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# IMPACT OF HEALTH SPENDING ON SPECIFIC DEMOGRAPHIC RATIO IN INDIA AND UTTAR PRADESH

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## ABSTRACT

This paper examines health spending and its influence on specific demographic ratios at both the macro (national) and micro (state) levels. The first examines the trajectory in Indian health spending, followed by an examination of the impact of such spending on specific demographic ratios. However, a similar analysis is done in the later portion of the study in the context of the state of Uttar Pradesh, which is part of our micro level study. As a result conclude that at the national level, the government should spend both capital and revenue expenditures because it has been discovered that capital expenditures played a critical role in some cases, while revenue expenditures had a positive impact in others. However, when the outcomes are seen from the perspective of the state, it is clear that if the government spends more on revenue expenditures, they will have a far more favourable impact than capital expenditures. Thus, in the framework of the state, it is proposed that revenue spending be increased in order for the state to have favourable demographic conditions

**Keywords:** Health expenditure, growth rate, impact analysis of public health expenditure etc.

## 1. INTRODUCTION

When it comes to a country's degree of social and economic development, health is a multifaceted notion that acts as both an input and an output. In this view, government spending on health is seen as a critical instrument for delivering better health services, which is linked to better health outcomes. Various studies have shown that nations with a high level of public health spending have considerably better results than countries with a relatively low level of health spending (Hooda S. K., March 2013).

Owing to this scenario the role of public expenditure on health in the present time is not only restricted to combat various diseases like malaria, tuberculosis, HIV/AIDS etc. but provisions related to health under the millennium development goals are also to be met out of the public health expenditure only. However, if we consider the case of India then in spite of such huge responsibility on its shoulder in terms of service delivery, the public expenditure on health as a percentage of GDP is only 1.4 % in 2014 which is amongst the lowest worldwide.

Talking in terms of international perspective then the Table 1 shown below depicts the general government health expenditure as a percentage of Gross Domestic Product of certain developed as well as developing nations along with their major demographic ratios with reference to year 2014.

Considering the example of developed nations first, it can be plainly said here that developed nations tend to spend more on health. In order to study this which we have taken general government expenditure on health as a proportion of GDP into account. It has been observed that an increase in government health expenditure has a positive impact on the demographic ratios of the concerned country. For instance, in case of Australia, health spending stands at 6.4 percent, resulting in an IMR as low as 3.0. A similar tendency has been observed in Germany, which spends somewhat more on health care than Australia. In this respect, it has been found that a higher level of health expenditure generates an even better demographic outcome; for example, when health spending in Germany was increased to 8.9 percent, ratios such as total fertility rate and crude birth rate improved slightly more compared to Australia.

**TABLE 1:** Demographic Ratios And General Government Expenditure On Health

| COUNTRY | GGE AS A % OF GDP* (2014) | IMR (2018) | MMR (2018) | CBR (2018) | CDR(2018) | TFR(2018) |
|---|---|---|---|---|---|---|
| DEVELOPED COUNTRIES | | | | | | |
| AUSTRALIA | 6.4 | 3.0 | 6.0 | 13.0 | 6.0 | 1.7 |
| GERMANY | 8.9 | 3.0 | 7.0 | 10.0 | 12.0 | 1.6 |
| FRANCE | 8.3 | 4.0 | 8.0 | 11.0 | 9.0 | 1.9 |
| DEVELOPING COUNTRIES | | | | | | |

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| | | | | | | |
|---|---|---|---|---|---|---|
| INDIA | 0.96 | 6.6 | 145 | 18.0 | 7.0 | 2.2 |
| SRI LANKA | 1.5 | 6.0 | 36 | 16.0 | 7.0 | 2.2 |
| AFGHANISTAN | 0.49 | 47.0 | 638 | 32.0 | 6.0 | 4.5 |

Source: World Bank, * Total Health Expenditure as a percentage of Gross Domestic Product

Talking about developing countries then it is clear from the above table that the health spending in such nations tends to be much lower as compared to the developed ones. Considering the case of India where it is observed that the health expenditure done by government is the lowest amongst all nations, the impact of this is very well visible in terms of Maternal Mortality Rate and Infant Mortality Rate which are higher as compared to other developed and some of the developing nations.

As a result, a country that spends less on health is less likely to attain favourable demographic indicators, because a lower level of health spending leads to fewer provisions for safer birth, longer distances to travel to seek medical treatment, and fewer institutional deliveries. When we look at the component of health spending, we can see that it is one of the key mechanisms that helps a country attain greater Operational Performance of Primary Health Centres in Uttar Pradesh levels of health. This is only feasible if both the federal government and the state government work together to make health care services more accessible to the general public. As a result of this, the Indian constitution places health on the concurrent list, which means that both the centre and the states are required to share responsibility for health spending.

In this context, the current research examines health spending and its influence on specific demographic ratios at both the macro (national) and micro (state) levels. The former will assist us in determining the rate of increase in spending over time while the latter will allow us to determine the direction of change. In order to investigate the influence of government health spending on demographic ratios, we have used the log linear regression models shown below.

$\text{Ln } Y = \alpha + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \ldots\ldots\ldots + \beta_n \ln X_n$ ---------- Model 1

$\text{Ln } Y = \alpha + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \ldots\ldots\ldots + \beta_n \ln X_n$ ----------Model 2

Thus in the above developed equations model 1 deals with the analysis pertaining to the time period 1995-2007 wherein model 2 takes into account the time period of 2008-2022.Given the methodology we now proceed towards the analysis of these expenditure in context of India.

**HEALTH EXPENDITURE IN INDIA**

In the present era the major concern of India revolves around not only in providing an adequate level of health services to its citizen but also it aims at providing such a level of service that is acceptable as well as affordable for all. As a result, the government's efficiency in this area is reflected in the country's health status, prompting us to examine both the trajectory of health expenditures as well as the status of important demographic ratios impacted by these expenditures. Now if we try to understand the pattern of Public Expenditure in India then in our country the expenditure by the government is done in the form of revenue and capital expenditure. Revenue Expenditure is that expenditure which is of a recurring nature whereas the capital expenditure is a type of investment made by the government that tends to add something new to the existing asset which is of a permanent nature. Further the revenue and capital expenditure are classified into developmental and non-developmental expenditure. Where developmental expenditure aims at increasing the productive capacity of the economy and the non-developmental expenditure is done upon the essential general services of the government. For proper understanding of this concept the bifurcation of government expenditure has been presented in the following figure. (Figure 1)

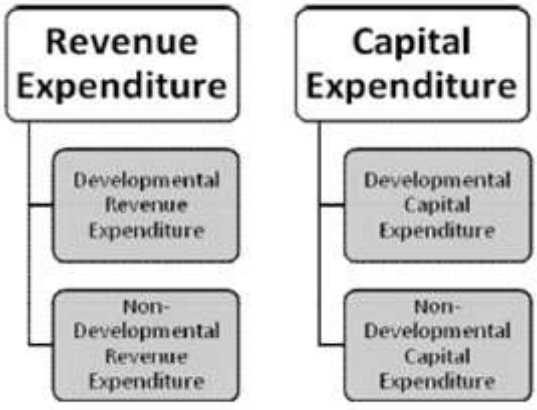

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**FIGURE 1** Classification Of Government Expenditure

However if we consider the public expenditure upon health then this forms a part of the developmental expenditure under both heads i.e. revenue and capital because it is believed that the health expenditure contributes to the welfare of the people thereby improving the quality of well-being, hence it is considered as an investment in man. (Kumar K., 2011).

In order to study the trend of health expenditure in India we have combined the health expenditure of the government upon medical, public health sanitation and water supply along with expenditure on family welfare. Using this data we have analysed the trend of government expenditure upon these heads by dividing them into two time periods one ranging from 1995-2007 and another ranging from 2008-2022. However, the catalyst of bifurcation is the launch of National Rural Health Mission (NRHM) programme in the year 2005. It is a governmentsponsored initiative aimed at providing accessible, affordable, and elevated health care to the underprivileged population. Hence by comparing the results of both these time periods it will be possible for us to analyse the situation in the presence and absence of government efforts.

In the table 2 shown below we have initially analysed the trend of revenue and capital expenditure and further we have taken into consideration the direction of change. The analysis of trend growth rate and the acceleration model has been separately carried out for the time periods ranging from 1995-2007 and 2008-2022 respectively. If we consider the time period of 1995-2007 then we observe this particular time period is that the revenue expenditure has registered a trend growth rate of 10.25 percent annually. Further if we tend to investigate the direct of change then it has been observed that the revenue expenditure during 1995-2007 has shown an accelerating trend with 10.28 percent magnitude however it is found to be statistically insignificant (t value=0.18).

Similarly, if we consider the capital expenditure during the same time period then it has shown a trend growth rate of 18.61% which is much higher than that of the revenue expenditure. If we consider the direction of change then just like revenue expenditure the capital expenditure too has experienced an accelerating trend but the magnitude of acceleration is 40.65% which is of significant nature in this case (t value=2.97).

Now if we consider the total expenditure in this period then conceptually the total expenditure incorporates the effect of both revenue as well as the capital expenditure showing a trend growth rate of 11.27 percent.

Furthermore, when we look at the period from 2008 to 2022, Now if we look into the pattern of revenue expenditure then as shown in the table 2 the revenue expenditure has grown over 15.52% alongside showing an accelerating trend

**TABLE 2** Estimates Of Trend Growth Rate And Acceleration Model: India Model: Y=A+ Bt + Ct2

| PERIOD 1995-2007 | | | | |
|---|---|---|---|---|
| EXPENDITURE | 'B' VALUE | 'C' VALUE | $R^2$ | TGR$^{\#}$(%) |
| REVANUE EXPENDITURE | 983.76 (3.22)** | 10.28 (.18) | 0.972 | 10.25 |
| CAPITAL EXPENDITURE | 89.66 (.57) | 40.65 (2.987)** | 0.974 | 18.61 |
| TOTAL EXPENDITURE | 2074 (.91)** | 50.95 (.82) | 0.976 | 11.27 |
| PERIOD 2008-2022 | | | | |
| REVANUE EXPENDITURE | 61.21 (4.61)** | 474.46 (4.38)** | 0.996 | 15.52 |
| CAPITAL EXPENDITURE | -1582.45 (.95)** | 371.34 (2.77)** | 0.895 | 16.12 |
| TOTAL EXPENDITURE | 4538-24 (.2.56) | 845-81 (5.86)* | 0.995 | 15.65 |

Source: Estimated from data given in various issues of Indian Public Finance Statistics Figures in parenthesis show's' values Note: Exponential Trend Ln(Y) = a+bt **, * denotes significance at 5% level and 1% level respectively

The period of 2008-2022 was such that the government left no stone unturned to upgrade the existing health care sector for which it increased its revenue expenditure so as to provide assessable healthcare to the population. Sub-centres, primary health centres, and community health centres were all strengthened as part of the budget (Husain, 2011).

Owing to all such expenditures the capital expenditure during this period has shown a trend growth rate of 16.12 percent. Although the capital expenditure decreased during this period from 18.61 percent to 16.12 percent yet it has shown an accelerating trend which is of a significant nature (t value=2.77). Now if we consider the total expenditure during this period then it has registered a trend growth rate of 15.65 percent during this time period. Also the total expenditure has shown an accelerating trend with a magnitude of 845.81 percent. Overall if we consider both periods then all together it is clear from the table 2 above that the post NRHM period has shown better results as compared to

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period before NRHM since during the NRHM period the governments expenditure has increased manifolds as a corollary of various schemes and policies that were introduced as a part of the health mission. Such initiatives led to the increase in the capital as well as the revenue expenditure. So we can say that the health became a focal point after the NRHM period in India. The effect of such an increase in public health expenditure upon the demographic ratios has been dealt in the next part of the research.

**IMPACT ANALYSIS (INDIA)**

In this portion of the research, we intend to investigate the influence of public health spending on several critical demographic ratios that serve as a benchmark for judging a country's profile; for this reason, we have taken into account the demographic ratios listed below.

- Infant Mortality Rate (IMR
- Maternal Mortality Rate (MMR)
- Crude Birth Rate (CBR)
- Total Fertility Rate (TFR)

The first two demographic ratios, IMR and MMR, were used to determine the government's efficiency in providing child and maternal care, while the last two indicators, CBR and TFR, were used to determine the government's efforts to restrict population increase. As a result, we used a log linear regression model to investigate the impact of health spending on the above-mentioned demographic ratios, with the dependent variables being the demographic indicators mentioned above and the independent variables being the various types of public health spending, such as capital and revenue spending. The analysis pertaining to first period that ranges from 1995-2007 uses the log linear regression model 1 and the period ranging from 2008-2022 makes use of the equation established for log linear regression model 2. The results of the regression model in context of India are discussed further.

**INFANT MORTALITY RATE**

Infant Mortality Rate (IMR) is defined as the number of children dying before attaining the age of one year per 1000 population. The IMR is a critical metric for assessing a country's economic and social characteristics. In this regard considering the period of 1995-2007 in the table 3 shown below then the results pertaining to IMR shows that 1 percent change in revenue expenditure decreases the IMR by 0.12 percent annually but such an impact is insignificant in nature. However if we consider the capital expenditure during the same time period then we see that 1 percent change in the capital expenditure has led to the decrease in IMR by 0.15 percent annually which is slightly higher than the revenue expenditure.

**TABLE 3** Impact Of Public Health Expenditure Upon Imr In India

| **INDEPENDENT VARIABLE** | **DEPENDENTVARIABLE** | | | | | |
|---|---|---|---|---|---|---|
| | MODEL 1 (1995-2007) | | | MODEL 2 (2008-2022) | | |
| | INFANT MORTALITY RATE (IMR) | | | INFANT MORTALITY RATE (IMR ) | | |
| | CO-EFFICIENT | T-VALUE | P VALUE | CO-EFFICIENT | T-VALUE | P VALUE |
| REVANUE EXPENDITURE | .118 | .648 | .536 | -.258 | 8.76* | .000 |
| CAPITAL EXPENDITURE | -.144 | 1.383 | .208 | -.084 | 3.052** | .015 |
| $R^2$ | .938 | | | .993 | | |
| ADJASTED $R^2$ | .922 | | | .988 | | |
| F VALUE | 53.71 (P VALUE =0.000) | | | 470.42 (P VALUE =0.000) | | |

Note: *& ** shows significance at 1% and 5% level respectively

Now, if we consider the period 2008 to 2022, this was the time when a significant expenditure was spent under the NRHM umbrella. In order to improve the nation's IMR, programmes such as Navjat Shishu Suraksha Karyakram, Home Based New Born Care, Integrated Management of Neonatal and Childhood Illness, and others were launched. The revenue expenditure made by the government led to a decrease in IMR by 0.26 percent which was highly significant (t value= 8.76) on the other hand the capital expenditure also led to a decrease of 0.07 percent in the IMR which was also found to be significant (t value=0.015).As a result of such a considerable increase in the capital and

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revenue expenditure the IMR reduced from 109 per thousand populations in 1999 to 32 per thousand population in 2022.

**MATERNAL MORTALITY RATE**

Maternal Mortality is the death of a woman during pregnancy or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy from any cause related to or aggravated by the pregnancy or due its poor management but not from any causes related to accidental or incidental cases.1 Maternal mortality is caused by a variety of factors, including postpartum haemorrhage, complications from botched abortion, hypertensive problems, postpartum infections, and so on. Table 4 shown below captures the impact of public health expenditure upon the maternal mortality rate. During the period of 1995-2007 a percent change in the revenue expenditure has led to the decrease in MMR by 0.26 percent however this decrease is of an insignificant nature (t value=0.146) whereas the capital expenditure brings about a decrease of 0.94 percent annually.

**TABLE 4** Impact Of Public Health Expenditure Upon Mmr In India

| **INDEPENDENT VARIABLE** | **DEPENDENT VARIABLE** | | | | | |
|---|---|---|---|---|---|---|
| | MADEL 1 1995-2007 | | | MADEL 2 2008-2022 | | |
| | MATERNAL MORTALITY RATE | | | MATERNAL MORTTALITY RATE | | |
| | C0-EFFICIENT | T-VALUE | CO-EFFICIENT | T-VALUE | CO-EFFICIENT | T-VALUE |
| REVANUE EXPENDITURE | -.275 | .145 | .888 | -.276 | 16.34* | .000 |
| CAPITAL EXPENDITURE | .935 | 2.78** | .026 | -.052 | 3.25** | .011 |
| $R^2$ | .971 | | | .996 | | |
| AJUSTED $R^2$ | .963 | | | .995 | | |
| F VALUE | 113.61 (P VALUE=0.000) | | | 1.306.65 (PVALUE=0.000) | | |

Note: * & ** shows significance at 1% and 5% level respectively

Taking into account the findings of model 2 as stated in table 4. We can see that revenue spending has had a substantial impact in lowering the MMR by 0.26 percent which is highly significant in nature (t value=16.34) whereas the capital expenditure has led to a decrease in 0.05 percent in MMR which is significant at 5 percent level.

Thus, in the case of MMR, the post-NRHM period has shown to be much more favourable, since both capital and revenue expenditure have resulted in a large drop in MMR. This is primarily due to a rise in government spending, which has an inverse relationship with the MMR.

To summarise, both revenue and capital expenditures have had a significant impact on the MMR between 2008 and 2022, as compared to the previous time period. The reason for this is the notable initiative taken by the government in April 2008 under the name of Janani Suraksha Yojna (JSY), the main goal of which was to promote institutional deliveries among women in particular. To emphasise, there were 3929 and 5604 institutional deliveries before and after the implementation of JSY, respectively. (Sanjeev K. Gupt, 2012).

**CRUDE BIRTH RATE**

The number of live births per 1000 population estimated at mid-year is known as the crude birth rate. It is regarded as a vital component of the population stabilisation strategy. The government has been focusing on the crude birth rate since its first five-year plan, when India became the first country to formally start a family planning programme to address unmet family planning requirements. Due to a considerable rise in government spending, India had about 1,50,000 health centres offering family planning programmes by 1991. The regression results in table 5 show that during the period 1995-2007, a percent increase in revenue expenditure resulted in a 0.07 percent decrease in the CBR, while a percent increase in capital expenditure resulted in a 0.05 percent decrease in the CBR; both of these types of government expenditure were found to be significant at the 10 percent level.

**TABLE 5** Impact Of Public Health Expenditure Upon Cbr In India

| **INDEPENDENT VARIABLE** | **DEPENDENT VARIABLE** | |
|---|---|---|
| | **MODEL 1 1995 - 2007** | **MODEL 2 2008 -2022** |
| | **CRUDE BIRTH RATE** | **CRUDE BIRTH RATE** |

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| | CO – EFFICIENT | T – CALUE | P VALUE | CO – EFFICIENT | T- VALUE | P-VALUE |
|---|---|---|---|---|---|---|
| REVENUE EXPENDITURE | -.083 | 2.082*** | .075 | -.082 | 8.42* | .000 |
| CAPITAL EXPENDITURE | -0.501 | 2.22*** | .064 | .006 | .778 | .457 |
| $R^2$ | .985 | | | .982 | | |
| ADJUSTED $R^2$ | .982 | | | .975 | | |
| F VALUE | 239.498 (P VALUE = 0,000) | | | 205.65 (P VALUE = 0.000) | | |

Note: *, ** &***shows significance at 1% and 5% level respectively

The government's investment on contraceptive usage awareness programmes, which is classified as revenue expenditure, is notable for the period 2008-18. As a result, it is obvious from table 4 that a percent rise in government revenue expenditure has resulted in a 0.07 percent decrease in the birth rate, which is highly significant (t value=0.00); on the other hand, capital expenditure has been seen to have no impact on the CBR.

**TREND OF HEALTH EXPENDITURE IN UTTAR PRADESH**

A state's success is measured by its healthy population, which allows for multidimensional growth (Kumar A., 2013). In this sense, a healthy population is referred to as a key factor of government health spending. Because Uttar Pradesh has a population comparable to that of Brazil, the government has been steadily increasing health spending over time, as seen in the graph below. It has been noted that between 1995 and 2020, both revenue and capital spending on health, which includes medical and public health, Family Welfare, and water supply and sanitation, have consistently grown. However, this growth has acquired significant traction after 2005 as a result of significant measures undertaken under the National Rural Health Mission regime, some of which are described below

- National Disease Control Programme
- Janani Suraksha Yojna
- Cafeteria Approac
- Navjat Shishu Suraksha Yojna
- Home Based New Born Care
- Integrated Management of Neonatal and Childhood Illness.

Considering the first phase in respect of Uttar Pradesh economy we see that the revenue expenditure has shown a trend growth rate of merely 6.33 percent per year during the time period 1995-2007. However, it has experienced an increasing trend but this increase in revenue expenditure is of an insignificant nature (t value=0.15) The results pertaining to above argument has been shown in the table 2.6 below. In the same table when we consider the capital expenditure during the same period then it has registered a trend growth rate of 12.14 percent annually. This is much higher than the previous class of expenditure The direction of change however tends to be accelerating which is significant.

Now when we take the total expenditure into account then it has registered a trend growth rate of 6.75 percent a year. Along with this it has also shown an accelerating trend. Thus, the period 1995-2007 was not favourable to the Uttar Pradesh economy since the government's spending on health and family welfare was deemed insufficient to fulfil the public's health objectives (Gupta, 1999)

**TABLE 6** Estimates Of Trend Growth Rate And Acceleration Model: Uttar Pradesh, Model: Y=A+ Bt + Ct2

| **PERIOD 1995 – 2007** | | | | |
|---|---|---|---|---|
| EXPENDETURE | 'B' VALUE | 'C' VALUE | $R^2$ | $TGR^{\#}$(%) |
| REVENUE EXPENDITURE | 9043.65 (1.35) | 67.26 (015) | .825 | 6.34 |
| CAPITAL EXPENDITURE | -3518.83 (2.26)* | 387.83 (3.35)** | .766 | 12.14 |
| TOTEL EXPENDITURE | 5524.85 (0.71) | 455.12(077) | .824 | .675 |
| PERIOD 2008- 2022 | | | | |
| REVANUE EXPENDITURE | -13519.16 (0.62) | 9237.16 (6.01)* | .983 | 15.54 |
| CAPITAL EXPENDITURE | -23064.23 (1.02) | 5233.27 (3.32)* | .912 | 19.02 |

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| TOTEL EXPENDITURE | -36583.36 (1.07) | 14470.46 (6.15)* | .981 | 16.32 |

Source: Estimated from data given in various issues of Indian Public Finance Statistics

Figures in parenthesis show's' values

Note: Exponential Trend Ln(Y) = a + bt

*& **denotes significance at 5% level and 10% level respectively

Due to low levels of government investment, Uttar Pradesh has been in a poor state, experiencing numerous challenges such as widespread poverty, a high prevalence of maternal deaths, infant mortality, and so on. As a result, the government increased its health-care spending considerably in order to enhance health outcomes in India's largest state.

Hence the increasing thrust of the government on health sector led to the increase in the trend growth rate of revenue expenditure from 5.36 percent per year in the previous phase to 15.54 percent after 2008.The capital expenditure experienced a much higher trend growth rate of 19.02 percent. Talking about the total expenditure then it had registered a trend growth rate of 16.32 percent a year.

As a result, both capital and revenue expenditures, as well as total spending, have showed an increasing trend. As a result, we can conclude that the period 2008- 2022 represented significant efforts made by the government in the form of increased expenditure on health in order to allow the Uttar Pradesh economy to tackle various issues that rendered it a low-performing state.

**IMPACT ANALYSIS**

A micro level analysis of the study of the influence of government health expenditure on demographic ratios in Uttar Pradesh is provided in this section of the research. A comparable analysis has been carried out for the state of Uttar Pradesh, just as it has been done for India, in order to analyse and compare the performance and influence of government expenditure on certain demographic RATIOS

**INFANT MORTALITY RATE**

As stated earlier in this research the Infant Mortality rate is a crucial indicator of the performance of an economy since it relates to the availability, affordability and accessibility of the health services at the grassroots level. It also presents an overview of the socio-economic development taking place in that region. In this regard the importance of public health expenditure in enhancing the IMR is vital. It means that a state with higher levels of public expenditure has a lower IMR. (Andrew Barenberg, 2015). Thus, in order to determine whether the rise in government health expenditure has impacted the IMR in a comparable manner as demonstrated by various researches, the regression findings for Uttar Pradesh are presented in table 7 below.

During the period 1995-2007 a 1 percent increase in revenue expenditure has led to a decrease in IMR by 0.06 percent. However, this impact brought about by way of revenue expenditure upon IMR was insignificant. At the same time the capital expenditure has impacted the IMR in a more effective manner by bringing it down by 0.06 percent. As a result, health infrastructure development is even more critical in Uttar Pradesh, which has inadequate health infrastructure. This obstructs total service delivery to those who require more public-sector health-care delivery systems.

**TABLE 7** IMPACT OF PUBLIC HEALTH EXPENDITURE UPON IMR IN UTTAR PRADESH

| **INDEPENDENT VARIABLE** | **DEPENDENT VARIABLE** | | | | | |
|---|---|---|---|---|---|---|
| | **MODEL 1 (1992-2004)** | | | **MODEL 2 (2005-2018)** | | |
| | **INFANT MARTALITY RATE (IMR)** | | | **INFANT MARTALITY RATE (IMR )** | | |
| | CO-EFFICIENT | T-VALUE | P-VALUE | CO-EFFICIENT | T-VALUE | P-VALUE |
| REVANUE EXPENDITURE | -0.57 | .636 | .545 | -.293 | 5.408* | .001 |
| CAPITAL EXPENDITURE | -.075 | 2.56** | .036 | -.034 | .808 | .443 |
| $R^2$ | .835 | | | .976 | | |
| ADJUSTED $R^2$ | .786 | | | .956 | | |
| F VALUE | 17.65 (P VALUE =0.002) | | | 85.017 (P VALUE =0.000) | | |

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Note: *& ** shows significance at 1% and 5% level respectively

When we move towards the results shown by model 2 which pertains to the time period 2008-2022 then during this period it is the revenue expenditure that has played a much crucial role in bringing down the IMR since a 1 percent increase in revenue expenditure has led to a decrease in the IMR by 0.28 percent which is highly significant. On the other hand capital expenditure has merely impacted the IMR by 0.04 percent. The reason for this is that between 2008 and 2022, the government spent more upon post-delivery care for both mother and child, training programmes for auxiliary nurse midwives to encourage safer deliveries etc. However, it is important to note that health spending cannot be considered in isolation from other social and economic factors. For instance, social awareness, educational levels of the mother and other household members, as well as economic empowerment, all play a significant impact in lowering infant mortality rates. If these characteristics could be combined with public health expenditures, the role of public health expenditures may be more efficient.

**MATERNAL MORTALITY RATE**

The majority of maternal mortality in any region are linked to variables such asnutrition, poverty, and socioeconomic situations etc. (William Joe, 2015, p. 3). In terms of the determinants indicated, the state of Uttar Pradesh was far from satisfactory, as the number of BPL families identified by the state government in 2000 was over 105 lakhs. It became more difficult for the families to finance a decent institutional delivery as a result of this. As a result, the MMR reached a peak of 612 (average) between 1995 and 2007. In this context, as shown in table 8 below, we have attempted to capture the impact of government health expenditure on the maternal mortality ratio.

A limitation faced during the analysis of the results of MMR in context of Uttar Pradesh was the unavailability of annual data of MMR hence for this purpose we have made use of the interpolation technique so as to analyse the impact of annual increase in health expenditure of the government upon the maternal mortality rate. The log linear regression results in respect of health expenditure and MMR during 1995-2007 shows that 1 percent increase in revenue expenditure has brought down the MMR by 0.68 percent whereas the capital expenditure has reduced it by 0.04 percent.

**TABLE 8** IMPACT OF PUBLIC HEALTH EXPENDITURE UPON MMR IN UTTAR PRADESH

| **INDEPENDENT VARIABLE** | **DEPENDENT VARIABLE** | | | | | |
|---|---|---|---|---|---|---|
| | **MODEL 1 1995-2007** | | | **MODEL 2008-2022** | | |
| | **MATERNAL MORTALITY RATE** | | | **MATERNAL MORTALITY RATE** | | |
| | CO-EFFICIENT | T- VALUE | P-VALUE | CO-EFFICIENT | T-VALUE | P-VALUE |
| REVANUE EXPENDITURE | -.693 | 1.414 | .202 | -.526 | 6.154* | .000 |
| CAPITAL EXPENDITURE | -.035 | .222 | .833 | -.074 | 1.106 | .295 |
| $R^2$ | .776 | | | .973 | | |
| ADJUSTED $R^2$ | .446 | | | .966 | | |
| F value | 4.635 (p value =0.052 ) | | | 175.96 (P VALUE=0.000) | | |

Note: '*'shows significance at 1% level

Owing to such a dismal situation in the most populous state of Uttar Pradesh, the government launched a number of initiatives post 2008. One of the noteworthy initiatives was Janani Suraksha Yojna Scheme that especially focussed upon the poor pregnant women. The main motive behind it was to promote institutional delivery among pregnant women where they could be assisted by trained nurses or doctors in safe environment for safe delivery. In this regard we find that the revenue expenditure by the government during 2008-2017 has played a significant role in reducing the MMR by 0.53 percent. However, the capital expenditure doesn't show a much impact upon MMR since it decreases the MMR by only 0.06 percent. Nonetheless, it aided in the reduction of the MMR. Taken as a whole, the government's overall health expenditures had a significant impact on lowering the MMR.

**CRUDE BIRTH RATE**

There are various elements that contribute to high birth rates in a developing economy. Scholars have researched it in sections or by employing one or more of the variables that influence the CBR. According to studies, the society has a

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high birth rate due to traditional patriarchal institutions wherein sons are valued more than daughters due to the prevalence of economic and socio-cultural factors (A. Dharmalingam, 2014). Along with this, the state of Uttar Pradesh is distinguished by a lack of development in educational institutions, which can be connected to a lack of awareness about birth control. Education is seen as a means of controlling birth, and when combined with easy access to birth control devices, it can be a powerful tool for limiting population expansion.3As a result, the government boosted its spending under the umbrella of Family Welfare Programs, with a major focus on population control. In this regard the impact of the increase in government expenditure has been presented in the table 10 below. It is clear from the table that it is only the revenue expenditure that has been able to impact the crude birth rate in a significant manner since it has led to a decrease in the birth rate by 0.17 percent whereas the capital expenditure had no effect upon the crude birth rate. However, many times indirect effects become more prominent. Because even for the revenue expenditure to be effective, background support of the capital expenditure cannot be negated in an economy like Uttar Pradesh.

**TABLE 10** IMPACT OF PUBLIC HEALTH EXPENDITURE UPON CBR IN UTTAR PRADESH

| **INDEPENDENT VARIABLE** | **DEPENDENT VARIABLE** | | | | | |
|---|---|---|---|---|---|---|
| | **MODEL 1 1992-2004** | | | **MODEL 2 2005- 2018** | | |
| | **CRUDE BIRTH RATE** | | | **CRUDE BIRTH RATE** | | |
| | CO-EFFICIENT | T-VALUE | P-VALUE | CO-EFFICIENT | T-VALUE | P-VALUE |
| REVANUE EXPEDITURE | -0.176 | 2.35* | 0.050 | -0.096 | 5.872* | 0.000 |
| CAPITAL EXPENDITURE | 0.000 | 0.006 | 0.995 | 0.003 | 0.258 | 0.803 |
| $R^2$ | 0.755 | | | 0.947 | | |
| ADJUSTED $R^2$ | 0.666 | | | 0.934 | | |
| F VALUE | 9.970(P VALUE =0.009) | | | 72.010 (P VALUE =0.000) | | |

Note: * &** shows significance at 1% and 5% level respectively

Source: Authors own calculation

The result of such an increase was that the crude birth rate was brought down by 0.09 percent due to the increase in revenue expenditure by 1 percent (meaning crude birth rate has a revenue elasticity of 0.09, which is negative). However, during this time period, the capital expenditure couldn't impact the crude birth rate much. Hence on the basis of the log linear regression model results shown in context of Crude birth rate it is implied that not much relation has been found between the capital expenditure and the crude birth rate in direct estimate. However, we do not rule out the indirect or lagged effect on CBR in Uttar Pradesh.

**TOTAL FERTILITY RATE**

Uttar Pradesh's population growth has outpaced the national average. The reason behind this is the unintended high fertility as a result of unmet contraceptive needs, implying that the family planning programme in a state like Uttar Pradesh needs to be enhanced. (S.C.Gulati, 2005).As a consequence, in order to control the population growth, the government continued to alter the programmes already in place under the National Program for Family Planning, which was first introduced in 1952. If we look at the years 1992-2004, we can see that it was an era distinguished by two major government initiatives:

- Millennium Development Goals, 2000
- National Population Policy,2000

The former aimed to eradicate poverty, believing that a small family was a key contributor, whereas the population policy's main goal was to meet unmet contraceptive requirements and establish a stable population by 2045. Hence, the Uttar Pradesh government contributed to the achievement of the stated goals. As a result, the government made a significant expenditure on health to reduce the overall fertility rate. The impact of the government's expenditures from 1992 to 2004 is seen in table11.

Considering the revenue expenditure during 1992-2004 then it has impacted the total fertility rate by 0.23 percent. It means the revenue expenditure's elasticity for TFR reduction has been 0.23 and this is truly very high impact. The capital expenditure however had a negative impact upon the TFR. Thus, the government's role in population management might be regarded important. However, studies show that knowledge, coupled with public health spending, have played a key role.

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**TABLE 11** Impact Of Public Health Expenditure Upon Tfr In Uttar Pradesh

| INDEPENDENT VARIABLE | DEPENDENT VARIABLE | | | | | |
|---|---|---|---|---|---|---|
| | MODEL 1 1192-2004 | | | MODEL 2 2005-2018 | | |
| | TOTEL FERTILITY RATE | | | TOTEL FERTILITY RATE | | |
| | CO-EFFICIENT | T-VALUE | P-VALUE | CO-EFFICIENT | T-VALUE | P-VALUE |
| REVANUE EXPENDITURE | -0.231 | 2.215** | 0.062 | -0.259 | 5.165** | 0.001 |
| CAPITAL EXPENDITURE | 0.010 | 0.309 | 0.766 | 0.033 | 0.863 | 0.413 |
| $R^2$ | 0.664 | | | 0.917 | | |
| ADJUSTED $R^2$ | 0.568 | | | 0.896 | | |
| F VALUE | 6.912(PVALUE =00.22) | | | 44.171(P VALUE=0.000 | | |

Note: '*' shows significant at 5% level

Source: Authors own calculation

To enhance its performance, the Uttar Pradesh government increased spending from 2005 to 2018, slowing the rate of TFR in the state. The government put a lot of money into bettering contraceptive supply management. Apart from that, it prompted the creation of sterilisation acceptor compensation programmes. As a result, both capital and revenue expenditures had grown. However, in the case of CBR, it was only the revenue expenditure that had a substantial influence on the TFR, as a 1percent annual rise in revenue spending resulted in a 0.26 percent drop in the fertility rate.

## 2. CONCLUSION

To sum up, the importance of public health spending cannot be negated because it contributes to a demographic shift at both the national and state levels. Even after garnering such prominence, health spending in India and Uttar Pradesh only increased when the National Rural Health Mission (NRHM) was implemented in 2005; however the statistics on health expenditure shows that it is still far behind the intended commitment. As a result, health facilities in India have exhibited significant difference when compared to developing countries; for example, the population bed ratio in India is 1:1000, whereas it is 7:1000 in developed countries. (Hooda S. K., 2013) .As a result, despite the continual rise in public health expenditure, health institutions have not been able to demonstrate a positive impact. These health facilities can also be connected to demographic ratios, as the lack of health facilities leads to a lack of access to them. In this context, the Indian government has worked hard to increase its health spending, and it has been noticed that both revenue and capital expenditures have increased significantly since the establishment of the NRHM. Despite the fact that the share of capital expenditure spent by the government decreased, it remained considerable, implying that government efficiency has improved over time. When the impact of these expenditures on demographic ratios such as Infant Mortality Rate, Maternal Mortality Rate, Crude Birth Rate, and Total Fertility Rate was considered, it was discovered that in the case of Infant Mortality Rate, the results pertaining to the two heads of expenditures became significant only after the government took significant measures under the NRHM banner. Whereas the maternal mortality rate was influenced favourably only by an increase in capital expenditure prior to 2005 because the government was involved in the establishment of institutions for safer delivery at the time, the post-NRHM period has seen a positive effect of an increase in both revenue and capital expenditure on the MMR. The common observation in the context of CBR and TFR in India was that both of these demographic ratios were influenced favourably by revenue expenditure because there was nothing new that the government had to add to the existing capital to bring down the birth rate and the fertility rate; instead, what was required was the dissemination of awareness programmes regarding the benefits of having a small family. Efficacy of these public awareness campaigns was such that the CBR and TFR were reduced from 28.3 and 3.5 in 1995 to 20.8 and 2.4 in 2015.

Comparable to India, Uttar Pradesh's expenditures increased significantly when the NRHM was implemented, with significant increases in both revenue and capital spending. In addition, an intriguing finding that has emerged in the case of Uttar Pradesh is that revenue expenditure has played a critical role following the NRHM period, since it has positively influenced all demographic ratios.

As a result of all of the findings discussed in this research, we can conclude that at the national level, the government should spend both capital and revenue expenditures because it has been discovered that capital expenditures played a critical role in some cases, while revenue expenditures had a positive impact in others. However, when the outcomes are seen from the perspective of the state, it is clear that if the government spends more on revenue expenditures, they will have a far more favourable impact than capital expenditures. Thus, in the framework of the state, it is proposed that revenue spending be increased in order for the state to have favourable demographic conditions.

## 3. REFERENCES

[1] Dharmalingam, s. R. (2014, july). The determinants of low fertility in india. Springer.
[2] Agrawal, R., Negi, R., Kaushal, S. K., &Misra, S. K. (2020). Out of pocket expenditure and its associated factors in neonates admitted to neonatal intensive care unit of tertiary care government hospital of Agra district, Uttar Pradesh. Indian journal of public health, 64(1), 60.
[3] Ahuja, p. B. (2008). Government health spending in india. Economic and political weekly.
[4] Andrew barenberg, d. B. (2015, december). The effect of public health expenditure on infant mortality: evidence from a panel of indian states, 1983-84 to 2011-12.
[5] Berman, P., Ahuja, R., & Bhandari, L. (2010). The impoverishing effect of healthcare payments in India: new methodology and findings. Economic and Political Weekly, 65-71.
[6] Bhat, R., & Jain, N. (2004). Analysis of public expenditure on health using state level data.
[7] Choudhury, M., &Nath, H. A. (2012). An estimate of public expenditure on health in India. New Delhi: National Institute of Public Finance and Policy, 1-17.
[8] Deolalikar, A. B., Jamison, D. T., Jha, P., &Laxminarayan, R. (2008). Financing health improvements in India. Health Affairs, 27(4), 978-990.
[9] Gill, K. (2009). A primary evaluation of service delivery under the National Rural Health Mission (NRHM): findings from a study in Andhra Pradesh, Uttar Pradesh, Bihar and Rajasthan. Planning Commission of India, Government of India
[10] Gumber, A. (2005). Pattern and determinants of health care use and expenditures at the end-of-life in India.
[11] Gupta, d. B. (1999, august). Public expenditure analysis on the health sector. Health sector development program for uttar pradesh.
[12] Hooda, s. K. ( 2013, march ). Changing pattern of public expenditure on health in india: issues and challenges. Isid-phfi collaborative research programme working paper series 01. New delhi.
[13] Hooda, s. K. (march 2013). Changing pattern of public expenditure on health in india. Isid working paper series , 2.
[14] Http://factsanddetails.com/india/people_and_life/sub7_3a/entry-4140.html.(2015, june). Retrieved from http://factsanddetails.com/.
[15] Http://www.who.int/healthinfo/statistics/indmaternalmortality/en/.(n.d.). Retrieved from http://www.who.int. Husain, z. (2011). Health of the national rural health mission. Economic and political weekly
[16] .Issac, A., Chatterjee, S., Srivastava, A., & Bhattacharyya, S. (2016). Out of pocket expenditure to deliver at public health facilities in India: a cross sectional analysis. Reproductive health, 13(1), 1-9.
[17] Kumar, a. (2013). Health expenditure and health infrastructure in class-i towns of uttar pradesh, india. 3rd international conference on management, economics and social sciences (icmess'2013) january 8-9, 2013 (malaysia). Kuala lumpur.
[18] Kumar, k. (2011). State, market and utilization pattern. Patiala.
[19] Ladusingh, L., & Pandey, A. (2013). Health expenditure and impoverishment in India. Journal of Health Management, 15(1), 57-74.
[20] Mathiyazhagan, M. K. (2003). Rural household characteristics and health expenditure in India; an analysis. Journal of Social and Economic Development, 5(1), 86.
[21] Pandey, A., Ploubidis, G. B., Clarke, L., &Dandona, L. (2018). Trends in catastrophic health expenditure in India: 1993 to 2014. Bulletin of the World Health Organization, 96(1), 18.
[22] Press information bureau , government of india , mohfw. (n.d.).
[23] Ram, b. (2012). Fertility decline and family change in india: a demographic perspective. Journal of comparative family studies, 11.
[24] S.c.gulati. ( 2005). Population policies and programs since icpd, 1994: issues and challenges ahead. Indian association for the study of population, (p. 5). Chandigarh.

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[25] Sangar, S., Dutt, V., & Thakur, R. (2019). Economic burden, impoverishment, and coping mechanisms associated with out-of-pocket health expenditure in India: A disaggregated analysis at the state level. The International journal of health planning and management, 34(1), e301-e313.

[26] Sanjeev k. Gupt, d. K. (2012, december). Impact of janani suraksha yojana on institutional delivery rate and maternal morbidity and mortality: an observational study in india.

[27] Selvaraju, V., and Vinod B. Annigeri. "Trends in Public Spending on Health in India." New Delhi: National Institute of Public Finance and Policy. Background paper for the Commission on Macro Economics and Health (India) (2001).

[28] Sridhar, D., & Gómez, E. J. (2010). Health financing in Brazil, Russia and India: What role does the International community play?. Health policy and planning, czq016. Srivastava, A., Bhattacharyya, S., Gautham, M., Schellenberg, J., &Avan, B. I. (2016).

[29] Linkages between public and non-government sectors in healthcare: a case study from Uttar Pradesh, India. Global public health, 11(10), 1216-1230.

[30] Yesduian, c. A. K. (1993). Financing health care. Economic and political weekly, 28, 2789-2789.