study, Union-to-State transfers on health, water and other development sector schemes underwent a complete overhaul in the mode of transfer, along with the accounting practices for the same. This has been explained in Section 4.3.

If one were to examine just the major heads of expenditure (2210, 2211, etc.) at the Union level – the discontinuation of direct transfers from the Union government to implementing agencies leads to a significant reduction in expenditure. This is because the expenditures got subsumed under 3601 and 3601 major heads for inter-budgetary transfers. Correspondingly, the budgetary expenditures of States on health jumped up in 2014-15.

Table 8 illustrates the difference in per capita expenditures at the State level that comes from excluding direct transfers.

Table 8. Per Capita Expenditure at the State Level for the year 2013-14
(Rupees, Current)

		State-level budgetary Expenditure on Health and allied subjects ("Treasury route")	State-level extra-budgetary Expenditure on Health and allied subjects ("Non treasury route")	Total Public Expenditure at State Level
	Major States			
1	Andhra Pradesh	1,300	166	1,466
2	Bihar	507	111	618
3	Chhattisgarh	976	163	1,139
4	Gujarat	1,513	191	1,704
5	Haryana	1,590	233	1,823
6	Jharkhand	669	171	840
7	Karnataka	1,162	230	1,392
8	Kerala	1,478	156	1,634
9	Madhya Pradesh	826	240	1,066
10	Maharashtra	941	152	1,093
11	Orissa	985	185	1,170
12	Punjab	886	225	1,111
13	Rajasthan	1,520	286	1,806
14	Tamil Nadu	1,625	240	1,865
15	Uttar Pradesh	556	119	675
16	West Bengal	516	359	875
	Other States			
1	Arunachal Pradesh	5,213	2,484	7,697
2	Assam	932	481	1,413
3	Himachal Pradesh	2,992	480	3,472
4	J&K	2,360	674	3,034
5	Manipur	2,178	580	2,758
6	Meghalaya	3,111	NA	NA
7	Mizoram	4,603	948	5,551
8	Nagaland	1,941	681	2,622
9	Sikkim	4,456	901	5,357
10	Tripura	2,271	592	2,863
11	Uttarakhand	1,575	293	1,868
12	Goa	4,273	127	4,400
13	Puducherry	3,504	114	3,618

As Figures 3 and 4 show, till 2013-14, up to 67 per cent of health transfers and up to 80 per cent of health & allied transfers were given as direct transfers, outside the control and purview of State government budgets.

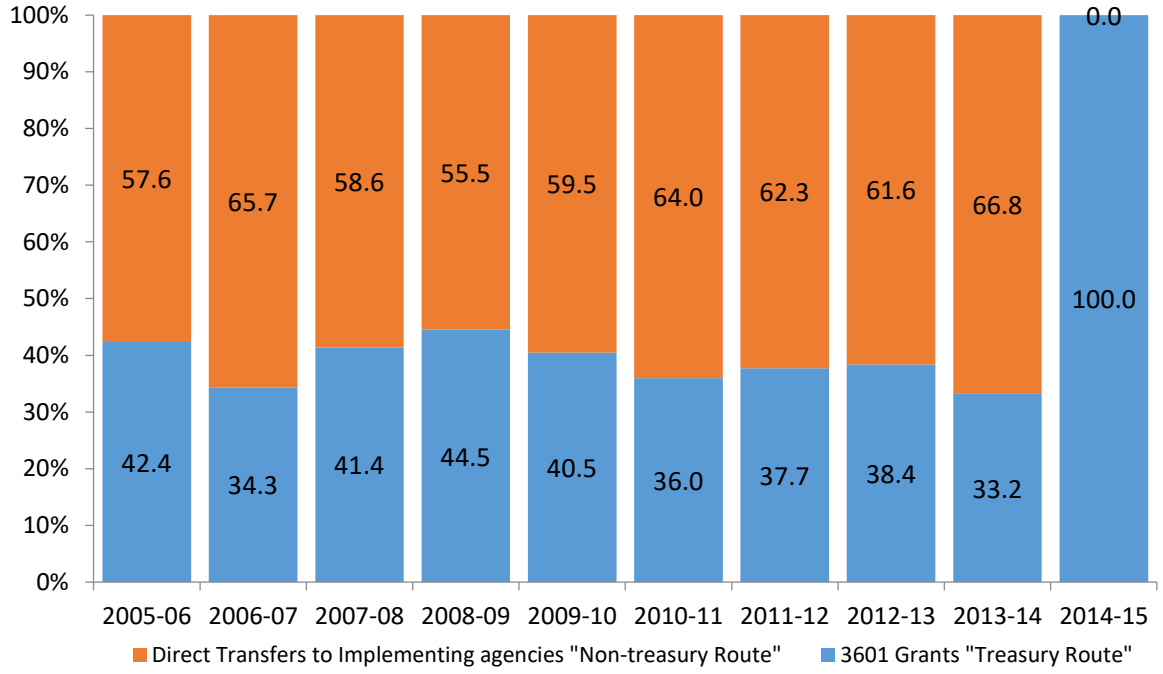

Figure 3. Percentage of Union Transfers to States on Health Through Treasury Route and Direct to Implementing Agencies

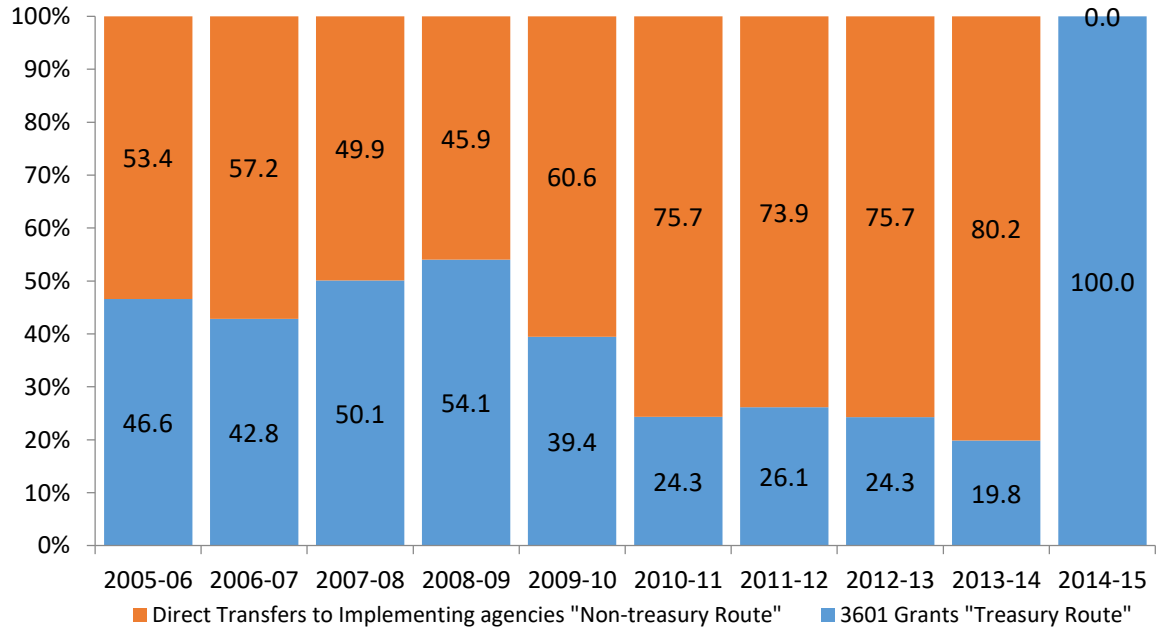

Figure 4. Percentage of Union Transfers to States on Health and Allied Fields Through Treasury Route and Direct to Implementing Agencies

Within health expenditure, Table 1 from earlier in the report shows how officially reported salary expenditure by States is only a fraction of the overall salary-related expenses of States on health. Table 9 provides the most comprehensive estimate of salary-related expenditure on health in India. This is only available for the period of 2009-10 onwards, thanks to updates to object codes and other accounting improvements that allowed the tracking of all salary-related expenditures in States. For major States, the share of salary expenditure in health ranges from about 30 per cent to almost 80 per cent.

Table 9. Share of Salary expenditure in total public expenditure on health at the State level (Percentage, 2009-10 to 2014-15)

		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
	Major States						
1	Andhra Pradesh	62.5	65.8	60.9	66.9	57.3	NA
2	Bihar	55.5	NA	NA	NA	53.1	53.7
3	Chhattisgarh	53.8	54.9	47.5	48.9	57.6	46.1
4	Gujarat	39.5	38.5	38.9	30.5	31.7	28
5	Haryana	65	59.5	53.9	48.9	45.4	50.1
6	Jharkhand	52.2	52.4	54.9	63	60.2	57.9
7	Karnataka	62.4	64	62.1	63.2	63	66.2
8	Kerala	53.5	50.6	50.1	54.5	51.8	50.5
9	Madhya Pradesh	69.3	62	56.3	55.6	52.7	54.3
10	Maharashtra	61.3	63.1	57.8	54.8	50.6	45
11	Orissa	79.1	77.3	75.4	72.1	76.6	81
12	Punjab	71.2	67.5	58.1	58.9	59.1	54.7
13	Rajasthan	36.1	37.5	39.4	33.1	32	29.7
14	Tamil Nadu	46.5	52.6	43.7	50.7	41.1	43.7
15	Uttar Pradesh	47.4	55.2	61.9	58.1	53.5	53.8
16	West Bengal	61.5	64.4	59.8	63.3	NA	NA
	Other States						
1	Arunachal Pradesh	NA	NA	NA	NA	NA	NA
2	Assam	25.9	40.3	31.1	36.3	42.3	41.1
3	Himachal Pradesh	73.5	77.3	72.4	74	66.8	71.7
4	Jammu and Kashmir	61.2	60.7	61.4	67.9	65.8	73.1
5	Manipur	56.7	59.4	38.5	51.1	45.7	43.8
6	Meghalaya	NA	NA	NA	NA	NA	NA
7	Mizoram	85.5	NA	NA	NA	NA	NA
8	Nagaland	33.7	60.9	60	73.6	64	75.8
9	Sikkim	57	59.1	56	59.4	66.1	64.4
10	Tripura	68.6	36.3	51.3	39.6	40.2	41.2
11	Uttarakhand	59.7	56.7	44.7	52.9	53.3	54.3
12	Goa	66.2	67	64.9	67.4	62.2	63.9

Unlike sectors such as, say, the defence sector, it is not easy to infer the quality of health services delivered based on the share of salaries. Some States likely need more doctors, nurses and specialists to work across regions, and additional expenditure on salaries could lead to better health outcomes. In other States, complementing existing healthcare staff with both capital investments in better hospitals, and greater share of expenses on consumables such as medicines, could lead to better health outcomes.

Table 10. Expenditure on Primary Health Institutions at the State Level as a percentage of public expenditure on health (2009-10 to 2014-15)

		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
	Major States						
1	Andhra Pradesh	18.1	17.4	17.1	19.3	18.0	NA
2	Bihar	39.4	NA	NA	39.7	34.2	27.5
3	Chhattisgarh	40.9	39.5	36.1	37.7	40.2	30.4
4	Gujarat	18.5	16.2	14.9	15.9	16.5	13.0
5	Haryana	30.6	31.1	31.6	33.3	32.2	40.2
6	Karnataka	21.1	20.0	22.1	23.0	21.8	19.6
7	Kerala	19.0	17.1	17.8	17.4	19.9	18.8
8	Madhya Pradesh	25.3	23.4	27.1	29.1	25.0	24.1
9	Maharashtra	24.1	23.5	22.1	21.4	20.0	14.6
10	Orissa	24.6	25.6	23.7	22.7	20.1	18.4
11	Punjab	NA	NA	NA	NA	NA	NA
12	Rajasthan	20.4	21.2	17.6	21.0	20.7	20.2
13	Tamil Nadu	18.6	10.8	12.3	9.4	10.5	11.2
14	Uttar Pradesh	22.4	25.1	23.9	23.7	24.7	25.2
15	West Bengal	23.8	21.9	19.7	20.0	19.3	20.3
	Other States						
1	Goa	12.5	13.4	12.6	12.6	13.2	14.1
2	Arunachal Pradesh	NA	NA	NA	NA	NA	NA
3	Assam	11.2	19.2	11.2	12.9	15.8	16.4
4	Himachal Pradesh	11.7	9.9	12.2	9.6	10.8	8.9
5	Jammu and Kashmir	16.3	16.8	15.6	17.5	20.5	21.0
6	Jharkhand	29.8	28.3	19.3	25.2	26.9	24.0
7	Manipur	16.7	18.5	18.1	25.0	16.1	NA
8	Meghalaya	46.1	NA	NA	NA	NA	49.2
9	Mizoram	20.2	40.7	35.0	57.0	23.9	18.4
10	Nagaland	11.7	8.4	14.2	26.5	29.7	27.6
11	Sikkim	18.6	18.4	23.3	23.6	22.8	21.9
12	Tripura	16.6	16.0	18.0	16.4	16.5	16.4
13	Uttarakhand	10.7	7.3	10.9	16.1	10.9	12.2

Primary healthcare – the first level of contact with individuals and families by the healthcare system – is a critical part of public expenditure on health. However, both the complexity and the inadequacy of India's governmental health infrastructure result in a multitude of institutions delivering primary healthcare services. This study estimates the share of expenditure on primary health institutions (defined in the previous section) in overall public expenditure on health.

It is found that between 10 and 40 per cent of health expenditure is allocated by States towards primary health institutions (PHIs) [Table 10]. On average, a meagre Rs 158 was spent per person on PHIs by major States. This is likely a significant source of failure for India achieving desirable health outcomes as well as improvements.

6. Analysis of Health Expenditure in India: Inter-state analysis

In the set of chosen16 major States, the unit costs of providing health and allied services is likely similar to each other's, compared to that of the smaller, hilly States. While this is a crude approximation, one could say that a unit difference in per capita health expenditures would translate into differences in standards of public services provided.[35]

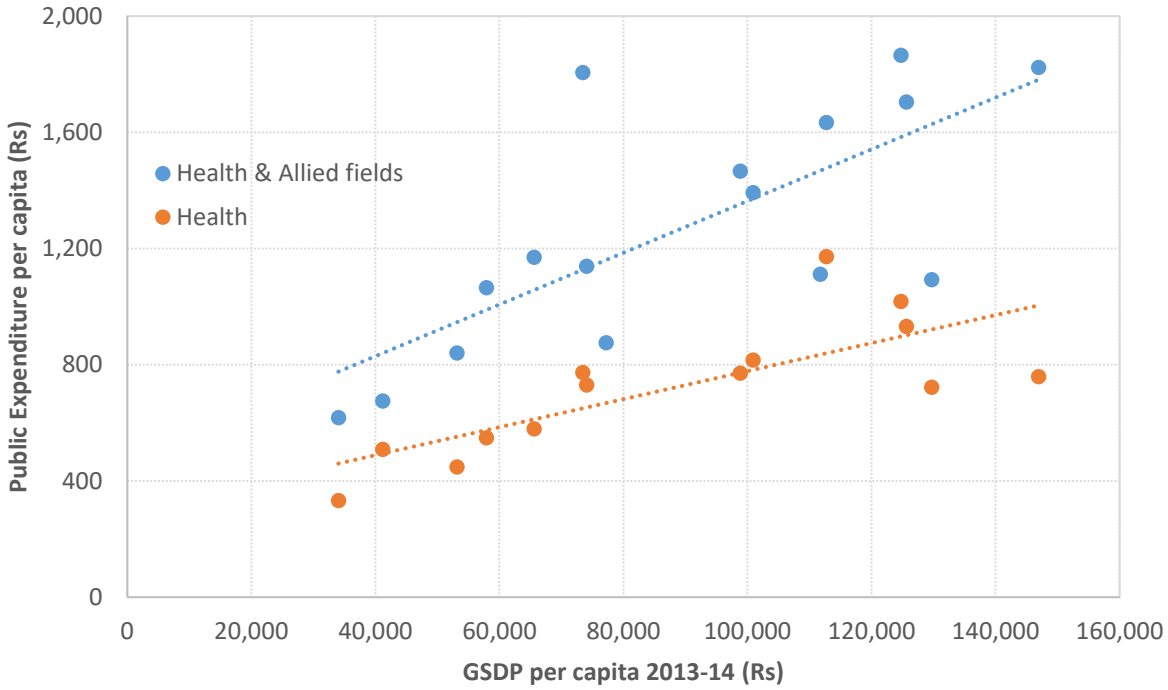

Figure 5. Health and Allied expenditures of Major States according to per capita GSDP (2013-14)

India's States have significant variations in incomes, and thus in GSDP per capita. The analysis of per capita expenditures on health and allied fields provides useful results, especially when compared against per capita GSDP figures.

Generally, it is seen that richer States spend more on health and allied fields. Figure 5 shows the variation in per capita health and allied expenditures with per capita GSDP for the year 2013-14. Both for health alone, and for health together with allied fields, it is generally seen that higher GSDP per capita States have higher targeted expenditures. From Table 6 earlier, in 2014-15, Rajasthan spent 3.28 times the per capita expenditure of Bihar on health and allied fields. Thus,

when the unit costs of providing health and allied services are equal, the standard of services in Rajasthan are 3.28 times that of Bihar.

States with high per capita GSDP also have higher taxable capacity person and can spend more development needs and social sector needs such as health, water and more.

Panagariya et. al showed how inter-state variations in health expenditures were extremely high in the 1990s and in the early 2000s. They found that the coefficient of variation of health and allied expenditures peaked at 0.72 in 2000-01, and then steadily decreased. The resolution of the fiscal stress that many States were under, as well as a larger role taken up by the Union government in health, could have both resulted in lowering the inter-state variation in health expenditures.[36]

On health expenditures, there appears to be a general increase in inter-state disparities in per capita health expenditure, with the coefficient of variation in health expenditures across States increasing from about 0.20 in 2005-06 to about 0.30 in 2014-5. But, there appears to be a sudden jump in disparity between 2011-12 and 2012-13. One possible explanation could be that this is an outcome of States trying to adjust to a lower economic growth scenario. However, the same observation does not apply to health and allied expenditures when considered together.

For 2005-06 to 2014-15, the coefficient of variation in per capita health and allied expenditures stands high between 0.30 and 0.37, as Table 11 shows. Beyond this, health and allied expenditures show a strong positive correlation with per capita GSDP. It appears that Union-to-State transfers, though they are meant to be progressive and equalising in nature, are unable to offset the additional fiscal space and governance capacity that comes with higher per capita GSDP.

The growth rate in per capita expenditures on health and allied fields varies significantly across years and across States. If the study period is split in half, it is found that the growth rates (CAGR) in the first 4-5 years is 16.1 per cent, and growth rate in the second half drops to about 10.1 per cent (Table 12). 2005-06 to 2009-10 was a period of high economic growth across India, and it was also a time when tax revenues were highly buoyant.[37] After about 2011, both growth rates and tax buoyancy came down significantly, also resulting in slower increases in per capita health expenditure.

Table 11. Coefficients of variation in per capita health expenditures across major States, and correlation with per capita GSDP

	Coefficient of Variation in Per Capita Expenditures			Correlation Coefficients Per Capita State Level Expenditures with Per Capita GSDP	
Year	Health	Health & Allied		Health	Health & Allied
2005-06	0.20	0.30		0.55	0.78
2006-07	0.20	0.32		0.57	0.65
2007-08	0.22	0.34		0.58	0.63
2008-09	0.21	0.37		0.55	0.60
2009-10	0.24	0.37		0.75	0.68
2010-11	0.25	0.34		0.81	0.81
2011-12	0.25	0.32		0.63	0.79
2012-13	0.31	0.31		0.79	0.80
2013-14	0.32	0.33		0.77	0.74
2014-15	0.30	0.34		0.73	0.68

Table 12. Annual Average Growth Rate of Expenditures in Major States (CAGR, Percentage per year)

		2009-10	2010-11
1	Andhra Pradesh	25.2	10.0
2	Bihar	13.9	12.5
3	Chhattisgarh	15.6	12.3
4	Gujarat	17.7	12.5
5	Haryana	21.2	1.5
6	Jharkhand	14.0	5.4
7	Karnataka	21.7	11.1
8	Kerala	19.0	10.1
9	Madhya Pradesh	14.5	13.2
10	Maharashtra	7.4	11.6
11	Orissa	18.9	10.0
12	Punjab	6.5	10.4
13	Rajasthan	20.4	11.4
14	Tamil Nadu	17.2	12.6
15	Uttar Pradesh	11.8	6.5
16	West Bengal	22.8	9.8

Panagariya et al[38] found that growth rates in public expenditure for a multi-year period varied positively with the initial-year per capita GSDP when they examined the 1990s. However, this variation with a positive slope turned zero or slightly negative starting in the 2000s. This study extends the analysis further till 2014-15 for health and allied expenditures – and finds that the slope becomes more negative over time again [Figures 6 and 7].

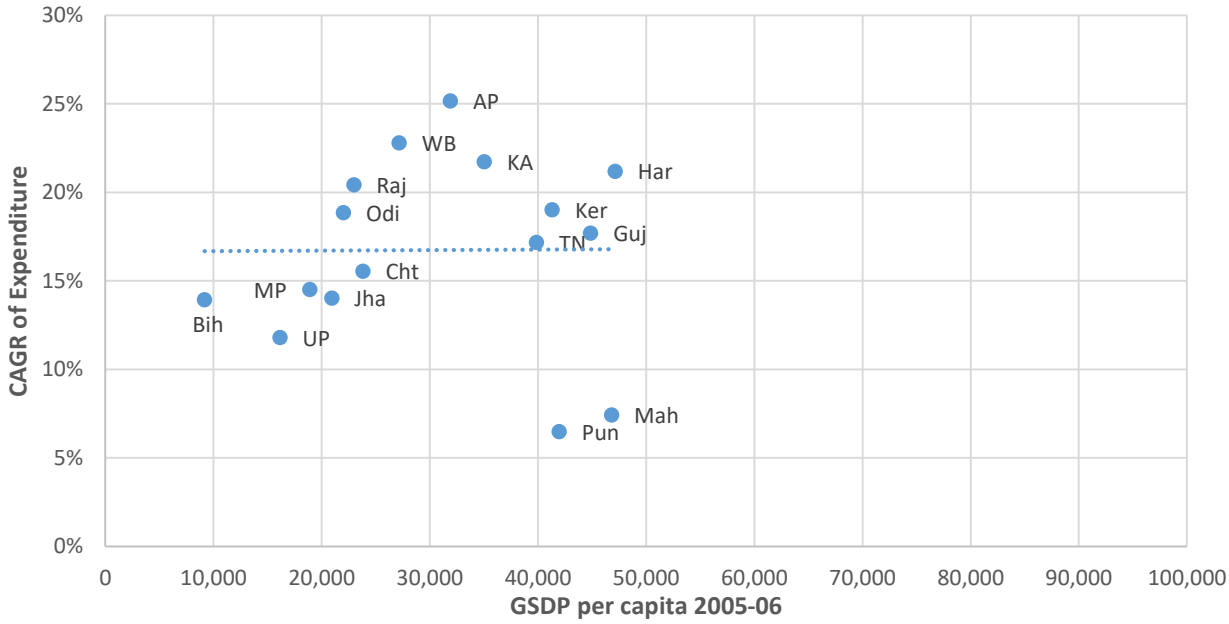

Figure 6. Relation between initial level of GSDP and growth of public expenditure on health and allied fields, 2005-06 to 2009-10

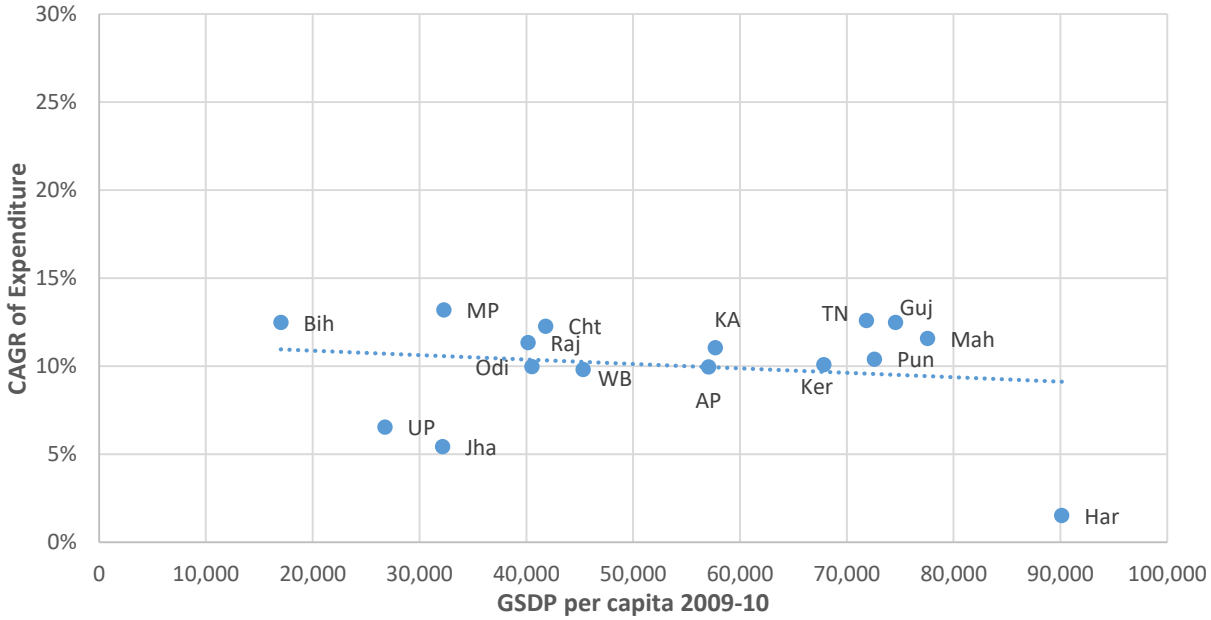

Figure 7. Relation between initial level of GSDP and growth of public expenditure on health and allied fields, 2009-10 to 2014-15

The implication of this observed change in the slope is significant. It appears that richer states are getting complacent about prioritising health expenditures, even if it can be more difficult to achieve high growth rates over a larger base of per capita health expenditures. In particular, Haryana, India's richest large state on

per capita GSDP terms in 2009-10, shows negligible increase in per capita public expenditure on health and allied fields in the 5 years after then.

Additionally, Figures 6 and 7 show that with rising incomes, even low-income States like Bihar, Madhya Pradesh, and Odisha were able to prioritise health spending over other competing areas. In contrast, Uttar Pradesh and Jharkhand show no such promise of prioritising health expenditures given their limited fiscal resources. In all, more needs to be done by governments at both Union and State levels to ensure better health outcomes in poor states.

Growth in a state's GSDP broadly correlates with higher tax revenues for the state, especially with own source tax revenues coming from tax on sales of goods, and from other sources. In Figure 8, we try to examine the relationship between the rate of growth of per capita expenditure on health and allied sources against the rate of growth of per capita tax revenues of the state. Data for the period of 2009-10 to 2014-15 shows that generally, states that see faster growth in income in the form of tax revenues, also increase health expenditure faster.

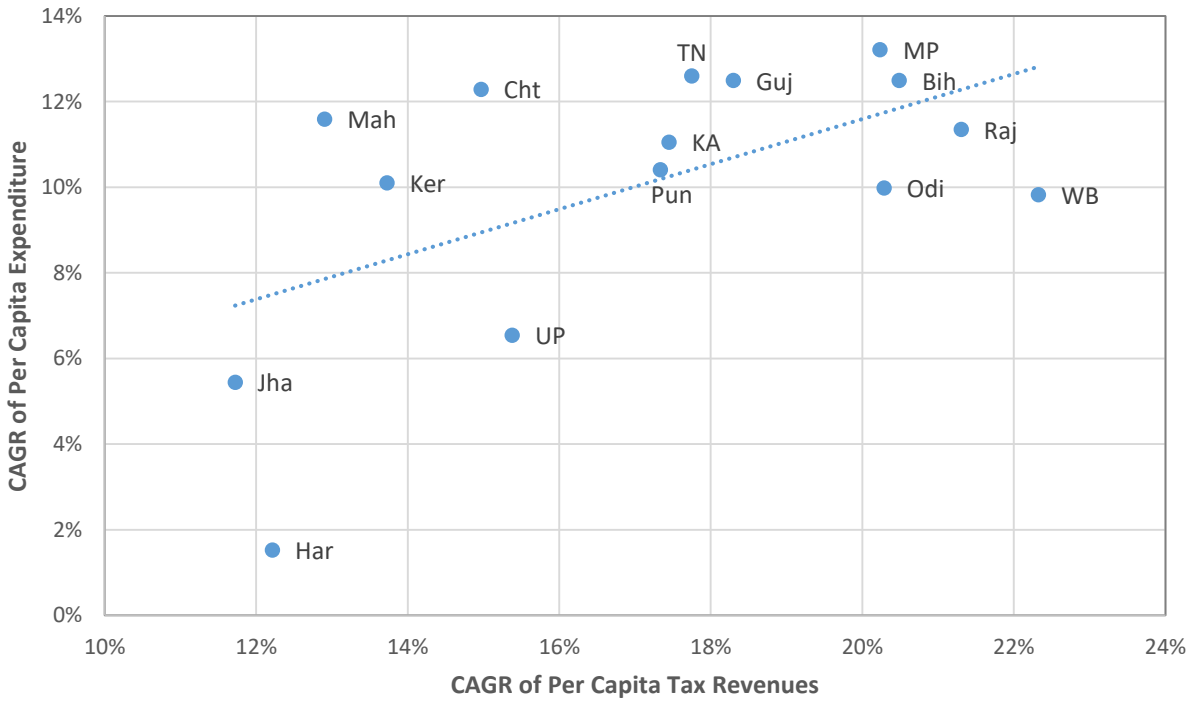

Figure 8: Relation between growth in per capita public expenditure on health and allied fields and growth in per capita tax revenues (2009-10 to 2014-15)

The Union government provides specific purpose transfers on health to States in the form of Centrally Sponsored Schemes like the National Health Mission. The ultimate purpose of specific purpose grants is to ensure minimum levels of public services across States, irrespective of the taxable capacity of the individual States.

From Section 5, one finds that intergovernmental transfers account for between 18 and 20 per cent of the overall public expenditure on health and allied fields in India. In order to ensure minimum levels of services, the transfers will likely have to be progressive, and have an equalising nature – providing higher grants to poorer States with poorer health outcomes, and lower grants per capita to richer States with better health outcomes and services.

However, specific purpose transfers on health and allied fields appear to have little relation to a State's level of income. Figure 9 is a snapshot of the year 2013-14, where the governmental components of expenditure on health and allied fields is broken down. Both total per capita public expenditure, and per capita State's own expenditure vary positively with increases in per capita GSDP. But, per capita health and allied transfers appear to stay the same across income. Table 12 shows that per capita transfers are not correlated well with per capita GSDP for any of the years in the study period. Had the transfer system been truly progressive and equalising, it should have shown a strong negative correlation with per capita GSDP.

Thus, Bihar and Tamil Nadu get roughly similar transfers on health and allied fields per capita, in spite of the significantly different taxable capacity in either State.

As one can clearly see in Figure 9, even the poorest States have own expenditures on health and allied fields being three to four times as much as the transfers they receive. In order to ensure minimum levels of services, it might be necessary to redistribute the transfers more heavily in the favour of poorer States – to the extent that the transfers to poorer States doubles or triples. This will remain a difficult bargain in a federal system like India's.

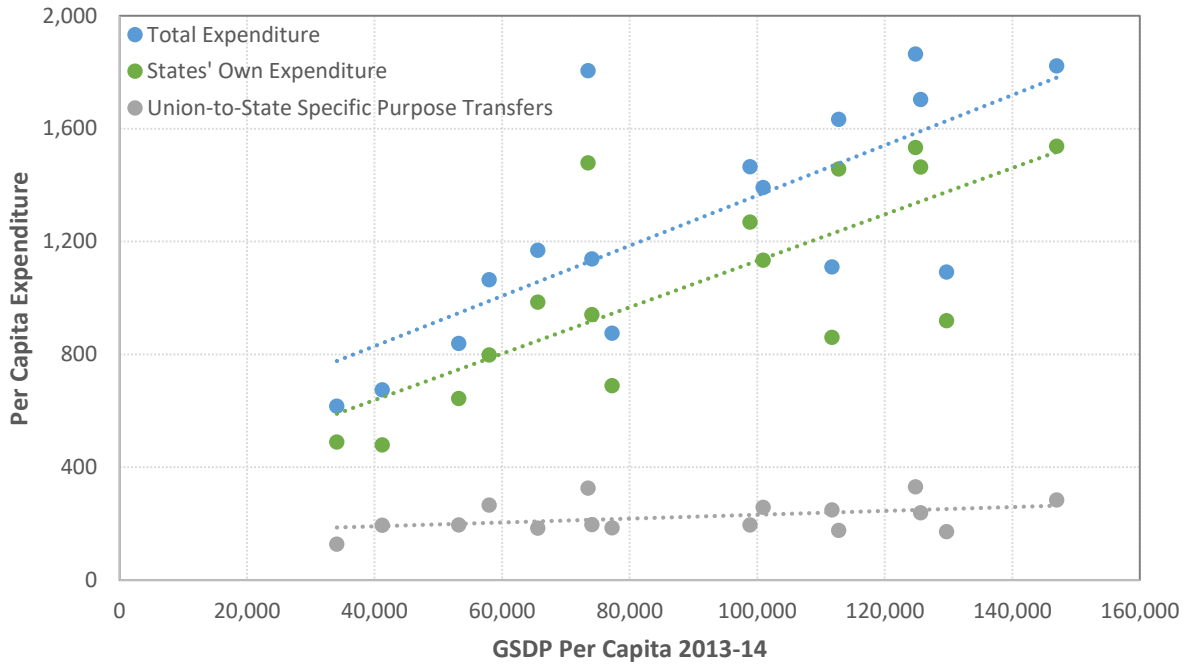

Figure 9. Components of Per Capita Public Expenditure on Health and Allied Fields at the State Level for 2013-14

Table 13. Per Capita Specific Purpose Transfers from Union-to-State governments on health & allied fields and its relation with per capita GSDP

Year	Coefficient of Variation	Correlation Coefficients with per capita GSDP
2005-06	0.47	0.45
2006-07	0.50	0.36
2007-08	0.52	0.40
2008-09	0.54	0.42
2009-10	0.54	0.48
2010-11	0.47	0.57
2011-12	0.31	0.26
2012-13	0.26	0.44
2013-14	0.26	0.40
2014-15	0.30	0.31

Thus, Bihar and Tamil Nadu get roughly similar transfers on health and allied fields per capita, despite the significantly different taxable capacity in either State. Since the specific purpose transfers for health and allied fields do not seem to be performing the equalising role that they were supposed to, a redesign of the transfer mechanism is required.

8. Analysis of Health Expenditure in India: Impact on health indicators

Until this point in the report, only health sector outlays have been discussed and analysed. This section makes a preliminary attempt to examine the relationship between health sector outlays by governments with key health outcomes across States.

In order to do this, the study has used recently released data from the National Family Health Survey-4 (NFHS-4)[39] which provides key health indicators for the year 2015-16. The study period of 2005-06 to 2014-15 coincides well with the last two rounds of NFHS data on health outcomes. Thus, NFHS-3 data (which captures health indicators from 2005-06)[40] helps in taking stock of the state of public expenditures and health outcomes at the start of the study period. And comparing the change in public health expenditures over the next decade with changes in health outcomes between NFHS-3 and NFHS-4 helps in establishing the impact of public spending on changing health outcomes.

NFHS-4 provides data for a list of 114 key health outcome indicators across every state in India. A detailed study should compare public health expenditures with many of these key indicators but for the purposes of this study, only one indicator has been examined: Infant Mortality Rate (IMR). IMR is defined as the number of deaths in children under 1 year of age per 1000 live births in the same year. This rate is often used as an indicator to measure the health and well-being of a nation, because factors affecting the health of entire populations can also impact the mortality rate of infants[41]. Because IMR is a good indicator of community health status, this study specifically focuses on the relationship between IMR data from NFHS-3/NFHS-4 and the corresponding changes in public health expenditures.

Figure 10 places state wise IMR data against per capita expenditures on health and allied fields at the start of the study period i.e. 2005-06. The negative correlation provides evidence for the obvious assertion that States having lower IMR also appear to be those that spend more, as of 2005-06. This further means that 2005-06 onwards, states that were performing poorly on IMR needed a lot more fiscal support from the Union government in order to ensure that minimum standards of IMR are met across the country. Ideally, Centrally Sponsored Schemes such as NHM (earlier NRHM), which began around the same time, should have addressed this wide disparity over the next decade.

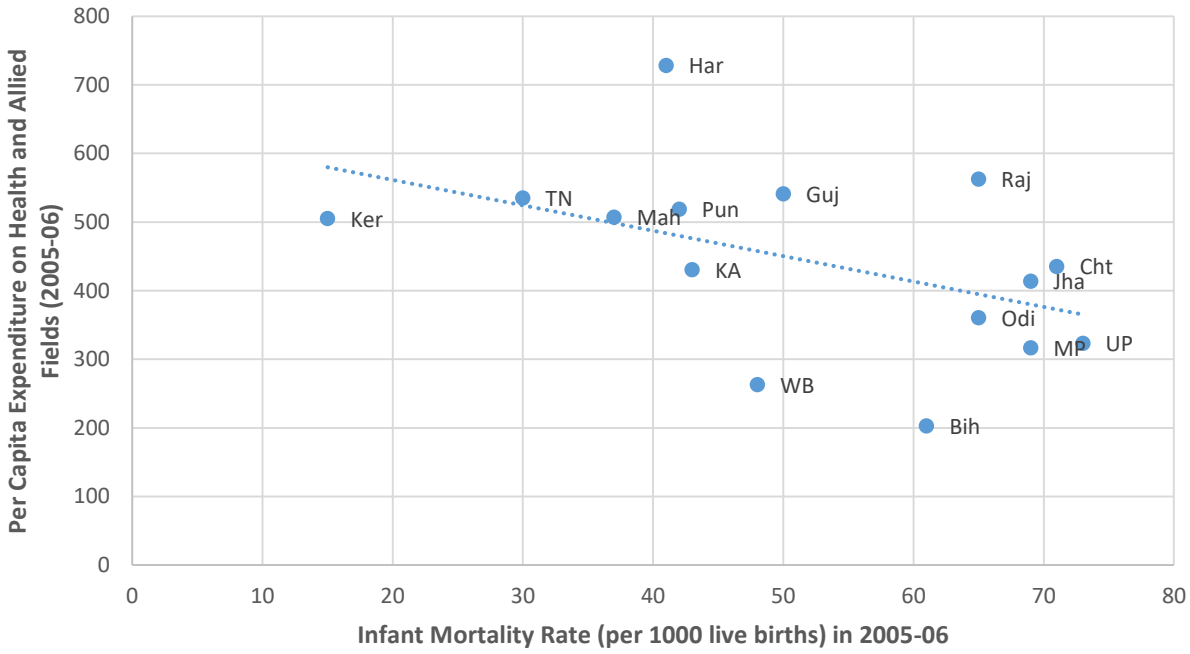

Figure 10. Per capita expenditure on Health and Allied Fields according to Infant Mortality Rate (2005-06)

Figure 11 repeats the same plot albeit with IMR numbers from NFHS-4 and overall public health expenditure in the year 2014-15[42]. The same correlation that existed in Figure 10 is repeated. Even though both IMR numbers and public health expenditures have shown improvement, the inequity is sustained. States that do better on IMR were still the ones that spent more on public health. In contrast, the states that continue to fare badly in 2014-15 are also the ones that spend less on public health. Evidently, equalising measures of specific transfers have not yielded the results they were supposed to.

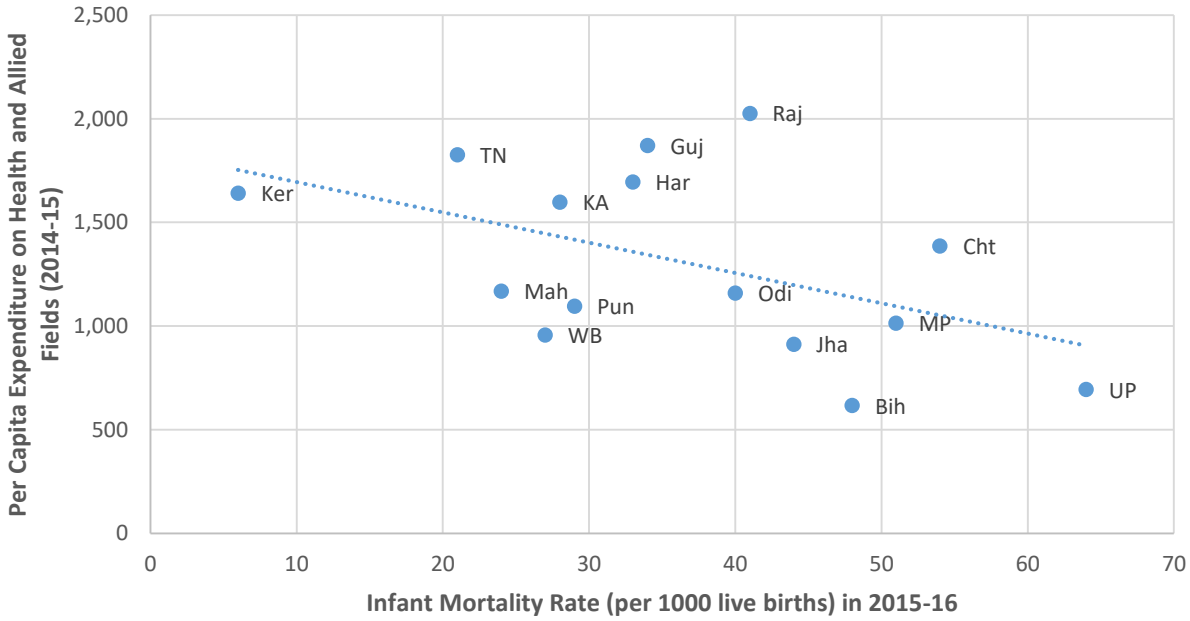

Figure 11. Per capita expenditure on Health and Allied Fields according to Infant Mortality Rate

Figure 12 is a more direct intertemporal comparison of public health expenditures and changes in IMR between 2004-05 and 2014-15. CAGR of per capita expenditure on overall health correlates positively with the percentage change in IMR figures between 2004-05 and 2014-15. This means that in spite of the levels of out-of-pocket expenditure that might account for an improvement in outcomes, public expenditure on health appears to have had a positive impact on improvement in IMR health outcome over the last decade. This is an evidence for the need to increase public health sector allocations particularly in states that are lagging behind on health indicators.

Figure 13 shows a comparison of percentage change in IMR over the study period with the initial levels of IMR at the beginning of the study period. It is observed that states with the lowest initial IMR were also the ones that improved the fastest. This, despite the fact that as IMR improves, there is a possibility that further increases in public health expenditures will only yield diminishing marginal returns.

Kerala is the biggest outlier, achieving a 60 per cent reduction in IMR even though it already started with a low base in 2004-05. Even if Kerala is omitted, the trend is sustained. Thus, it is clear that because of systemic issues, inequality in health outcomes is not being reduced.

Finally, the above discussion on health outcomes reemphasises two points: one, the urgent need to rethink the specific transfer mechanism as it is not progressive. Secondly, because of the large inequalities, there is no long-term solution other than for poorer states to increase their economic growth rates.

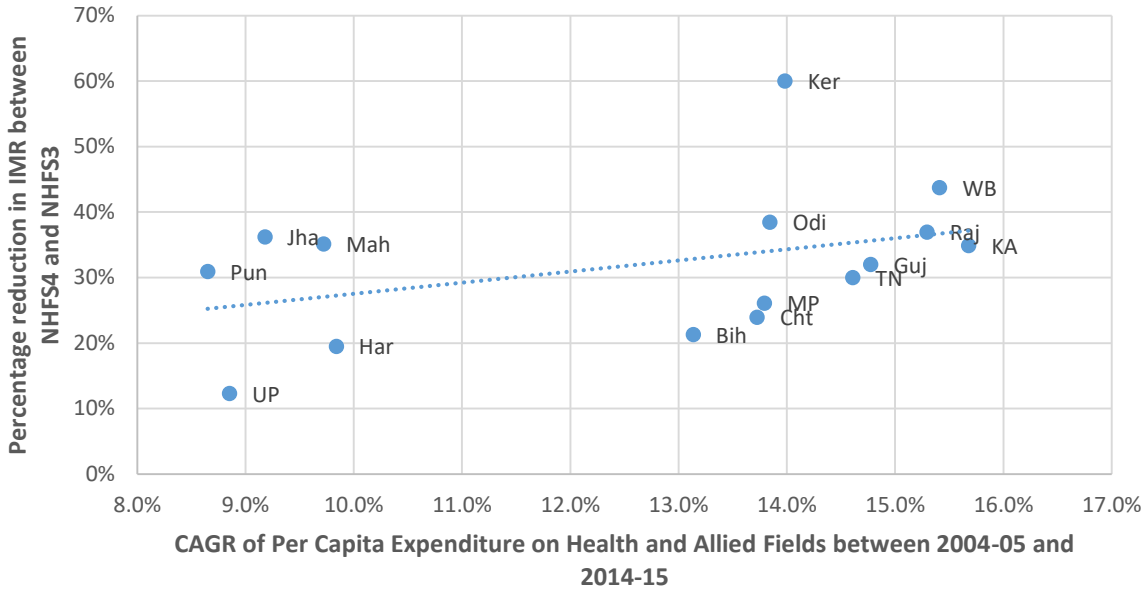

Figure 12. Reduction in Infant Mortality Rate between NHFS-3 (2005-06) and NHFS-4 (2015-16) According to Increase in Per Capita Public Expenditure on Health and Allied Fields

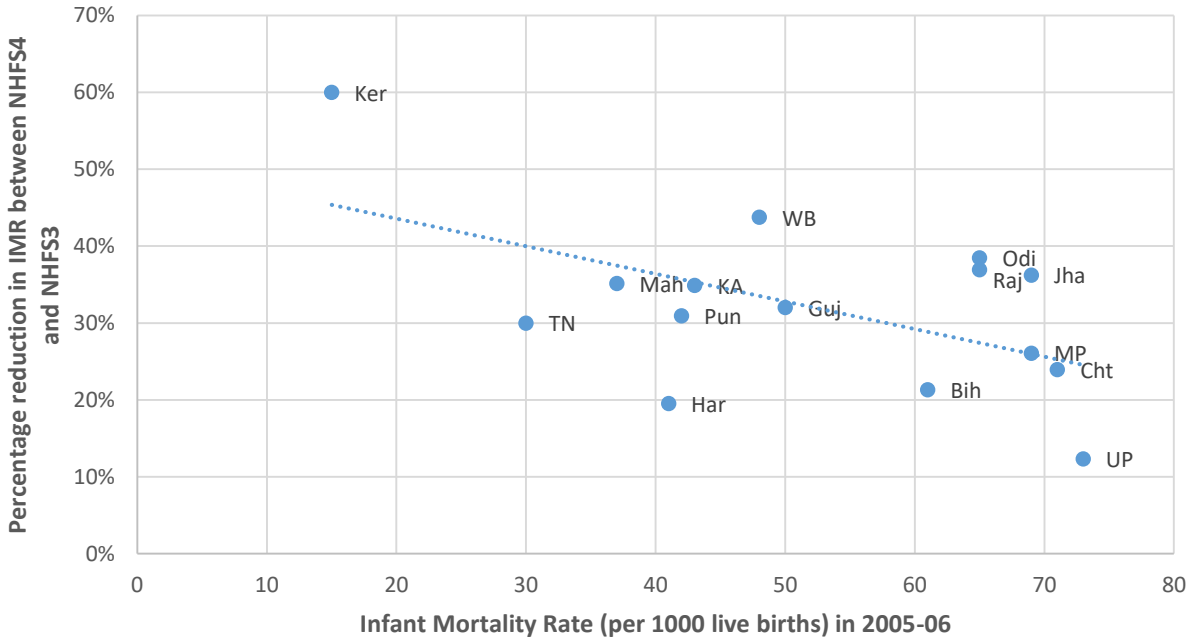

Figure 13. Improvement in Infant Mortality Rate between NHFS-3 (2005-06) and NHFS-4 (2015-16)

9. Analysis of Health Expenditure in India: Responsiveness of Union transfers on State Health Expenditures

As seen in section 5, total public expenditure in health is far below 2.5 – 3 per cent of GDP, and steadily falling since 2010. The fiscal space required is not easy to obtain, and if universal access of basic, affordable healthcare is a national mandate, then the Union government has to examine the role it is playing in creating that fiscal space for public expenditure on health.

Centrally Sponsored Schemes such as the National Health Mission are means to increase overall public expenditure on health. While the Union Government provides specific purpose grants on health via the NHM, the scheme also expects States to contribute funds to match the Union's grants. Before 2014-15, the Union-to-State funding ratio for 85:15 for major States in NHM, after which it changed to 75:25 for major States. This is expected to drop to 50:50 in subsequent years. The intended design of NHM is to stimulate State government expenditure on health, where if the Union increases its contributions, States follow and increase their contributions too. However, it is also possible that State governments can substitute their own expenditure with fresh grants coming from the Union government.

Rao and Choudhury[43] (2012) conducted econometric analysis to investigate whether specific purpose grants by the Union government to States is stimulating or substituting States' own expenditure on health. They examined health expenditures of 14 major States in India from the period 1991 to 2007, investigating the relationship between States' own expenditures on health, and transfers from the Union government, overall revenues of the State's and the States' priority for health. In order to test substitution or stimulation effect, we have recreated the econometric analysis deployed by Rao and Choudhury.

Details of the econometric analysis methodology used are as follows:

In India, given that States have a predominant role in the provision of health care, the possibility of additional fiscal space at the State level can be due to:

i. *Increase in own revenues of the States;*

ii. *Increase in general-purpose transfers from the Finance and Planning Commissions, which includes shared taxes and plan and non-plan grants;*

iii. *Increase in specific-purpose transfers for the health sector; and*

iv. *Changes in prioritization in favour of the health sector.*
In India, foreign aid is not an important factor in determining the fiscal space nor are earmarked taxes important.[44]

A two-way fixed effects panel data model can be used to estimate the effects of health transfers from the Union government, as well as other factors that influence health expenditure at the State level. The change in States' own per capita expenditures on health (PC_OHE) can be taken as the dependent variable. The independent variables are changes in per capita specific purpose transfers on health (PC_CGH), per capita State's own revenues (PC_SOR), per capita general purpose transfers received by the State (PC_GPGC) and States' priority on health spending in overall budgetary and extra-budgetary expenditures at the State level (SPH). Thus, the equation used is:

$$\Delta \textbf{(PC\_OHE)}_{it} = \alpha + \beta\, \Delta \textbf{(PC\_CGH)}_{it} + \gamma\, \Delta \textbf{(PC\_SOR)}_{it} + \psi\, \Delta \textbf{(SPH)}_{it} + \tau\, \Delta\textbf{(PC\_GPGC)}_{it} + \upsilon\, \textbf{(State Dummies)} + \sigma\, \textbf{(Year Dummies)} + \varepsilon_{it}$$

Where,

$\Delta (PC\_OHE)_{it} = \{ (PC\_OHE)_{it} - (PC\_OHE)_{it-1} \}$ or changes in per capita own health expenditure (from the previous year) of State *i* in year *t*;

$\Delta (PC\_CGH)_{it} = \{ (PC\_CGH)_{it} - (PC\_CGH)_{it-1} \}$ or changes in per capita central Government's grant (from the previous year) for health to State *i* in year *t*;

$\Delta (PC\_SOR)_{it} = \{ (PC\_SOR)_{it} - (PC\_SOR)_{it-1} \}$ or changes in per capita own revenues (from the previous year) of State *i* in year *t*;

$\Delta (SPH)_{it} = \{ (G_{hi}/G_{bi})_t - (G_{hi}/G_{bi})_{t-1} \}$ or changes in the ratio of public expenditure on health to total budget expenditure of the i^{th} State in the year *t* over the previous year; and

$\Delta (PC\_GPGC)_{it}$ = changes in per capita general purpose grant by the central government to State *i* in year *t* = (tax devolution + plan and non-plan grants).[45]

Based on this construction, Rao and Choudhury had concluded that for the entire period 1991-2007, and for sub-periods 1991-2000 and 2001-2007 – increases in

health grants by the Union government had a significant substitution effect on States' own expenditures on health. For our study, the analysis conducted by Rao and Choudhury is repeated for a more recent period to investigate whether the same substitution effect has continued.

The panel data analysis was conducted for the years 2012-2015 on health expenditures excluding water supply, sanitation and nutrition. The equations have been estimated for a balanced data series. The analysis was conducted for major States, of which only 11 States were used: Chhattisgarh, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh. All these are general category States, whose data are generally more robust, and the pattern of expenditure from general category States is more internally comparable than that of all States.

Of the general category States, Goa was dropped from the analysis because of its small State size. Andhra Pradesh, Bihar, Haryana, Punjab and West Bengal are not included in the study because of several data gaps. Data from the year 2011 was also removed for the analysis because of incompleteness. In cases where there were a few missing values, the values for the previous or succeeding years have been used to estimate the equation. The data for general purpose grants has been sourced from annual reports of the Reserve Bank of India on State finances.[46] All other data used has been collected or generated based on the analysis conducted in the study, described in section 4.1.

Table 14. Regression Results – Dependent Variable: Changes in States' Own Expenditure on Health, from a two-way fixed effects panel data model.

#	Independent Variable	Coefficient of Variation (and Standard Error)			
		Rao and Choudhury (2012)			New Analysis
		1991-2007 (Model I)	**1991-2000 (Model II)**	**2001-2007 (Model III)**	**2012-2015 (Model IV)**
1	Specific Purpose Transfers from Union Government on Health	-0.952*** (0.074)	-0.777*** (0.114)	-1.059*** (0.109)	**-0.360*** (0.137)**
2	State's Own Revenues	0.012*** (0.003)	0.015*** (0.004)	0.1545*** (0.006)	**0.012 (0.020)**
3	State's Priority for Health (as % of spending)	17.649*** (1.828)	15.03*** (2.038)	19.487*** (4.231)	**38.644*** (12.069)**
4	General Purpose Transfers (Unconditional) from Union Government	0.019*** (0.007)	0.014 (0.011)	0.013 (0.01)	**0.017** (0.008)**
5	Constant	18.252*** (3.561)	17.17*** (3.885)	3.552 (5.035)	**58.204*** (17.542)**
6	State Specific Fixed-effects	Yes	Yes	Yes	**Yes**

7	Time Specific Fixed-effects	Yes	Yes	Yes	**Yes**
8	Number of States	14	14	14	**11**
9	Number of Observations	224	126	84	**55**
10	R-square	0.69	0.62	0.77	**0.29**

The regression results are summarised in Table 14. In the analysis conducted for major States for 2012-2015 (Model IV), a significant and large negative sign is found in the correlation coefficient for specific health transfers from the Union Government, with State's own expenditures on health. This means that all other things being equal, a unit increase in specific purpose transfers by the Union government on health will lead to a reduction in States' own expenditure on health. That is, there is a significant substitution effect that continues to happen with the National Health Mission and other centrally sponsored schemes in health. This re-confirms the findings of Rao and Choudhury (2012) for 2012-2015. The magnitude of the substitution effect (measured by the coefficient of correlation) appears to be much smaller than for previous periods. It is possible that better and improving accounting systems under the National Health Mission might have contributed to a smaller substitution effect, but with the available evidence, this is just conjecture.

In summary, intergovernmental transfers on health are not being directed at States with a lower taxable capacity. The transfers also fail at stimulating States' own expenditure on health and instead end up substituting States' own expenditures. The current design of intergovernmental transfers needs to change, in order to increase public expenditure on health in India.

10. Analysis of Health Expenditure in India: Impact of FFC recommendations on health sector allocations

Two recommendations from the Fourteenth Finance Commission (FFC)'s have altered the fiscal landscape in India significantly. These are the increased share of States in the divisible pool of taxes and proposing a new formula for horizontal devolution. Particularly, the increase in the tax devolution from the divisible pool to 42 per cent has led to greater fiscal autonomy for the States. To accommodate this increased outflow, the Union government has in turn reduced the grants to States under several Centrally Sponsored Schemes in the social sector. In parallel, a committee constituted by the NITI Aayog and headed by Mr Shivraj Singh Chauhan, the Chief Minister of Madhya Pradesh, came out with a report in October 2015 to significantly rationalise and consolidate centrally sponsored schemes.[47] As a result of these fiscal manoeuvres, a number of studies have analysed the impact of recommendations of the Fourteenth Finance Commission on sectoral expenditures at the State and national levels.

One such study[48] concludes:

"As expected, FY 2015-16 saw a significant increase in the quantum of taxes devolved from the Union Government to States over the previous financial year. In FY 2015-16 RE, tax devolution to State governments accounted for 3.7% of Gross Domestic Product (GDP) compared with 2.7% in FY 2014-15 Actuals. Contrary to widely held fears, the overall transfer of funds from the Union to the States (tax devolution and Union transfers) also saw a marginal increase, from 5.4% of GDP in FY 2014-15 Actuals to 6.1% in FY 2015-16 RE."

One of the terms of references of this study is to analyse the impact of FFC's recommendations on the health sector. For this analysis, data was collected from State budget documents for the year 2016-17. Because estimates undergo significant changes between the budget estimates (BE), the revised estimates (RE) and actuals, this study limits its analysis to a comparison between Revised Estimates of 2015-16 (the first year of FFC award period) and actual expenditures of 2014-15 (the last year of the Thirteenth Finance Commission award period). The analysis was conducted for all major States, excluding Andhra Pradesh[49].

Two questions have been investigated in this study:

a) What has been the impact of FFC recommendations on specific transfers to States for health schemes, and

b) How have States altered their own health expenditures in response to the FFC recommendations?

This study found that the extent of increase in overall central transfers to the States was between 21 per cent and 65 per cent for the 15 major States under consideration. In Figure 14, we overlay this change in Union transfers with changes in specific transfers in health and allied sectors.

Figure 14. Percentage change in Central Transfers and Specific Transfers for Health in 2015-16 (R.E.) over 2014-15 (Actuals)

This study finds that the increase in overall central transfers has translated into increases in specific transfers for the health sector in 13 out of 15 major States. Tamil Nadu and Uttar Pradesh saw a decline in the aggregate health transfers. Thus, the increase in untied resources to the States has not led to a corresponding withdrawal of transfers on CSS in the health sector.

The increase in central transfers to States has further translated into increases in health expenditures by States. Figure 15 shows the percentage change in expenditures during the transition period from TFC to FFC award periods.

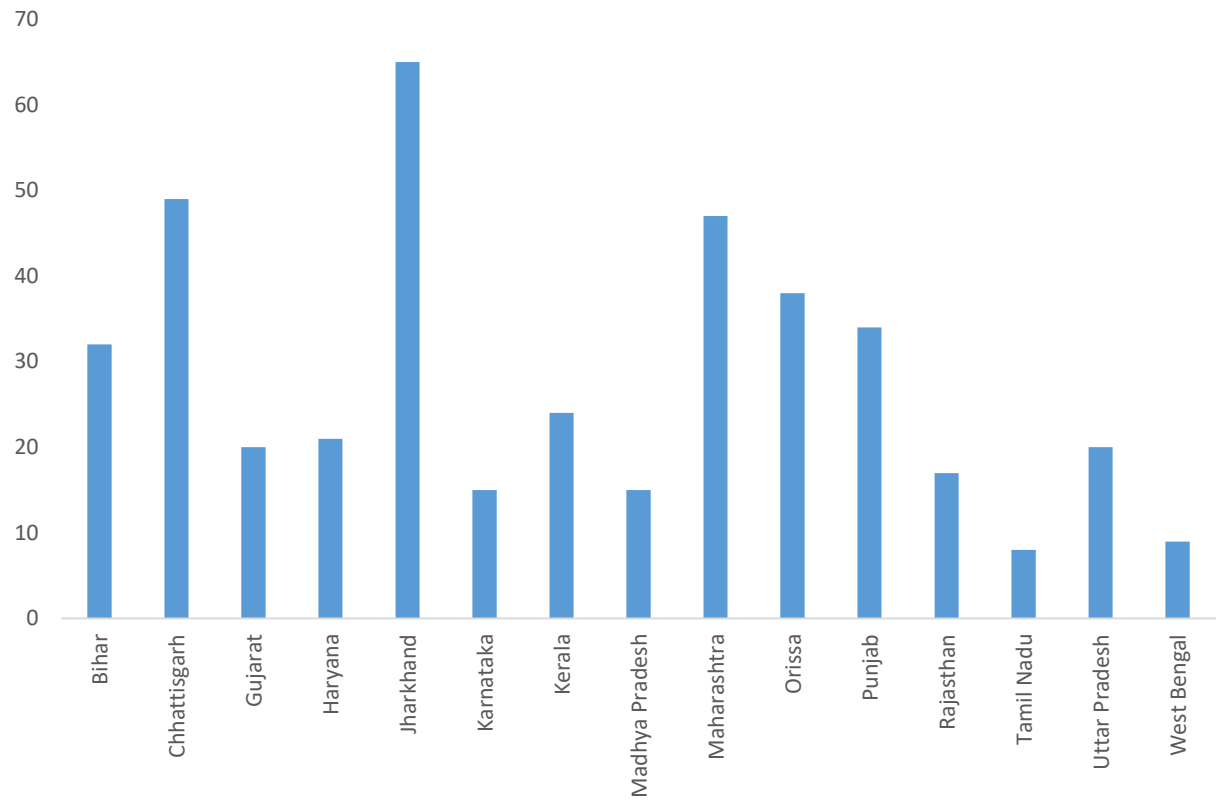

Figure 15: Percentage change in Health Sector Expenditures in 2015-16 (R.E.) over 2014-15 (Actual Expenditure)

In order to analyse the changes in the composition of health sector expenditures, Figures 16 and 17 show the percentage change in revenue and capital expenditures respectively.

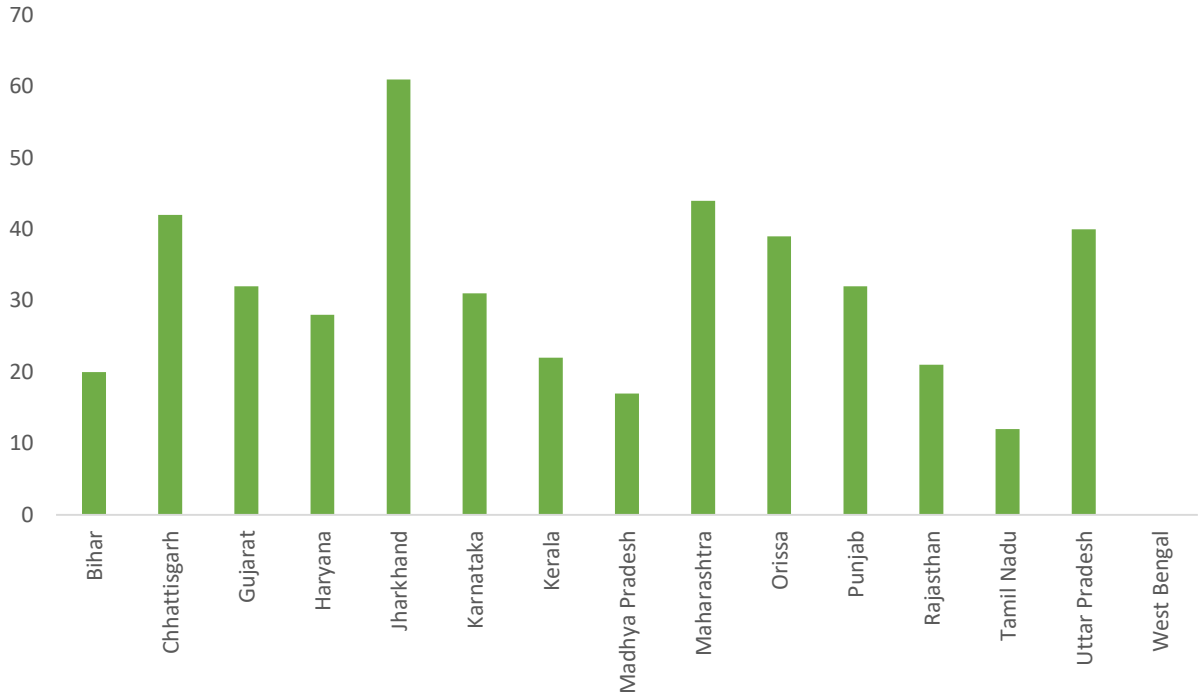

Figure 16: Percentage change in Health Sector Revenue Expenditures in 2015-16 (R.E.) over 2014-15 (Actuals)

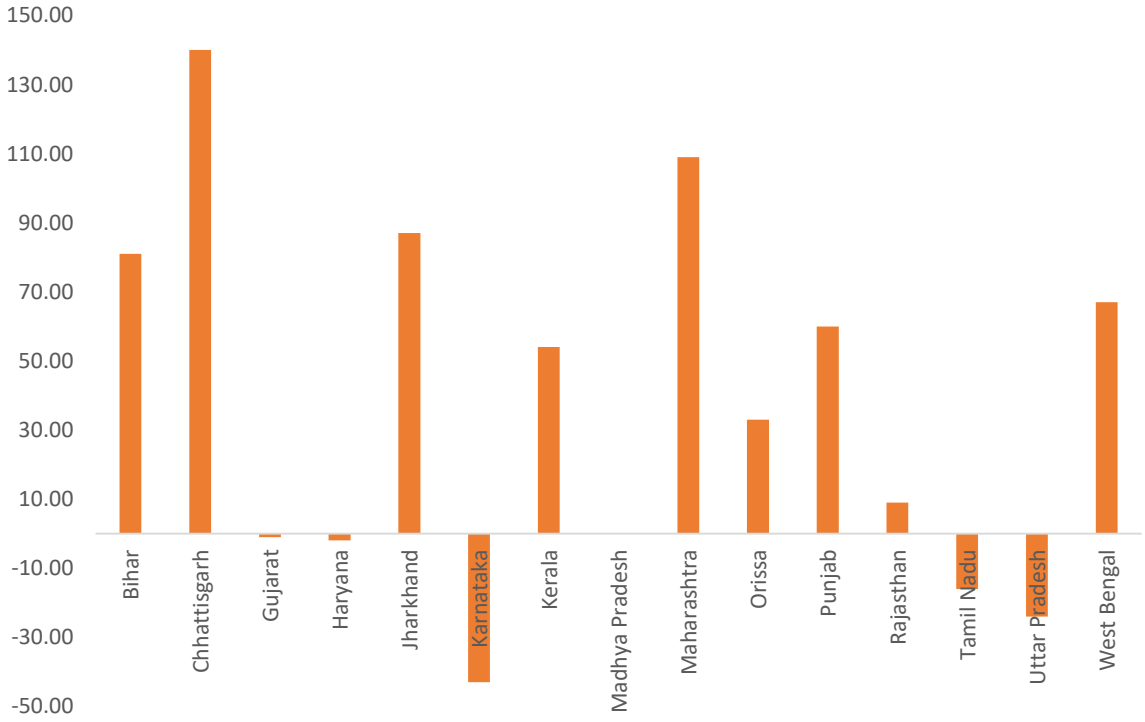

Figure 17: Percentage change in Health Sector Capital Expenditures in 2015-16 (R.E.) over 2014-15 (Actuals)

While there has been an increase in nominal terms in revenue expenditures for health for all States except West Bengal, the same cannot be said about capital expenditures. Four States (Karnataka, Gujarat, Haryana, Tamil Nadu, and Uttar Pradesh) showed a decline in nominal terms. This analysis suggests that the additionally created fiscal space as a result of FFC recommendations has been dominated by increases in revenue expenditures.

11. Issues

This section lists down some of the limitations of this study.

11.1 Missing data points

As highlighted in Section 4.1, due to the inaccessibility of sources, several missing data points were encountered, which have been marked as "NA" in the full dataset presented. In some instances, for the purpose of calculating aggregates, component data was linearly extrapolated or interpolated from surrounding years. Particularly, several data gaps were encountered while collecting data on nutrition expenditure. In the budget documents of a few States, expenditure on nutrition is incurred as a part of the Integrated Child Development Services (ICDS) scheme. Similarly, there are other nutrition expenditures that are not categorised under the major head for nutrition — 2236. Other data gaps relate to the incompleteness and inaccessibility of digitised data for the NHM. This issue has been elaborated separately in a later point. Another related caveat is that expenditure on Rashtriya Swasthya Bima Yojana (RSBY), a health insurance scheme for low income families has not been included as health expenditure in this study as it was a part of the Ministry of Labour and Employment until 2015 when it was transferred to the Ministry of Health and Family Welfare.

11.2 Quality issues

We encountered quality issues while dealing with data on direct transfers to implementing agencies at the State level. First, the data is unavailable for the period before 2009-10 in any public or published source, and hence the Appendices of the Annual Finance Accounts were used -- which includes Government of India's direct releases to implementing agencies from 2009-10 onwards. The data in the Appendix has been presented for the previous two years, i.e. until 2007-08. However, the appendix figures are not audited, and the information is furnished to the Indian Audits and Accounts departments on a courtesy basis. Therefore, the numbers provided are unverified, and often incomplete.

11.3 Inter-State and inter-temporal data comparability issues

11.3.1 Grants-in-Aid salaries data

Lack of specific code in the budget for components such as Grants-in-Aid Salaries before 2010-11/2009-10 makes it impossible to separate Grants-in-Aid data into salary and non-salary components. This makes the data incomparable for the initial study period.

11.3.2 Primary Health Institutions (PHIs) expenditures

Data on public health expenditure available via government websites and documents requires clear classification. For instance, public expenditure on primary healthcare is not the same as public expenditure on primary health institutions.

There are also large inclusion and exclusion errors which make it difficult to estimate primary health expenditures. For example, in addition to the Primary and Community Health Centres, even tertiary hospitals play a role in primary health. In certain cases, Primary Health Centres provide secondary health care services as well. However, these effects are not specifically captured in the expenditure data. Separating PHI expenditure from expenditures on other institutions is also difficult as the object codes are not granular enough in some cases. For instance, the object code for certain expenditure items such as loan-funded special projects includes expenditure on primary health institutions and on other institutions.

There are also fundamental differences across States on how expenditure is incurred on PHIs. For instance, Tamil Nadu has separate budget heads under 2210-04 for AYUSH and other alternative systems of medicines at the PHC level. West Bengal, on the other hand, specifies no explicit budget heads for expenditures on PHCs and CHCs. The expenditures on improving and deepening the PHC and CHC system in the State is included within an active Externally Aided Project called DFID Assisted Programme for Health System Development Initiative.

In some cases, nomenclature was inconsistent or unclear. For example, Mobile Medical Centres are a key head of expenditure in Jammu and Kashmir, but it is unclear whether they fall under PHIs or not. Similarly, rural dispensaries and ambulances are also heads of expenditure, but some States include them under PHI expenditure while others don't.

11.4 Issues with NHM data

Data provided under the National Health Mission has a host of issues. One, each year's budget is not strictly comparable to the next year's. This is primarily due to the continuous evolution of the scheme. In line with the changes, the accounting structures have also been modified at varying levels of details.

Two, as the audited expenditures are not made public. Only approved allocations, as well as governmental releases are known. The study, therefore, relied upon ROP ("Record of Proceedings") documents, which list allocations approved by the Union mission directorate. Moreover, as the implementing agencies are allowed to roll over expenses, releases do not correlate perfectly with actual expenditures on the ground. For instance, if in one year the releases from the government are high, large components can be left unspent in the year leading to a large opening balance the next year. It leads to a subsequent reduction in the next year's release of transfers. If only releases are studied, this would result in an apparent downward trend in expenditure, however most of the expenditure could be made using the deferred balance. Hence, the trends might be completely different from the pattern of expenditure on the ground. In the study, we assumed that the allocations to the subcomponents scale down in a common ratio to the actual releases. When the releases are lower than the approved allocations, the subsequent reduction in the expenditure in subcomponents of NRHM/NHM is likely to be non-uniform. In such scenarios, some components may see dramatic reduction in expenditures, and some would see no difference. However, we are forced to assume a uniform reduction in expenditures given the lack of better information.

Three, the challenge of lack of granularity, mentioned in section 6.3.2 applies for NHM data collection as well.

12. Conclusion

Health policy is vital to a country like India, which lags behind others on many important human development indicators, thereby adding more barriers to Indians escaping poverty and entering relative prosperity. Given the nature of information asymmetry and market failures in this policy area, governments have a critical role to play.

Health policy debates and options are currently being hampered by the lack of comparable datasets of public expenditure on health in India. The National Health Accounts, the most authoritative source of health expenditure information in India, is extremely infrequent. The subsequent use of partial data sets available on public health expenditures leads to flawed policymaking and less than desirable public health outcomes.

This study has produced a comparable database of estimates of public health expenditures in the country and at the state level for the period 2005-06 to 2014-15. In order to produce a high-quality dataset, the study had to overcome convoluted and changing governmental accounting mechanisms, multiplicity of governments and departments all incurring health related expenditures, lack of access to digitised data, fragmented data sources of differing levels of quality, and significant variation in expenditure practices across India's States.

From the analysis of public expenditure in India, it is found that India spent only 1.41 per cent of its GDP on health and allied fields in 2005-06, which increased to 1.62 per cent in 2010-11 and then reduced again to 1.40 per cent in 2014-15. Of this, States contribute between 70 and 75 per cent of the overall public expenditure on health and allied fields.

In 2014-15, major States spent anywhere between Rs 617 and Rs 2,026 per capita on health and allied subjects. Less populated, hilly or small Indian States spent between Rs 2,289 and Rs 7,409 per person. The per capita expenditure on health and allied subjects is correlated to per capita state GSDPs.

States with better basic health outcome indicators such as IMR also show higher per capita expenditures, even though it can be argued that States with dire health outcome challenges need better resources. Inequality between states in health outcomes has not reduced, and one cause is the continuing inequality in public health expenditure.

The study finds that Centrally Sponsored Schemes have been unable to ensure minimum standards of per capita expenditure, nor are transfers progressive or redistributive. The study examined the responsiveness of State governments' own expenditures on health to specific purpose transfers for the same, and finds that Centrally Sponsored Schemes in health and allied fields end up substituting States' own expenditure on health instead of stimulating the states' own expenditures on health.

Finally, after the recommendations of the Fourteenth Finance Commissions came into effect, overall central transfers to States, particularly the untied transfers have increased. This increase in untied transfers led the Union government to cut down expenditure on plan and non-plan grants. However, this study finds that the increase in overall central transfers has not come at the cost of Union government's grants for the health sector: 13 out of 15 major States showed increases in Union government grants for health sector in the first year of the FFC period. Further, there was a wide variation in how States responded to these grants: while Tamil Nadu increased its overall public health expenditure by a mere 8 per cent, the corresponding increase for Jharkhand was 65 per cent.

~end~

REFERENCES

[1] A study undertaken by the Takshashila Institution.
[2] Sahoo and Dash (2009) 'Infrastructure development and economic growth in India', *Journal of the Asia Pacific E conomy*,14:4, 351 — 365
[3] Panagariya, Chakraborty and Rao (2014), 'States' Development Expenditures and Implications for Regional Development', *State Level Reforms, Growth, and Development in Indian States*, Oxford University Press, 79-113
[4] ibid
[5] Choudhury, Nath, and Dash (2013), 'Selected Aspects of NRHM Expenditure at the State-level: A Focus on Rajasthan and Karnataka', *NIPFP Draft Report*, 2
[6] Rao and Chaudhury (2012), Health Care Financing Reforms in India, *NIPFP Working Paper 2012-100*
[7] In addition to these routes, government hospitals may collect some fees from patients which may in turn be spent directly by these hospitals.
[8] ibid
[9] Report of the High Level Expert Committee on Efficient Management of Public Expenditures", Planning, Commission, Government of India, 2011
[10] Ministry of Health Accounts, Estimates for India 2013-14, http://www.mohfw.nic.in/showfile.php?lid=4016
[11] Accessed on 23rd December 2016 at https://www.scribd.com/doc/316517542/National-Health-Account-04-05
[12] National Health Systems Resource Centre (2016). National Health Accounts Estimates for India (2013-14). New Delhi: Ministry of Health and Family Welfare, Government of India.
[13] Ibid.
[14] Ibid.
[15] Ibid.
[16] Comptroller and Auditor General of India. http://cag.gov.in/
[17] Controller General of Accounts, Government of India. http://www.cga.nic.in/
[18] Usually in Appendix VI of the Annual Finance Accounts, presented for the last two years. Some States' finance accounts start reporting direct transfers only from 2010-11's finance accounts.
[19] The NCT of Delhi's annual finance accounts do not have appendices which share the amount of direct transfers to implementing agencies
[20] From Dr Mita Choudhury, who shared data made available to her by the ministry for a previous study
[21] In 2013-14 alone, the National Urban Health Mission featured as a separate scheme, since dovetailed into NHM. NUHM has also been included in this study's analysis
[22] National Rural Drinking Water Programme (NRDWP), Data Portal. Last Accessed August 16, 2016. http://indiawater.gov.in/IMISReports/
[23] Rao and Chaudhury (2012), Health Care Financing Reforms in India, *NIPFP Working Paper 2012-100*
[24] CAG (2015), Report of the Comptroller and Auditor General of India on State Finances for the year ended March 2014, Government of Karnataka.
[25] Economic Survey of India 2016, Table 1.3 B1 and B2, Statistical Appendix. Last accessed August 21, 2016. http://indiabudget.nic.in/es2014-15/estat1.pdf
[26] Arup Roychoudhury, "GDP back-series data may not be released," Business Standard, Mar 7, 2017. http://www.business-standard.com/article/economy-policy/gdp-back-series-data-may-not-be-released-117030600330_1.html
[27] NITI Aayog, GSDP at Current Prices, 2004-05 series (2004-05 to 2014-15) http://niti.gov.in/content/gsdp-current-prices-2004-05-series-2004-05-2014-15
[28] Choudhury, Mita and HK Amar Nath (2012), "An Estimate of Public Expenditure on Health in India", Research Report, National Institute of Public Finance and Policy, May 2012. Last accessed August 1, 2016. http://www.nipfp.org.in/media/medialibrary/2013/08/health_estimates_report.pdf
[29] There are no up-to-date state population tables available for the study period 2005-06 to 2014-15. State population totals were taken from Census 2001 and Census 2011 and interpolated for the study period. Assuming the same rate of exponential growth, the state population totals were projected for the remainder of the study period. This is an approximation, and can be used until Census of India releases population projection tables. Typically, population projection tables are released midway through the decade after a Census, however, nothing has been published as of April 2017.

[30] Choudhury, Mita, HK Amarnath and Pritam Datta, (2011) "Health Expenditure by the Central Government in India: State level distribution", National Institute for Public Finance and Policy, September 2011. Last accessed July 21, 2016. http://www.nipfp.org.in/media/medialibrary/2013/08/nipfp-report100911_1.pdf
[31] ibid
[32] Rajya Sabha (2016). "Ninety-third report on Demands for Grants 2016-17 (Demand No. 42) of the Department of Health and Family Welfare (Ministry of Health and Family Welfare", Department- Related Standing Committee for Health and Family Welfare, Rajya Sabha, Parliament of India
[33] ibid
[34] 'Major States' is defined for the subsequent part of the report as a set of 16 'General Category States' with the exclusion of the small, rich State of Goa. Telangana is also excluded as the State was created at the end of the study period.
[35] Panagariya, Chakraborty and Rao (2014), 'States' Development Expenditures and Implications for Regional Development', *State Level Reforms, Growth, and Development in Indian States*, Oxford University Press, 79-113
[36] ibid
[37] ibid
[38] ibid
[39] Data obtained from National Family Health Survey-4, International Institute of Population Sciences, http://rchiips.org/NFHS/factsheet_NFHS-4.shtml
[40] Ibid. NFHS-4 factsheets also mention estimates for indicators from NFHS-3.
[41] Infant Mortality, Centers for Disease Control and Prevention, https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm
[42] NFHS-4 provides health indicators for the year 2015-16. Since 2015-16 actual expenditures are still not available completely, we have used data for the year 2014-15 for comparison.
[43] Rao, M. Govinda, and Mita Choudhury. "Health care financing reforms in India." National Institute of Public finance and policy working paper 2012-100 (2012).
[44] ibid
[45] ibid
[46] RBI, "State Finances: A Study of State's Budgets", reports for the years 2010-11 to 2015-16.
[47] NITI Aayog, "Report of the Sub-Group of Chief Ministers on Rationalisation of Centrally Sponsored Schemes", October 2015.
[48] A. Kapur, V Srinivas, PR Chaudhury, "State of Social Sector Expenditure in 2015-16", Accountability Initiative (2016).
[49] The reorganisation of erstwhile Andhra Pradesh into two States complicates the analysis between 2014-15 and 2015-16. Hence, it was excluded from this analysis.