SOCIAL SECTOR DEVELOPMENT IN INDIA

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Foreword

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CHAPTER I

INTRODUCTION

1.1 Introduction

The importance of social sector is increasing rapidly in the recent days, not only in India but also in almost all the countries of the world. From the initial and mid-19th century, most of the countries have considered themselves as the welfare states. The main objective of welfare state is to promote the general happiness and welfare of the people. Functions of welfare state are not limited to traditional functions of the state that is to guarantee a minimum of social and economic security. Functions of welfare state have increased to most of the socio-economic activities in recent years. Providing social services and social security to its citizen is the main aim of the welfare state.

Social services or *social sector can be defined with two approaches namely human capital approach and human development approach* (Prabhu, 2005). For the development of human capital, such as education, health, nutrition, skill development and so on, huge amount of spending is needed. Spending on these sectors is considered as investment because current spending on these sectors will raise future income by increasing lifetime earnings. In other words, *human capital formation rests on the proposition that people enhance their capabilities as producers and consumers by investing in themselves through schooling, health, on-the-training, searching for information about job opportunities and by investing in migration* (Schultz, 1962). Through human development approach, *social sectors could be defined as those providing social securities* (Prabhu, 2005). 'Social-security services' includes, old age pension, public distribution system (PDS), welfare programmes for SC and ST, minority, physically challenged, pension for widow and so on. The term social security is used in its broader connotation. The human development has been defined by the UNDP as *the process of enlarging people's choices* (UNDP, 1990).

World Social Summit (1995), Millennium Development Goals (2000), and UNDP's Human Development reports (Starting from 1990) have also given much emphasis on social sector development of its member countries. However, investment by people on enhancement of human capital in developing country like India is not possible. Major

proportion of the people are belonging to poor or in the middle income group, their most of the spending is towards food and clothing. Hence, intervention of the government is necessary for human capital development and human development through the social sector policies and programmes. In India huge amount of money has been spent on social sector development. In the present study an attempt has been made to analyze the public expenditure on social services by centre and all the states. Further, association among and between different socio-economic indicators have been made.

1.2 Review of Literature:

In this section, existing literature has been reviewed in detail. The review of literature has been made into four themes, namely i) studies on spending on social sector, ii) studies on education sectors, iii) studies on health sector, iv) studies on association among and between social sector indicators and indices.

Spending on Social Sector:

For social sector development, government spending is necessary. Hence, first of all, studies on spending on social sector have been reviewed. This theme includes studies such as trends and pattern of public spending on social services, studies on economic reforms and social sector spending, plan expenditure on social sector, inter-state disparities in social sector spending and so on.

A study by Panchamukhi (2000) has used the data of social sector expenditure of centre and state government from 1987-88 to 1997-98 and found that after economic reforms, inter-state disparity in social sector expenditure has increased. Hence, the study concluded that economic reforms were unfavorable to countries like India.

An important and detailed study by Dev and Mooij (2002) looked at several aspects, including overall levels of allocation, expenditure on health and education and other components and inter-state disparities. The study examined trends at three levels: Central and states combined, at Central and at State level. The study included plan and non-plan expenditure under capital and revenue accounts. The study analysed the trends as a proportion of GDP (for states GSDP), as a percentage of aggregate budgetary

expenditure, and real per capita expenditure. The study revealed that With regard to health, not much has changed. Neither the states nor the centre did increase their health expenditures considerably. With regard to education, the share of expenditure from all the departments put together declined from around 4.1 per in 1990-91 to 3.8 percent in 1998-99. The education expenditure of the Centre increased from 0.25 per cent of GDP in 1994-95 to 0.31 per cent in 1995-96 and to 0.36 per cent in 1998-99.The study also observed that social sector expenditure as a share of budgetary expenditure in India in the 1990s was low as compared with what India spent in the 1980s; and it is also low as compared to other developing countries, and certainly less compared with the East Asian countries as also the UNDP recommended ratio. Karunakaran's study (2003) also discussed the similar issue.

Taking into consideration of revenue and capital expenditure of Centre, states and union territories in India from 1986-87 to 2002-03, and plan outlay of health and family welfare from the first to tenth plan a study by Rawat, Agarwal and Dev (2006) indicated that even though, the government has put great efforts to providing good health facilities since independence, a lot still has to be done. They suggested that not only increasing of expenditure on health and family welfare but also improve the quality of services needs to be strengthened.

Aggarwal (2011) found the a decline in social sector expenditure after the economic reforms, while analyzing the trends in social sector expenditure in India and Punjab during pre-reforms (1980-1991) and post-reforms (1991-2011) periods. Hence, the study suggested for the introspection of social sector policies and programmes for providing basic social services in the country.

A study by Meril (2016) explores the pattern of expenditure of the Government of India towards social sector and its development. Importance of human resource development is significant in a country like India because more than sixty percent of its people are living in rural area and they are dependent on agriculture sector for their livelihood, income and employment. Through proper human resource management – income, employment of the people can be improved.

To find out whether the economic reforms had any significant impact on the level and trend of social sector expenditures a study by Yuko (2005) taking fifteen Indian states for the period 1980-81 and 1999-00 found that revenue became a major determinant of social sector expenditures from the mid-1980s. Hence, real per capita social sector expenditure in most of the states has declined before economic reforms, which is due to fiscal deficits in mid 1980s. The study indicated that economic reforms have not made any significant negative impact on expenditures. In fact there was a positive impact on some states, which often were those that received more foreign aid than other states. By the late 1990s, states expending more on the social sector changed from states with a traditionally strong commitment to the social sector, such as Kerala, to states having higher revenues including aid from outside the country.

Sharma (2014) discussed the pattern of social sector expenditure by Haryana State from the year 1990-91 to 2009-10. The study found that social sector expenditure increases, when the demand for infrastructure expenditure increases, but not with the long-run plan. The study traced the decrease of revenue expenditure and increase of capital expenditure. The study suggested that along with education, other components of social sectors should be given importance as they are also important for the development. Moreover, central government should allocate the money according to the need of the state (need based allocation).

Dongre and Kapur (2016) indicated decline of the role of union government in financing social welfare, including elementary education in the nearer future, while analyzing the data of 25 years. The study suggested that union government should spend on education differently for different states

Prabhu (1997) points out that social sector expenditures by the state governments (crucially) depend as much on their success in additional resource mobilization as on the political commitment towards the goals of human development.

Sudhakar and Moss (2003) have observed that with respect to share of social sector expenditure to the total expenditure - central government spending has increased significantly, while combined of all states spending on social services as a share of total

expenditure has decreased marginally. The study concluded that most of the heads of social services are in the 'state list' decreasing share is not a good sign for social sector development.

Adi (2004) studied the combined (centre and states), centre and all states expenditure on social sector from 1991-92 to 1999-00. But the study does not focus on individual states expenditure. Further, the study points out that over the years, public expenditure on social sectors has increased substantially in absolute terms. However, the rate of increase during the reforms period went on decreasing until 1997-98.

Another study by Tulasidhar and Sarma (1993) observed that real per capita public spending on health grew faster than real per capita state domestic product in all the states. Bhat (2000) found that in the recent years, central government expenditure on social sector increased in general, and health sector in particular.

A few studies have examined the social sector expenditure during plan period, among them very important study is by Patak (1999), which studied the relationship between social sector plan outlay and economic growth. The study found plan outlay of social sector grew very significantly from 1st plan to 9th plan. This increased spending resulted in expansion of social services, human resource development.

While analysing the plan expenditure on social sector from 1st plan to 9th plan a study by Prasad (2005) highlighted the significance of social sector spending for economic growth. Growth of public spending on social services and its various sectors in plan period (1st plan to 8th plan) is examined by Ahmad (2005). The study found that even after spending large sums on social sector, India has eradicated its poverty and not achieved 100 per cent literacy tills now.

Education Sector:

A very important study by Tilak (2002) analyzed the public expenditure on education from 1960. The study found that public expenditure on education in India experienced a fluctuating trend such as rising trends in the 1960s, followed by a steep decline in the 1970s, and then a slow and steady increase in the 1980s, followed again by

severe cuts in the 1990s. The study indicated that these types of fluctuations are the major constraints to build a strong and sustainable education structure.

Whether public expenditure on education is more effective in improving educational outcome is empirically examined by Rajkumar and Swaroop (2008). They have used 101 sample observations from 57 countries tanking the annual data for the years 1990, 1997 and 2003. The study captures the direct effects of governance on educational outcomes by using the governance variable, Gi, as an independent regressor, and the indirect effects of governance by interacting Gi with the share of public primary education spending in GDP. They use OLS and 2SLS to estimate the impact of spending on outcomes such as the primary school completion rate, and control for the level of corruption, and the bureaucratic quality of the government. In their regressions, the coefficient on primary education spending becomes significant only when the interaction term between spending and good governance is included. Thus, as the level of corruption falls or the quality of the bureaucracy rises, public spending on primary education becomes more effective in achieving primary education attainment.

Study by Singh and Nandakeoliyar (2006) has also emphasized the significance of spending of 6 –7 per cent of GDP on education. Chandrasehkaran (2006) attempted to bring out the contribution of public expenditure on education to economic growth. The study reveals that the growth of public expenditure on education is brighter in nominal terms, but not so in real terms. Public expenditure on education and national income are positively correlated. The study also predicted that, had the public expenditure on education been 6 per cent of national income, its contribution to national income would have been Rs. 97244.307 at current prices and Rs. 50786.986 at constant prices for the year 2003. The CAGR of public expenditure on education is estimated at around 12 per cent and 5 per cent at current and constant prices respectively. He concluded that the CAGRs of public expenditure would generate an equal CAGR of national income both at current and constant prices. He suggested that the government should allocate adequate funds (at least 6 per cent of GDP) to education in order to realise the targeted increase in the rate in growth of national income.

Hariharan (2006) found that government expenditure on education influenced significantly the NSDP in Tamilnadu. Through regression analysis he suggested that an increase in the state government expenditure on education a year by Rs. One crore, would increase the NSDP of Tamilnadu by Rs. 114 crores after 14 years. He also suggested similar estimation has to be made for all states and at All-India level to frame proper policy intervention.

Roy, Kamaiah and Rao (2000) used the pooled regression model for per capita public expenditure on primary, secondary and higher education for 15 major states for the years 1992-93 to 1997-98. The study found that, the spending by Gujarat and Maharashtra at primary education is much higher than the normative levels. On the other side, states like Bihar, Haryana, Uttar Pradesh and West Bengal lagged far behind the normative expenditure levels in terms of their actual expenditure. In secondary education, Andhra Pradesh, Punjab and West Bengal spent significantly more than the normative levels, whereas Assam, Bihar, Madhya Pradesh, Orissa and Uttar Pradesh spent much less. With respect to higher education, Andhra Pradesh, Haryana, Kerala and Punjab spent significantly more than the normative levels. Whereas, Assam and Uttar Pradesh spent significantly less than the normative levels. The study also found that except Orissa poor states spent less and rich states spent more on social sectors in India.

Mishra (1962) has made detailed discussion on financing of education during the British and post-independence period. He pointed out that problem of educational finance in India are the heavy wastage and ineffectiveness of the system. He has examined the evolution of grants-in-aid system in India with special focus on their determinants, sources, and the methods of allocation making comparison with other countries.

The Education Commission's task force on financing of education (1964-66) has discussed the problems of educational finance at length, and suggested many recommendations. The commission has recommended various policies changes like enhancement of tuition fees, betterment levy for qualitative improvements in education with prior approval of government and others. Among the recommendations of the commission, at least 6 per cent of GDP to education is most important.

Panchamukhi (1962) using factor analysis constructed the education and health indices, which were regressed with the indicators like public expenditure on education, public expenditure on health, productivity and income. He found a close relationship between human capital and labour productivity. Educational capital of India was also estimated in his study. The study indicated that a larger share of education and health costs should be borne the government.

Chalam (1978) estimated the costs of university education with reference to socio-economic background of the student in Andhra Pradesh. Prakash and Chowdhury (1994) found that the tendency of the proportion of income spent on education to rise in arithmetical progression warranted the transgression of the slow autonomous growth by strong political will and sharp administrative measures for realizing the target of allocating six per cent income to education the target has otherwise been highly ambitious.

Pillai and Nair (1962) made an attempt to study the history and problems of educational finance in Kerala state. The study suggested that additional public resources should be generated on large scale in order to finance the continuously rising demands for the education in the state at all levels. Even, the Education Commission (1964-66) had strongly argued for devoting 6 per cent of GNP to the education sector by taking into account the numerous parameters like cost of education, teacher-student ratio, educational requirements of the country and financing policies adopted in other countries.

Panchamukhi (1990), conducting a sample survey in Maharashtra, Rajasthan and Karnataka, based upon which estimates were generated on the extent of expenditures on school education made by the private sector - households and private school management sector - in various states in India in 1986-87 and 1987-88.

Similarly Studies like NCAER (1998) and UNICEF (2007) conducting the field-work in selected area in the country, have tried to estimate the household social costs of education, estimation of rates of return to education, etc.

Nanjundappa (1975) described Karnataka University's finances with special reference to growth of revenue and behavior of various revenue components during 1972-73. It was found that the state government financed up to 54 per cent and income from

fees and funds collected from students contributed up to 35 per cent. Moreover, per capita expenditure of state on education was just ₹ 80 in 1949-50 and rose to ₹ 3,306 in 1972-73. At the university level, there was enormous increase in the expenditure, especially in the academic departments, but still the grants of teaching staff were only 13 per cent. He reported increasing gap between the cost of higher education and fees charged in Karnataka University. In order to eliminate this gap, Nanjundappa suggested (i) state grants must be increased in higher education; (ii) a rise in fees and funds from beneficiaries; (iii) introduction of indirect methods of financing such as student loans, which would be beneficial for both students as well as society.

A study by George (1982) measured the private and social costs of higher education in Tamil Nadu for the period 1960-76. He found that private expenditure on professional education was higher than that of general education. He also points out that the poor communities lagged behind than the urban based families who were enjoying the maximum benefits of higher education.

Swaminathan and Rawal (2000) estimated the requirement of addition annual expenditure for primary education for each of the state and found that states like Bihar and Uttar Pradesh are in the need of more allocation.

Health Sector

Sinha, Sahay and Koul (2015) constructed two indices on health for Indian states namely Health outcome index and Health input index. The study has used factor analysis weights to construct the indices and to give the ranks. The study, surprisingly have not found any positive association between outcome and input indices of health. The study suggested that not only building of resources and infrastructure for delivery of health care services are important but also there is a need for development of innovative and participative approach, which would be done using people, system, infrastructure and technology.

Another important study for the years 1970 and 1980 was by Rao (1991), which constructed community and health status index using a method called 'multiple indicators, multiple causes (MIMIC)'. The index was constructed for 15 major Indian states. The index

used by this study was very useful in ranking the states in terms of health status and monitoring their progress.

Roy, Kulkarni, Vaidehi (2004) examined the quantum of inequality and nutritional status among Indian states using the data from NFHS II. The special focus was given on tribe and caste. The study examined three dimensions of health performance (a) socio economic indicators (low standard of living, literacy rate, no exposure to media, no health facility within locality), (b) programme indicators of utilization of health services (un safe delivery and non-utilization of ANC services), (c) Nutritional status (low body mass index and anemia). The study found U.P., M.P., Bihar and Rajasthan were in the lower position. Karnataka and Maharashtra have shown lower in equality among social groups and tribes. SC, ST and OBC women were comparatively in the lower status.

Rahman (2008) examined the trends and patterns of expenditure on health in India using panel data model for the year 1971 to 2001. The study found that state per capita income and literacy rate were the major determinants causing the regional variation in health expenditure along with proportion of state population aged more than 60 years, primary health centers and Doctors. The study also found that health is not a luxury good, which has been proved using panel data model with strong statistical significance.

In India after the economic reforms many researchers have tried to find the impact of economic reforms on various socio-economic and policy levels. A study by Jain and Paul (2014) examined the economic reforms on public health. The study found that after a decade of economic reforms also there is no considerable improvement in health status of vast majority of the people of the nations. The study suggested that not only increasing of allocation on health important, but also utilization matters a lot. The study has given the stress to improve the nutrition status of the people through significant budgetary allocation so that higher health status can be achieved.

A study by Rao and Choudhury (2005) indicated that ensuring adequate allocation to human development expenditures is seriously constrained by the steadily deteriorating fiscal health of the State. Ironically, even after the State adopted the fiscal adjustment programme with the World Bank assistance, the deterioration has continued. Additional

allocation to the human development sectors in the State has to come by increasing the stagnant revenue GSDP ratio, improving the power sector finances, levying appropriate user charges on irrigation, rationalizing grants and fees for higher educational institutions and containing unproductive administrative expenditures. The debt swap scheme introduced recently would provide some fiscal space to the State governments to enhance spending on human development in the next few years.

Another study on public expenditure on health and education by Gaur (2006) using regression analysis found that growth of public expenditure on these heads during the period of economic reforms (1992-02) is not satisfactory compared to pre economic (1980-91) reforms period in most of the states. Among the rich states except Punjab remaining states like Haryana, Gujarat and Maharashtra were affected a lot during the reform period. On the other hand poor states namely Bihar, Madhya Pradesh, Rajasthan and Orissa have also shown poor performance. The study also found due to decline in education and health expenditures, growth in human development indicators have been affected negatively. The study suggested for adequate state expenditure on social sector in order to ensure better standard of living.

Dadibhavi and Bagalakoti (1994) using different indicators constructed two composite indices namely health status index and health infrastructure index for 1976-77 and 1992, They found that gap between rural and urban is declining in health status and health infrastructure facilities in India. The study indicated the role of government expenditure in the development health status, through the improvement in health infrastructure facilities. The study suggested that expansion of investment on health infrastructure in rural areas in general and rural areas of backward regions in particular will reduce the rural-urban as well as inter-state disparities in health status.

Shariff (1995) studied the determinants of morbidity using the NCAER national household level survey (1993) indicated that India's original health transition is still in a stage in which the individual level variables are showing considerable influence on morbidity.

Another study on health infrastructure at district level of Karnataka by Somannavar (2003) for the year 1960-61, 1970-71, 1980-81, 1990-91 and 1999-00, constructed the principle composite index, using seven different indicators. Further, health status has been analysed with the indicators like CDR, IMR, and LEB. The study identified the reduction in inter-district disparity from 1961 to 2000 and also found the strong positive impact of health infrastructure on health status.

To analyse the influence of the determinants on health status in India a multiple regression method was used, using NHFS (1992-93) data by Armugam (1998). He took into consideration of determinants like -life expectancy of at birth [LEB], female literacy [FLIT], per capita health expenditure [PCHE], per capita state domestic product [PCSDP], all doses of vaccination [VACCINEA], infant mortality Rate [IMR], crude death rate [CDR], proportion of mothers had anti-natal care [ATENA], proportion of population below poverty line [PBPL], number of beds per one lakhs population [NOBEDDS], proportion of children under nourished [NUTRIST], and morbidity. The study found – Morbidity is positively correlated with the set of independent variable- CDR, IMR, and NUTRIST; female literacy has a crucial role in reducing morbidity, followed by Per capita expenditure on health, proportion of population below the poverty line, life expectancy at birth and nutritional status of the children. Similarly, as life expectancy at birth progresses, morbidity rate declines; nutritional deficiency is determined by per capita income and poverty level; when nutritional status raises, morbidity rate declines.

Manonmany (1991) studied the determinants of health status of Tamil Nadu taking the indicators like per capita income, public health expenditure, number of hospitals, dispensaries, primary health centres and bed strength per million population for the period 1981-82 and 1990-1991. The study found that primary health centre play very important role in reducing infant mortality rate.

Kundu, Mohanan and Varghes (2013) indicated that the high inequality in IMR across the states and its increasing trend over time should be a matter of serious policy concern. absence of basic amenities, particularly toilets, have a strong association with health facilities and both are negatively related to per capita income. The study found that growth process will not address the problems of human development in less developed

states that are not growing rapidly. The study suggested that unless there are specific policies and interventions to address the issue of delivery of basic amenities and tacking the problem of health in backward regions and for the poor and vulnerable social groups, it would be impossible to achieve the concerned MDG targets even at the national levels.

A study Duggal et al. (1995) taking into consideration of health expenditure under various heads across the states from 1950-51 to 1994-95, pointed out that being a state subject States' expenditure accounts for around 90 percent. The study also found expenditures on health as a share to total expenditure over the years shows a declining trend in most states especially after 1985-86.

Malhotra and Shweta (2006) through a regression analysis established the positive relationship between per capita public health expenditure and per capita net state domestic product, health indicators and literacy rate. The study has not found positive relationship between health expenditure and health status. The study suggested that, to improve health status, the state governments have to allocate more money on public health and education. Poor states should not wait for state income to increase; states have to devote more resources to promote basic health facilities especially for the poorer sections. To raise public investment, policies are to be promoted to permit equitable access to preventive and curative health services.

A study by Deogaonkar (2004) in rural and urban difference in health facilities in India revealed that rural area is lagging behind in all the health facilities. The study found that rural and urban gap in hospital beds is more than 15 times, beds is around 6 times, public spending on health is seven times. He also revealed the existence of dominance of the unregulated private health care sector made the gap between rich and poor more apparent

Taking into consideration of 16 major Indian states, Sankar and Kathuria (2004) examined the performance of rural health sector of different states. The study found that investment alone would not yield into the betterment of health indicators. They have suggested that through efficiency, more infrastructures, better access to health facilities, better management targeted health outcome can be achieved.

Bhatt and Jain (2004) analyzed public expenditures on health of all states of India. They found most of the states have spent less than 0.5 per cent of domestic product on health, which is very less as compared to the present health status. The study also found out every one percent increase in state per capita income will lead to 0.68 per capita of health care expenditure.

Another study Gupta and Datta (2003) using data from 52nd Round of National Sample Survey Organization analyzed the inequities in health and health care in India. The study indicated that the poor had much higher levels of mortality, malnutrition and fertility than the rich. The study revealed that economic status has negative association with getting government health facility in India. The study also found positive association of health status with income as well as education. They have estimated that health expenditure is high in adults and elderly than children.

A study by Rout (2007) examined the impact of income and education of households on their health care expenditures in Orissa. He found strong positive correlation of household health expenditure with education and income levels in the state. He suggested that income is more responsible than education for better health. Hence, government has to adopt the policies, which should reduce poverty as well as proper income distribution.

Kaushik (2006) using the data for the period 1971-2001examined the relationship among and between health status, expenditure on health, education level and per capita income for Himachal Pradesh. The study revealed the association between health expenditure and health status is different from the association of health expenditure and income, as there was a lack of causality in the latter relationship. The study also found causality that flowed from per capita expenditure on education to infant mortality rate was stronger than the impact of real per capita income on health status. The study concluded that policy intervention is needed to increase the public expenditures on health to improve the health status.

Gupta and Mitra (2004) using the data for 15 major Indian states examined the association of economic growth, poverty and health for the years 1970s, 1980s and

1990s. They found that growth and health status are not only positively associated but also have a two-way relationship. It means good health improves the productivity and higher growth will lead to good health as well as better human capital formation. The same but negative trend is observed with respect to poverty ratio. The study suggested that large scale investment in health sector is needed for higher economic growth as well as good standard of living

Singh Balwant Mehta (2008) using RBI and NSSO data for public and private health care expenditure, respectively, analyzed the performance of different states. It was found that the average per capita health expenditure in the year 2002 turned out to be Rs. 617. Between public and private expenditures, per capita public expenditure (Rs. 170) has vary lower share as compared to household per capita health expenditure (Rs. 641). The study analysed the difference of public and private per capita health expenditures for all the states. The study found that distribution of the out of pocket share across the expenditure quintile groups of households revealed that the out of pocket shares were higher among the richer expenditure quintiles in comparison with those among the poorer quintiles

Purohit (2004) traced the performance in health sector for 15 major Indian states using various indicators in different paramiters like availability of health services, utilization of health services and outcomes of health services. The study found the inter-state inequality in the health sector. States, who have higher income have higher health states and infrastructure facilities. He has also found the greater importance of per capita public health expenditure. The study suggested the establishment and maintenance of proper linkages between socioeconomic development and health care planning to protect the poor and vulnerable from financial burden.

Hanagodimath (2009) studied the impact of public expenditure on health of major 15 states from the year 1976-77 to 2005-06, dividing the time period as pre economic reforms (from 1976-77 to 1990-91) and post economic reforms (from 1991-92 to 2005-06) periods. The study found that economic reforms have affected negatively on health sector spending. With respect to per capita health expenditure seven out of 15 states have experienced negative growth rates during the economic reforms period. Further, the study

also found that all the states have experienced decrease in public spending on health as a share of NSDP during economic reforms.

Association Among and Between Social Sector Indicators and Indices

According to a study by Sarma and Sharma (2016) 'two way relationships between economic development and human resource' suggests that nations may enter either into a virtuous cycle of high growth and large gains in human development, or a vicious cycle of low growth and low rates of human resource development. This paper explores that increasing expenditure on social sector have significant impact on crud birth rate and crude death rate. Further, Life expectancy index has significant relationship with education index and GDP index.

Using the rank correlation method a study Kaur and Misra (2003) found that the HDI and social sector expenditure are strongly positively correlated. Correlation co-efficient between HDI and two other components of social sector expenditure, namely education and health is high. Between these two, education expenditure plays more significant role than health expenditure with HDI.

Some studies have suggested policy prescriptions for social sector development. Lakdawal (1978) argued that the provision of enhanced social services leads to improvement in productive capacities of the economy through raising the consumption standards, which in turn improves the productivity of labour. The study suggested that proper planning at local levels should be made for development of social sector. Tej (1984), Varughese (1982), Seeta Prabhu (2002) and many others have suggested various policies for the social sector reforms in India.

Prabhu and Chatterjee (1993) found the BIMARU states (Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh) as the lowest ranking states with respect to both SDP as well as human development (the study constructed HDI).

Rani (1999) after developing district-wise human development index for 391 districts, indicated that apart from the development opportunities (income), literacy in

general and female literacy in particular, appears to hold the key to the attainment of high human development.

Marimuthu and Chikkaiah (2012) found that BIMURAO states are lagging behind in reducing their poverty ratio and develop the education level even though these states have rich natural resources comparatively. The study also indicated that education brings social benefits the poor in the areas like fertility, health care for children, participation in the labour market, and so on. BanuRawal (2015) fond that the factors such as historical, social, cultural, economical, inefficient government policies etc. are major determinants for regional imbalances in the state of West Bengal.

Dasgupta and Dasgupta (2006) after the construction of human development index for major 15 states, found that Bihar (including Jharkhand), Madhya Pradesh (including Chhattisgarh), Andhra Pradesh, Orissa, Assam, Rajasthan still lack the immediate potential for improving their human development Index. The study prescribes that in order to raise the human development of the relatively backward states removal of the non-economic bottlenecks and economic impediments. Zaidi and Salam (2005) constructed the HDI making slight modifications to the UNDP methods to calculate the life expectancy and educational attainment indicators. They have also arrived similar conclusion like Dasgupta and Dasgupta (2006).

Roy (2012) identified that inter-state imbalances in human development indicators like literacy rate, general enrolment ratio and life expectancy at birth has decreased significantly over the period of time, but there is no significant change in the relative position of different states.

Ghosh (2013) evaluated the relative performance of 15 major Indian states on education and health also examined the regional disparities in the indicators of human development. Further, the study traced the association of human development indicators with per capita income and per capita social sector expenditure. It is found that regional convergence in human development indicators despite a divergence in real per capita income. Poor states are performing well in human development indicators, while failed to compete with income indicators. The study also found strong positive association of public

social sector expenditure with human development indicators and economic growth (per capita income).

Using an aggregate production function approach for 26 Indian states and union territories for the years 1995-96 and 1998-99 a study by Jandhyala, Reddy and Pandit (2009) estimated the contributions of human capital and physical capital to economic growth. Several alternative specifications of functional forms were estimated by the study and most of them gave robust results. The important finding that emerged from their study is that a strong positive relationship exists between investments in human capital and economic growth.

After the detailed review of literature it is observed that there are number of studies, which have analyzed the public expenditure on education and health. But very less numbers of studies have taken into consideration of social sector spending as whole. Further, time period taken by them are also limited. Hence, in the present study an attempt has been made to fulfill this research gap taking into consideration social sector spending from 1990-91 to 2014-15 by all the state governments, union government and combined centre and state governments. Public spending on social sector has been discussed in different ways, which are presented in methodology section of this chapter. With respect to impact analysis limited number of indicator and indices have been taken by the researcher. In the present study taking into consideration of more number of appropriate indicators and indices, impact analysis has been made for education, health, human development and public expenditure.

1.3 Objectives

- To examine the trends and pattern of public expenditure on social services in India.
- To analyze the education status and infrastructure facilities in different states in India.
- To trace the association among and between education status, education infrastructure, public expenditure on education and socio-economic indicators.
- To discuss the health status and infrastructure facilities in Indian states.
- To study the relationship among and between public expenditure on health, health inputs, health outcomes and socio-economic indicators.

- To find out the nexus among and between different indicators and indices of social sector development, human development, economic growth.

1.4 Data and Methodology

The study is based on secondary sources of data. The required data have been obtained from different source such as – IndianPublic Finance Statistics, RBI Bulletin, Education for all, Selected Educational Statistics, Health Information of India, Human Development Report (UNDP), National Human Development Report (2002), Indian Human Development Report 2012, CSO, NSSO,Economic Survey and so on. Further, the study has used difference indices for linking HDI and social sector development. The indices are public affairs index (PAI), basic human needs index (BHNI), corruption index (CI), foundations of wellbeing index (FWI), opportunity index (OI), social progress index (SPI), female empowerment Index (FEI), child development index (CDI), India state hunger index (ISHI), prosperity index (PI), ease of doing index (EI) internet readiness Index (IRI), governance performance index (GPI) and so on.

In order to remove the impact of price rise, the growth and composition of public expenditure has been considered at constant prices with reference to 2004-05as the base year. By using the GDP deflator method, the current expenditure items were converted into constant (2004-05) prices. The GDP deflator is the ratio of nominal GDP to real GDP. In other words, it is equal to nominal GDP divided by real GDP. To get a value in constant prices we need to divide the value of current prices with GDP deflator.

1.5 Limitations of the Study

The study has some limitations – among the social services only education and health have been given more importance in the study. The study does not evaluate the particular schemes or programmes on social services. The study does not analyze the intra-state disparities.

1.6 Organization of the Study

The study has been structured into six chapters. The first chapter gives the introduction, literature review, objectives, and source of data &methodology of the study. The second chapter analyses the trends of public expenditure on social services. Third chapter discusses status and infrastructure facilities of education in Indian states. It also examines the association among and between education status, education infrastructure, public expenditure on education and socio-economic indicators. The fourth chapter devoted on health sector in Indian states, also the chapter studies the relationship among and between public expenditure on health, health inputs, health outcomes and socio-economic indicators. The fifth chapter finds out the nexus among and between different indicators and indices of social sector development, human development, and economic growth. Summary and conclusions are presented in the final chapter.

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CHAPTER - II

PUBLIC SPENDING ON SOCIAL SECTOR

2.1 Introduction:

Human capital theory tells that expenditure on education, health, skill development training programmes have to be considered as an investment. Expenditure on these things will improve the income of the individual in future. During 1961, T.W. Sweltz, in his presidential address to the American Economic Association, addressed that people should invest themselves in the form of education, health, and skill development programmes for the improvement of their income in the future. In developing country like India people cannot invest on these sectors as most of the people are poor and they have scarcity of money for food and clothing. And the returns from expenditure on human capital are in the long gestation of period. Hence, it is not attracted by the private section. Therefore, intervention of government through various policies and programmes for the development of status of health and education of citizens of the country is much necessary. With this national development can be achieved.

In India right from the independence, central and state governments have invested huge amount of money on social sector especially on education and health sector through various schemes. Even though most of the heads of social services are in the state list, union government also allocates and spends on these heads. Hence, public expenditure on social services is to be examined in three ways namely, combined (union and state government) expenditure, expenditure by union government, and expenditure by state governments. In the present study all these three means of expenditures are analysed. Public expenditure is always analysed converting it into different terms namely, expenditure as a share of total budgetary spending, expenditure as a share of GDP/GSDP, and in per capita terms. These all terms also examined in the present study. Expenditure on education induces the heads 'Education, art & culture' and 'Scientific services & research', while expenditure on health includes heads like 'Medical, public health, sanitation & water supply' and 'Family welfare'.

This chapter has been divided into VII sections apart from introduction, section II analyses the combined expenditure of central and state governments on social sector,

section III is devoted on social sector spending by Union Government, while section IV analyses the public expenditure on social services of All-States. Zone-wise social sector spending is examined in section V, inter-state comparison of social sector has been made in section VI, whereas, last section concludes the present chapter.

2.2 Combined Expenditure of Central and State Governments:

In table 2.1, public expenditure on social services of centre and state governments **combined** has been presented. It is observed that in 1990-91 public expenditure on social services was Rs. 30,972 crore, which increased to Rs. 9,42,156 crore in 2015-16. More than 30 time increase is observed in 26 years of selected time period. Similarly, expenditure on education has increased from Rs. 18,726 crore to Rs. 4,71,581 crore (more than 25 fold increase), expenditure on health has increased to Rs. 1,93,643 crore from Rs. 7,497 crore (around 30 times increase), spending on housing sector has increased from Rs. crore 766 to Rs. 29,161 crore (more than 38 times increase), and other social services have increased from only Rs. 3,983 croreto Rs.2,47,771 crore (more than 62 times increase). This increase is very impressive and one feels very happy about it. If we convert this expenditure into constant prices and in per capita terms, the picture is different.

Table 2.1: Public Expenditure on Social Services by Combined Central and States, at current constant prices and in per capita terms 1990-91 to 2015-16

Heads	1990-91		2000-01		2010-11		2015-16	
	Current	Constant	Current	Constant	Current	Constant	Current	Constant
	Actual*							
Total	156226	395967	556664	653482	2116478	1436071	3794689	1898976
Social Services	30972	78501	114005	133833	495105	335938	942156	471483
Education	18726	47462	68001	79828	266601	180894	471581	235993
Health	7497	19002	27186	31914	102038	69235	193643	96905
Housing	766	1941	4156	4879	21521	14602	29161	14593
Others	3983	10095	14662	17212	104945	71207	247771	123992
	Per Capita*							
Total	1862	4720	5463	6413	17846	12109	29577	14801
Social Services	369	936	1119	1313	4175	2833	7343	3675
Education	223	566	667	783	2248	1525	3676	1839
Health	89	226	267	313	860	584	1509	755
Housing	9	23	41	48	181	123	227	114
Others	47	120	144	169	885	600	1931	966

Note: Actual expenditure is in Rs. Crore and Per capita is in Rs.

Constant prices are at 2004-05 prices

Source: Various Issues of Indian Public Finance Statistics, GoI

The reason is that -Public expenditure on selected heads of social services is eaten by the prices escalation and increased population. In per capita constant price or in per capita real term, public expenditure on social services has increased from Rs. 936 to Rs. 3675 (only 3.9 times increase). Similarly, Education (3.3 times), Health (3.3 times), Housing (4.9 times) and Other Social Services (8 times) have also shown lower increase in the same period.

Figure 2.1: Composition of Public Expenditure on social service during 1990-91, Combined Central and States

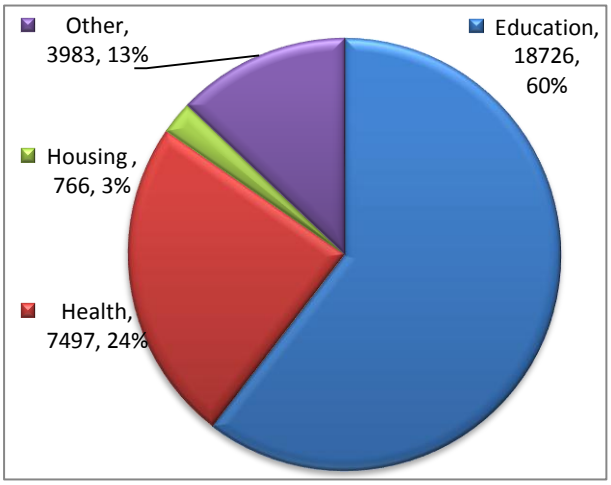
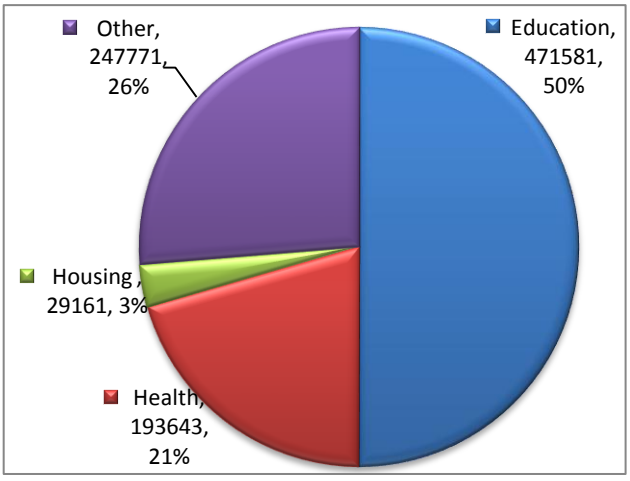


Figure 2.2: Composition of Public Expenditure on social service during 2015-16, Combined Central and States



In figures 2.1 and 2.2 composition of public expenditure on social services by combined central and state governments have been presented. From these figures, it is clear that among the social services education and health have the lion shares in both the time period, that is 1990-91 and 2015-16. In the year 2015-16, compared with the year 1990-91 education (from 60 per cent to 50 per cent) and health (24 per cent to 21 per cent) have shown the decreased share, while other social services have increased from 13 per cent to 26 per cent, but housing sector has remained in the 3 per cent in both the time periods.

Public expenditure on social services is also converted into - as a share total budgetary expenditure and as a share of GDP in the present study. Information related to this has been presented table 2.2. It is found from the table that expenditure on social services as a share of total budgetary expenditure has increased from 20 per cent in 1990-91 to 25 per cent in 2015-16. Expenditure on education is hovering between 12 per

cent and 12.6 per cent. Spending on health has increased from 4.8 per cent to 5.1 per cent. Housing sector has registered the share between 0.5 per cent and 1 per cent in the study period.The table also shows the expenditure as a share of GDP. It is found that spending on social services is between 5 to 7 per cent, education and health are around 3 and 1 per cent respectively. Housing is less than 1 per cent in the study period.

Table 2.2: Combined Central and State Public Expenditure on Social Services, as a share of Total Expenditure and as a per cent to GDP

Heads	1990-91	2000-01	2010-11	2015-16
Percentage to Total Expenditure				
Social & Community Services	20	20	23	25
Education	12.0	12.2	12.6	12.4
Health	4.8	4.9	4.8	5.1
Housing	0.5	0.7	1.0	0.8
Percentage to GDP				
Total	27	26	27	28
Social & Community Services	5	5	6	7
Education	3	3	3	3
Health	1	1	1	1
Housing	0	0	0	0

Source: Various Issues of Indian Public Finance Statistics, GoI

2.3 Social Sector Spending by Union Government:

As it has already mentioned that although states have the major responsibilityin social service spending, the commitment of central government is not negligible, which is evident from the fact that central government's expenditure on social services has increased from Rs. 6432 crore in 1990-91 to Rs. 1,59,374 crore in 2015-16 in current prices. In constant prices of per capita terms, social sector expenditure has increased from Rs. 194 to Rs. 622 in the same period. Similarly, education (from Rs. 106 to Rs. 366), Health (from Rs. 46 to Rs. 119) housing (from Rs. 8 to Rs. 53), and other social services (from Rs. 34 to Rs. 84) have also increased (please see table 2.3 for more details).

Table 2.3: Public Expenditure on Social Services by Union Government, at current constant prices and in per capita terms 1990-91 to 2015-16

Heads	1990-91		2000-01		2010-11		2015-16	
	Current	Constant	Current	Constant	Current	Constant	Current	Constant
Actual								
Total	100884	255698	313011	367452	1187898	806011	1761812	881663
Social Services	6432	16302	25143	29516	128906	87465	159374	79756
Education	3510	8896	12851	15086	71961	48827	93815	46948
Health	1520	3853	6252	7339	34790	23606	30616	15321
Housing	265	672	2577	3025	12465	8458	13619	6815
Other	1137	2881	3463	4066	9690	6574	21324	10672
Per Capita								
Total	1202	3048	3072	3606	10016	6796	13732	6872
Social Services	77	194	247	290	1087	737	1242	622
Education	42	106	126	148	607	412	731	366
Health	18	46	61	72	293	199	239	119
Housing	3	8	25	30	105	71	106	53
Other	14	34	35	40	82	55	166	84

Note: 1) Actual expenditure is in Rs. crore and Per capita is in Rs. 2) Constant prices are at 2004-05 prices

Source: Various Issues of Indian Public Finance Statistics, GoI

In figures 3.3 and 2.4 composition of public expenditure on social services by central government have been presented. In union government spending also, among the social services, education and health have the major shares in both the time period. Comparison between two years i.e. 1990-91 and 2015-16, shares of education and housing sectors have increased from 54 per cent to 59 per cent and 4 per cent to 9 per cent respectively. Health sector and other social services have shown decreased share from 24 per cent to 19 per cent and 18 per cent to 13 per cent respectively.

Figure 2.3: Composition of Public Expenditure on social service by Union Government during 1990-91

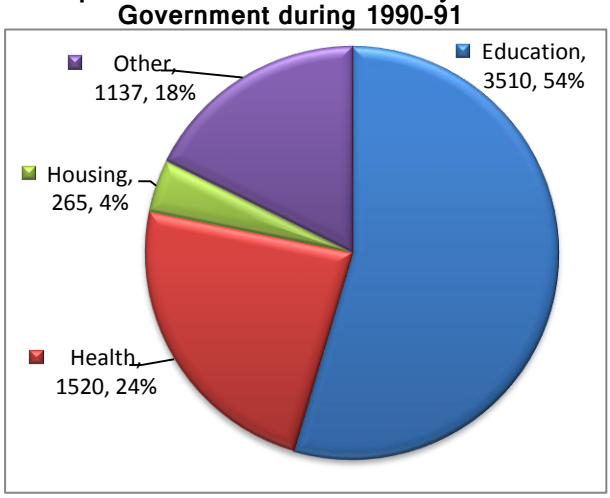


Figure 2.4: Composition of Public Expenditure on social service by Union Government during 2015-16

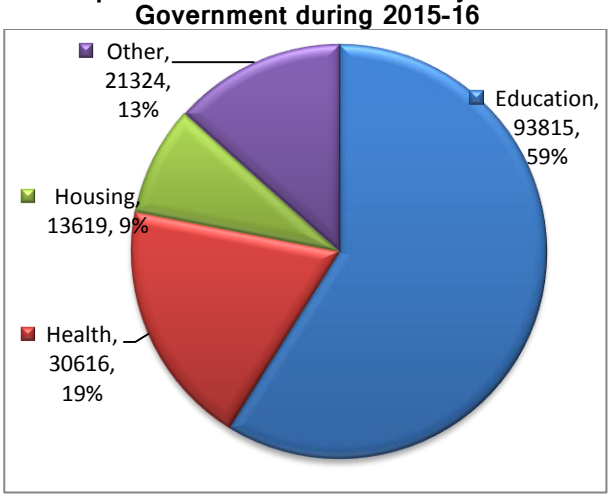


Table 2.4: Union Government Expenditure on Social Services, as a share of Total Expenditure

Heads	1990-91	2000-01	2010-11	2015-16
Social Services	6.4	8.0	10.9	9.0
Education	3.5	4.1	6.1	5.3
Health	1.5	2.0	2.9	1.7
Housing	0.3	0.8	1.0	0.8

2.4 Public Expenditure on Social Sector by All-States:

In table 2.5, public expenditure of all state governments has been presented. In the table three heads of expenditure has been presented viz., total expenditure, expenditure on economic services and expenditure on social services. Expenditures on these heads are presented in actual and per capita terms of current and constant prices. Total public expenditure is Rs. 911 billion in the year 1991, which increased to Rs. 24,450 billion in the year 2014-15. The increase is observed 27 times, which is very impressive. Similarly, expenditures on economic and social services have also increased significantly. Expenditure on economic services has increased from Rs. 334 billion to Rs. 7,294 (increase of 13.39 fold) and social services has increased from Rs. 300 billion to Rs. 8,784 billion (14.66 fold) in the reference period. This impressive picture cannot be seen, when one coverts the expenditure data into constant prices and per capita terms. Increasing population and price inflations have eaten this increase. In per capita real term, public expenditure on social services has increased only 3.9 times from Rs. 905 in 1990-91 to Rs. 3528 in 2014-15, whereas 'economic services' has increased only 2.9 times from Rs. 1,009 to Rs. 2,929. Compound annual growth rate has also been calculated and presented in the table. It is found that between social and economic services, social services (CAGR-3.9%) has higher growth rate than the economic services (CAGR-2.9%). It shows state governments' commitments to increase the human development indicator or social sector indicators.

In figure 2.5 composition of expenditure on economic and social services has been presented from 1990-91 to 2014-15. Expenditures on economic and social services are given in percentage to total expenditure. It is observed that in 1990-91 expenditure on economic services as a share of total budgetary expenditure was higher (37%) than the social services (33%).

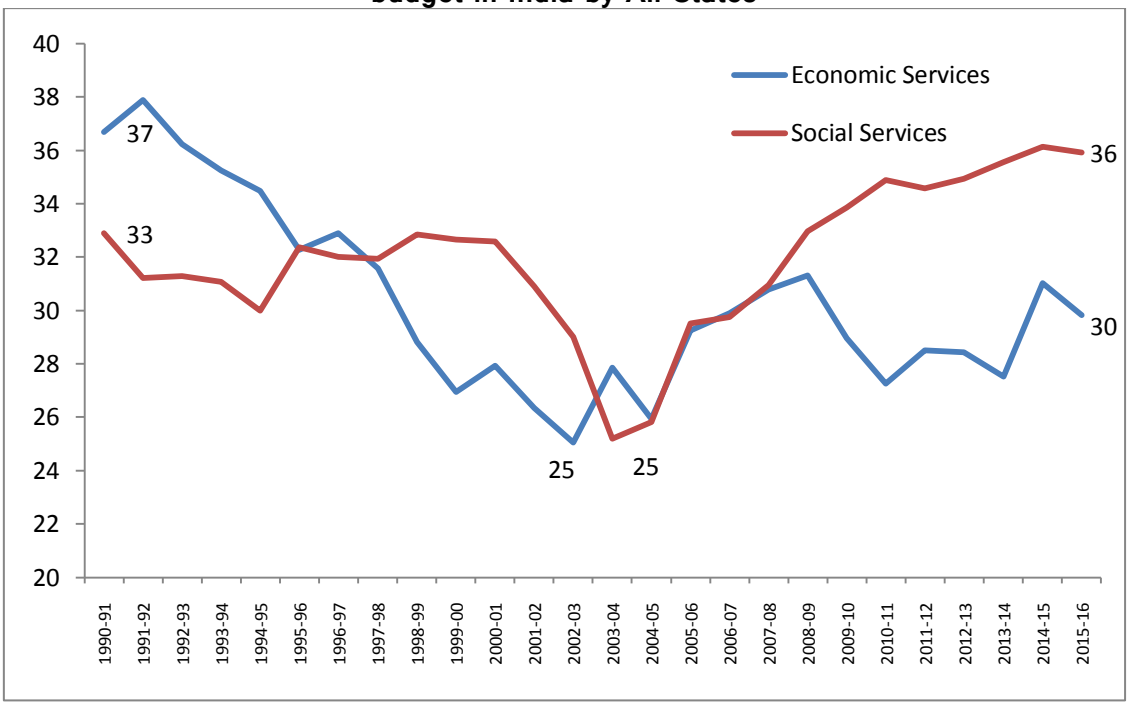
Table 2.5: Expenditure Pattern of the State Governments (Rupees Billion)

Year	Total Expenditure				Economic Services				Social Services			
	Current Prices	Constant Prices	Per Capita Current Prices	Per Capita Constant Prices	Current Prices	Constant Prices	Per Capita Current Prices	Per Capita Constant Prices	Current Prices	Constant Prices	Per Capita Current Prices	Per Capita Constant Prices
1990-91	911	2309	1086	2752	334	847	398	1009	300	759	357	905
1991-92	1079	2405	1261	2810	409	911	478	1065	337	751	394	877
1992-93	1193	2443	1369	2801	432	885	496	1015	373	764	428	876
1993-94	1338	2491	1501	2793	472	878	529	985	416	774	466	868
1994-95	1591	2698	1749	2965	549	931	603	1023	477	809	525	889
1995-96	1746	2713	1882	2923	564	876	608	944	565	878	609	946
1996-97	1993	2872	2106	3036	656	945	693	999	638	920	674	972
1997-98	2239	3027	2323	3140	707	956	734	992	715	967	742	1003
1998-99	2614	3271	2659	3327	753	942	766	959	859	1075	874	1093
1999-00	3080	3737	3077	3734	830	1007	829	1006	1005	1220	1004	1219
2000-01	3398	3989	3335	3915	950	1115	932	1094	1107	1300	1086	1275
2001-02	3687	4195	3545	4033	971	1105	934	1062	1140	1297	1096	1247
2002-03	4102	4500	3885	4261	1028	1127	973	1068	1190	1305	1127	1236
2003-04	5143	5437	4798	5072	1433	1514	1336	1413	1296	1370	1209	1278
2004-05	5534	5534	5082	5082	1436	1436	1318	1318	1429	1429	1312	1312
2005-06	5617	5389	5078	4873	1643	1577	1486	1425	1657	1590	1498	1438
2006-07	6573	5926	5858	5282	1966	1772	1752	1580	1956	1763	1743	1572
2007-08	7523	6398	6611	5622	2315	1969	2035	1730	2329	1981	2047	1741
2008-09	8823	6919	7646	5995	2763	2166	2394	1877	2908	2280	2520	1976
2009-10	10153	7506	8678	6415	2940	2173	2513	1857	3438	2541	2938	2172
2010-11	11587	7862	9770	6629	3159	2144	2664	1808	4044	2744	3410	2314
2011-12	13516	8452	11245	7032	3851	2408	3204	2004	4673	2922	3887	2431
2012-13	15343	8958	12607	7361	4361	2546	3583	2092	5362	3131	4406	2572
2013-14	17061	9354	13837	7586	4696	2574	3808	2088	6069	3327	4922	2699
2014-15	22684	12104	18159	9689	7036	3754	5633	3006	8199	4375	6563	3502
2015-16	24450	12422	19327	9819	7294	3706	5765	2929	8784	4463	6944	3528
Growth Rate	**14.36**	**6.82**	**17.8**	**3.6**	**13.39**	**5.62**	**14.5**	**2.9**	**14.66**	**7.11**	**19.4**	**3.9**

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

On the other hand, in the year 2014-15, expenditure on social services is higher (36%) than expenditure on economic services (30%). During the 16 years of time period, it is observed that from 1990-91 to 2002-03 the expenditure pattern is found to be decreasing, and then afterwards, it has shown the increasing trend. As it was mentioned in the review section that many researchers have found declining of social sector spending after economic reforms. Through, figure 2.1 it is found that from 1990-91 to 2002-03 this trend has declined. Further, it again increased and reached a noticeable position. Hence, one can conclude that negative impact of economic reform was short-term on social sector spending.

Figure 2.5: Public Expenditure on Economic and Social Services as a share of total budget in India by All States



Source: Calculated from the data available from the different issues of Study of State Finance, RBI

In table 2.6 public expenditure on social and economic services are presented converting them into percentage to GDP.Total public expenditure as a per cent to GDP was between 15 per cent and 20 per cent in the entire study period. The lowest expenditure (15.31%) is observed in the year 1996-97 and the highest expenditure (19.75%) is observed in the year 2014-15.Expenditure on economic services as a percentage to GDP is hovering between 4 per cent and 7 per cent in the study period of 16 years. The lowest

is found in the year 2010-11 (4.36%) and the highest is found in the year 1991-92 (6.67%). Expenditure on social services is between 4.81 and 7.14 per in the study period. Further, an important point here is to be noted that spending on social services was lower than the economic services at the initial years of the study period, in the latter period, spending on social services increasing marginally.

Table 2.6: Public Expenditure on Social and Economic Services, as a share of GDP of All States, from 1990-91 to 2014-15

Year	Total Expenditure	Developmental Expenditure	Economic Services	Social Services
1990-91	17.13	11.92	6.28	5.63
1991-92	17.59	12.16	6.67	5.49
1992-93	16.96	11.45	6.14	5.30
1993-94	16.36	10.93	5.77	5.09
1994-95	16.66	10.92	5.75	5.00
1995-96	15.61	10.26	5.04	5.05
1996-97	15.31	10.14	5.04	4.90
1997-98	15.47	10.04	4.89	4.94
1998-99	15.67	9.86	4.51	5.15
1999-00	16.57	10.08	4.47	5.41
2000-01	16.99	10.52	4.75	5.53
2001-02	16.95	9.96	4.46	5.24
2002-03	17.50	9.75	4.39	5.08
2003-04	19.59	10.44	5.46	4.94
2004-05	18.62	9.88	4.83	4.81
2005-06	16.57	9.73	4.85	4.89
2006-07	16.63	9.92	4.97	4.95
2007-08	16.42	10.14	5.05	5.08
2008-09	16.64	10.69	5.21	5.48
2009-10	16.62	10.44	4.81	5.63
2010-11	15.98	9.94	4.36	5.58
2011-12	16.11	10.16	4.59	5.57
2012-13	16.34	10.36	4.64	5.71
2013-14	16.29	10.28	4.48	5.80
2014-15	19.75	13.26	6.13	7.14
2014-15	19.26	12.67	5.75	6.92

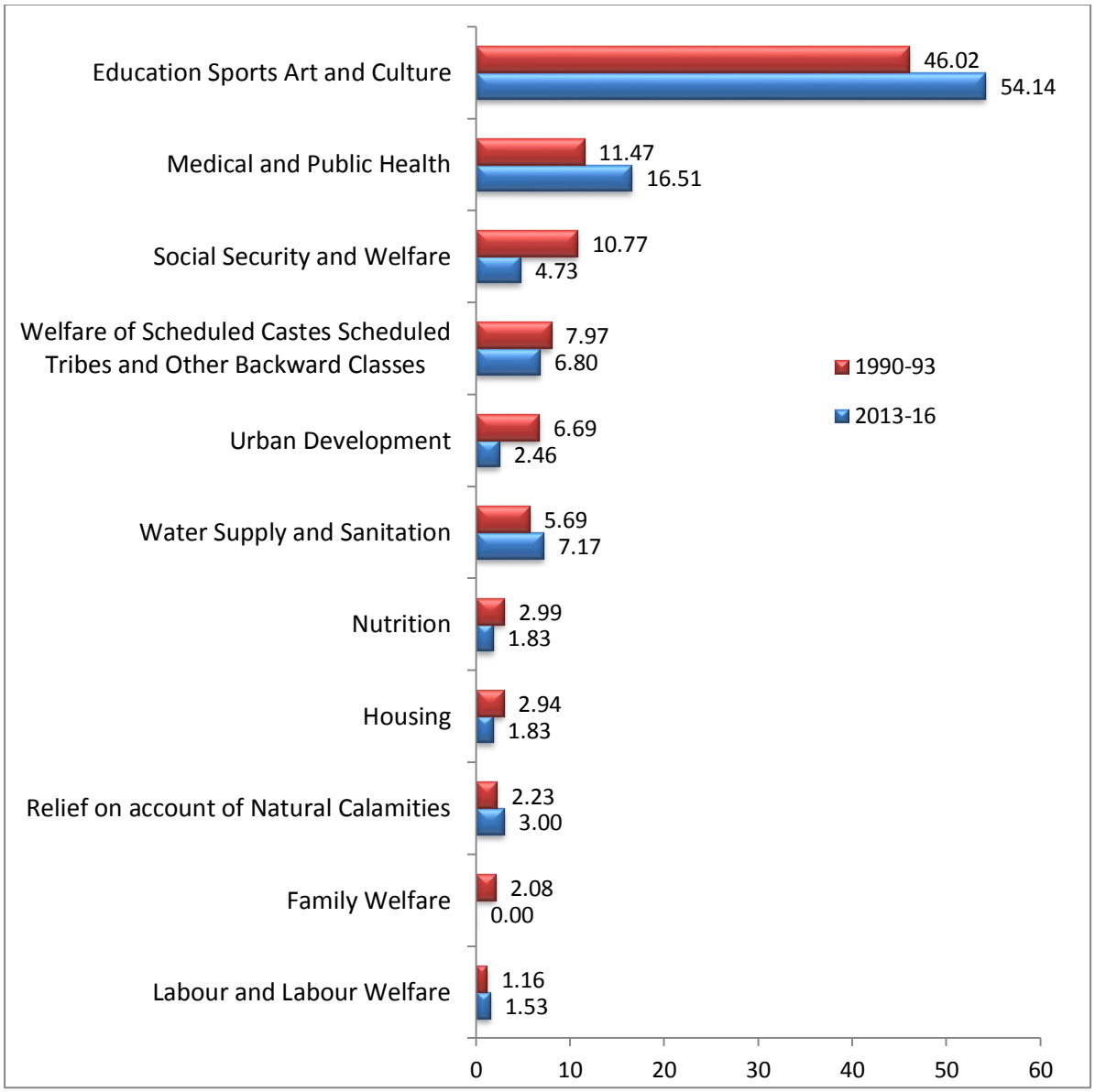
Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Another exercise has been made to analyse the composition of different heads of social services during initial years and for the recent years. For the purpose, different heads of social services are taken as an average of three. The information related to this has been presented through a bar diagram in figure 2.6. The figure reveals that expenditure on

education and health have the lion share in social services, followed by 'social security' and 'welfare, welfare of SC and ST' and so on. Through the figure some of the important observation can be made, which are as follows,

- Spending on 'Education sports Arts and Culture' was 46.02 per cent of total social services expenditure in 1990-93 (average of three years), which has increased to 54.14 per cent in 2013-16(average of three years).
- Public expenditure on 'Medical and public health' by all the state governments was 11.47 per cent in 1990-93, which reached to 16.51 per cent in the year 2013-16.

Figure 2.6: Components of Expenditure on Social Services by All Sates, 1990-93 and 2013-16



Source: Calculated from the data available from the different issues of Study of State Finance, RBI

- Five out of eleven heads of social services have shown the increase in the share of composition of social services expenditure they are 'education', health, 'water supply and sanitation', 'relief of account of natural calamities' and 'labour and welfare'.
- Spending on 'Family Welfare' was 2.8 per cent in 1990-93, but in the year 2013-16, nothing is spent under this head.
- Spending of 'Urban development' has decreased significantly from 6.69 per cent to 2.46 per cent in the study period. Further, housing sector has also experienced significant deterioration from 2.94 per cent to 1.83 per cent. These two heads have decreased more than 50 per cent as a share of social services.

2.5Social Sector spendingby different Zones

Before going to analyse the state wise public expenditure on different heads of social services a quick look at zone-wise spending have been made to see which region/zone is performing well. Information related to this has been presented in table 2.7.

Table 2.7: Zone-wise average Per capita public expenditure on social services and its components

ZonesYear		Central	East	North	North Eastern	South	West	All States
Social Services	1990-91	672	740	1640	2223	1037	1845	1550
	2014-15	3168	2117	4310	6839	3858	5192	4747
Education	1990-91	368	424	768	1054	553	950	769
	2014-15	1607	982	2115	3236	1725	2312	2185
Health	1990-91	112	129	288	371	166	359	269
	2014-15	456	278	678	1192	551	773	779
Housing	1990-91	8	13	42	145	13	35	59
	2014-15	98	46	43	273	97	63	126
Rural Development	1990-91	159	134	106	240	149	149	167
	2014-15	674	579	422	923	525	400	598
Total	1990-91	2170	2224	5447	7382	2912	5258	4881
	2014-15	7213	4989	11643	17037	10066	11981	11560

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Through, the table very interesting observation are found, which are presented as below,

- In per capita social sector (and its components also), North eastern and western zones are found in the top position in both the selected years.

- Central zone and eastern zones were in the bottom position in both years in per capita total public expenditure, expenditure on social services and all its components.
- Southern and northern zones are found in the middle position in per capita public expenditure on different components of social service in the selected time period.
- Three-fold gap is observed between top position (north eastern zone) and bottom position (eastern zone)zones in per capita expenditure on social services.
- Among the zones, higher gap is observed in housing sector and the lower gap is observed in education sector.

Table 2.8: Zone-wise Inter-state disparity (CV %) in Per capita public expenditure on social services and its components

Zones	Years	Central	East	North	North Eastern	South	West	All States
Social Services	1990-91	0.29	20.92	37.41	34.74	21.65	100.57	64.98
	2014-15	51.19	22.27	34.74	46.50	28.82	63.39	55.81
Education	1990-91	14.95	19.59	29.78	29.63	31.87	96.22	60.15
	2014-15	51.27	19.93	39.63	46.42	19.80	62.04	54.93
Health	1990-91	20.49	30.94	46.67	43.84	25.20	120.24	78.94
	2014-15	49.58	32.46	42.43	43.00	23.30	76.23	63.60
Housing	1990-91	44.72	80.72	79.83	92.35	42.64	61.64	152.03
	2014-15	36.07	57.51	70.99	141.19	62.33	105.56	167.62
Rural Development	1990-91	20.00	27.99	55.61	67.29	17.19	12.89	60.03
	2014-15	56.22	27.82	51.44	41.06	66.38	53.93	60.71
Total	1990-91	10.32	19.77	30.83	43.07	11.58	88.12	64.97
	2014-15	42.66	22.31	27.34	47.04	30.72	70.97	57.37

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Zone-wise regional imbalances has been presented in table 2.8. In this table CV has been presented taking into consideration of states within the zones. Some observation can be made through this table, which are presented as follows,

- In social sector, western zone has higher regional imbalances in both 1990-91 and 2014-15. Central zone and eastern zones have lower regional imbalances in 1990-91 and 2014-15 respectively. Except northern and western zones, all zones experienced increase in regional imbalances in the study period.

- As per as expenditure on education is concerned, western zone has the lower regional imbalances in the selected study period. Central and southern zones have lower regional disparity respectively in 1990-91 and 2014-15. Southern and western zones registered reduction in regional imbalances in the 25 years of reference period.
- In per capita health, central zone has lower regional imbalances in 1990-91, and in 2014-15 eastern zone has lower regional imbalances. Western zone has the huge regional imbalances in both the selected time periods. Two out of six zones namely central and eastern zones have experienced higher regional imbalances from 1990-91 to 2014-15
- With respect to housing, southern zone had lower regional imbalances in 1990-91. Further, in 2014-15 central zone has lower regional imbalances. Three zones namely central, eastern, and northern zones have experienced reduction in regional imbalances.
- In per capita spending on rural development western and eastern zones have lower regional imbalances in 1990-91 and 2014-15 respectively. Central, northern and southern are the three zone, which have registered increased regional imbalances from 1990-91 to 2014-15.

2.6 Inter-State Comparison of Social Sector Spending:

Most of the heads of social services have been listed in the state list, so the major responsibility of spending on social services lies with the states. In this section, state wise spending on different heads of social services has been analysed. Per capita expenditure on social service was Rs. 751 in 1990-91, which increased to Rs. 2658 in 2014-15. This increase is not similar in all the states.

Goa, Nagaland, Sikkim, Arunachal Pradesh and Himachal Pradesh were found in the group of top spending states in both the time periods. Rajasthan, Odisha, Madhya Pradesh, Uttar Pradesh and Bihar states are spending lower on per capita public social services. With respect to Andhra Pradesh, the state has shown a significant improvement

from 20th position in 1990-91, to 14th position in 2014-15. Similarly, Gujarat (16th to 12th) and Haryana (13th to 9th) have also improved their positions in the same period. Punjab has deteriorated its position from 12th in 1990-91 to 21st in 2014-15. Similarly, Jammu Kashmir has also experienced negative change in its rank from 6th to 10th in the same period.

Totally, out of 24 states, 8 states have registered negative change, ten states have shown positive change and remaining six states have not shown any changes in their ranks from 1990-91 to 2014-15 in per capita expenditure on social services. To see the regional imbalances coefficient of variation has been calculated, which has been presented in the last column of the table. It is found that over the period of time, inter-state imbalances in per capita expenditure on social services has come down, which is evident from the fact that the CV in the year 1990-91 was 65.0 per cent, that has decreased to 55 per cent (table 2.9).

Table 2.9: Per Capita Public Expenditure on Social Services at constant prices of 2004-05

Years	1990-91		2000-01	2010-11	2014-15	
	Exp.	Rank	Exp	Exp	Exp.	Rank
Andhra Pradesh	843	20	1272	2543	3777	14
Arunachal Pradesh	2773	4	2693	5926	7552	3
Assam	933	15	1276	1969	2906	17
Bihar	573	24	840	1063	1540	24
Goa	4627	1	4852	7579	10072	2
Gujarat	921	16	2032	3168	4055	12
Haryana	1085	13	1493	3017	4432	9
Himachal Pradesh	2207	5	3374	5616	6123	5
Jammu and Kashmir	2132	6	2140	3767	4222	10
Karnataka	860	18	1448	2775	3467	16
Kerala	1304	10	1542	2718	4008	13
Madhya Pradesh	673	22	1137	1780	2233	22
Maharashtra	982	14	1768	3126	3755	15
Manipur	1761	9	2148	4752	4917	7
Meghalaya	1960	8	2473	3668	4848	8
Nagaland	3177	2	3092	5772	6172	4
Odisha	769	21	1065	1932	2530	19
Punjab	1134	12	1389	1782	2462	21
Rajasthan	851	19	1357	1676	2886	18
Sikkim	2857	3	5359	13793	11619	1
Tamil Nadu	1141	11	1586	3350	4182	11
Tripura	2099	7	2844	657	5244	6
Uttar Pradesh	670	23	665	1445	1728	23
West Bengal	879	17	1245	2478	2474	20
All States	751		1207	2171	2658	
CV[1](%)	65.0				55.0	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

[1]The coefficient of variation (CV) is defined as the ratio of the standard deviation σ to the mean μ It shows the extent of variability in relation to the mean of the population.
$CV=\frac{\sigma}{\mu} X100$

Education[2] is the most important component in social services. To improve the education status all the state governments have implemented various programmes and policies. In the recent years public expenditure on education has increased in all the states. In table 2.10, information related to per capita public expenditure on education has been presented. In the year 1990-91, per capita public expenditure on education by all state was Rs. 407, which increased Rs. 1238 in 2014-15. It has shown an increase of three fold in 25 years of selected time period. Among the states Sikkim, Goa, Arunachal Pradeshand Nagaland are found in the higher spending states.

Table 2.10: Per Capita Public Expenditure on Education at constant prices of 2004-05

Years	1990-91		2000-01	2010-11	2014-15	
	Exp.	Rank	Exp	Exp	Exp.	Rank
Andhra Pradesh	397	22	572	997	1401	17
Arunachal Pradesh	1467	2	794	2544	3136	4
Assam	523	15	871	1223	1739	14
Bihar	354	23	556	542	763	24
Goa	2320	1	2239	3681	4431	2
Gujarat	504	17	854	1370	1639	15
Haryana	537	14	752	1485	1999	10
Himachal Pradesh	1059	5	1706	2902	3283	3
Jammu and Kashmir	829	9	981	1805	1884	13
Karnataka	444	18	786	1258	1463	16
Kerala	790	10	957	1497	2134	9
Madhya Pradesh	329	24	526	807	1082	22
Maharashtra	540	13	1151	1710	1893	12
Manipur	989	6	1395	1683	2368	6
Meghalaya	902	8	1200	1865	2308	7
Nagaland	1164	4	1380	3005	3110	5
Odisha	401	21	579	1005	1108	21
Punjab	646	11	848	976	1293	18
Rajasthan	437	19	663	955	1286	19
Sikkim	1350	3	2960	9671	5702	1
Tamil Nadu	581	12	830	1381	1903	11
Tripura	982	7	1492	223	2139	8
Uttar Pradesh	406	20	433	695	829	23
West Bengal	516	16	663	1464	1181	20
All States	407		663	1040	1238	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

These states are spending more than Rs. 3000 per capita on education through the budget in 2014-15. Bihar, Uttar Pradesh, Madhya Pradesh and Odisha are observed in the bottom position with lower than Rs. 1150 per capita in the same year. Andhra Pradesh

[2]In most of the countries education is under the control of central government, in Indian education is in concurrent list.

(22nd to 17th) and Haryana (14th to 10th) states have improved their position significantly from 1990-91 to 2014-15. Punjab (11th 18th), Jammu Kashamir (9th to 13th) and West Bengal (16th to 20th) have experienced significant deterioration in the same period.

Overall, out of 24 states, 12 states have improved their ranks, 9 states have experienced negative change and remaining three states have experienced no change in their ranks in per capita public expenditure on education between 1990-91 and 2014-15.

Health is the second major component in social services. After education, health sector has the major share of around 15 per cent in social service spending. During 1990-91, Rs. 124 was spent on this sector by all states, which increased to Rs. 369 in the year 2014-15.

Table 2.11: Per Capita Public Expenditure on Health at constant prices of 2004-05

Years	1990-91		2000-01	2010-11	2014-15	
	Exp.	Rank	Exp	Exp	Exp.	Rank
Andhra Pradesh	129	20	204	320	475	13
Arunachal Pradesh	497	4	616	1012	1565	3
Assam	147	15	159	289	299	22
Bihar	93	24	138	110	166	24
Goa	1005	1	829	1330	1649	2
Gujarat	139	17	213	361	588	11
Haryana	141	16	168	270	472	14
Himachal Pradesh	430	5	565	833	998	7
Jammu and Kashmir	368	6	433	732	841	9
Karnataka	138	18	226	314	466	15
Kerala	220	10	251	446	689	10
Madhya Pradesh	96	23	164	203	312	21
Maharashtra	155	14	200	294	427	17
Manipur	241	9	333	786	1100	5
Meghalaya	343	7	407	722	1013	6
Nagaland	591	2	517	973	1163	4
Odisha	122	22	151	193	347	20
Punjab	212	11	292	277	401	18
Rajasthan	136	19	182	236	427	16
Sikkim	504	3	766	1594	1948	1
Tamil Nadu	175	12	223	451	572	12
Tripura	276	8	313	84	843	8
Uttar Pradesh	129	21	102	214	281	23
West Bengal	171	13	218	265	355	19
All States	**124**		**175**	**272**	**369**	
CV%	**78.9**				**65.8**	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

This sector has shown around 3 fold increase over 25 years of selected time period. In this sector, in 2014-15, Sikkim is found to be in the first position with Rs. 1948 per person per year, while Bihar with Rs. 166 found in the lost position among the 24 selected

states. Sikkim, Goa, Arunachal Pradesh and Nagaland are in the top position in both the years. Bihar, Uttar Pradesh, Assam, Madhya Pradesh and Odisha were in the bottom position in 1990-91 and 2014-15. States like Punjab, Assam and West Bengal have experienced significant negative change in their ranks from 1990-91 to 2014-15, whereas, Andhra Pradesh and Gujarat have shown a higher positive change. Among the selected 24 states, 11 states have registered positive change, 9 states have experienced negative change and remaining 4 states have not shown any change in the selected time period of 25 years. CV in per capita health expenditure was 78.9 per cent in 1990-91, which increased to 65.8 per cent in 2014-15. It means inter-state disparities have decreased noticeably (table 2.11).

Housing is another component in social services. Its share is around 2 per cent in social services. In this sector, only Rs. 14 per capita has been spent in 1990-91, which increased to Rs. 76 in 2015-16 by all states (table 2.12).

Table 2.12: Per Capita Public Expenditure on Housing at constant prices of 2004-05

Years	1990-91		2000-01	2010-11	2014-15	
	Exp.	Rank	Exp	Exp	Exp.	Rank
Andhra Pradesh	5	23	8	59	68	12
Arunachal Pradesh	275	2	158	169	82	9
Assam	15	17	8	4	137	7
Bihar	2	24	1	52	74	11
Goa	63	6	36	32	37	19
Gujarat	35	8	87	87	158	5
Haryana	23	12	7	10	11	23
Himachal Pradesh	31	10	90	45	50	17
Jammu and Kashmir	91	5	38	27	28	20
Karnataka	16	16	65	103	169	4
Kerala	13	19	15	40	12	22
Madhya Pradesh	11	20	14	27	68	13
Maharashtra	34	9	41	120	51	16
Manipur	29	11	11	54	26	21
Meghalaya	126	4	109	73	63	14
Nagaland	368	1	206	351	331	2
Odisha	22	13	15	41	56	15
Punjab	21	14	0	0	81	10
Rajasthan	9	21	15	4	5	24
Sikkim	157	3	280	422	1199	1
Tamil Nadu	16	15	12	272	137	6
Tripura	46	7	200	22	202	3
Uttar Pradesh	6	22	2	4	119	8
West Bengal	14	18	13	17	45	18
All States	**14**		**20**	**52**	**76**	
CV(%)	**152**				**178**	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

In this sector more than 5 time increase can be observed over the period of 25 year of selected time period.State-wise analyse reveals that in the year 2014-15 per capita expenditure on housing is high in the stare like Sikkim, Nagaland, Tripura and Karnataka. Lower per capita spending is observed in the states like Rajasthan, Haryana, Kerala and Manipur in the same period.

States like Assam, Andhra Pradesh, Karnataka, Bihar and Uttar Pradesh have improved their position significantly in per capita public spending on housing sector. On the other hand, states like Jammu and Kashmir, Goa, Haryana, Meghalaya and Manipur have deteriorated in their ranks in the reference period.

In sum, out 24 states 11 states have improved their position, 12 states have slipped down the rankings and remaining only one state (West Bengal) is in the same position from 1990-91 to 2014-15 in this sector. Inter-state imbalances in public per capita expenditure on housing from 1990-91 (CV-152%) to 2014-15(CV-178%) has increased.

Rural Development has not been listed in social services category; it comes in the category of economic services. Rural development is also a component in social sector. In the recent years government has given at most importance to rural development.

Central and state governments have implemented various rural development schemes. Among the implemented schemes, most important schemes are Swachh Gram, MGNREGA, PMAY (G), DDUGKY, PMGSY, DAY-NRLM, NSAP, RURBAN , NRuM), SAGY and DIKSHA (Training Portal). Through this huge amount of money is being spent and many benefits are being given for the rural development and people living in the rural area. In table 2.8 per capita public expenditure on Rural development has been presented. The table reveals that per capita public expenditure on rural development was Rs. 123 in 1990-91 by all states, which increased to Rs. 434 in 2014-15. More than 3.5 times increase can be observed in the 25 years of the reference period.

In this sector also states like Sikkim, Tripura, Manipur, Meghalaya and Nagaland are spending more amounts in per capita terms. On the other side states like Assam, Uttar Pradesh, Goa and Punjab are spending lower per capita on rural development. Regional imbalances in per capita spending rural development has reduced from 1990-91 to 2014-

15, which is evident through the reduction in CV from 60 per cent to 56 per cent in the reference period (table 2.13).

Table 2.13: Per Capita Public Expenditure on Rural Development at constant prices of 2004-05

States	1990-91		2000-01	2010-11	2014-15	
	Exp.	Rank	Exp	Exp	Exp.	Rank
Andhra Pradesh	185	5	199	280	773	6
Arunachal Pradesh	396	2	259	467	548	10
Assam	93	22	46	196	258	21
Bihar	95	21	174	210	402	16
Goa	170	8	102	327	247	23
Gujarat	149	11	176	247	296	20
Haryana	112	19	50	241	389	18
Himachal Pradesh	176	7	262	342	688	9
Jammu and Kashmir	101	20	102	193	449	14
Karnataka	140	13	103	168	398	17
Kerala	125	16	292	88	411	15
Madhya Pradesh	136	15	185	336	515	12
Maharashtra	154	10	62	191	338	19
Manipur	75	23	60	222	1031	3
Meghalaya	267	3	270	591	1008	4
Nagaland	501	1	208	532	777	5
Odisha	170	9	135	225	484	13
Punjab	33	24	31	95	161	24
Rajasthan	124	17	80	247	719	7
Sikkim	119	18	250	683	1368	1
Tamil Nadu	147	12	160	248	520	11
Tripura	228	4	358	59	1326	2
Uttar Pradesh	181	6	130	223	252	22
West Bengal	137	14	111	184	700	8
All States	123		127	231	434	
CV (%)	**60**				**56**	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Spending on Social Sector as a share of GSDP

Another method of analyzing of different heads of public expenditure is expenditure as a share of GDP (GSDP for states). Through this measure one can find how much national income is devoted to different heads of expenditure. Public expenditure on social services as a per cent to GSDP is between 4 and 18 per cent in 2014-15. Social services expenditure is more than ten per cent in Tripura, Arunachal Pradesh, Sikkim, Nagaland,

Manipur and Meghalaya in 1990-91 and 2014-15. Gujarat, Maharashtra and Punjab states are spending lower amount on social services as a share of their GSDP in both the time period (table 2.14).

Table 2.14: Public Expenditure on Social Services as per cent to GSDP

States	1990-91		2014-15	
	Expenditure	Rank	Expenditure	Rank
Andhra Pradesh	8.19	10	12.36	3
Arunachal Pradesh	15.68	2	17.97	1
Assam	5.96	17	10.15	8
Bihar	9.24	9	8.30	10
Goa	10.45	8	5.65	17
Gujarat	5.07	20	5.19	21
Haryana	4.03	23	5.54	19
Himachal Pradesh	10.53	7	9.46	9
Karnataka	5.51	19	6.20	15
Kerala	6.81	11	5.53	20
Madhya Pradesh	6.17	15	6.72	14
Maharashtra	4.06	22	4.68	22
Manipur	12.55	5	16.35	2
Meghalaya	10.75	6	10.79	6
Nagaland	14.25	4	10.98	5
Orissa	6.39	13	7.48	13
Punjab	4.34	21	4.15	23
Rajasthan	6.18	14	7.59	11
Sikkim	15.12	3	11.54	4
Tamil Nadu	5.98	16	5.59	18
Tripura	16.40	1	10.44	7
Uttar Pradesh	5.60	18	7.54	12
West Bengal	6.60	12	5.74	16
CV (%)	**46.27**		**42.75**	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Many committees and commissions have suggested that educational expenditure is to be more than 6 per cent of GDP for Indian educational development. In this background, if one wants to see the state level performance, expenditure data should be taken as a share of GSDP instead of GDP. Table 2.11 shows the information related to this. It is observed that in 1990-91 only 4 out of 23 states have the public expenditure on education more than 6 per cent of GSDP and they are, Arunachal Pradesh, Tripura, Sikkim and Manipur. In the year 2014-15 number of states, which are spending more than 6 per cent

of GSDP on education have decreased to only three viz., Manipur, Arunachal Pradesh and Assam (table 2.15).

Table 2.15: Public Expenditure on Education as per cent to GSDP

States	1990-91		2014-15	
	Expenditure	Rank	Expenditure	Rank
Andhra Pradesh	3.85	12	4.59	8
Arunachal Pradesh	8.30	1	7.46	2
Assam	3.34	14	6.07	3
Bihar	5.71	5	4.11	10
Goa	5.24	6	2.49	20
Gujarat	2.78	20	2.10	23
Haryana	1.99	23	2.50	19
Himachal Pradesh	5.05	8	5.07	7
Karnataka	2.84	19	2.62	17
Kerala	4.12	10	2.95	15
Madhya Pradesh	3.01	18	3.26	14
Maharashtra	2.23	22	2.36	21
Manipur	7.05	4	7.87	1
Meghalaya	4.95	9	5.14	6
Nagaland	5.22	7	5.53	5
Orissa	3.34	15	3.28	13
Punjab	2.47	21	2.18	22
Rajasthan	3.17	16	3.38	12
Sikkim	7.15	3	5.66	4
Tamil Nadu	3.04	17	2.54	18
Tripura	7.67	2	4.26	9
Uttar Pradesh	3.40	13	3.62	11
West Bengal	3.88	11	2.74	16
CV (%)	**41.90**		**41.95**	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Public expenditure on health as a share of GDP by OECD countries is 7.7 per cent, world average is 6 per cent, high income countries 7.7 per cent, middle income countries 3 per cent, low income countries 2.4 per cent, and in India it is 1.4 per cent. If we see the state wise performance it is found that expenditure on health and family welfare as a per cent to GSDP is between 0.50 per cent and 3.75 per cent in the study period. Arunachal Pradesh is found to be in the first position in both of the selected study period (2.81% in 1990-91 and 3.72% in 2014-15) Haryana (0.52%) and Maharashtra (0.53%) were found in the last positions respectively in the years 1990-91 and 2014-15. States like Arunachal Pradesh, Sikkim and Nagaland were found in the group of top 5 states in the both of the study period, whereas, states like Haryana, Maharashtra, Gujarat and Punjab are in found in the bottom five position.

Table 2.16: Public Expenditure on Health as per cent to GSDP

States	1990-91		2014-15	
	Expenditure	Rank	Expenditure	Rank
Andhra Pradesh	1.25	11	1.56	7
Arunachal Pradesh	2.81	1	3.72	1
Assam	0.94	16	1.05	11
Bihar	1.49	9	0.90	16
Goa	2.27	4	0.93	15
Gujarat	0.77	21	0.75	20
Haryana	0.52	23	0.59	22
Himachal Pradesh	2.05	6	1.54	8
Karnataka	0.88	18	0.83	17
Kerala	1.15	12	0.95	13
Madhya Pradesh	0.88	19	0.94	14
Maharashtra	0.64	22	0.53	23
Manipur	1.72	8	3.66	2
Meghalaya	1.88	7	2.25	3
Nagaland	2.65	3	2.07	4
Orissa	1.02	14	1.03	12
Punjab	0.81	20	0.68	21
Rajasthan	0.99	15	1.12	10
Sikkim	2.67	2	1.93	5
Tamil Nadu	0.92	17	0.76	19
Tripura	2.15	5	1.68	6
Uttar Pradesh	1.07	13	1.23	9
West Bengal	1.29	10	0.82	18

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Madhya Pradesh (from 19th to 14th), Assam (from 16th to 11th), Rajasthan (from 15th to 10th), Manipur (from 8th to 2nd) have registered higher positive change in their ranks from 1990-91 to 2014-15. On other hand, Goa (from 4th to 15th), West Bengal (from 10th to 18th) and Bihar (from 9th to 16th) have slipped in their ranking (Table 2.16).

Expenditure on housing as a per cent of GSPD has been presented in table 2.13. Nagaland and Sikkim were in the top position in public expenditure on housing as a per cent of GSDP in 1990-91 and 2014-15 respectively. In the year 1990-91 Bihar, Uttar Pradesh and Andhra Pradesh were in the bottom position, while Sikkim, Arunachal Pradesh and Nagaland were in the top position. In the year 2014-15, Sikkim, Nagaland and Uttar Pradesh were in the top while states like Kerala, Haryana, and Rajasthan were found to be in the bottom position. Out of total selected states, 9 states have shown positive change, 13 states have registered negative change and only one state (Tripura) has shown no change in their ranking of public expenditure on housing in the selected time period (table 2.17).

Table 2.17: Public Expenditure on Housing as per cent to GSDP

States	1990-91		2014-15	
	Expenditure	Rank	Expenditure	Rank
Andhra Pradesh	0.05	22	0.22	8
Arunachal Pradesh	1.55	2	0.19	11
Assam	0.10	15	0.48	4
Bihar	0.03	23	0.40	6
Goa	0.14	11	0.02	20
Gujarat	0.19	7	0.20	10
Haryana	0.09	16	0.01	22
Himachal Pradesh	0.15	9	0.08	18
Karnataka	0.10	14	0.30	7
Kerala	0.07	19	0.02	21
Madhya Pradesh	0.10	13	0.20	9
Maharashtra	0.14	10	0.06	19
Manipur	0.20	6	0.09	17
Meghalaya	0.69	4	0.14	14
Nagaland	1.65	1	0.59	2
Orissa	0.18	8	0.17	13
Punjab	0.08	18	0.14	15
Rajasthan	0.07	20	0.01	23
Sikkim	0.83	3	1.19	1
Tamil Nadu	0.09	17	0.18	12
Tripura	0.36	5	0.40	5
Uttar Pradesh	0.05	21	0.52	3
West Bengal	0.11	12	0.10	16

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Expenditure on other social services as a per cent to GSDP has been presented in table 2.14. The table reveals that expenditure as a per cent to GSDP was between 0.98 per cent and 6.21 per cent in 1990-91 and in the year 2014-15 it was between 4.10 and

6.59. Except,six states, namely, Tripura, Nagaland, Sikkim, Goa and Himachal Pradesh all states have shown higher spending on expenditure on other social services as a per cent to GSDP from 1990-91 to 2014-15. It shows governments' expansion on social service components (table 2.18).

Table 2.18: Public Expenditure on Other Social Services as per cent to GSDP

	1990-91		2014-15	
States	Expenditure	Rank	Expenditure	Rank
Andhra Pradesh	3.04	7	6.00	2
Arunachal Pradesh	3.02	8	6.59	1
Assam	1.58	16	2.55	12
Bihar	2.01	11	2.90	8
Goa	2.80	9	2.22	16
Gujarat	1.34	19	2.14	18
Haryana	1.42	18	2.44	14
Himachal Pradesh	3.28	5	2.77	10
Karnataka	1.68	15	2.45	13
Kerala	1.46	17	1.62	22
Madhya Pradesh	2.18	10	2.32	15
Maharashtra	1.04	22	1.72	21
Manipur	3.58	4	4.73	3
Meghalaya	3.23	6	3.26	5
Nagaland	4.72	2	2.79	9
Orissa	1.86	14	3.01	7
Punjab	0.98	23	1.16	23
Rajasthan	1.95	12	3.07	6
Sikkim	4.48	3	2.75	11
Tamil Nadu	1.93	13	2.10	19
Tripura	6.21	1	4.10	4
Uttar Pradesh	1.08	21	2.18	17
West Bengal	1.33	20	2.07	20

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Growth Rates of Public Expenditure on Social Services:

Inthis section an attempt has been made to see the growth rates of public expenditure on social services in different states. Further, another analysis has also been made to see the association of per capita expenditure with its growth rate from 1990-91 to 2014-15 in table 2.19. Average per capita public expenditure on social services from 1990-91 to 2014-15 of all states is Rs. 1705, while it growth rate in the same period is 19.09 at constant prices of 2004-05. Higher per capita expenditure on social services is found in the states like Goa, Sikkim, Arunachal Pradesh, Nagaland and Himachal Pradesh,

whereas, lower expenditure is found in the states like Bihar, Uttar Pradesh, Madhya Pradesh, Odisha and West Bengal. On the other hand,the table also reveals the growth rate is high in the states like Andhra Pradesh, Gujarat, Karnataka, Haryana and Maharashtra, while it is low in the states like Nagaland, Jammu and Kashmir, Goa, Punjab and Meghalaya

Table 2.19: Average Per Capita Public Expenditure from 1990-91 to 2014-15 and its Growth Rate

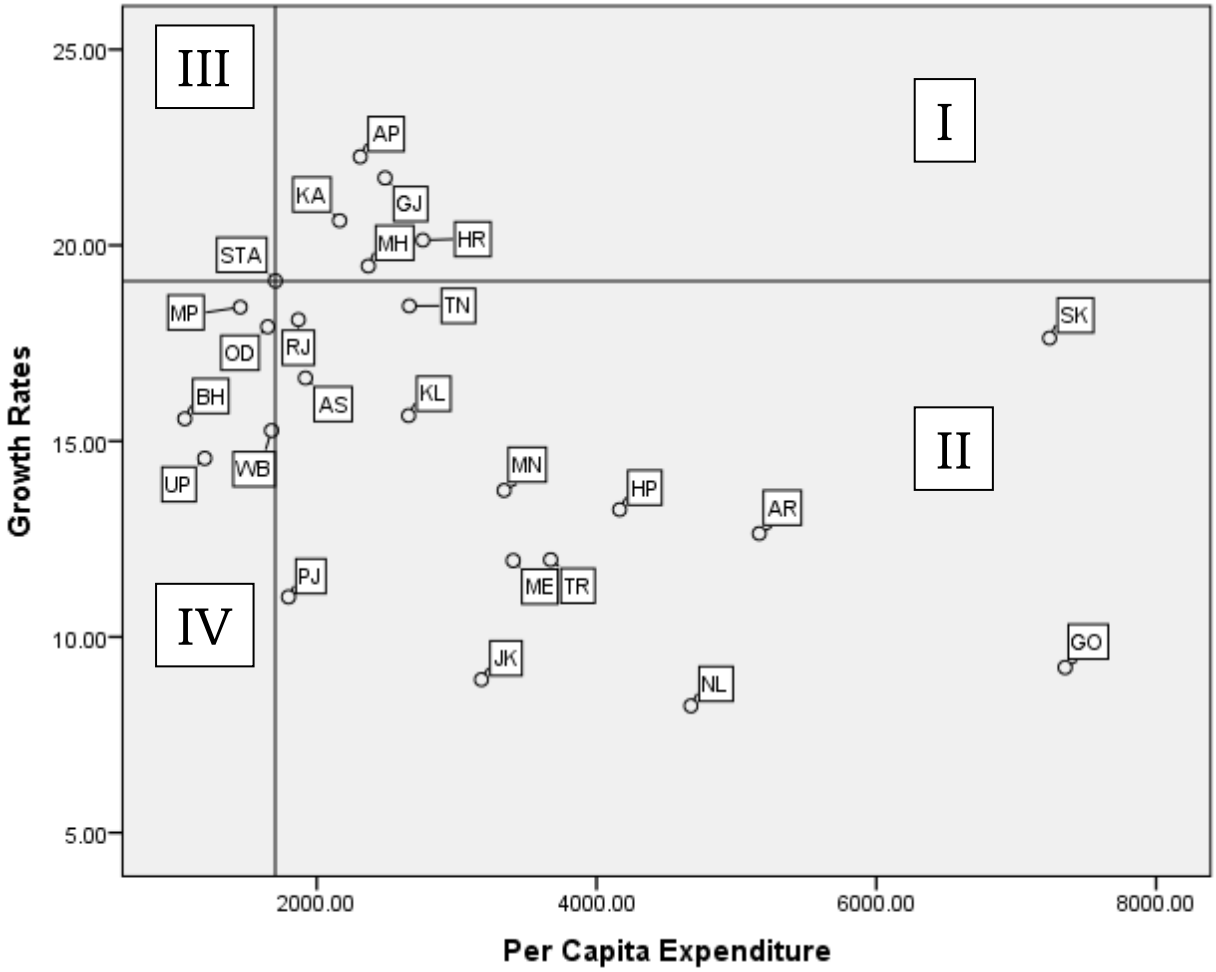
Years	Average Per Capita Public Expenditure from 1990-91 to 2014-15	Growth Rates from 1990-91 to 2014-15
Andhra Pradesh	2310	22.26
Arunachal Pradesh	5163	12.64
Assam	1920	16.61
Bihar	1057	15.57
Goa	7350	9.22
Gujarat	2488	21.72
Haryana	2759	20.13
Himachal Pradesh	4165	13.25
Jammu and Kashmir	3177	8.91
Karnataka	2164	20.63
Kerala	2656	15.65
Madhya Pradesh	1453	18.42
Maharashtra	2369	19.47
Manipur	3339	13.74
Meghalaya	3404	11.95
Nagaland	4675	8.24
Odisha	1650	17.92
Punjab	1798	11.02
Rajasthan	1869	18.10
Sikkim	7238	17.63
Tamil Nadu	2662	18.45
Tripura	3672	11.97
Uttar Pradesh	1199	14.56
West Bengal	1677	15.27
All States	1705	19.09
CV (%)	**56.08**	**26.18**

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

To see the performance of states in per capita public expenditure on social services more meaningfully the states have put in a scatter diagram. Then states are grouped on the basis of average per capita expenditure and its 'growth rates' in the study period. This information has been presented in figure 2.7. It is found from the figure that Andhra Pradesh, Gujarat, Karnataka and Maharashtra are in the Best category with higher per capita income and higher growth rates in the study period.

Madhya Pradesh, Odisha, Uttar Pradesh, West Bengal and Bihar are found in the last category, where the states have lower per capita income and lower growth rates in comparison with the national average in the study period. This category has been considered as the vicious cycle of growth of public expenditure on social service. Remaining all other states are found in the second category where, the states have higher average per capita income and lower growth rates in comparison with the state average.

Figure 2.7: Average Per Capita Public Expenditure from 1990-91 to 2014-15 and its Growth Rate



Note: AP-Andhra Pradesh, AR-Arunachal Pradesh, AS-Assam, BH-Bihar, GO-Goa, GJ-Gujarat, HR-Haryana, HP-Himachal Pradesh, JK-Jammu and Kashmir, KA-Karnataka, KL-Kerala, MP-Madhya Pradesh, MH-Maharashtra, MN-Manipur, ME-Meghalaya, NL-Nagaland, OD-Odisha, PJ-Punjab, RJ-Rajasthan, SK-Sikkim, TN-Tamil Nadu, TR-Tripura, UP-Uttar Pradesh, WB-West Bengal and STA-Average of All States

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

2.7 Conclusions:

Public expenditure on social services of centre and state governments **COMBINED** in 1990-91 was Rs. 30,972 crore, which increased to Rs. 9,42,156 crore in 2015-16. More than 30 times increase is observed in 26 years of selected time period. Similarly, expenditure on education (more than 25 fold), health (around 30 times), housing (more than 38 times), and other social services (more than 62 times) have also increased significantly. This increase is very impressive and one feels very happy about it. If we convert this expenditure into constant prices and in per capita terms, the picture is different. The reason is that -Public expenditure on selected heads of social services is eaten by the price escalation and increased population. With regards to per capita expenditure at constant price, public expenditure on social services has increased from Rs. 936 to Rs. 3675 (only 3.9 times increase). Similarly, Education (3.3 times), Health (3.3 times), Housing (4.9 times) and Other Social Services (8 times) have also shown lower increase in the same period.

CENTRALgovernment's expenditure on social services has increased from Rs. 6432 crore in 1990-91 to Rs. 1,59,374 crore in 2015-16 at current prices. In constant prices the per capita expenditure on social sector has increased from Rs. 194 to Rs. 622 for the same period. As for as union government spending is concerned, among the social services education and health have the major shares for both the time periods.

State Governments' commitment to increase the Human Development indicator or social sector indicators is evident from the fact that 'social services' (CAGR-3.9%) has the highest growth rate than the 'economic services' (CAGR-2.9%). Further, In 1990-91 expenditure on economic services as a share of total budgetary expenditure was higher (37%) than the social services (33%), whereas, in 2014-15 expenditure on social services is higher (36%) than expenditure on economic services (30%).

Andhra Pradesh, Gujarat, Karnataka and Maharashtra are in the Best category with higher per capita income and higher growth rates in the study period. Madhya Pradesh,

Odisha, Uttar Pradesh, West Bengal and Bihar are found in the last category, where the states have lower per capita income and lower growth rates in comparison with the national average in the study period. This category has been considered as the vicious cycle of growth of public expenditure on social service. Remaining all other states are found in the second category where, the states have higher average per capita income and lower growth rates in comparison with the state average.

To sum up, public expenditure on social services has increased considerably in all the states and all the sectors. Compared to many developing countries, our spending on education and health are very less. Comparatively, states like Madhya Pradesh, Odisha, Uttar Pradesh, West Bengal and Bihar are lagging behind. Special care is needed for these states. Further, huge inter-state disparities are observed. Moreover, Kothari Commission's (1964-66) recommendation of at least 6 per cent of GDP for education sector has not been achieved till date.

As it is known that there is a huge intra-state disparity in social sector indicators. There is a major constraint in getting the data of government intervention at district and sub-district level by different sectors/departments. MGNREGS is a good example of data maintenance from village level to national level. Similarly, more scientific mechanisation should be developed to maintain district and sub-district level data public expenditure (input and outcome) by different department. Then only proper management, evaluation and modification can be made on public expenditure. There are several problems in this task, so a committee should be setup with this respect including academicians, policymaker, software technicians, and activists.

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Appendix Table 2.1: State and Union Territory wise NSDP at Current Prices (base year 2004-05) (Rs. in lakh)

States/UTs	1990-91	2000-01	2010-11	2014-15
A & N Islands	43983	117163	434314	688946
Andhra Pradesh	2635378	9208526	31986394	52002992
Arunachal Pradesh	63809	218463	902144	1558805
Assam	1364051	3742012	11268796	18379759
Bihar	2175077	6044980	20355499	40228299
Chandigarh	..	462464	2001388	3291334
Chhattisgarh	..	2837999	11941976	21019179
Delhi	1344376	6552748	25275279	45115365
Goa	143585	748208	3360536	4909356
Gujarat	3298472	11951624	52151888	76871077
Haryana	1666181	5957240	26062128	39047758
Himachal Pradesh	374735	1634736	5745226	8291680
Jammu and Kashmir	..	1879141	5807257	8792138
Jharkhand	..	3736658	12728105	19751431
Karnataka	2825614	11565955	41070316	70213121
Kerala	1928345	7859233	26377330	46307812
Madhya Pradesh	3199417	8374085	26339573	50800607
Maharashtra	7788063	27134157	104915008	168669475
Manipur	113549	349707	913719	1655263
Meghalaya	128143	447526	1458256	2533341
Mizoram	45664	189838	638788	1166019
Nagaland	107316	386239	1175937	2009914
Odisha	1384050	4701343	19752990	31081024
Puducherry	83036	428768	1309160	2581935
Punjab	2093660	7481530	22620407	34982574
Rajasthan	2617141	8979546	33834843	57454860
Sikkim	37844	110036	741157	1415103
Tamil Nadu	4251153	15885861	58489626	97670288
Telangana	..	..	26389774	43059936
Tripura	156828	590130	1786773	3033814
Uttar Pradesh	6291061	19025774	60028572	97629654
Uttarakhand	..	1515258	8396911	13872254
West Bengal	4119817	14318785	46095894	80086784

Source: CSO

Appendix Table 2.2: State and Union Territory wise NSDP at Constant Prices (base year 2004-05) (Rs. in lakh)

States/UTs	1990-91	2000-01	2010-11	2014-15
A & N Islands	89346	140483	345963	452433
Andhra Pradesh	6787197	10644503	20827348	26452092
Arunachal Pradesh	150875	243787	522041	632124
Assam	3474309	4419734	7344442	9243163
Bihar	5312695	6862023	13017089	18978925
Chandigarh	..	572044	1333780	1660675
Chhattisgarh	..	3441249	7890295	10084247
Delhi	3385801	7605955	18076539	23802650
Goa	515385	959115	2249908	3269948
Gujarat	7450161	13882543	36758128	48773885
Haryana	4392314	7002698	16377020	21514573
Himachal Pradesh	1076627	1873589	3905441	4651178
Jammu and Kashmir	..	2301614	3826996	4512631
Jharkhand	..	4384558	8949114	11874316
Karnataka	6974500	13651591	27272131	34410571
Kerala	5551812	9045011	18985071	24924977
Madhya Pradesh	7145116	9552510	17814354	25353258
Maharashtra	18899313	31843865	74204180	94754976
Manipur	255063	397142	668061	908818
Meghalaya	319744	516910	1041308	1456112
Mizoram	..	212230	497932	598894
Nagaland	268742	435848	925399	1213965
Odisha	3776910	5647500	12513105	14857608
Puducherry	274448	522981	1080640	1570141
Punjab	5253828	8298088	14767012	18329810
Rajasthan	6008715	10126341	21307929	27222748
Sikkim	75938	129204	478428	659828
Tamil Nadu	10598196	18510120	40341573	51545756
Telangana	..	..	17418546	21743200
Tripura	352844	640574	1438667	1985652
Uttar Pradesh	15802169	22184317	39630943	49238380
Uttarakhand	..	1757127	5566681	7755209
West Bengal	8968495	16503066	30883705	39838651

Source: CSO

Appendix Table 2.3: Growth of GDP and Population in India

Years	Population (Million)	GDP Factor Cost (Billion) Current	GDP at Factor Cost (Constant)
1990-91	839	5318	13479
1991-92	856	6135	13672
1992-93	872	7037	14405
1993-94	892	8180	15223
1994-95	910	9554	16197
1995-96	928	11186	17377
1996-97	946	13018	18763
1997-98	964	14476	19570
1998-99	983	16687	20878
1999-00	1001	18582	22549
2000-01	1019	20007	23485
2001-02	1040	21753	24750
2002-03	1056	23439	25709
2003-04	1072	26258	27757
2004-05	1089	29715	29715
2005-06	1106	33905	32531
2006-07	1122	39533	35644
2007-08	1138	45821	38966
2008-09	1154	53036	41587
2009-10	1170	61089	45161
2010-11	1186	72489	49185
2011-12	1202	83917	52475
2012-13	1217	93889	54821
2013-14	1233	104728	57418
2014-15	1249	112210	61285
2015-16	1265	121743	64480
2016-17	1281	131275	67675

Source: Handbook on Statistics on Indian Economy

Appendix Table 2.4: State-wise Total Public Expenditure in India (Actual Data, Rs. in lakhs)

States	1990-91		2000-01		2010-11		2014-15	
	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital
Andhra Pradesh	550478	107626	2307036	504903	785343	1715372	1148657	2558382
Arunachal Pradesh	25814	13964	90845	29787	37442	339533	71566	154343
Assam	192040	76845	641712	121381	229518	2226971	390782	1527404
Bihar	488771	132876	1434543	260061	382159	1510627	725700	2279018
Chhattisgarh			161186	30523	193558	899134	394972	1160244
Goa	27540	11983	170925	25272	47838	155762	74102	149504
Gujarat	408192	138792	2204082	513379	574400	2416785	866517	2770148
Haryana	193307	46367	718137	197750	283102	585480	491179	884337
Himachal Pradesh	90147	21670	437618	93875	132461	356714	197871	252127
Jammu & Kashmir	124905	77190	668533	114373	184668	666906	293289	471050
Jharkhand					202426	773120	317948	960682
Karnataka	397109	100765	1668495	297874	540339	3040293	1036143	3495628
Kerala	282495	55150	1187791	127072	346648	1364341	717464	1828130
Madhya Pradesh	474611	115264	1498641	193764	450116	2550165	823728	2944520
Maharashtra	875367	201859	3740095	480724	1064594	4092847	1775531	4055415
Manipur	30716	14582	113088	25022	40780	241299	72673	199958
Meghalaya	31077	9487	107947	34440	40127	142676	62519	217346
Mizoram	30483	19731	102161	26633	34004	217098	56524	93511
Nagaland	42191	13023	142024	41523	41878	121301	67624	109493
Orissa	219053	86072	882879	221858	293679	1433414	511357	1158643
Punjab	251991	87962	1171283	239774	328972	474398	466135	717552
Rajasthan	347994	124777	1503536	245883	448734		945420	2706173
Sikkim	12815	5507	76331	18392	29075	41906	37310	87118
Tamil Nadu	564129	97994	2175244	268465	729163	4001368	1288280	4410930
Telangana							506731	1550532
Tripura	49703	11570	173403	40101		147480	74429	449519
Uttarakhand			91361	19664	116211	586153	211637	735460
Uttar Pradesh	953836	270180	3103261	564859	1076756	5666386	1710273	10779598
West Bengal	512811	89994	2210345	463734	645382	2275231	1036516	3911722
All States	7177575	1931230	28782502	5201086	9322966	39950258	16372878	52618486
NCT Delhi	–	–	369650	366578		111426	235095	74306
Puducherry	–	–	–	–	35402	53093	47999	185443

Source: Study of State Finance, RBI

Appendix Table 2.5: State-wise Public Expenditure on Social Services in India (Actual Data, Rs. in lakhs)

States	1990-91		2000-01		2010-11		2014-15	
	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital
Andhra Pradesh	211,686	4,124	803,357	28,373	323,144	323,144	422,589	23,821
Arunachal Pradesh	7,483	2,521	21,896	4,288	9,943	9,943	23,584	4,425
Assam	78,185	3,058	281,460	3,469	90,140	90,140	180,877	5,688
Bihar	192,329	8,629	582,794	23,397	150,894	150,894	317,127	16,736
Chhattisgarh			73,674	4,366	83,097	83,097	153,889	15,600
Goa	12,079	2,926	43,276	7,258	17,743	17,743	28,148	2,785
Gujarat	160,674	6,636	771,648	105,003	237,016	237,016	367,142	71,857
Haryana	64,643	2,442	250,630	14,268	109,041	109,041	191,206	18,976
Himachal Pradesh	35,598	3,851	156,081	22,816	49,789	49,789	74,515	5,220
Jammu & Kashmir	47,573	10,536	164,944	24,038	52,139	52,139	85,014	16,085
Jharkhand					80,427	80,427	119,153	9,095
Karnataka	153,892	1,760	613,191	29,870	221,078	221,078	393,663	41,809
Kerala	127,776	3,521	418,836	5,755	121,108	121,108	237,181	8,753
Madhya Pradesh	185,783	11,635	583,646	13,579	173,454	173,454	320,672	20,703
Maharashtra	309,668	6,486	1,435,071	12,046	482,821	482,821	769,525	19,578
Manipur	11,844	2,406	39,009	4,019	12,385	12,385	20,281	5,476
Meghalaya	11,427	2,352	40,996	7,844	13,760	13,760	23,702	3,633
Mizoram	9,660	1,332	37,103	6,360	12,374	12,374	21,609	3,140
Nagaland	11,969	3,320	38,337	14,937	11,257	11,257	18,552	3,510
Orissa	84,220	4,278	311,596	12,313	119,220	119,220	209,641	22,884
Punjab	89,109	1,806	299,271	5,251	72,609	72,609	137,291	7,946
Rajasthan	147,100	14,514	612,780	59,259	178,952	178,952	377,534	58,381
Sikkim	4,289	1,434	19,249	5,032	8,164	8,164	12,797	2,698
Tamil Nadu	249,191	4,934	779,221	63,415	289,091	289,091	503,491	42,339
Telangana							187,534	9,046
Tripura	21,225	1,848	66,355	12,056			31,843	8,382
Uttarakhand			30,725	1	51,695	51,695	92,237	12,307
Uttar Pradesh	339,291	13,196	921,796	26,077	395,667	395,667	609,058	127,547
West Bengal	229,535	6,168	841,536	19,663	273,431	273,431	401,557	42,239
All States	2,796,229	125,713	10,238,478	534,753	3,657,112	3,657,112	6,331,410	630,659
NCT Delhi	–	–	212,059	40,285			133,061	13,301
Puducherry	–	–	–	–	13,785	13,785	18,313	3,124

Source: Study of State Finance, RBI

Appendix Table 2.6: State-wise Public Expenditure on Education in India (Actual Data, Rs. in lakhs)

States	1990-91		2000-01		2010-11		2014-15	
	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital
Andhra Pradesh	100852	676	373881	149	125311	536	162999	5529
Arunachal Pradesh	3932	1361	6678	1046	4888	1139	10306	1325
Assam	44984	552	194116	236	57055	0	111645	–
Bihar	120922	3312	400688	539	81006	1438	162672	2635
Chhattisgarh			24972	60	40817	3032	92570	2614
Goa	7051	474	22609	704	8756	860	12258	1351
Gujarat	91186	389	367236	1241	109882	4246	164211	13283
Haryana	32499	698	133062	385	58968	757	92932	1861
Himachal Pradesh	18541	389	87971	2481	26889	2003	41439	1310
Jammu & Kashmir	20764	1817	83510	3174	27241	5126	39815	5308
Jharkhand					40746	1029	57445	830
Karnataka	80209	172	348261	614	107903	4223	180628	3172
Kerala	77549	1952	262023	1529	68478	856	127902	3073
Madhya Pradesh	91027	5358	274987	1266	82860	2712	162223	3219
Maharashtra	173413	589	940842	1183	269435	1399	396957	958
Manipur	7684	324	26791	1160	5690	824	11112	1292
Meghalaya	6056	284	23553	153	7581	89	12972	43
Mizoram	4627	127	18813	173	5887	300	11420	217
Nagaland	5061	542	20084	3684	6592	863	10640	477
Orissa	45174	1016	174158	1890	64243	1876	98221	3609
Punjab	51247	550	185896	28	40861	2535	74719	1537
Rajasthan	80881	2078	324281	4347	101817	394	193629	564
Sikkim	2359	345	11378	2031	5540	3585	7287	317
Tamil Nadu	128388	934	439600	1367	134658		242442	5983
Telangana						1120	68048	1891
Tripura	10577	221	40675	465		1214	15026	1378
Uttarakhand			23863	–	31772	7100	47176	4272
Uttar Pradesh	210308	3347	611933	5319	209542	753	339491	13852
West Bengal	137480	846	456430	1733	143205	50552	206073	5716
All States	1552771	28353	5878291	36957	1876173	3078	3154257	87615
NCT Delhi	–	–	104294	7208		216	60582	4966
Puducherry	–	–	–	–	5160		6493	127

Source: Study of State Finance, RBI

Appendix Table 2.7: State-wise Public Expenditure on Health in India (Actual Data, Rs. in lakhs)

States	1990-91		2000-01		2010-11		2014-15	
	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital
Andhra Pradesh	32680	299	128609	4794	41340	177	48059	7278
Arunachal Pradesh	1627	166	5361	627	2072	326	5462	341
Assam	11031	1793	34618	933	13443	52	19093	131
Bihar	31039	1444	99643	0	15022	1650	32882	3158
Chhattisgarh	0	0	7712	205	7489	979	20989	2345
Goa	2384	876	8236	399	3316	158	4896	169
Gujarat	25108	132	89375	2517	24994	5110	43977	19692
Haryana	8193	518	29091	736	10684	185	21739	649
Himachal Pradesh	7072	617	26306	3664	7630	663	12372	623
Jammu & Kashmir	8858	1158	36105	2156	10073	3062	18025	2126
Jharkhand					8565	2217	13580	2610
Karnataka	24302	657	90357	10176	23597	4369	50581	7904
Kerala	21277	922	67388	1679	19648	988	40351	1932
Madhya Pradesh	27454	706	83199	2960	20393	1149	45214	2405
Maharashtra	47742	2020	159534	3894	44744	1826	84972	4695
Manipur	1811	139	6637	25	2093	950	4177	1586
Meghalaya	2076	336	7051	992	2769	201	4834	879
Mizoram	1492	59	5385	1009	1741	1	3281	178
Nagaland	2308	538	7606	1292	2018	395	3945	212
Orissa	13503	555	43311	2583	12438	286	27735	4138
Punjab	16629	339	63759	255	11898	402	23642	1
Rajasthan	25067	721	87760	2539	25255		59734	4843
Sikkim	793	217	3173	299	1186	318	1985	613
Tamil Nadu	37901	1051	116049	2689	40757	3256	69006	5682
Telangana							24783	807
Tripura	2771	261	8273	355		456	5436	1028
Uttarakhand	0	0	3422	0	6151	728	12451	2604
Uttar Pradesh	62143	5455	141022	4885	54442	10322	100757	19007
West Bengal	43301	2699	137662	12938	33152	1872	53100	10652
All States	458562	23678	1496644	64601	448937	42457	857056	108287
NCT Delhi	0	0	43924	8823		1642	31316	4904
Puducherry	0	0	0	0	2808	95	4308	97

Source: Study of State Finance, RBI

Appendix Table 2.8: State-wise Public Expenditure on Housing in India (Actual Data, Rs. in lakhs)

States	1990-91		2000-01		2010-11		2014-15	
	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital
Andhra Pradesh	1053	159	3686	1296	7482	179	7747	62
Arunachal Pradesh	429	563	190	1347	199	201	230	74
Assam	934	368	602	1218	107	81	8667	152
Bihar	48	518	82	928	7822	30	15803	177
Chhattisgarh			777	2252	711	248	5992	950
Goa	94	109	277	98	80	3	113	1
Gujarat	5208	1142	30634	6861	5581	1698	12707	4353
Haryana	501	943	901	322	234	168	218	305
Himachal Pradesh	171	378	625	4160	333	113	450	200
Jammu & Kashmir	864	1620	3055	285	380	97	592	88
Jharkhand					188	132	204	497
Karnataka	2443	364	26339	2568	8548	615	18990	2200
Kerala	1100	253	3695	403	984	889	610	156
Madhya Pradesh	2732	502	6597	894	2666	188	9689	630
Maharashtra	9675	1403	30618	3051	18645	319	10318	492
Manipur	74	157	188	30	54	156	106	29
Meghalaya	530	353	1616	528	258	44	283	70
Mizoram	342	201	478	117	81	76	62	257
Nagaland	1237	535	1247	2295	91	779	526	656
Orissa	1141	1353	3095	1616	1780	934	2942	2196
Punjab	40	1674	–	19	–	2	4667	130
Rajasthan	1148	621	2596	5030	428		625	65
Sikkim	244	70	1064	204	163	235	1446	153
Tamil Nadu	2722	936	2639	3709	5939	20622	16505	1440
Telangana							3632	141
Tripura	83	421	188	5317		123	27	1521
Uttarakhand			57	–	18	273	21	1300
Uttar Pradesh	981	2031	1845	807	445	907	720	49963
West Bengal	2309	1575	5456	3752	1029	1205	1213	6862
All States	36103	18249	128547	49107	64279	30406	125102	75118
NCT Delhi	–	–	1978	924		241	2020	495
Puducherry	–	–	–	–	415	41	305	25

Source: Study of State Finance, RBI

Appendix Table 2.9: State-wise Public Expenditure on Housing in India (Actual Data, Rs. in lakhs)

States	1990-91		2000-01		2010-11		2014-15	
	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital
Andhra Pradesh	47368	21	92403	37922	36393	–	95687	–
Arunachal Pradesh	1374	55	2446	70	915	192	1849	184
Assam	8101	–	10178	–	9127	–	16548	–
Bihar	29210	4098	89292	36565	19894	12038	40695	46478
Chhattisgarh			7530	9561	12162	1710	35879	4574
Goa	551	–	1064	–	846	8	758	2
Gujarat	27121	19	76073	–	20587	–	20395	11654
Haryana	6918	–	8919	–	9679	–	18434	–
Himachal Pradesh	3149	1	13886	13	3402	1	8957	6
Jammu & Kashmir	1984	766	7852	1185	2137	1317	3533	7210
Jharkhand					18306	8295	35013	13602
Karnataka	25100	182	45662	157	13710	1253	49881	140
Kerala	12597	–	80355	–	3855	225	23051	2182
Madhya Pradesh	34945	5072	90301	6682	26411	9215	66171	12489
Maharashtra	49743	–	50728	–	22430	7763	61718	9349
Manipur	611	–	1181	14	859	–	5399	–
Meghalaya	1866	11	4925	414	2418	12	5681	1
Mizoram	2494	15	2705	214	646	73	2277	30
Nagaland	2409	–	3553	25	1316	4	2778	–
Orissa	19504	33	41177	–	14834	–	44463	–
Punjab	2644	–	6725	30	1174	3039	8554	922
Rajasthan	23444	39	27237	12219	26451		104046	4559
Sikkim	239	–	1023	108	417	227	1665	160
Tamil Nadu	32390	270	65611	19455	8068	16155	57361	10467
Telangana							35360	513
Tripura	2508	–	7246	2619		322	2486	7688
Uttarakhand			2302	–	4551	918	15018	7015
Uttar Pradesh	94584	801	184212	1226	40031	27323	62920	44429
West Bengal	36661	97	76801	–	24378	18	125648	5
All States	467515	11480	1001387	128479	325943	92437	952225	183658
NCT Delhi	–	–	453	1827		691	99	1164
Puducherry	–	–	–	–	306	–	321	–

Source: Study of State Finance, RBI

Appendix Table 2.10: State-wise Public Expenditure on Other Social Services in India (Actual Data, Rs. in lakhs)

States	1990-91		2000-01		2010-11		2014-15	
	Revenue	Capital	Revenue	Capital	Revenue	Capital	Revenue	Capital
Andhra Pradesh	77,101	2,990	297,181	22,134	149,011	5,201	203,784	10,952
Arunachal Pradesh	1,495	431	9,667	1,268	2,785	2,431	7,587	2,686
Assam	21,236	345	52,124	1,082	19,536	1,617	41,473	5,405
Bihar	40,320	3,355	82,381	21,930	47,044	7,604	105,770	10,766
Chhattisgarh	0	0	40,213	1,849	34,080	4,017	34,338	9,692
Goa	2,550	1,467	12,154	6,057	5,592	1,034	10,880	1,264
Gujarat	39,172	4,973	284,403	94,384	96,558	15,763	146,247	34,530
Haryana	23,450	283	87,576	12,825	39,155	11,187	76,318	16,161
Himachal Pradesh	9,814	2,467	41,179	12,511	14,937	3,335	20,255	3,088
Jammu & Kashmir	17,087	5,941	42,274	18,423	14,446	7,139	26,582	8,563
JHARKHAND					30,928	12,370	47,924	5,159
Karnataka	46,938	567	148,234	16,512	81,030	16,960	143,464	28,533
Kerala	27,850	394	85,730	2,144	31,998	2,059	68,319	3,592
Madhya Pradesh	64,570	5,069	218,863	8,459	67,535	11,272	103,546	14,449
Maharashtra	78,838	2,474	304,077	3,918	149,997	8,863	277,278	13,432
Manipur	2,275	1,786	5,393	2,804	4,548	4,078	4,886	2,570
Meghalaya	2,765	1,379	8,776	6,171	3,151	993	5,613	2,642
Mizoram	3,199	945	12,427	5,061	4,665	884	6,847	2,488
Nagaland	3,363	1,705	9,400	7,666	2,557	1,024	3,441	2,165
Orissa	24,402	1,354	91,032	6,224	40,760	4,748	80,744	12,942
Punjab	21,193	-757	49,616	4,949	19,850	3,696	34,263	6,279
Rajasthan	40,004	11,094	198,143	47,343	51,453		123,546	52,909
Sikkim	893	802	3,634	2,498	1,276	711	2,079	1,614
Tamil Nadu	80,180	2,013	220,933	55,650	107,738	13,769	175,538	29,235
TELANGANA					0		91,071	6,206
Tripura	7,794	945	17,219	5,919	0	1,786	11,355	4,455
Uttarakhand	0	0	3,383	1	13,754	138	32,589	4,131
Uttar Pradesh	65,859	2,363	166,996	15,066	131,238	29,625	168,091	44,726
West Bengal	46,445	1,048	241,988	1,240	96,046	933	141,171	19,010
All States	748,793	55,433	2,734,996	384,088	1,267,723	190,598	2,194,994	359,641
NCT Delhi	0	0	61,863	23,330	0	407	39,143	2,935
Puducherry	0	0	0	0	5,402	675	7,207	2,876

Source: Study of State Finance, RBI

Appendix Table 2.11: Total Public Expenditure on as per cent to GSDP

States	1990-91		2014-15	
	Expenditure	Rank	Expenditure	Rank
Andhra Pradesh	24.97	10	32.41	4
Arunachal Pradesh	62.34	1	46.99	2
Assam	19.71	12	21.60	8
Bihar	28.58	8	18.59	10
Goa	27.53	9	13.84	17
Gujarat	16.58	19	10.60	23
Haryana	14.38	22	13.14	21
Himachal Pradesh	29.84	7	24.00	7
Karnataka	17.62	16	15.11	16
Kerala	17.51	17	16.32	15
Madhya Pradesh	18.44	14	16.79	14
Maharashtra	13.83	23	10.70	22
Manipur	39.89	5	47.15	1
Meghalaya	31.66	6	25.22	6
Nagaland	51.45	2	34.30	3
Orissa	22.05	11	16.92	12
Punjab	16.24	20	13.51	19
Rajasthan	18.06	15	16.83	13
Sikkim	48.41	3	28.60	5
Tamil Nadu	15.58	21	13.48	20
Tripura	43.55	4	20.14	9
Uttar Pradesh	19.46	13	18.18	11
West Bengal	16.89	18	13.65	18

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Appendix Table 2.12: Per Capita Total Public Expenditure at constant prices of 2004-05

Years	1990-91		2000-01	2010-11	2014-15	
	Exp.	Rank	Exp	Exp	Exp.	Rank
Andhra Pradesh	2571	19	4299	6234	9900	13
Arunachal Pradesh	11026	3	12407	16578	19750	3
Assam	3087	14	3418	4983	6182	19
Bihar	1773	24	2350	2597	3450	24
Goa	12188	1	18839	18865	24652	2
Gujarat	3010	15	6300	7067	8281	16
Haryana	3876	11	5161	7192	10502	10
Himachal Pradesh	6256	6	10024	13596	15536	5
Jammu and Kashmir	7417	5	8864	10692	12520	7
Karnataka	2749	17	4428	6265	8448	15
Kerala	3354	12	4774	7616	11826	8
Madhya Pradesh	2011	23	3223	4386	5581	22
Maharashtra	3345	13	5157	6870	8588	14
Manipur	5597	8	6894	11062	14180	6
Meghalaya	5771	7	7210	9940	11332	9
Nagaland	11475	2	10654	17443	19289	4
Odisha	2651	18	3632	4566	5721	21
Punjab	4239	10	6438	7490	8014	17
Rajasthan	2488	20	3532	4198	6402	18
Sikkim	9145	4	20907	49861	28796	1
Tamil Nadu	2972	16	4599	7489	10090	12
Tripura	5573	9	7744	4938	10113	11
Uttar Pradesh	2328	21	2573	4306	4163	23
West Bengal	2247	22	3867	4960	5886	20
All States	2343		3807	5159	6399	

Source: Calculated from the data available from the different issues of Study of State Finance, RBI

Appendix Table 2.13: State-wise Population in India (in thousands)

States	1990-91	2000-01	2010-11	2014-15
Andhra Pradesh	65912	75604	84581	86603
Arunachal Pradesh	853	1085	1371	1504
Assam	22187	26368	30413	32291
Bihar	85657	81873	97192	102255
Chhattisgarh	..	20834	25545	26876
Goa	1164	1335	1749	1835
Gujarat	41044	50104	58702	62413
Haryana	16301	20859	25270	26917
Himachal Pradesh	5135	6077	6767	7187
Jammu And Kashmir	7837	10144	12541	13319
Jharkhand	..	..	32988	35034
Karnataka	44697	52417	59170	61560
Kerala	28987	31699	33338	34391
Madhya Pradesh	65491	59898	71732	76283
Maharashtra	78152	96053	112042	118068
Manipur	1818	2275	2830	3022
Meghalaya	1754	2281	2937	3241
Mizoram	..	..	..	1241
Nagaland	1205	1944	1952	2159
Orissa	31408	36534	41672	43935
Punjab	20123	24310	29034	30908
Rajasthan	43621	55858	67401	71576
Sikkim	402	532	609	655
Tamil Nadu	55536	61913	67273	68881
Tripura	2757	3199	3674	3953
Uttarakhand	..	8489	10086	10853
Uttar Pradesh	132062	166198	199812	215001
West Bengal	67412	79881	89158	92389
All States	846421	1028737	1210855	1302902
NCT Delhi	..	13851	16788	17396
Puducherry	..	..	1248	1343

Source: Handbook Statistics on Indian Economy, RBI

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CHAPTER - III

EDUCATIONAL DEVELOPMENT IN INDIAN STATES

Introduction:

Education plays an important role in the overall development of a nation. Healthy and educated people are the real wealth of the nation. After the revolution of human capital theory (in 1960 and 1970) vast amount of research have taken place on evaluation of investment on education and impact of education on socio-economic development world over. Most of the economists have recognized and confirmed the existence of positive association between education and economic development. They have also emphasised the significance of higher level of education in all the aspects of human life. Among the studies very important studies are Schultz, T. W. (1961), Nelson and Phelps (1966), Schultz (1975), Lucas (1988), Psacharopoulos (1973), Psacharopoulos (1989), Psacharopoulos (1994), Mincer (1988), Cohn and Geske (1990), Denison (1985), Mulligan and Sala-i-Martin (1992), Mankiew, Romer, and Weil (1992), Becker, Murphy, and Tomura (1990), Romer, (1990), Barro's (1991), Lucas (1988), Romer (1986). Hence, most of the governments have made serious attempts to improve the education level of their citizens with public investment on education through various policies and programmes. Indian is also not lagging behind in this regards, even though education is the state subject in the Indian constitution, both central and state governments have spent huge amount of money on educational development

In India also there are number of studies who have looked into education for the development in Indian context among them very important are V.K.R.V Rao (1964, 1970), Singh (1967), Kothari (1966a), Pandit (1969), Woodhall (1969), Panchamukhi 1975, Varghese 1989, Baghavati 1973 Tilak (1987)Roy, Kamaiah and Rao (2000), Malhotra and Shweta (2006), Kaushik, Klein and Arbenser (2006), Hariharn (2006), Chandrasehkaran (2006), Yadav and Srivastava (2005), Tilak (2002). However, studies taking into consideration of all the states and union territories to see the position of different

states are in a smaller amount. Further, linking education status with different socio-economic developmental indicators are also very less in Indian context in the recent years.

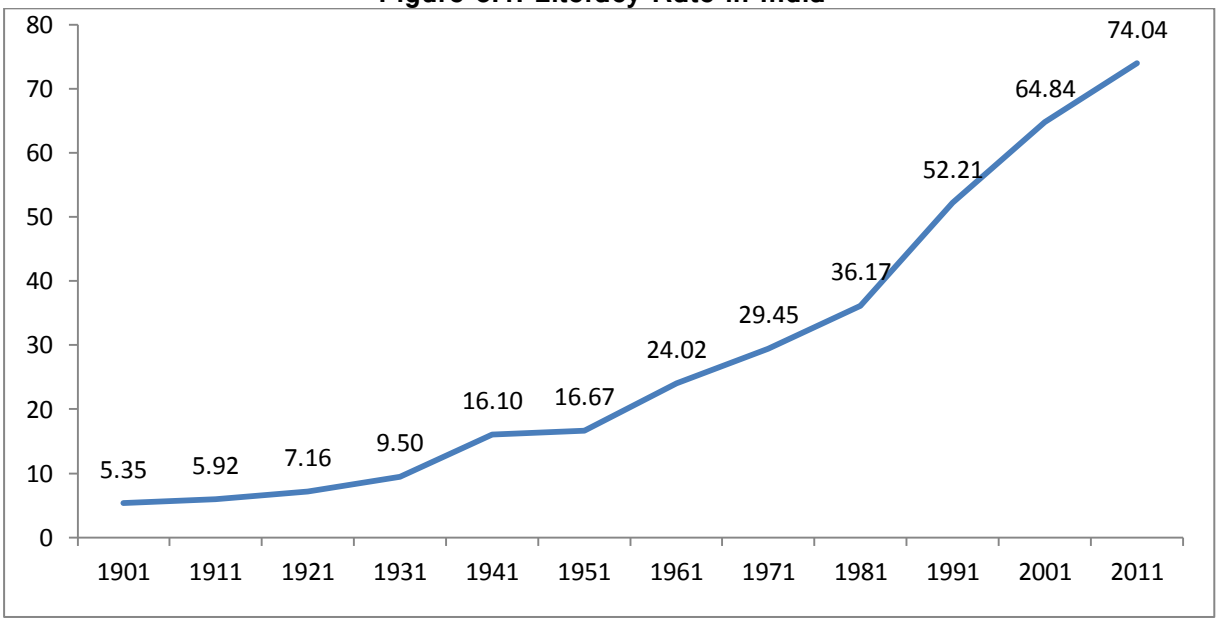
Given this background in the present chapter an attempt have been made to - analyse the growth of education status and infrastructure in India. The chapter discusses different educational indices, further, links the educational indices with different socio-economic indicators. This chapter has been divided into seven sections, apart from introduction, section II analyses growth of education status and infrastructure facilities at All-India level. Section III is devoted on inter-state comparison of education sector, while section IV deals with education indices. Section V links education with socio-economic indicators. Section VI is on international comparison and the last section concludes the present chapter.

3.2 Growth of Education Status and Infrastructure Facilities in India:

Literacy Rate in India:

Literacy is one of the important indicators of human capital in general and educational indicator in particular. There are number of studies who have found education's positive contribution for the socio-economic development of any nation. Literacy rate in India was very less before independence. Literacy rate of India was 5.35 in 1901.

Figure 3.1: Literacy Rate in India



Source: Calculated from the data available from Census of India

Up to 1931 it has not crossed two digits. Major jump in literacy has started after 1951. In the year 1951, literacy rate in India was 16.67, which increased to 36.17 in the year 1981. After 1981, again growth of literacy rate in India has started to increase. It increased to 52.21 in 1991. In2011, literacy rate has reached to 74.04 (please see Figure 3.1 for more details). Increase of literacy rate is due to implementation of various educational development programmes by the union and the state governments. At the same time public expenditure on education has also increased from 0.64 per cent of GDP in 1950-51 to 4.15 per cent in 2014-15. Expenditure on education has been thoroughly analysed in chapter III. Countries like Switzerland, USA, Germany, Japan and other developed countries spend more than 5-6 per cent of GDP on education.

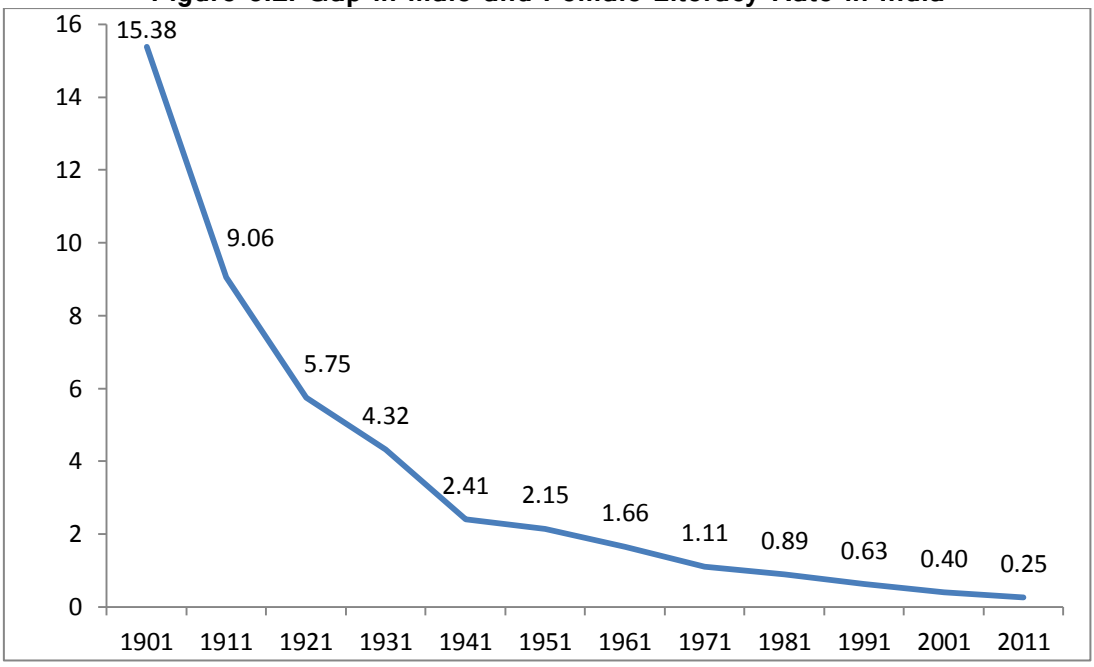
Table 3.1 Male and Female Literacy Rate in India 1901 to 2011

Year	All Persons	Male	Female	Gap (Male-Female)/Female
1901	5.35	9.83	0.60	15.38
1911	5.92	10.56	1.05	9.06
1921	7.16	12.21	1.81	5.75
1931	9.50	15.59	2.93	4.32
1941	16.10	24.90	7.30	2.41
1951	16.67	24.95	7.93	2.15
1961	24.02	34.44	12.95	1.66
1971	29.45	39.45	18.69	1.11
1981	36.17	46.89	24.82	0.89
1991	52.21	64.13	39.26	0.63
2001	64.84	75.26	53.67	0.40
2011	74.04	82.14	65.46	0.25

Source: Calculated from the data available from Census of India

Growth of literacy is not same male and female. Alike other socio-economic indicators, Gender discrimination is observed in the case of literacy rate also. Table 3.1 shows the data related to this. In 1901, Literacy rate of male was 9.83, while female was only 0.60. Huge quantum of gap was observed between male and female. Over the period of time literacy rates of both male and female have increased significantly. Moreover the gap has decreased more sharply. Figure 3.2 shows the information related to the gap of male and female literacy rate. In 2011, the gap between male and female literacy rate is around 0.25. It means around 25 per cent of gap is observed between male and female literacy rates.

Figure 3.2: Gap in Male and Female Literacy Rate in India



Source: Calculated from the data available from Census of India

Rural and urban disparity is a common phenomenon in every country. India is also not an exception for these types of disparities. With respect to literacy rate, there is a disparity between rural and urban. A positive sign is observed in the gap of rural and urban disparity in literacy rate is that decreasing the quantum of the gap. Table 3.2 shows growth of Literacy Rate of Rural and Urban in India

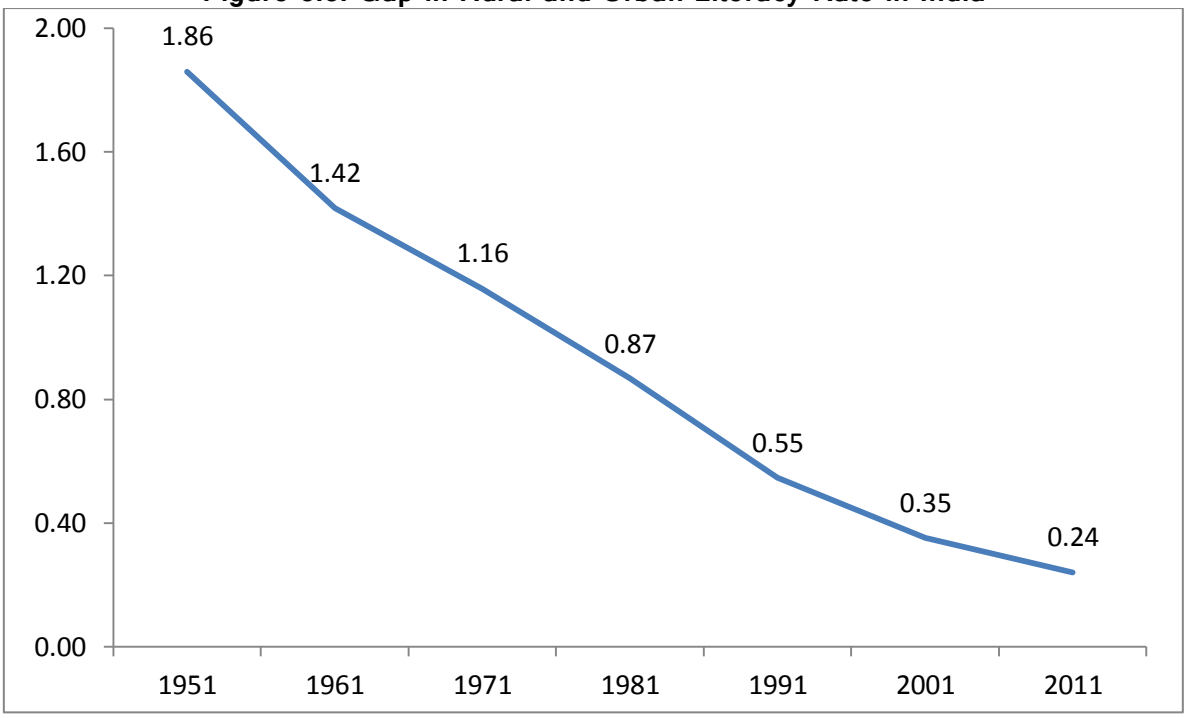
Table 3.2: Rural and Urban Literacy Rate

Year	Rural	Urban	Gap (Urban-Rural)/Rural
1951	12.1	34.59	1.86
1961	22.5	54.4	1.42
1971	27.9	60.2	1.16
1981	36.0	67.2	0.87
1991	47.7	73.7	0.55
2001	59.4	80.3	0.35
2011	67.8	84.1	0.24

Source: Calculated from the data available from Census of India

In the year 1951, rural and urban literacy rates were 12.1 and 34.59 respectively, which increased significantly to 67.8 and 84.1 in 2011 respectively (table 3.2). The gap between rural and urban has been presented in the table as well as in figure 3.2. From the figure it is clear that gap in rural and urban literacy rates decreased significantly in the study period from 1.86 in 1951 to 0.24 in 2011.

Figure 3.3: Gap in Rural and Urban Literacy Rate in India



Source: Calculated from the data available from Census of India

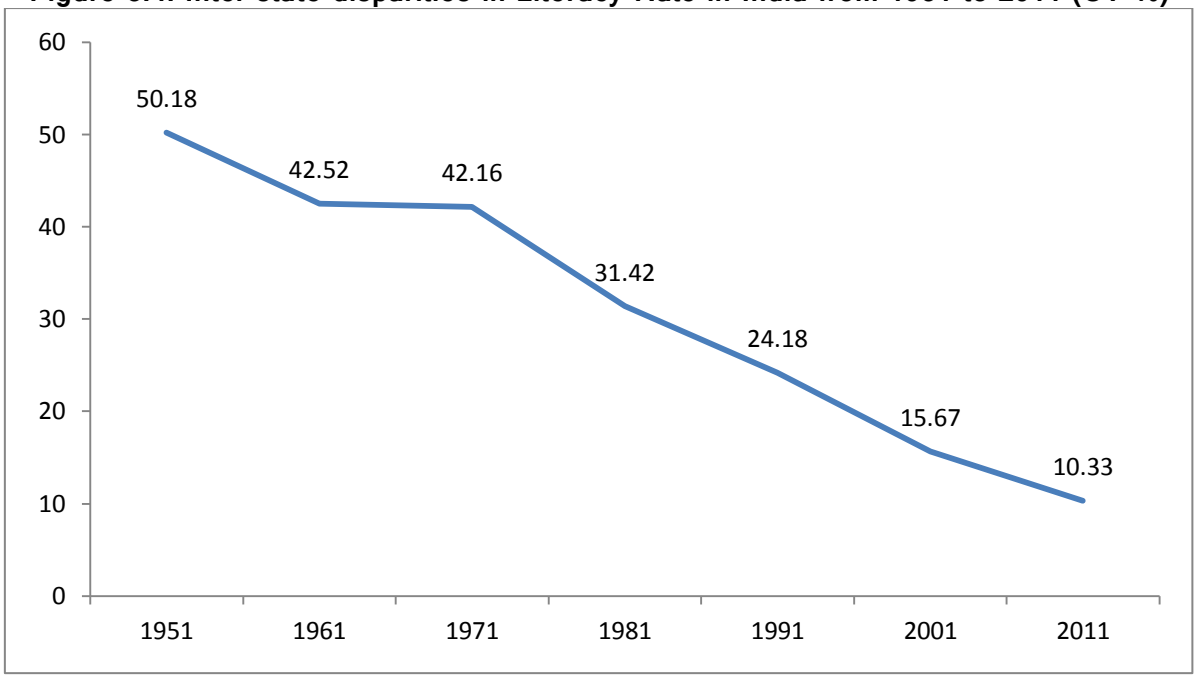
Inter-state comparison of literacy rate has also been presented in table 3.4. The table reveals that in the year 1951 there were 19 states in the country. At that time all-India literacy rate was 18.33 per cent. Kerala, Mizoram, Andaman and Nicobar Islands and Maharashtra were found in the top position, whereas, Rajasthan, Chhattisgarh, Nagaland and Uttar Pradesh were found in the bottom position. Kerala was in the first position with the literacy rate of 47.18 per cent and Rajasthan was in the last position with the literacy rate of only 8.5 per cent. In the year 2011, literacy rate of India has increased to 74.04 per cent. Kerala continued with the first position with literacy rate of 93.91 per cent, whereas, Bihar found in the last position with the literacy rate of 63.82 per cent.

Table 3.3: State/Union Territory-Wise Literacy Rate in India from 1951 to 2011

States/Union Territories	1951	1961	1971	1981	1991	2001	2011	
							Rate	Rank
Andaman and Nicobar Islands	30.3	40.07	51.15	63.19	73.02	81.3	86.27	10
Andhra Pradesh	-	21.19	24.57	35.66	44.08	60.47	67.66	32
Arunachal Pradesh	-	7.13	11.29	25.55	41.59	54.34	66.95	35
Assam	18.53	32.95	33.94	-	52.89	63.25	73.18	27
Bihar	13.49	21.95	23.17	32.32	37.49	47	63.82	36
Chandigarh	-	-	70.43	74.8	77.81	81.94	86.43	8
Chhattisgarh	9.41	18.14	24.08	32.63	42.91	64.66	71.04	28
Dadra and Nagar Haveli	-	-	18.13	32.9	40.71	57.63	77.65	19
Daman and Diu	-	-	-	-	71.2	78.18	87.07	6
Delhi	-	61.95	65.08	71.94	75.29	81.67	86.34	9
Goa	23.48	35.41	51.96	65.71	75.51	82.01	87.4	5
Gujarat	21.82	31.47	36.95	44.92	61.29	69.14	79.31	18
Haryana	-	-	25.71	37.13	55.85	67.91	76.64	22
Himachal Pradesh	-	-	-	-	63.86	76.48	83.78	11
Jammu and Kashmir	-	12.95	21.71	30.64	-	55.52	68.74	31
Jharkhand	12.93	21.14	23.87	35.03	41.39	53.56	67.63	33
Karnataka	-	29.8	36.83	46.21	56.04	60.47	75.6	23
Kerala	47.18	55.08	69.75	78.85	89.81	90.86	93.91	1
Lakshadweep	15.23	27.15	51.76	68.42	81.78	86.66	92.28	2
Madhya Pradesh	13.16	21.41	27.27	38.63	44.67	63.74	70.63	29
Maharashtra	27.91	35.08	45.77	57.24	64.87	76.88	82.91	12
Manipur	12.57	36.04	38.47	49.66	59.89	69.93	79.85	16
Meghalaya	-	26.92	29.49	42.05	49.1	62.56	75.48	24
Mizoram	31.14	44.01	53.8	59.88	82.26	88.8	91.58	3
Nagaland	10.52	21.95	33.78	50.28	61.65	66.59	80.11	15
Odisha	15.8	21.66	26.18	33.62	49.09	63.08	73.45	26
Puducherry	-	43.65	53.38	65.14	74.74	81.24	86.55	7
Punjab	-	-	34.12	43.37	58.51	69.65	76.68	21
Rajasthan	8.5	18.12	22.57	30.11	38.55	60.41	67.06	34
Sikkim	-	-	17.74	34.05	56.94	68.81	82.2	13
Tamil Nadu	-	36.39	45.4	54.39	62.66	73.45	80.33	14
Tripura	-	20.24	30.98	50.1	60.44	73.19	87.75	4
Uttar Pradesh	12.02	20.87	23.99	32.65	40.71	56.27	69.72	30
Uttarakhand	18.93	18.05	33.26	46.06	57.75	71.62	79.63	17
West Bengal	24.61	34.46	38.86	48.65	57.7	68.64	77.08	20
ALL INDIA	18.33	28.3	34.45	43.57	52.21	64.84	74.04	
CV (%)	**50.18**	**42.52**	**42.16**	**31.42**	**24.18**	**15.67**	**10.33**	

Source: Calculated from the data available from Census of India

Figure 3.4: Inter-state disparities in Literacy Rate in India from 1951 to 2011 (CV %)



Source: Table 3.3

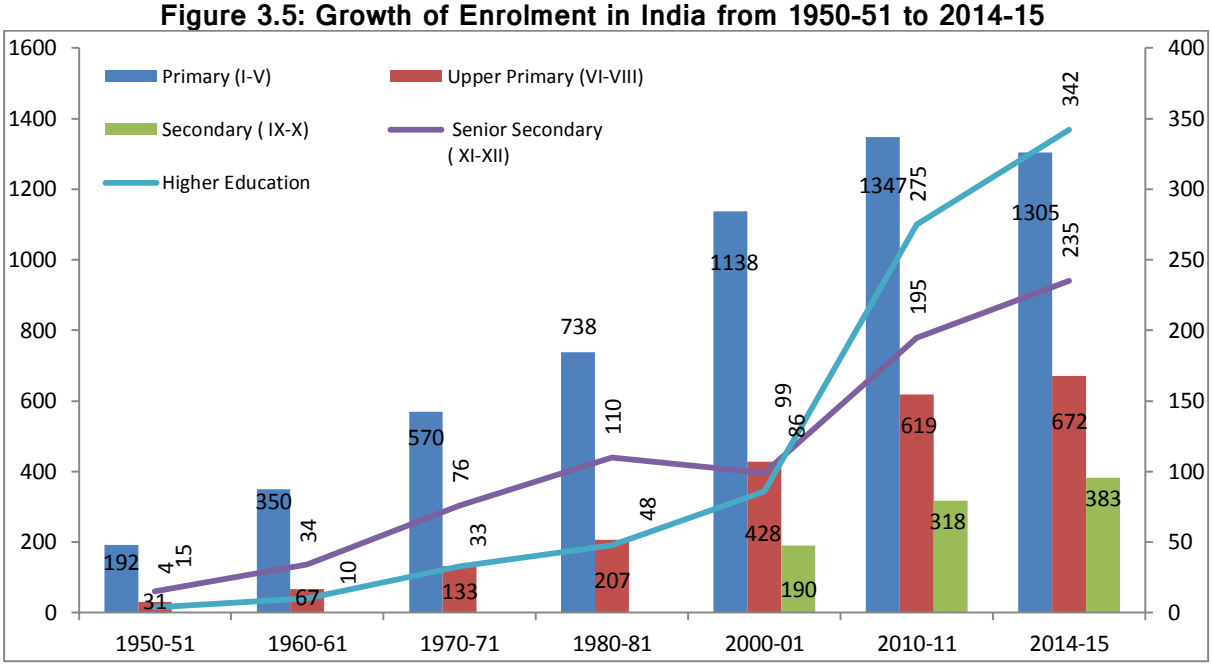
In the year 2011, 35 states and union territories can be observed. Out of them Kerala, Lakshadweep, Mizoram, Tripura, Goa and Daman and Diu are found in the top position with the literacy rate higher than 87 per cent. On the other hand Bihar, Arunachal Pradesh, Rajasthan, Jharkhand and Andhra Pradesh were in the bottom position with the literacy rate less than 68 per cent. To see the regional imbalances Coefficient of Variation (%) has been calculated and presented in the last row of the table. It is found that in the year 1951 huge inter-state disparity was in literacy rate with the Coefficient of variation of 50.18 %. Over the period of time, this inter-state disparity has started decreasing. The trend of decrease is lower up to 1971; afterwards, it has started decreasing very rapidly. CV in the year 2011 is only 10.33 %. If one looks the current decreasing trend, by next census, regional imbalances in literacy rate will be very less or negligible. Through this, it is clear that all the state governments and central governments have put efforts to increase the literacy rate of the people since independence (figure 3.4).

Enrolment:

Enrolment is another important component of measurement of educational status. Enrolment in primary school shows the literacy rate of the next generation. Further,

enrolment in higher education depicts the improvement in higher education and its fruitfulness[1].

Figure 3.5: Growth of Enrolment in India from 1950-51 to 2014-15



Source: Various Issues of Educational Statistics at a Glance, GoI

Growth of higher education has been presented in table 3.5 and in graph 3.5. It is observed that from 1950-51 to 2014-15 enrolment has increased in all the levels of education, which is presented below,

- In 1950-51 enrolment in primary (I-V) was 192 lakh students, which increased to 1305 lakh students. It means enrolment in primary education has increased around 7 times in the selected period of 64 years.
- Enrolment in upper primary (VI-VIII) has increased from 31 lakh in 1950-51 to 672 lakh, which registered the more than 20 fold increase.
- More than 15 times increase is observed with respect to enrolment in senior secondary (XI-XII) level education, which is from 15 lakh to 235 lakh in the selected time period.
- Among the selected heads of level of education, a significant increase is observed in higher education. Enrolment in higher education was only 4 lakh in 1950-51, which increased to 342 lakh in 2014. More than 86 fold increase is observed.

[1]Enrolment in higher education will improve when people get job through higher education, when people are rich to offer for higher education and when government gives more add to the higher educational institutions.

Table 3.4: Growth of Level-wise Enrolment (In lakh)

Year	Primary (I-V)	Upper Primary (VI-VIII)	Secondary (IX-X)	Senior Secondary (XI-XII)	Higher Education
1950-51	192	31	NA	15	4
1960-61	350	67	NA	34	10
1970-71	570	133	NA	76	33
1980-81	738	207	NA	110	48
2000-01	1138	428	190	99	86
2010-11	1347	619	318	195	275
2014-15	1305	672	383	235	342

Source: Various Issues of Educational Statistics at a Glance, GoI

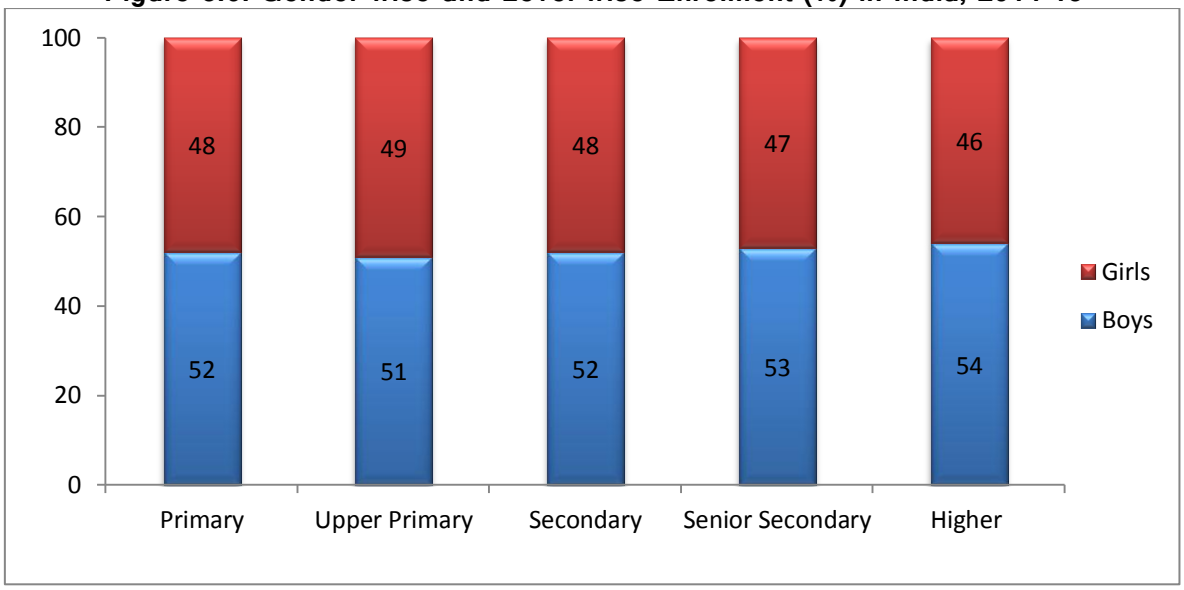
Enrolment ratio has also increased significantly over the period of time. In the year 1950-51, total enrolment rate was 42.6 and 12.7 for the age group 6-10 and 11-13 respectively, they have increased to 115.5 and 85.2 respectively. In the same period enrolment ratio of 6-13 years (Classes I-VIII) has increased from 32.1 to 103.9. Between boys and girls huge gap was observed in the initial years of the study period. In the later stage it has decrease significantly. An interesting point here is to be noted that enrolment ratio in I-V of girls is higher than the boys in 2010-11. In Class VI-VIII and I-VIII, it is marginally high for boys (for more details please see table 3.6)

Table 3.5: Enrolment Ratio from 1950-51 to 2010-11

Year	Classes I-V (6-10 Years)			Classes VI-VIII (11-13 Years)			Classes I-VIII (6-13 Years)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1950-51	60.6	24.8	42.6	20.6	4.6	12.7	46.4	17.7	32.1
1960-61	82.6	41.4	62.4	33.2	11.3	22.5	65.2	30.9	48.7
1970-71	95.5	60.5	78.6	46.3	20.8	33.4	75.5	44.4	61.9
1980-81	95.8	64.1	80.5	54.3	28.6	41.9	82.2	52.1	67.5
1990-91	94.8	71.9	83.8	80.1	51.9	66.7	90.3	65.9	78.6
2000-01	104.9	85.9	95.7	66.7	49.9	58.6	90.3	72.4	81.6
2010-11	114.9	116.3	115.5	87.5	82.9	85.2	104.5	103.3	103.9

Source: Various Issues of Educational Statistics at a Glance, GoI

Figure 3.6: Gender wise and Level-wise Enrolment (%) in India, 2014-15

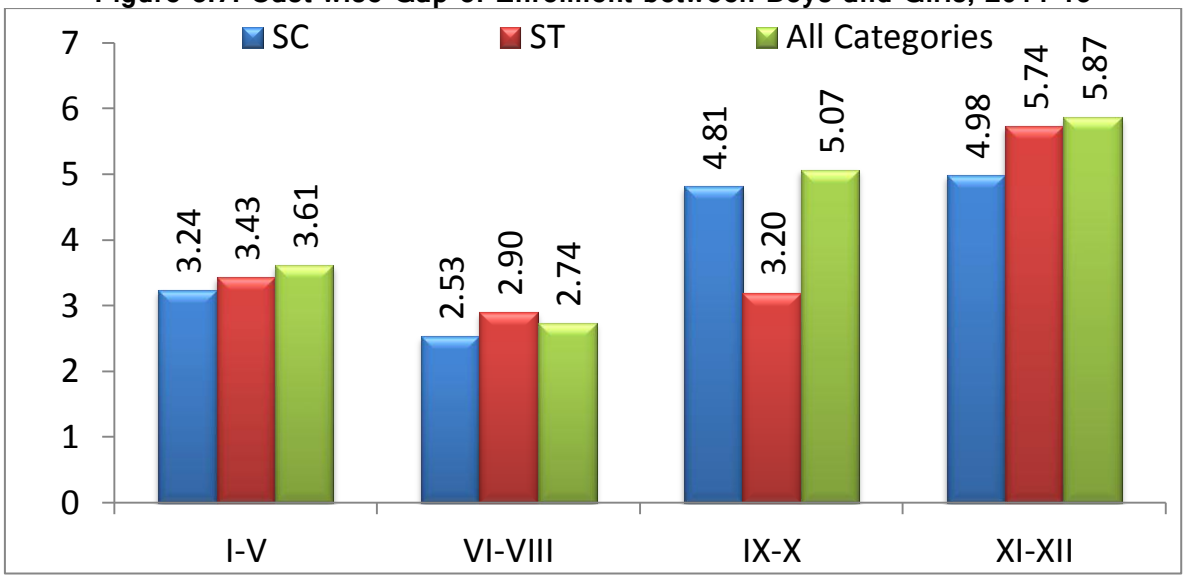


Source: Various Issues of Educational Statistics at a Glance, GoI

Gender wise distribution of enrolment in different level of education has been presented in figure 3.6 and appendix table 3.2. It is found from the figure that in all the levels of education, enrolment ratio is higher for boys, which is more than 50 per cent. The ratio between boys and girls are 52 and 48 respectively for primary level. Among the next level of education, share of boys is high in higher education (54%) followed by senior secondary education (53%), secondary education (52%) and upper primary education (51%). Trend of gap between male and female is increasing from lower level of education to higher level of education, except, in primary level.

In figure 3.7, caste wise gap of enrolment between boys and girls for the year 2014-15 has been presented. Gap has been calculated- subtracting the enrolment of boys to the enrolment ratio girls. In the appendix table 3.3 original data has been presented. It is found from the table and diagrams that in the education level of 1-5, 5-8 and 11-12, enrolment gaps between boys and girls is high in ST category than the SC category. In the class 9-10 this gap is found to be high in SC category than the ST category.

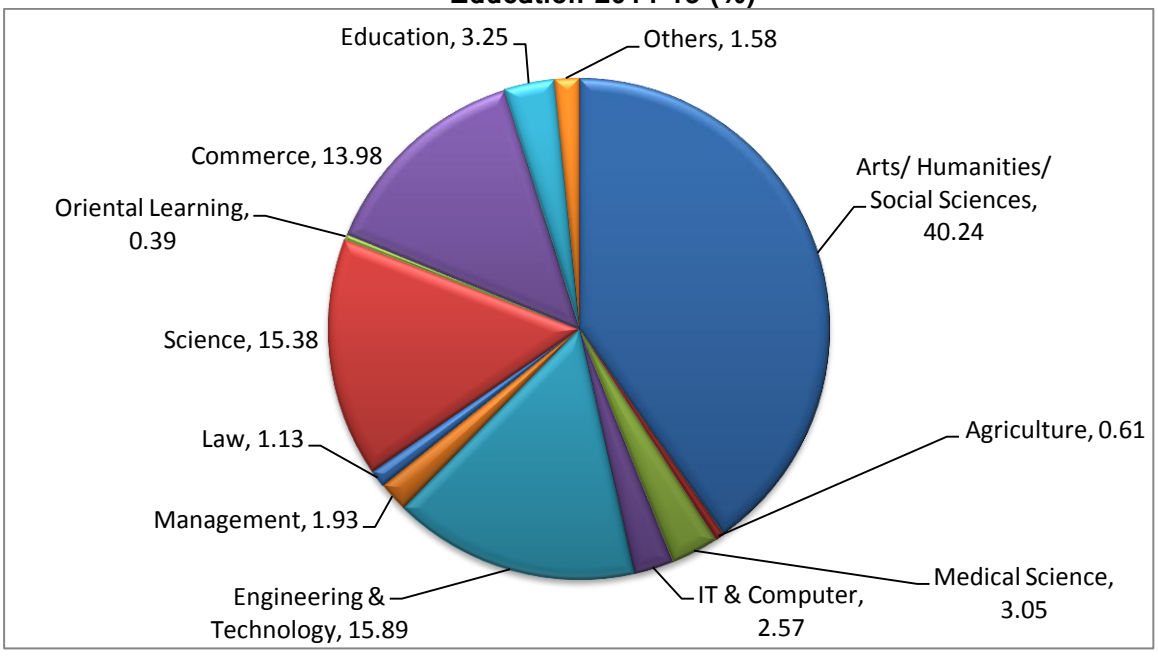
Figure 3.7: Cast wise Gap of Enrolment between Boys and Girls, 2014-15



Source: Appendix table 3.3

Figure 3.8 shows the enrolment in various disciplines at under graduate level, in higher education for the year 2014-15. It is observed from the graph that a lion share of students is enrolling to 'Arts/Humanities/Social Sciences' with the share of more than 40 per cent followed by Engineering and Technology (15.89%), Science (15.38%) and Commerce (13.98%). Remaining disciplines have very lower shares. Oriental Learning (0.39%) and Agriculture (0.61%) have the lowest enrolment.

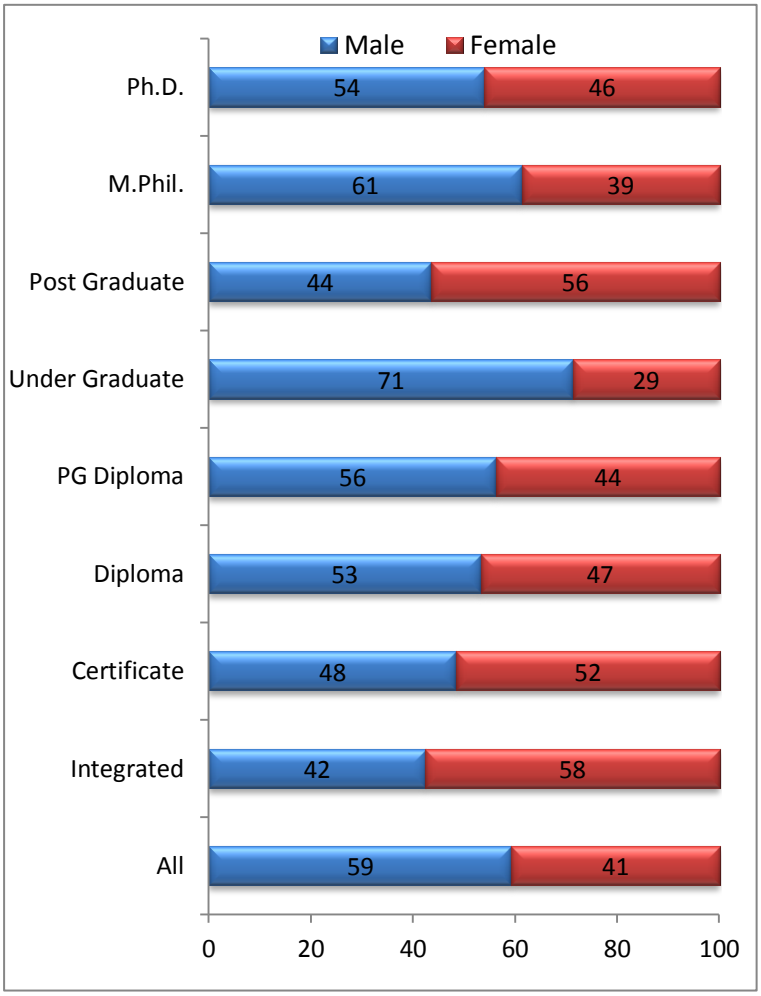
Figure 3.8: Enrolment in various Disciplines at Under Graduate level in Higher Education 2014-15 (%)



Source: Various Issues of Educational Statistics at a Glance, GoI

Level wise enrolment in higher education has been presented in appendix table 3.4 and share of enrolment of male and female is presented in Figure 3.9. It is observed that in the year 2014-15, totally 342 lakh people have enrolled into higher education. Out of this, 185 lakh (59%) are male and 157 lakh (41%) are female.

Figure 3.9: Share of Enrolment in Higher Education of Male and Female, 2014-15



Among the selected levels, under graduation has higher amount of disparity between male and female (71% and 29% respectively) followed by MPhil (61% and 39%), PG Diploma (56% and 44%), PhD (54% and 46%), and Diploma (53% and 47%). On the other hand, higher education courses like post graduation (56%), certificate (52%) and integrated (58%) courses have higher share of female than the male.

Source: Appendix table 3.4

In the recent years, enrolment in research especially for PhD has increased significantly. An attempt has been made in table 3.7 to see the distribution of PhD enrolment, in various disciplines. In PhD enrolment, higher share is observed in discipline like Science (25.88%), Engineering & Technology (23.42%) and Social Science (12.13%), whereas lower share is observed in the disciplines like Home Science (0.51%), Law (0.99%) and IT & Computer (1.69%). The table also reveals information related to the share of enrolment in post-graduation. In Post-graduation, Social Science (17.35),

Management (15.70) and Science (12.51) have higher share in 2014-15, while Law (0.67%), Agriculture & Allied (0.58%) and Home Science (0.25%) have lower shares.

Table 3.6: Percentage Enrolment in various Disciplines at Ph.D & Post Graduate level in Higher Education 2014-15

Discipline	Ph.D.	Post Graduate
Agriculture & Allied	3.84	0.58
Commerce	3.09	9.61
Engineering & Technology	23.42	7.60
Foreign Language	2.58	4.86
Home Science	0.51	0.25
Indian Language	5.01	8.99
IT & Computer	1.69	7.48
Law	0.99	0.67
Management	5.31	15.70
Medical Science	3.99	3.06
Science	25.88	12.51
Social Science	12.13	17.35
Others	11.56	11.34

Source: Various Issues of Educational Statistics at a Glance, GoI

Educational Institutions:

To increase the educational status, educational institutions play very important role. In the initial year of the study period, there were very less amount of the educational institutions in India. In the later stage, these have increased significantly. In table 3.8, information related to this has been presented.

Table 3.7: Growth of Number of Recognised Educational Institutions in India, per lakh population of particular age group

Year	Primary (6-10 Years)	Upper Primary (11-13 Years)	Secondary (14-15 Years)	Senior Secondary (16-17 Years)	College (18-23 years)	University (18-23 years)
1950-51	443	52	NA	46	135	6
1960-61	621	172	NA	90	351	9
1970-71	670	252	NA	155	511	13
1980-81	651	273	NA	200	871	14
1990-91	610	284	NA	274	585	19
2000-01	614	378	208	153	866	22
2010-11	630	697	350	244	2476	47
2014-15	673	771	341	290	3002	59

Source: Various Issues of Educational Statistics at a Glance, GoI

With respect to primary level there were 443 schools per lakh population (age group of 6-10 years) in 1950-51, which increased to 670 in 1970-71. It decreased to 610 in

1990-91, and in the year 2014-15 again increased to 673schools per lakh population (age group of 6-10 years). It means, over the 64 years of the study period, number of primary schools has increased 1.5 fold.

With respect of upper primary schools the trend is always increasing. In the year 1950-51, upper primary schools per lakh population (age group of 11-13 years) were only 52, which increased to 771 in the year 2014-15.

Table 3.8: Number of Educational Institutions by Type 2014-15

Type	Number
School Education	
Primary	847118 (66.06)
Upper Primary	425094 (33.15)
Secondary	135335 (10.55)
Senior Secondary	109318 (8.52)
Total	1516865 118.28)
Higher Education	
University	760 (0.06)
College	38498 (3)
Stand Alone Institution	12276 (0.96)

Note: Figures in the brackets are per lakh population
Source: Various Issues of Educational Statistics at a Glance, GoI

Senior Secondary schools have also increased in the same period from 46 per lakh population (age group of 16-17 Years) to 290per lakh population (age group of 16-17 Years) in 2014-15.

Higher increase is observed in number of colleges and universities. There were only 135 colleges per lakh population (age group of 18-23 years) in 1950-51, which increased to 3002 colleges in 2014-15. Similarly, number of universities per lakh population (age group of 18-23 years) has increased from 6 in 1950-51 to 59 2014-15. It is the highest increase among the selected heads of the educational institutions. In table 3.9 numbers of educational institutions by type has been presented in detail.

3.3 Inter-state Comparison

In this section, inter-state comparison has been made to see the performance of different states in education status and infrastructures facilities. In figures 3.10 and 3.11 information related to number of schools[2]per lakh population and per 1000 square km. area has been presented respectively. It is found from the table and figures that in India there

[2] The term 'School Education Institutions' includes 'Number of Senior Secondary/ Secondary Education Board', 'Intermediate/ Senior Secondary Schools', 'High/ Secondary Schools', 'Upper Primary Schools' and 'Primary Schools'

are 477 schools (Primary, Upper Primary, Secondary and Senior Secondary) per lakh population and 443 primary schools per 1000 sq. Km. area are there. This has not been distributed among different states. Meghalaya, Mizoram and Himachal Pradesh have registered higher schools per lakh population (age group 6-17 years) i.e., more than 1100, whereas, Chandigarh, Delhi, Kerala and Puducherry are in the lower position with less than 250 schools per lakh population (age group 6-17 years).

Sometime taking into consideration of only one indicator i.e., schools per lakh population will not give proper picture. Hence, researchers, also use area as the denominator to reach proper conclusions. Therefore, primary schools per 1000 sq. km. area has been calculated and presented in figure 3.11. It is found from the figure that Delhi with 3414 schools per 1000 sq. Km. area is found in the first position and Arunachal Pradesh with 40 primary schools per 1000 sq. Km. area found in the last position. Along with Delhi, states/union territories like Chandigarh, Puducherry, Lakshadweep, Daman and Diu and Uttar Pradesh were found in the top position, those have primary schools per 1000 sq. Km. area more than 1000 schools.

Andaman and Nicobar Islands, Jammu and Kashmir, Nagaland and Sikkim have less than 175 primary schools per 1000 sq. km. area along with Arunachal Pradesh. Not only schools but also adequate numbers of teacher are very important for the development education. In figure 3.12 and appendix table 101 pupil teacher ratio in primary schools has been presented for the year 2014-15.

Figure 3.10 Number of Schools per lakh population (6-17 years), 2011

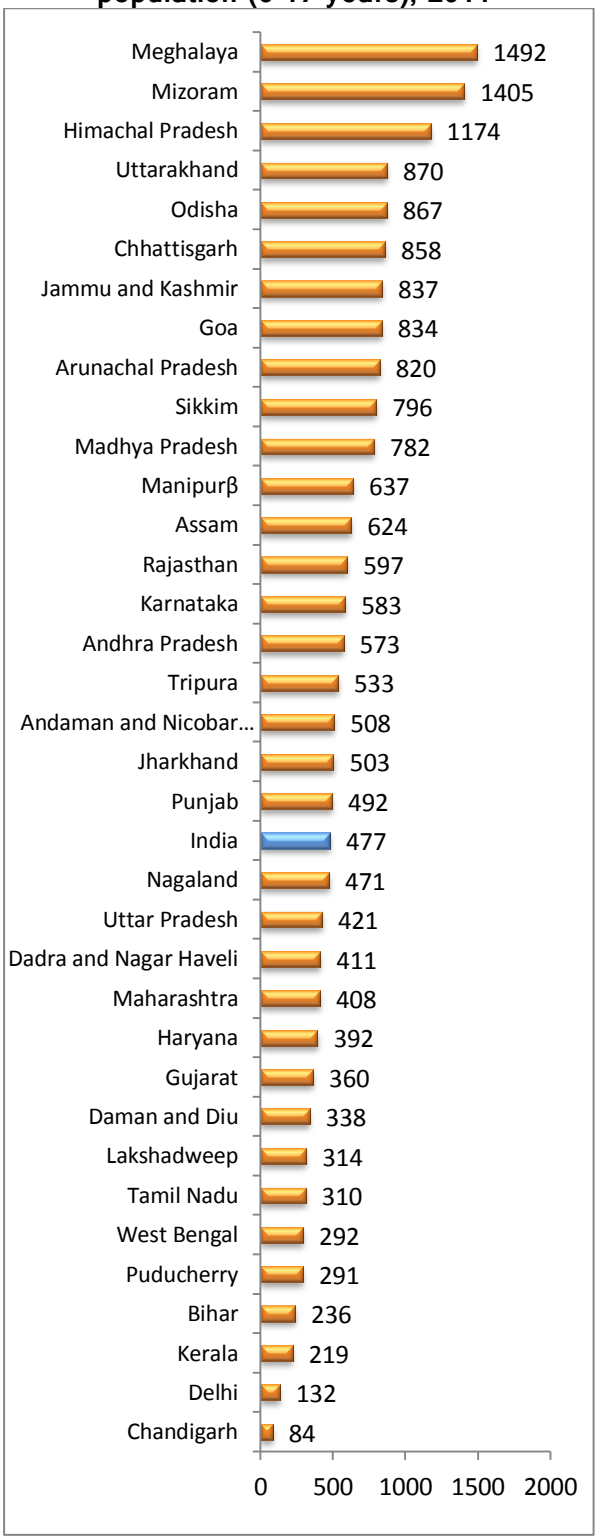
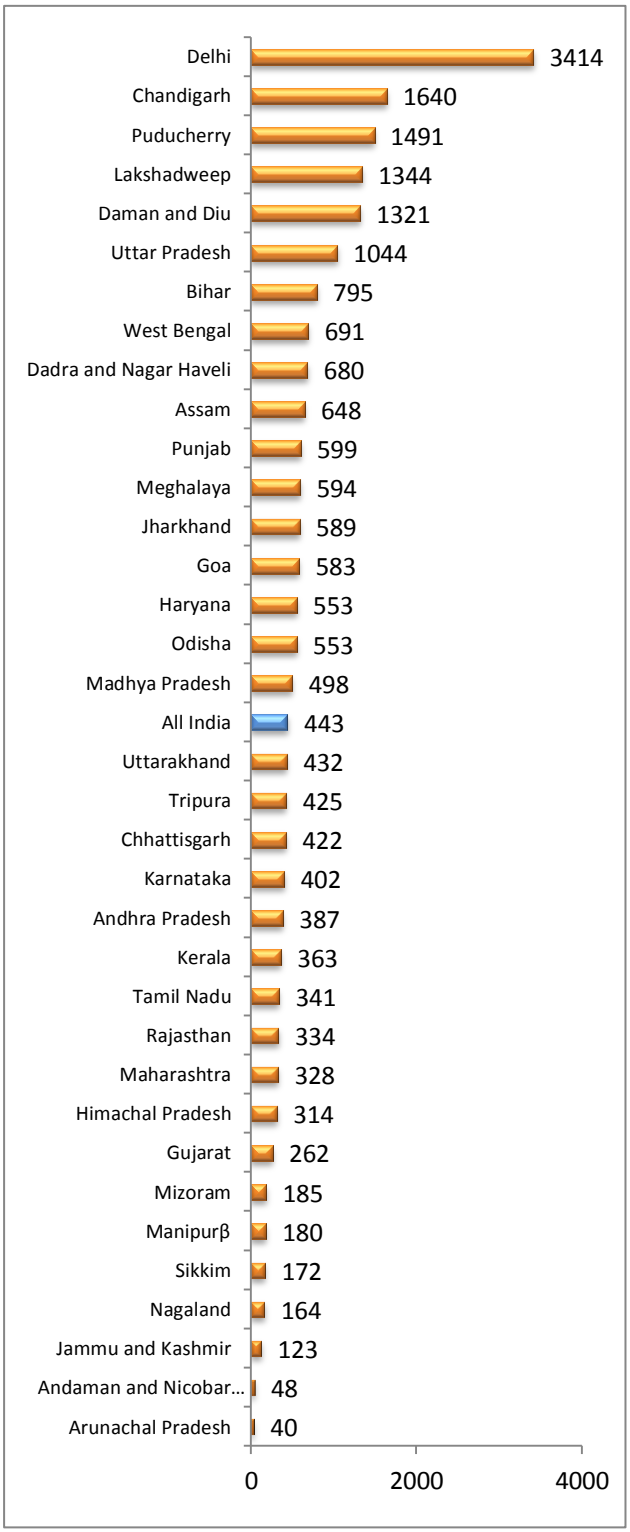
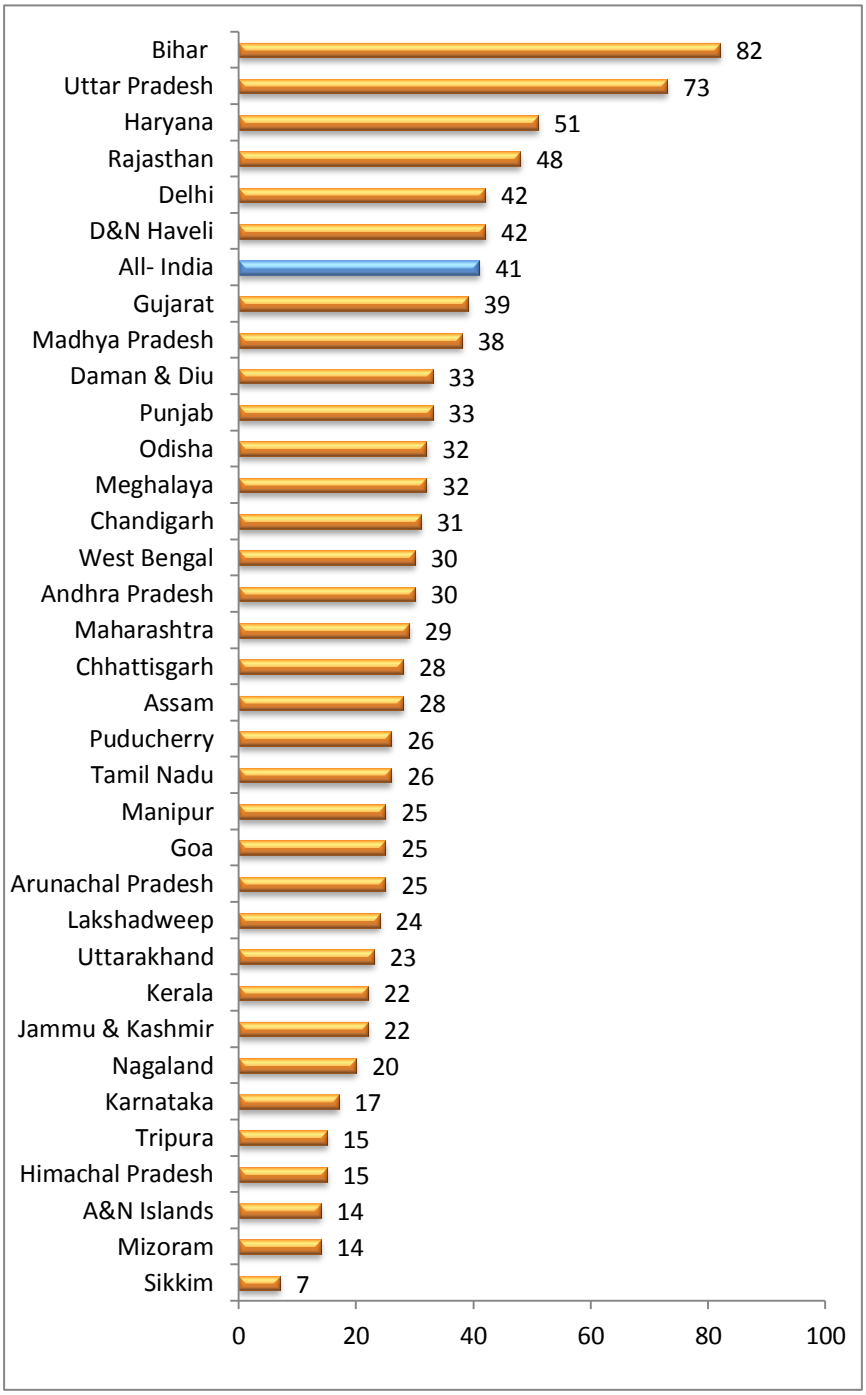


Figure 3.11: Number of Schools per 1000 sq. Km. area in India, 2011



Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Figure 3.12: Pupil Teacher Ratio in Primary Schools, 2014-15



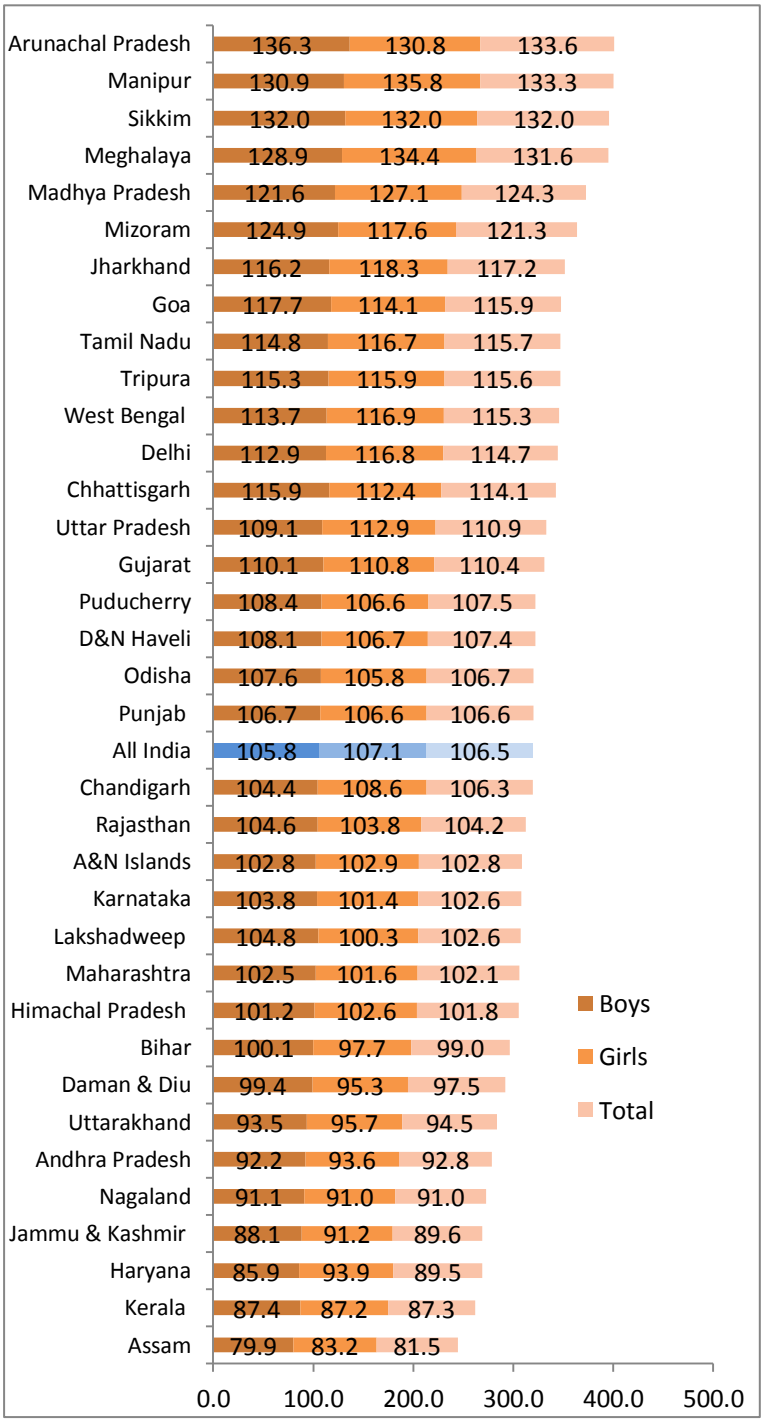
It is found from the figure that Bihar is in the last position with more than 80 students per teacher, whereas, Sikkim found in the first position with only 7 students per teacher. Sikkim, Mizoram, A & N Islands, Himachal Pradesh and Tripura are found in the top position with 15 or less than 15 students per one teacher. Along with Bihar, states like Uttar Pradesh, Haryana, Rajasthan and Delhi are observed in the bottom position for the same indicator.

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Enrolment

Enrolment is also one of the very important indicators in the measurement of the educational status. In figure 3.13, Gross Enrolment Ratio (GER) for Classes I-Vhas been presented for the year 2014-15.

Figure 3.13: Gross Enrolment Ratio (GER), Classes I-V, 2014-15



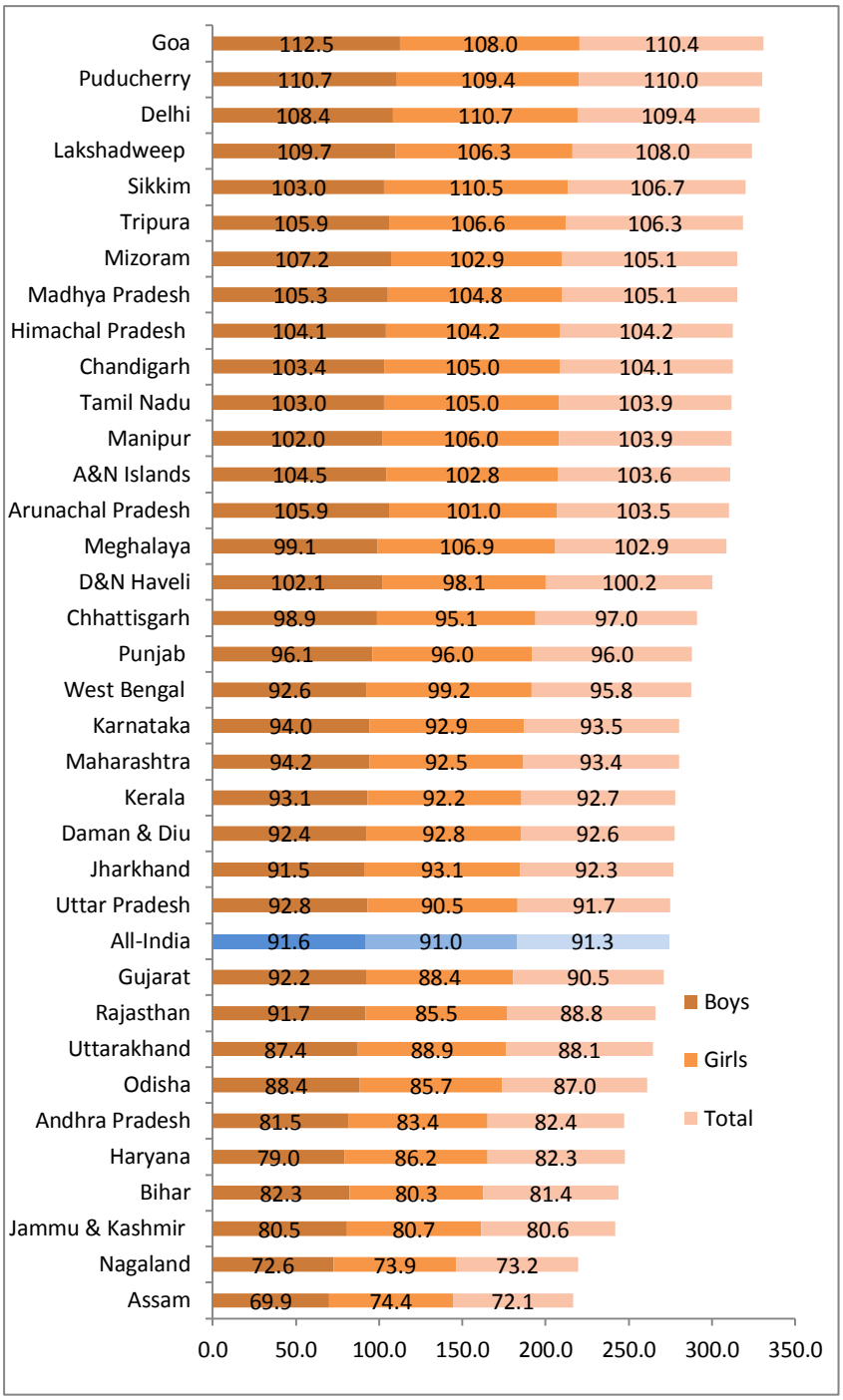
It is found from the figure that GER of All-India for class I-V is 106.5. Between male and female, GER of female (107.1) is more than the male (105.8).

Among the states/union territories, Assam, Kerala, Haryana and Jammu and Kashmir have lower GER i.e., less than 90. On the other hand, Arunachal Pradesh, Manipur, Sikkim, Meghalaya have higher gross enrolment ratio that is more than 125 students.

Out 35 states and union territories, 18 have GER of girls higher than the boys, whereas, remaining 17 states and union territories. Arunachal Pradesh is in the top position and Assam is in the bottom position.

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Figure 3.14: Gross Enrolment Ratio (GER), Classes I-X, 2014-15



In figure 3.14, Gross Enrolment Ratio (GER) for Classes I-X has been presented for the year 2014-15. It is found that, Gross enrolment ratio (GER) in class I-X for All-India is 91.3. There is a slight gap between boys (91.6) and girls (91.0) GER.

The state of Goa is in the top position with GER of 110 and Assam is in the bottom position with only GER of 72, in class I-X.

Along with Goa, states/union territories like Puducherry, Delhi, Lakshadweep and Sikkim are found in the top position with GER more than 105.

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Nagaland, Jammu and Kashmir, Bihar, Haryana and Andhra Pradesh are found in the bottom position with GER less than 85. Out 35 states and union territories 17 have girls GER higher than the boys, whereas.

Drop-out rate

Drop-out rate is multi-factorial indicators influenced by many factors. Poverty, availability and accessibility are three major reasons for child drop out from the schools. In table 3.10 state-wise dropout rates from I-X classes have been presented for boys and girls. It is found that in 2014-15 All-India Dropout rate is 55.3 (55.0 for male and 55.6 for female). States like Bihar, Mizoram, Jharkhand, Sikkim and Rajasthan are found in the bottom position with higher drop-out rates, which is more than 70.

Table 3.9: Drop Out Rates, 2014-15

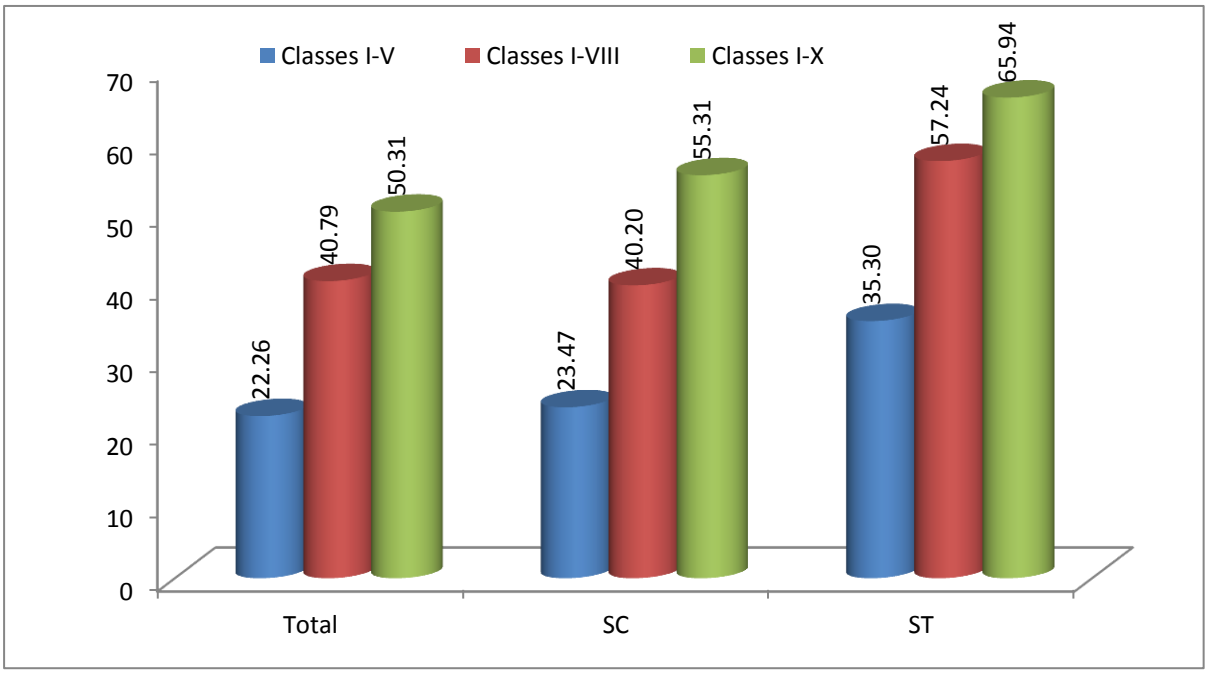
States/ Union Territories	Classes I-X		
	Boys	Girls	Total
Andhra Pradesh	49.1	48.4	48.7
Assam	70.4	65.8	68.2
Bihar	80.5	81.1	80.7
Chhattisgarh	55.4	56.4	55.9
Goa	49.3	52.7	51.0
Gujarat	39.1	52.6	45.5
Haryana	32.1	31.3	31.8
Himachal Pradesh	24.6	24.1	24.3
Jammu & Kashmir	60.2	59.2	59.7
Jharkhand	76.7	76.3	76.5
Karnataka	48.6	50.3	49.4
Kerala	6.0	2.2	4.1
Madhya Pradesh	33.5	49.4	41.0
Maharashtra	33.2	39.3	36.1
Manipur	63.1	63.7	63.4
Meghalaya	66.3	70.2	68.2
Mizoram	77.5	81.0	78.9
Odisha	69.9	69.3	69.6
Punjab	42.2	40.2	41.2
Rajasthan	65.1	78.1	71.6
Sikkim	72.8	70.5	71.7
Tamil Nadu	42.8	36.3	39.7
Tripura	35.8	34.0	35.0
Uttar Pradesh	53.8	51.1	52.5
Uttarakhand	43.0	48.1	45.5
West Bengal	64.9	65.1	65.0
D&N Haveli	30.0	16.3	23.7
INDIA	55.0	55.6	55.3

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

On the other hand, Kerala, Himachal Pradesh, D&N Haveli, Haryana and Tripura are found in the top position with dropout rate less than 35. A point here is to be noted that dropout rate of Bihar (80.7) is 20 times higher than that of Kerala (only 4.1). Out of total states and union territories, 14 states/union territories have boys drop-out rates higher than girls. Whereas, 13 states and union territories have girls drop-out rates higher than boys.

In figure 3.15, drop-out rates among social categories for different level of education have been presented. Drop-out rates are high in Classes I-X (50.31) followed by I-VIII (40.79) and I-V (22.26). The similar trend is observed in SC and ST categories also. Between SC and ST categories, ST category has higher drop-out rates than SC category in all the level of education.

Figure 3.15: Drop-Out Rates among Social Categories and different level of Education



Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Higher Education:

Higher education is also important. Through higher education one can get improved career opportunities, receive higher pay, experience greater cultural awareness and have a life with more choices and possibilities. Hence, in the recent years, importance of higher education has improved significantly. In table 3.11 numbers of higher education and enrolment in it have been presented. In India, there are 39071 colleges for the year 2014-15. It means around

28 colleges per lakh population (age group of 18-23 years) are observed. States like Telangana, Puducherry, Karnataka and Himachal Pradesh have higher number of colleges per lakh population (age group of 18-23 years).

Table 3.10: Number of College per Lakh Population (18-23 Years), Average Enrolment per College

States/UTs	No. of College	College per lakh population	Average Enrolment per College
A & N Islands	7	15	888
Andhra Pradesh	2532	45	494
Arunachal Pradesh	28	17	1356
Assam	539	15	942
Bihar	744	7	2142
Chandigarh	25	14	1871
Chhatisgarh	706	23	527
Dadra & Nagar Haveli	8	13	747
Daman & Diu	8	15	382
Delhi	191	9	1527
Goa	55	32	560
Gujarat	2019	28	585
Haryana	1113	35	646
Himachal Pradesh	348	47	520
Jammu and Kashmir	329	25	644
Jharkhand	328	9	1716
Karnataka	3555	50	438
Kerala	1302	43	521
Madhya Pradesh	2260	26	589
Maharashtra	4569	34	628
Manipur	87	30	1070
Meghalaya	63	18	1087
Mizoram	29	22	653
Nagaland	65	26	416
Odisha	1076	23	661
Puducherry	84	55	542
Punjab	1050	32	633
Rajasthan	3050	35	551
Sikkim	16	20	580
Tamil Nadu	2368	32	895
Telangana	2454	60	574
Tripura	51	12	1097
Uttar Pradesh	6491	26	920
Uttrakhand	439	36	684
West Bengal	1082	10	1427
All India	39071	28	721

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

On the other side Bihar, Delhi, Jharkhand, West Bengal and Tripura have lower number in this regards. With respect to enrolment per college is concerned Bihar, Chandigarh, Jharkhand, Delhi and West Bengal have higher enrolment per college. On the other hand, Daman & Diu, Nagaland, Karnataka, Andhra Pradesh and Himachal Pradesh have lower enrolments per college.

In table 3.12 gross enrolment ratio in higher education has been presented. In this indicator, Chandigarh, Delhi, Tamil Nadu, Puducherry and Sikkim are found in the first position while,

Daman & Diu, Lakshadweep, Dadra & Nagar Haveli and Bihar are found in the bottom position.

Table 3.11: Gross Enrolment Ratio in Higher Education (18-23 Years)

State	MALE	FEMALE	TOTAL
Andaman & Nicobar Islands	22.3	24.7	23.5
Andhra Pradesh	34.7	26.9	30.8
Arunachal Pradesh	28.8	28.5	28.7
Assam	16.2	14.7	15.4
Bihar	15.8	12.6	14.3
Chandigarh	48.4	70.4	57.6
Chhatisgarh	15.7	14.6	15.1
Dadra & Nagar Haveli	7.8	11.3	9.1
Daman & Diu	4.6	9.2	5.7
Delhi	43.0	48.2	45.4
Goa	25.0	30.9	27.6
Gujarat	22.9	18.3	20.7
Haryana	25.9	26.4	26.1
Himachal Pradesh	29.6	35.5	32.5
Jammu and Kashmir	23.5	26.2	24.8
Jharkhand	16.2	14.8	15.5
Karnataka	26.3	25.9	26.1
Kerala	26.6	35.0	30.8
Lakshadweep	4.1	10.2	7.1
Madhya Pradesh	21.1	17.9	19.6
Maharashtra	31.9	27.6	29.9
Manipur	35.3	33.1	34.2
Meghalaya	20.4	21.1	20.8
Mizoram	25.2	23.0	24.1
Nagaland	14.2	15.6	14.9
Odisha	21.5	17.8	19.6
Puducherry	44.2	42.1	43.2
Punjab	25.8	28.5	27.0
Rajasthan	21.8	18.5	20.2
Sikkim	36.7	38.5	37.6
Tamil Nadu	46.3	42.4	44.3
Telangana	39.3	33.4	36.3
Tripura	19.9	14.0	16.9
Uttar Pradesh	24.2	24.9	24.5
Uttrakhand	33.6	32.9	33.3
West Bengal	19.1	16.2	17.7
All India	25.4	23.5	24.5

Source:

3.4 Education Development Index:

Status and infrastructure facilities of education cannot be measured through a single indicator; therefore, many time researchers construct indices to see the performance in it. There are a number of studies on construction of educational indices in India, which as discussed in the review section of first chapter. Present study has used the Education Development Index[3] (EDI) and its sub indices namely Access index, Infrastructure index, Teacher index, Outcome index, which were developed by the National University of

[3]The EDI comprises of four parameters: access, infrastructure, teachers and outcomes.

Education Planning and Administration (NEUPA). Methodology has been presented in the following paragraphs.

Methodology of Education Development Index:

After getting the data from DISE, NEUPA has cleans it. After cleaning each indicator are normalized by using the following formula:

$$1 - \left\{ \frac{Best\ Value - Observed\ Value}{Best\ Value - Worst\ Value} \right\}$$

Then for normalized values, Principal Component Analysis (PCA) is applied to decide the factor loading and weights. In case of a few variables, policy options are explored to identify the best values instead of based on the observed values (best value, zero), percentage of teachers without professional qualification (best value, zero) etc (http://schoolreportcards.in/Media/m188.html).

Table 3.12: List of Indicators of EDI and its Components

Component	Indicator
Access	Density of Schools per 10 Sq. Km
	Availability of schools per 1000 child population
	Ratio of primary to Upper Primary Schools/Sections
Infrastructure	Percentage of Schools with Student-Classroom Ratio: Primary >30 and Upper-Primary > 35
	Percentage of Schools with 1:1 Classroom-Teacher Ratio
	Percentage of Schools with Drinking Water facility
	Percentage of Schools with Boys Toilet
	Percentage of Schools without Girls Toilets
	Percentage of Schools Required and have Ramp
	Percentage of Schools with Kitchen-Shed (Government & Aided Schools)
Teacher	Percentage of schools with female teachers (in schools with 2 and more teachers)
	Percentage of Schools with Pupil-Teacher Ratio: Primary >30 & Upper Primary > 35
	Percentage of Single-Teacher Schools
	Teachers without Professional Qualification
Outcome	Average number of instructional days -Upper Primary
	Average number of Instructional days
	Average working hours for teachers
	Percentage of change in enrollment in Gov schools over the previous year
	Gross Enrollment Ratio
	Participation of SC children: Percentage of SC Population: Percentage of SC Enrollment
	Participation of ST children: Percentage of ST Population: Percentage of ST Enrollment
	Participation of Muslim children: Percentage of Muslim Population: Percentage of Muslim Enrollment
	Ratio of Girls Enrollment to Boys Enrollment
	Drop-out rate
	Transition Rate for primary to upper primary level

Source: http://schoolreportcards.in/Media/m188.html

Results of using the above mentioned methodology have been presented in the table 3.11 for the year 2013-14. It is found that Puducherry, Lakshadweep, Sikkim, Himachal Pradesh, Karnataka and Delhi were found in the top position in the education development index of 'primary', 'upper primary' and 'composite primary and upper primary levels'; whereas, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Madhya Pradesh and Assam were found in the bottom position out of 35 states in the country. Inter-state disparities have also been studies with the coefficient of variation (CV %), which has been presented in the last row of the table. It is found that between primary and upper primary level inter-state disparity is lower in primary (CV 13.62%) than the upper primary (CV 13.91%).

Table 3.13: State-wise Ranking on Composite Educational Development Index (Primary and Upper Primary) in India, 2013-14

State/UT	Primary Level		Upper Primary Level		Composite Primary & Upper Primary Level	
	Index	Rank	Index	Rank	Index	Rank
A & N Islands	0.659	12	0.678	12	0.668	12
Andhra Pradesh	0.564	23	0.643	19	0.603	19
Arunachal Pradesh	0.460	34	0.637	20	0.548	28
Assam	0.490	32	0.557	30	0.524	30
Bihar	0.444	35	0.538	31	0.491	34
Chandigarh	0.621	14	0.739	4	0.680	11
Chhattisgarh	0.575	21	0.567	29	0.571	26
D & N Haveli	0.565	22	0.647	18	0.606	18
Daman & Diu	0.608	16	0.675	14	0.642	15
Delhi	0.673	10	0.737	5	0.705	6
Goa	0.586	19	0.616	22	0.601	20
Gujarat	0.678	8	0.714	6	0.696	8
Haryana	0.616	15	0.676	13	0.646	14
Himachal Pradesh	0.719	3	0.709	10	0.714	4
Jammu & Kashmir	0.531	28	0.608	27	0.570	27
Jharkhand	0.502	31	0.507	32	0.505	33
Karnataka	0.705	5	0.714	7	0.710	5
Kerala	0.680	7	0.712	9	0.696	9
Lakshadweep	0.726	2	0.756	2	0.741	2
Madhya Pradesh	0.559	24	0.479	34	0.519	31
Maharashtra	0.634	13	0.666	16	0.650	13
Manipur	0.592	17	0.665	17	0.628	17
Meghalaya	0.468	33	0.615	25	0.541	29
Mizoram	0.527	29	0.667	15	0.597	22
Nagaland	0.558	25	0.615	24	0.586	24
Odisha	0.583	20	0.614	26	0.599	21
Puducherry	0.743	1	0.782	1	0.762	1
Punjab	0.674	9	0.712	8	0.693	10
Rajasthan	0.587	18	0.597	28	0.592	23
Sikkim	0.701	6	0.742	3	0.722	3
Tamil Nadu	0.712	4	0.690	11	0.701	7
Tripura	0.524	30	0.630	21	0.577	25
Uttar Pradesh	0.554	26	0.370	35	0.462	35
Uttarakhand	0.664	11	0.615	23	0.639	16
West Bengal	0.550	27	0.480	33	0.515	32

Source: NEUPA, EDI Report

Mere ranking of states will not give the meaningful picture of the performance of different states. Hence, these states have been grouped into four categories based on their index values.

On the basis of the index value, the states are categorised into four groups i.e. Group I – Best, Group II – Good, Group III – Below Average and Group IV – Worst. For this purpose all the states are first divided into two groups on the basis of state average index values, - one above the all-India average and the other below the all-India average. Then two more averages are worked out, one for the group of states whose values are above the all-India average and another for the group of states whose values are below the all-India average. The states whose values are above and below the former average are classified as Group I – Best and Group II – Good states respectively. The states whose values are above and below the latter average are classified as Group III – Below Average and Group IV – Worst states respectively. Information related to this has been presented in table 3.12.

- Eight out of 35 states/union territories namely Puducherry, Lakshadweep, Himachal Pradesh, Tamil Nadu, Karnataka, Sikkim, Kerala, Gujarat, were found in the best category in EDI of primary level with the group average of EDI value 0.710
- Similarly, same number of (eight) states viz., Jammu & Kashmir, Mizoram, Tripura, Jharkhand, Assam, Meghalaya, Arunachal Pradesh and Bihar were observed in the worst group in EDI of upper primary level with group average of EDI value of only 0.490
- With respect of upper primary level also more or less same status can be observed.
- Inter-state imbalances is increasing from the group of best performing states to worst performing states in primary level EDI
- On the other hand in upper primary level no trend is observed in different groups of states in EDI value.

Table 3.14: Grouping of States and union territories in Educational Development Index of Primary and Upper Primary levels in India (2013-14)

	Best	Good	Below Average	Worst
EDI of Primary Level	Puducherry, Lakshadweep, Himachal Pradesh, Tamil Nadu, Karnataka, Sikkim, Kerala, Gujarat, **(Group Average 0.71) CV-3.13%**	Punjab, Delhi, Uttarakhand, A & N Islands, Maharashtra, Chandigarh, Haryana, Daman & Diu, **(Group Average 0.64) CV-4.18%**	Manipur, Rajasthan, Goa, Odisha, Chhattisgarh, D & N Haveli, Andhra Pradesh, Madhya Pradesh, Nagaland, Uttar Pradesh, West Bengal, **(Group Average 0.57) CV-2.6%**	Jammu & Kashmir, Mizoram, Tripura, Jharkhand, Assam, Meghalaya, Arunachal Pradesh, Bihar, **(Group Average 0.49) CV-6.75%**
EDI of Upper Primary Level	Puducherry, Lakshadweep, Sikkim, Chandigarh, Delhi, Karnataka, Gujarat, **(Group Average 0.74) CV-3.21%**	Kerala, Punjab, Himachal Pradesh, Tamil Nadu, A & N Islands, Haryana, Daman & Diu, Mizoram, **(Group Average) 0.69CV-2.7%**	Maharashtra, Manipur, D & N Haveli, Andhra Pradesh, Arunachal Pradesh, Tripura, Goa, Uttarakhand, Nagaland, Meghalaya, Odisha, Jammu & Kashmir, Rajasthan, **(Group Average 0.63) CV-3.47%**	Chhattisgarh, Assam, Bihar, Jharkhand, West Bengal, **(Group Average 0.5) CV-13.42%**

Further, another exercise has also been done to see the association among and between different indices. It is found that,

- In upper primary level all the indices namely Access Index, Infrastructure Index, Teachers Index and Outcome Index are positively associated and statistically significant to each other, which can be seen through the correlation coefficient in table 3.14 and figure 3.10 to 3.12. The highest statistical significance is found between output and teacher indices. It means teachers play an important role for the educational development.
- With respect to primary level, except 'teacher-infrastructure' and 'teacher-output' none of the indices are correlated significantly (Figure 3.16 to 3.21).

Table 3.15: Correlation coefficients among and between different indices of Primary Level

	Access Index	Infrastructure Index	Teachers Index	Outcome Index	EDI
Access Index	1				
Infrastructure Index	-.167	1			
Teachers Index	-.031	.742**	1		
Outcome Index	.141	.307	.674**	1	
EDI	.008	.878**	.954**	.667**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Source: calculated from appendix Tables from 3.8 to 3.11

Table 3.16: Correlation coefficients among and between different indices of Upper Primary Level

	Access Index	Infrastructure Index	Teachers Index	Outcome Index	EDI
Access Index	1				
Infrastructure Index	.585**	1			
Teachers Index	.470*	.542*	1		
Outcome Index	.447*	.493*	.525*	1	
EDI	.723**	.846**	.831**	.764**	1

Source: calculated from appendix Tables from 3.8 to 3.11

Figure 3.16: Output index is positively associated with Access index at primary level, but not statistically significant

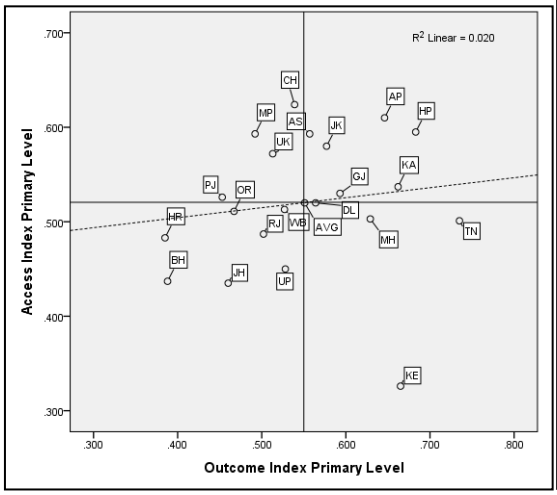


Figure 3.17: Output index is positively associated with Infrastructure index at primary level with statistically significant

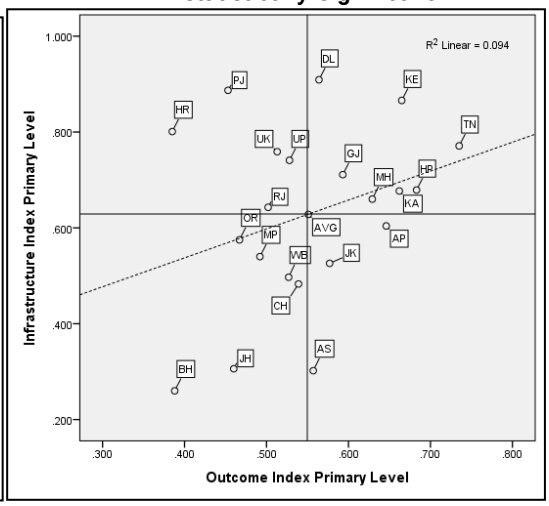


Figure 3.18: Output index is positively associated with Teacher index at primary level with statistically significant strongly

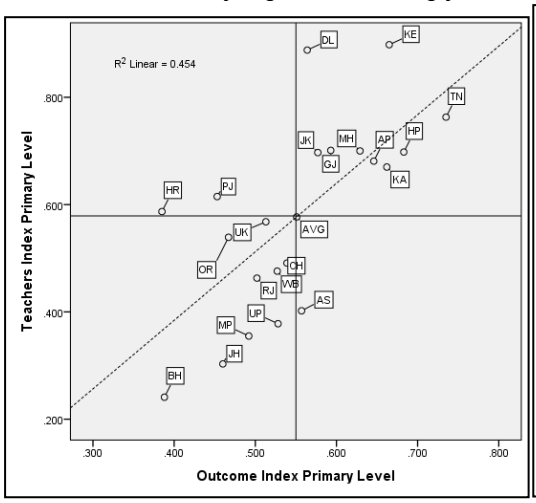


Figure 3.19: Output index is positively associated with Access index at primary level with statistically significant

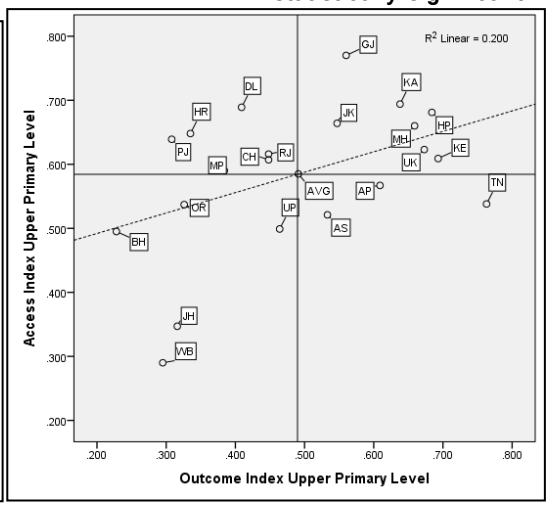


Figure 3.20: Output index is positively associated with Infrastructure index at upper primary level with statistically significant strongly

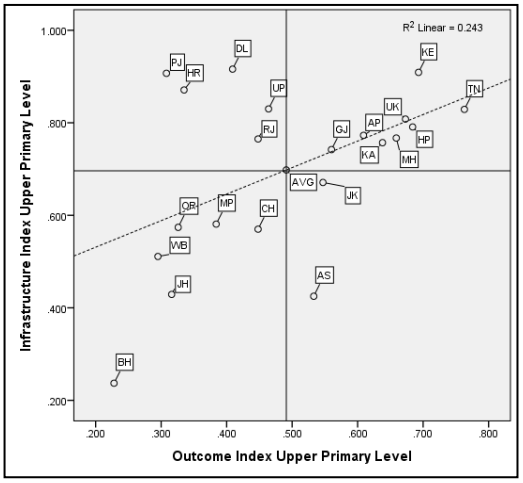
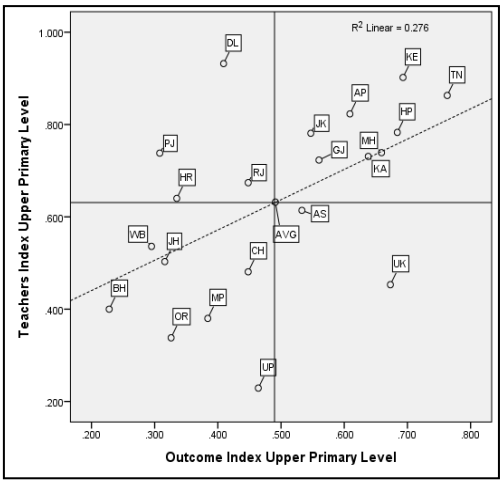


Figure 3.21: Output index is positively associated with Teacher index at upper primary level with statistically significant



3.5 Association of Education with socio-economic Indicators:

In this section an attempt has been made to analyze the education with some of the selected socio-economic indicators. Initially we have linked the literacy rate with socio-economic indicators. Further, it is thought that in the recent years more or less most of the Indian states have higher literacy rate. Hence enrolment ratio in higher education has also been considered to see the association with some socio-economic indicators. Associations are also made with some indices like female empower index, child development index, social progress index. Source and methodological information about these indices are discussed in the fifth chapter of this report.

Figure 3.22: Scatter diagram of Literacy rate and per capita income of Indian states

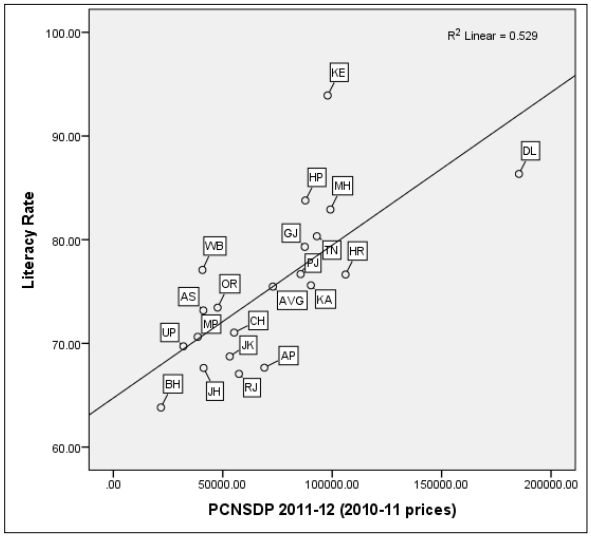
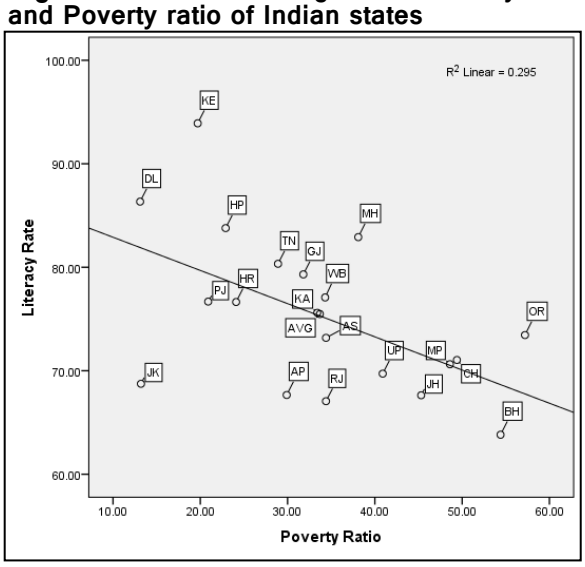
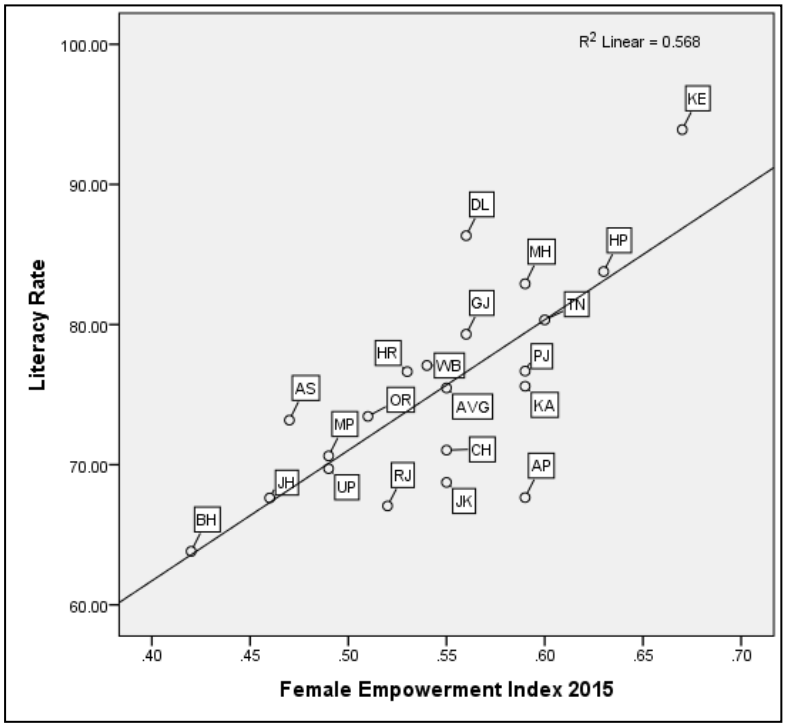


Figure 3.23: Scatter diagram of Literacy rate and Poverty ratio of Indian states



Theoretically, education has positive association with per capita income and negative association with poverty ratio. This theory has been tested in figures 3.22 and 3.23 for per capita income and poverty ratios respectively. Literacy level and per capita income of Indian states have strong positive association. Correlation coefficient between them is 0.771 (99 per cent significance). Similarly, poverty ratio and literacy rates have negative association with correlation coefficient of -0.543 (95 per cent level significance). Thus, with the empirical data of Indian states, this test strengthens the argument of human capita theory. It means higher the level of education higher will be the per capita income and lower will be the poverty ratio.

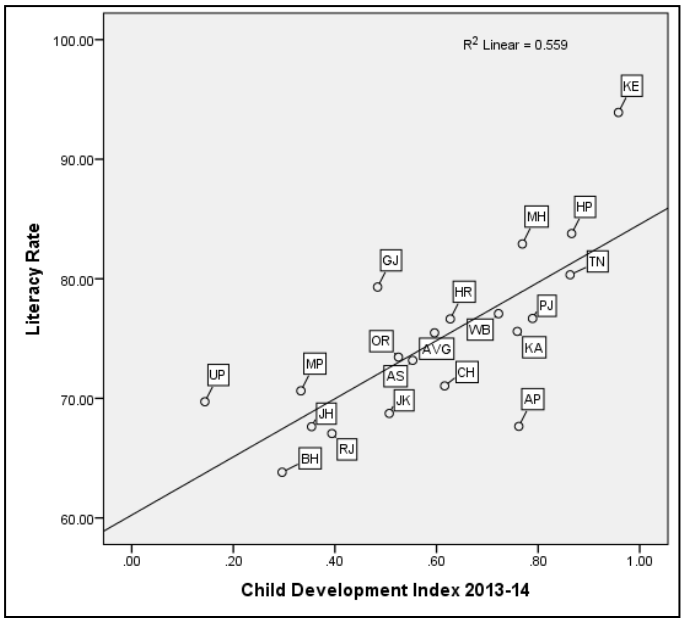
Figure 3.24: Scatter diagram of Literacy rate and Female Empowerment Index



In figure 3.24 literacy rate and female empowerment index have put into a scatter diagram to see the association between them. It is found from the figure that there is a strong positive association exists between literacy rate and female empowerment index.

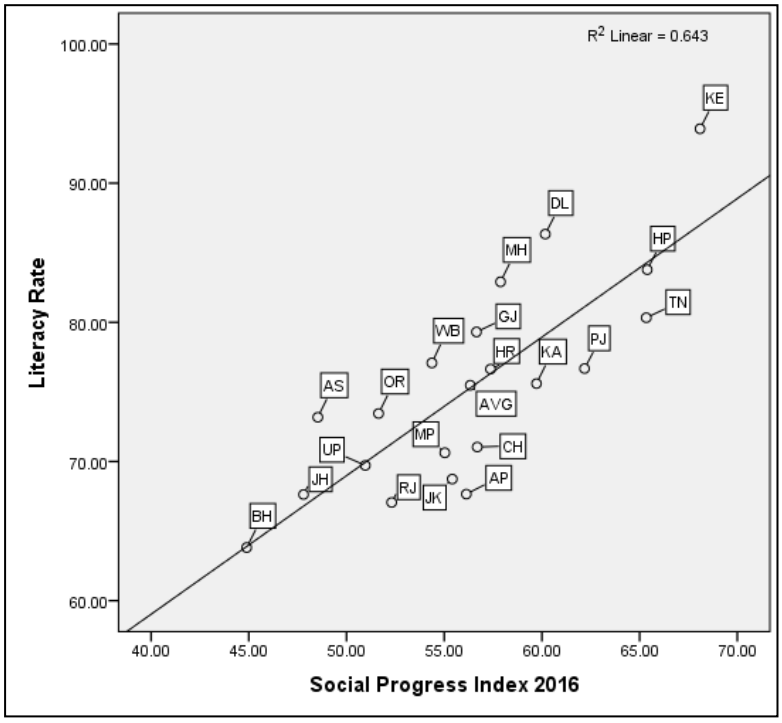
It means, literacy rate has the positive impact on gender empowerment, it lowers amount of gender discrimination.

Figure 3.25: Scatter diagram of Literacy rate and Child Development Index



If the people have good education then they can take care of their children more effectively. To see the association of literacy rate and child development index a scatter diagram has been prepared and presented in figure 3.25. It is found from the figure that child development index and literacy rates have positive associations. It means, higher the literacy rate higher will be the value of child development index.

Figure 3.26: Scatter diagram of Literacy rate and Social Progress Index

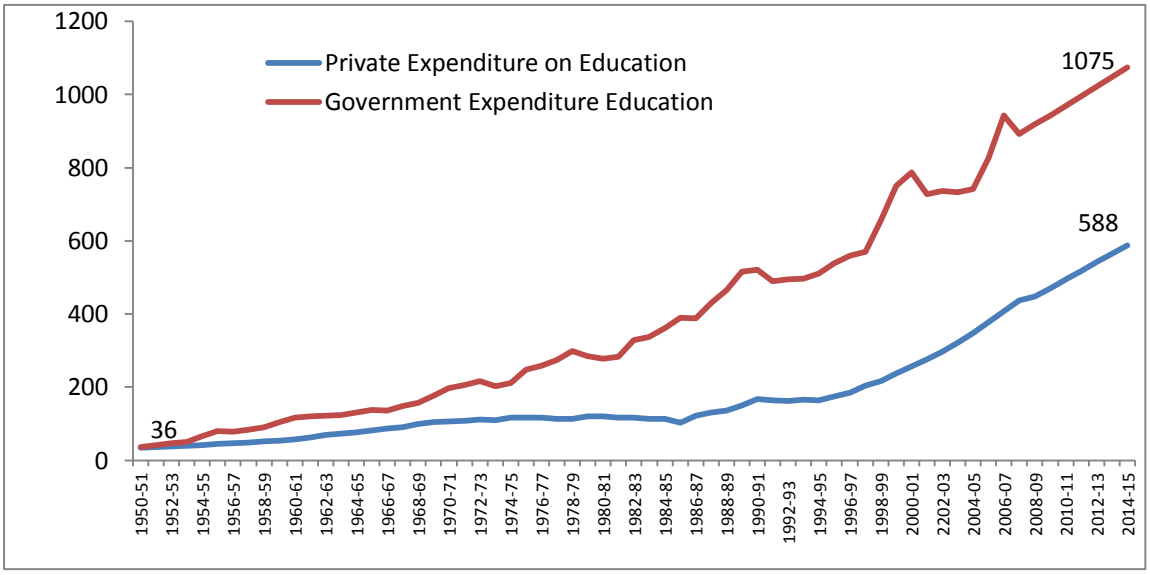


In figure 3.26 literacy rate and social progress index have put into a scatter diagram to see the association between them. It is found from the figure that there is a strong positive association exists between literacy rate and social progress index. It means literacy has the positive impact on overall social development (more details about social progress index have been presented in chapter 5). In appendix figures 3.1-3.6, association of education (literacy rate and enrolment ratio in higher education) with public affairs index, health outcome index, rural population, SC and ST population and so on have been seen through scatter diagrams.

Public and Private Expenditures on Education:

Investment by public and private sector is necessary for the growth of educational indicators. Hence, an attempt has been made to see the growth of public and private health expenditure in India from 1950-51 to 2014-15. Information related to this have been presented in figure 3.27 and appendix table 1000. During 1950-51 public and private expenditures on education were 36 and 35 respectively. These have increased considerably to Rs. 1075 and Rs. 588 at constant prices of 1999-00. It should be noted that in 1950-51, between public and private expenditure on education, there is no much difference but in the year 2014-15, public expenditure on education is more than 2 fold than private expenditure. Growth rate (CAGR) of private expenditure is 4.0 % per annum, which public is 4.9 % per annum.

Figure 3.27: Public and Private Expenditures on Education in India, from 1950-51 to 2014-15



Source: Tilak (2009) and Based on CSO [www.mospi.nic.in], and MHRD

3.6 International Comparison:

In this section, a quick look of comparison of educational indicators of India with the selected nations has been made. Information related to selected country wise education indicators for the year 2015 has been made in table 3.15. It is found from the table that

except in 'gross enrolment ratio, primary (% of primary school-age population)', in all the indicators performance of our country is lagging behind.

Table 3.17: Selected Country wise Education Indicators, 2015

Indicators	India	China	Norway	USA	UK	Germany
Expected years of schooling (years)	11.7	13.5	17.7	16.5	16.3	17.1
Adult literacy rate (% ages 15 and older)	72.1	96.4	n.a.	n.a.	n.a.	n.a.
Government expenditure on education (% of GDP)	3.8	n.a.	7.4	5.2	5.7	4.9
Gross enrolment ratio: pre-primary (% of preschool-age children)	10	82	98	71	88	111
Gross enrolment ratio, primary (% of primary school-age population)	111	104	100	100	108	103
Gross enrolment ratio, secondary (% of secondary school-age population)	69	94	113	98	128	102
Gross enrolment ratio, tertiary (% of tertiary school-age population)	24	39	77	87	56	65
Mean years of schooling (years)	6.3	7.6	12.7	13.2	13.3	13.2
Population with at least some secondary education (% aged 25 and older)	48.7	75	95.3	95.3	82.9	96.7
Pupil-teacher ratio, primary school (number of pupils per teacher)	32	16	9	15	17	12

Source: Human Development Report, 2016

Mean years of schooling (years) in India is only 6.3 years, while Norway, USA, UK and Germany it is more than 12 years (more than two fold high). But it is not be noted that with respect to expected years of schooling, the gap is lower with other countries. Government expenditure on education in India is only 3.8, which is the lowest among the selected countries, whereas, Norway spends 7.4 per cent of GDP on education (for more details see table 3.15).

In this section, education indicators have been linked with other indicators such as HDI, urban population, per capita income and gender inequality index taking into consideration of 188 courtiers of the world. It is found that share of urban population and per capita income have strong positive association with mean years of schooling. It shows that higher the level of schooling higher will be the income; and urban population has higher level of schooling world over. Gender inequality index has strong negative association with mean years of schooling. It means higher the level of education lower will be the gender discrimination. Education leads for higher gender empowerment. HDI and unemployment have positive and negative association respectively with mean year of schooling but unemployment has very weak statistical significance (Figures from 3.28 to 3.32).

Figure 3.28: Scatter diagram of HDI and Government Expenditure on Education (% to GDP)

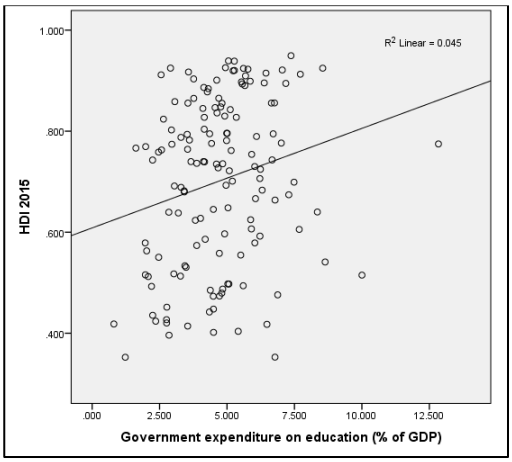


Figure 3.29: Scatter diagram of Mean years of schooling and Unemployment

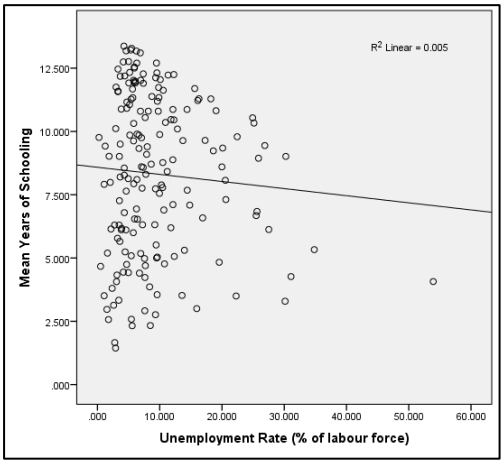


Figure 3.30: Scatter diagram of Mean years of schooling and Per capita GNI

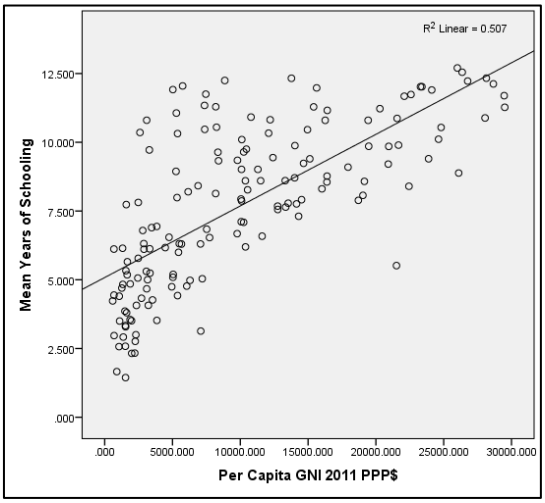


Figure 3.31: Scatter diagram of Mean years of schooling and Urban Population

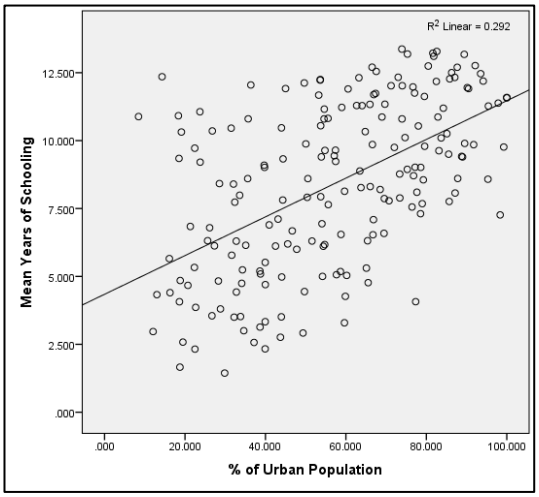
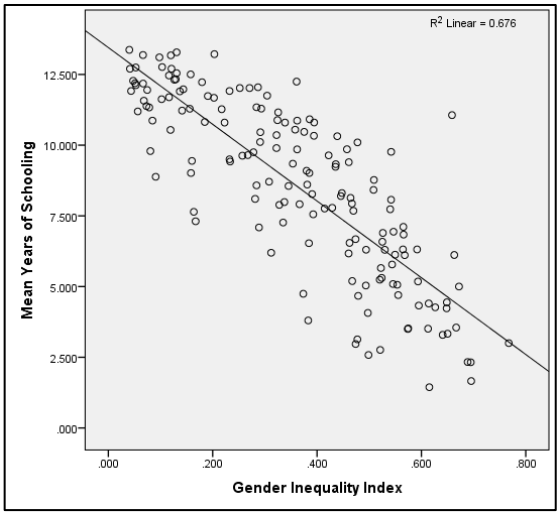


Figure 3.32 Scatter diagram of Mean years of schooling and Per capita GNI



Source: Computed from Appendix Table 4.13

3.7 Conclusions:

Indian has made considerable progress in education section since independence. Most of the educational indicators like literacy rate, enrolment, have improved notable in all the states. On the other hand infrastructure facilities like, number of schools, colleges, universities, teacher have also increased significantly. The gap between rural-urban and male-female has decreased in all the states. With respect of inter-state disparity, most of the education status indicators have registered decline in regional imbalances over the period of time. Between status and infrastructure facilities, regional imbalance is high in infrastructure facilities. Bihar, Odisha, West Bengal, Madhya Pradesh and Uttar Pradesh are in the bottom position with respect of input and out-come indicators, special attention should be given to these states.

Observing at the association among and between different indices it is found that with respect to primary level, except 'teacher index-infrastructure index' and 'teacher index-output index' none of the indices are correlated significantly, but they have expected signs. In upper primary level, all the indices namely Access Index, Infrastructure Index, Teachers Index and Outcome Index are positively associated and statistically significant to each other. The highest statistical significance is found between output and teacher indices. It means teachers play an important role for the educational development in upper primary level. Totally, for primary level infrastructure has major role and in upper primary level teacher has major role in higher outcome educational outcome.

It is found-**Higher the level of education, higher will be the per capita income and lower will be the poverty ratio.** This finding strengthens the argument of Human Capital Theory. Further, literacy has positive impact on women empowerment (FEI), child development (CDI) and overall social progress (SPI). Totally, education will build a healthy society.

Indian states should be compared with the developed countries of the world instead of inter-state comparison. Our education status is far lower than many developing countries. So target based regional planning should be prepared starting from villages. Skill oriented education should be encouraged, through that education will be fruitful in generating employment and income.

Appendix Table 3.1: Literacy Rate in rural-urban of Male and Female

Year	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1951	4.87	19.02	12.1	22.33	45.6	34.59	8.86	27.15	18.32
1961	10.1	34.3	22.5	40.5	66	54.4	15.35	40.4	28.31
1971	15.5	48.6	27.9	48.8	69.8	60.2	21.97	45.96	34.45
1981	21.7	49.6	36	56.3	76.7	67.2	29.76	56.38	43.57
1991	30.17	56.96	36	64.05	81.09	67.2	39.29	64.13	52.21
2001	46.7	71.4	59.4	73.2	86.7	80.3	53.67	75.26	64.83
2011	58.75	78.57	67.8	79.92	89.67	84.1	65.46	82.14	74.04

Source: Census of India, Various Issues

Appendix Table 3.2: Gender wise Level-wise Enrolment (In lakh)

Year	Primary (I-V)	Upper Primary (VI-VIII)	Secondary (IX-X)	Senior Secondary (XI-XII)	Higher Education
Boys	676	345	201	124	185
	(52)	(51)	(52)	(53)	(54)
Girls	629	327	182	111	157
	(48)	(49)	(48)	(47)	(46)
Total	1305	672	383	235	342
	(100)	(100)	(100)	(100)	(100)

Note: Figures in the parenthesis are per cent to total

Source: Various Issues of Educational Statistics at a Glance, GoI

Appendix Table 3.3: Level-wise Enrolment in School Education 2014-15, (in thousand)

Level	All Categories			SC			ST		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Primary (I-V)	67609	62892	130501	13427	12585	26012	7309	6824	14133
Upper Primary (VI-VIII)	34501	32664	67165	6731	6399	13130	3371	3181	6552
Elementary (I-VIII)	102110	95556	197666	20158	18984	39142	10680	10005	20685
Secondary (IX-X)	20121	18180	38301	3747	3403	7150	1678	1574	3252
I-X	122231	113736	235967	23905	22387	46292	12358	11579	23937
Senior Secondary (XI-XII)	12440	11061	23501	2170	1964	4134	802	715	1517
I-XII	134671	124797	259468	26075	24351	50426	13160	12294	25454

Source: Various Issues of Educational Statistics at a Glance, GoI

Appendix Table 3.4: Level-wise Enrolment in Higher Education 2014-15, (in thousand)

Level	Male	Female	Total
Ph.D.	70	48	118
M.Phil.	14	19	33
Post Graduate	1867	1986	3853
Under Graduate	14467	12705	27172
PG Diploma	121	94	215
Diploma	1788	720	2508
Certificate	74	96	170
Integrated	87	55	142
Higher Education Total	18488	15723	34211

Source: Various Issues of Educational Statistics at a Glance, GoI

Table 3.5: Number of School Education Institutions, 2011

States/ Union Territories	Number of Senior Secondary/ Secondary Education Board	Intermediate/ Senior Secondary Schools	High/ Secondary Schools	Upper Primary Schools	Primary Schools	Total	Population	Area (Sq. Km.)
A&N Islands		56	45	76	217	394	379944	8249
Andhra Pradesh	3	5873	19053	15759	66721	107406	84673556	277808
Arunachal Pradesh		118	220	945	2098	3381	1382611	83743
Assam	3	4655	805	14133	31202	50795	31169272	78438
Bihar	3	2492	2608	27620	42112	74832	103804637	94163
Chandigarh		81	63	29	14	187	1055450	114
Chhattisgarh	4	2947	2806	15883	35352	56988	25540196	135191
D&N Haveli		14	19	99	202	334	342853	491
Daman & Diu		18	18	52	60	148	242911	112
Delhi	3	1427	461	598	2581	5067	16753235	1484
Goa	1	86	380	461	1230	2157	1457723	3702
Gujarat	1	5689	3523	42145	0	51357	60383628	196024
Haryana	1	3436	3542	3483	13987	24448	25353081	44212
Himachal Pradesh	1	1785	1517	2993	11214	17509	6864602	55673
Jammu & Kashmir	1	889	2216	8877	15446	27428	12548926	222236
Jharkhand	1	1118	4225	14863	26731	46937	32966238	79714
Karnataka	2	3644	13850	33582	25949	77025	61130704	191791
Kerala	2	2704	1600	3002	6786	14092	33387677	38863
Lakshadweep		10	2	8	23	43	64429	32
Madhya Pradesh	2	5832	7101	96797	43662	153392	72597565	308245
Maharashtra	1	7328	14710	28969	49915	100922	112372972	307713
Manipur	2	118	757	733	2420	4028	2721756	22327
Meghalaya	1	163	845	3235	9081	13324	2964007	22429
Mizoram	1	113	543	1383	1855	3894	1091014	21081
Nagaland	1	132	461	465	1662	2720	1980602	16579
Odisha	2	1307	7974	22649	54150	86080	41947358	155707
Puducherry		121	195	95	303	714	1244464	479
Punjab	1	3810	4844	5766	15738	30158	27704236	50362
Rajasthan	3	8530	15691	40322	49642	114185	68621012	342239
Sikkim		61	137	327	692	1217	607688	7096
Tamil Nadu	1	3660	3112	8501	29060	44333	72138958	130058
Tripura	1	350	533	1274	2298	4455	3671032	10486
Uttar Pradesh	1	10739	8691	76398	155619	251447	199281477	240928
Uttarakhand	1	1742	1320	4611	15440	23113	10116752	53483
West Bengal	4	4341	4454	2623	49908	61326	91347736	88752
INDIA	48	85389	128321	478756	763370	1455836	1210193422	3287240

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Appendix Table 3.6: PUPIL TEACHER RATIO (PTR)

Sl. No.	States/ Union Territories	Intermediate/Senior Secondary Schools	High/ Secondary Schools	Upper Primary Schools	Primary Schools
1	Andhra Pradesh	28	26	22	30
2	Arunachal Pradesh	28	23	23	25
3	Assam	14	20	17	28
4	Bihar	45	71	47	82
5	Chhattisgarh	22	43	24	28
6	Goa	21	20	30	25
7	Gujarat	33	45	36	39
8	Haryana	29	26	38	51
9	Himachal Pradesh	22	19	11	15
10	Jammu & Kashmir	14	14	15	22
11	Jharkhand				
12	Karnataka	37	22	27	17
13	Kerala	26	24	25	22
14	Madhya Pradesh	23	39	39	38
15	Maharashtra	40	32	31	29
16	Manipur	22	19	29	25
17	Meghalaya	15	8	12	32
18	Mizoram	15	9	9	14
19	Nagaland	31	27	15	20
20	Odisha	17	25	26	32
21	Punjab	37	34	28	33
22	Rajasthan	28	22	25	48
23	Sikkim	17	15	10	7
24	Tamil Nadu	42	35	26	26
25	Tripura	26	20	15	15
26	Uttar Pradesh	45	69	43	73
27	Uttarakhand	21	16	28	23
28	West Bengal	53	113	255	30
29	A&N Islands	19	14	13	14
30	Chandigarh	38		30	31
31	D&N Haveli	36	26	36	42
32	Daman & Diu	41	21	34	33
33	Delhi	33	35	30	42
34	Lakshadweep	4	146	27	24
35	Puducherry	100	100	14	26
	INDIA	33	32	34	41

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Appendix Table 3.7: Pupil Teacher Ratio in Higher Education

States/UTs	All Institutions		University & Colleges		University & its Constituent Units	
	Regular & Distance Mode	Regular Mode	Regular & Distance Mode	Regular Mode	Regular & Distance Mode	Regular Mode
Andaman & Nicobar Islands	34	20	34	20	481	13
Andhra Pradesh	16	13	16	13	65	15
Arunachal Pradesh	43	31	46	33	38	13
Assam	25	22	26	22	35	11
Bihar	54	50	55	52	37	15
Chandigarh	31	22	32	22	36	16
Chhatisgarh	23	20	23	20	53	18
Dadra & Nagar Haveli	27	27	27	27	18	17
Daman & Diu	16	16	17	17	-	-
Delhi	51	19	54	19	121	16
Goa	18	15	19	15	61	14
Gujarat	27	25	28	26	32	23
Haryana	18	17	19	18	18	14
Himachal Pradesh	22	19	24	20	24	13
Jammu and Kashmir	31	21	33	23	61	12
Jharkhand	52	48	54	50	51	24
Karnataka	14	13	14	13	15	11
Kerala	16	13	16	13	53	13
Lakshdweep	13	13	13	13	13	13
Madhya Pradesh	24	21	24	21	45	28
Maharashtra	24	20	26	22	47	13
Manipur	21	19	21	19	37	15
Meghalaya	24	21	25	22	25	13
Mizoram	19	15	19	15	33	13
Nagaland	17	14	18	15	26	8
Odisha	21	20	23	22	24	16
Puducherry	10	9	10	9	11	7
Punjab	16	15	17	16	22	17
Rajasthan	26	24	27	26	36	26
Sikkim	21	12	22	13	22	9
Tamil Nadu	15	13	16	13	29	11
Telangana	16	14	16	14	67	15
Tripura	30	26	31	26	58	25
Uttar Pradesh	34	34	36	35	22	17
Uttrakhand	22	20	23	22	24	18
West Bengal	36	32	38	34	38	13
All India	23	20	24	21	37	16

Source: Calculated from the data available from various issues of Statistics of School Education, GoI

Appendix Table 3.8: Education Infrastructure Index of Primary and secondary levels

States	Primary Level	Rank	Upper Primary Level	Rank
Andhra Pradesh	0.604	13	0.773	9
Assam	0.302	20	0.425	20
Bihar	0.260	21	0.237	21
Chhattisgarh	0.483	18	0.570	17
Delhi	0.909	1	0.916	1
Gujarat	0.711	8	0.742	13
Haryana	0.801	4	0.871	4
Himachal Pradesh	0.679	9	0.791	8
Jammu & Kashmir	0.526	16	0.671	14
Jharkhand	0.306	19	0.429	19
Karnataka	0.677	10	0.757	12
Kerala	0.866	3	0.909	2
Madhya Pradesh	0.540	15	0.581	15
Maharashtra	0.660	11	0.767	10
Orissa	0.575	14	0.574	16
Punjab	0.887	2	0.907	3
Rajasthan	0.643	12	0.765	11
Tamil Nadu	0.771	5	0.829	6
Uttar Pradesh	0.741	7	0.830	5
Uttarakhand	0.759	6	0.808	7
West Bengal	0.497	17	0.511	18

Source: NEUPA, EDI Report

Appendix Table 3.9: Teacher Index of Primary and secondary levels

States	Primary Level	Rank	Upper Primary Level	Rank
Andhra Pradesh	0.681	8	0.823	4
Assam	0.402	17	0.614	13
Bihar	0.241	21	0.400	18
Chhattisgarh	0.491	14	0.481	16
Delhi	0.888	2	0.932	1
Gujarat	0.701	4	0.723	10
Haryana	0.587	11	0.640	12
Himachal Pradesh	0.698	6	0.783	5
Jammu & Kashmir	0.697	7	0.781	6
Jharkhand	0.303	20	0.503	15
Karnataka	0.670	9	0.731	9
Kerala	0.898	1	0.902	2
Madhya Pradesh	0.355	19	0.380	19
Maharashtra	0.700	5	0.739	7
Orissa	0.539	13	0.338	20
Punjab	0.615	10	0.738	8
Rajasthan	0.463	16	0.674	11
Tamil Nadu	0.763	3	0.863	3
Uttar Pradesh	0.378	18	0.229	21
Uttarakhand	0.568	12	0.453	17
West Bengal	0.476	15	0.536	14

Source: NEUPA, EDI Report

Appendix Table 3.10: Outcome Index of Primary and Upper Primary Level

States	Primary Level	Rank	Upper Primary Level	Rank
Andhra Pradesh	0.646	5	0.609	7
Assam	0.557	10	0.533	10
Bihar	0.388	20	0.228	21
Chhattisgarh	0.539	11	0.448	12
Delhi	0.564	9	0.409	14
Gujarat	0.593	7	0.560	8
Haryana	0.385	21	0.335	16
Himachal Pradesh	0.683	2	0.684	3
Jammu & Kashmir	0.577	8	0.547	9
Jharkhand	0.460	18	0.316	18
Karnataka	0.662	4	0.638	6
Kerala	0.665	3	0.693	2
Madhya Pradesh	0.492	16	0.384	15
Maharashtra	0.629	6	0.659	5
Orissa	0.467	17	0.326	17
Punjab	0.453	19	0.308	19
Rajasthan	0.502	15	0.448	13
Tamil Nadu	0.735	1	0.763	1
Uttar Pradesh	0.528	12	0.464	11
Uttarakhand	0.513	14	0.673	4
West Bengal	0.527	13	0.295	20

Source: NEUPA, EDI Report

Appendix Table 3.11: EDI of Primary, Upper Primary and Composite

States	Primary Level	Rank	Upper Primary Level	Rank	Composite (Primary & Upper Primary)	Rank
Andhra Pradesh	0.639	9	0.700	7	0.670	8
Assam	0.433	19	0.521	15	0.477	18
Bihar	0.309	21	0.334	21	0.321	21
Chhattisgarh	0.517	16	0.526	14	0.521	15
Delhi	0.767	1	0.747	3	0.757	2
Gujarat	0.655	5	0.699	8	0.677	6
Haryana	0.591	12	0.632	12	0.612	12
Himachal Pradesh	0.675	4	0.739	4	0.707	4
Jammu & Kashmir	0.599	11	0.667	9	0.633	10
Jharkhand	0.360	20	0.402	20	0.381	20
Karnataka	0.653	6	0.708	6	0.680	5
Kerala	0.756	2	0.788	1	0.772	1
Madhya Pradesh	0.478	18	0.483	17	0.481	17
Maharashtra	0.644	8	0.710	5	0.677	7
Orissa	0.529	15	0.445	18	0.487	16
Punjab	0.649	7	0.659	10	0.654	9
Rajasthan	0.532	14	0.632	13	0.582	13
Tamil Nadu	0.724	3	0.757	2	0.741	3
Uttar Pradesh	0.538	13	0.514	16	0.526	14
Uttarakhand	0.615	10	0.643	11	0.629	11
West Bengal	0.500	17	0.416	19	0.458	19

Source: NEUPA, EDI Report

Appendix Table 3.12: Year-wise Private Final Consumption Expenditure on Education and Government Expenditure on Education per Capita, (in 1999-2000 prices) Rs per annum

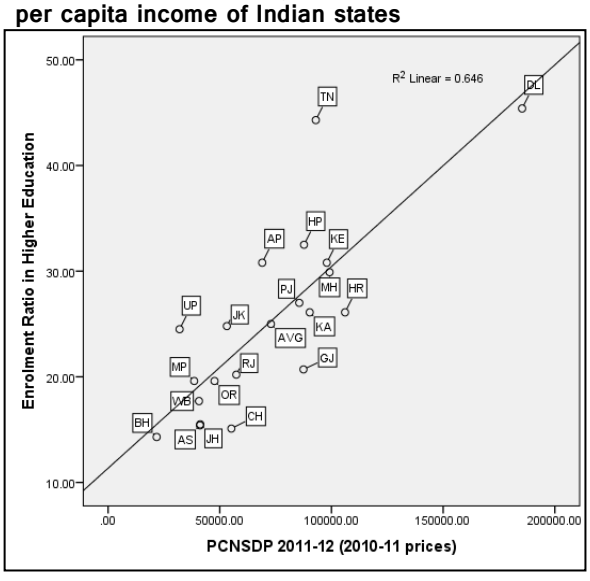
Years	Private Expenditure on Education	Government Expenditure Education
1950-51	35	36
1951-52	36	41
1952-53	38	47
1953-54	40	50
1954-55	42	65
1955-56	45	79
1956-57	47	78
1957-58	48	84
1958-59	51	91
1959-60	54	104
1960-61	57	116
1961-62	62	121
1962-63	69	121
1963-64	73	124
1964-65	77	131
1965-66	82	138
1966-67	87	136
1967-68	91	147
1968-69	99	158
1969-70	105	177
1970-71	105	197
1971-72	108	206
1972-73	111	216
1973-74	109	202
1974-75	117	211
1975-76	117	247
1976-77	116	258
1977-78	114	273
1978-79	114	299
1979-80	121	285
1980-81	121	277
1981-82	117	283
1982-83	117	329
1983-84	113	338
1984-85	113	361
1985-86	102	390
1986-87	122	388
1987-88	131	430
1988-89	136	464
1989-90	151	516
1990-91	167	521
1991-92	163	490

Appendix Table 3.12: Year-wise Private Final Consumption Expenditure on Education and Government Expenditure on Education per Capita, (in 1999-2000 prices) Rs per annum

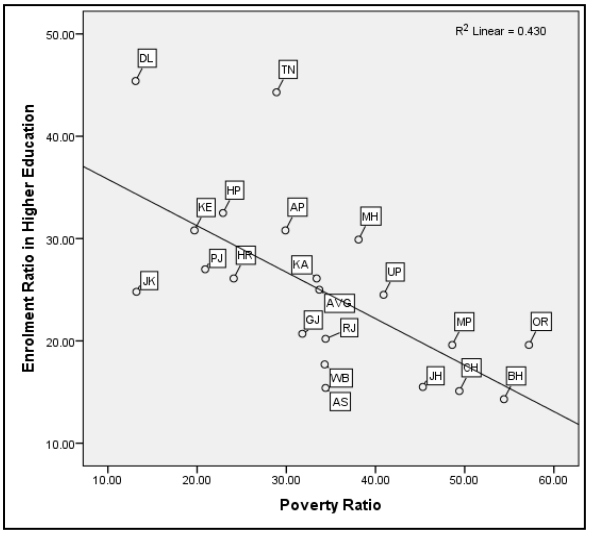
1992-93	161	494
1993-94	165	497
1994-95	164	510
1995-96	174	539
1996-97	185	559
1997-98	205	571
1998-99	217	656
1999-00	238	751
2000-01	257	787
2001-02	275	727
2202-03	297	735
2003-04	322	732
2004-05	348	741
2005-06	378	825
2006-07	406	942
2007-08	437	891
2008-09	448	917
2009-10	471	943
2010-11	494	970
2011-12	518	996
2012-13	541	1022
2013-14	565	1048
2014-15	588	1075
Growth Rate	4.0	4.9

Source: Tilak (2009) and Based on CSO [www.mospi.nic.in], and MHRD

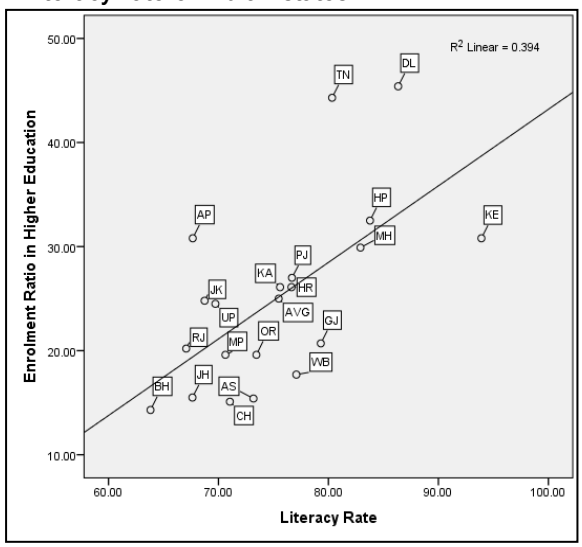
Appendix Figure 3.1: Scatter diagram of Enrolment Ratio in higher education rate and per capita income of Indian states



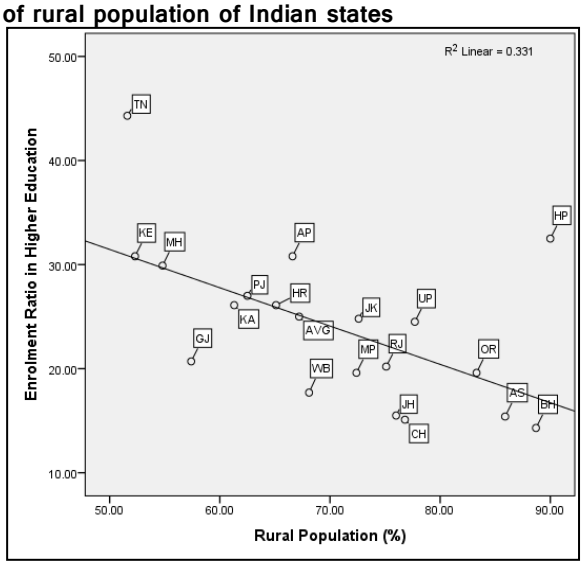
Appendix Figure 3.2: Scatter diagram of Enrolment Ratio in higher education and Poverty ratio of Indian states



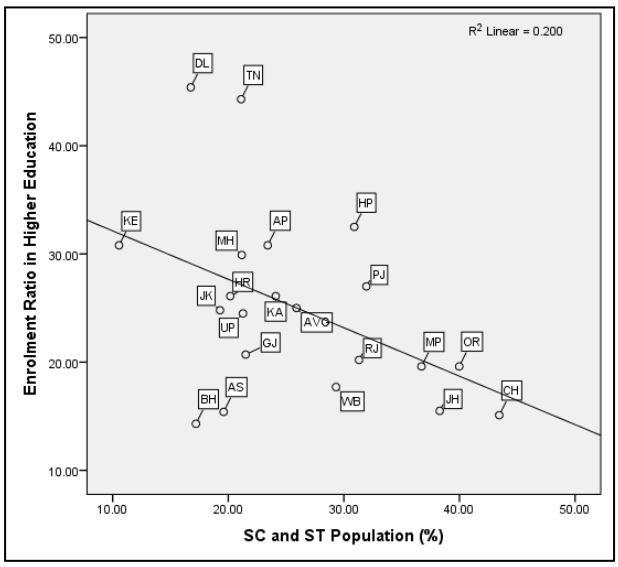
Appendix Figure 3.3: Scatter diagram of Enrolment Ratio in higher education and Literacy rate of Indian states



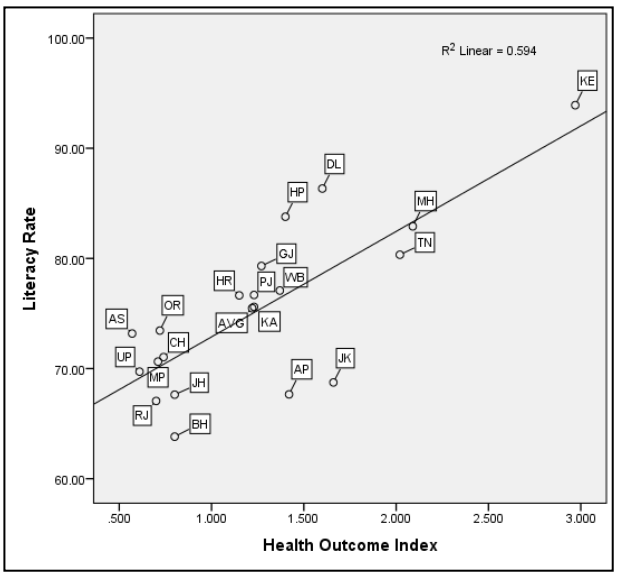
Appendix Figure 3.4: Scatter diagram of Enrolment Ratio in higher education and share of rural population of Indian states



Appendix Figure 3.5: Scatter diagram of Enrolment Ratio in higher education and share of SC and ST population



Appendix Figure 3.6: Scatter diagram of Literacy Rate and Health outcome index



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CHAPTER - IV

HEALTH: STATUS AND INFRASTRUCTURE AMONG INDIAN STATES

INTRODUCTION:

The importance of condition of good HEALTH of the people cannot be minimized as it has been considered as one of the important components of human capital. Good health is an indication of strong mind. Due to its vital importance, economics of health is attracting researchers and policy makers more rapidly in recent decades. It is well said in the theory of human capital that people should invest themselves in terms of education, health and skill development programmes. Health is a major segment of human capital. If the quality of human capital is not good, physical capital and natural resources cannot be utilised properly and growth can neither be sustained nor be qualitative (Siddu and Keshava Murthy, 2012).

Importance of good health status of the citizens has been well recognised by planners and policy makers of India. Hence, huge amount of money has been spent on health by central and state governments. Therefore health infrastructure and health status have improved a lot in Indian states. Though growth of health status and infrastructure has been studied by many researchers in India, time period taken by them is very limited and inter-states comparison of different health indicators in the present day is also less. Furthermore, studies on linking health outcome with different socio-economic indicators are also a few. In the present chapter an attempt has been made to fulfil this research gap.

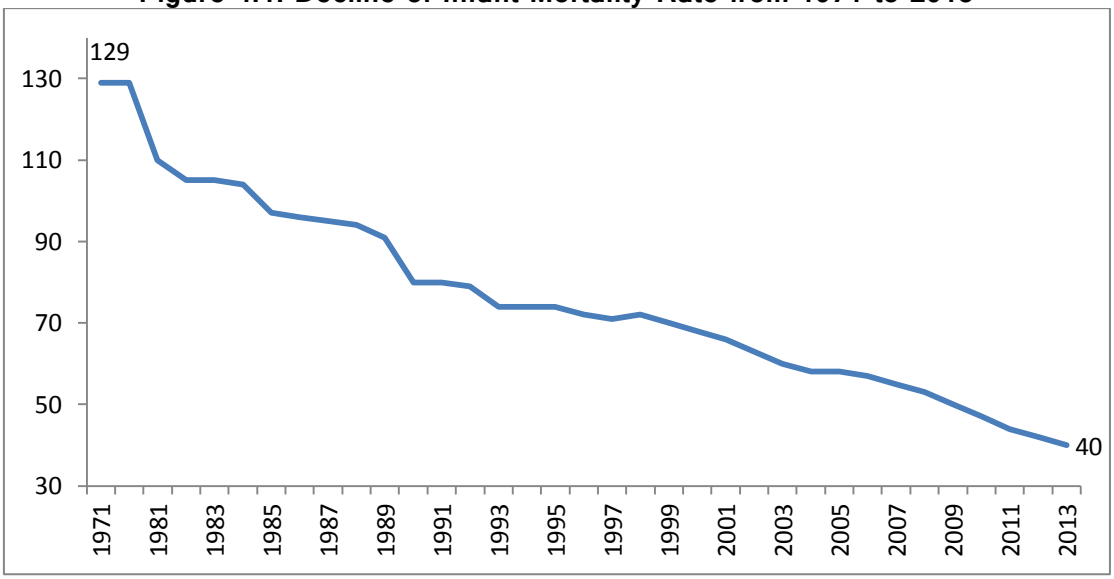
This chapter has been divided into five sections. Apart from introduction section II depicts the growth of health status and infrastructure facilities in India, section III is devoted on inter-states comparison of health status and infrastructure facilities in the recent years. Section IV finds the association of health outcome with different socio-economic indicators. Section V presents international comparison of health sector and the last section concludes the present chapter.

4.2 Growth of health Status and infrastructure India:

Infant Mortality Rate:

Infant mortality rate (IMR) is one of the important indicators in determination of good health. In the initial stage of the measurement of human development, instead of life expectancy at birth, IMR was vastly used indicator. Now also, in case of non-availability of life expectancy at birth, this indicator is used. This usage is observed especially for the disaggregated levels like sub-district level, village level, as well as for different social and economic groups[1]. IMR of India was 129 in the year 1971, which decreased significantly to 63 in the year 2002.Further, in 2013 it again decreased considerably to 40. In figure 4.1, information related to this has been presented.

Figure 4.1: Decline of Infant Mortality Rate from 1971 to 2013



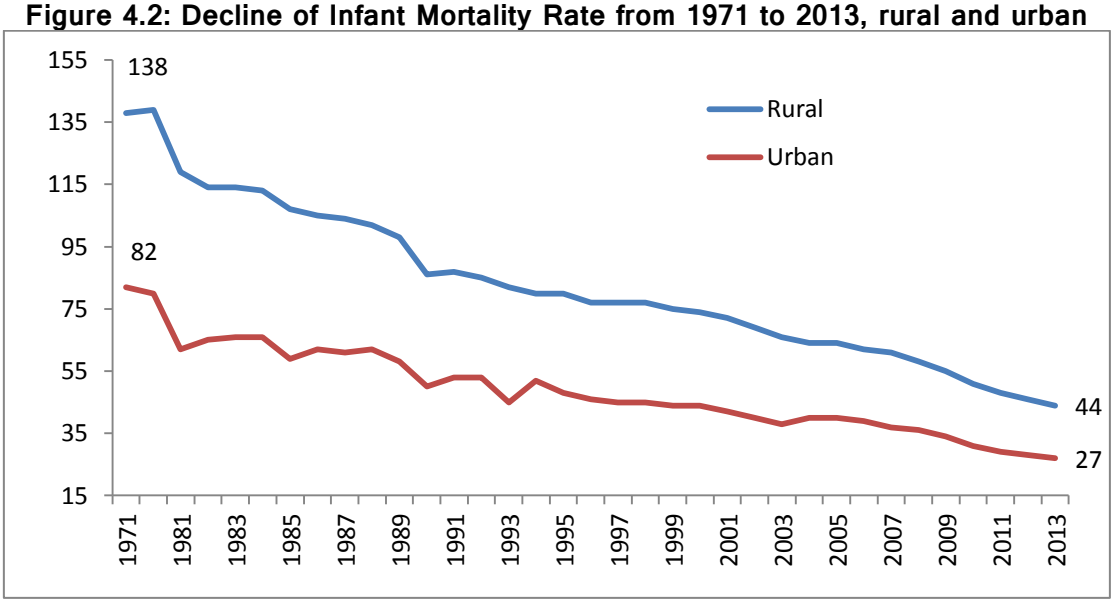
Source: Calculated from appendix table 4.1

Rural and urban gap is observed in Infant mortality rate as it is observed in all other socio-economic indicators. In figure 4.2, information related to this has been presented. Infant mortality rate (IMR) is high in rural area than that of urban area. In the year 1971 rural IMR was 138, while urban IMR was 82. Over the period of time IMR has decreased in both rural

[1]Recently many state governments are preparing District Human Development Reports, taking into consideration of taluks as the unit of study. These reports use the Infant Mortality Rate to measure the health status, which is one the important dimensions along with knowledge (education) and standard of living (per capita income). District Human Development Reports 2014 (DHDRs) of Karnataka State Government is the best example in this regards. For more details please see the website www.planning.kar.nic.in

and urban areas. In the year 2013, IMR of rural area has decreased to 44, while urban has decreased to 27.

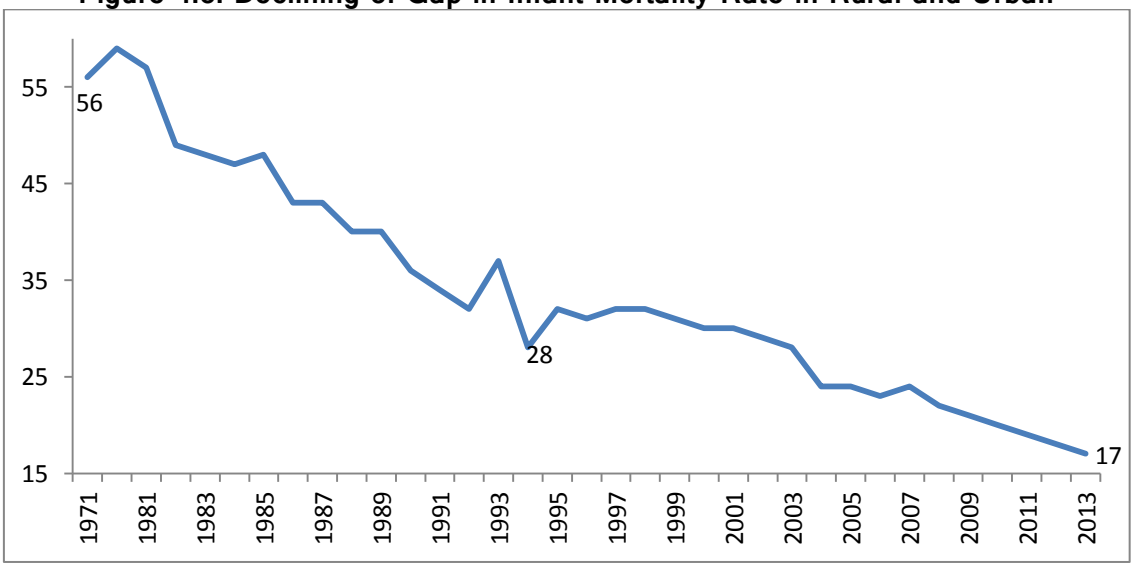
Figure 4.2: Decline of Infant Mortality Rate from 1971 to 2013, rural and urban



Source: Calculated from appendix table 4.1

An interesting point here is to be noted that quantum of the gap between IMR of rural and urban has also decreased significantly, which has been depicted in figure 4.3. The figure shows that in the year 1971, gap between rural-urban was 56, which decreased to only 27 in 2013. It means, in 1971, rural area has 56 infant deaths per thousand birth, which decreased to 27 infant deaths per thousand birth.

Figure 4.3: Declining of Gap in Infant Mortality Rate in Rural and Urban



Source: Appendix table 4.1

Table 4.1: Male and Female Infant Mortality Rates in India, 1991-2013

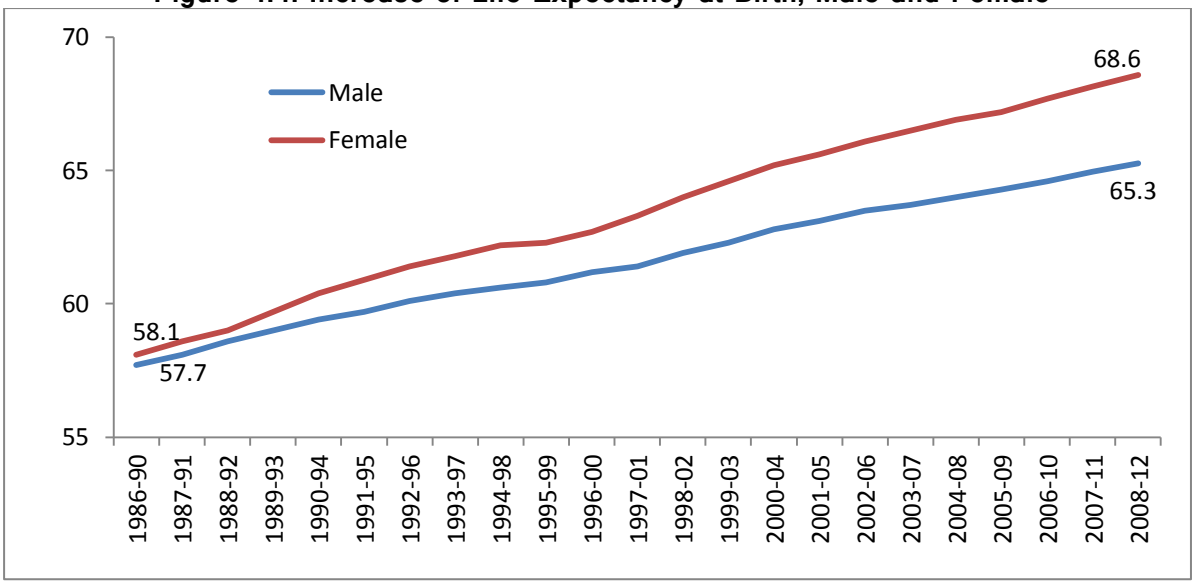
Years	Male	Female	Gap (Male-Female)
1991	81	80	-1.0
1992	79	80	1.0
1993	73	75	2.0
1994	75	73	-2.0
1995	73	76	3.0
1996	71	73	2.0
1997	70	72	2.0
1998	70	73	3.0
1999	70	71	1.0
2000	67	69	2.0
2001	64	68	4.0
2002	62	65	3.0
2003	57	64	7.0
2004	58	58	0.0
2005	56	61	5.0
2006	56	59	3.0
2007	55	56	1.0
2008	52	55	3.0
2009	49	52	3.0
2010	46	49	3.0
2011	43	46	3.0
2012	41	44	3.0
2013	39	42	3.0

Source:

In table 4.1 infant mortality rates of male and female has been presented from the year 1991 to 2013. It is found from the table that in the initial years of the study period, IMR is low for female. Out of the selected 23 years, only in two years IMR of female is lower than male. In 2013 IMR of male is 39 and female is 42. There is noticeable gender difference is observed.

Life Expectancy at Birth (LEB) is considered as the best indicator of the measurement health status of any nation or region. It has also been considered as the best dimension to measure the healthy life of the people in the Human Development Index. This indicator is proxy indictor for the overall health profile or health situation. If the life expectancy is more, it means that the society has good health infrastructure like adequate number of hospitals, nurses, doctors, beds, diagnosing mechanism and so on. Further, it also shows the good service delivery of medicines as well as all the medical services. Information related to life expectancy at birth has been presented in appendix table 4.2, figure 4.4 and 4.5. Further, in figure 4.6 gap of male-female and rural-urban has been presented. It is observed that in 1973 (1971-75) LEB of India was 49.7 years, which increased significantly to 66.9 in 2010 (2008-12). This increase is due to the implementation of various good programmes by central and state governments, awareness among people in utilisation of health care facilities and improved standard of living (with growth in income & employment, reduction in poverty and so on), increase in the production of food-grains, strengthened public distribution system (PDS) and so on.

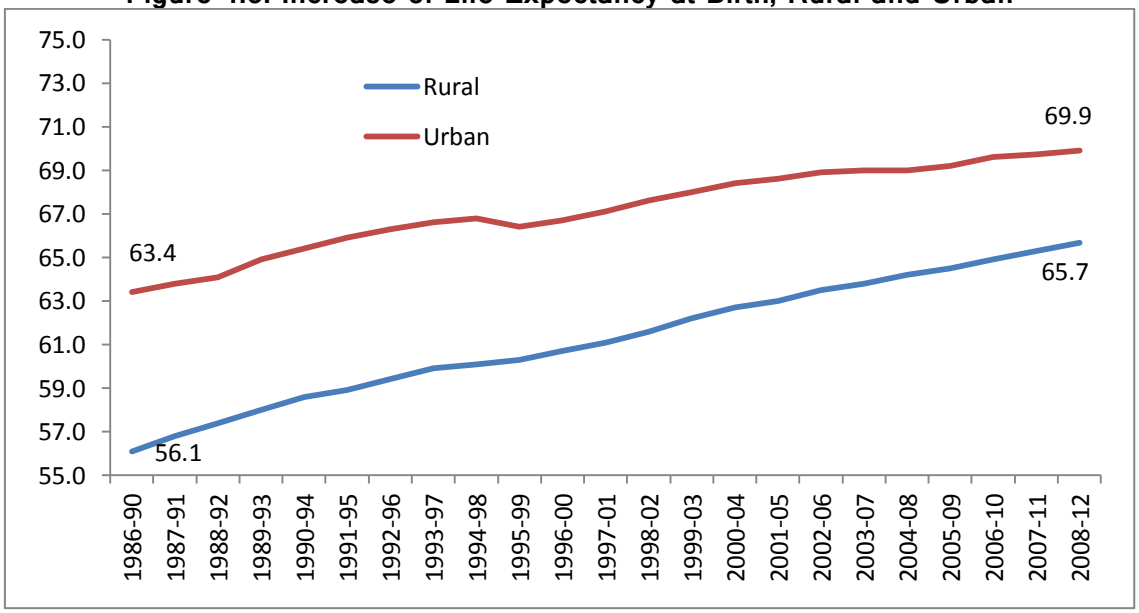
Figure 4.4: Increase of Life Expectancy at Birth, Male and Female



Source: calculated from appendix table 4.2

Figure 4.4 shows the LEB of male and female. In the year 1986-90, LEB of male and female were more or less same, which were 58.1 and 57.7 respectively. Both the LEB of male and female have increased significantly to 65.3 and 68.6 respectively for male and female. Female LEB is not only high but also its rate of increase is also high. Over the 20 years of the study period, Female LEB has shown 1.2 time increase and male LEB has shown only 1.1 times increase.

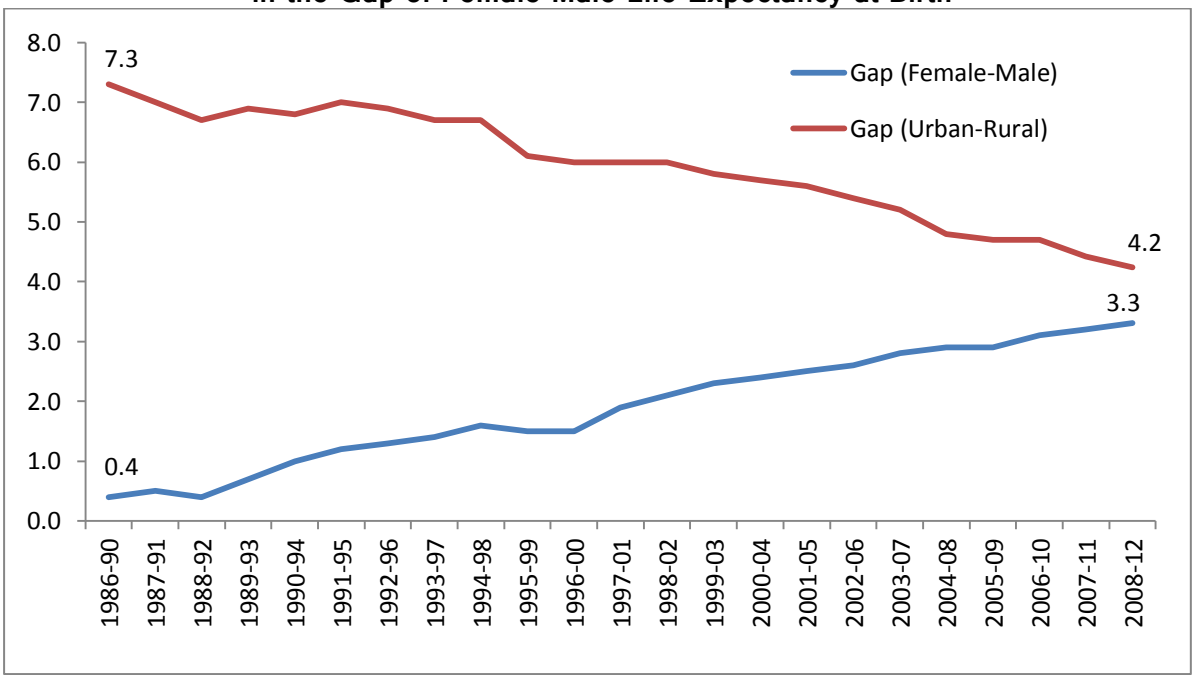
Figure 4.5: Increase of Life Expectancy at Birth, Rural and Urban



Source: calculated from appendix table 4.2

In figure 4.5 LEB of rural and urban has been presented from 1986-90 to 2008-12. It is found that LEB has increased in the study period in both rural and urban areas. LEB of urban is comparatively higher than the rural area in the entire study period. LEB of rural was 56.1 n 1986-90, which increased to 65.7 in 2008-12, an increase of 1.2 fold. On the other hand LEB of urban was 63.4 in 1986-90, which has also increased to 69.9 in 2008-12, an increase of 1.1 fold. Rate of increase of LEB of rural area is higher than the urban area.

Figure 4.6: Decrease in the Gap of Urban-Rural Life Expectancy at Birth and Increase in the Gap of Female-Male Life Expectancy at Birth



Source: calculated from appendix table 4.2

In figure 4.6 gap of LEB of male-female and rural-urban has been presented. Two contrary observations can be seen in this figure. Gap in LEB of male-female was only 0.4 in 1986-90, which increased considerably to 3.3 in 2008-12. On the other hand in the same period LEB of rural-urban has decreased from 7.3 to 4.2. In sum, it is found that gap of rural-urban has decreased and male-female has increased in the study period with respect to Life Expectancy at Birth in India.

Growth of Health Infrastructure Facilities

Good health infrastructure facilities provide quality services and through this, health status would improve. Every facility has its own significance and has considerable

contributions to improve the health status of the population. Hence, the country has been making serious steps to develop health facilities, which as follows,

GROWTH OF NUMBER OF HEALTH MANPOWER

Doctors, nurses, midwives, health visitors and other health workers are considered as important health manpower. Professionally qualified, skilled manpower in required number is needed for improving the health status of any nation. Table 4.2 shows the growth of health manpower from 1951 to 2016. In 1971, the number of doctors, nurses, midwives and health visitors was 27, 14, 5 and 0.8 per ten lakh population respectively; these figures increased to 71, 101, 48 and 4.82 respectively, in the year 2016. For the period 1951 to 1991, number of doctors was higher compared to other categories. Number of nurses increased considerably from 1990 onwards, and overtook the number of doctors in 1993. Still, this number is low when compared to other developed and many developing countries. In USA, the number of physicians per ten lakh population is more than 300.

Table 4.2: Growth of Health Manpower in India (per ten lakhpopulation)

Year	Doctors*	Nurses	Auxiliary Nurse/Mid-wives	Health Visitors
1951	17	5	..	..
1961	19	9	..	..
1971	27	14	5	0.81
1976	31	18	8	1.11
1981	39	21	10	1.35
1986	41	27	14	1.71
1991	47	40	18	2.03
1996	51	61	30	2.84
2001	56	78	36	3.88
2006	61	79	38	3.87
2011	66	90	43	4.35
2016	71	101	48	4.82

Note: * Only allopathic Doctors are considered
Source: Health Information of India, Various Issues and health Profile of India Various Issues

GROWTH OF NUMBER OF ALLOPATHIC HOSPITALS, DISPENSARIES AND PUBLIC HEALTH CENTRES:

Hospitals, dispensaries, beds, PHCs, CHCs and sub centres are also necessary health infrastructures like doctors and nurses. Table 4.3 shows the growth in number of these infrastructural indicators per million population from 1971 to 2016. In 1971, the number of hospitals, dispensaries, PHCs and beds respectively were 7, 16, 9.3 and 64 per million population. These have increased to 21,35, 35 and 111 per million population by

2016. But the growth trend of these variables is quite different. Number of PHCs per million population were 9, which increased to 35, which has shown the highest increase of 4 fold increase in the study period followed by hospitals per million population (3 fold), Dispensaries per million population (2.1 fold) and finally beds per million population (1.7 fold).

Table 4.3: Growth of Number of Allopathic Hospitals, Dispensaries and Public Health Centres in India (per million population)

Year	Hospitals	Dispensaries	PHCs	Beds
1971	7	17	9	64
1976	7	20	9	72
1981	7	24	8	83
1986	10	33	17	88
1991	13	33	24	97
1996	16	30	24	93
2001	15	22	23	88
2006	18	32	29	102
2011	19	33	32	106
2016	21	35	35	111

Source: Health Information of India, Various Issues and health Profile of India Various Issues

4.3Inter-State comparison of Health Status:

Health status of India has not been distributed similarly in all the states. Some states are in the good position and some are in the bad position. In table 4.4 information related to infant mortality rate has been presented. It is found from the table that Kerala stands in the first position, where the infant mortality rate is only 12 in the year 1997. Out to 30 statesand union territories, Kerala, Goa, Mizoram, Puducherry and Manipur were found in the top position with infant mortality rate less than 30. Odisha stands in the least position with IMR more than 95. States like Bihar, Assam, Rajasthan, Uttar Pradesh, Madhya Pradesh and Odisha were in the bottom position, whose IMR is greater than 70.

In the year 2013 Goa is found in the first position with IMR less than 10 and Madhya Pradesh found in the last position with IMR 54. Out of 35 statesand union territories in the year 2013, Goa, Manipur, Kerala, Puducherry and Nagaland were in the top position with IMR less than 20. On the other hand, Uttar Pradesh, Odisha, Assam and Madhya Pradesh with IMR more than 50 found in the last position. A point here is to be noted that in 1997 Odisha's IMR (Bottom) is 8 times higher than Kerala's IMR (Top), which shows the existing of vast inter-state disparity in the IMR.

Table 4.4: State-Wise Infant Mortality Rate, (Per Thousand)

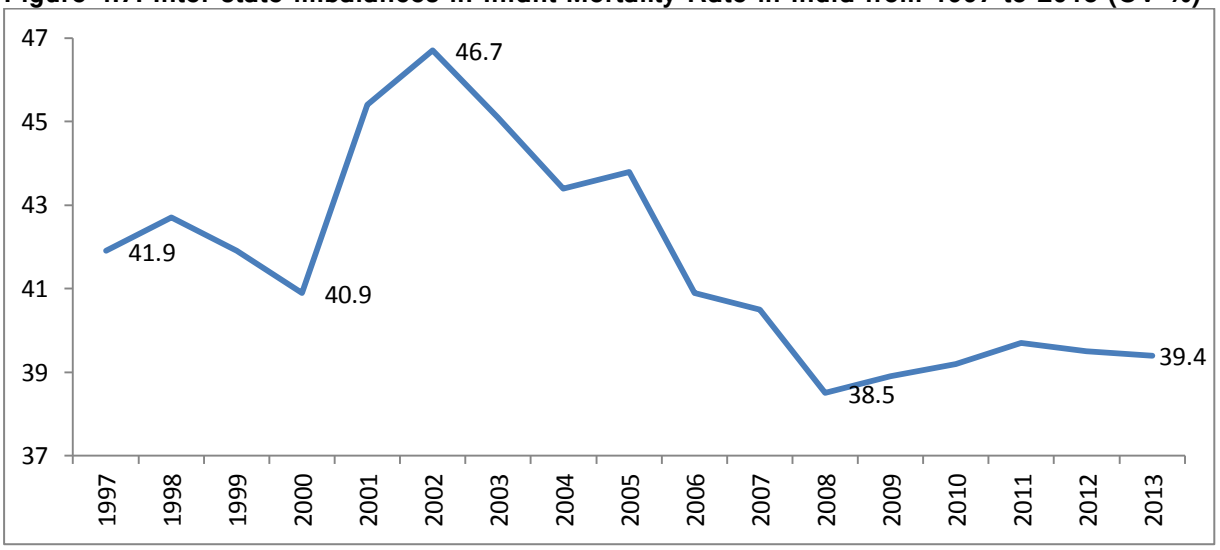
States/Union Territories	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Andaman & Nicobar Islands	33	30	25	23	18	15	18	19	27	31	34	31	27	25	23	24	24
Andhra Pradesh	63	66	66	65	66	62	59	59	57	56	54	52	49	46	43	41	39
Arunachal Pradesh	47	44	43	44	39	37	34	38	37	40	37	32	32	31	32	33	32
Assam	76	76	76	75	73	70	67	66	68	67	66	64	61	58	55	55	54
Bihar	71	67	63	62	62	61	60	61	61	60	58	56	52	48	44	43	42
Chandigarh	40	32	28	28	24	21	19	21	19	23	27	28	25	22	20	20	21
Chhattisgarh	.	94	78	79	76	73	70	60	63	61	59	57	54	51	48	47	46
Dadra & Nagar Haveli	63	61	56	58	58	56	54	48	42	35	34	34	37	38	35	33	31
Daman & Diu	38	51	35	48	40	42	39	37	28	28	27	31	24	23	22	22	20
Delhi	35	36	31	32	29	30	28	32	35	37	36	35	33	30	28	25	24
Goa	19	23	21	23	19	17	16	17	16	15	13	10	11	10	11	10	9
Gujarat	62	64	63	62	60	60	57	53	54	53	52	50	48	44	41	38	36
Haryana	68	70	68	67	65	62	59	61	60	57	55	54	51	48	44	42	41
Himachal Pradesh	63	64	62	60	54	52	49	51	49	50	47	44	45	40	38	36	35
Jammu and Kashmir	-	45	52	50	48	45	44	49	50	52	51	49	45	43	41	39	37
Jharkhand	.	.	71	70	62	51	51	49	50	49	48	46	44	42	39	38	37
Karnataka	53	58	58	57	58	55	52	49	50	48	47	45	41	38	35	32	31
Kerala	12	16	14	14	11	10	11	12	14	15	13	12	12	13	12	12	12
Lakshadweep	36	26	32	27	33	25	26	30	22	25	24	31	25	25	24	24	24
Madhya Pradesh	94	98	90	87	86	85	82	79	76	74	72	70	67	62	59	56	54
Maharashtra	47	49	48	48	45	45	42	36	36	35	34	33	31	28	25	25	24
Manipur	30	25	25	23	20	14	16	14	13	11	12	14	16	14	11	10	10
Meghalaya	54	52	56	58	56	61	57	54	49	53	56	58	59	55	52	49	47
Mizoram	19	23	19	21	19	14	16	19	20	25	23	37	36	37	34	35	35
Nagaland	-	-	-	-	13	-	-	17	18	20	21	26	26	23	21	18	18
Odisha	96	98	97	95	90	87	83	77	75	73	71	69	65	61	57	53	51
Puducherry	22	21	22	23	22	22	24	24	28	28	25	25	22	22	19	17	17
Punjab	51	54	53	52	51	51	49	45	44	44	43	41	38	34	30	28	26
Rajasthan	85	83	81	79	79	78	75	67	68	67	65	63	59	55	52	49	47
Sikkim	51	52	49	49	42	34	33	32	30	33	34	33	34	30	26	24	22
Tamilnadu	53	53	52	51	49	44	43	41	37	37	35	31	28	24	22	21	21
Tripura	51	49	42	41	39	34	32	32	31	36	39	34	31	27	29	28	26
Uttar Pradesh	85	85	84	83	82	80	76	72	73	71	69	67	63	61	57	53	50
Uttarakhand	.	.	52	50	48	41	41	42	42	43	48	44	41	38	36	34	32
West Bengal	55	53	52	51	51	49	46	40	38	38	37	35	33	33	32	32	31
ALL INDIA	71	72	70	68	66	63	60	58	58	57	55	53	50	47	44	42	40
CV (%)	41.9	42.7	41.9	40.9	45.4	46.7	45.1	43.4	43.8	40.9	40.5	38.5	38.9	39.2	39.7	39.5	39.4

Source:

But in the year 2013, Madhya Pradesh's (bottom) IMR is 4.4 times higher than Goa's (top) IMR, which shows the decreased quantum of regional imbalances over the period of time.

Comparison between two time periods from 1997 and 2013, it is found that out of 30 states, nine states have improved their ranks, 18 states have slipped in their ranks, and remaining three states namely Puducherry, Karnataka and Himachal Pradesh have not changed their respective ranks. Highest improvement is observed in Sikkim, Dadra & Nagar Haveli and Tamil Nadu, whereas, highest deterioration is observed in Mizoram, Meghalaya, Arunachal Pradesh and Assam.

Figure 4.7: Inter-state imbalances in Infant Mortality Rate in India from 1997 to 2013 (CV %)



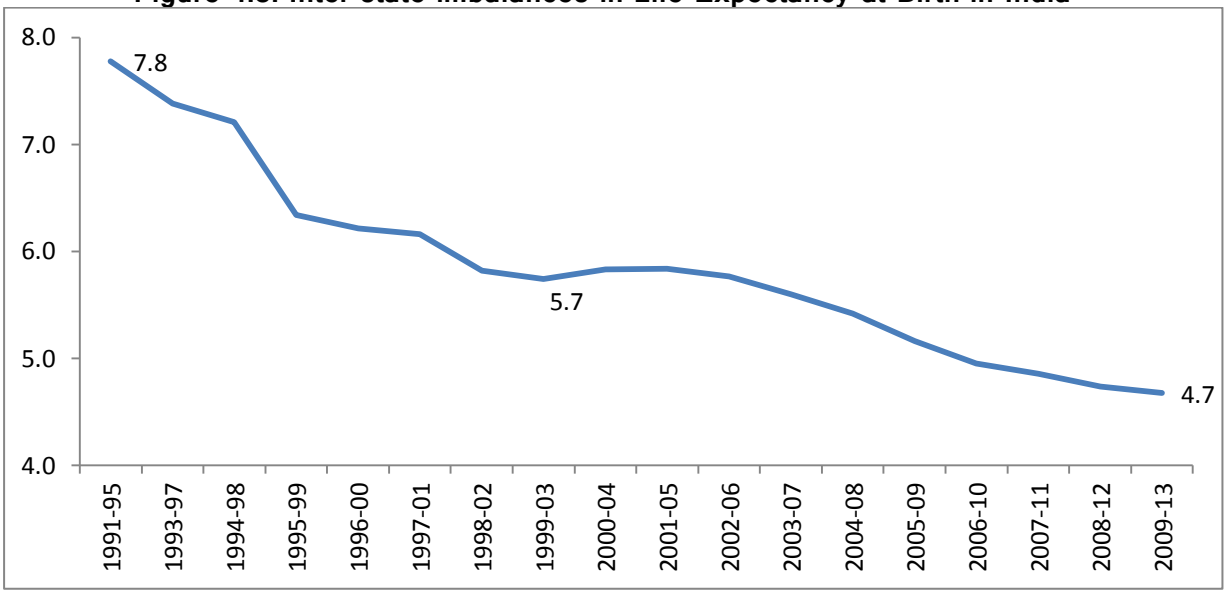
Source: Table 4.3

To see the Inter-state imbalances,coefficient of variation (CV %) has been calculated and presented in the last row of table 4.4.Further, the graphical presentation has been made in figure 4.7. It is found from the table and figures that inter-state imbalances (CV %) in IMR is hovering between 38.5 per cent and 46.7 per cent. In the year 1997 it was 41.9 per cent which decreased to 40.9 per cent in 2000. It again increased to 46.7 per cent (it is the highest in the selected time period)in 2002. In the later stage it decreased drastically to 38.5 per cent in 2008 and stood at 39.4 per cent in 2013. Totally, over the period of time inter-state disparity in IMR has decreased.

Life expectancy at birth is another important indicator of measurement of health status.Itis also not similarly distributed among different states. Information related to this has been presented in table 4.5. From the table it is observed that in 1991-95 life expectancy at birth was 60.3years, which increased to 67.5 in 2009-13. In entire study period Kerala was in the top position. LEB of Kerala was 72.9 year in 1991-95, which increased to 74.8 years in 2009-13. In 1991-95, Kerala, Maharashtra, Punjab and Tamil Nadu were in the top position out of 15 states in India. On the other hand, in the year 2009-13, states like Kerala, Jammu and Kashmir, Maharashtra, Punjab and Himachal Pradesh are found in the top position. In both the periods, Rajasthan, Odisha, Madhya Pradesh, Uttar Pradesh and Assam were observed in the bottom position. The highest improvement is observed in the states like Rajasthan, Bihar, Odisha and Madhya Pradesh. The gap in LEB between Kerala (Top position) and Assam (Bottom Position) is more than 11 years in 2009-13, which shows the vast regional imbalances in the country.

Coefficient of Variation has been calculated to see the inter-state disparities and presented in the last row of the table and in figure 4.8. In the initial years of the study period, inter-state imbalances were very high, which is evident from the fact that the CV of LEB in 1991-95 is 7.8%. In the later stage, this disparity declined significantly. Rapid decline is observed from 1991-95 to 1999-2003. Further also it has decreased and at the end it reached to 4.7 per cent in 2009-13.

Figure 4.8: Inter-state imbalances in Life Expectancy at Birth in India



Source: Table 4.4

Table 4.4: STATE-WISE LIFE EXPECTANCY IN Years

States	1991-95	1993-97	1994-98	1995-99	1996-00	1997-01	1998-02	1999-03	2000-04	2001-05	2002-06	2003-07	2004-08	2005-09	2006-10	2007-11	2008-12	2009-13
Andhra Pradesh	61.8	62.4	62.6	62.5	62.7	63.0	63.4	63.9	64.6	65.0	65.3	65.5	65.7	65.6	65.8	66.3	67.0	67.9
Assam	55.7	56.9	57.2	57.3	57.4	57.5	58.0	58.6	58.8	59.2	60.0	60.6	61.0	61.6	61.9	62.2	62.7	63.3
Bihar	59.3	59.4	59.6	59.5	60.5	61.7	63.0	64.0	64.1	64.2	64.4	64.4	64.4	65.1	65.8	66.3	67.2	67.7
Gujarat	61.0	61.9	62.4	64.1	64.4	64.7	64.8	65.0	65.6	65.7	65.8	66.1	66.4	66.4	66.8	67.3	67.7	68.2
Haryana	63.4	64.2	64.4	64.1	64.4	64.7	65.1	65.7	66.1	66.5	67.0	67.1	67.1	67.1	67.0	67.3	67.6	68.2
Himachal Pradesh	-	64.9	65.2	66.2	67.0	67.8	68.3	69.1	69.5	69.5	69.6	69.9	69.8	69.8	70.0	70.1	70.5	71.0
Jammu and Kashmir	-	-	-	-	-	-	65.9	66.0	67.3	68.4	70.0	69.6	69.8	70.0	70.1	70.5	71.0	72.0
Karnataka	62.5	63.3	63.7	64.4	64.5	64.6	65.0	65.4	65.8	66.1	66.5	66.6	66.7	66.8	67.2	67.5	68.0	68.5
Kerala	72.9	73.2	73.3	71.7	71.6	71.7	71.9	72.5	73.2	73.6	73.9	74.1	74.3	74.3	74.2	74.4	74.7	74.8
Madhya Pradesh	54.7	55.4	55.9	56.6	57.1	57.5	58.1	58.8	59.3	59.7	60.2	60.7	61.4	61.9	62.4	62.8	63.3	63.8
Maharashtra	64.8	65.4	65.6	65.5	65.9	66.0	66.2	66.7	67.5	68.0	68.6	69.1	69.5	69.6	69.9	70.3	70.8	71.3
Odisha	56.5	57.1	57.5	58.0	58.3	58.6	59.1	59.7	60.4	60.8	61.2	61.7	62.1	62.5	63.0	63.7	64.3	64.9
Punjab	67.2	67.8	67.9	66.4	66.5	67.0	67.2	67.6	68.3	68.8	68.9	69.1	69.2	69.1	69.3	69.8	70.3	71.1
Rajasthan	59.1	59.6	59.9	61.7	62.1	62.8	63.3	63.8	64.1	64.5	64.9	65.2	65.8	66.2	66.5	66.8	67.2	67.5
Tamil Nadu	63.3	64.2	64.5	64.4	64.8	65.2	65.7	66.2	66.7	67.2	67.5	67.9	68.3	68.7	68.9	69.4	69.8	70.2
Uttar Pradesh	56.8	57.5	57.9	59.1	59.2	59.4	59.7	60.1	60.5	60.8	61.3	61.5	61.9	62.3	62.7	63.0	63.5	63.8
West Bengal	62.1	62.9	63.2	63.7	64.3	64.9	65.6	66.2	66.8	67.2	67.7	68.1	68.3	68.6	69.0	69.4	69.7	69.9
ALL INDIA	60.3	61.1	62.6	61.5	61.9	62.3	62.9	63.4	63.9	64.3	64.7	65.0	65.4	65.7	66.1	66.5	67.0	67.5
CV %	**7.78**	**7.38**	**7.21**	**6.34**	**6.21**	**6.16**	**5.82**	**5.74**	**5.83**	**5.84**	**5.76**	**5.60**	**5.42**	**5.16**	**4.95**	**4.86**	**4.74**	**4.68**

Source:

Health Infrastructure and Health Manpower:

Health Infrastructure and health manpower play very important role in the development of the health status of any region. In the earlier section (2), growth of these infrastructure and manpower have been analysed at the national level. In this section inter-state analysis has been made. In table 4.6,information on government hospital and beds per ten lakh population for different states has been presented for the year 2014-15. It is found that in India there were 16 hospitals and 55 beds per lakh population in 2014-15. This has not been distributed similarly in all the states. Jammu & Kashmir is found in the first position (with 231 Hospitals per ten Lakh Population) and A & N Islands is in the last position (with only 2.42 Hospitals per ten Lakh Population). Jammu & Kashmir, Arunachal Pradesh, Lakshadweep, Uttarakhand and Chandigarh were in the top position and D & N Haveli, Uttar Pradesh, Andhra Pradesh and A & N Islands were in the bottom position. A point here is to be noted that the difference between the top (J&K) and bottom (A & N Islands) is more than 95 times.

On the other hand, with respect of beds per lakh population, it is found that Lakshadweep with 385 Beds per lakh population found in the top position among 34 staes and union territories, and Bihar with only 11 beds per lakh population found in the last position. Lakshadweep has more than 35 fold higher beds per lakh population than that of Bihar. States and union territories like Lakshadweep, Sikkim, Puducherry, Chandigarh and Arunachal Pradesh were in the top position with more than 180 beds per lakh population, while Madhya Pradesh, Haryana, Andhra Pradesh, Jharkhand and Bihar were in the bottom position with less than 38 beds per lakh population.

Table 4.5: State/UT wise Number of Govt. Hospital & Beds (Including CHCs) in India, 2014-15

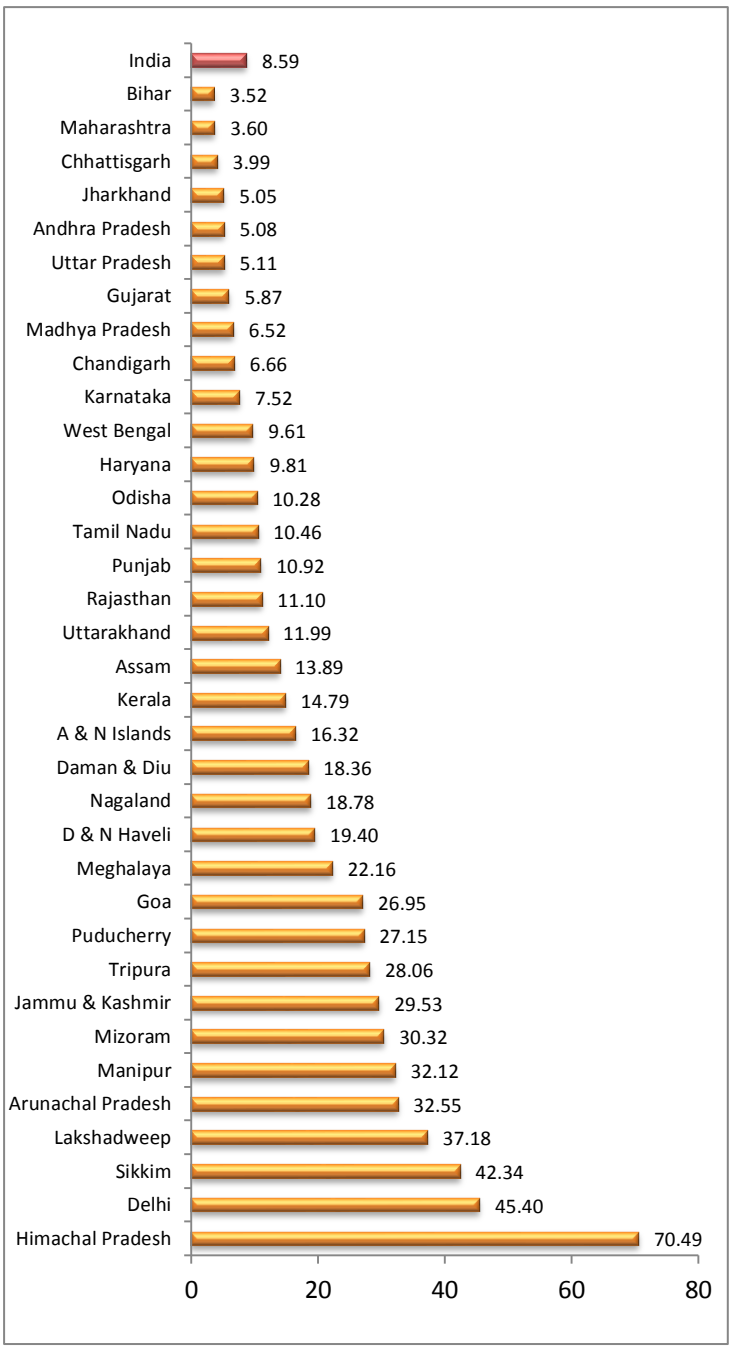
State/UT/ Division	Hospitals per ten Lakh Population	Rank	Beds per Lakh Population	Rank
Andhra Pradesh	3	34	23	32
Arunachal Pradesh	165	2	180	5
Assam	36	10	42	26
Bihar	14	21	11	34
Chhattisgarh	25	14	48	24
Goa	16	19	163	6
Gujarat	6	27	46	25
Haryana	6	28	29	31
Himachal Pradesh	23	15	126	9
Jammu & Kashmir	231	1	80	19
Jharkhand	17	18	17	33
Karnataka	11	25	87	17
Kerala	36	9	109	13
Madhya Pradesh	6	28	37	30
Maharashtra	5	31	140	8
Manipur	12	23	56	23
Meghalaya	15	20	115	11
Mizoram	35	11	157	7
Nagaland	23	16	104	14
Odisha	42	8	40	29
Punjab	8	26	41	28
Rajasthan	44	7	66	21
Sikkim	52	6	246	2
Tamil Nadu	11	24	94	15
Tripura	33	13	111	12
Uttar Pradesh	4	33	NA	
Uttarakhand	67	4	77	20
West Bengal	17	17	85	18
Chandigarh	60	5	202	4
A & N Islands	2	35	42	26
D & N Haveli	5	32	93	16
Daman & Diu	13	22	66	21
Delhi	5	30	121	10
Lakshadweep	115	3	385	1
Puducherry	34	12	208	3
India	16		55	

Source: Computed from the data available from National Health Profile, 2015

Doctors:

Among the health manpower,doctor is very important one. Figure 4.9 shows the state wise number of government allopathic doctors per lakh population for the year 2014-15. From the figure it is clear that compared to the developed countries in India number of doctors per lakh population is very low. Number of doctors per lakh population in India is 8.59, where in developed countries it is more than 300.

Figure 4.9: Number of Govt. Allopathic Doctors per Lakh Population, 2014-15



Further, from the figure it is clear that Himachal Pradesh is in the top position with more than 70 doctors per lakh population, while Bihar is observed in the bottom position with number of doctors less than 4 per lakh population. Twelve out of 35 states and union territories viz., Himachal Pradesh, Delhi, Sikkim, Lakshadweep, Arunachal Pradesh, Manipur, Mizoram, Jammu & Kashmir, Tripura, Puducherry, Goa and Meghalaya have the number of doctors more than 20 per lakh population. States like Haryana, West Bengal, Karnataka, Chandigarh, Madhya Pradesh, Gujarat, Uttar Pradesh, Andhra Pradesh, Jharkhand, Chhattisgarh, Maharashtra and Bihar have number of doctors less than 9 per lakh population.

Source: Appendix table 4.4

Ayush Registered Practitioners (Doctors):

The Ministry of AYUSH was formed on 9th November 2014 to ensure the optimal development and propagation of AYUSH systems of health care. Earlier it was known as the Department of Indian System of Medicine and Homeopathy (ISM&H) which was created in March 1995 and renamed as Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) in November 2003, with focused attention for development of Education and Research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (http://ayush.gov.in).

Figure 4.10: Number of AyushRegistered Practitioners (Doctors) Per Lakh Population, 2014-15

In figure 4.10 Number of Ayush Registered Practitioners (Doctors) Per Lakh Population has been presented. It is observed from the figure that in India there are around 60 Ayush registered doctors per lakh population in the year 2014-15.

Bihar, Maharashtra, Kerala, Nagaland, Himachal Pradesh and Madhya Pradesh were in the top position, where, more than 80 Ayush doctors are found per lakh population.

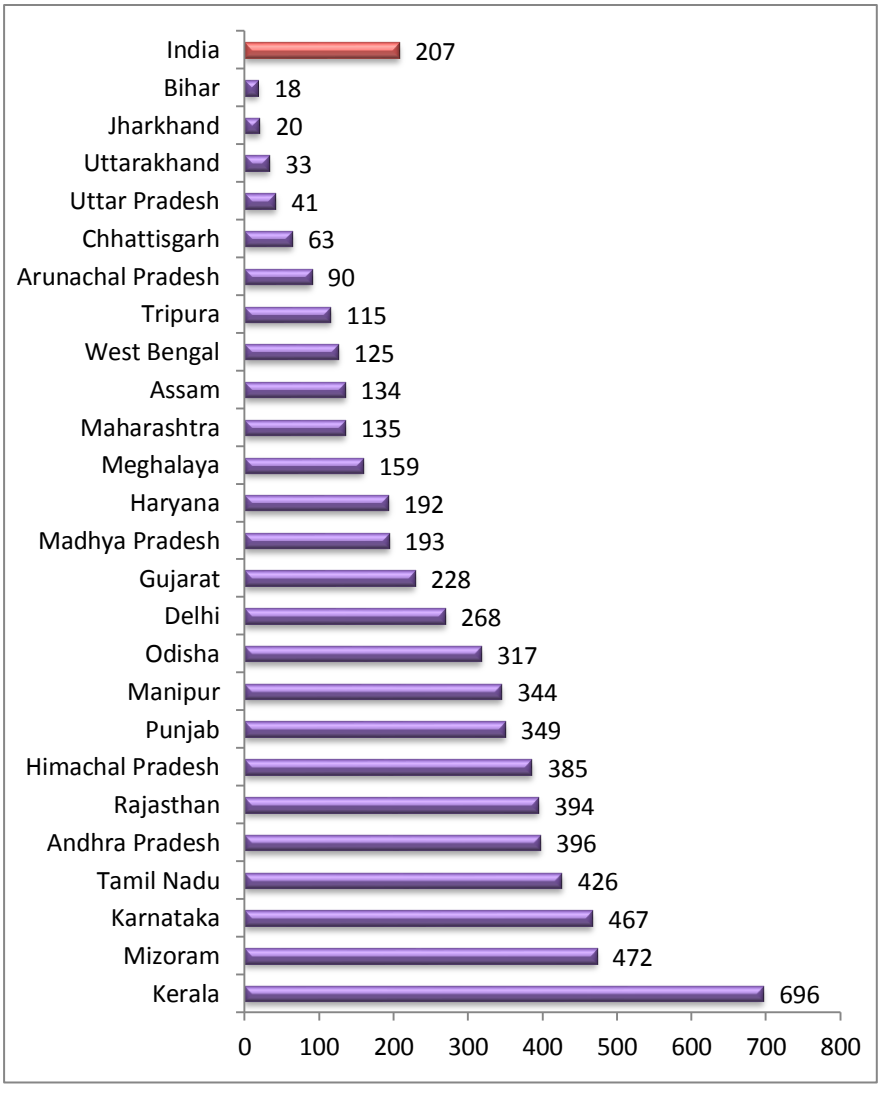
Source: Appendix table 4.5

On the other hand, states like Mizoram, Assam, Tripura and Chandigarh are found to be in the last position with number of Ayush doctors per lakh population less than 10. Bihar is in the first postion and Mizoram is in the last position in this regard. CV has been calculated to see the inter-state disparity, which is 59.45 per cent.

Auxiliary nurse midwife (ANM) and Registered Nurse Registered Midwife RN&RM:

Auxiliary nurse midwife, commonly known as ANM, is a village-level female health worker in India who is known as the first contact person between the community and the health services. ANMs are regarded as the grass-roots workers in the health organisation pyramid.

Figure 4.11: ANM and RN&RM per lakh population, 2014-15



Their services are considered important to provide safe and effective care to village communities. Their role may help communities achieve the targets of national health programmes Geeta Malik (2009). RN&RM means, they are Registered Nurse Registered Midwife respectively. In figure 4.11, state-wise information related to ANM and RN&RM per lakh population has been presented.

Source: Appendix table 4.6

It is observed that in Indian there were 207 ANM and RN&RM per lakh population in 2014-15. Kerala is in the first position with around 700 ANM and RN&RM per lakh population, and Bihar is observed in the last postion with only 18 ANM and RN&RM per lakh population in the same year. Tamil Nadu, Karnataka, Mizoram and Kerala are found in the top position with more than 400 ANM and RN&RM per lakh population and Bihar Jarkhand and Uttarakhand are in the bottom position with less than 35ANM and RN&RM per lakh population. Huge inter-state disparity is observe among the selected states, which is evedent from the fact that CV of ANM and RN&RM per lakh population is 72.62% (state-wise number of 'sub centers, PHCs, & CHCs' and 'number of government hospital & Beds in rural & urban areas (including CHCs)' in India have been presented in appendix table 4.7 and 4.8).

Health Input Index and Health Outcome Index:

Status and infrastructure facilities of health cannot be measured through a single indicator; therefore, researchers construct indices to see the overall performance in the sector. A Study by Sinha, Sahay and Koul (2016)constructed indices for the health performance using various indicators. The variables selected for their study were divided under outcome and input measures. Using factor analysis weights were attached to each of the parameters for arriving at a summated score for outcome and input dimensions. Further, in the present study these scores have been converted into indices using relatively index method. Formula for the relativity index is presented as below,

$$Input\ Index = \frac{Average of All States Value}{State Value}$$

$$Outcome\ Index = \frac{State Value}{Average of All States Value}$$

Indictors Considered by Sinha, Sahay and Koul (2016) to measure the outcome and input dimensions are presented as follows

Dimension	Factors	Items	Source	Year
Outcome	Mortality	Infant Mortality Rate	Census of India, SRS Bulletin	2009 - 13
		Under 5 Mortality Rate	Census of India, SRS Bulletin	2009 - 13
		Neo Natal Mortality Rate	Census of India, SRS Bulletin	2009 - 13
		Maternity Mortality Rate	Census of India, SRS Bulletin	2009 - 13
		Deaths due to HIV	Indiastat (2016a), Central Bureau of Health Intelligence, MoHFW, GoI	2008 - 12
		Deaths due to TB	Central Bureau of Health Intelligence, MoHFW, GoI	2008 - 12
		Deaths due to Pneumonia	Central Bureau of Health Intelligence, MoHFW, GoI	2008 - 12
		Deaths due to Acute Diarrohrial Diseases	Central Bureau of Health Intelligence, MoHFW, GoI	2008 - 12
Input	Infrastructure	No. of PHCs	Indiastat (2016b), MoHFW, GoI	2008 - 12
		No. of CHCs	Indiastat (2016c), MoHFW, GoI	2008 - 12
		No. of SCs	Indiastat (2016d), MoHFW, GoI	2008 - 12
		No. of Hospitals (Private & Public)	Family Health Plans (New India Assurance Co. Ltd., National Insurance Co. Ltd., United India Insurance Co Ltd.)	2012
	Manpower	No. of Registered Medical Practitioners	Indiastat (2016e), Registrar General, Govt. of India & Bureau of Applied Economics & Statistics and Directorate of Health Services, Government of India	2008 - 12
		No. of Nurses in PHC's and CHC's	Indiastat (2016f), Indian Nursing Council	2008 - 12
		No. of Aganwadi Workers	Indiastat (2016g), NHRM	2008 - 12
		No .of ASHA workers	IndiaStat(2016h), NHRM	2008 - 12
	Utilisation	No. of Children Immunized	Indiastat(2016i), National Immunization Program, GoI	2008 - 12

Source: Sinha, Sahay and Koul (2016) Development of a Health Index of Indian States (IIMA)

Based on study by Sinha, Sahay and Koul (2016) with some modification health Input and health outcome indices are calculated. Index values as well as their respective ranks have been presented in table 4.7. It is found from the table that with respect to Input Index, Uttar Pradesh was found in the first position and Himachal Pradesh was in the bottom position out of the 21 selected states. States like Uttar Pradesh, Bihar, Maharashtra, Andhra Pradesh and West Bengal were in the top 5 position. On the other hand, Himachal Pradesh, Uttaranchal, Jammu & Kashmir, Punjab and Delhi were found in the least position.

With respect to outcome index, Kerala stands first and Assam stands in the last position. Kerala, Maharashtra, Tamil Nadu, Jammu & Kashmir and Delhi are the states with top five ranks, whereas, Assam, Uttar Pradesh, Uttaranchal, Rajasthan and Madhya Pradesh have the bottom 5 ranks.

Table 4.7 State-wise Modification Health Input Index and Health Outcome indices

State	Input Index		Outcome Index	
	Value	Rank	Value	Rank
Kerala	0.53	14	2.97	1
Maharashtra	1.74	3	2.09	2
Tamil Nadu	1.01	10	2.02	3
Jammu & Kashmir	0.25	19	1.66	4
Delhi	0.47	17	1.60	5
Andhra Pradesh	1.52	4	1.42	6
Himachal Pradesh	0.16	21	1.40	7
West Bengal	1.33	5	1.37	8
Gujarat	1.10	9	1.27	9
Punjab	0.45	18	1.23	10
Karnataka	1.11	8	1.23	11
Haryana	0.48	16	1.15	12
Bihar	1.86	2	0.80	13
Jharkhand	0.59	12	0.80	14
Chhattisgarh	0.52	15	0.74	15
Orissa	0.74	11	0.72	16
Madhya Pradesh	1.29	6	0.71	17
Rajasthan	1.21	7	0.70	18
Uttaranchal	0.19	20	0.64	19
Uttar Pradesh	3.88	1	0.61	20
Assam	0.58	13	0.57	21
Average	1.00		1.22	

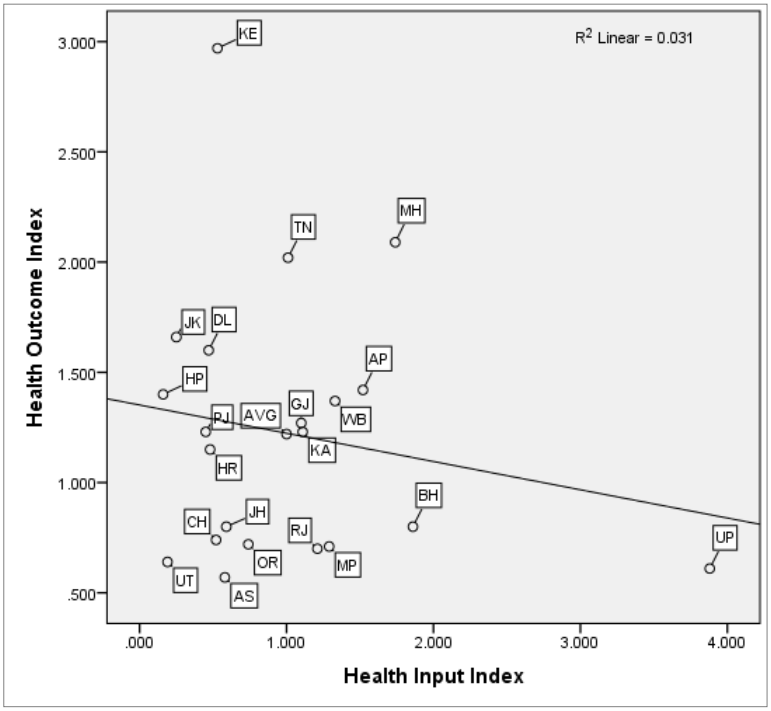
Source: Calculated from the data available from Sinha, Sahay and Koul (2016)

4.4 Association of Health Outcome Index with Socio-economic Indicators:

The main intention of the use of these indices is to see the association among and between different socio-economic indicators. In the following section these associations have been presented using the scatter diagram. Correlation matrix has also been calculated, which has been presented in appendix table 4.12.

To improve the health condition, health input or health infrastructure facilities are very important, which is known fact to everybody. A contrary finding is observed for this statement, when correlating the health outcome and health input indices for Indian states. Negative trend with the correlation coefficient of -0.175 is observed between these two indices (see figure 4.12 and appendix table 4.12).

Figure 4.12: Scatter Diagram of Health Input Index and Health Outcome Index



One should not be shocked with this finding, because the correlation coefficient is not statistically significant. Further, not only the input but also the service delivery through these inputs and awareness to utilize these input (facilities) becomes very important. Moreover, in the recent years, central government is investing huge amount on the under developed states. Hence, states like Uttar Pradesh, Bihar Madhya Pradesh, Rajasthan and Odisha are in the better position in the health input index. In the nearer future, health outcome of these states will be increased.

From the above diagram it is clear that not only infrastructure, but also some other factors are important for the development of health status/outcome. Then one would wander about those indicators and the quantum of the association of those indicators with

health outcome. An attempt has been made to trace the association of different socio-economic indicators with health outcome index in the following analysis.

Figure 4.13: Scatter Diagram of Per Capita Public Health Expenditure and Health Outcome Index

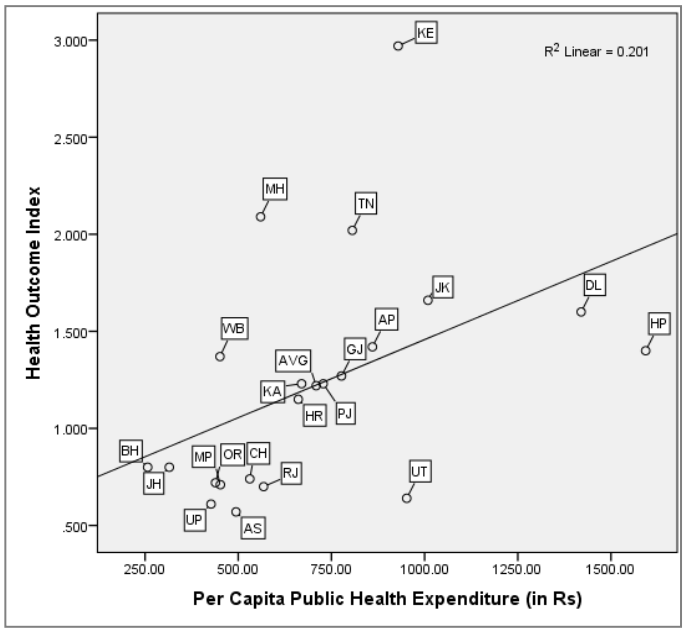
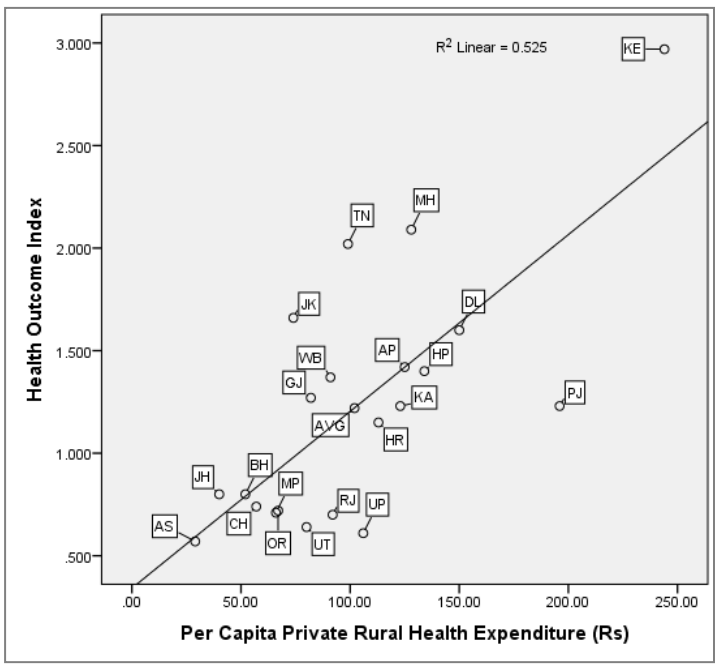


Figure 4.13 shows the association between health outcome Index and per capita public health expenditure among different states of India. It is clear from the diagram that public health expenditure has the positive association with health outcome. Correlation coefficient between these two are positive with the correlation coefficient of 0.448 and 95 per cent of significant level (appendix Table 4.12). It means higher the public expenditure on health, higher will be the health outcome.

Figure 4.14: Scatter Diagram of Per Capita Private Rural Health Expenditure and Health Outcome Index

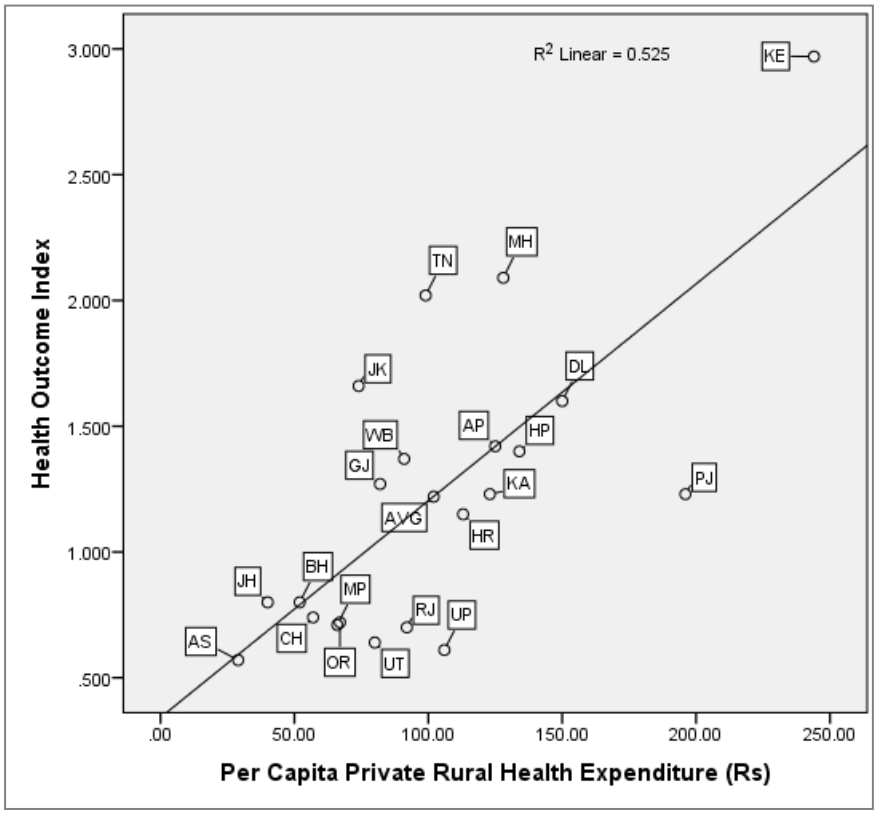


Private expenditure or out of pocket expenditure on health is also important indicator for the measurement of the health outcome. In private health expenditure, in the present study we have considered two types of expenditures. One is rural per capita private expenditure and another is urban per capita private expenditure.

In figure 4.14 per capita rural health expenditure has been scattered with health outcome index. It is found that health

outcome has positive and strong significant association with per capita private rural health expenditure. Further, correlation coefficient between these two is 0.724 with 99 per cent significant level. It means higher the out of pocket expenditure means higher will be the health status. Significant association of private per capita rural health expenditure is more than that of public per capita expenditure. It means, between public and private expenditures, private or out of pocket expenditure has significant outcome/impact.

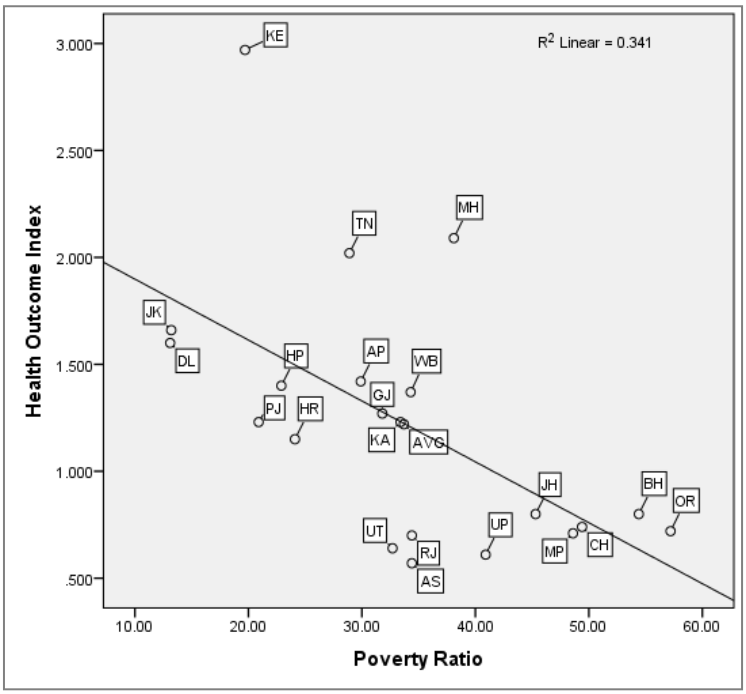
Figure 4.15: Scatter Diagram of Per Capita Private Urban Health Expenditure and Health Outcome Index



Private expenditure either it may be rural or urban, it has the positive implication on health outcome or health status. Figure 4.15 shows the significant positive association between Per Capita Private Urban Health Expenditure and Health Outcome Index.

Between rural and urban health expenditures, urban health expenditure has more significance with the outcome, which is evident from the correlation coefficient of per capita private urban health expenditure and health outcome index is 0.771with 99 per cent of significant level (for more details see Appendix Table 4.12).

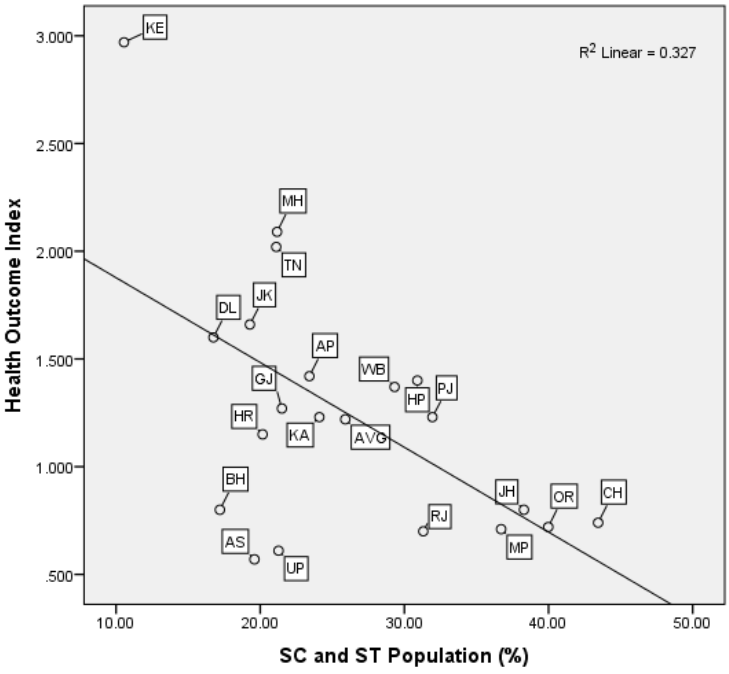
Figure 4.16: Scatter Diagram of Poverty Ratio and Health Outcome Index



Poverty is the situation, where people are not able to spend on food and cloths, in such circumstances; it will be difficult for them to spend on health. Therefore, it is more difficult to maintain good health.

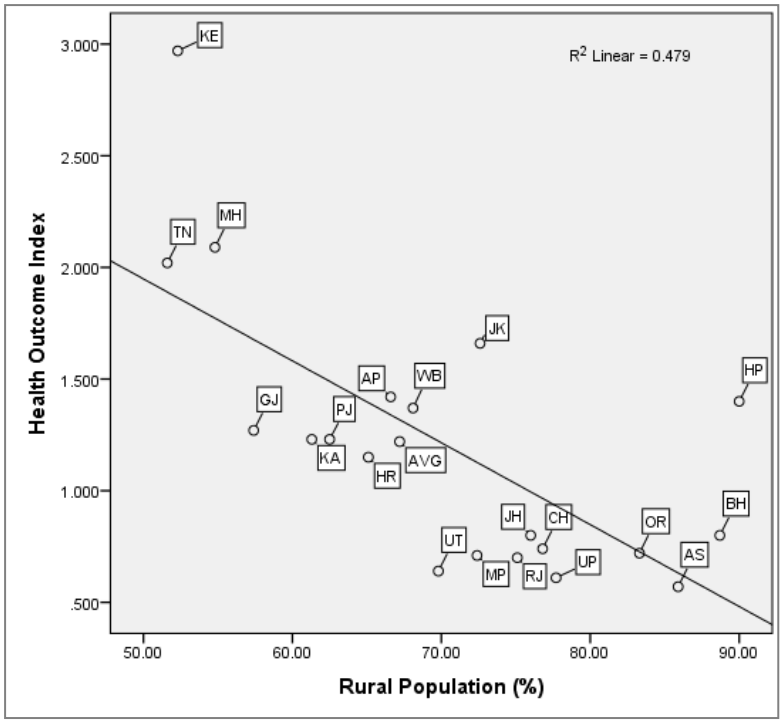
Poverty ratio has strong negative association with health outcome index, which is evident from figure 4.16and appendix table 4.12. Correlation coefficient between poverty ratio and health outcome index is -.0584, with 95 per cent of significant level. It means higher the poverty; lower will be the health status of the people.

Figure 4.17: Scatter Diagram of Share of SC and ST Population and Health Outcome Index



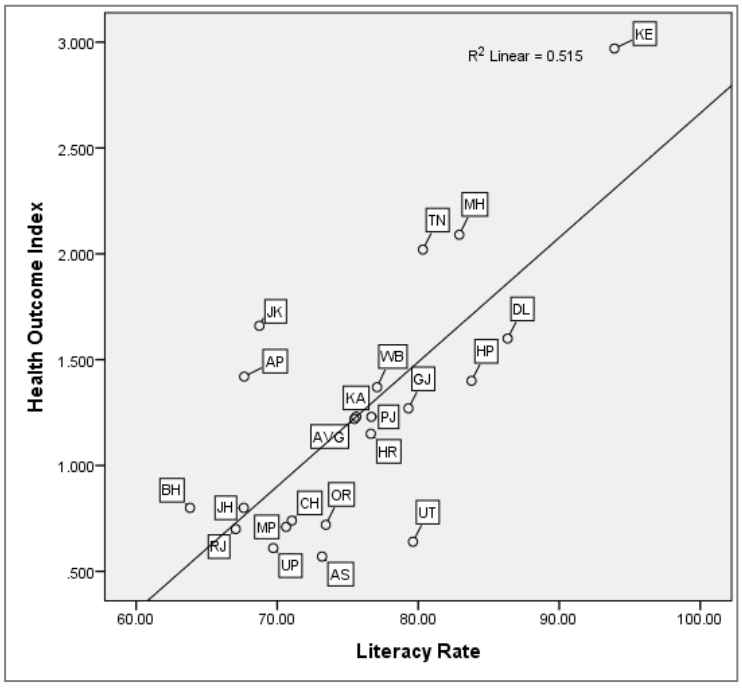
In figure 4.17, share of SC and ST population and health outcome index of Indian states have been plotted. It is found from the figure as well as appendix table 4.12 that there is negative association between share of SC and ST population and health out-come index. It means SC and ST population have lower health status than the rest of the people

Figure 4.18: Scatter Diagram of Share of Rural Population and Health Outcome Index



Another important indicator for the determination of health status is the area of residence. Many people think that people, who live in the village have good health than that of their counterparts of urban area. In the present study it is found that health status of urban is higher than rural people. It can be seen through figure 4.18 and appendix table 4.12. There is a strong negative association between share of rural population and health outcome index. -0.529. It means, rural people have comparatively lower health status than urban people.

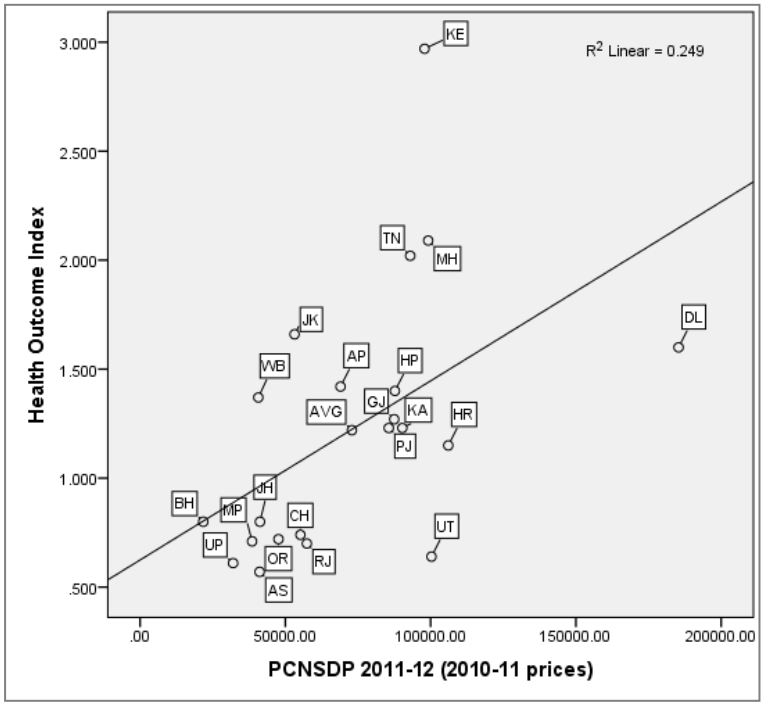
Figure 4.19: Scatter Diagram of Literacy Rate and Health Outcome Index



Literacy rate plays very important role in overall development of the nation. It is one of the very important human capitals. Educated people are the real wealth of the nation. In graph figure 4.19Health Outcome Index and its association with literacy rate has been presented. It is found from the figure that Health Outcome Index has the positive association with literacy rate. It

means, higher the literacy rate higher will be the health status. Correlation coefficient between these variable are 0.718 with the statistical significance at 95 per cent.

Figure 4.20: Scatter Diagram of Per Capita Income and Health Outcome Index



Per capita income is the measure of economic growth. Higher the per capita income, higher is considered as economic growth. Hence, it becomes very important to link the per capita income with the health outcome or health status.

An attempt has been made in figure 4.20 and in appendix table 4.12 to see the association between them. There is a strong positive association between per capita Income and health outcome index (correlation coefficient is 0.499 at 95 per cent of significant level). It means people who have good income, generally, they have good health status also.

4.5InternationalComparison of Health Indicators:

Indian health status has been compared with selected countries of the world to see the Indian position. Information related to this has been presented table 4.8. It is found from the table that Indian health status is too low than China, Norway, USA, UK and Germany. With respect to infant mortality rate, in India around 38 infant die per 1000 live births, whereas, none of the selected country has IMR more than 10. Germany and Norway have IMR only 3 and 2. Further, 10 per cent of Indian infants lacking immunization, DTP (% of one-year-old), whereas, it is one in China and Norway, it is 2 in USA, UK and Germany. In India, stunting is around 40 per cent for 'under five children', whereas, in China it is around

10 per cent and in Germany it is only one per cent. Around 48 children per 1000 live birth in India will not see their 5th year 'birth-day', in the selected countries is very less. These fact and figures show the painful health condition of our country. It is due to lack of public expenditure on health sector. India spends 1.4 per cent of GDP on health sector, whereas, countries like Norway, USA, UK and Germany spend around 7-9 per cent of GDP on this sector, even China spends more than 3 per cent of GDP to health sector.

Table 4.8: Selected Country wise Health Indicators, 2015

Indicators	India	China	Norway	USA	UK	Germany
Life expectancy at birth (years)	68.3	76	81.7	79.2	80.8	81.1
Adult mortality rate, female (per 1,000 people)	145	72	44	78	54	n.a.
Adult mortality rate, male (per 1,000 people)	217	98	69	131	85	n.a.
Deaths due to malaria (per 100,000 people)	4.1	0	n.a.	n.a.	n.a.	n.a.
Deaths due to tuberculosis (per 100,000 people)	17	2.8	0.1	0.1	0.5	0.4
Infant mortality rate (per 1,000 live births)	37.9	9.2	2	5.6	3.5	3.1
Infants lacking immunization, DTP (% of one-year-olds)	10	1	1	2	2	2
Infants lacking immunization, measles (% of one-year-olds)	17	1	6	9	7	3
Public health expenditure (% of GDP)	1.4	3.1	8.3	8.3	7.6	8.7
Stunting (moderate or severe) (% under age 5)	38.7	9.4	n.a.	2.1	n.a.	1.3
Under-five mortality rate (per 1,000 live births)	47.7	10.7	2.6	6.5	4.2	3.7

Source: Human Development Report, 2016

In this section, taking into consideration of 188 courtiers of the world,association of health status has been linked with other indicators such as HDI, urban population, per capita income and gender inequality index to see the nexus among them. It is found that share of urban population and per capita income have strong positive association with LEB. It shows that urban population has higher level of health status world over. Higher per capita income leads higher health status. Gender inequality index has strong negative association with LEB. Further, public health expenditure as a share of GDP has strong positive association with LEB and HDI. It emphasizes the investment on health by the government (for more details see figures from 4.21 to 4.25).

Figure 4.21: Scatter Diagram of HDI and Public expenditure on health (% to GDP)

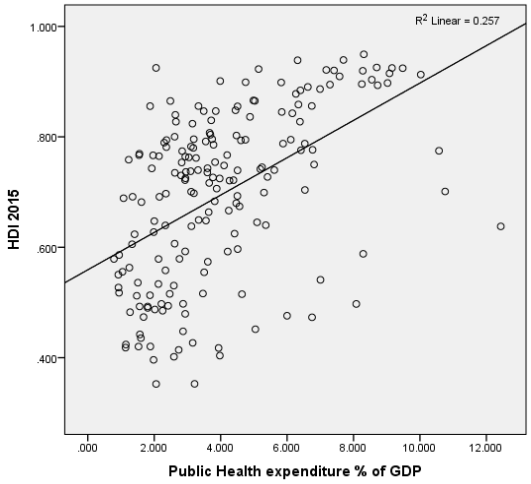


Figure 4.22: Scatter Diagram of LEB and Public expenditure on health (% to GDP)

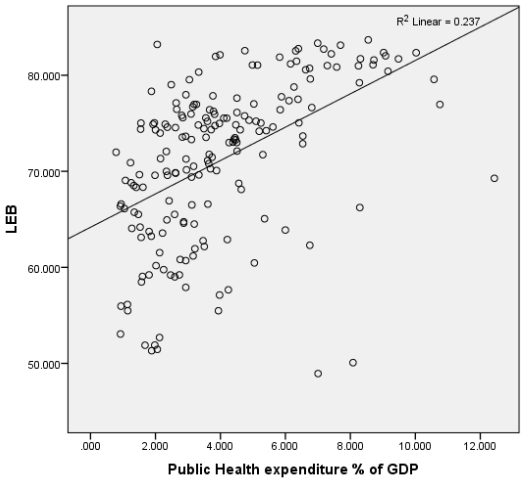


Figure 4.23: Scatter Diagram of LEB and Gender Inequality Index

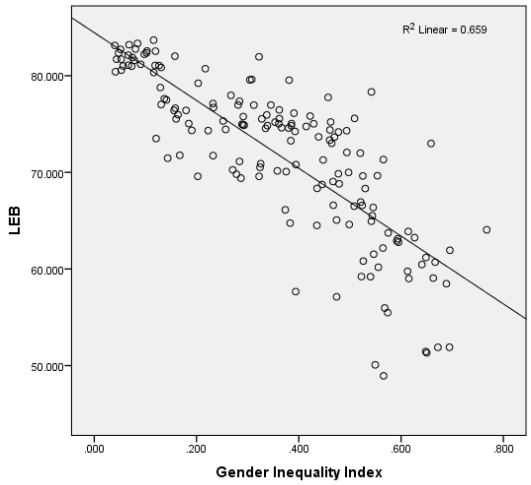


Figure 4.24: Scatter Diagram of LEB and Per capita GNI

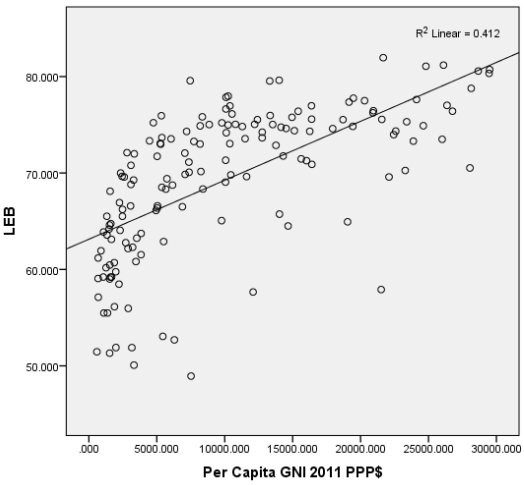
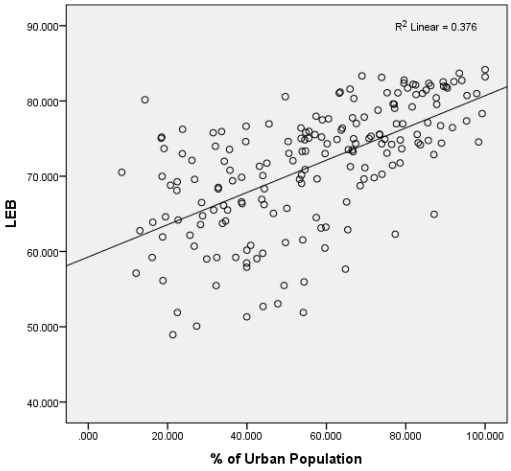


Figure 4.25: Scatter Diagram of LEB and Share of Urban Population



Source: Computed from the data available from HDR, UNDP, 2016

4.6 Conclusion:

From the ongoing analysis it is clear that Indian has made considerable progress in health sector. The progress is visible not only in health infrastructure but also in health status. Rural and urban gap has decreased in health infant mortality rate and life expectancy at birth. LEB of Female is growing at the higher rate than male. Inter-state disparity in LEB has decreased considerably over the period of time.

Doctors, nurses, midwives and health visitors were 27, 14, 5 and 0.8 per ten lakh population respectively in 1971, which increased to 71, 101, 48 and 4.82 respectively, in 2016.In 1971, the number of hospitals, dispensaries, PHCs and beds respectively were 7, 16, 9.3 and 64 per million population. These have increased to 21, 35, 35 and 111 per million population by 2016. But the growth trend of these variables is quite different. This growth cannot be seen in all the states. Some states are in the good position and some are in the worst position.

With respect to Health Input Index, Uttar Pradesh was found in the first position and Himachal Pradesh was in the bottom position out of the 21 selected states. States like Uttar Pradesh, Bihar, Maharashtra, Andhra Pradesh and West Bengal were in the top 5 position. On the other hand, Himachal Pradesh, Uttaranchal, Jammu & Kashmir, Punjab and Delhi were found in the least position.

With respect to Health Outcome index, Kerala stands first and Assam stands in the last position. Kerala, Maharashtra, Tamil Nadu, Jammu & Kashmir and Delhi are the states with top five ranks, whereas, Assam, Uttar Pradesh, Uttaranchal, Rajasthan and Madhya Pradesh have the bottom 5 ranks.

Correlation analysis of health outcome index and health input index reveals that there is negative association between health input index and health outcome index. One should not be shocked with this finding, because the correlation coefficient is not statistically significant. Further, not only the input but also the service delivery through these inputs and awareness to utilize the health facilities becomes very important. Moreover, in the recent years central government is investing huge amount on the under developed states. Hence, states like Uttar Pradesh, Bihar Madhya Pradesh, Rajasthan and Odisha are in the better position in the health input index. Health outcome or health status will not improve

immediately after the investment on infrastructure, it takes time. In the near future health status will improve in under developed states.

Public health expenditure has the positive association with health outcome index.Out of pocket expenditure (NSSO Data) has strong positive association with health outcome index of Indian states. It means higher the out of pocket expenditure higher will be the health status. Impact on health outcome index by '**private** per capita health expenditure' is more than that of '**public** per capita public health expenditure'. It means between public and private expenditures, private or out of pocket expenditure has major role in outcome.

The study has found that health status (health outcome index) is comparatively lower among poor, people belong to SC & ST category, people from rural area and people with lower level of education. Hence, existing government health facilities should be provided in more meaningful way. For this purpose number of medical colleges should be increased. Traditional medical practices should be strengthened with more scientific way.

Appendix table 4.1: Infant Mortality Rate (Per Thousand Live Births)

Years	Rural	Urban	Combined	Gap (Rural-Urban)
1971	138	82	129	56
1976	139	80	129	59
1981	119	62	110	57
1982	114	65	105	49
1983	114	66	105	48
1984	113	66	104	47
1985	107	59	97	48
1986	105	62	96	43
1987	104	61	95	43
1988	102	62	94	40
1989	98	58	91	40
1990	86	50	80	36
1991	87	53	80	34
1992	85	53	79	32
1993	82	45	74	37
1994	80	52	74	28
1995	80	48	74	32
1996	77	46	72	31
1997	77	45	71	32
1998	77	45	72	32
1999	75	44	70	31
2000	74	44	68	30
2001	72	42	66	30
2002	69	40	63	29
2003	66	38	153	28
2004	64	40	154	24
2005	64	40	155	24
2006	62	39	156	23
2007	61	37	157	24
2008	58	36	158	22
2009	55	34	159	21
2010	51	31	160	20
2011	48	29	161	19
2012	46	28	162	18
2013	44	27	163	17

Source: Various Issues of SRS Bulletin

Appendix table 4.2: Life Expectancy at Birth, Male and Female

Year	Male	Female
1901	23.63	23.96
1906	24.76	23.23
1911	22.59	23.31
1916	24.74	23.34
1921	19.42	20.91
1926	28.26	26.97
1931	26.91	26.56
1936	31.63	30.25
1941	32.09	31.37
1946	35.91	34.09
1951	32.45	31.66
1956	42.04	39.95
1961	41.89	40.55
1966	46.98	44.27
1971	46.40	44.47
1976	52.45	49.13
1981	54.63	55.03
1986	57.48	56.27
1991	59.70	59.70
1996	60.60	62.20
2001	63.50	63.50
2006	62.22	64.40
2011	65.77	67.95
2016	65.14	68.70

Source: Bhagawati and Choudhury (2015)

Appendix Table 4.3: Expectation of life at birth by sex and residence, India 1970-75 to 2008-12

Period	Mid Year	Total			Rural			Urban		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
1970-75	1973	49.7	50.5	49.0	48.0	48.9	47.1	58.9	58.8	59.2
1976-80	1978	52.3	52.5	52.1	50.6	51.0	50.3	60.1	59.6	60.8
1981-85	1983	55.4	55.4	55.7	53.7	54.0	53.6	62.8	61.6	64.1
1986-90	1988	57.7	57.7	58.1	56.1	56.1	56.2	63.4	62.0	64.9
1987-91	1989	58.3	58.1	58.6	56.8	56.7	56.9	63.8	62.3	65.3
1988-92	1990	58.7	58.6	59.0	57.4	57.2	57.4	64.1	62.8	65.5
1989-93	1991	59.4	59.0	59.7	58.0	57.9	58.1	64.9	63.5	66.3
1990-94	1992	60.0	59.4	60.4	58.6	58.2	58.7	65.4	64.1	66.7
1991-95	1993	60.3	59.7	60.9	58.9	58.5	59.3	65.9	64.5	67.3
1992-96	1994	60.7	60.1	61.4	59.4	58.9	59.8	66.3	64.9	67.7
1993-97	1995	61.1	60.4	61.8	59.9	59.3	60.2	66.6	65.1	68.0
1994-98	1996	61.4	60.6	62.2	60.1	59.5	60.5	66.8	65.3	68.2
1995-99	1997	61.5	60.8	62.3	60.3	59.7	60.9	66.4	65.1	67.9
1996-00	1998	61.9	61.2	62.7	60.7	60.1	61.3	66.7	65.4	68.3
1997-01	1999	62.3	61.4	63.3	61.1	60.3	61.9	67.1	65.7	68.7
1998-02	2000	62.9	61.9	64.0	61.6	60.7	62.5	67.6	66.1	69.2
1999-03	2001	63.4	62.3	64.6	62.2	61.1	63.2	68.0	66.5	69.7
2000-04	2002	63.9	62.8	65.2	62.7	61.6	63.8	68.4	66.9	70.0
2001-05	2003	64.3	63.1	65.6	63.0	61.9	64.2	68.6	67.2	70.3
2002-06	2004	64.7	63.5	66.1	63.5	62.3	64.7	68.9	67.4	70.6
2003-07	2005	65.0	63.7	66.5	63.8	62.6	65.2	69.0	67.5	70.7
2004-08	2006	65.4	64.0	66.9	64.2	62.9	65.7	69.0	67.5	70.8
2005-09	2007	65.7	64.3	67.2	64.5	63.2	66.0	69.2	67.6	71.0
2006-10	2008	66.1	64.6	67.7	64.9	63.5	66.5	69.6	68.0	71.4
2007-11	2009	66.5	65.0	68.2	65.3	63.9	67.0	69.7	68.1	71.6
2008-12	2010	66.9	65.3	68.6	65.7	64.2	67.5	69.9	68.3	71.8

Source: Various issues of National Health Profile

Appendix Table 4.4: State/UT wise Number of Government Allopathic Doctors and Dental Surgeons & Average Population Served in India 2014-15

State/UT	No. of Govt. Allopathic Doctors	No. of Govt. Dental Surgeons	Population (000)	Average Population Served/Govt. Allopathic Doctors	Average Population Served/Govt. Dental Surgeon	No. of Govt. Allopathic Doctors per Lakh Population
Andhra Pradesh	4414	264	86952	19699	329365	5.08
Arunachal Pradesh	418	53	1284	3072	24227	32.55
Assam	4401	262	31693	7201	120967	13.89
Bihar	3576	405	101526	28391	250681	3.52
Chhattisgarh	1008	62	25232	25032	406967	3.99
Goa	516	18	1915	4570	106383	26.95
Gujarat	3600	59	61329	17036	1039482	5.87
Haryana	2618	566	26675	10189	47129	9.81
Himachal Pradesh	4919	105	6978	1419	66461	70.49
Jammu & Kashmir	3589	588	12152	3386	20666	29.53
Jharkhand	1656	40	32766	19786	819142	5.05
Karnataka*	4606	417	61214	13290	146795	7.52
Kerala	5214	121	35258	6762	291388	14.79
Madhya Pradesh	4929	152	75614	15341	497462	6.52
Maharashtra	4217	31	117189	27790	3780291	3.60
Manipur	814	81	2534	3114	31290	32.12
Meghalaya	601	64	2712	4513	42379	22.16
Mizoram	315	75	1039	3299	13857	30.32
Nagaland	437	33	2327	5326	70526	18.78
Odisha	4296	34	41797	9729	1229322	10.28
Punjab	3121	255	28568	9153	112031	10.92
Rajasthan	7877	370	70969	9010	191808	11.10
Sikkim	268	42	633	2363	15080	42.34
Tamil Nadu	7178	166	68654	9564	413576	10.46
Tripura	1050	87	3742	3564	43010	28.06
Uttar Pradesh	10798	198	211217	19561	1066754	5.11
Uttarakhand	1242	57	10362	8343	181794	11.99
West Bengal	8829	647	91920	10411	142071	9.61
A & N Islands	87	5	533	6121	106506	16.32
Chandigarh	110	17	1651	15013	97142	6.66
D & N Haveli	78	13	402	5150	30900	19.40
Daman & Diu	56	5	305	5439	60915	18.36
Delhi	9121	312	20092	2203	64398	45.40
Lakshadweep	29	1	78	2699	78279	37.18
Puducherry	427	9	1573	3684	174764	27.15
Total	**106415**	**5614**	**1238887**	**11528**	**217448**	**8.59**

Source: National Health Profile, 2015

Appendix Table 4.5: State/UT wise AYUSH Registered Practitioners (Doctors) in India as on 1.1.2014

State/UT	Ayurveda	Unani	Siddha	Naturopathy	Homeopathy	Total	Population	AYUSH Registered Practitioners (Doctors) Per Lakh Population
Andhra Pradesh	11781	4933	0	368	5810	22892	86952	26.33
Arunachal Pradesh	0	0	0	0	291	291	1284	22.66
Assam	796	0	0	0	485	1281	31693	4.04
Bihar	96648	6954	0	0	30536	134138	101526	132.12
Chhattisgarh	2674	143	0	96	1569	4482	25232	17.76
Delhi	3617	2074	0	0	4354	10045	20092	50.00
Goa	570	0	0	0	576	1146	1915	59.84
Gujarat	24859	308	0	0	17376	42543	61329	69.37
Haryana	7423	257	0	0	5486	13166	26675	49.36
Himachal Pradesh	4648	4	0	0	1301	5953	6978	85.31
Jammu & Kashmir	2534	2343	0	0	310	5187	12152	42.68
Jharkhand	3164	330	0	0	2845	6339	32766	19.35
Karnataka	30850	1697	4	486	8349	41386	61214	67.61
Kerala	20431	92	1587	117	11411	33638	35258	95.41
Madhya Pradesh	45461	1486	0	15	15523	62485	75614	82.64
Maharashtra	69478	6048	0	0	59831	135357	117189	115.50
Manipur	79	21	0	13	630	743	2534	29.32
Meghalaya	0	0	0	0	296	296	2712	10.91
Mizoram	6	0	0	0	30	36	1039	3.46
Nagaland	0	0	0	0	2084	2084	2327	89.56
Odisha	4586	24	0	0	9244	13854	41797	33.15
Punjab	5715	91	0	0	4325	10131	28568	35.46
Rajasthan	9403	905	0	0	6946	17254	70969	24.31
Sikkim	0	0	0	0	0	0	633	0.00
Tamil Nadu	4260	1143	6582	669	19890	32544	68654	47.40
Tripura	0	0	0	0	235	235	3742	6.28
Uttar Pradesh	43332	13590	0	0	32703	89625	211217	42.43
Uttarakhand	2111	88	0	0	509	2708	10362	26.13
West Bengal	4974	5152	0	0	36415	46541	91920	50.63
A & N Islands	0	0	0	0	0	0	533	0.00
Chandigarh	0	0	0	0	158	158	1651	9.57
D & N Haveli	0	0	0	0	0	0	402	0.00
Daman & Diu	0	0	0	0	0	0	305	0.00
Lakshadweep	0	0	0	0	0	0	78	0.00
Puducherry	0	0	0	0	0	0	1573	0.00
Total	399400	47683	8173	1764	279518	736538	1238887	59.45

Source: National Health Profile, 2015

Appendix Table 4.6: State/UT Wise Number of Registered Nurses & Pharmacists In India

State/UT	ANM	RN & RM	LHV	Pharmacists as on 27.06.2014	ANM and RN&RM	ANM and RN&RM per Lakh Population
Andhra Pradesh	134694	210000	2480	43958	344694	396.4
Arunachal Pradesh	641	510	2	279	1151	89.6
Assam	24043	18506	204	2429	42549	134.3
Bihar	8624	9413	511	4163	18037	17.8
Chhattisgarh	8018	7851	1352	9713	15869	62.9
Goa	NA	NA	NA	466	NA	NA
Gujarat	40694	99125	NA	32030	139819	228.0
Haryana	22850	28356	694	7554	51206	192.0
Himachal Pradesh	11448	15424	500	2818	26872	385.1
Jharkhand	4071	2355	142	NA	6426	19.6
Karnataka	54039	231643	6840	79508	285682	466.7
Kerala	29710	215708	8507	21411	245418	696.1
Madhya Pradesh	37199	108855	1686	1381	146054	193.2
Maharashtra	51456	106155	572	156315	157611	134.5
Manipur	3220	5503	NA	NA	8723	344.2
Meghalaya	1066	3235	116	596	4301	158.6
Mizoram	1932	2973	NA	330	4905	472.1
Nagaland	NA	NA	NA	1553	NA	NA
Odisha	59225	73306	238	14312	132531	317.1
Punjab	23029	76680	2584	40162	99709	349.0
Rajasthan	103994	175542	2550	38156	279536	393.9
Tamil Nadu	55975	236161	11160	58466	292136	425.5
Tripura	2040	2259	148	257	4299	114.9
Uttar Pradesh	43488	42612	2763	30276	86100	40.8
Uttarakhand	1864	1513	11	NA	3377	32.6
West Bengal	59021	56124	12854	89630	115145	125.3
Dadra & Nagar Haveli	NA	NA	NA	66	NA	NA
Daman & Diu	NA	NA	NA	44	NA	NA
Delhi	3720	50197	NA	22728	53917	268.4
Lakshadweep	NA	NA	NA	3082	NA	NA
Puducherry	NA	NA	NA	2493	NA	NA
Total	**786061**	**1780006**	**55914**	**664176**	2566067	207.1

Source: National Health Profile, 2015

Appendix Table 4.7: State/UT wise Number of Sub Centers, PHCs & CHCs Functioning in India as on 31 March 2014

State/UT	Sub Centres	PHCs	CHCs	Population	Sub Centres and PHCs	Sub Centres and PHCs Per lakh population
India	152326	25020	5363	1238886	177346	14315
Andhra Pradesh	12522	1709	292	86952	14231	16367
Arunachal Pradesh	286	117	52	1284	403	31386
Assam	4621	1014	151	31693	5635	17780
Bihar	9729	1883	70	101526	11612	11437
Chhattisgarh	5161	783	157	25232	5944	23557
Goa	207	21	4	1915	228	11906
Gujarat	7274	1158	300	61329	8432	13749
Haryana	2542	454	109	26675	2996	11231
Himachal Pradesh	2068	489	78	6978	2557	36644
Jammu & Kashmir	2265	637	84	12152	2902	23881
Jharkhand	3958	330	188	32766	4288	13087
Karnataka	9264	2233	193	61214	11497	18782
Kerala	4575	829	224	35258	5404	15327
Madhya Pradesh	8764	1157	334	75614	9921	13121
Maharashtra	10580	1811	360	117189	12391	10574
Manipur	421	85	17	2534	506	19968
Meghalaya	422	108	27	2712	530	19543
Mizoram	370	57	9	1039	427	41097
Nagaland	396	126	21	2327	522	22432
Odisha	6688	1305	377	41797	7993	19123
Punjab	2951	427	150	28568	3378	11824
Rajasthan	14407	2082	567	70969	16489	23234
Sikkim	147	24	2	633	171	27014
Tamil Nadu	8706	1369	385	68654	10075	14675
Tripura	972	84	18	3742	1056	28220
Uttarakhand	1847	257	59	10362	2104	20305
Uttar Pradesh	20521	3497	773	211217	24018	11371
West Bengal	10356	909	347	91920	11265	12255
A & N Islands	119	22	4	1651	141	8540
Chandigarh	16	0	2	533	16	3002
D & N Haveli	51	7	1	402	58	14428
Daman & Diu	26	3	2	305	29	9508
Delhi	27	5	0	20092	32	159
Lakshadweep	14	4	3	78	18	23077
Puducherry	53	24	3	1573	77	4895

Source: National Health Profile, 2015

Appendix Table 4.8: State/UT wise Number of Govt. Hospital & Beds in Rural & Urban Areas (Including CHCs) in India (Provisional)

State/UT /Division	Rural Hospitals (Govt.)		Urban Hospitals (Govt.)		Total Hospitals (Govt.)		Provisional/ Projected Population as on reference period in (000)	Average Population Served Per Govt. Hospital	Average Population Served Per Govt. Hospital Bed
	No.	Beds	No.	Beds	No.	Beds			
India	16816	183602	3490	492177	20306	675779	1238886	61011	1833
Andhra Pradesh	222	7380	56	12468	278	19848	86952	312778	4381
Arunachal Pradesh	204	2095	8	218	212	2313	1284	6057	555
Assam	1088	7504	49	5877	1137	13381	31693	27874	2369
Bihar	1325	5250	111	6302	1436	11552	101526	70701	8789
Chhattisgarh	416	1522	221	10490	637	12012	25232	39611	2101
Goa	16	1684	15	1434	31	3118	1915	61771	614
Gujarat	296	8945	89	18983	385	27928	61329	159297	2196
Haryana	80	2454	79	5210	159	7664	26675	167768	3481
Himachal Pradesh	107	3328	53	5448	160	8776	6978	43615	795
Jammu & Kashmir	2368	5867	444	3893	2812	9760	12152	4321	1245
Jharkhand	545	4879	4	535	549	5414	32766	59682	6052
Karnataka	439	9884	215	43138	654	53022	61214	93599	1154
Kerala	1135	18082	143	20318	1278	38400	35258	27588	918
Madhya Pradesh	334	10020	117	18167	451	28187	75614	167659	2683
Maharashtra	450	12420	135	151445	585	163865	117189	200323	715
Manipur	23	730	7	697	30	1427	2534	84482	1776
Meghalaya	28	840	12	2287	40	3127	2712	67807	867
Mizoram	29	1420	7	210	36	1630	1039	28868	638
Nagaland	21	630	32	1797	53	2427	2327	43912	959
Odisha	1659	7099	91	9584	1750	16683	41797	23884	2505
Punjab	94	2900	146	8904	240	11804	28568	119033	2420
Rajasthan	2656	33038	489	13631	3145	46669	70969	22566	1521
Sikkim	30	730	3	830	33	1560	633	19192	406
Tamil Nadu	407	9150	381	55093	788	64243	68654	87124	1069
Tripura	101	1022	21	3115	122	4137	3742	30671	904
Uttar Pradesh	737	NA	94	NA	831	NA	211217	254172	NA
Uttarakhand	666	3746	29	4219	695	7965	10362	14909	1301
West Bengal	1272	19684	294	58882	1566	78566	91920	58697	1170
Chandigarh	31	625	1	450	32	1075	533	16642	495
A & N Islands	0	0	4	700	4	700	1651	412851	2359
D & N Haveli	1	100	1	272	2	372	402	200850	1080
Daman & Diu	0	0	4	200	4	200	305	76144	1523
Delhi	0	0	109	24383	109	24383	20092	184331	824
Lakshadweep	9	300	0	0	9	300	78	8698	261
Puducherry	27	274	26	2997	53	3271	1573	29677	481

Source: National Health Profile, 2015

Appendix Table 4.9: State-wise score and Ranking for Income and input Indices, 2008-12

State	Outcome Index		Input Index	
	Score	Rank	Score	Rank
Andhra Pradesh	239	6	1851104	4
Assam	595	21	711058	13
Bihar	422	13	2264612	2
Chhattisgarh	457	15	635798	15
Delhi	212	5	567263	17
Gujarat	268	9	1335106	9
Haryana	295	12	587470	16
Himachal Pradesh	243	7	199774	21
Jammu & Kashmir	204	4	299312	19
Jharkhand	423	14	719330	12
Karnataka	276	11	1358896	8
Kerala	114	1	646282	14
Madhya Pradesh	480	17	1568441	6
Maharashtra	162	2	2117093	3
Orissa	473	16	896492	11
Punjab	275	10	545670	18
Rajasthan	485	18	1469035	7
Tamil Nadu	168	3	1233721	10
Uttar Pradesh	558	20	4732917	1
Uttaranchal	526	19	235443	20
West Bengal	247	8	1623937	5

Source: Sinha, Sahay and Koul (2016) Development of a Health Index of Indian States(IIMA)
https://www.indiaoppi.com/sites/default/files/PDF%20files/Development%20of%20a%20Health%20Index%20of%20Indian%20States.pdf

Appendix Table 4.10: Per Capita Expenditure on Health

State/UT	Medical and Public Health	Family Welfare	Others	Total
Andhra Pradesh	495	137	228	859
Delhi	1375	41	0	1417
Goa	2306	56	6	2367
Gujarat	688	81	8	776
Haryana	566	48	46	660
Himachal Pradesh	1280	180	130	1590
Jammu & Kashmir	966	13	34	1013
Karnataka	581	71	19	670
Kerala	837	93	0	930
Maharashtra	506	51	3	560
Punjab	616	61	51	728
Tamil Nadu	644	133	28	805
West Bengal	393	51	8	452
Assam	435	59	0	495
Bihar	208	32	17	257
Chhattisgarh	471	52	9	532
Jharkhand	273	25	17	315
Madhya Pradesh	400	47	5	452
Odisha	376	52	11	438
Rajasthan	452	109	7	568
Uttar Pradesh	300	119	8	427
Uttarakhand	840	86	22	948
Arunachal Pradesh	1992	100	77	2169
Manipur	1256	68	4	1328
Meghalaya	1363	107	7	1478
Mizoram	1880	340	40	2260
Nagaland	1174	96	370	1639
Sikkim	3783	283	17	4083
Tripura	784	57	16	857
All States	487	79	29	595

Source: National Health Profile, 2015

Appendix Table 4.11: Monthly Per Capita Household Out-of-Pocket Medical Expenditure by State/UT for 2011-12

State/UT	Per Capita Medical Expenditure (Rs)		Medical Expenditure as share of total non-food consumption expenditure (%)		Medical Expenditure as share of totalconsumption expenditure (%)	
	Rural	Urban	Rural	Urban	Rural	Urban
Andhra Pradesh	125	144	14.7	9.3	7.2	5.4
Delhi	150	114	9.3	5.8	5.4	3.5
Goa	99	142	8	8.8	4.1	4.6
Gujarat	82	120	11.8	8.5	5.3	4.7
Haryana	113	149	10.9	6.4	5.2	3.9
Himachal Pradesh	134	135	12.5	7.2	6.6	4.1
Jammu & Kashmir	74	116	9.5	9.0	4.3	4.7
Karnataka	123	137	16.1	7.6	7.8	4.5
Kerala	244	275	16.1	12.8	9.2	8.1
Punjab	196	197	15.0	11.9	8.4	7.0
Tamil Nadu	99	149	12.0	9.9	5.8	5.7
West Bengal	91	193	16.9	13.3	7.1	7.4
Assam	29	116	6.2	10.1	2.4	5.3
Bihar	52	78	11.3	10.4	4.6	5.2
Chhattisgarh	57	88	11.7	8.2	5.5	4.7
Jharkhand	40	108	9.5	10.0	3.9	5.4
Madhya Pradesh	66	125	12.2	10.5	5.7	6.1
Odisha	67	89	15.5	8.4	6.6	4.6
Rajasthan	92	92	11.7	6.8	5.8	3.8
Uttar Pradesh	106	127	19.4	11.0	9.1	6.2
Uttarakhand	80	84	9.2	6.7	4.6	3.6
Arunachal Pradesh	54	103	6.3	6.8	3.0	3.9
Manipur	26	23	3.8	3.3	1.7	1.6
Meghalaya	12	29	1.8	2.1	0.8	1.2
Mizoram	21	41	2.9	3.1	1.3	1.6
Nagaland	15	20	1.6	1.8	0.7	0.9
Sikkim	15	32	2.0	2.2	0.9	1.2
Tripura	53	133	9.4	12.6	4.0	6.2

Source: National Health Profile, 2015

Appendix Table 4.12: Correlations Matrix of among and between health indices and different socio-economic Indicators

Indices/ Indicators	Health Outcome Index	Health Input Index	Per Capita Private Rural Health Expenditure (Rs)	Per Capita Private Urban Health Expenditure (Rs)	Per Capita Public Health Expenditure (in Rs)	Literacy Rate	PCNSDP 2011-12 (2010-11 prices)	Rural Population (%)	Poverty Ratio	SC and ST Population (%)
Health Outcome Index	1.000									
Health Input Index	-0.175	1.000								
Per Capita Private Rural Health Expenditure (Rs)	.724**	-0.079	1.000							
Per Capita Private Urban Health Expenditure (Rs)	.771**	-0.032	.798**	1.000						
Per Capita Public Health Expenditure (in Rs)	.448*	-.471*	.494*	0.168	1.000					
Literacy Rate	.718**	-0.337	.695**	.629**	.604**	1.000				
PCNSDP 2011-12 (2010-11 prices)	.499*	-0.390	.574**	0.238	.717**	.733**	1.000			
Rural Population (%)	-.529*	0.130	-.503*	-0.302	-.443*	-.582**	-.847**	1.000		
Poverty Ratio	-.584**	0.388	-.613**	-.476*	-.765**	-.541**	-.661**	.549**	1.000	
SC and ST Population (%)	0.050	-0.119	0.129	0.036	-0.033	0.063	-0.024	0.175	0.153	1.000

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Annexure Table 4.13: Country-wise selected Indicators on Human Development, 2015																			
HDI Rank	Country	HDI 2015	LEB	Expected Years of Schooling	Mean Years of Schooling	Per Capita GNI 2011 PPP$	Growth Rate of HDI 1990-2015	Gender Development Index	Gender Inequality Index	MMR	% of Urban Population	Public Health expenditure % of GDP	(% of primary school–age population)	Primary school dropout rate	Pupil-teacher ratio, primary school	Government expenditure on education (% of GDP)	Per capita (2011 PPP $)	Employment in agriculture	Unemployment Rate (% of labour force)
1	Norway	0.949	81.71	17.67	12.75	67614	0.45	0.993	0.05	5	80.47	8.31	100.14	0.43	8.85	7.37	64451	2.10	4.15
2	Australia	0.939	82.54	20.43	13.18	42822	0.32	0.978	0.12	6	89.42	6.32	106.57			5.27	43655	2.60	6.25
2	Switzerland	0.939	83.13	16.04	13.37	56364	0.49	0.974	0.04	5	73.91	7.70	103.23		10.10	5.05	55112	3.20	4.25
4	Germany	0.926	81.09	17.10	13.19	45000	0.58	0.964	0.07	6	75.30	8.70	103.33	3.52	12.30	4.94	44053	1.30	4.61
5	Denmark	0.925	80.41	19.19	12.70	44519	0.59	0.970	0.04	6	87.68	9.16	101.33	0.52		8.55	43415	2.30	6.31
5	Singapore	0.925	83.21	15.40	11.57	78162	1.02	0.985	0.07	10	100.00	2.05		1.32		2.91	80192		3.27
7	Netherlands	0.924	81.71	18.12	11.91	46326	0.43	0.946	0.04	7	90.50	9.48	104.44		11.67	5.61	46374	2.00	6.08
8	Ireland	0.923	81.05	18.58	12.31	43798	0.77	0.976	0.13	8	63.24	5.14	102.86		16.06	5.77	51899	6.10	9.54
9	Iceland	0.921	82.72	18.99	12.19	37065	0.58	0.965	0.05	3	94.14	7.18	98.67	2.08	9.93	7.05	42449	4.20	4.37
10	Canada	0.920	82.22	16.33	13.11	42582	0.32	0.983	0.10	7	81.83	7.41	100.57			5.27	42891	2.10	6.88
10	United States	0.920	79.22	16.54	13.22	53245	0.27	0.993	0.20	14	81.62	8.28	99.53		14.54	5.22	52549	1.60	5.34
12	Hong Kong, China (SAR)	0.917	84.16	15.67	11.59	54265	0.64	0.964			100.00		111.03	1.55	13.85	3.57	53380		3.33
13	New Zealand	0.915	82.03	19.23	12.50	32870	0.45	0.963	0.16	11	86.28	9.08	98.63		14.37	6.44	34762	6.40	5.92
14	Sweden	0.913	82.35	16.06	12.27	46251	0.45	0.997	0.05	4	85.82	10.02	120.90	0.44	9.65	7.72	45296	1.70	7.36
15	Liechtenstein	0.912	80.16	14.64	12.35	75065					14.29		102.66	20.60	7.44	2.56			
16	United Kingdom	0.909	80.85	16.31	13.28	37931	0.64	0.964	0.13	9	82.59	7.58	108.24		17.39	5.69	38658	1.10	5.47
17	Japan	0.903	83.68	15.34	12.46	37268	0.42	0.970	0.12	5	93.50	8.55	101.58	0.16	16.73	3.76	35804	3.70	3.29
18	Korea (Republic of)	0.901	82.13	16.59	12.18	34541	0.84	0.929	0.07	11	82.47	3.99	99.04	0.41	16.85	4.62	34387	6.10	3.66
19	Israel	0.899	82.56	16.00	12.76	31215	0.54	0.973	0.10	5	92.14	4.75	104.18	0.76	12.50	5.86	31671	1.10	5.00
20	Luxembourg	0.898	81.88	13.86	11.95	62471	0.56	0.966	0.07	10	90.16	5.82	96.54	15.22	8.37		93553	1.30	5.86
21	France	0.897	82.36	16.27	11.63	38085	0.57	0.988	0.10	8	79.52	9.02	105.36		18.18	5.53	37306	2.80	10.55
22	Belgium	0.896	80.98	16.64	11.38	41243	0.42	0.978	0.07	7	97.86	8.25	104.85	7.81	11.24	6.38	41138	1.10	8.74
23	Finland	0.895	81.01	17.05	11.19	38868	0.53	1.000	0.06	3	84.22	7.29	101.43	0.37	13.20	7.18	38643	3.90	9.62
24	Austria	0.893	81.58	15.91	11.33	43609	0.47	0.957	0.08	4	65.97	8.73	102.25	0.50	10.72	5.56	43893	4.30	5.68
25	Slovenia	0.890	80.58	17.35	12.12	28664	0.60	1.003	0.05	9	49.65	6.62	99.30	0.95	16.89	5.66	28942	7.70	9.34
26	Italy	0.887	83.34	16.26	10.87	33573	0.58	0.963	0.08	4	68.96	6.99	101.89	1.06	12.03	4.14	33587	3.50	12.12
27	Spain	0.884	82.77	17.70	9.79	32779	0.64	0.974	0.08	5	79.58	6.40	104.69	3.66	12.60	4.30	32814	4.20	22.44
28	Czech Republic	0.878	78.78	16.81	12.33	28144	0.57	0.983	0.13	4	72.99	6.26	98.87	0.71	18.93	4.27	29805	2.70	5.17
29	Greece	0.866	81.07	17.22	10.54	24808	0.52	0.957	0.12	3	78.01	4.99	98.60	9.32	9.20		24617	13.00	24.92
30	Brunei Darussalam	0.865	79.02	14.94	9.02	72843	0.40	0.986		23	77.20	2.49	107.44	3.63	10.26	3.77	66647	0.60	1.87
30	Estonia	0.865	77.01	16.50	12.55	26362	0.69	1.032	0.13	9	67.54	5.03	100.70	3.42	11.50	4.69	26930	3.90	5.93
32	Andorra	0.858	81.46	13.52	10.26	47979					85.12	6.34		29.35	9.52	3.06			
33	Cyprus	0.856	80.33	14.26	11.70	29459	0.62	0.979	0.12	7	66.92	3.33	99.15	9.16	13.39	6.64	30310	3.90	15.62
33	Malta	0.856	80.73	14.59	11.27	29500	0.61	0.923	0.22	9	95.41	6.74	97.49	3.12	11.27	6.76	28822	1.20	5.40
33	Qatar	0.856	78.32	13.41	9.76	129916	0.51	0.991	0.54	13	99.24	1.88	101.36	2.26	11.21	3.55	135322	1.40	0.24

Annexure Table 4.13: Country-wise selected Indicators on Human Development, 2015																			
HDI Rank	Country	HDI 2015	LEB	Expected Years of Schooling	Mean Years of Schooling	Per Capita GNI 2011 PPP$	Growth Rate of HDI 1990-2015	Gender Development Index	Gender Inequality Index	MMR	% of Urban Population	Public Health expenditure % of GDP	(% of primary school–age population)	Primary school dropout rate	Pupil-teacher ratio, primary school	Government expenditure on education (% of GDP)	Per capita (2011 PPP $)	Employment in agriculture	Unemployment Rate (% of labour force)
36	Poland	0.855	77.62	16.37	11.90	24117	0.74	1.006	0.14	3	60.54	4.51	101.31	1.47	10.23	4.81	24836	11.20	7.36
37	Lithuania	0.848	73.50	16.52	12.70	26006	0.60	1.032	0.12	10	66.51	4.45	102.46	2.79	12.81	4.77	26397	9.00	9.48
38	Chile	0.847	81.96	16.34	9.90	21665	0.76	0.966	0.32	22	89.53	3.85	100.53	0.47	19.53	4.56	22145	9.20	6.36
38	Saudi Arabia	0.847	74.44	16.11	9.63	51320	0.77	0.882	0.26	12	83.13	3.49	108.72	1.31	10.76		50284	4.90	5.80
40	Slovakia	0.845	76.41	14.96	12.23	26764	0.54	0.991	0.18	6	53.60	5.84	100.98	2.10	15.24	4.11	27394	3.50	11.34
41	Portugal	0.843	81.18	16.57	8.88	26104	0.68	0.980	0.09	10	63.47	6.16	108.51		13.41	5.12	26690	5.50	12.11
42	United Arab Emirates	0.840	77.12	13.33	9.50	66203	0.58	0.972	0.23	6	85.54	2.64	106.71	8.04	18.93		66102		3.65
43	Hungary	0.836	75.31	15.60	12.02	23394	0.70	0.988	0.25	17	71.23	4.88	101.51	1.74	11.24	4.63	24474	4.60	6.96
44	Latvia	0.830	74.34	15.97	11.74	22589	0.67	1.025	0.19	18	67.38	3.72	100.41	6.48	11.09	4.91	22628	7.30	9.81
45	Argentina	0.827	76.46	17.26	9.85	20945	0.64	0.982	0.36	52	91.75	2.65	110.57	5.43		5.34		0.50	6.67
45	Croatia	0.827	77.50	15.26	11.22	20291	0.85	0.997	0.14	8	58.96	6.39	98.87	0.56	13.70	4.16	20430	8.70	16.11
47	Bahrain	0.824	76.72	14.50	9.42	37236	0.40	0.970	0.23	15	88.78	3.15		2.19	11.67	2.64	44182	1.10	1.24
48	Montenegro	0.807	76.40	15.13	11.29	15410		0.955	0.16	7	64.03	3.67	94.31	19.50			15010	5.70	18.21
49	Russian Federation	0.804	70.26	14.95	12.02	23286	0.37	1.016	0.27	25	74.01	3.69	98.56	3.55	19.81	4.15	23895	6.70	5.81
50	Romania	0.802	74.84	14.73	10.80	19428	0.55	0.990	0.34	31	54.56	4.47	95.54	5.95	17.56	2.94	19926	25.40	6.91
51	Kuwait	0.800	74.55	13.26	7.27	76075	0.46	0.972	0.33	4	98.34	2.61	102.68	4.30	8.83		67113	1.20	3.52
52	Belarus	0.796	71.46	15.66	11.98	15629		1.021	0.14	4	76.67	3.74	98.97	1.68	16.48	4.99	16621	9.60	6.10
52	Oman	0.796	76.97	13.74	8.10	34402		0.927	0.28	17	77.64	3.19	110.26	1.32		5.01	35983	5.20	6.34
54	Barbados	0.795	75.77	15.29	10.46	14952	0.43	1.006	0.29	27	31.48	4.74	93.63	6.63	18.49	6.71	15426	2.70	12.27
54	Uruguay	0.795	77.35	15.51	8.58	19148	0.55	1.017	0.28	15	95.31	6.11	109.73	5.26	13.79	4.36	19952	9.30	7.34
56	Bulgaria	0.794	74.32	15.04	10.80	16261	0.50	0.984	0.22	11	73.95	4.61	99.08	2.16	17.73	3.52	16956	6.90	9.76
56	Kazakhstan	0.794	69.59	14.97	11.68	22093	0.56	1.006	0.20	12	53.25	2.37	110.56	1.23	16.20		24353	24.20	5.63
58	Bahamas	0.792	75.56	12.70	10.87	21565			0.36	80	82.87	3.55	107.90	10.50	14.15		22394	3.70	14.39
59	Malaysia	0.789	74.90	13.08	10.11	24620	0.83		0.29	40	74.71	2.30	106.88	5.77	11.41	6.09	25308	12.20	2.93
60	Palau	0.788	72.87	14.29	12.33	13771					87.07	6.53	114.30				14386		
60	Panama	0.788	77.76	13.04	9.85	19470	0.70	0.997	0.46	94	66.59	5.88	105.33	6.76	25.49	3.29	20885	16.70	5.19
62	Antigua and Barbuda	0.786	76.24	13.95	9.21	20907					23.77	3.78	97.11	8.68	14.25		21615		
63	Seychelles	0.782	73.30	14.14	9.40	23886					53.89	3.11	104.15		12.55	3.61	25668	3.60	
64	Mauritius	0.781	74.60	15.17	9.09	17948	0.93	0.954	0.38	53	39.67	2.36	102.70	1.76	18.73	4.98	18333	8.00	7.89
65	Trinidad and Tobago	0.780	70.52	12.75	10.88	28049	0.61	1.004	0.32	63	8.45	3.17	106.16	10.61			30677		3.82
66	Costa Rica	0.776	79.61	14.16	8.71	14006	0.70	0.969	0.31	25	76.82	6.77	110.79	9.63	13.23	7.01	14472	12.70	8.63
66	Serbia	0.776	75.05	14.36	10.82	12202	0.33	0.969	0.18	17	55.55	6.42	101.13	1.70	15.71	4.43	12863	21.30	19.04
68	Cuba	0.775	79.57	13.94	11.75	7455	0.55	0.946	0.30	39	77.07	10.57	98.11	3.54	9.07	12.84	19950	18.60	2.98

Annexure Table 4.13: Country-wise selected Indicators on Human Development, 2015																			
HDI Rank	Country	HDI 2015	LEB	Expected Years of Schooling	Mean Years of Schooling	Per Capita GNI 2011 PPP$	Growth Rate of HDI 1990-2015	Gender Development Index	Gender Inequality Index	MMR	% of Urban Population	Public Health expenditure % of GDP	(% of primary school–age population)	Primary school dropout rate	Pupil-teacher ratio, primary school	Government expenditure on education (% of GDP)	Per capita (2011 PPP $)	Employment in agriculture	Unemployment Rate (% of labour force)
69	Iran (Islamic Republic of)	0.774	75.58	14.82	8.77	16395	1.22	0.862	0.51	25	73.38	2.84	109.18	3.82	25.92	2.95	16507	17.90	10.50
70	Georgia	0.769	75.02	13.90	12.25	8856		0.970	0.36	36	53.64	1.55	116.86	1.32	9.08	1.98	9109		12.25
71	Turkey	0.767	75.53	14.60	7.89	18705	1.15	0.908	0.33	16	73.40	4.19	106.86	9.98	19.83		18959	19.70	10.26
71	Venezuela (Bolivarian Republic of)	0.767	74.39	14.30	9.40	15129	0.76	1.028	0.46	95	88.99	1.54	100.85	12.85			15603	7.40	7.99
73	Sri Lanka	0.766	75.05	13.97	10.92	10789	0.82	0.934	0.39	30	18.36	1.96	101.27	1.80	23.66	1.62	11048	30.40	4.70
74	Saint Kitts and Nevis	0.765	73.98	13.66	8.40	22436					32.05	2.14	83.72	7.18	13.80		22934		
75	Albania	0.764	77.97	14.18	9.65	10252	0.74	0.959	0.27	29	57.41	2.94	112.49	1.29	18.92	3.54	10397		17.29
76	Lebanon	0.763	79.54	13.29	8.61	13312		0.893	0.38	15	87.79	3.04	97.15	6.71	12.05	2.57	13117		7.06
77	Mexico	0.762	76.97	13.30	8.55	16383	0.65	0.951	0.35	38	79.25	3.26	103.39	4.29	27.41	5.15	16502	13.40	4.30
78	Azerbaijan	0.759	70.90	12.65	11.16	16413		0.940	0.33	25	54.62	1.23	106.06	2.74	12.62	2.46	16695	36.80	4.73
79	Brazil	0.754	74.75	15.20	7.76	14145	0.85	1.005	0.41	44	85.69	3.83	109.77		21.23	5.91	14455	14.50	7.17
79	Grenada	0.754	73.56	15.76	8.60	11502				27	35.59	2.83	103.13		14.48		12203		
81	Bosnia and Herzegovina	0.750	76.63	14.18	9.01	10091		0.923	0.16	11	39.77	6.81	100.17	13.48	16.82		10024		30.26
82	The former Yugoslav Republic of Macedonia	0.748	75.53	12.89	9.44	12405		0.947	0.16	8	57.10	4.10	85.76	2.51	15.15		12725	18.00	26.88
83	Algeria	0.745	75.03	14.36	7.79	13533	1.03	0.854	0.43	140	70.73	5.24	118.75	6.59	23.66		13823	10.80	10.47
84	Armenia	0.743	74.89	12.71	11.29	8189	0.64	0.993	0.29	25	62.67	1.93		9.79		2.24	7899	36.30	16.30
84	Ukraine	0.743	71.13	15.31	11.34	7361	0.21	1.000	0.28	24	69.70	3.60	103.91	1.47	16.89	6.67	7450	14.80	9.87
86	Jordan	0.741	74.18	13.14	10.10	10111	0.72	0.864	0.48	58	83.68	5.19	88.72	2.10			10240	1.80	12.85
87	Peru	0.740	74.81	13.39	9.01	11295	0.76	0.959	0.39	68	78.61	3.32	101.42	9.49	17.66	3.66	11672		3.52
87	Thailand	0.740	74.62	13.57	7.91	14519	1.02	1.001	0.37	20	50.37	5.62	103.69	6.53	15.39	4.13	15345	41.90	1.07
89	Ecuador	0.739	76.12	14.02	8.27	10536	0.56	0.976	0.39	64	63.74	4.51	113.27	11.09	23.59	4.17	10718	25.30	4.31
90	China	0.738	75.96	13.54	7.64	13345	1.57	0.954	0.16	27	55.61	3.10	103.92		16.23		13400	2.50	4.62
91	Fiji	0.736	70.15	15.30	10.55	8245	0.56		0.36	30	53.73	2.95	105.55	2.85	28.00	3.88	8620		7.65
92	Mongolia	0.735	69.81	14.85	9.75	10449	0.96	1.026	0.28	44	72.04	2.62	101.68		27.21	4.61	11471	35.00	7.07
92	Saint Lucia	0.735	75.20	13.14	9.34	9791		0.986	0.35	48	18.50	3.60		9.91	14.22	4.84	10344		20.11
94	Jamaica	0.730	75.82	12.84	9.64	8350	0.46	0.975	0.42	89	54.79	2.81		5.15	22.08	6.03	8529	18.20	13.72
95	Colombia	0.727	74.23	13.60	7.56	12762	0.83	1.004	0.39	64	76.44	5.41	113.75	16.50	24.29	4.67	12988	16.30	9.95
96	Dominica	0.726	77.85	12.80	7.87	10096					69.54	3.77	117.95	14.99	14.25		10614		
97	Suriname	0.725	71.28	12.71	8.31	16018		0.972	0.45	155	66.04	2.94	119.96	14.13	13.83		15970	3.20	7.77
97	Tunisia	0.725	74.98	14.64	7.09	10249	0.97	0.904	0.29	62	66.84	3.97	113.07	6.03	16.54	6.24	10726	14.80	14.82

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99	Dominican Republic	0.722	73.65	13.17	7.68	12756	0.77	0.990	0.47	92	78.98	2.93	100.65	21.40	20.56		13375	14.50	14.42
99	Saint Vincent and the Grenadines	0.722	73.04	13.32	8.60	10372				45	50.55	4.39	104.71	31.43	15.69	5.09	10379		19.99
101	Tonga	0.721	72.99	14.31	11.06	5284	0.42	0.969	0.66	124	23.71	4.27	108.07	9.61	21.86		4972		5.16
102	Libya	0.716	71.76	13.40	7.31	14303	0.20	0.950	0.17	9	78.55	3.65					13321		20.62
103	Belize	0.706	70.08	12.77	10.47	7375	0.34	0.967	0.38	28	43.97	3.88	111.73	5.33	22.39	6.22	8025		11.81
104	Samoa	0.704	73.67	12.88	10.32	5372	0.65		0.44	51	19.10	6.54	106.16	10.05	30.24		5574	5.40	5.82
105	Maldives	0.701	76.96	12.75	6.20	10383		0.937	0.31	68	45.54	10.76		17.84	12.02	5.20	11892	14.60	11.79
105	Uzbekistan	0.701	69.40	12.17	12.05	5748		0.946	0.29	36	36.37	3.11	96.86	1.92	15.62		5643		10.09
107	Moldova (Republic of)	0.699	71.73	11.81	11.92	5026	0.28	1.010	0.23	23	45.00	5.30	93.06	4.94	16.81	7.48	4742	28.80	5.03
108	Botswana	0.698	64.51	12.62	9.23	14663	0.71	0.984	0.44	129	57.44	3.19	108.57	5.99	22.62		14876	26.40	18.61
109	Gabon	0.697	64.94	12.56	8.07	19044	0.47	0.923	0.54	291	87.16	2.35	141.99		24.53		18832		20.54
110	Paraguay	0.693	73.00	12.32	8.14	8182	0.71	0.966	0.46	132	59.67	4.50	105.99	15.85	24.16	4.96	8644	22.80	4.94
111	Egypt	0.691	71.33	13.10	7.11	10064	0.94	0.884	0.57	33	43.14	2.16	103.93	3.90	23.14		10250	28.00	12.12
111	Turkmenistan	0.691	65.73	10.80	9.88	14026				42	50.04	1.35	89.37			3.05	15527		9.99
113	Indonesia	0.689	69.05	12.87	7.93	10053	1.07	0.926	0.47	126	53.74	1.08	105.74	18.06	16.56	3.30	10385	34.30	5.83
114	Palestine, State of	0.684	73.07	12.84	8.94	5256		0.867		45	75.25		94.91	2.47	23.76		4715	10.50	25.86
115	Viet Nam	0.683	75.94	12.63	7.99	5335	1.45	1.010	0.34	54	33.59	3.82	109.35	10.40	19.21	6.30	5668	46.80	2.06
116	Philippines	0.682	68.34	11.73	9.33	8395	0.61	1.001	0.44	114	44.37	1.61	116.82	24.22	31.35	3.41	6926	30.40	6.67
117	El Salvador	0.680	73.27	13.17	6.53	7732	1.01	0.958	0.38	54	66.73	4.47	112.19	17.36	24.48	3.42	8096	19.60	6.42
118	Bolivia (Plurinational State of)	0.674	68.74	13.79	8.20	6155	0.92	0.934	0.45	206	68.51	4.57		3.27		7.29	6476		3.64
119	South Africa	0.666	57.66	13.00	10.33	12087	0.28	0.962	0.39	138	64.80	4.24	99.72		32.33	6.06	12390	4.60	25.14
120	Kyrgyzstan	0.664	70.79	13.00	10.80	3097	0.30	0.967	0.39	76	35.71	3.64	107.67	1.21	25.31	6.78	3225	31.70	8.17
121	Iraq	0.649	69.63	10.09	6.58	11608	0.51	0.804	0.53	50	69.47	3.34					14018		16.90
122	Cabo Verde	0.648	73.54	13.50	4.77	6049				42	65.53	3.56	113.15	9.36	22.60	5.04	6296		10.76
123	Morocco	0.647	74.31	12.05	5.04	7195	1.39	0.826	0.49	121	60.20	2.00	116.13	10.75	25.67		7361	39.20	9.61
124	Nicaragua	0.645	75.21	11.67	6.54	4747	1.06	0.961	0.46	150	58.78	5.10	123.26	51.59	30.22	4.49	4884	32.20	5.96
125	Guatemala	0.640	72.06	10.72	6.30	7063	1.17	0.959	0.49	88	51.57	2.33	103.59	28.24	22.98	2.84	7253	32.70	2.74
125	Namibia	0.640	65.06	11.66	6.68	9770	0.41	0.986	0.47	265	46.66	5.36	111.43	9.41	29.78	8.35	9801	31.40	25.49
127	Guyana	0.638	66.50	10.35	8.42	6884	0.66	0.943	0.51	229	28.55	3.12	85.44	7.81	23.16	3.19	7064		11.20

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127	Micronesia (Federated States of)	0.638	69.27	11.68	9.72	3291				100	22.42	12.43	97.63				3177		
129	Tajikistan	0.627	69.58	11.26	10.36	2601	0.08	0.930	0.32	32	26.78	1.98	98.19	1.38	22.29	4.02	2616		10.93
130	Honduras	0.625	73.33	11.24	6.17	4466	0.84	0.942	0.46	129	54.73	4.42	109.15	24.55	13.67	5.87	4785	35.80	3.89
131	India	0.624	68.32	11.70	6.30	5663	1.52	0.819	0.53	174	32.75	1.41	110.58		32.32	3.83	5730	49.70	3.48
132	Bhutan	0.607	69.85	12.52	3.13	7081		0.900	0.48	148	38.64	2.62	102.13	21.14	26.66	5.90	7601	56.30	2.59
133	Timor-Leste	0.605	68.51	12.48	4.42	5371		0.858		215	32.77	1.33	136.81	18.77	31.35	7.68	2126	50.60	4.97
134	Vanuatu	0.597	72.11	10.80	6.79	2805				78	26.13	4.51	123.75	28.55	22.82	4.91	2891		4.31
135	Congo	0.592	62.89	11.15	6.31	5503	0.52	0.932	0.59	442	65.38	4.21	110.89	29.71	44.44	6.22	5993		7.23
135	Equatorial Guinea	0.592	57.91	9.20	5.52	21517				342	39.92	2.93	84.46	27.93	26.17		28272		9.41
137	Kiribati	0.588	66.23	11.87	7.81	2475				90	44.30	8.29	113.11		26.37		1749	22.10	
138	Lao People's Democratic Republic	0.586	66.60	10.83	5.19	5049	1.57	0.924	0.47	197	38.61	0.94	116.34	22.39	25.16	4.19	5341	71.30	1.61
139	Bangladesh	0.579	71.99	10.18	5.24	3341	1.64	0.927	0.52	176	34.28	0.79	111.88	33.80	40.21	1.97	3137	47.50	4.44
139	Ghana	0.579	61.53	11.50	6.94	3839	0.97	0.899	0.55	319	54.04	2.13	109.93	16.29	31.26	6.03	3953	44.70	6.26
139	Zambia	0.579	60.82	12.51	6.90	3464	1.51	0.924	0.53	224	40.92	2.76	103.65	44.51	47.95		3626	52.20	10.66
142	Sao Tome and Principe	0.574	66.58	11.97	5.31	3070	0.94	0.907	0.52	156	65.09	3.61	113.60	20.47	38.78	3.88	3030	26.10	13.97
143	Cambodia	0.563	68.81	10.90	4.67	3095	1.84	0.892	0.48	161	20.72	1.25	116.39	53.08	44.63	2.02	3278	54.10	0.50
144	Nepal	0.558	69.99	12.22	4.07	2337	1.57	0.925	0.50	258	18.62	2.34	135.43	29.90	23.10	4.72	2313	66.50	3.05
145	Myanmar	0.556	66.12	9.07	4.74	4943	1.83		0.37	178	34.10	1.04	99.66	25.21	27.56				4.68
146	Kenya	0.555	62.16	11.08	6.31	2881	0.64	0.919	0.56	510	25.62	3.50	111.40		56.57	5.51	2901		9.21
147	Pakistan	0.550	66.37	8.11	5.09	5031	1.24	0.742	0.55	178	38.76	0.92	93.56	20.41	46.52	2.47	4745	43.50	5.43
148	Swaziland	0.541	48.94	11.41	6.84	7522	-0.05	0.853	0.57	389	21.31	7.00	113.27	25.29	28.10	8.64	7930		25.62
149	Syrian Arab Republic	0.536	69.65	8.95	5.06	2441	-0.15	0.851	0.55	68	57.66	1.51	80.10	83.89				13.20	12.33
150	Angola	0.533	52.70	11.39	4.98	6291				477	44.05	2.12	128.70	68.13	42.54	3.44	6937		7.56
151	Tanzania (United Republic of)	0.531	65.51	8.92	5.78	2467	1.46	0.937	0.54	398	31.61	2.59	86.77	33.35	43.44	3.48	2510	66.90	3.22
152	Nigeria	0.527	53.06	9.97	6.00	5443		0.847		814	47.78	0.92	84.72	20.66	37.55		5639		5.76
153	Cameroon	0.518	55.96	10.42	6.11	2894	0.61	0.853	0.57	596	54.38	0.94	113.55	30.25	44.20	3.03	2939		4.58
154	Papua New Guinea	0.516	62.77	9.90	4.33	2712	1.45		0.59	215	13.01	3.47	114.74				2723		3.13
154	Zimbabwe	0.516	59.20	10.31	7.73	1588	0.13	0.927	0.54	443	32.38	2.47	99.94	23.07	36.41	1.97	1688	65.80	9.32

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156	Solomon Islands	0.515	68.11	9.61	5.33	1561				114	22.33	4.64	113.87	28.54	20.32	10.00	2058		34.82
157	Mauritania	0.513	63.24	8.46	4.27	3527	1.23	0.818	0.63	602	59.86	1.87	97.97	35.87	34.38	3.28	3694		31.09
158	Madagascar	0.512	65.52	10.35	6.15	1320		0.948		353	35.11	1.47	146.74	59.95	41.72	2.08	1373	75.30	2.17
159	Rwanda	0.498	64.75	10.76	3.80	1617	2.89	0.992	0.38	290	28.81	2.87	133.58	65.25	58.25	5.03	1655	75.30	2.35
160	Comoros	0.497	63.57	11.10	4.83	1335		0.817		335	28.30	2.22	105.25		27.81	5.07	1364		19.55
160	Lesotho	0.497	50.08	10.74	6.13	3319	0.04	0.962	0.55	487	27.31	8.08	107.09	32.64	32.78		2517		27.52
162	Senegal	0.494	66.93	9.47	2.76	2250	1.20	0.886	0.52	315	43.72	2.42	80.88	38.63	31.59	5.60	2288	46.10	9.32
163	Haiti	0.493	63.12	9.10	5.18	1657	0.76		0.59	359	58.65	1.56					1658		6.94
163	Uganda	0.493	59.21	10.01	5.65	1670	1.88	0.878	0.52	343	16.10	1.80	109.89	75.16	45.59	2.20	1718	71.90	3.59
165	Sudan	0.490	63.73	7.21	3.52	3846	1.58	0.839	0.57	311	33.81	1.80	70.40	20.57	25.33		3927	44.60	13.58
166	Togo	0.487	60.18	11.97	4.70	1262	0.75	0.841	0.56	368	39.96	2.02	125.11	47.17	41.14	4.84	1374		7.69
167	Benin	0.485	59.76	10.69	3.51	1979	1.37	0.858	0.61	405	43.95	2.25	125.56	46.61	45.92	4.38	1986	45.10	1.08
168	Yemen	0.482	64.05	8.99	3.00	2300	0.70	0.737	0.77	385	34.61	1.27	97.49	30.53	30.25		3663	24.70	15.94
169	Afghanistan	0.479	60.70	10.05	3.55	1871	1.97	0.609	0.67	396	26.70	2.93	111.74		45.71	4.80	1820		9.58
170	Malawi	0.476	63.88	10.75	4.40	1073	1.53	0.921	0.61	634	16.27	6.00	146.51	50.88	61.39	6.88	1113	64.10	6.74
171	Côte d'Ivoire	0.474	51.89	8.95	5.00	3163	0.79	0.814	0.67	645	54.18	1.68	89.61	25.96	42.53	4.72	3290		9.50
172	Djibouti	0.473	62.30	6.29	4.07	3216				229	77.34	6.75	66.26	15.60	33.02	4.49	3120		53.93
173	Gambia	0.452	60.46	8.94	3.29	1541	1.27	0.878	0.64	706	59.63	5.05	85.77	22.69	36.84	2.77	1556	31.50	30.13
174	Ethiopia	0.448	64.60	8.35	2.58	1523		0.842	0.50	353	19.47	2.87	100.12	63.40	64.27	4.50	1530	72.70	5.45
175	Mali	0.442	58.47	8.43	2.33	2218	2.80	0.786	0.69	587	39.92	1.57	77.19	38.41	42.47	4.35	2285		8.49
176	Congo (Democratic Republic of the)	0.435	59.06	9.75	6.12	680	0.81	0.832	0.66	693	42.49	1.60	106.97	44.56	35.32	2.24	737		3.83
177	Liberia	0.427	61.19	9.90	4.44	683		0.830	0.65	725	49.70	3.16	95.65	32.23	26.50	2.76	787	46.50	4.15
178	Guinea-Bissau	0.424	55.49	9.20	2.92	1369				549	49.33	1.15	113.65		51.93	2.36	1367		7.60
179	Eritrea	0.420	64.19	4.99	3.86	1490				501	22.64	1.53	51.24	22.40	40.28		1411		8.38
179	Sierra Leone	0.420	51.32	9.47	3.33	1529	1.75	0.871	0.65	1360	39.94	1.88	130.05	52.25	34.83	2.76	1497		3.43
181	Mozambique	0.418	55.48	9.07	3.50	1098	2.82	0.879	0.57	489	32.21	3.94	104.12	69.25	54.49	6.48	1116		22.27
181	South Sudan	0.418	56.13	4.87	4.85	1882				789	18.80	1.14	84.25		49.90	0.81	1741		
183	Guinea	0.414	59.22	8.82	2.57	1058	1.71	0.784		679	37.16	2.74	91.26	34.11	45.59	3.54	1135	74.80	1.77
184	Burundi	0.404	57.12	10.65	2.97	691	1.62	0.919	0.47	712	12.06	3.97	127.64	47.43	43.65	5.41	693		1.52
185	Burkina Faso	0.402	59.01	7.69	1.44	1537		0.874	0.62	371	29.86	2.59	86.89	30.50	44.50	4.50	1562		2.91
186	Chad	0.396	51.90	7.30	2.32	1991		0.765	0.69	856	22.47	1.98	101.40	49.01	62.43	2.85	2044		5.58
187	Niger	0.353	61.94	5.42	1.66	889	2.06	0.732	0.70	553	18.73	3.21	70.60	35.60	35.75	6.78	897		2.77
188	Central African Republic	0.352	51.46	7.10	4.23	587	0.39	0.776	0.65	882		2.06	93.46	53.44	80.12	1.23	562		7.63

Source: UNDP website

Appendix Table 4.14 Correlation coefficients of different Indicators at international level

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18
X1	1																	
X2	.902**	1																
X3	.918**	.801**	1															
X4	.907**	.748**	.831**	1														
X5	.737**	.627**	.601**	.591**	1													
X6	-.541**	-.370**	-.486**	-.649**	-.363**	1												
X7	.698**	.596**	.674**	.711**	.421**	-.439**	1											
X8	-.882**	-.812**	-.847**	-.822**	-.623**	.413**	-.660**	1										
X9	-.818**	-.839**	-.718**	-.723**	-.470**	.440**	-.622**	.721**	1									
X10	.680**	.613**	.619**	.540**	.593**	-.449**	.412**	-.575**	-.499**	1								
X11	.507**	.487**	.525**	.501**	.339**	-.394**	.392**	-.602**	-.368**	.347**	1							
X12	0.017	-0.001	.182*	-0.034	-0.044	0.121	0.13	0.084	0.004	-0.029	-0.015	1						
X13	-.773**	-.681**	-.687**	-.743**	-.451**	.560**	-.533**	.648**	.676**	-.520**	-.349**	.186*	1					
X14	-.840**	-.797**	-.740**	-.750**	-.580**	.523**	-.607**	.725**	.768**	-.581**	-.440**	0.082	.800**	1				
X15	.213*	.215*	.296**	.187*	0.071	-.198*	.196*	-.298**	-.267**	0.151	.544**	0.056	-.216*	-.269**	1			
X16	.729**	.620**	.600**	.586**	.989**	-.372**	.415**	-.618**	-.470**	.639**	.333**	-0.068	-.474**	-.574**	0.127	1		
X17	-.844**	-.748**	-.741**	-.748**	-.624**	.723**	-.456**	.669**	.729**	-.772**	-.517**	.306**	.709**	.793**	-.303**	-.626**	1	
X18	-0.109	-0.14	-0.125	-0.068	-.208**	-.190*	-0.074	0.011	0.001	-0.017	0.144	-.216**	-0.041	-0.023	0.155	-.211**	-.207*	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Note: X1 : HDI 2015 , X2 : LEB , X3 : Expected Years of Schooling , X4 : Mean Years of Schooling , X5 : Per Capita GNI 2011 PPP$, X6 : Growth Rate of HDI 1990-2015 , X7 : Gender Development Index , X8 : Gender Inequality Index , X9 : MMR , X10 : % of Urban Population , X11 : Public Health expenditure % of GDP , X12 : (% of primary school–age population) , X13 : Primary school dropout rate , X14 : Pupil-teacher ratio, primary school , X15 : Government expenditure on education (% of GDP) , X16 : (2011 PPP $) , X17 : Employment in agriculture , X18 : Unemployment Rate (% of labour force)

Source: Computed from Appendix table 4.13

CHAPTER - V

NEXUS AMONG AND BETWEEN SOCIAL SECTOR, HUMAN DEVELOPMENT, SOCIO-ECONOMIC INDICATOR AND INDICES

5.1 Introduction:

The most important objective of the social sector development or investment in social sectors is to improve the human development. UNDP measures human development through its Human Development Index[1] (HDI) every year since 1990. Human development is measured through three dimensions namely, 'decent standard of living', 'long and healthy life' and 'knowledge'. These three dimensions are measured through the four indicators. Decent standard of living is measure with per capita income, long and healthy life is measured with life expectancy at birth and knowledge is measured with two indicators, namely, mean years of schooling, and expected years of schooling[2]. Through this, countries are ranked and grouped as high, medium and low human development. In the recent years' human development report, India has been categories as medium human developed country with HDI rank of 131st and HDI Value of 0.624. Compared to olden years, Indian HDI has increased significantly. Seeing the success of HDI as the measurement of overall development and its policy perspectives, governments of every country have not only constructed human development indices but also formulated policies and programmes towards it. India is also not lagging behind in this regard. Till now, India has two national level human development reports, (state specific) i.e., for the years 2002 and 2012. Along with the government's efforts, many scholars have also calculated human development indices for Indian states[3]. To know the status of human development of districts, many Indian states have also developed State Human Development Reports.

[1]In the design of the concept of Human Development Index, the contribution of Mahbub-Ul-Haq and Amartya Sen is remarkable.

[2] Methodology of calculation of Human Development Index of UNCP's has changed many times from 1990. In the previous reports it used consider the adult literacy rate and enrolment ratios for calculation of education index, presently it is considering the means years of schooling and expected years of schooling, Further, in the calculation of per capita income (Standard of living dimension) has also changed in 1994 and 2000. Moreover, from HDR, 2010 instead of arithmetic mean, geometric mean is used and maximum and minimum values of calculation of indices have been changed to fixed values to observed values in the population (see UNDP Human Development Reports of UNDP more details).

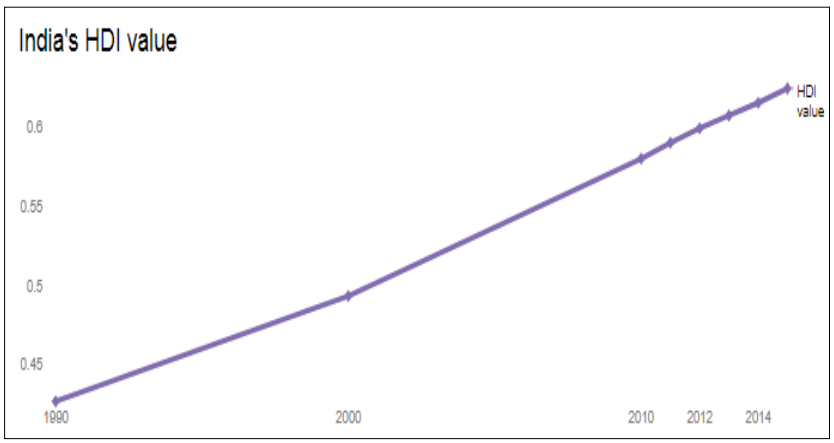
[3] Government of India has two human development reports, but individual researchers have constructed their own human development report making some modification in the methodology.

Furthermore, many states have also prepared (are preparing) human development reports of sub-district level[4].

Numerous studies have already found the positive association between social sectors spending and human development at cross-country level as well as in Indian context (see the review of literature of the present study for more details). A very few studies have attempted to link the HDI with other socio-economic indicators. In the present chapter an attempt has been made see the association of HDI with other socio-economic factors. The indictors and indices which are chosen are poverty ratio, per capita public expenditure on social sector, per capita out of pocket expenditure on health, per capita income, percentage rural population, percentage of SC and ST population, health outcome index, literacy rate, cognizable crime rate, public affairs index (PAI), basic human needs index (BHNI), corruption index (CI), foundations of wellbeing index (FWI), opportunity index (OI), social progress index (SPI), female empowerment Index (FEI), child development index (CDI), India state hunger index (ISHI), prosperity index (PI), ease of doing index (EI) internet readiness Index (IRI), governance performance index (GPI) and so on.

5.2 HDI and Indian States

Figure 5.1: Human Development Index of India from 1990 to 2014

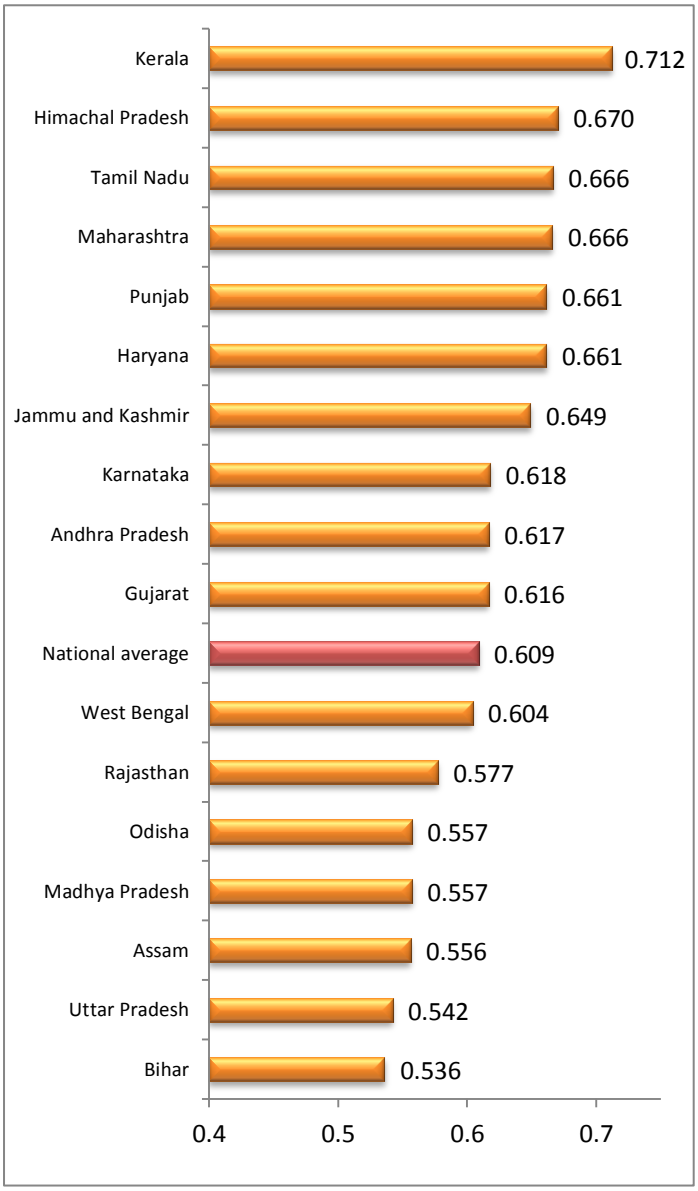


Indian HDI value was only 0.43 in the year 1990, which increased significantly to 0.62 in the year 2014 (Figure 5.1).This is mainly due to the commitment of successive governments at state and central to improve the quality of life of the people with respect of health, education, employment and so on through public investment on social sector.

[4] Karnataka state has district HDI taking into consideration of taluks as the unit of study.

In the present study HDI for Indian states have been taken from the study by Kunduand Tadit (2017). These indices have been compared with the other indicators and indices. Before going to see the relationship among and between these indices and indicators, status of different states has been analyzed. Figure 5.2 shows the information of HDI value of Indian states for the year 2015.

Figure 5.2: Human Development Index for Indian States, 2015



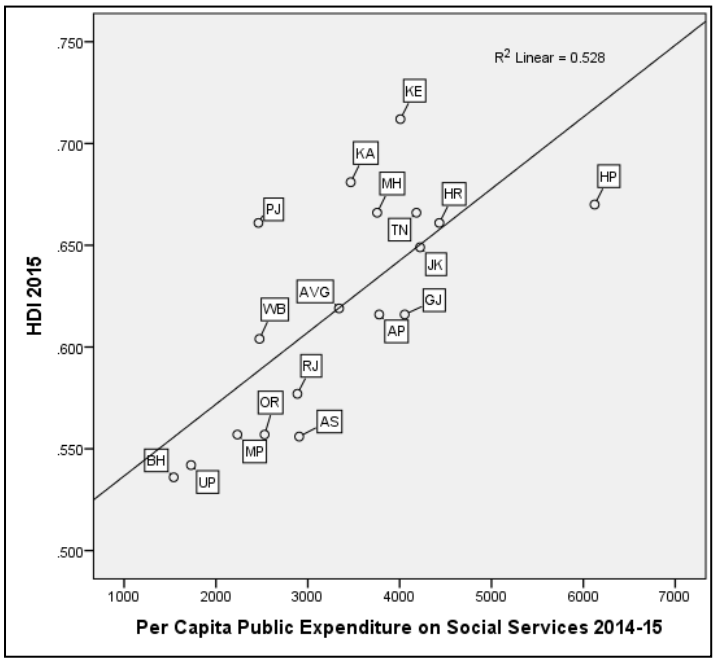
It is found that Kerala is found in the first position with the HDI value of 0.712 and Bihar is found in the last position with the HDI value of 0.536. States like Kerala, Himachal Pradesh, Tamil Nadu, Maharashtra and Punjab are observed in the top position, while Bihar, Uttar Pradesh, Assam, Madhya Pradesh and Odisha are in the bottom position. Kerala has the 1.3 fold higher human development than Bihar, which shows the existence of inter-state disparity. To see the regional imbalances Coefficient of variation (CV) has been calculated, it shows that quantum of regional imbalances in HDI is not so high, which is evident from the fact that CV of HDI is only 8.8%.

Sources: Kundu, Tadit (17 December 2015). "Why Kerala is like Maldives and Uttar Pradesh, Pakistan". Live Mint. Retrieved 2 May 2017, http://www.livemint.com/Politics/3KhGMV XGxXcGYBRMsmDCFO/Why-Kerala-is-like-Maldives -and-Uttar-Pradesh-Pakistan.html

5.3Relationship of HDI and Socio-economic Indicators and Indices:

In this section HDI value of Indian states have been linked with the socio-economic indicators and indices, for this purpose scatter diagram has been prepared. To improve the human development investment is required hence first of all per capita public social services expenditure has been linked with the HDI value of Indian states, which has been presented in figure 5.3.

Figure 5.3: Scatter Diagram of HDI and Per Capita Public Expenditure on Social Services



It is observed from the figure that there is a high positive association exists between per capita social services expenditure and HDI value. It means higher the investment by the government on social services, higher will be the HDI. It also reveals that spending on social services has yielded on improved human development in India.

To improve the education and health status of the people, not only public expenditure but out of pocket expenditure is also improvement. To see the per capita out of pocket health expenditure and its association with HDI, two scatter diagrams have been made and presented in future 5.4 and 5.5. It is found from the figures that per capita out of pocket rural as well as urban expenditures have positive association with HDI values. An interesting point here is to be noted that between rural and urban out of pocket health expenditures, rural expenditure has higher positive association. Totally, it is clear that **higher the out of pocket expenditure leads for high in HDI status**.

Figure 5.4: Scatter Diagram of HDI and Per Private Rural Health Expenditure

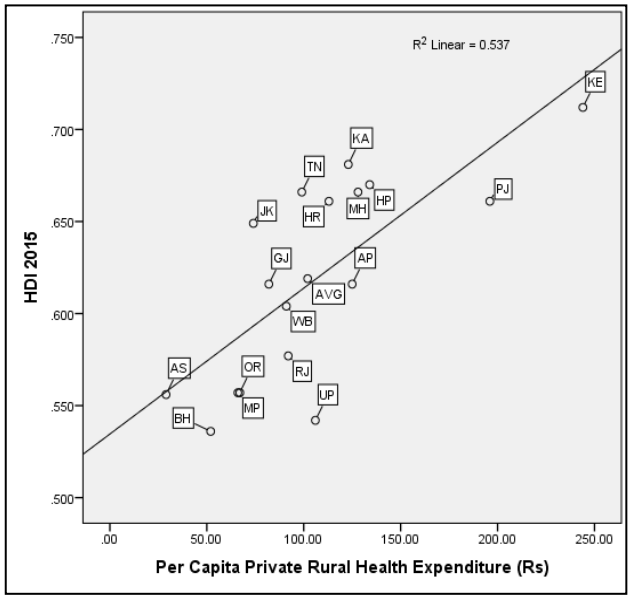
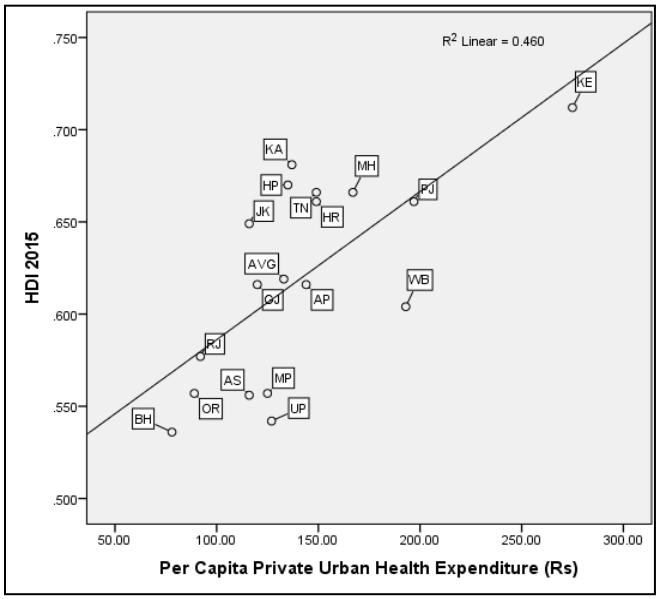
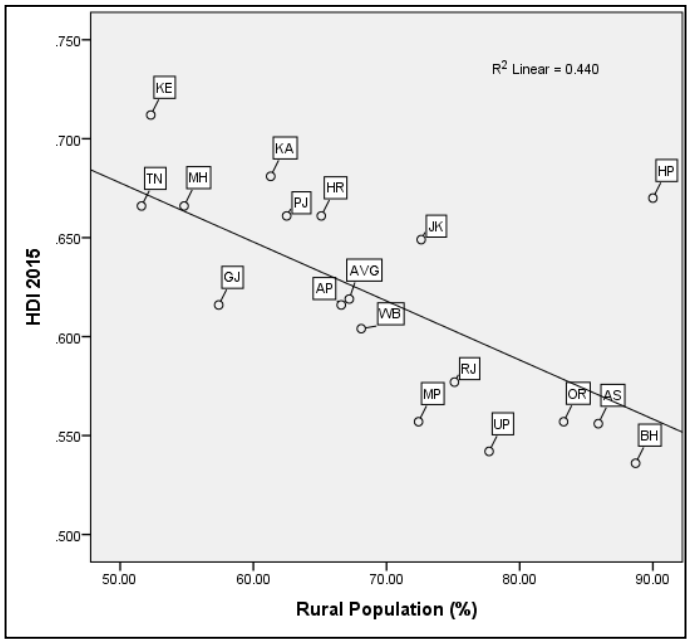


Figure 5.4: Scatter Diagram of HDI and Per Private Urban Health Expenditure



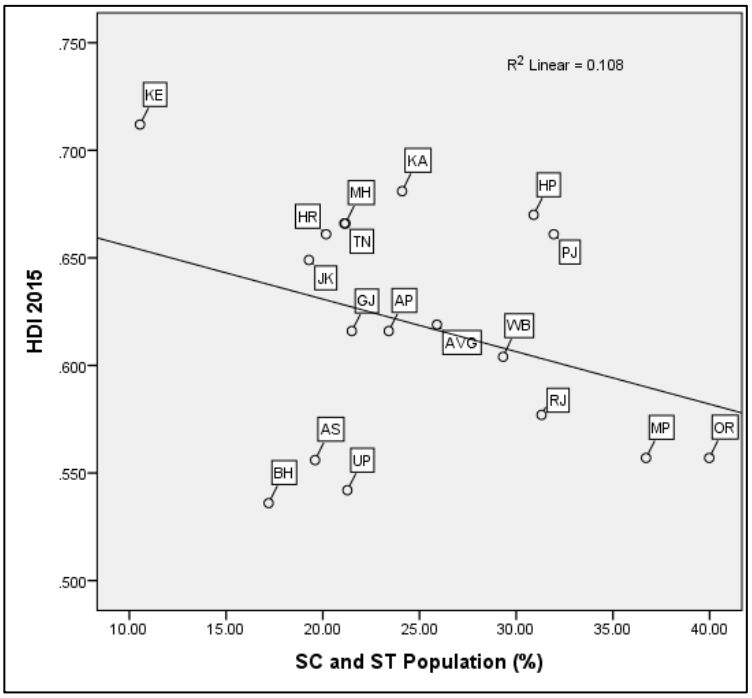
In India, human development indices of rural and urban have not been calculated separately. Through indirect way rural and urban HDI value can be compared, which can be done through the correlation analysis and scatter diagram analysis.

Figure 5.5: Scatter Diagram of HDI and percentage of Rural Population



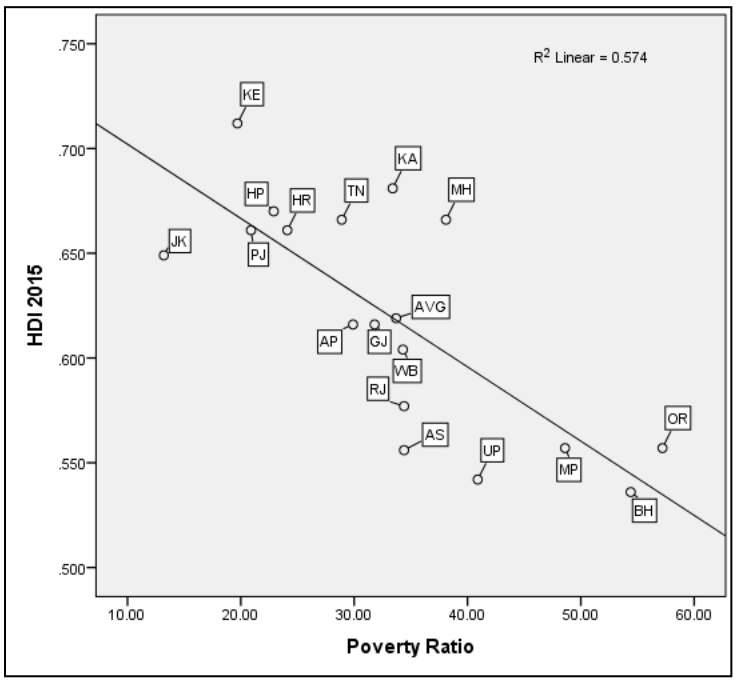
Hence, in figure 5.5 an attempt has been made to see the association of rural population and human development. It is found from the figure that **rural people have lower human development than the urban people.** Trend line of association is negative, it means, higher the rural population lower will be the status of human development.

Figure 5.6: Scatter Diagram of HDI and percentage of SC and ST Population



In India, most of the developmental measures are compared between marginalized groups like SC, ST and other categories, since these castes or communities have deprived socially, economically from centuries. With respect of human development index, some scholars have developed human development index for SC,ST and for the rest. Here in this section an attempt has been made to compare the HDI and percentage of SC and ST population. The information related to this has been presented in figure 5.5. It is found from the figure that HDI and SC and ST population have negative association. It means, higher the SC and ST population lower will be the HDI value. It also tells that human development status of SC and ST are lower than that of other community people.

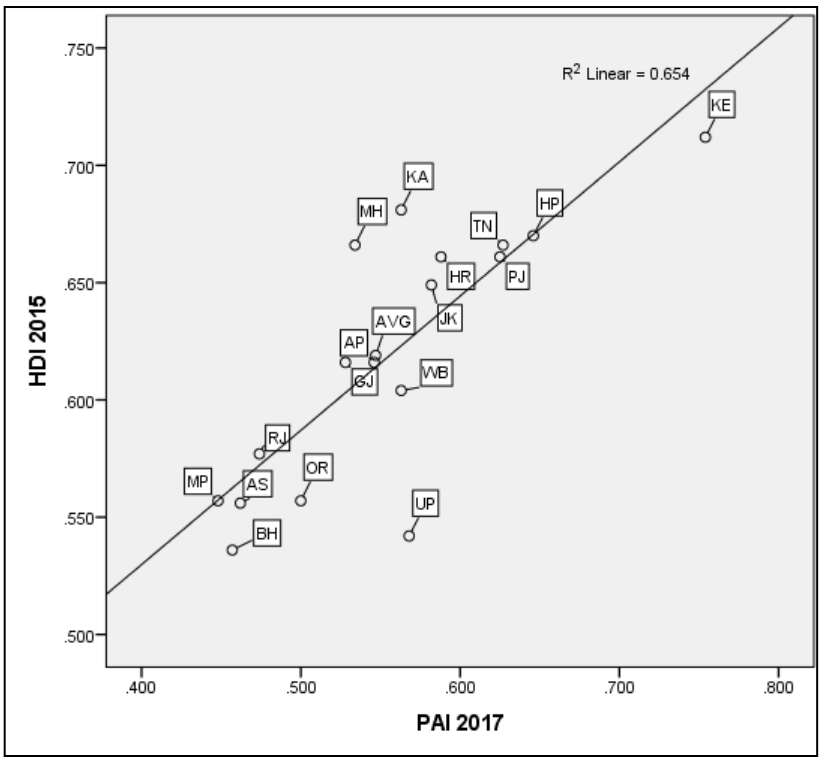
Figure 5.7: Scatter Diagram of HDI and Poverty Ratio



There are many definitions for poverty world over. In India also there are many methods to measure poverty. Among them, NSSO's consumption based poverty ratio is vastly used one. In the present analysis poverty ratio of 2011 has been used to see the association for HDI value. In figure 5.7, state-wise poverty ratio and HDI values have been plotted. It is found from the figure

that poverty and HDI value have strong negative association. It means higher the poverty means, lower will be the human development.

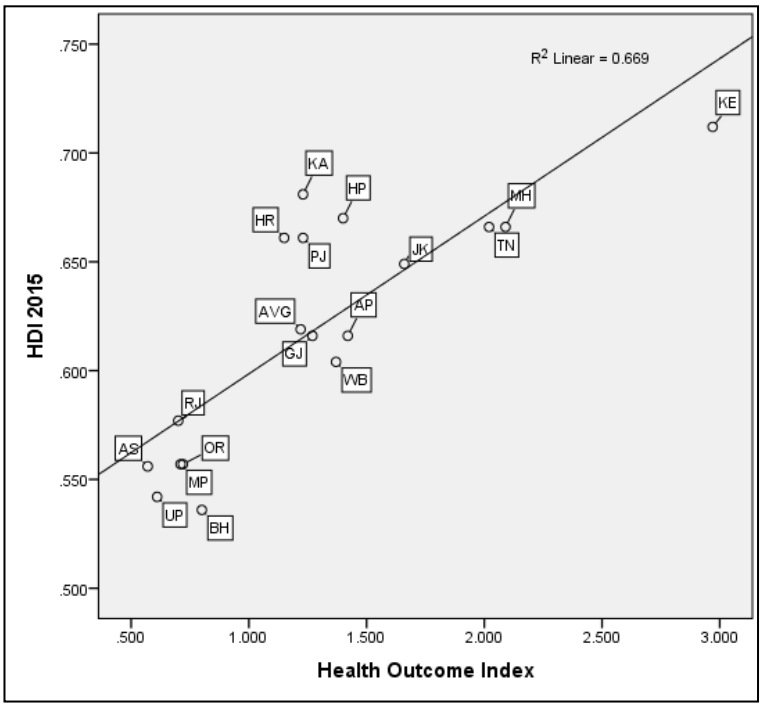
Figure 5.8: Scatter Diagram of HDI and Public Affairs Index



Public Affairs Index (PAI) is a data driven platform to rank the states of India from the lens of governance. While it is a complex task to rank the Indian states which are economically, culturally and socially so diverse, Public Affairs Centre (PAC) has developed PAI as a unique statistical tool to evaluate the performance of governance in the States. PAI is largely based on secondary data and has been extracted from Union Government Ministries and Departments. PAI has been constructed using 82 indicators from 26 focused subjects with 10 themes Public Affairs Index (2017) (for more details see http://pai.pacindia.org).In Figure 5.8 an attempt has been made to see the correlation of HDI value and PAI values. It is found from the figure that there is a strong positive correlation between HDI and PAI. Higher the PAI means higher will bethe HDI value.

In the previous chapter health outcome index has been discussed. In this section an attempt has been made to see the relationship of health outcome index and HDI. Information related to this has been presented in figure 5.9 with the scatter diagram of these two indices.

Figure 5.9: Scatter Diagram of HDI and Health Outcome Index

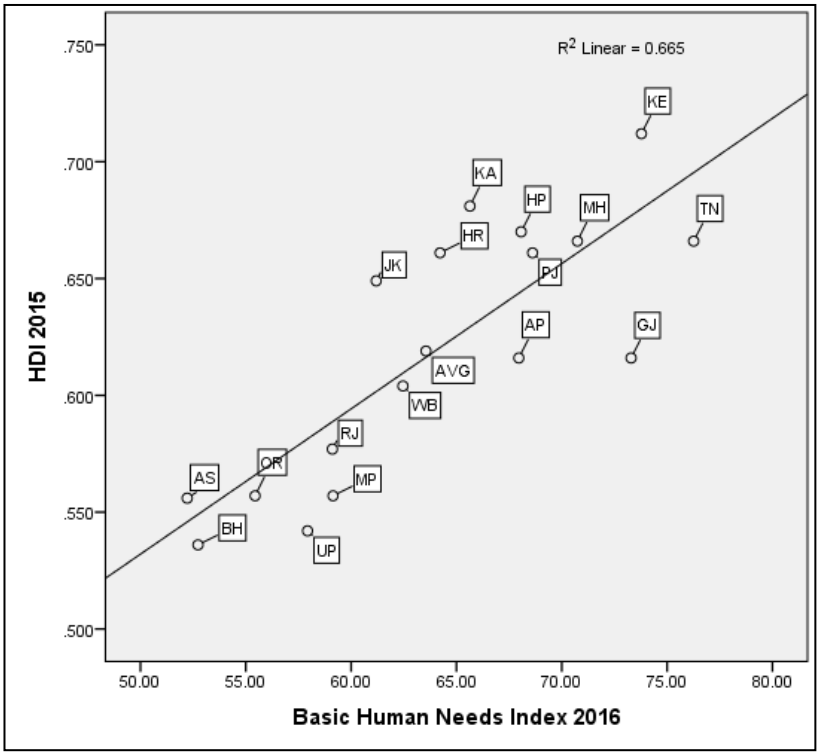


It is found from the figure that strong positive association is observed between health outcome index and human development index.

It is clear from the figure **higher health outcome leads to higher human development** among Indian states.

Social progress index includes 54 indicators and three sub-indices namely Basic Human Needs Index, Foundations for Wellbeing Index and Opportunity Index (for more details visithttp://socialprogress.in/wp-content/ uploads/ 2017/10/SPI2017Methodology.pdf). In the present study all these indices have linked with HDI value to see the association.

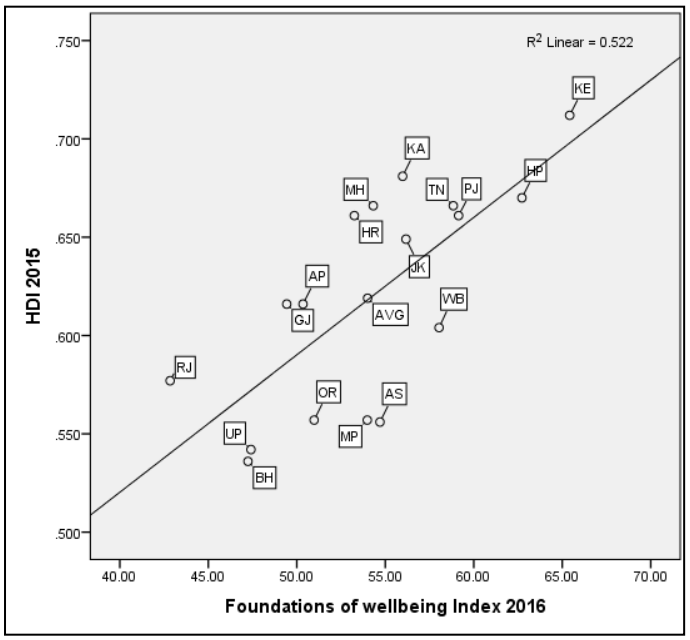
Figure 5.10: Scatter Diagram of HDI and Basic Human Needs Index



Basic Human Needs has been calculated using 17 indicators and four sub indices namely Nutrition & Basic Medical Care, Water & Sanitation, Shelter, Personal Safety. In figure 5.10, HDI value and basic human needs index has been put into a scatter diagram to see the association between these two. From the figure it is

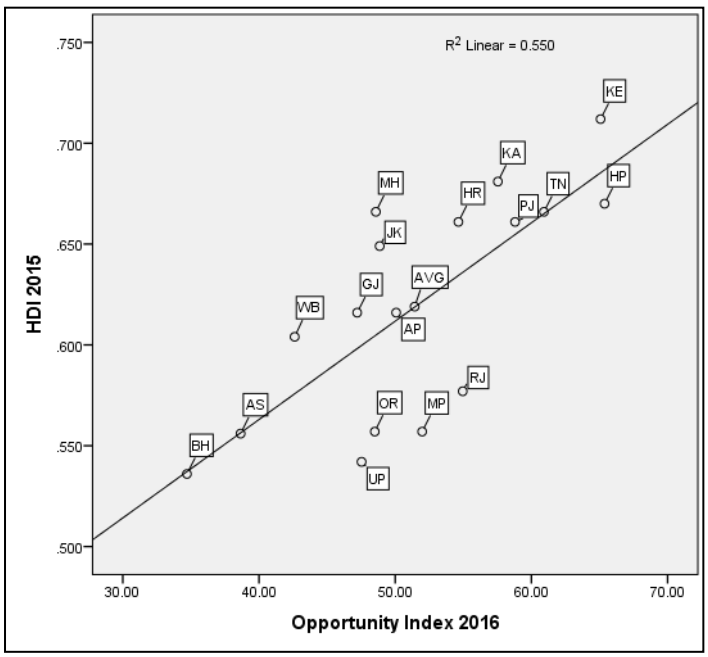
found that there is an existence of strong and positive association between these two. It means, **higher the human development, higher will be the status of basic human needs**.

Figure 5.11: Scatter Diagram of HDI and Foundations of Wellbeing Index



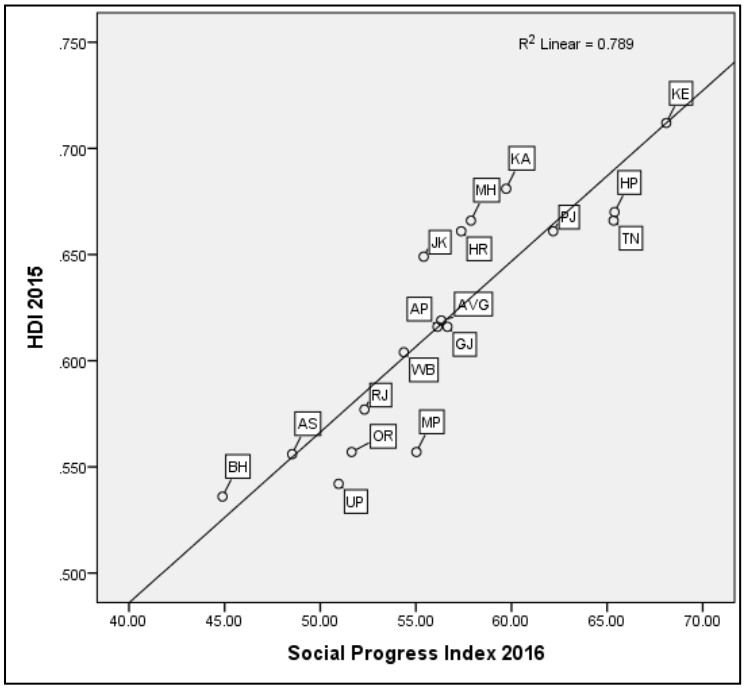
'Foundations of Wellbeing Index' is the second sub-index of Social Progress Index. This index has been calculated using 21 indicators from four dimension indices namely Access to Basic Knowledge, Access to Information & Communication, Health & Wellness, Environmental Quality. This index is also positively and strongly associated with the HDI. It advocates that **foundations of well-being are good, when the human development status is good**(figure 5.11).

Figure 5.12: Scatter Diagram of HDI and Opportunity Index



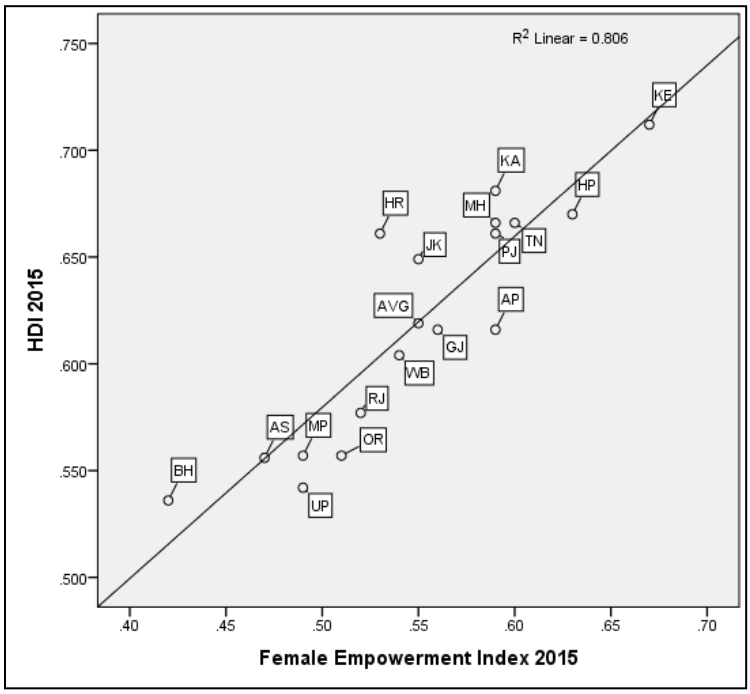
Opportunity Index is the third and last sub-index in the Social Progress Index (SPI). This index has been calculated using 17 indicators from four dimension indices namely Personal Rights, Personal Freedom & Choice, Inclusion, and Access to Advanced Education. In figure 5.12 (scatter diagram) HDI and Opportunity Index of Indian states have been plotted. In the opportunity index also human development has strong and positive association. It means, **for the overall development, higher level of human development is necessary**.

Figure 5.13: Scatter Diagram of HDI and Social Progress Index



Social progress index has also been put into scatter plots to see the association with human development. Figure 5.13 has the information on HDI and SPI. A very strong and positive association is observed between human development and social progress. It means,**human development leads to social progress.**

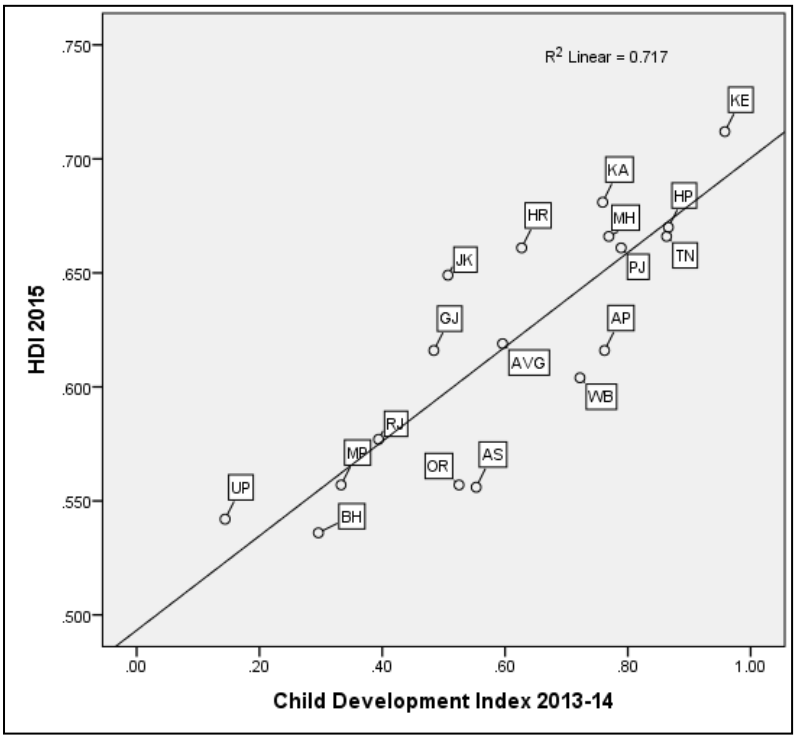
Figure 5.14: Scatter Diagram of HDI and Female Empowerment Index



Female Empowerment Index is a composite index of Equality in work, Essential services and enablers of economic opportunity, Legal protection and political voice and Physical security and autonomy indices (MIG, 2015). (For more details see www.mckinsey.com/ mgi/ publications/multimedia/)This index has also been put into scatter diagram for seeing association. Figure 5.14 shows the scatter diagram for HDI and Female Empowerment Index. It is observed that if the female empowerment is high in a region then it leads to higher human development. A very interesting point here is to be noted that **female empowerment index and human**

development index are moving more or less similar direction, which is evident from the fact that trend like is nearer to the 45 degree line in the diagram.

Figure 5.15: Scatter Diagram of HDI and Child Development Index

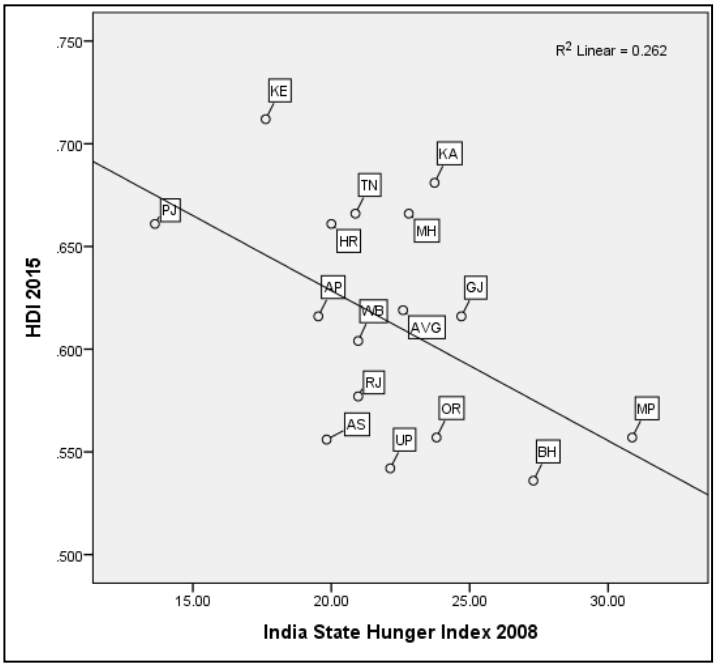


Recently, Child Development Index (CDI) has been developed by Khera and Dreze (2015) for Indian states. This *index has been* calculated using four indicators namely i) Proportion of children aged 12-23 months who are fully immunized (%), ii) Female literacy rate, age 10-14 (%), iii) Proportion of births preceded by health checkup (%), iv) Proportion of children below age 5 who are not underweight (%). In the present study these values of index has been linked to HDI values to see the relationship between them. Information related to this has been presented in figure 5.15. It is happy to note that **child development index and human development index have strong positive association with statistical significance**.

The Global Hunger Index (GHI) is designed by the International Food Policy Research Institute (IFPRI) every year. It comprehensively measures and tracks hunger globally and by country and region. By raising awareness and understanding of regional and country differences in hunger, the GHI aims to trigger actions to reduce hunger (http://www.ifpri. org/topic/global-hunger-index). In the line to Global Hunger Index, in India, Hunger Index has been constructed for Indian states by Menon, Deolalikar, Bhaskar in 2009, (funded by IFPRI) and named it as 'The India State Hunger Index (ISHI)'. This index coved 17 states, which cover 95 per cent of the population, for the year 2008, with

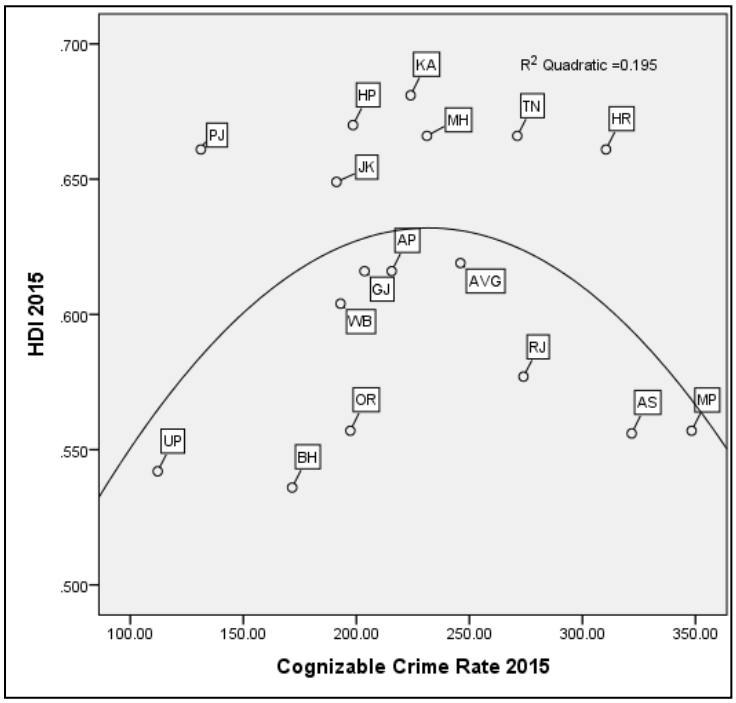
minor modification in the methodology (please see for report and methodology in http://www.ifpri.org/publication/ comparisons-hunger-across-states).

Figure 5.16: Scatter Diagram of HDI and Hunger Index



In the present study an attempt has been made to link the hunger Index and human development Index to see the association between these two. Information related to this has been presented in figure 5.16 with the scatter diagram of HDI value and ISHI for Indian states. It is found from the figure that there is a negative significant relationship between HDI and ISHI. It means, **higher the human development value; lower will be the incident of hunger.**

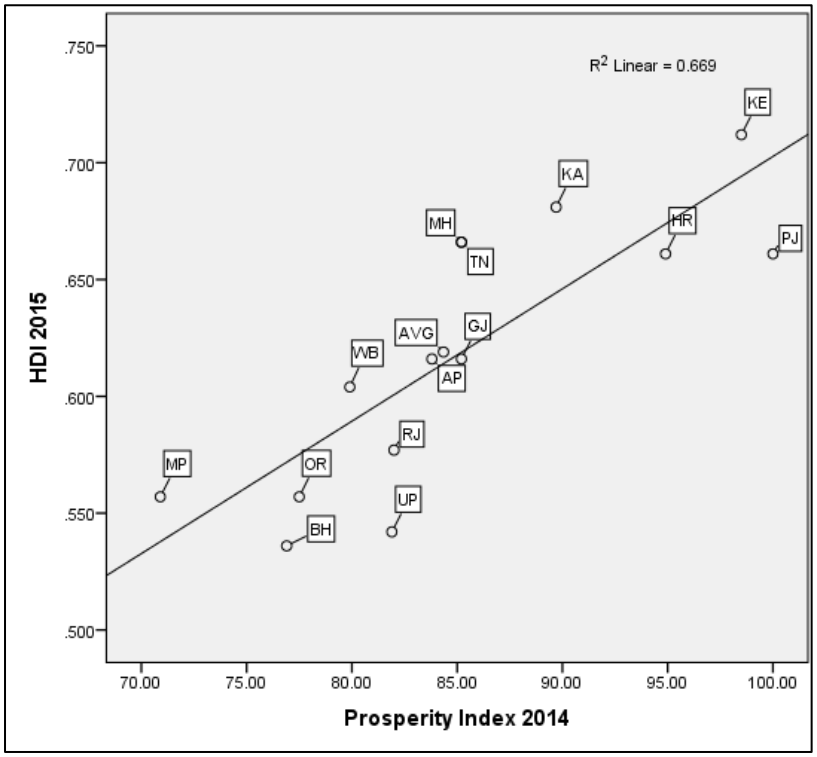
Figure 5.17: Scatter Diagram of HDI and Cognizable Crime Rate



Crime rate is also one of the important indicators for the measurement of the development. Lower the crime rate means higher will be happiness, prosperity, wealth and even healthy society. Crime is also a multidimensional indicator affected by many factors. In figure 5.17, an attempt has been made to link the cognizable crime rate with human development index for major Indian states. Kerala reported higher HDI and higher cognizable crimes. Hence, the state has been excluded in

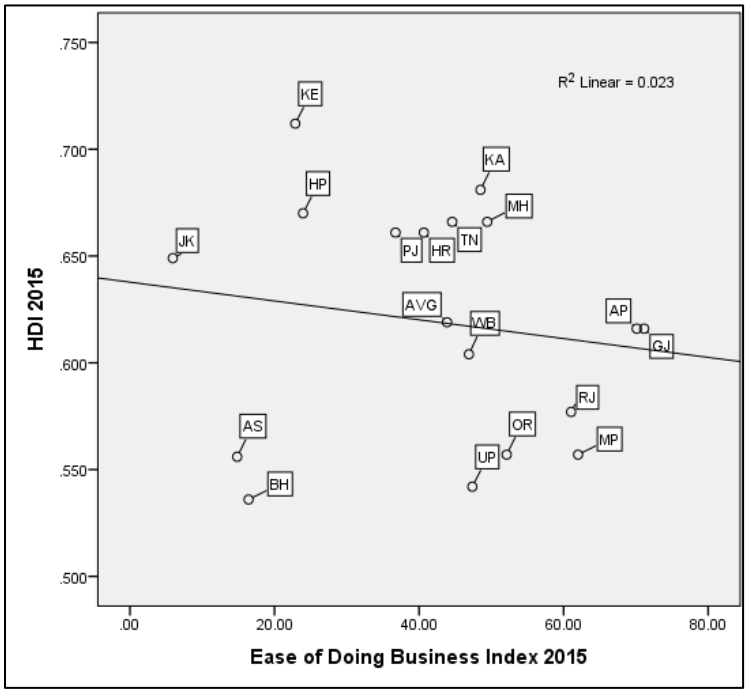
the scatter diagram as it is an out layer both in HDI as well as crime rate. From the figure it is observed that there are three stages when we compare HDI and crime rate viz., i) in the first state HDI is low and crime rate is also low ii) in the second stage HDI is high and crime is medium iii) in the third stage HDI is low and crime rate is high. Totally, it can be pointed out that **crime rates are low in the states that have higher human development as well as lower human development; it is high in medium human developed states.**

Figure 5.18: Scatter Diagram of HDI and Prosperity Index



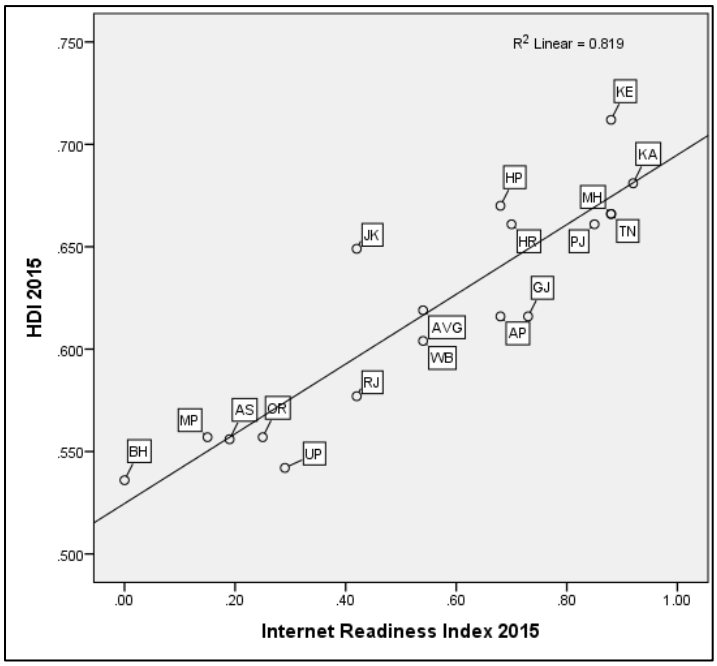
Crisil, has developed anindex called 'prosperity index', using census data on the ownership pattern of consumer durables such as television, mobile phone, bicycles, computer/laptop and automobiles for major Indian states for the year 2014(please see www.crisil.com for more details). In this index Punjab, Kerala, Haryana and Karnataka are found in the top position, while Madhya Pradesh, Chhattisgarh, Bihar and Odisha were in the bottom position. In figure 5.18 prosperity index has been plotted with HDI values to see the association between them. It is found from the figure that there is **strong positive association between human development and prosperity of people.**

Figure 5.19: Scatter Diagram of HDI and Ease of Doing Business Index



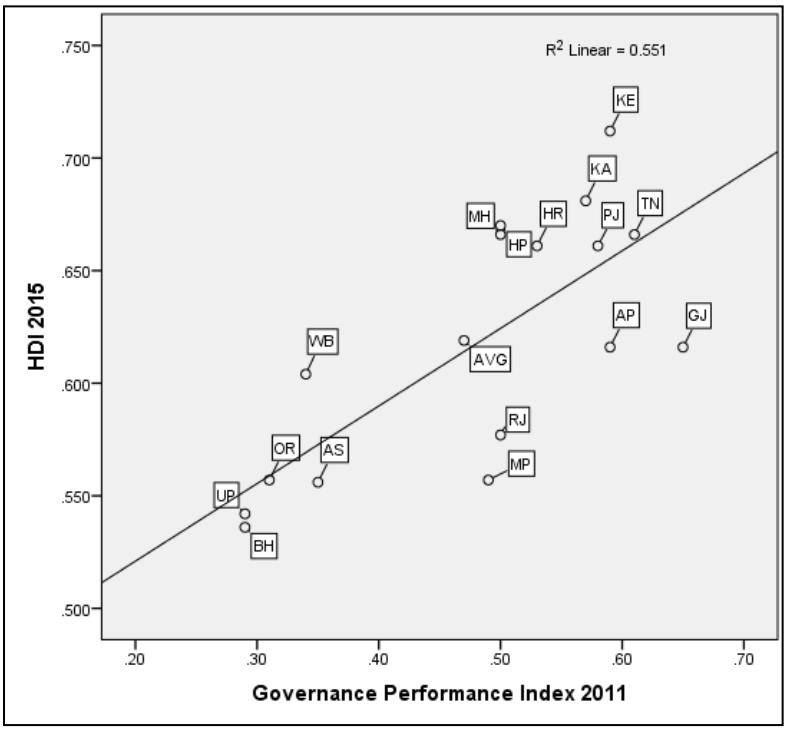
World Bank has developed ease of doing business index for Indian states for the year 2015. This index has also been put into scatter diagram to see the association with human development. Figure 5.19 shows the information related to this. It is found from the scatter diagram that there is no significant association between human development index and ease of doing business index. But surprisingly correlation between these two are found to be negative, however it is not statistically significant.

Figure 5.20: Scatter Diagram of HDI and Internet Readiness Index



Internet and Mobile Association of India (IAMAI) has published 'Index of Internet Readiness of Indian States'. It is observed that Delhi stands first among all states followed by Karnataka, Maharashtra, Kerala and Tamil Nadu. In figure 5.20 association between internet readiness index and human development index are seen. It is found from the figure that **higher the human development, higher will be the internet readiness.**

Figure 5.21: Scatter Diagram of HDI and Governance Performance Index



In the recent years importance or role of good governance is well recognized by the scholars. Hence, governance performance index and human development index have been put into a scatter diagram (figure 5.21) to see the association between them. For this purpose governance performance index for the year 2011 has been used, which is developed by Mundle, Samik Chowdhury, Sikdar (2016). From the figure it is found that there is a strong and positive association between human development and good governance. It means, **higher the human development, higher will be the performance of governance.**

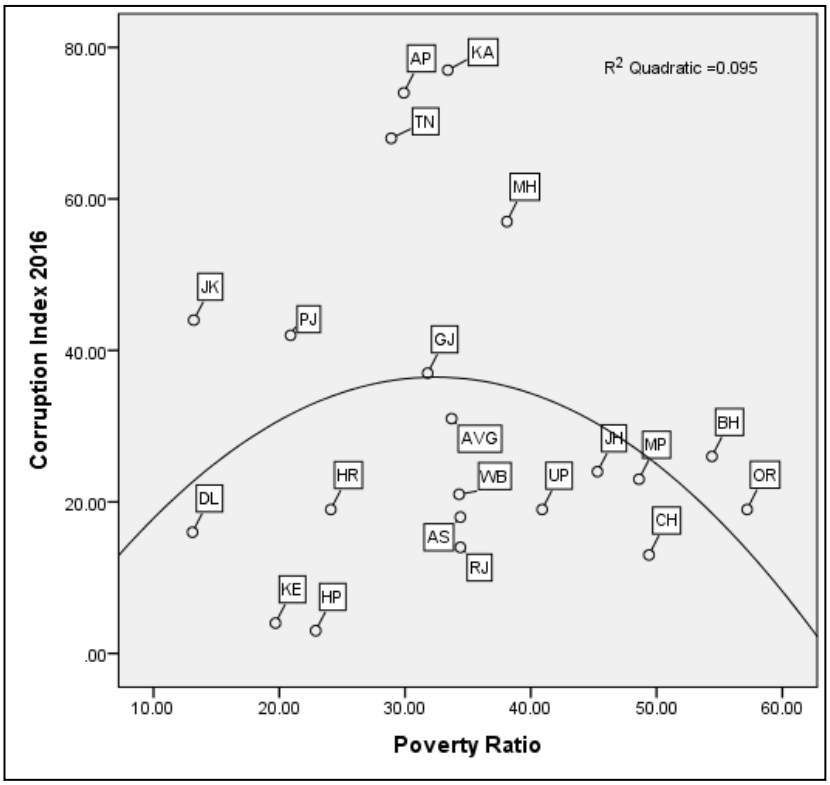
Many studies have opined that even after the spending on huge amount of money on social sector, India has not achieved desired human development status, which is due to improper utilization or corruption in the implementation. Therefore, a question arises here that, who are more corrupt? Next section deals issues related to it.

5.4 Corruption and Socio-economic Development

In India, corruption has affected negatively for the socio-economic development of the nation. Over the period of time quantum of the corruption has increased. Many studies have shown that corruption is the constraint for the development, because, due to corruption government programmes will not reach to the targeted goal. Compared to other countries in India, number of studies on corruption is very tiny. Among the studies a very important study is by Charron (2010). Many times it is told that due to corruption our government policies, programmes, and schemes have not reached to the people. Hence, our social sector programmes have not succeeded. It is said that due to rampant there is no

hope of getting success of social sector programme and policies in India in the nearer future. Hence, observing this, in the present study an attempt has been made to analyse the association of corruption with some socio-economic indicators for Indian states. The main intention of this section is to find the answer for the question, that is – Who are more corrupt?

Figure 5.22: Scatter Diagram of Corruption Index and Poverty Ratio

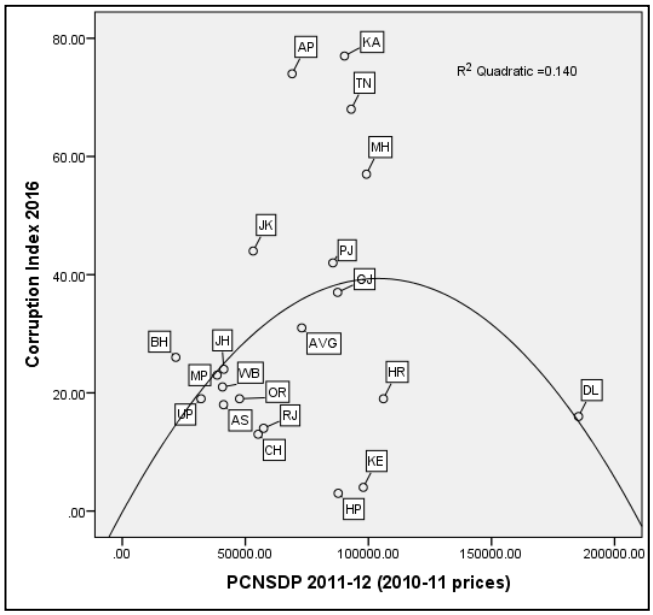


A question here is posed that- Who are more corrupt?poor or rich? To answer this question, taking into consideration of the data of corruption index[5] and poverty ratio of Indian states, a scatter diagram have been prepared and presented in figure 5.22 (in figure 5.23 Corruption Index and Per Capita Income have put into scatter diagram). Through the figure it is found that between corruption and poverty ratio the trend line is in inverted U shape. Result enlightens us that neither rich nor poor or more corrupt. More corrupt are the people who are in middle income group.

It means, **people of middle class are more corrupt than rich and poor.** Delhi, Kerala, Haryana and Himachal Pradesh have lower corruption as well as lower poverty ration. States like Karnataka, Andhra Pradesh, Tamil Nadu, Maharashtra and Gujarat have higher corruption with moderate level of poverty ratio.

[5] Date for Corruption Index has been taken from 'CMS- India Corruption Study 2017 perception and Experience with public Services & Snapshot View for 2005-17'. CMS followed the Perception, Experience and Estimation (PEE) approach for construction of corruption index for Indian states. For more details visit the web site http://cmsindia.org/sites/default/files/Monograph_ICS_2017.pdf

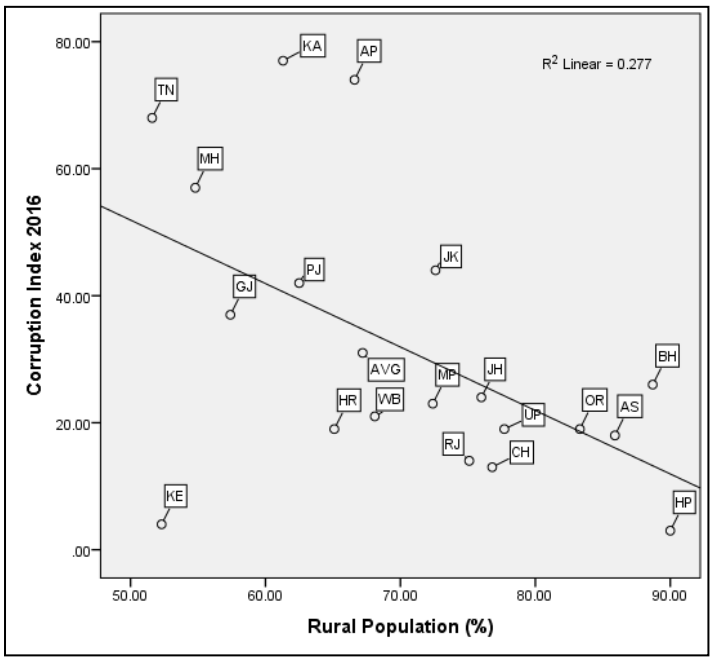
Figure 5.23: Scatter Diagram of Corruption Index and Per Capita Income



On the other hand states like Orissa, Bihar, Chhattisgarh, Madhya Pradesh and Uttar Pradesh have lower corruption with higher poverty ratio. With respect to per capita income and corruption more or less same trend line is observed means,

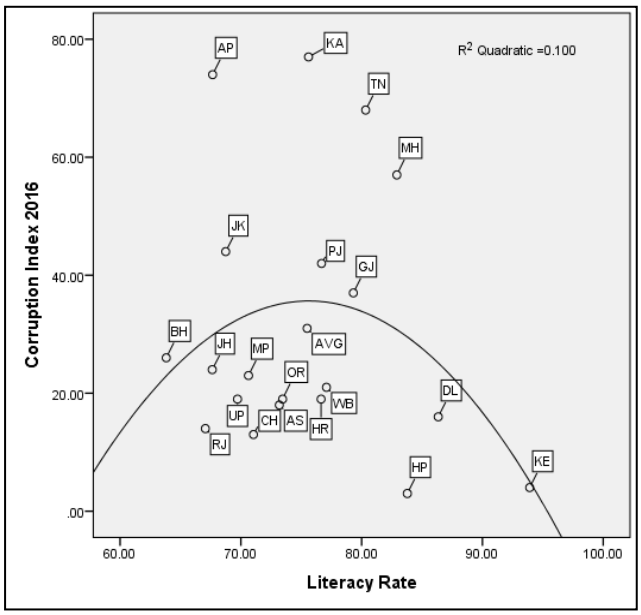
- lower is the per capita income lower will be the corruption
- higher is the per capita income lower will be the corruption
- moderate is the per capita income higher will be the corruption

Figure 5.24: Scatter Diagram of Corruption Index and Percentage of Rural Population



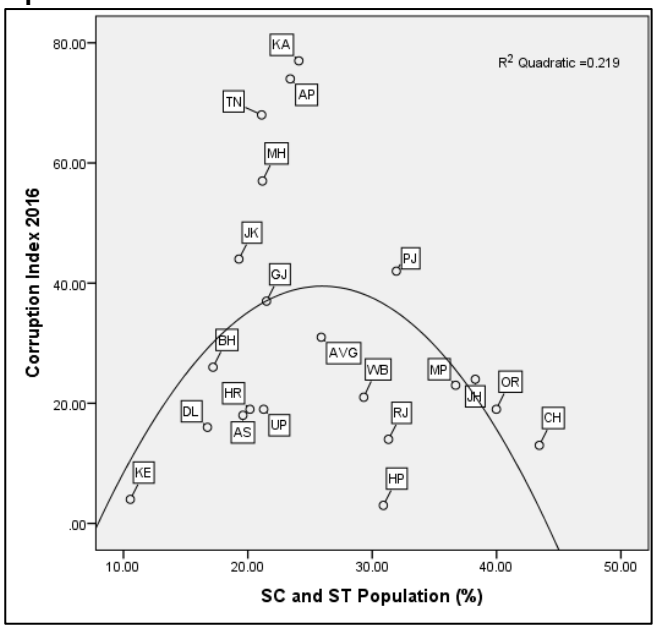
Another question has been posed here is that- Who are more corrupt? rural people or urban people? For this purpose percentage of rural people and values of corruption index of Indian states have been plotted in the scatter diagram (figure 5.24). From the figure it is found that rural people and corruption index have significant negative association. It means higher the rural population lower is the corruption. In other words, **urban people are more corrupt than the rural people in India.**

Figure 5.25: Scatter Diagram of Corruption Index and Literacy Rate



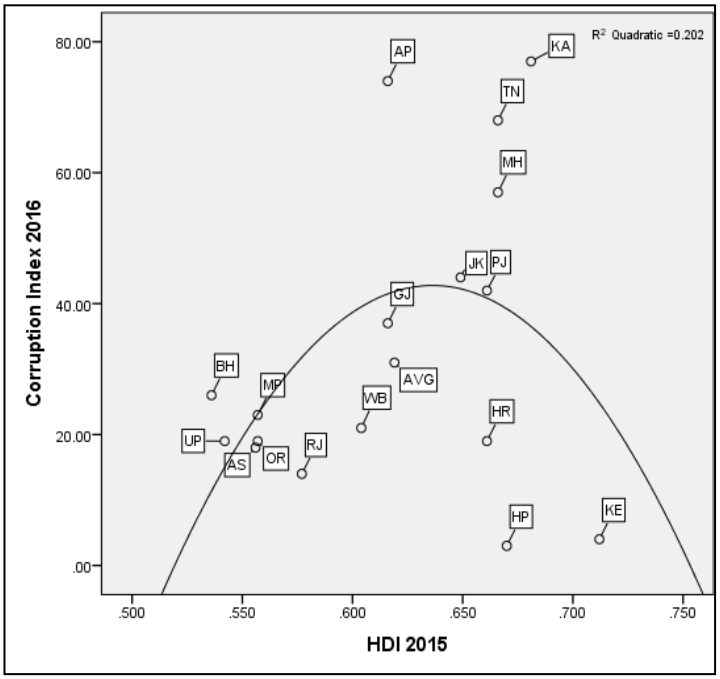
Many people think that people who are literate they will not be cheated easily,hence, it is thought that lower the literacy rate higher the corruption. Therefore, a simple question has been made here is that – who are more Corrupt? Literates or illiterates? To get the answer for this question a scatter diagram has been prepared putting literacy rate and corruption index for Indian states in figure 5.25. It is found from the figure that neither low educated nor high educated is more corrupt. More corrupt are people who are moderately educated. This is evident from the figure that the trend line of literacy rate and corruption is in inverted U shape.

Figure 5.26: Scatter Diagram of Corruption Index and Percentage of SC and ST Population



In figure 5.26 corruption index and share of SC and ST population of Indian states have been put into a scatter diagram to see their association. In this context also, inverted U shape trend line is observed. It means, where lower number of SC and ST population is there, there is a less corruption. Further, where the higher SC and ST population, there is also less corruption. Moreover, corruption is high in the states, which have moderate share of SC and ST population.

Figure 5.27: Scatter Diagram of Corruption Index and Human Development Index



Last question regarding corruption is that- Who are more corrupt? Higher human developed or lower human developed? For this purpose human development values and corruption index values of Indian states have been put into a scatter diagram and presented in figure 5.27. In this context also, it is found that moderately human developed states have higher level of corruption than higher and lower human developed states.

5.5 Conclusion:

The Main objective of the social sector spending is to achieve the human development. Long back it was understood that only economic growth, which was measured through the per capita income, is not a good measurement to understand the overall development of any nation or region. Hence, an approach called development or human development came into existence in academic as well as in policy formulation process. In the forgoing analysis public expenditure on social sector has been linked with the human development index of Indian states and found a strong positive association between them. Further, private per capita health expenditure has also strong positive association with human development. It advocates investment in human capital development and human development by government and private (out of pocket) sectors is needed to get the desired results.

A question here arises that whether human development index (which is only with three dimensions namely education, health and per capita income) represents all the aspect

of development or not? For this purpose available socio-economic indicators and indices have been linked with HDI in this chapter to see the association. It is found that human development is comparatively low among people belong to rural area, SC & ST groups and poor. Hence, to uplift the marginalized groups special attention should be continued, which all the state governments and central governments are following with subsidies, reservation and other incentives.

Many agencies and institutions also construct various developmental indices to measure the different dimensions of development using various socio-economic indicators. These have been linked with HDI in the forgoing analysis and found that public affairs index (PAI), Health Outcome Index (HOI) basic human needs index (BHNI), foundations of wellbeing index (FWI),opportunity index (OI), social progress index (SPI), female empowerment Index (FEI), child development index (CDI),prosperity index (PI),internet readiness Index (IRI), governance performance index (GPI) have positive strong correlation with HDI. On the other hand, corruption index (CI), India state hunger index (ISHI) have negative association. It proves that improvement in HDI will lead to overall development of the nation.

Many studies have opined that even after the spending on huge amount of money on social sector, India has not achieved desired human development status, which is due to improper utilization or corruption in the implementation. Therefore, a question arises here that, who are more corrupt? A section in forging deals with this it found corruption is more among people belong to middle income groups, moderate level of education, and moderate level of human development. Urban people are more corrupt than rural people.

Systematic and strengthened social sector policy implementation process should be developed. More transparent implementation process should be developed. Moreover, above mentioned socio-economic indices should be developed starting from village level. So that balanced and sustained human development can be achieved.

Appendix Table 5.1: State-wise various Socio-economic Indicators and Indices in India

States	Health Outcome Index	Health Input Index	Per Capita Private Rural Health Expenditure (Rs)	Per Capita Private Urban Health Expenditure (Rs)	Per Capita Public Health Expenditure (in Rs)	PCNSDP 2011-12 (2010-11 prices)
Andhra Pradesh	1.42	1.52	125	144	860	69000
Assam	0.57	0.58	29	116	494	41142
Bihar	0.8	1.86	52	78	257	21750
Chhattisgarh	0.74	0.52	57	88	531	55177
Delhi	1.6	0.47	150	114	1420	185343
Gujarat	1.27	1.1	82	120	777	87481
Haryana	1.15	0.48	113	149	661	106085
Himachal Pradesh	1.4	0.16	134	135	1593	87721
Jammu & Kashmir	1.66	0.25	74	116	1009	53173
Jharkhand	0.8	0.59	40	108	315	41254
Karnataka	1.23	1.11	123	137	670	90263
Kerala	2.97	0.53	244	275	929	97912
Madhya Pradesh	0.71	1.29	66	125	452	38550
Maharashtra	2.09	1.74	128	167	560	99173
Orissa	0.72	0.74	67	89	439	47632
Punjab	1.23	0.45	196	197	728	85577
Rajasthan	0.7	1.21	92	92	568	57391
Tamil Nadu	2.02	1.01	99	149	806	92984
Uttar Pradesh	0.61	3.88	106	127	427	32002
West Bengal	1.37	1.33	91	193	451	40708

Sources: Health Outcome Index: Sinha, Sahay and Koul (2016), Health Input Index: Sinha, Sahay and Koul (2016), Per Capita Private Rural Health Expenditure (Rs): NSSO, Per Capita Private Urban Health Expenditure (Rs): NSSO, Per Capita Public Health Expenditure (in Rs): Study of State Finances in India, RBI, Literacy Rate (%): Census, PCNSDP 2011-12 (2010-11 prices): CSO, Rural Population (%): Census,

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Appendix Table 5.1: State-wise various Socio-economic Indicators and Indices in India

States	Rural Population (%)	Poverty Ratio	SC and ST Population (%)	Corruption Index 2016	Public Affairs Index 2017	Human Development Index 2015
Andhra Pradesh	66.6	29.9	23.41	74	0.546	0.616
Assam	85.9	34.4	19.6	18	0.462	0.556
Bihar	88.7	54.4	17.2	26	0.457	0.536
Chhattisgarh	76.8	49.4	43.44	13	0.419	
Delhi	2.5	13.1	16.75	16	0.607	
Gujarat	57.4	31.8	21.5	37	0.528	0.616
Haryana	65.1	24.1	20.17	19	0.588	0.661
Himachal Pradesh	90	22.9	30.9	3	0.646	0.67
Jammu & Kashmir	72.6	13.2	19.28	44	0.582	0.649
Jharkhand	76	45.3	38.29	24	0.44	
Karnataka	61.3	33.4	24.1	77	0.563	0.681
Kerala	52.3	19.7	10.55	4	0.754	0.712
Madhya Pradesh	72.4	48.6	36.71	23	0.448	0.557
Maharashtra	54.8	38.1	21.17	57	0.534	0.666
Orissa	83.3	57.2	39.98	19	0.5	0.557
Punjab	62.5	20.9	31.94	42	0.625	0.661
Rajasthan	75.1	34.4	31.31	14	0.474	0.577
Tamil Nadu	51.6	28.9	21.11	68	0.627	0.666
Uttar Pradesh	77.7	40.9	21.27	19	0.568	0.542
West Bengal	68.1	34.3	29.32	21	0.563	0.604

Sources: Poverty Ratio: NSSO, SC and ST Population (%): Census, Corruption Index 2016: CMS (2017), Public Affairs Index 2017: PAI (2017), Human Development Index 2015: Kundu and Tadit (2017),

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Appendix Table 5.1: State-wise various Socio-economic Indicators and Indices in India

States	Per Capita Public Expenditure on Social Services 2014-15	Basic Human Needs Index 2016	Foundations of wellbeing Index 2016	Opportunity Index 2016	Social Progress Index 2016
Andhra Pradesh	3777	67.96	50.35	50.07	56.13
Assam	2906	52.22	54.7	38.65	48.53
Bihar	1540	52.73	47.24	34.71	44.89
Chhattisgarh		63.19	51.96	54.93	56.69
Delhi		62.92	60.25	57.34	60.17
Gujarat	4055	73.29	49.43	47.21	56.65
Haryana	4432	64.22	53.25	54.64	57.37
Himachal Pradesh	6123	68.07	62.72	65.37	65.39
Jammu & Kashmir	4222	61.19	56.17	48.86	55.41
Jharkhand		56.1	46.98	40.33	47.8
Karnataka	3467	65.64	55.98	57.54	59.72
Kerala	4008	73.78	65.42	65.08	68.09
Madhya Pradesh	2233	59.14	53.98	51.98	55.03
Maharashtra	3755	70.74	54.32	48.58	57.88
Orissa	2530	55.44	50.98	48.5	51.64
Punjab	2462	68.61	59.14	58.8	62.18
Rajasthan	2886	59.11	42.84	54.96	52.31
Tamil Nadu	4182	76.26	58.84	60.92	65.34
Uttar Pradesh	1728	57.93	47.41	47.53	50.96
West Bengal	2474	62.46	58.04	42.62	54.37

Sources: Per Capita Public Expenditure on Social Services 2014-15: Study of State Finances in India, RBI, Basic Human Needs Index 2016: IFC (2017), Foundations of wellbeing Index 2016: IFC (2017), Opportunity Index 2016: IFC (2017), Social Progress Index 2016: IFC (2017),

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Appendix Table 5.1: State-wise various Socio-economic Indicators and Indices in India

States	Female Empowerment Index 2015	Child Development Index 2013-14	India State Hunger Index 2008	Cognizable Crime Rate 2015	Prosperity Index 2014
Andhra Pradesh	0.59	0.76	19.53	215.6	83.8
Assam	0.47	0.55	19.83	321.8	
Bihar	0.42	0.3	27.3	171.6	76.9
Chhattisgarh	0.55	0.62	26.63	220.9	76.1
Delhi	0.56				
Gujarat	0.56	0.48	24.7	203.6	85.2
Haryana	0.53	0.63	20	310.4	94.9
Himachal Pradesh	0.63	0.87		198.5	
Jammu & Kashmir	0.55	0.51		191.2	
Jharkhand	0.46	0.35	28.67	135.1	81.9
Karnataka	0.59	0.76	23.73	224	89.7
Kerala	0.67	0.96	17.63	723.2	98.5
Madhya Pradesh	0.49	0.33	30.87	348.3	70.9
Maharashtra	0.59	0.77	22.8	231.2	85.2
Orissa	0.51	0.53	23.8	197.3	77.5
Punjab	0.59	0.79	13.63	131.2	100
Rajasthan	0.52	0.39	20.97	273.9	82
Tamil Nadu	0.6	0.86	20.87	271.2	85.2
Uttar Pradesh	0.49	0.14	22.13	112.1	81.9
West Bengal	0.54	0.72	20.97	193	79.9

Sources: Female Empowerment Index 2015: McKinsey&Company (2015), Child Development Index 2013-14: Reetika Khera, Jean Dreze (2015), India State Hunger Index 2008: Purnima Menon, Anil Deolalikar, Anjor Bhaskar (2009), Cognizable Crime Rate 2015: Crime in India (2015), Prospority Index 2014: Crisil Report (2013),

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Appendix Table 5.1: State-wise various Socio-economic Indicators and Indices in India

States	Ease of Doing Index 2015	Internet Readiness Index 2015	Governance Performance Index 2011	Enrolment Ratio in Higher Education	Literacy Rate (%)
Andhra Pradesh	70.12	0.68	0.59	30.8	67.66
Assam	14.84	0.19	0.35	15.4	73.18
Bihar	16.41	0	0.29	14.3	63.82
Chhattisgarh	62.45	0.18	0.54	15.1	71.04
Delhi	37.35	1		45.4	86.34
Gujarat	71.14	0.73	0.65	20.7	79.31
Haryana	40.66	0.7	0.53	26.1	76.64
Himachal Pradesh	23.95	0.68	0.5	32.5	83.78
Jammu & Kashmir	5.93	0.42		24.8	68.74
Jharkhand	63.09	0.08	0.3	15.5	67.63
Karnataka	48.5	0.92	0.57	26.1	75.6
Kerala	22.87	0.88	0.59	30.8	93.91
Madhya Pradesh	62	0.15	0.49	19.6	70.63
Maharashtra	49.43	0.88	0.5	29.9	82.91
Orissa	52.12	0.25	0.31	19.6	73.45
Punjab	36.73	0.85	0.58	27	76.68
Rajasthan	61.04	0.42	0.5	20.2	67.06
Tamil Nadu	44.58	0.88	0.61	44.3	80.33
Uttar Pradesh	47.37	0.29	0.29	24.5	69.72
West Bengal	46.9	0.54	0.34	17.7	77.08

Sources: Ease of Doing Index 2015: World Bank (2016), Internet Readiness Index 2015: IAMAI and Nielsen (2017), Governance Performance Index 2011: Sudipto Mundle, Samik Chowdhury, Satadru Sikdar (2016), Enrolment Ratio in Higher Education: AISHE (2015).

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CHAPTER VI

CONCLUSIONS

6.1 Introduction

The importance of social sector is increasing rapidly in the recent days, not only in India but also in almost all the countries of the world. From the initial and mid-19th century, most of the countries have considered themselves as the welfare states. The main objective of welfare state is to promote the general happiness and welfare of the people. Functions of welfare state are not limited to traditional functions of the state that is to guarantee a minimum of social and economic security. Functions of welfare state have increased to most of the socio-economic activities in recent years. Providing social services and social security to its citizen is the main aim of the welfare state.

Social services or *social sector can be defined with two approaches namely human capital approach and human development approach* (Prabhu, 2005). For the development of human capital, such as education, health, nutrition, skill development and so on, huge amount of spending is needed. Spending on these sectors is considered as investment because current spending on these sectors will raise future income by increasing lifetime earnings. In other words, *human capital formation rests on the proposition that people enhance their capabilities as producers and consumers by investing in themselves through schooling, health, on-the-training, searching for information about job opportunities and by investing in migration* (Schultz, 1962). Through human development approach, *social sectors could be defined as those providing social securities* (Prabhu, 2005). 'Social-security services' includes, old age pension, public distribution system (PDS), welfare programmes for SC and ST, minority, physically challenged, pension for widow and so on. The term social security is used in its broader connotation. The human development has been defined by the UNDP as *the process of enlarging people's choices* (UNDP, 1990).

World Social Summit (1995), Millennium Development Goals (2000), and UNDP's Human Development reports (Starting from 1990) have also given much emphasis on social sector development of its member countries. However, investment by people on enhancement of human capital in developing country like India is not possible. Major

proportion of the people are belonging to poor or in the middle income group, their most of the spending is towards food and clothing. Hence, intervention of the government is necessary for human capital development and human development through the social sector policies and programmes. In India huge amount of money has been spent on social sector development. In the present study an attempt has been made to analyze the public expenditure on social services by centre and all the states. Further, association among and between different socio-economic indicators have been made.

After the detailed review of literature it is observed that there are number of studies, which have analyzed the public expenditure on education and health. But very less numbers of studies have taken into consideration social sector spending as a whole. Further, time period taken by them are also limited. Hence, in the present study an attempt has been made to fulfill this research gap taking into consideration of social sector spending from 1990-91 to 2014-15 by all the state governments, union government and combined centre and state governments. Public spending on social sector has been discussed in different ways, which are presented in methodology section of this chapter. With respect to impact analysis limited number of indicator and indices have been taken by the researcher. In the present study taking into consideration of more number of appropriate indicators and indices, impact analysis has been made for education, health, human development and public expenditure.

Objectives

- To examine the trends and pattern of public expenditure on social services in India.
- To analyze the education status and infrastructure facilities in different states in India.
- To trace the association among and between education status, education infrastructure, public expenditure on education and socio-economic indicators.
- To discuss the health status and infrastructure facilities in Indian states.
- To study the relationship among and between public expenditure on health, health inputs, health outcomes and socio-economic indicators.
- To find out the nexus among and between different indicators and indices of social sector development, human development, economic growth.

Data and Methodology

The study is based on secondary sources of data. The required data have been obtained from different source such as – Indian Public Finance Statistics, RBI Bulletin, Education for all, Selected Educational Statistics, Health Information of India, Human Development Report (UNDP), National Human Development Report (2002), Indian Human Development Report 2012, CSO, NSSO, Economic Survey and so on. Further, the study has used difference indices for linking HDI and social sector development. The indices are public affairs index (PAI), basic human needs index (BHNI), corruption index (CI), foundations of wellbeing index (FWI), opportunity index (OI), social progress index (SPI), female empowerment Index (FEI), child development index (CDI), India state hunger index (ISHI), prosperity index (PI), ease of doing index (EI) internet readiness Index (IRI), governance performance index (GPI) and so on.

In order to remove the impact of price rise, the growth and composition of public expenditure has been considered at constant prices with reference to 2004-05 as the base year. By using the GDP deflator method, the current expenditure items were converted into constant (2004-05) prices. The GDP deflator is the ratio of nominal GDP to real GDP. In other words, it is equal to nominal GDP divided by real GDP. To get a value in constant prices we need to divide the value of current prices with GDP deflator.

ORGANISATION OF THE STUDY

The study has been structured into six chapters. The first chapter gives the introduction, literature review, objectives, and source of data & methodology of the study. The second chapter analyses the trends of public expenditure on social services. Third chapter discusses status and infrastructure facilities of education in Indian states. It also examines the association among and between education status, education infrastructure, public expenditure on education and socio-economic indicators. The fourth chapter devoted on health sector in Indian states, also the chapter studies the relationship among and between public expenditure on health, health inputs, health outcomes and socio-economic indicators. The fifth chapter finds out the nexus among and between different indicators and

indices of social sector development, human development, and economic growth. Summary and conclusions are presented in the final chapter.

6.2 Findings

- Public expenditure on social services of centre and state governments **COMBINED**in 1990-91 was Rs. 30,972 crore, which increased to Rs. 9,42,156 crore in 2015-16. More than 30 times increase is observed in 26 years of selected time period. Similarly, expenditure on education (more than 25 fold), health (around 30 times), housing (more than 38 times), and other social services (more than 62 times) have also increased significantly. This increase is very impressive and one feels very happy about it. If we convert this expenditure into constant prices and in per capita terms, the picture is different. The reason is that -Public expenditure on selected heads of social services is eaten by the price escalation and increased population. With regards to percapita expenditure at constant price, public expenditure on social services has increased from Rs. 936 to Rs. 3675 (only 3.9 times increase). Similarly, Education (3.3 times), Health (3.3 times), Housing (4.9 times) and Other Social Services (8 times) have also shown lower increase in the same period.

- **CENTRAL**government's expenditure on social services has increased from Rs. 6432 crore in 1990-91 to Rs. 1,59,374 crore in 2015-16 at current prices. In constant prices the per capita expenditure on social sector has increased from Rs. 194 to Rs. 622 for the same period. As for as union government spending is concerned, among the social services education and health have the major shares for both the time periods.

- Expenditure on social services by **ALL-STATES** has increased around 15 times i.e., from Rs. 300 billion in 1990-91 to Rs. 8,784 billion in 2014-15. In per capita real term, public expenditure on social services by all-states has increased by 3.9 times i.e., from Rs. 905 to Rs. 3528.

- State Governments' commitment to increase the Human Development indicator or social sector indicators is evident from the fact that 'social services' (CAGR-3.9%) has the highest growth rate than the 'economic services' (CAGR-2.9%). Further,

In1990-91 expenditure on economic services as a share of total budgetary expenditure was higher (37%) than the social services (33%), whereas, in 2014-15 expenditure on social services is higher (36%) than expenditure on economic services (30%).

- Expenditure on social services as a per cent to GDP is between 4.81 and 7.14 per cent for the study period. Further, an important point is to be noted that spending on social services was lower than the economic services in the initial years of the study period, and in the latter period, spending on social services has increased.

- Among the social services, expenditures on education and health have the lion share in social services, followed by 'social security', 'welfare, welfare of SC and ST' and so on by all-states.

    - Spending on 'Education sports Arts and Culture' was 46.02 per cent of total social services expenditure in 1990-93 (average of 3 years), which has increased to 54.14 per cent in 2013-16(average of 3 years).

    - Public expenditure on 'Medical and public health' by all the state governments was 11.47 per cent in 1990-93, which reached to 16.51 per cent in the year 2013-16.

    - Five out of eleven heads of social services have shown increase in the share of composition of social services expenditure namely 'education', 'health', 'water supply and sanitation', 'relief on account of natural calamities' and 'labour and welfare'. Spending on

    - Spending of 'Urban development' has decreased significantly from 6.69 per cent to 2.46 per cent in the study period. Further, housing sector has also experienced significant deterioration from 2.94 per cent to 1.83 per cent. These two heads have decreased more than 50 per cent as a share of social services.

- ZONE-WISE analysis reveals some interesting observation as indicated below,
    - In per capita terms social sector and its components in North eastern and western zones were found to be in the top position for both the selected years.
    - Central zone and eastern zones were in the bottom position in both years with regard to per capita total public expenditure, considering of expenditure on social services and all its components.
    - Southern and northern zones are found in the middle position with regard to per capita public expenditure on different components of social service in the selected time period.
    - Three-fold gap is observed between top position (north eastern zone) and bottom position (eastern zone) zones in per capita expenditure on social services.
    - Among the zones, higher gap is observed in housing sector and the lower gap is observed in education sector.
- Per Capita Public Spending on social services in Goa, Nagaland, Sikkim, Arunachal Pradesh and Himachal Pradesh were found to be the top spending states in both the time periods (1990-91 and 2014-15). Rajasthan, Odisha, Madhya Pradesh, Uttar Pradesh and Bihar states are spending lower on per capita public social services. Andhra Pradesh has improved its position from 20th in 1990-91 to 11th in 2014-15. Similarly, Gujarat (16th to 12th) and Haryana (13th to 9th) have also improved their positions in the same period. Punjab has deteriorated its position from 12th in 1990-91 to 21st in 2014-15. Similarly, Jammu Kashmir has also experienced negative change in its rank from 6th to 10th in the same period.
- Inter-state imbalances in per capita expenditure on social services have come down, which is evident from the fact that the CV in the year 1990-91 was 65.0 per cent, has decreased to 55 per cent

- In the year 1990-91, per capita public expenditure at constant prices (2004-05) on **education** by all state was Rs. 407, which increased Rs. 1238 in 2014-15. It has shown an increase of three fold in 25 years of selected time period.

    - Among the states Sikkim, Goa, Arunachal Pradeshand Nagaland are found in the higher spending states. These states are spending more than Rs. 3000 per capita (constant prices of 2004-05) on education through the budget in 2014-15. Bihar, Uttar Pradesh, Madhya Pradesh and Odisha are found in the bottom position with lower than Rs. 1150 per capita in the same year. Andhra Pradesh (22^{nd} to 17^{th}) and Haryana (14^{th} to 10^{th}) states have improved their position significantly from 1990-91 to 2014-15. Punjab (11^{th} 18^{th}), Jammu Kashmir (9^{th} to 13^{th}) and West Bengal (16^{th} to 20^{th}) have experienced significant deterioration in the same period.

- During 1990-91, Rs. 124 was spent on **health** sector by all states (at constant prices), which increased to Rs. 369 in the year 2014-15. This sector has shown around 3 fold increase over 25 years of reference period. In this sector, for the year in 2014-15, Sikkim is found to be in the first position with Rs. 1948 per person per year, while Bihar with Rs. 166 was found in the last position among the 24 selected states. Sikkim, Goa, Arunachal Pradesh and Nagaland are in the top position in both the years. Bihar, Uttar Pradesh, Assam, Madhya Pradesh and Odisha were in the bottom position in 1990-91 and 2014-15. CV in per capita health expenditure was 78.9 per cent in 1990-91, which increased to 65.8 per cent in 2014-15. It means inter-state disparities have decreased noticeably.

- In **housing** sector, only Rs. 14 per capita has been spent in 1990-91, which increased to Rs. 76 in 2015-16 by all states (at constant prices). In this sector more than 5 time increase can be observed over the period of 25 year for the selected time period.State-wise analysis reveals that in the year 2014-15 per capita expenditure on housing is high in the stares like Sikkim, Nagaland, Tripura and Karnataka. Lower per capita spending is observed in the states like Rajasthan, Haryana, Kerala and Manipur in the same period. States like Assam, Andhra Pradesh, Karnataka, Bihar and Uttar Pradesh have improved their position

significantly in per capita public spending on housing sector. On the other hand, states like Jammu and Kashmir, Goa, Haryana, Meghalaya and Manipur have worsened in their ranks in the reference period. Inter-state imbalances in public per capita expenditure on housing from 1990-91 (CV-152%) to 2014-15(CV-178%) has increased.

- Per capita public expenditure on **rural development** was Rs. 123 in 1990-91 by all states, which increased to Rs. 434 in 2014-15. More than 3.5 times increase can be observed in the 25 years of the reference period. In this sector also states like Sikkim, Tripura, Manipur, Meghalaya and Nagaland are spending more amounts in per capita terms. On the other side states like Assam, Uttar Pradesh, Goa and Punjab are spending lower per capita on rural development. Regional imbalances in per capita spending on rural development has reduced from 1990-91 to 2014-15, which is evident through the reduction in CV from 60 per cent to 56 per cent in the reference period.

- Zone-wise regional imbalances reveals some interesting observations as shown below,

    - In social sector, western zone has higher regional imbalances for both 1990-91 and 2014-15. Central zone and eastern zones have lower regional imbalances in 1990-91 and 2014-15 respectively. Except northern and western zones, all zones experienced increase in regional imbalances in the study period.

    - As per expenditure on education is concerned, western zone has the lower regional imbalances in the selected study period. Central and southern zones have lower regional disparity respectively in 1990-91 and 2014-15. Southern and western zones registered reduction in regional imbalances in the 25 years of reference period.

    - In per capita health, central zone has lower regional imbalances in 1990-91, and in 2014-15 eastern zone has lower regional imbalances. Western zone has huge regional imbalances in both the selected time periods. Two out of six zones

namely central and eastern zones have experienced higher regional imbalances from 1990-91 to 2014-15

- With respect to housing, southern zone had lower regional imbalances in 1990-91, further; in 2014-15 central zone has lower regional imbalances. Three zones namely central, eastern and northern zones have experienced reduction in regional imbalances.

- In per capita spending on rural development western and eastern zones have lower regional imbalances in 1990-91 and 2014-15 respectively. Central, northern and southern are the three zone, which have registered increased regional imbalances from 1990-91 to 2014-15.

- Andhra Pradesh, Gujarat, Karnataka and Maharashtra are in the Best category with higher per capita income and higher growth rates in the study period. Madhya Pradesh, Odisha, Uttar Pradesh, West Bengal and Bihar are found in the last category, where the states have lower per capita income and lower growth rates in comparison with the national average in the study period. This category has been considered as the vicious cycle of growth of public expenditure on social service. Remaining all other states are found in the second category where, the states have higher average per capita income and lower growth rates in comparison with the state average.

Education

- Up to 1931 Indian literacy rate has not crossed two digits. Major jump in literacy has started after 1951. In the year 1951, literacy rate in India was 16.67, which increased to 36.17 in the year 1981. After 1981 again growth of literacy rate in India has started to increase. It increased to 52.21 in 1991. At last in 2011 literacy rate has reached to 74.04. At the same time public expenditure on education has also increased from 0.64 per cent of GDP in 1950-51 to 4.15 per cent in 2014-15.

- In 1901, Literacy rate of male was 9.83, while female was only 0.60. Huge quantum of gap was observed between male and female. Over the period of time

literacy rates of both male and female have increased significantly. Moreover the gap has decreased more sharply.

- In the year 1951 rural and urban literacy rates were 12.1 and 34.59 respectively, which increased significantly to 67.8 and 84.1 in 2011 respectively. Gap [(Urban-Rural)/Rural] in rural and urban literacy rates decreased significantly from 1.86 in 1951 to 0.24 in 2011.

- With respect to literacy rate of 1951, Kerala, Mizoram, Andaman and Nicobar Islands and Maharashtra were found in the top position, whereas, Rajasthan, Chhattisgarh, Nagaland and Uttar Pradesh were found in the bottom position. Kerala was in the first position with the literacy rate of 47.18 per cent and Rajasthan was in the last position with the literacy rate of only 8.5 per cent.

- In the year 2011, Kerala continued with the first position with literacy rate of 93.91 per cent, whereas, Bihar found in the last position with the literacy rate of 63.82 per cent. Kerala, Lakshadweep, Mizoram, Tripura, Goa and Daman and Diu are found in the top position with the literacy rate higher than 87 per cent. On the other hand Bihar, Arunachal Pradesh, Rajasthan, Jharkhand and Andhra Pradesh were in the bottom position with the literacy rate less than 68 per cent.

- In the year 1951 huge inter-state disparity was in literacy rate (CV 50.18 %). Over the period of time this inter-state disparity has stated decreasing. The trend of decrease is slow up to 1971; afterwards, it has started decreasing rapidly. CV in the year 2011 is only 10.33 %. If one looks at this the trend, by next census, regional imbalances in literacy rate will be very less or negligible.

Enrolment

- It is observed that from 1950-51 to 2014-15 enrolment has increased in all the levels of education, which is presented below,

    - In 1950-51 enrolment in primary (I-V) was 192 lakh students, which increased to 1305 lakh students (around 7 times increase in 64 years).

- Enrolment in upper primary (VI-VIII) was only 31 lakh students in 1950-51, which increased to 672 lakh students (more than 20 fold increase).

- More than 15 times increase is observed with respect to enrolment in senior secondary (XI-XII) level education from 15 lakh students to 235 lakh students in the selected time period.

- Among the selected heads of level of education, a significant increase is observed in higher education. Enrolment in higher education was only 4 lakh students in 1950-51, which increased to 342 lakh students in 2014 (more than 86 fold increase).

- In all levels of education, enrolment ratio is higher for boys, which is more than 50 per cent. The ratio between boys and girls are 52 and 48 respectively for primary level. Further, share of boys is high in higher education (54%) followed by senior secondary education (53%), secondary education (52%) and upper primary education (51%). Trend of gap between male and female is increasing from lower level of education to higher level of education, except, in primary level.

- In the education level of 1-5, 5-8 and 11-12, enrolment gaps between boys and girls is high in ST category than the SC category. In the class 9-10 this gap is found to be high in SC category than the ST category.

Enrolment Ratio

- GER of All-India for class I-V is 106.5. Between male and female, GER of female (107.1) is more than the male (105.8). Among the states/union territories Assam, Kerala, Haryana and Jammu and Kashmir have lower GER i.e., less than 90. On the other hand, Arunachal Pradesh, Manipur, Sikkim, Meghalaya have higher gross enrolment ratio more than 125 students. Out 35 states and union territories 18 have girls GER higher than the boys, whereas, remaining 17 states and union territories. Arunachal Pradesh is in the top position and Assam is in the bottom position.

- Gross enrolment ratio (GER) in class I-X for All-India is 91.3. There is a slight gap between boys (91.6) and girls (91.0) GER. The state of Goa is in the top position

with GER of 110 and Assam is in the bottom position with only GER of 72, in class I-X. Along with Goa, states/union territories like Puducherry, Delhi, Lakshadweep and Sikkim are found in the top position with more than GER of more than 105. Nagaland, Jammu and Kashmir, Bihar, Haryana and Andhra Pradesh are found in the bottom position with GER less than 85. Out 35 states and union territories 17 have girls GER higher than the boys, whereas, remaining 18 states and union territories.

Enrolment in Higher Education

- At the college level of education, a lion share of students is enrolling to 'Arts/Humanities/Social Sciences' with the share of more than 40 per cent followed by Engineering and Technology (15.89%), Science (15.38%) and Commerce (13.98%). Remaining disciplines have very lower shares. Oriental Learning (0.39%) and Agriculture (0.61%) have the lowest enrolment (for 2014-15).

- Among the selected levels, under graduation has higher amount of disparity between male and female (71% and 29% respectively) followed by MPhil (61% and 39%), PG Diploma (56% and 44%), PhD (54% and 46%), and Diploma (53% and 47%). On the other hand, higher education courses like post-graduation (56%), certificate (52%) and integrated (58%) courses have higher share of female than the male.

- In the recent years, enrolment in research especially for PhD increased significantly. Higher share in enrolment in PhD is observed in discipline like Science (25.88%), Engineering & Technology (23.42%) and Social Science (12.13%), whereas lower share is observed in the disciplines like Home Science (0.51%), Law (0.99%) and IT & Computer (1.69%). On the other hand enrolment in Post-graduation: Social Science (17.35), Management (15.70) and Science (12.51) have higher share in 2014-15, while Law (0.67%), Agriculture & Allied (0.58%) and Home Science (0.25%) have lower shares.

Number of Schools

- Over the 64 years of the study period, number of primary schools per lakh population (age group of 6-10 years) has increased 1.5 fold (from 443 in 1950-51 to 673 in 2014-15). Upperprimary schools per lakh population (age group of 11-13 years) were only 52 in 1950-51, which increased to 771 in the year 2014-15.

- Senior Secondary schools have also increased in the same period from 46 per lakh population (age group of 16-17 Years) to 274 per lakh population (age group of 16-17 Years) in 1990-91, but not maintained the improved situation, so decreased to 153 schools per lakh population (age group of 16-17 Years). In 2014-15 it reached to 290 schools per lakh population (age group of 16-17 Years).

- Higher increased is observed in number of colleges and universities. There were only 135 colleges per lakh population (age group of 18-23 years) in 1950-51, which increased to 3002 colleges in 2014-15. Similarly, number of universities per lakh population (age group of 18-23 years) has increased from 6 in 1950-51 to 59 in 2014-15.

- In India there are 447 schools (Primary, Upper Primary, Secondary and Senior Secondary) per lakh population (age group of 6-17 years) and 443 primary schools per 1000 sqKm. area are there. This has not been distributed among different states.Meghalaya, Mizoram, Himachal Pradesh, have registered higher schools per lakh population i.e., more than 1100 schools per lakh population(age group of 6-17 years), whereas, Chandigarh, Delhi, Kerala and Bihar are in the lower position with less than 250 schools per lakh population.

- Delhi with 3414 schools per 1000 sqKm. area is found in the first position and Arunachal Pradesh with 40 primary schools per 1000 sqKm. area found in the last position. Along with Delhi, states/union territories like Chandigarh, Puducherry, Lakshadweep, Daman and Diu and Uttar Pradesh were found in the top position, those have primary schools per 1000 sq area more than 1000 schools. Andaman and Nicobar Islands, Jammu and Kashmir, Nagaland and Sikkim have less than 175 primary schools per 1000 sq. Km. area along with Arunachal Pradesh.

- In India, there are 39071 colleges in 2014-15 (28 colleges per lakh population of 18-23 years). States like Telangana, Puducherry, Karnataka and Himachal Pradesh have higher number of colleges per lakh population. On the other side Bihar, Delhi, Jharkhand, West Bengal and Tripura have lower number in this regards. With respect to enrolment per college is concerned Bihar, Chandigarh, Jharkhand, Delhi and West Bengal have higher enrolment per college. On the other hand, Daman & Diu, Nagaland, Karnataka, Andhra Pradesh and Himachal Pradesh have lower enrolments per college.

Pupil-Teacher Ratio

- With respect to pupil teacher ratio in primary schools, Bihar is in the last position with more than 80 students per teacher, whereas, Sikkim found in the first position with only 7 students per teacher. Sikkim, Mizoram, Aland & N Islands, Himachal Pradesh and Tripura are found in the top position with 15 or less than 15 students per one teacher. Along with Bihar, states like Uttar Pradesh, Haryana, Rajasthan and Delhi are observed in the bottom position for the same indicator.

Drop-Out

- It is found that in 2014-15 All-India Dropout rate (I-X Classes) is 55.3 (55.0 for male and 55.6 for female). States like Bihar, Mizoram, Jharkhand, Sikkim and Rajasthan are found in the bottom position with higher drop-out rates, which is more than 70. On the other hand, Kerala, Himachal Pradesh, D&N Haveli, Haryana and Tripura are found in the top position with dropout rate less than 35. A point here is to be noted that dropout rate of Bihar (80.7) is 20 times higher than that of Kerala (only 4.1). Out of total states and union territories, 14 states/union territories have boys drop-out rates higher than girls. Whereas, 13 states and union territories have girls drop-out rates higher than boys. Drop-out rates are high in Classes I-X (50.31) followed by I-VIII (40.79) and I-V (22.26). The similar trend is observed in SC and ST categories also. Between SC and ST categories, ST category has higher drop-out rates than SC category in all the level of education.

Education Development Index (EDI)

- It is found that Puducherry, Lakshadweep, Sikkim, Himachal Pradesh, Karnataka and Delhi were found in the top position in the education development index of 'primary', 'upper primary' and 'composite primary and upper primary levels'; whereas, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Madhya Pradesh and Assam were found in the bottom position out of 35 states in the country. Inter-state disparities have also been studies with the coefficient of variation (CV %), which has been presented in the last row of the table. It is found that between primary and upper primary level inter-state disparity is lower in primary (CV 13.62%) than the upper primary (CV 13.91%).

    - Eight out of 35 states/union territories namely Puducherry, Lakshadweep, Himachal Pradesh, Tamil Nadu, Karnataka, Sikkim, Kerala, Gujarat, were found in the best category in EDI of primary level with the group average of EDI value 0.710

    - Similarly, same number of (eight) states viz., Jammu & Kashmir, Mizoram, Tripura, Jharkhand, Assam, Meghalaya, Arunachal Pradesh and Bihar were observed in the worst group in EDI of upper primary level with group average of EDI value of only 0.490. With respect of upper primary level also more or less same status can be observed.

    - Inter-state imbalances is increasing from the group of best performing states to worst performing states in primary level EDI

    - On the other hand in upper primary level no trend is observed in different groups of states in EDI value

- Observing at the association among and between different indices the following finding are observed

    - In upper primary level all the indices namely Access Index, Infrastructure Index, Teachers Index and Outcome Index are positively associated and statistically significant to each other. The highest statistical significance is found between

output and teacher indices. It means teachers play an important role for the educational development.

- With respect to primary level, except 'teacher-infrastructure' and 'teacher-output' none of the indices are correlated significantly.

- In primary level, output index is positively associated with the remaining three indices namely infrastructure index, access index and teacher index. Further it is to be noted that output index is statistically significant with infrastructure index. Moreover, between access and teacher indices, teacher index has more statistically significant with output index.

- **Higherthe level of education higher will be the per capita income and lower will be the poverty ratio.** This findingstrengthens the argument of Human Capital Theory.

- It is found that correlation between literacy rate and Female Empower Index are positively and strongly associated. Hence, one can say that education has the positive impact on gender empowerment.

- Child development index and literacy rates have positive associations. It means higher the literacy rate; higher will be the value of child development index.

- It is found that there is a strong positive association, which exists between literacy rate and social progress index. It means literacy has the positive impact on overall social development.

Health

- IMR of India was 129 in the year 1971, which decreased significantly to 63 in the year 2002. Further, in 2013 it again decreased considerably to 40.

- Infant mortality rate (IMR) is high in rural area than in urban area. In the year 1971 rural IMR was 138, while urban IMR was 82. Over the period of time IMR has decreased in both rural and urban areas. In the year 2013, IMR of rural area has decreased to 44, while urban has decreased to 27.

- In the year 1971 gap between rural-urban was 56 which decreased to only 27 in 2013.

- It is observed that in 1973 (1971-75) LEB of India was 49.7 years, which increased significantly to 66.9 in 2010 (2008-12). This increase is due to the implementation of various good programmes by central and state governments, awareness among people in utilisation of health care facilities and improved standard of living (with growth in income & employment, reduction in poverty and so on), increase in the production of food-grains, strengthened public distribution system (PDS) and so on.

- LEB of male and female were more or less same, which were 58.1 and 57.7 respectively. Both the LEB of male and female have increased significantly to 65.3 and 68.6 respectively for male and female. Female LEB is not only high but its rate of growth is also high over the period of time. Over the 20 years of the study period, Female LEB has shown 1.2 time increase and male LEB has shown only 1.1 times increase.

- LEB has increased in the study period in both rural and urban areas. LEB of urban is comparatively higher than the rural area in the entire study period. LEB of rural was 56.1 n 1986-90, which increased to 65.7 in 2008-12, an increase of 1.2 fold. On the other hand LEB of urban was 63.4 in 1986-90, which has also increased to 69.9 in 2008-12, an increase of 1.1 fold. Rate of increase of LEB of rural area is higher than the urban area.

Health Infrastructure

- In 1971, the number of doctors, nurses, midwives and health visitors was 27, 14, 5 and 0.8 per ten lakh population respectively; these figures increased to 71, 101, 48 and 4.82 respectively, in the year 2016. For the period 1951 to 1991, number of doctors was higher compared to other categories. Number of nurses increased considerably from 1990 onwards, and overtook the number of doctors in 1993. Still, this number is low when compared to other developed and many developing countries.

- In 1971, the number of hospitals, dispensaries, PHCs and beds respectively were 7, 16, 9.3 and 64 per million population. These have increased to 21, 35, 35 and 111 per million population by 2016. But the growth trend of these variables is quite different. Number of PHCs per million population were 9, which increased to 35, which has shown the highest increase of 4 fold increase in the study period followed by hospitals per million population (3 fold), Dispensaries per million population (2.1 fold) and finally beds per million population (1.7 fold).

Inter-state Comparison of Health Status

- Kerala stands in the first position, where the infant mortality rate is only 12 in the year 1997. Out of 30 states and union territories, Kerala, Goa, Mizoram, Puducherry and Manipur were found in the top position with infant mortality rate less than 30. Odisha stands in the least position with IMR more than 95. States like Bihar, Assam, Rajasthan, Uttar Pradesh, Madhya Pradesh and Odisha were in the bottom position, whose IMR is greater than 70.

- In the year 2013 Goa is found in the first position with IMR less than 10 and Madhya Pradesh found in the last position with IMR 54. Out of 35 states and union territories in the year 2013, Goa, Manipur, Kerala, Puducherry and Nagaland were in the top position with IMR less than 20. On the other hand, Uttar Pradesh, Odisha, Assam and Madhya Pradesh with IMR more than 50 found in the last position.

- Inter-state imbalances (CV %) in IMR is hovering between 38.5 per cent and 46.7 per cent. In the year 1997 it was 41.9 per cent which decreased to 40.9 per cent in 2000. It again increased to 46.7 per cent. In the later stage it decreased drastically to 38.5 per cent in 2008 and stood at 39.4 per cent in 2013. Totally, over the period of time inter-state disparity in IMR has decreased.

- Life Expectancy at Birth (LEB) of Kerala was 72.9 years(top position) in 1991-95, which increased to 74.8 years in 2009-13. In 1991-95, Kerala, Maharashtra, Punjab and Tamil Nadu were in the top position. On the other hand in the year 2009-13, states like Kerala, Jammu and Kashmir, Maharashtra, Punjab and Himachal Pradesh are found in the top position. In both the periods, Rajasthan,

Odisha, Madhya Pradesh, Uttar Pradesh and Assam were observed in the bottom position. The highest improvement is observed in the states like Rajasthan, Bihar, Odisha and Madhya Pradesh. The gap in LEB between Kerala (Top position) and Assam (Bottom Position) is more than 11 years in 2009-13, which shows the vast regional imbalances in the country.

- In the initial years of the study period inter-state imbalances were very high, which is evident from the fact that the CV of LEB in 1991-95 is 7.8%. In the later stage this imbalances declined significantly. Rapid decline is observed from 1991-95 to 1999-2003. Further, also it has decreased and at the end it reached to 4.7 per cent in 2009-13.

Inter-state Comparison of Health Infrastructure Facilities

- Jammu & Kashmir is found in the first position (with 231 Hospitals per ten Lakh Population) and A & N Islands is in the last position (with only 2.42 Hospitals per ten Lakh Population). Jammu & Kashmir, Arunachal Pradesh, Lakshadweep, Uttarakhand and Chandigarh were in the top position and D & N Haveli, Uttar Pradesh, Andhra Pradesh and A & N Islands were in the bottom position. A point here is to be noted that the difference between the top (J&K) and bottom (A & N Islands) is more than 95 times. On the other hand, with respect of beds per lakh population, it is found that Lakshadweep with 385 Beds per lakh population found in the top position among 34 states and union territories, and Bihar with only 11 beds per lakh population found in the last position. Lakshadweep has more than 35 fold higher beds per lakh population than that of Bihar. States and union territories like Lakshadweep, Sikkim, Puducherry, Chandigarh and Arunachal Pradesh were in the top position with more than 180 beds per lakh population, while Madhya Pradesh, Haryana, Andhra Pradesh, Jharkhand and Bihar were in the bottom position with less than 38 beds per lakh population.

- Himachal Pradesh is in the top position with more than 70 doctors per lakh population, while Bihar is observed in the bottom position with number of doctors less than 4 per lakh population. Twelve out of 35 states and union territories viz., Himachal Pradesh, Delhi, Sikkim, Lakshadweep, Arunachal Pradesh, Manipur,

Mizoram, Jammu & Kashmir, Tripura, Puducherry, Goa and Meghalaya have the number of doctors more than 20 per lakh population. States like Haryana, West Bengal, Karnataka, Chandigarh, Madhya Pradesh, Gujarat, Uttar Pradesh, Andhra Pradesh, Jharkhand, Chhattisgarh, Maharashtra and Bihar.

Health Input Index and Health Outcome Index

- Withrespect to Health Input Index, Uttar Pradesh was found in the first position and Himachal Pradesh was in the bottom position out of the 21 selected states. States like Uttar Pradesh, Bihar, Maharashtra, Andhra Pradesh and West Bengal were in the top 5 position. On the other hand, Himachal Pradesh, Uttaranchal, Jammu & Kashmir, Punjab and Delhi were found in the least position.

- With respect to Health Outcome index, Kerala stands first and Assam stands in the last position. Kerala, Maharashtra, Tamil Nadu, Jammu & Kashmir and Delhi are the states with top five ranks, whereas, Assam, Uttar Pradesh, Uttaranchal, Rajasthan and Madhya Pradesh have the bottom 5 ranks.

Nexus of Health Outcome Index and socio-economic indicators

- Correlation analysis of health outcome index and health input index reveals a negative association with the correlation coefficient of -0.175. One should not be shocked with this finding, because the correlation coefficient is not statistically significant. Further, not only the input but also the service delivery through these inputs and awareness to utilize the health facilities becomes very important. Moreover, in the recent years central government is investing huge amount on the under developed states. Hence, states like Uttar Pradesh, Bihar Madhya Pradesh, Rajasthan and Odisha are in the better position in the health input index.

- Public health expenditure has the positive association with health outcome index.

- Higher the out of pocket expenditure (NSSO Data) has strong positive association with health outcome index of Indian states. It means higher the out of pocket expenditure higher will be the health status. Impact of health outcome index by '**private** per capita health expenditure' is more than that of '**public** per capita

expenditure'. It means between public and private expenditures, private or out of pocket expenditure has major role in outcome.

- Between rural and urban private health expenditures, urban health expenditure has more significance with the outcome, which is evident from the correlation coefficient of per capita private urban health expenditure and health outcome index is 0.771with 99 per cent of significant level.

- Correlation coefficient between poverty ratio and health outcome index is -.0584, with 95 per cent of significant level. It means higher the poverty; lower will be the health status of the people.

- SC and ST population have lower health status than the rest of the people, which is evident through the negative association between SC and ST Population and Health Outcome Index.

- There is a strong negative association between share of rural population and health outcome index. -0.529. It means rural people have lower health status than urban people.

- Health Outcome Index has the positive association with literacy rate. It means, higher the literacy rate higher will be the health status. (Correlation coefficient is 0.718 with 95 per cent statistical significance).

- There is a strong positive association between per capita Income and health outcome index (correlation coefficient is 0.499 at 95 per cent of significant level). It means people who have good income, generally, they have good health also.

HDI and social sector

- Indian HDI value was only 0.43 in the year 1990, which increased significantly to 0.62 in the year 2014. This is mainly due to the commitment of successive governments at state and central to improve the quality of life of the people with respect of health, education, employment and so on through the social sector investment.

- It is found that Kerala is found in the first position with the HDI value of 0.712 and Bihar is found in the last position with the HDI value of 0.536. States like Kerala, Himachal Pradesh, Tamil Nadu, Maharashtra and Punjab have experienced in the top position, while Bihar, Uttar Pradesh, Assam, Madhya Pradesh and Odisha are in the bottom position. Kerala has the 1.3 fold higher human development than Bihar, which shows the existence of inter-state disparity. To see the regional imbalances Coefficient of variation (CV) has been calculated, it shows that quantum of regional imbalances in HDI is not so high, which is evident from the fact that CV of HDI is only 8.8%.

- Spending on social services by government has yielded in terms of improved human development in India, which is evident through the strong positive association between HDI and Per capita social sector spending by Indian states.

- It is found that per capita out of pocket rural as well as urban expenditures have positive association with HDI values. An interesting point here is to be noted that between the out of pocket health expenditures of rural and urban, rural expenditure has higher positive association.

- Trend line of association between HDI and share of rural population is negative, it means, rural population have lower status of human development.

- HDI and SC and ST population have negative association. Hence, it can be said that human development status of SC and ST are lower than that of other community people.

- Poverty (Planning Commission Estimates) and HDI value have strong negative association. It means higher the poverty means, lower will be the human development.

- It is found that there is a strong positive correlation between HDI and PAI (Public Affairs Index). Higher the PAI means higher will bent the HDI value.

- There is an existence of strong and positive association between HDI and Basic Human Needs Index. It means, higher the human development; higher will be the status of basic human needs.

- 'Foundations of Wellbeing Index' is also positively and strongly associated with the HDI. It advocates that foundations of well-being are good, when the human development status is good.

- With 'opportunity index' also HDI has strong and positive association. A very strong and positive association is observed between HDI and 'social progress index'. It means human development leads to social progress.

- 'Female empowerment index' and 'human development index' are moving more or less similar direction, which is evident from the fact that trend like is nearer to the 45 degree line in the scatter diagram.

- Child development index and human development index have strong positive association with statistical significance.

- There is a negative significant relationship between HDI and 'Indian State Hunger Index (ISHI)'. It means higher the human development value; lower will be the incident of hunger.

- Crime rates are low in the states that have higher human development as well as lower human development; it is high in medium human developed states.

- There is strong positive association between human development and prosperity of people (Prosperity Index).

- There is no significant association between human development index and 'ease of doing business index'.

- Higher the human development, higher will be the internet readiness (internet readiness index).

- There is a strong and positive association between human development and good governance (Governance Performance Index).

Corruption of Socio-economic Development

- Neither rich nor poor are more-corrupt. More corrupt are the people who are in middle income group, which is evident from the fact that association of "poverty-corruption index" as well as "per capita income-corruption index" have the inverted U shape curve.

- Higher the rural population, lower is the corruption. In other words, urban people are more corrupt than the rural people in India.

- More corrupt are people who are moderately educated. This is evident from the figure that the trend line of literacy rate and corruption index is in inverted U shape.

- Moderately human developed states have higher level of corruption than high HDI and low HDI states.

6.3 Suggestions:

Public expenditure on social services especially on education and health are too low in India as compared with many countries in per capita terms as well as per cent to GDP. This makes a case for increase in such expenditure. Not only increasing of public expenditure is important but also proper utilization is more important. At present with respect to expenditure on education, most of the share of spending is on salary expenses. Along with salary expenses, good amount of school infrastructures should be developed. Infrastructure should be not only in the form of buildings but also good play grounds, good amount of equipments and tools on teaching and learning. Along with play grounds, students should be encouraged to participate in different games. This work should be initiated from the primary schools at village level. At least one government sports federation at taluk/block level should be developed with almost all the tools and techniques of sports. Every student should participate in at least in 2-3 games.

Indian school education system is considered as the largest and the most complex education system in the world. Different states follow different type of school educational

arrangements in India, it becomes very difficult to measure the educational development (especially output) of different states and regions. Hence, understanding or knowledge level of the students of different states of the same age is different. Further, it also becomes very difficult to make a single policy intervention for all the states. Therefore, our country should have **Indian Standard and Uniform Educational System (ISUES)**. Whatever the medium of learning or teaching but syllabus should be same up to classes from I to XII. This will help the student to acquire the uniform knowledge. Further, in higher education, University Grants Commission (UGC), All India Council for Technical Education (AICTE), The Indian Council of Agricultural Research (ICAR), Medical Council of India (MCI), The Bar Council of India (BCI) and so on, should take responsibility of conducting different courses with framing proper syllabus in their respective areas based on the demand of the job market.

Expenditure on education should be fixed on the basis of per student expenditure for different level of education. With respect to under developed states (like Bihar, Uttar Pradesh, Odisha, West Bengal, Madhya Pradesh), higher allocation should be made for a stipulated period. Up to that period only, additional allocation or more allocation should be provided, backward states should correct their under development within the stipulated time period. After that period, incentive based allocation should be provided. That means, **which state performs well in achieving the targeted educational goal that state should be provided more allocation**. Thus, healthy competitive educational development can be achieved.

To measure the educational development, different types of indices should be developed at gross-root level. (Village level, town level, taluk level, district level, division level and state level) with disaggregated levels (such as SC, ST, OBC, rural, urban, different income groups and so on). These types of activities will help to understand the backwardness properly and helps for proper policy interventions.

A lot of discussion is going on with respect to public and private education systems. It is always opined that in private schools students are given more importance than teachers, while in public schools teachers are given more importance. Hence, if possible either fully government or fully private educational system can be followed. If only private schools then poor and vulnerable sections should be encouraged through, scholarships,

reservations, subsides and so on. If it is only government, same type of facilities should be maintained in all the schools. This system should be followed up to class XII through **Indian standard and uniform education system (ISUES).** Higher education should be made more privatized.

In school education system, digital applications should be developed. Through digital software applications – syllabus, home-works, solved question papers, tricky questions, quiz and so on should be developed, it attracts students to learn more interestingly.

In health indicators, Indian performance is too low as compared with the developed and many developing countries. States like West Bengal, Bihar, Madhya Pradesh, Orissa and Rajasthan were found in the lower health status with higher health infrastructure facilities. It is mainly because of improper utilization of health facilities. Many people, especially poor and rural people are unaware of facilities provided by the government. Most of the advertisements of government programmes/schemes are broadcasted through the government radio and television channels. It is known that a few proportion of people see the government channels, it does not reach most of the people. Hence, government should broadcast its advertisements in private radio and television channels also. Further, in schools and colleges also awareness programmes should be made and popularized through different extra curriculum activities like, drama, picnic, awareness camps, competitive activities like, easy writing, quiz and so on.

In India, the major constraint with respect to measurement of health status as well as health infrastructure facilities is the lack of data at different disaggregated levels like village level, town level, taluk level, and district levels. Further, the same is observed with respect to different cast groups, different income groups and so on. At present available sources like SRS, NFHS, DFHS should be strengthened to get broader level data with more disaggregated levels. That will be helpful for proper policy interventions. If the data is available at more disaggregated level that will be helpful in understanding the problems in more detailed manner. Problem may be food habit or living condition, or bad habits, or ignorance, or water, or sanitation or hygiene or work environment or pollution and so on. Based on the proper understanding of the problem, appropriate policy intervention can be formulated at disaggregated level or grass root levels.

To collect disaggregated level data, digital mechanization can be used. Suitable software should be developed taking into consideration different aspects, linking different government departments, consulting academicians, policy makers, planners, peoples' representatives, NGO people, stockholders and IT technicians. This task may take huge amount of time and monetary support, but the utilities by these activities will be helpful in long-run.

The study found that strong positive association among and between different indices. In this context, one can question that why to construct these many indices? When one or two indices explain over all socio-economic development (whether is it necessary to construct these many indices?), But in reality, every index has its own purpose, its own objective, and its own policy implications. Hence, construction of different indices is necessary, that is also at disaggregated level as much as possible, which will be helpful for policy interventions more meaningfully.

Many studies have opined that even after spending huge amount of money on social sector, India has not achieved desired human development status, which is due to improper utilization or corruption in the implementation process. Therefore, a question arises here that, who are more corrupt? A section in the present study has found corruption is more among people belong to middle income groups, moderate level of education, and moderate level of human development. Urban people are more corrupt than rural people.

Systematic and strengthened social sector policy implementation mechanization should be developed. More transparent implementation process should be developed. Research in understanding and reducing of corruption should be encouraged. So that sustained human development can be achieved with balanced regional redevelopment.

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