

Inter- District Disparity in Health Care Facility and Education: A Case of Uttar Pradesh

Reena Kumari (Research Scholar)

Department of Economics, Faculty of Social Sciences
Banaras Hindu University, Varanasi-221005

Email-raireena86@gmail.com

Contact No. 08953124830

Rakesh Raman (Associate Professor)

Department of Economics, Faculty of Social Sciences
Banaras Hindu University, Varanasi-221005

Email-rraman88@gmail.com

Contact No. 09452236223

Abstract

Economic and Human development in any society are prerequisites for a better quality of human life. The present paper attempts to measure inter-district disparity in education and health attainment in UP at two time periods 1990-91 and 2007-08. It uses Maher's methodology (subsequently used by a number of others) to standardise 8 indicators for the health attainment and 13 for educational attainment and then applies principal component analysis to compute the composite indices. The results show that apart from existence of wide disparity there are sufficient proof to say that there are regions/districts that have done well in educational attainment but are poorly placed in terms of health attainment and vice-versa. The paper offers some suggestions to reduce the glaring disparity.

Keywords: Disparity, health and education, Composite Indices, district-level,.

1. Introduction

Indian economy finds itself as one of the fastest growing economies in the 21st century. There has been, by India's standards, remarkable increase in GDP and per capita income growth. A significant structural transformation from agriculture to manufacturing and services sector is also evident (Kochhar et al, 2006). The problem however is that although services and organised manufacturing sectors have achieved higher income growth yet have failed to generate sufficient employment opportunities for the masses and thus have had limited impact on the extent of poverty (Mitra, 2008). The trickle-down theory postulated by our planners has miserably failed to tackle the problems like- poverty, unemployment, illiteracy, malnutrition, infant mortality and other socio-economic problems. What has been really worse is the negligible transformation of the fruits of economic development of the nation on the human development. The uneven distribution of fruits of economic development, ineffective policies and plans for education and health sector, adhocism among other factors have seen Indian states doing rather miserably on the front of health and education. There exists wide interstate and intrastate disparity in economic as well as human development in India, something that is not only putting question about the veracity of the growth process but, at the same time resulting in growing discontent and disillusionment among the masses.

The inequalities in health and education among states and among different regions/districts of the big states like Uttar Pradesh, Bihar, Madhya Pradesh etc. remains a matter of deep concern. The widening of this disparity in the period of reforms is further complicating problems for the planners. The development of

social infrastructure in general and education and health in particular reflects the quality of life of people in a particular region. It is very important to understand the extent of disparity in the attainment of different states and different regions within a large state on the human development front or more precisely on the front of education and health, the way this disparity has evolved since the launching of reforms, the way performance of a region in one field e.g. education has impacted its performance on the other etc. Such an analysis is expected to help us understand the real dynamics of human development and suggest some Do's and Don'ts for the policy makers. A number of studies have been conducted dealing with inter-state variations in education and health attainment, but the literature on variations within a state is rather scarce. It is this that has encouraged the present author to address the issue of 'Inter- District Disparity in Health Care Facility and Education' for the largest state of the nation Uttar Pradesh (UP).

The focus of the present write up is the following- first, to investigate the disparities in the context of health and education at micro (District) level for the state of UP. Second, To categorise different districts and regions of the state on the basis of their attainment in the health care facility and education and both. Third, to find out the inter-relationship between health and education two significant factors of human development that lead to the development of state economy and fourth, to examine how the inter-district/region disparity has changed over a period of time and identify the factors behind the existence and growth of disparities in the state economy.

The paper stands divided into four major sections- Section-I provides a brief literature review related to inter-district disparity as a supplement of the paper, Section-II focuses on the methodology and data-set, Section-III examines the inter-district disparity in health and education in Uttar Pradesh and Section-IV provides some suggestions and recommendations for the policy makers.

1.1. Brief Literature Review-

The literature on regional disparity is very vast and varied. It can be classified on a number of bases such as the unit of discussion such as nation, state or district, methodology used (using multivariate analysis for developing composite indices or resorting to simple rank analysis etc.), coverage (including all the important sectors of the economy or concentrating on few sectors only), results and findings (showing increase or otherwise in the extent of disparity) etc. Since we are attempting to discuss inter-district disparity this work concentrate on only those works which are related to this.

A number of studies have been conducted dealing with the issue of disparity and level of development at the sub-state level. These studies have used a number of development indicators. The important studies include the one by Iyenger and Sudershan, (1982), using multivariate data for the two developed regions Karnataka and Andhra Pradesh to find out the level of development in various social and economic indicators, Shaban & Bhole (1999) for the state of Maharashtra, using Principle Component Analysis (PCA) and 62 indicators (72 variables) to measure the level of development of districts for the benchmark years 1972-73, 1982-83 and 1988-89. Shastri (1988) has examined the regional disparity for the state of Rajasthan which covers a period of 23 years (1961-1984). The study delineates the 'developed' and 'underdeveloped' districts and within the districts, the 'developed' and 'underdeveloped' sectors which require the attention of the policy makers. Wang (2007) developed a composite index, using various social and economic indicators for Chinese economy and tried to find out the level of inter-province disparity. Debapriya & Mohanty (2008) tried to identify the inter-district disparity in the levels of development for the state of Orissa in two significant sectors health and education and related 16 sub-indicators, using Principal Component Index.

Among the studies that do not use multivariate analysis a prominent one related to Uttar Pradesh is by Diwakar (2009). The study examines the regional disparity at disaggregate level, using district as a unit for the state of Uttar Pradesh and finds that no district in the Eastern and Bundelkhand regions were in the most

developed category. At the same time, many districts in the Western and Central regions were also on the lower rungs. McDoudall (2000) see the level of gender disparity in literacy attainment in Uttar Pradesh during 1951-1991. The study reveals significant regional variation in female achievement and gender gap. Kapur et.al. (2010) identify the causes and extent of disparities in caste, particularly for Schedule caste community to capture social practices and condition of living in the society. A brief review of literature creates two impressions- first, there is in general shortage of studies discussing how in Uttar Pradesh inter-district disparity has evolved over a period of time and how the launching of reforms has affected this disparity and second, what is the extent of disparity in human development among different districts and regions of Uttar Pradesh.

The state of Uttar Pradesh is more than twice densely populated than the country as a whole, and is one of the most backward states in terms of literacy & educational attainment indicator (Census, 2011). Similarly, it also stands very low in health achievement and it has lowest life expectancy (60) compared to the national average of 65 years. The state is ranked below most states in the country and only the states at the bottom - Bihar, Orissa and northern-eastern states lie below UP in different indicators of health achievement like Infant Mortality Rates (IMR), utilisation of health services, public health expenditure and more important health infrastructure facilities. In order to achieve the objective of promoting growth in the backward regions and to reduce regional disparities, it is essential to formulate plans at the micro-regional levels. Whatever studies are available dealing with intra-state disparity do not make any serious attempt to identify the possible causes of the disparity for the state of Uttar Pradesh. No study has looked at the level of disparity in health and education which are the two broad measures of human development and also represents the social and human achievement in the state economy.

1.1.1 Methodology & Database-

The present paper attempts to develop suitable indices involving appropriate indicators to measure the extent of disparity in educational and health attainment in the state of Uttar Pradesh. The indicators are different and heterogeneous across the district of the state. District level data on the variables have been chosen keeping in the view the availability of information. There are two problems related to methodological that the present author has come across-

First, there are a number of indicators of level of health and educational attainment, but the source of data for these indicators are varied making it difficult to use all the indicators jointly to develop a composite index. Further, the fact that the present study attempts to compare disparity in health and educational attainment at different time periods cause additional problem. This is because the agencies providing the information have been frequently changing the definition and coverage making it difficult to use data across time period without involving considerable error.

Second, the study seeks to compare regional variation for the benchmark year 1990-91, and 2007-08. The year 1990-91 represents the turning point of reform period and 2007-08 represents the latest year for which most of the information are available. Between 1990-91 & 2007-08 a number of new districts have come up in UP. Although in most cases one big district has been bifurcated to form two new districts but in some stray cases out of two big districts a third one has been carved out. For making comparisons as we try to reconstruct the old districts in 2007-08, the ideal methodology would have been to find figures for different blocks and add these to get figure of the whole old district. The non-availability of relevant block level data however has forced us to shun this and go for adding the data of new districts to get information of the old district in the process assuming that the new districts are subset of the old one,. This indeed involves some error but we are compelled to commit this because of lack of information. The study thus takes only 54 districts and all newly created districts have been merged accordingly on the basis of 1990-91 year. The merging of these new districts for the year 2000-01 and 2007-08 have been done by averaging all the

indicators according to population of districts. Data for regional development are mainly cited or calculated from the latest available statistics, mostly from U.P. Planning Commission, Census of India and U.P. District Development Report. The study computes composite indices for education and health. This index system focuses on the relative position of each district. For the better reliability Factor Analysis has been used to give weights to the indicators to construct indices for education and education.

First, the values of the selected indicators for all the 54 districts of the state were collected and tabulated.

$$X_{id} = \frac{(X_{idr} - \text{Min } X_{idr})}{\text{Max } X_{idr} - \text{Min } X_{idr}} \dots \dots \dots 1$$

Then the tabulated data were transformed into standardised X_{id} 's, using equation 1, where X_{idr} stands for actual value of i^{th} variable for district dr^{th} (number of district) and $\text{Min } X_{idr}$ stands for minimum value of i^{th} variable of all districts, $\text{Max } X_{idr}$ stands for the maximum value of i^{th} variable within the all districts and X_{id} stands for the standard value of the i^{th} variable in the d^{th} district and d^{th} runs from 1 to 54, representing the 54 districts of the state of Uttar Pradesh.

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$$X_{id} = \frac{(\text{Min } X_{id} - X_{id})}{\text{Max } X_{id} - \text{Min } X_{id}} \dots \dots \dots 2$$

Second, using data of all variables of all districts factor analysis¹ has been used to find out the weights for different variables. Using the weights of variables, the j^{th} factor F_j can be expressed as:

¹ Factor analysis seeks to identify a relatively small number of factors that can be used to represent relationship among sets of many inter-related variables. Factor analysis assumes that some underlying factors, also known as hypothetical or unobservable factors, are responsible for the co-variation among the observed variables. The factor analysis is based on the assumption that the observed variables are linear combination of some underlying or hypothetical factors. Some of the factors are assumed to be common to two or more variables and some are assumed to be unique for each variable, which are orthogonal to each other. However, only common factors (which are smaller in number) contribute to the co-variation among the observed variables. Factor analysis can help in explaining complex phenomenon in terms of a small number of factors. Factor analysis produces components as factors in descending order of their importance and factor loading, which explain the relative importance of different variables in explaining variance in the phenomenon. Therefore weights determined on the basis of factor analysis, reflect the relative contribution made by the variables to total variation. Higher weights are assigned to those variables, which contribute larger part of variations and vice-versa. The factor matrix gives the factor coefficients or loadings, which show the correlation between factors and standardized variables, where multiple common factors are orthogonal to each other. The first factor accounts for the largest amount of variation in the sample and the second factor accounts for the second largest amount of variation and so on. For each factor, the factor scores can be obtained by multiplying the standardized values by the corresponding factor score coefficients using the following equation.

$$F_j = W_{j1}X_1 + W_{j2}X_2 + \dots + W_{jp}X_p \dots\dots\dots 3$$

Where, W_j 's are factor score co-efficient

P is the number of variables

X is the score of individual variable of indicator 1.

The unit of analysis can be then arranged in a hierarchical order on the basis of the factor score.

Third, in cases where first principal component explained less than 70 per cent of variation, then the first and second components have been considered for calculation of component or factor scores. A combined component score have been computed from the first (S_1I) and second (S_2I) component score using the per cent of variation explained as the weights. In other words, weights were allotted to each set of factor scores in the proportion to the variance explained by it.

That is the score for the unit is:

$$CCS_i = W_1S_1I + W_2S_2I \dots\dots\dots 4$$

Where, $W_1 = V_1 / (V_1 + V_2)$ = proportion of variance explained by the first Component with a variance value V_1 .

$W_2 = V_2 / (V_1 + V_2)$ = per cent of variance explained by the second Component with a variance value V_2 .

S_1I and S_2I = First and Second Factor Scores for the i^{th} unit.

The CCS_i (combined component Score) thus worked out is considered as composite index of development. Districts were then ranked according to Combined Component Score (CCS).

Districts, according to their development scores, have been classified into five levels of development, very high (VH), high (H), average (A), very low (VL) and low (L). While categorising districts in different development classes, 1/5 of the standard deviations of the sectoral scores have been used as class intervals.

Following indicators have been used to construct the composite index of Health's development. These are:

List of Indicators: Health Sector

Indicators: Details of Indicators

- X1: Number of Primary Health Centres (PHCs) per lakh of Population (NPHCLP)
- X2: Number of Allopathic Hospitals/Dispensaries per lakh of Population (Including P.H.Cs) (NAHD)
- X3: Number of Beds in Allopathic Hospitals/Dispensaries per lakh of Population (NBAD)

- X4: Number of Ayurvedic/Homiopathic /Unani Hospitals/Dispensaries Per lakh of Population (NAHUD)
- X5: Number of Beds in Aurvedic /Homiopathic/Unani Hospitals / Dispensaries per lakh of Population (Including P.H.Cs) (NBAHD)
- X6: Number of M.C.H. Centres/Sub-Centres per lakh of Population
- X7: Infant Mortality Rate
- X8: Crude Death Rate

Following indicators have been used to construct the composite index of Education's development. These are:

List of Indicators: Education Sector

Indicators Details of Indicators

- X9: Literacy Rate
- X10: Number of I.T.I. per lakh of Population
- X11: Number of Polytechnic per lakh of Population
- X12: Number of Higher Secondary Schools per lakh of Population
- X13: Number of Senior Basic Schools per lakh of Population (NSBS)
- X14: Number of Junior Basic Schools per lakh of Population (NJBS)
- X15: Pupil Teachers-ratio at Higher Secondary School Level (PTHSS)
- X16: Pupil Teacher-ratio at Senior Secondary School Level (PTSSS)
- X17: Pupil Teacher-ratio at Junior Secondary School Level (PTJSS)
- X18: Female Literacy Rate (FLR)
- X19: Male Literacy Rate (MLR)
- X20: Rural Literacy Rate (RLR)
- X21: Urban Literacy Rate (ULR)

The major limitations of this study is that we have figured out the value of FLR, MLR, RLR and ULR by calculating compound growth rate, because of for the year 2007-08 district level data are not available by any sources for Uttar Pradesh. Apart from this drawback one of the important fact which is concerned to the selection of indicators for health sector two important indicators-infant mortality rates and crude death rate are much significant but due to unavailability to required data it becomes difficult to compute the composite indices.

Thus, the indicators listed above to present activities of the health and education sector are neither exhaustive nor complete in themselves. Many indicators, which would have been more relevant in the context of building sectoral development index, have not been included in the study. In the selection of indicators, we have mainly been guided by availability of data for the selected indicators for all the districts of the state.

1.1.2 Inter-District Disparity in Health and Education in Uttar Pradesh

UP is a huge state and as is expected there exists large inter-district disparity in the state on different parameters of development and human development. The present work measures the extent of inter-district disparity in health and educational attainment using factor loading given in Table 4 &5.

Health-To obtain an idea of the level of health facility across the districts of the state an index based on the indicators mentioned above has been compiled for two periods 1990-91 and 2007-08. Table-1 shows the result. There are some obvious conclusions that can be drawn from the table 1-

First, the overall performance of the state in terms of health attainment is pathetic. The value of index is not only very low but it has declined over the years. The index of health attainment that was 0.7472 in 1990-91 declined to 0.6432 in 2007-08. This is indeed a worrying sign for the state.

Second, there has been a marginal increase in the inter-district disparity in health facilities and attainment. The coefficient of variation of the indices of health that was 49.77 in 1990-91, increased to 53.22 in 2007-08. Although the number of districts below the state average decreased from 34 in 1990-91 to 29 in 2007-08 yet, the gap between the top performers and lagging districts has increased in the intervening period. Maharajganj in the East and Meerut in the West were ranked the last and last but one respectively in 1990-91. The index for the lowest ranked Maharajganj was only about 11% of the top ranked Lalitpur and 32% of the state average. The gap between the lowest placed district and the average figure and the best performing district has increased significantly in 2007-08. The lowest placed district Kanpur Dehat had an index value that was just 6.61% of the top ranked districts and around 18% of the state average.

Third, there has been a consistent but low rate of increase in the index value for the all districts except some like Kanpur Nagar, Lucknow, Sitapur, Bareilly, Bijnor, Rampur, Agra, Badaun, Kheri, Barabanki, Jhansi, Allahabad, Basti, Mirzapur. Table-3 demonstrates that some districts in different regions of the state have done well over a period of time. We have set a benchmark of change in the rank by 5 places and above to define high increase if the movement is upwards and high deterioration if the movement is downward. Hence, if the rank of a district improves by 5 places or more we call the district as belonging to the category of high improvement class. A quick look at the table reveals that three districts of western region Etawah, Mainpuri, Siddharth Nagar, two districts Fatehpur and Kanpur Dehat of central region, four districts Deoria, Jaunpur, Varanasi and Gorakhpur of eastern region and Banda of Bundelkhand region have done remarkably well in the intervening period. The estimated district wise index values presented shows that seven districts declined their rank very highly; Ghaziabad, Farrukhabad, Sonbhadra, Sultanpur, Faizabad, Unnao, Saharanpur. There has been significant movement; upward and downward direction in health development among different districts. While it is natural to expect change in the ranking of districts in terms of any indicator with time but the magnitude of change in case of Uttar Pradesh has been significant. The change in ranks of a number of districts has been so drastic that an explanation becomes very difficult. It definitely shows that (i) the state over a period of time has not followed a consistent policy for improvement in health attainment in the state and there is some kind of adhocism in the policy of the government, (ii) Different set of factors are instrumental in pushing up and down of the ranks of different districts. These factors vary from the purely political (whereby in the government of particularly party more emphasis is given to a particular districts and the other districts are neglected) to purely economic (better pull capacity of the districts because of their importance in the state economy).

Fourth, as far as inter-regional disparity is concerned Table- 2 reveals that in the 18 year period (1990-91 to 2007-08), the inter-regional disparity in health facility has increased. The index value for the region of Bundelkhand stands with top position in both the year, similarly the western region remain at bottom in the concerned period. The position of Bundelkhand is however misleading as the region fairs very poorly in terms of indicators of economic development. In fact because of political reasons Bundelkhand has been able to attract huge investment from the central and state government s in education and health projects.

Hence judged from the availability of health infrastructure the region stands tall. However because of the overall backwardness of the region whatever infrastructural facilities have been created are not being properly utilised by the masses either because of ignorance and poverty or because of lack of commitment of the service providers which in this particular case are the government officials and employees who are working in the region. This finding puts serious limit to the validity of any exercise which tends to focus so much on availability of infrastructure as representative of attainment. The position of eastern region improved against central region during the period. The evidences strongly indicate that the impact of reform has widened the inter-region disparities in the state of Uttar Pradesh. The coefficient of variation of index of health attainment across the regions also showed an increase in the intervening period. It increased at 45.57 from 40.27.

Education- The present work makes an attempt to measure the inter-district disparity in educational attainment also. Education is a very important factor of economic growth. The relationship between education and economic growth is a two way relationship- educational attainment determines in a significant manner the rate of economic growth and education level itself depends on level and rate of economic growth. The major findings in terms of educational attainment is as follows-

First, the overall performance of the state in terms of educational attainment is grossly unsatisfactory. The value of index is low though it has increased over the years. The index of educational attainment that was 0.9185 in 1990-91 increased significantly to 3.0476 in 2007-08.

Second, there has been a fall in the inter-district disparity in educational facilities and attainment. The coefficient of variation of the indices of education that was 58.11 in 1990-91, has decreased to 50.44 in 2007-08. Although the number of districts below the state average decreased from 20 in 1990-91 to 19 in 2007-08 yet, the gap between the top performers and lagging districts has increased in the intervening period. Budayun in the Western region was ranked the last in 1990-91 while Etawa the first. The index for the lowest ranked Budayun was only about 1% of the top ranked Etawa and 2.84% of the state average. The gap between the lowest placed district and the average figure and the best performing district has come down a bit in 2007-08. The lowest placed district Baharaich had an index value that was 6.89% of the top ranked districts and around 11.08% of the state average. Hence there has been some improvement in educational disparity across districts in the state.

Third, the district wise level of educational attainment appear in Table-1 and Table-4 indicate the movement of districts in the state during the period 1990-91 to 2007-08. Seven districts of western region Muzzafar Nagar, Mainpuri, Saharanpur, Budaun, Pilibhit, Rampur, Agra, Shahjahanpur, two districts Banda & Lalitpur of Bundelkhand region, Sitapur, Unnao & Rae Bareilly of central and Azamgarh, Ghazipur and Sultanpu districts of eastern region improved their position in educational achievement. Among the districts that have witnessed significant decline over the period were Allahabad, Maharajganj, Gorakhpur, Hamirpur, Hardoi, Moradabad, Meerut, Bulandshahar, Basti, Firozabad, Faizabad, Deoria, Sonbhadra, Jhansi, Farrukhabad, Gonda.

Fourth, as far as inter-regional disparity is concerned Table- 4 reveals that in the 18 years period (1990-91 to 2007-08), the inter-regional disparity in education facility has slowly increased. The index value for the region of Bundelkhand stands at the top position in both the year while the western region remains at bottom in the concerned period. The index value of western region has changed significantly but the rank remains the same in 2007-08. The rank of eastern region has deteriorated and central region improved. In the benchmark year 1990-91 to 2007-08 the index value of Bundelkhand region followed by western region is higher than state average, but the index value of central followed by eastern region is lower than state average. The main reason for the deterioration of central region would be relative fall in centre fund transfer to the region and failure of institutional development program. It is clear that the improvement has been seen only in eastern region of the state. It may be due to awareness of state government development

program and other skill development programs in that region in educational development. The coefficient of variation of index of educational attainment across the regions also showed a substantial fall in the intervening period. It went down from 21.62 in 1990-91 to 7.54 in 2007-08.

1.1.3. Correlation between Education & Health Attainment

The economic theory believes that educational and health attainments normally go hand in hand. Hence districts that are doing well in educational parameters should also perform well on health parameters. Present work did a clustering of districts on the basis of their performance on health and educational indicators in the two time periods. The results obtained have really been shocking. The district wise analysis given in table-5 & 6 shows that there are a large number of districts which position in terms of the indicator mentioned has improved or deteriorated.

Very high deterioration is seen in health sector during the period 1990-91 to 2007-08 in most of the major districts of central region. The important factor for this is weak community demand for health care facility which includes poor literacy and lack of awareness about services, schemes and entitlements, poor knowledge about health and hygiene behaviours etc. This evidence expressed that the condition of some districts improved very significantly on the other hand inter-district disparity has widened but slightly.

Table—7 give some very important results. It shows that out of 54 districts only five districts have done very well in both education and health. These include Lucknow, Jalaun, Jhansi, Mirzapur and Hamirpur. There are seven districts in the state which are rated very low in terms of both the indicators. These include Kheri, Muzaffar Nagar, Bijnor, Moradabad, Rampur, Badaun, Deoria and Gonda. The existence of these districts is dragging the overall position of the state down.

What is really surprising and shocking is that a number of districts that have done very well in terms of health attainment during the period have done worse in terms of educational attainment and vice versa (This incidence is more common in the districts of the western region who have witnessed very high development in education and very low development in health sector. The main reason for the low development in health sector of western region would be the failure of government policy in that particular region and the role of private sector would be effective). This is against the normal theoretical conception that we have. It is generally accepted that as a region develops in terms of educational attainment and people become literate there is increase in awareness of all kinds and the consideration for health, hygiene and cleanliness increases. This causes rise in immunisation rate, fall in instances of malnutrition and disease on account of communicable diseases etc. But what we are experiencing in UP is that the districts of Firozabad, Agra, Mathura, Bulandshahar, Meerut, Ghaziabad, Gorakhpur, Etawah, Kanpur Dehat, Farrukhabad, Aligarh and Maharajganj have done remarkably well in terms of education have been the least performers in terms of the health indicator. In the similar fashion three districts Sonbhadra, Rae Bareilly and Lalitpur who have done remarkably well in terms of health attainment in the intervening period have done very poorly in terms of education. This is a contradiction that needs to be thoroughly investigated.

1.1.4. Summary and Conclusions-

A quick perusal of the results above reveals a very sorry state of affairs for the state. There are some important observations that can be made-

1. Although over a period of 18 years in absolute terms development in health and educational attainment has taken place in the state but the progress is rather tardy and slow as compared to some other states.

2. Apart from some districts of the states which have done remarkably well in the last 18 years and there relative position has improved significantly, districts which were backward in 1990 have continued to remain so even in 2008 meaning thereby that despite all tall claims by the government inclusiveness has remained a far cry.
3. The inter-district disparities as measured by co-efficient of variation have tended to increase in health sector but has declined in educational sector. Hence while in case of education the backward districts and regions are gradually catching up, this is not so in case of health attainment.
4. The result shows that the gulf between very low and the very highly developed districts has marginally widened, while the districts in general have come nearer to the state average in both the sectors. In technical terms it means while coefficient of variation has gone down, the value of Ginni coefficient has increased.
5. The study show that development in Uttar Pradesh over the years has remained polarized in Bundelkhand region in both the social development sectors. On the other hand western region has always remained the lagging region followed by eastern region and central region. These have composite index scores less than the state average in both the period. According to the latest National Family Health Survey (NFHS) and District-Level Household Survey (DLHS) data, an average of 15 percent of the population that seeks healthcare services in Uttar Pradesh (UP) accesses government health facilities, while 85 percent opt for private providers. Although the reasons for this are multi-faceted, and include lack of confidence in the government health system, yet overall this is a warning signal for the region.
6. Empirical evidences suggest that the Bundelkhand region is advanced one and western region in least developed pocket of the state in 1990-91-2007-08 in health sector. There is inter-regional disparity in both the sector-health and education. The relatively better position is however open to question.
7. Eastern region of the state has consistently lagged behind other sectors in terms of educational indicators. The main reason for the backwardness in education sector of eastern region is the socio-cultural attitude of the people and other economic problem like income, low-level of living and mass poverty. Unless the government pays special attention to spruce up the educational sector the situation is expected to deteriorate in coming future.
8. The regional variation has increased in health sector with time. High improvement in health sector has been seen in the districts of western region, eastern region and one district (Banda) in Bundelkhand region. But as these regions have improved some districts of these regions have done poorly- there relative position among districts of the state has gone down. This in other words means that the development of the developed region is primarily on account very high performance of some select districts of the region (while other districts have continued to fall back).
9. During the period 2007-08, the variation in educational sector has decreased but the position of districts has changed. High improvement has been seen in all the districts of the state but the performance has been really good in major districts of the western region and followed by Bundelkhand region. Low improvement has been seen in the districts of central region (Kanpur Nagar and Kanpur Dehat). Same way the deterioration has been seen in almost all the region but major districts in western region followed by eastern region of the state in education sector. The situation overall looks grim. Different regions and districts in the state are drifting apart in terms of health and educational attainment. Reforms have tended to intensify this gap. This is something that has to be realised and rectified. It is high time the government take serious note of it. Government's policies and commitment of its staff are crucial for success of any strategy. It is important that the government makes region specific planning and adopts regional development strategy after proper research. The astounding success of districts and regions need to be analysed along with the reasons for relative failure of backward districts and regions. Such an analysis is expected to replicate the examples of successful districts and at the same time ensure that the bad

experience of lagging districts is discouraged. Politicians of the state have to play a critical role. In UP the two political parties which have been ruling the state in the last two decades or so have tended to adopt biased approach in favour of and against some other districts and regions. Such an approach is responsible for the poor performance of a number of districts. It is high time that the policy makers adopt a balanced approach after proper research to develop these two crucial sectors which are essential for the survival and growth of people of the state.

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Appendix-1

Table 1

Composite Indices of Health & Educational Attainment

SN	District	Composite Index of Health Attainment				Composite Index of Educational Attainment			
		1990-91		2007-08		1990-91		2007-08	
		Index	Rank	Index	Rank	Index	Rank	Index	Rank
1	Saharanpur	0.3656	51	0.1451	52	0.7939	33	4.4358	15
2	Muzaffarnagar	0.4130	47	0.3278	45	0.7446	34	4.1388	19
3	Bijnor	0.5443	38	0.1953	50	0.6374	40	1.1569	43
4	Moradabad	0.3771	50	0.2798	49	0.5223	41	0.6873	51
5	Rampur	0.5793	35	0.3637	43	0.0997	52	2.0310	37
6	Meerut	0.2601	53	0.3185	46	1.6910	5	4.4733	13
7	Ghaziabad	0.4356	45	0.3179	47	1.6919	4	4.5623	9
8	Bulandshahar	0.6112	30	0.6859	23	1.1583	16	3.5088	30
9	Aligarh	0.5076	41	0.4337	38	1.4259	9	4.5888	7
10	Mathura	0.5716	36	0.6031	26	1.1134	17	4.4891	12
11	Agra	0.4319	46	0.1186	53	1.0248	23	4.4946	11
12	Firozabad	0.3778	49	0.3082	48	1.0421	15	3.9184	23
13	Etah	0.3613	52	0.1683	51	0.8183	30	3.6108	28
14	Mainpuri	0.4768	42	0.5513	30	1.0661	19	4.5897	6
15	Budaun	0.5877	34	0.3703	42	0.0261	54	2.1616	36
16	Bareilly	1.0036	12	0.7347	19	0.3938	45	0.9439	45
17	Pilibhit	1.0706	9	1.1178	6	0.1960	50	1.2058	42
18	Shahjahanpur	0.9485	14	0.8827	12	0.2026	49	3.3045	32
19	Farrukhabad	0.6082	31	0.5247	33	1.2541	12	1.3933	39
20	Etawah	0.5112	40	0.7870	15	2.6047	1	4.7488	3
21	Kheri	0.6055	32	0.4180	40	0.2142	48	1.0745	44
22	Sitapur	0.6993	21	0.4921	34	0.2950	46	3.2324	33
23	Hardoi	0.6361	28	0.6179	25	0.5153	42	0.8594	48
24	Unnao	0.8534	17	0.7414	18	0.6665	37	3.9469	21
25	Lucknow	1.4719	2	0.7272	20	1.4585	7	4.7054	4
26	Rae Bareli	1.1773	7	1.1339	5	0.6374	39	3.6706	26

27	Kanpur Dehat	0.6013	33	0.7681	17	1.2161	13	4.5752	8
28	Kanpur Nagar	0.6755	24	0.1181	54	1.6789	6	4.9251	1
29	Fatehpur	0.5598	37	0.7055	22	0.9304	28	3.4021	31
30	Barabanki	0.6731	25	0.4464	37	0.1852	51	0.7534	50
31	Jalaun	1.4181	4	1.3498	2	2.1553	2	4.8634	2
32	Jhansi	1.0810	8	0.8264	14	1.7298	3	4.6308	5
33	Lalitpur	2.2708	1	1.7863	1	0.2675	47	1.3543	41
34	Hamirpur	1.0291	11	1.1069	7	1.3218	11	1.3606	34
35	Banda	1.0529	10	1.1805	4	0.8484	29	4.0110	20
36	Pratapg	0.9733	13	0.9606	9	0.8096	32	4.3594	16
37	Allahabad	0.6664	26	0.3584	44	1.4383	8	4.1700	18
38	Faizabad	0.7389	20	0.7130	21	1.0956	18	3.5431	29
39	Sultan	0.6860	23	0.6680	24	0.7131	35	4.2684	17
40	Bahraich	0.6358	29	0.5674	29	0.0846	53	0.3378	54
41	Gonda	0.5421	39	0.4752	35	0.3988	44	0.5144	53
42	Siddharth	0.6374	27	0.9388	10	0.4993	43	3.1622	40
43	Basti	0.7449	19	0.5507	31	1.2145	14	0.8744	47
44	Mahrajgan	0.2464	54	0.3957	41	1.2145	38	0.5962	52
45	Gorakhpur	0.4060	48	0.4634	36	1.0514	21	0.7988	49
46	Deoria	0.4731	43	0.5406	32	0.7131	15	1.9203	38
47	Azamgarh	0.6983	22	0.5800	28	0.8177	31	3.8883	24
48	Mau	0.8636	15	0.8387	13	0.9896	24	3.6609	27
49	Ballia	1.3472	5	1.2596	3	0.9549	25	3.9286	22
50	Jaunpur	0.4533	44	0.4219	39	0.9545	26	3.8750	25
51	Ghazipur	0.8469	18	0.7813	16	0.9437	27	4.4585	14
52	Varanasi	0.8586	16	1.0833	8	1.3425	10	4.5322	10
53	Mirzapur	1.4347	3	0.6009	27	1.0620	20	2.9299	35
54	Sonbhadra	1.2459	6	0.8844	11	0.6766	36	0.9412	46
a.	Mean	0.7472		0.6432		0.9185		3.0476	
b.	S.D.	0.3719		0.3424		0.5337		1.5371	
c.	C.V.	49.77183		53.2265506		58.1056		50.4384	

Table 2:
Region wise Indices of Health and Educational Attainment

Regions	Composite Indices of Health Attainment				Composite Indices of Educational Attainment			
	1990-91		2007-08		1990-91		2007-08	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Western	0.5521	4	0.4617	4	0.9253	2	3.2992	2
Central	0.7953	2	0.6169	3	0.7797	4	3.1145	3
Bundelkhand	1.3704	1	1.2500	1	1.2646	1	3.2440	1
Eastern	0.7631	3	0.6885	2	0.8934	3	2.7768	4
State Average	0.8702		0.7543		0.9185		3.0476	
C. V.	40.272		45.577		21.620		7.5393	

Table: 3
Health sector Factors Loading for Principal Component Analysis, 1990-91 to 2007-08.²

Variables	Principal Component (1990-91)	Principal Component (2007-08)
	Factor1	Factor1
NPHCLP	0.5412	0.186
NAHD	0.1869	0.1162
NBAD	0.0168	-0.0397
NAHUD	0.7785	0.8359
NBAHD	0.8544	0.8546
Variance Explained	0.7253	0.7766

² Only one “eigenvalue” of factor was significant, so I have taken only one factor for the analysis.

Table-4
Education sector Factors Loading for Principal Component Analysis, 1990-91 to 2007-08

Variables	1990-91		2007-08	
	Principal Component		Principal Component	
	I	II	I	II
LR	0.9519	0.2351	0.982	0.082
NITI	0.9346	0.1062	0.987	0.038
NPPLP	0.8908	0.362	0.98	0.097
NHSS	0.8801	0.353	0.975	0.087
NSBS	0.5105	0.1355	0.869	0.009
NJBS	0.0526	-0.0819	0.288	0.175
PTHSS	0.5271	0.8073	0.057	-0.077
PTSSS	0.3621	-0.0041	0.646	0.59
PTJSS	-0.2788	-0.1679	0.057	0.776
FLR	0.0205	-0.347	0.717	-0.011
MLR	-0.1697	-0.1096	0.501	-0.095
RLR	0.4694	0.8226	0.226	-0.031
ULR	0.2545	0.0848	0.214	0.07
Variance Explained	0.63	0.17	0.68	0.15

Table-5
Regional Variations in the Relative Development Position from 1900-91 to 2007-08 in Education Sector

1990-91 to 2007-08		
	Improvement	Deterioration
High	Muzzafar Nagar, Mainpuri, Saharanpur, Budaun, Lalitpur, Banda, Pilibhit, Sitapur, Rampur, Azamgarh, Agra, Ghazipur, Shahjahanpur, Pratapgarh, Sultanpur, Unnao, Rae Bareilly	Allahabad, Maharajganj, Gorakhpur, Hamirpur, Hardoi, Moradabad, Meerut, Bulandshahar, Basti, Firozabad, Faizabad, Deoria, Sonebhadra, Jhansi, Farrukhabad, Gonda,
Low	Ballia Siddarth Nagar, Kanpur Nagar, Kanpur Dehat, Aligarh, Lucknow, Etah, Kheri,	Bijnor, Ghaziabad, Etawah, Fatehpur, Jhansi, Mau

Table 6
Cluster of Districts in Education and Health in 1990-91

Education	Health				
	VH	H	A	L	VL
VH	Lucknow, Jalaun, Jhansi, Mirzapur, Hamirpur,	Varanasi	Basti, Faizabad	Allahabad, Kanpur Nagar,	Firozabad, Agra, Mathura, Bulandshahar, Meerut, Ghaziabad, Gorakhpur, Etawah, Kanpur Dehat, Farrukhabad, Aligarh, Maharajganj,
H	Mau,	-----	-----	-----	Mainpui,
A	Ballia,	Ghazipur,	-----	-----	Jaunpur,
L	Pratapgarh, Banda			Azamgarh,	Etah
VL	Sonebhadra, Rae Bareilly, Pilibhit, Lalitpur,	Bareilly, Pilibhit, Shahjahanpur, Unnao	-----	Siddarth Nagar, Sitapur, Hardoi, Barabanki, Sultanpur, Bahraich,	Kheri, Muzaffar Nagar, Bijnor, Moradabad, Rampur, Badaun, Deoria, Gonda,

Note: Very high (VH), high (H), average (A), very low (VL) and low (L)

Table 8:
Cluster of Districts in Education and Health in 2007-08

Education	Health				
	VH	H	A	L	VL
VH	Etawah, Bareilly, Kanpur Dehat, Jalaun, Jhansi, Banda, Pratapgarh, Mau, Ballia, Ghazipur, Varanasi	Unnao, Lucknow,	Sultanpur	Mainpuri, Azamgarh,	Saharanpur, Muzaffar Nagar, Meerut, Ghaziabad, Aligarh, Agra, Firozabad, Etah, Kanpur Nagar, Allahabad, Jaunpur,
H	-----	Bulandshahar, Fatehpur, Faizabad, Shahjahanpur,	-----	-----	Sitapur,
A	Siddarth Nagar	-----	-----	Mirzapur	-----
L	-----	-----	-----	-----	-----
VL	Pilibhit, Lalitpur, Hamirpur, Sonebhadara,	Bareilly,	Hardoi,	Bahraich, Basti,	Bijnor, Moradabad, Rampur, Farrukhabad, Kheri, Barabanki, Gonda, Maharajganj, Gorakhpur, Deoria,

Note: Very high (VH), high (H), low (L) and very low (VL).

Appendix-II

LR- Literacy rate,

NITI- Number of I.T.I per lakh of population,

NPPLP- Number of polytechnic per lakh population,

NHSS- Number of Higher Secondary Schools per lakh of population,

NSBS- Number of Senior Basic Schools per lakh of population, NJBS- Number of Junior Basic Schools per of lakh of population,

PTHSS- Pupil teachers -ratio at Higher Secondary School level,

PTSSS- Pupil teachers -ratio at Senior Secondary School level,

PTJSS- Pupil teachers -ratio at Junior Secondary School level,

FLR- Female literacy rate,

MLR- Male literacy rate,

RLR- Rural literacy rate,

ULR- Urban literacy rate,

NPHCLP- Number of primary health centre (PHCs) per lakh of population,

NAHD- Number of allopathic hospitals/dispensaries per lakh of population (including P.H.CS),

NBAD- Number of beds in allopathic hospitals/dispensaries per lakh of population,

NAHUD- Number of Ayurvedic/Homeopathic/Unani hospitals/dispensaries per lakh of population,

NBAHD- Number of beds in Ayurvedic/Homiopathic/Unani hospitals/dispensaries per lakh of population (including P.H.CS).