How far socio-economic determinants affect the demographic and health inequalities in Urban India: Evidences from NFHS-3

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Urbanization is defined as a process of structural changes in social, economic and demographic aspects of life in a given society. However, have urbanites living in India been influenced to the same changes? Do they have the same access to urban amenities irrespective of their caste, religion and economic status? This paper used an analytical framework which explains the socio-economic stratification in accordance with cultural context of India and its influence on the demographic and health outcomes. Though on an average urban people have better health than their rural counterparts. This paper presents the evidences that, in spite of being urbanized, socio-economic inequalities are still persisting in urban India. Moreover, it significantly influences the demographic outcomes and access to public health services. Within the urban India, The odds of logistic regression after controlling other background variables are shows the huge disparity in demographic and health indicators of different socio-economic groups. Decomposition analysis is evident that 55 percent of inequality in IMR is due to poor economic status. Overall, 65.7 percent of inequality is explained by poor economic status, SC/ST castes and Muslim religion.

I. Introduction

There appears to be broad accord that many socio-economic disparities are unjust and unfair, since that puts certain groups of people at disadvantage, not only economically, socially, and politically but also in terms of their possibilities to be healthy (Hosseinpoor *et. al.* 2006). The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion and political belief (Article 1 UN General Assembly 1948). However, in spite of improvement in medical technology and health services the differential social customs and behavioral pattern are promoting health inequalities and leading to poor health status (Gollerkeri *et. al.* 1986; WHO 2008). Thus, governments and international organizations have recognized the need to reduce the health inequalities between social and economic groups. India even committed herself to the pursuit of achieving the goal of health for all by A.D. 2000 in accordance with the Alma Ata declaration of 1978. More than thirty years have passed since the Alma Ata declaration; however health for all remains an elusive goal and still there are gender bias, economic bias, status bias, and bias of availability of welfare funds in India (Feinstein 1993; IIPS and Macro International 2005-06; Joe *et. al.* 2008). To quote from the recently released health inequality report "Social inequalities are killing people on a grand scale" (WHO 2008).

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Social and economic inequalities are ubiquitous feature of all the societies of the world. While social order developed from traditional social and religious traits and economic order is stem of social order (Weber and Beshers 1962; Wilkinson 1997). Higher the social order and higher will be the economic order. To illustrate, globally, 90 percent of population sustain itself on 10 percent of resources of the society, whereas 10 percent population consumes 90 percent of the resources, this is also called *'10-90'syndrome* (Montego 2009). While health inequalities are an endemic characteristic of all the societies in world, but the size of the differential varies between countries. "The toxic combination of bad policies, economics, and politics is, in large measure responsible for the fact that a majority of people in the world do not enjoy the good health that is biologically possible," (WHO 2008). In developing countries, gap in the demographic and health-related outcomes between rich and poor are large (Baker *et al.,* 1993; Gwatkin, 2000; Leon *et al*., Wagstaff, 2002; Joe *et. al.,* 2008). In this part of the world the globalization boosts economic growth but risks widening social inequality (ILO 2000) and frequently social economic inequality led to Poor demographic situation and diffentials in population growth and family size build inequalities in health (IIPS and Macro Internationals 2005-06).

Defining health inequalities is an indispensable challenge to assess health status of population, where the analysis of average values of health is no longer sufficient. WHO during 1998-2003 stated to health inequalities (and extension, inequity) as any avoidable difference in health between any individuals, who should not be grouped a prior according to social characteristics, except possibly geographic location (Murray et al, 1999). Davey Smith *et. al.* (2002) have usefully identified seven 'models of explanation for the racial and ethnic pattern of health from the ongoing debates. The inequalities include differences between geographical areas, ethnic groups, occupations, income groups, and the sex (White et al 2003, Navarro 2004).

In India economic class, caste and religious groups around which the inequalities persist, and often one's social class determines their economic class, i.e. the lower social class is also blended into the lower economic class. In case of health, the high caste and class groups were found associated with health practices conducive to better health than low caste and low class groups (Kopparty 1994). From his study of health behavior in rural Andhra Pradesh[4] he pointed

[4] A state of India, geographically located in southern part of India

out that high class/high caste groups show a number of important differences in a variety of health practices in comparison to the low class/ low caste groups. Social cultural beliefs like food habits, dressing, household occupation, family norms and unequal access to health service in different social groups play a major role in determining health status (Kopparty 1994). It is manifested that these difference are greater in rural than urban (Sangwan 2003). Increasing urbanization is supposed to bring socio-economic change which further narrows down the socio-economic differentials (Shreshtha et al 1993. Thus historically, urbanization has been viewed as an important actor in the arena of socio-economic change, orchestrating the breakdown of the feudal order and taking societies to higher levels of social formation. This view is generally based on the industrial economic history of today's advanced countries where urbanization played a significant role in their development). Therefore, the urbanization is defined as a process that reveals itself through temporal, spatial and structural changes of demographic, social, and economic, technological and environmental aspects of life in given a society. These changes manifest themselves in increasing involvement of people in secondary and tertiary production functions, which ultimately results in higher income levels and progressive adoption of certain social traits that differ from the traits of traditional rural society (Wirth 1938, Bergel 1955; Bhasain 2001; Siddiqui 2009). However, the process of urbanization in developing countries, instead of becoming *"generative"* for a new socio-economic order, is widening the gaps in existing socio-economic order (Bhasain 2001). The vertical developmental policies badly affected the lower social and economic groups in the cities of developing countries like India (Kundu 1983; Bhattacharya 2009). From the above point of view, the present paper aims to study the extent of influence exerted by socio-economic correlates on demographic and health inequalities within urban India.

II. Rationale of the study

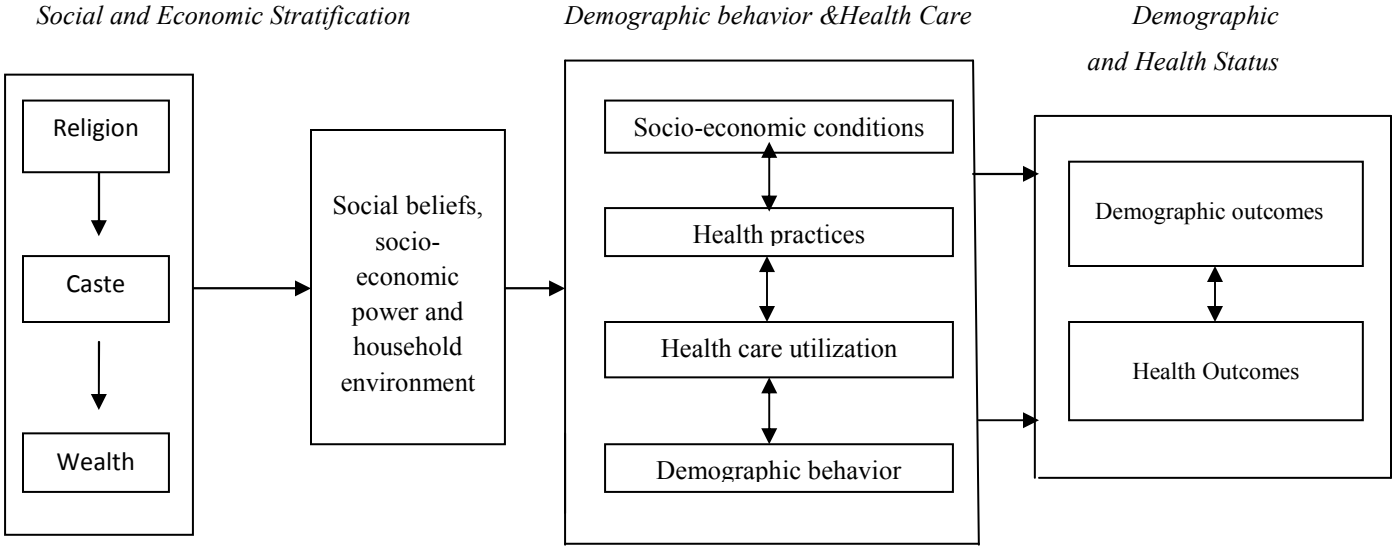
On an average, urbanites enjoy an advantage in health over rural villagers (IIPS and Macro International 2005-06). But, the health policies for an urbanizing world cannot be based on averages alone. In the developing countries like India urbanization is bringing huge chunk of rural population to urban areas (Census 2001). However, do they all have the same access to urban amenities and exposed to same urban environment irrespective of their caste, religion and economic status is needed to be enquired? To understand these consequences, it is important to set aside the misconceptions that have prevented the health needs of urban populations from

being fully appreciated. The most urgent need is to acknowledge the social and economic diversity of the urban population, which include large groups of the poor whose health environments differ from those of higher socio-economic class. Thus, from the above point of view the paper aims to study the extent of influence exerted by socio-economic determinants on health and demographic inequalities in urban India.

III. Materials and methods

The recent National Family Health Survey-3 (2005-06) data is used in this paper. The NFHS-3 collected information from a nationwide representative sample of 109,041 households, 124,385 women of 15-49 age groups and 74,369 men of 15-54 age groups. The survey provides information on wide ranges information on fertility, mortality, family planning and other health indicators by various socio-economic background characteristics. Assessment of progress in demographic and health indicators in comparison to the corresponding progress in socio-economic indicators and urbanization is examined by trend analyses. The Bivariate and multivariate logistic regression analyses have been carried out by controlling the selected socio-economic and demographic variables for assessing demographic and health differentials. This paper also incorporated estimation of Concentration index (CI) to measure the socio-economic inequality and perform the decomposition of concentration index

III.A. Framework[5] of the present study



[5] **The basic idea of the framework has been taken from Kopparty's 1994 "Social Inequality and Health Care Study in Rural Andhra Pradesh" and modified it according to the need of the present study.**

Decomposition is useful explanatory tool for partitioning inequality contributions which is further decomposed into elasticity of health and inequality of determinants (see methodology in appendix 1). A decomposition analysis allows one to estimate how determinants proportionally contribute to inequality (e.g. the gap between poor and rich) in a health variable.

For better understand of the relationship between various socio-economic and demographic variables and their influence on demographic and health status, we used a modified analytical framework of Kopparty (1994). This framework shows the way in which key socio-economic stratification influences the demographic and health outcomes. The network of relationship showed in the framework depicts Indian conditions in accordance with cultural context of India. Different caste, religion and wealth groups have their unique socio-economic and demographic behavior; socio-economic power and household environment, which all together are likely to influence the food habits, dressing, household location, household amenities, demographic behaviour, health practices and health care seeking behavior. These evidences have been established in some of the earlier studies for India as a whole and rural in particular (De and Gollerkeri 1986; Kopparty 1994; Joe et al. 2008 and 2009). The present study attempts to examine the extent of such influence within the urban India.

IV. Results

Table 1 shows the NFHS-3 sample distribution of the households, women and children belonging to different socio-economic groups in urban India. The sample distribution for India indicates that the samples size for each socio-economic group is adequate to examine linkages and draw appropriate conclusions for the framed objectives of the study.

Table 2 provides an interesting profile of urban India in terms of their socio-economic conditions by social groups. Results indicate that in urban areas a large share of people belonging to the schedule castes have no education (32 percent) in comparison to other backward castes (29 percent), schedule tribes (24 percent) and others castes (28 percent). The incidence of poverty (in terms of households in poor wealth quintile) is also higher among schedule tribes (23 percent) followed by schedule castes and lowest proportion (4 percent) among the other caste. In poor wealth quintiles of schedule castes living in shared rooms are more compared to other caste

groups. The proportion having improved source of drinking water facility is also much lower in schedule castes (70 percent) compared to other castes. Similarly 89 percent of the people belonging to other castes have pucca houses followed by other backward castes (79 percent) much lower proportion of the schedule castes (71 percent) and schedule tribes (64 percent) have pucca houses. The proportion having access to improved toilet facility among schedule tribes (61 percent) and schedule castes (67 percent) is substantially lower as compared to other castes (89.5 percent). The schedule caste and schedule tribe population in the urban areas are significantly disadvantages in terms of household amenities such as electricity and cooking fuel.

Among the different religious groups, the percentage of population with no education is higher (37 percent) among the Muslims followed by Hindus (24 percent) and other religious groups (19 percent). The percentage is also significantly high in case of sharing of room among Muslims (55 percent) in comparision to Hindus (38 percent) and other religious groups (30 percent), as positively Muslims are poorer than others. In case of improved source of drinking water facility people belonging to other religion are having better condition (75 percent) compared with Hindus and Muslims. The proportion of people having pucca house much lower among the Muslim compared others. Proportion of people having the improved sanitation facility is also significantly lower among the Muslim (78 percent) compared to other religious groups. Muslims are also disadvantaged in accessing basic household amenities like electricity and cooking gas compared with other religions.

By wealth quintile, the highest proportion of population with no education are in poorest wealth quintile (64 percent) followed by poorer people (52 percent). In contrast, richer and richest groups are have only 30 and 17 percent no education people respectively. The population living in the sharing rooms is also more in the poorest and poorer wealth quintiles compared to other wealth quintiles. The proportion of people having basic household amenities like safe drinking water, pucca house, electricity facility and cooking gas is significantly high among the higher economic groups compared lower economic groups. The 95 percent of population among the richest economic groups have improved toilet facility compared with only 6 percent in poorest groups.

Table 3 shows the evidences disparities in demographic and health indicators among different socio-economic groups in India. By caste group, table reveals that people belonging to schedule tribes have comparatively higher fertility (2.53 children per women) compared with other caste groups (1.93 children per women) while other backward and scheduled castes have 2.18 and 2.11 children per women respectively. The infant mortality rate (IMR is highest among schedule castes (59 per 1000 live births) followed by other backward castes (51 per 1000 live births) and schedule tribes (49 per 1000 live births). contrast other castes have significantly much lower IMR (41 per 1000 live births). It is also evident that the proportions of mothers having ANC visits highest among the women belong to other castes (43 percent) with compared SC, ST and OBC. The same pattern can be observed in case of safe delivery, 76 percent of women belong to the other castes delivered in health facility compared with 57 and 55 percent in schedule caste and schedule tribes respectively.

The results reveal that 64 percent of fully immunized children are in other castes compared with schedule tribes (52 percent) and schedule castes (53 percent). The prevalence of anemia is significantly high among the women belonging to the schedule tribes (58 percent) compared with women belonging to all other castes (50 percent). Similarly, a very proportion children belong to schedule tribes (68 percent) are anemic followed by schedule castes (67 percent). The proportion of anemic children in other backward castes (65 percent) is also high compared with lowest prevalence among the other castes (59 percent). It is also evident that the largest share of children with diarrhea taken to health provider belong to other castes (71 percent) compared with other backward castes (58 percent).

Among religious groups, Muslims have significantly higher TFR (2.71 per women) with compared to Hindus (1.95 per women) and others religions (1.76 per women). The results shows that the infant mortality is highest among Hindu (50 per 1000 live births) followed by Muslims (47 per 1000 live births) and other religions (42 per 1000 live births). The proportion of women delivered birth in health facility is significantly high other religions (81 percent) compared Hindus (69 percent) and Muslims (58 percent). Similar pattern of evident is apparent in the case of child immunization. The prevalence of anemia is high among Hindu women, however, the prevalence of anemia among the children is high in Muslims (67 percent) followed by Hindus (62 percent) and other religions (58 percent). The proportion of children with diarrhea taken to

health provider is considerably higher among the other religions (72 percent) in comparison to Hindus (65 percent) and Muslims (61 percent).

Wealth quintile, a measure of income remains major determinant factor of demographic and health status despite urbanization. By wealth quintile, table shows that the TFR is extremely high among the poorest wealth quintile (4.28 per women) in contrast to the richest wealth quintile (1.68 per women). Infant mortality rate is highest among poorest wealth quintile (90 per 1000 live births) in contrast to richest wealth quintile (35 per 1000 live births). The proportion of women with three antenatal care check up and delivered birth in health facility are high among richest wealth quintile (52 percent and 87 percent) compared women belong to poorest wealth quintile (2 percent and 26 percent). The same pattern is apparent case of child immunization and prevalence of anemia among children. In case of percentage of children with diarrhea taken to health provider, the results are same as all the other indicators are showing as the wealth index is increasing, the percentage is decreasing.

It is worth to know "whether highly urbanized states of India are experiencing same social-economic inequality?" Prevailing assumption is that the urbanization in India is not made any noticeable changes to remove socio-economic inequalities. To test this assumption the trend analysis has been carried out for the TFR of diverse socio-economic groups. **Table 4** shows the trends of TFR from NFHS-1 (1992-93) to NFHS-3 (2005-06) by selected socio-economic groups for the two largely urbanized states of India. In case of Tamil Nadu, even the table evident for 11 percent increase in urbanization from NFHS-2 (1992-93) to NFHS-3 (2005-06) is not showed much impact on decline in TFR for schedule castes. Likewise among Muslim, the TFR has in fact increased from 1992-93 to 1998-99 and not shown any considerable decline during 1998 to 2006. The same pattern can be seen among the poor economic groups. Apart from the OBCs population of Tamil Nadu, on an average in both states the ratio of TFR in different socio groups to total TFR evident for insignificant decline for depressed socio-economic groups compare others. However, this gap is less in Tamil Nadu than Maharashtra.

Infant mortality is considered as an important health indicator of a state (MGD 2008). The **table 5** shows the trends of Infant Mortality Rate among different economic groups. It is apparent from the table that though there is an evidence of declining IMR from 1992 to 2006. But, the level of difference between poor and non-poor remains same. While this difference is

less in case of Tamil Nadu and more in Maharashtra and India as a whole. This indicates that not only the level of urbanization but, the quality of urbanization and socio-economic policy which really determines the progress in demographic and health indicators. Tamil Nadu has become the highly progressive state in India mainly due to its socio-economic and health policy (Das Gupta et al. 2009) and some extent it is also ensures quality urbanization too. May be for Maharashtra and Tamil Nadu to be in the same level of urbanization but interestingly the quality of urbanization and health policy are makes Tamil Nadu ahead of Maharashtra in demographic and health indicators.

Table 6 presents results of multivariate analysis which demonstrate net effect of social disparities in demographic and health indicators controlling related socio-economic and other background factors. The odds of utilization of services like antenatal care, safe delivery, immunization and contraception are significantly varying by social groups and are statistically significant too. The odds ratio of utilization of antenatal care services among women of SCs (OR=0.782, $p<0.05$), STs (OR=0.915, $p<0.05$) and OBCs (OR=0.870, $p<0.05$) are significantly low compared with other castes. Similarly the women belong to Muslim and poor wealth quintiles also are highly disadvantaged in health and demographic indicators.

The likelihood of having an institutional delivery among SCs (OR=0.709, $p<0.01$) and STs (OR=0.643, $p<0.05$) is less in compared with the other castes. The likelihood of having an institutional delivery among Hindus (OR=0.754, $p<0.05$) and Muslims (OR=0.651, $p<0.05$) is very less compared to other religion. Wealth is a predominantly significant in predicting likelihood of having an institutional delivery. The odds of using institutional delivery among women belong to poorer (OR=0.272, $p<0.01$) and poorest (OR=0.288, $p<0.01$) wealth quintiles are low compared with women of richest wealth quintile.

The results also indicates that the odds of utilization of immunization services for children belongs to SCs (OR=0.908, $p<0.1$), STs (OR=0.789, $p<0.05$) and OBCs (OR=0.895, $p<0.05$) is less compared to other caste. The likelihood of having full immunization among the children belong to the Hindu (OR=0.773, $p<0.05$) and Muslim (OR=0.684, $p<0.01$) religions is less with compared to other religions. Among the different wealth quintiles, the likelihood of having full immunization among children belong to poorest (OR=0.448, $p<0.01$) and poor (OR=0.454, $p<0.01$) quintiles are lower than the richest wealth quintiles.

Caste, religion and wealth are found to be significant predictors of disparities in contraception use. The likelihood of using any modern contraception is less in SCs (OR=0.848, p<0.01), STs (OR=0.868, p<0.01) and OBCs (OR=0.694, p<0.01) compared to general caste. The odds of using contraception are less among Muslim (OR=0.310, p<0.01) with references to other religions. The likelihood of using contraception among women belongs to richest wealth quintiles is higher with reference to poorest wealth quintile.

Table 7 Presents the concentration index (CI) values of some of the vital demographic and health indicators (TFR, IMR and Institutional delivery). The results indicate that all the three predictors (SC/ST caste, Muslim religion and Poor economic status) showing negative concentration index all three indicators selected and values vary between -0.21 to -0.57. This implies that there is huge disparity among different socio economic groups within urban areas. The concentration index values for TFR varies between -0.2144 to -0.6743. While this value is highly negative among the wealth index and low among the caste, this implies that wealth is playing vital role in determining the TFR. However, all the three predictors showing impact on disparity. In case of IMR the CI values are varies between -0.1192 to -0.7316 which is highly negative among poor economic group and Muslim religion. Thus, again the wealth of the individual plays important role in determining the infant mortality. The results of CI show that though all the three predicators effecting disparities, while wealth effecting greater than religion and caste.

Table 8 shows the proportionate contribution of explanatory variables for demographic and health inequality. Results from this table evident that all the predictors considered for decomposition are together explaining 65 percent of the total inequality in Infant Mortality Rate (IMR). In spite being urban the contribution of poor economic status for inequality in child mortality is as high 55 percent. Other variables like Muslim religion and SC/ST caste also considerably explaining the IMR. This measure identifies the most disadvantage population are poor economic group, SC/ST caste and Muslim religion of urban India.

V. Discussion and conclusion

This study presents an assessment of various dimensions of health inequalities within urban Indian, many of the previous studies on health inequity have been unidirectional focusing largely on rural-urban differentials. This study therefore fills a critical gap by attempting a

review of total health and demographic inequalities that exists at both social and economic level within the urban India. The present study does an attempt to examine "whether the process of urbanization in India has made any noticeable impact on socio-economic inequalities and their corresponding effect on demographic and health outcomes".

Results illustrates that the urbanization process is not fruitful as anticipated in reducing social disparities. Results reveals that caste, religion and wealth are significantly influencing the outcome of demographic and health indicators. A significant large proportion of SCs, STs, Muslims and poor wealth quintile are observed with no education, more persons sharing single room, without improved drinking water and sanitation facilities. As for as demographic indicators are concerned, compare to others, SCs, STs, Muslim and poor wealth quintiles population has higher infant mortality and fertility. Within urban, compare with high socio-economic groups the depressed socio-economic groups are at the back in terms maternal, child and other public health indicators.

The results of this analysis also suggest that change in residence from rural to urban may not give certainty in reducing the disparities. Unless quality of urbanization has been ensured with effective socio-economic and health policy bringing change in socio-economic status, demographic behavior, access to household amenities and health care facilities to all the people is not possible. A long way is still ahead to reach equity in terms of health and wellbeing of urban people of different social groups in India. A serious effort is requisite to remove socio-economic and health disparities and to build healthy and sustainable cities in India.

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Table 1: Sample distribution of different socio-economic[1] groups in urban India, NFHS-3 (2005-06)

Major groups	Sub groups	Number of Households	Percent	Number of Women[1]	Percent	Number of Children[2]	Percent
Caste	Scheduled caste	18248	16.74	23331	18.76	11739	20.80
	Scheduled tribe	14708	13.49	10051	8.08	5389	9.55
	Other backward class	34425	31.58	49277	39.62	22962	40.69
	None of above	36917	33.87	37917	30.48	14559	25.80
Religion	Hindu	79974	73.37	100151	80.52	44152	78.23
	Muslim	13354	12.25	16936	13.62	9641	17.08
	others	15667	14.37	7175	5.77	2645	4.69
Wealth index	Poorest	14638	13.43	21718	17.46	14377	25.47
	Poorer	16566	15.20	23616	18.99	12654	22.42
	Middle	20947	19.22	25088	20.17	11181	19.81
	Richer	25486	23.38	26106	20.99	10154	17.99
	Richest	31359	28.77	27856	22.40	8072	14.30

Note: 1 women aged 15-49
2 children aged 0-4

Note: 1 Economic status is based on mean of household economic status (wealth index), which is based on 33 assets and housing characteristics. Each household assets is assigned a weight (factor score) generated through principle component analysis, and the resulting assets scores are standardized in relation to normal distribution with mean of zero and standard deviation of one. The sample is divided into quintiles.

Table 2: Socio-economic conditions of different social groups in urban India, NFHS-3 (2005-06)

States	Percentage of people with no education		Percentage of women aged 15-49 have mass media exposure		Percentage of people are in poor wealth quintile		Percentage of households with three or more person per room		Households With improved source of Drinking Water Facility[2] (In %)		Pucca Houses (In %)		Improved With Sanitation Toilet Facility[3] (In %)	
	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total
Cates														
SC	32.3	46.4	76.3	66.1	16.9	52.4	49.4	47.6	69.1	40.1	70.6	35.0	66.6	27.6
ST	24.9	52.2	60.3	47.4	23.0	63.2	39.8	38.6	72.6	23.8	63.6	16.8	60.6	13.1
OBC	29.1	42.1	76.3	65.2	11.4	40.2	42.4	43.3	68.9	42.0	78.5	43.4	73.3	34.4
Others	20.7	29.9	86.8	75.4	3.6	21.8	34.0	33.0	74.3	49.5	89.5	61.1	89.5	59.8
Religion														
Hindu	24.1	39.6	78.9	67.3	9.4	41.4	37.9	39.1	71.8	42.5	81.9	43.7	78.3	36.9
Muslim	37.0	47.5	72.7	58.9	11.0	38.6	54.6	51.0	65.2	34.7	76.2	44.9	78.0	45.6
Others	18.8	31.2	85.6	74.2	4.3	23.9	30.1	35.6	75.4	51.5	87.3	57.5	85.4	56.2
Wealth Quintile														
Poorest	63.9	60.2	45.4	38.3	-	-	54.1	54.1	49.8	14.8	0.0	.1	5.5	1.4
Poorer	51.8	50.5	65.2	56.2	-	-	55.3	49.4	51.6	26.8	14.2	8.1	22.4	7.8
Middle	41.5	41.1	78.8	71.9	-	-	52.6	44.2	63.6	43.5	57.6	40.9	49.6	25.5
Richer	29.6	29.6	90.9	87.2	-	-	48.1	39.6	70.6	55.4	87.0	76.9	83.7	67.0
Richest	16.7	17.3	98.5	97.1	-	-	39.8	23.8	77.8	70.5	98.4	96.9	97.5	95.2

Note: 1 Economic group are divided based on NFHS-3 wealth index, which is based on 33 assets and housing characteristics, each household assets is assigned a weight (factor score) generated through principle component analysis, and the resulting assets scores are standardized in relation to normal distribution with mean of zero and standard deviation of one. The sample is divided into quintiles.

2 improved source of drinking water includes piped water into dwelling/ yeard/ plot, public tap/standpipe, tube well or borehole, protected dug well, protected spring, rain water, bottled water, improved source for cooking, hand washing

3 improved , not shared sanitation facility includes Flush/pour flush to piped sewer system, Flush/pour to septic tank, Flush/pour flush to pit latrine, ventilated improved Pit latrine/biogas latrine, pit latrine with slab, twin pit, composting toilet

Table 3: Disparities in demographic and health conditions by different social groups in urban India, NFHS-3 (2005-06)

States	Total Fertility Rate (TFR)[1]		Infant Mortality Rate[2]		Percentage who had at least three antenatal care visits[3]		Percentage of births delivered in any health facility[4]		Children (aged 12-23 months) fully immunized[5]		Current use of contraception (Any modern method)		Prevalence of anemia in women age 15-49 (Any anemia (<12.0 g/dl))		Prevalence of Anemia status by hemoglobin level in 6-59 months children (Any anemia (<11.0 g/dl))		Percentage of children with diarrhea taken to a health Provider[6] (Excludes pharmacy shop, and traditional practitioner)	
	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total
Cates																		
SC	2.18	2.92	59.0	50.7	16.4	18.1	57.0	33.0	52.4	39.2	63.4	55.0	56.2	58.3	67.1	72.2	67.1	60.7
ST	2.53	3.12	49.0	43.8	3.2	7.4	55.1	18.0	52.7	32.1	59.6	47.9	57.5	68.5	68.2	76.8	68.2	54.3
OBC	2.11	2.75	51.0	42.2	37.2	40.0	65.0	38.0	54.0	40.1	61.5	54.2	51.8	54.4	65.3	70.3	58.0	57.5
Others	1.93	2.35	41.0	36.1	42.8	34.0	76.1	53.0	63.5	55.0	66.7	61.8	48.9	51.1	58.5	63.8	70.5	64.9
Religion																		
Hindu	1.95	2.65	50.3	44.3	75.4	77.0	69.1	39.0	60.4	44.5	65.6	57.8	52.1	55.9	62.3	69.7	64.7	59.3
Muslim	2.71	3.09	47.0	35.6	17.7	19.5	58.4	33.0	45.8	36.4	54.9	45.7	51.1	54.7	67.3	69.7	61.8	61.8
Others	1.76	2.18	42.0	35.1	6.9	3.5	81.0	52.0	69.4	54.0	67.0	61.0	44.8	49.0	58.1	64.8	71.8	60.2
Wealth Quintile																		
Poorest	4.28	3.89	90.0	64.8	2.1	12.4	26.0	13.0	27.2	24.4	43.1	42.2	70.4	64.3	79.2	76.4	43.6	50.5
Poorer	2.83	3.17	71.0	62.2	4.4	15.6	36.0	23.3	33.5	33.2	53.2	51.1	61.2	60.3	73.0	73.6	58.4	56.7
Middle	2.53	2.58	59.0	49.8	12.8	20.5	51.0	39.0	44.0	47.0	58.0	56.8	57.7	56.0	69.1	69.3	54.4	60.3
Richer	2.15	2.24	50.0	46.2	29.0	24.3	66.0	58.0	55.6	55.3	63.3	62.5	53.7	52.2	64.3	64.8	64.8	65.0
Richest	1.68	1.78	34.7	27.4	51.7	27.1	87.0	84.0	71.7	71.0	68.3	67.5	45.9	46.1	55.7	56.2	72.8	73.6

Note: 1 TFR is a summary measure based on the ASFRs (age specific fertility rates) that indicates the number of children a woman would bear during her reproductive years if she were to experience the ASFRs Prevailing at the time of the survey. Mathematically, the TFR is the five times the sum of all the ASFRs for the five year age group.

2. IMR Infant mortality rate based on children aged 0-4 years preceding survey.

3. Based on the last birth to ever-married women in the three years preceding the survey

4. Based on the most recent birth to ever-married women in the three years preceding the survey

5. Full immunization includes children who received BCG, measles, and three doses each of DPT and polio (excluding polio 0).

6. Excludes pharmacy shop, and traditional practitioner

Table: 4 Trends of level of urbanization and Total Fertility Rates in selected states, Urban India; 1992-2006

Name of the States			Social groups	Sub Category	NFHS-1 (1992-93) TFR	NFHS-2 (1998-99) TFR	NFHS-3 (2005-06) TFR	NFHS-1 (1992-93) Ratio®	NFHS-2 (1998-99) Ratio®	NFHS-3 (2005-06) Ratio®
Tamil Nadu			Caste	SC	2.57	2.23	1.83	1.04	1.02	1.02
				ST	2.5	**	**	1.01	**	**
				OBC	#	2.32	1.65	**	1.06	0.92
Level Of Urbanization				Others	2.57	1.79	1.95	1.04	0.82	1.08
1991	2001	2006	Religion	Hindu	2.47	2.16	1.64	1.00	0.99	0.91
34.2 in %	43.8 in %	49.6 in %		Muslim	2.42	2.81	2.08	0.98	1.28	1.16
				Others	3.4	3.11	1.7	1.37	1.42	0.94
			Wealth	Poor	2.71	2.63	1.94	1.09	1.20	1.08
				Middle	2.64	2.34	1.36	1.06	1.07	0.76
				Rich	2.23	2.33	1.36	0.90	1.06	0.76
			Total		2.48	2.19	1.8			
Maharashtra			Caste	SC	2.96	2.66	1.91	1.03	1.06	0.91
				ST	2.51	2.25	2.16	0.88	0.89	1.02
				OBC	#	2.21	1.82	**	0.88	0.86
Level Of Urbanization				Others	2.93	2.75	1.94	1.02	1.09	0.92
1991	2001	2006	Religion	Hindu	2.6	2.28	1.72	0.91	0.90	0.82
38.7 in %	42.4 in %	44.5 in %		Muslim	4.02	3.42	2.73	1.41	1.36	1.29
				Others	2.77	2.76	1.76	0.97	1.10	0.83
			Wealth	Poor	3.37	2.79	2.23	1.18	1.11	1.06
				Middle	2.74	2.63	1.91	0.96	1.04	0.91
				Rich	2.59	2.36	1.63	0.91	0.94	0.77
			Total		2.86	2.52	2.11			

Note: 1. ®Ratio = Ratio between the TFR of particular socio-group by average TFR of the their corresponding state

2. ** = sample is not sufficient enough to compute the TFR

3. # = the data is not collected

4. Economic group are divided based on NFHS-3 wealth index, see table 2 for definition. In table 1 and 2 we divided into 5 quintals, however here only two quintals. 1, Poor is comprised both poorest and Poorer; 2. Middle is comprised of Middle, 3. Rich is comprised of Richer and Richest

Table 5. Trends of Infant Mortality Rate (IMR) by economic groups in selected states/ India, Urban; 1992-2006.

Selected States/India	Economic Group	Infant Mortality Rate 1992-93	1998-99	2005-06
Maharashtra	Poor	74	48	51
	Non-poor	37	32	33
	Total	52	35	35
Tamil Nadu	Poor	61	50	42
	Non-poor	53	35	37
	Total	56	41	37
India	Poor	82	79	64
	Non-poor	46	41	43
	Total	61	54	50

Note: 1. Economic group are divided based on NFHS-3 wealth index, see table 2 for definition. In table 1 and 2 we divided into 5 quintals, however here only two quintals. 1, Poor is comprised both poorest and Poorer; 2. Non Poor which comprised of Middle, Richer and Richest

Table 6: Results of Logistic Regression (Odds Ratios) For ANC, Safe Delivery, Immunization and Contraception Use in Urban India, NFHS-3 (2005-06)

	ANC[1]	Safe delivery[2]	Immunization[3]	Contraceptive use[4]
Social Groups	Exp(β)	Exp(β)	Exp(β)	Exp(β)
Caste				
General/others®				
ST	0.915	0.643**	0.789**	0.868***
SC	0.782**	0.709***	0.908*	0.848***
OBC	0.870**	0.959*	0.895**	0.694***
Religion				
Others®				
Muslim	0.504***	0.651**	0.684***	1.310***
Hindu	0.650**	0.754**	0.773**	1.015
Wealth Index				
Poorest®				
Poor	1.340***	1.492***	1.205***	1.393***
Middle	2.166***	1.642***	1.642***	1.811***
Richer	3.099***	1.825***	1.825***	2.444***
Richest	6.308***	2.383***	2.383***	3.079***

Level of significance: * p < 0.1 ** p < 0.05 *** p < 0.01.

Note 1: variables like women's education, women's work status, exposure to mass media, and mother's age at birth of child are used as common control variables in all the four models (1-4)

Variables birth order, sex of the child, number of ANC visits are used as control variable in model 2 (safe delivery)

Variables like birth order, and sex of the child as additional control variables in model 3 (immunization)

Variables like child loss and number of living sons are used as control variable s for model 4 (contraception use)

Table 7: The concentration index of social disparity in demographic and health indicators, Urban India; NFHS-3 (2005-06)

Social group	CI_SC/ST Caste	CI_Muslim Religion	CI_poor Wealth Index
TFR	-0.2144	-0.2959	-0.6743
IMR	-0.2800	-0.1192	-0.7316
Institutional delivery	-0.2654	-0.2167	-0.5723

Note: Methodology of computation is given in Appendix 1

Table 8. Effect and contribution of predictor variables based on decomposition analysis for Infant Mortality Rate at the national level Urban India; NFHS-3 (2005-06)

Indicators	Mean	Marginal Effect	CI	Contribution To CI	Contribution To CI %
Poor Economic Status	0.4633	0.0211	--0.7318	-0.0531	55.2
Belong to Muslims	0.3195	0.0146	--0.1192	-0.0213	4.0
Belong to SC/ST	0.2775	0.0058	-0.2800	-0.0048	6.5
Infant Mortality	0.0892		-0.1616	-0.0917	64.7
			Residual	-0.0699	

Note: Estimation Is Based On Method Proposed By Wagstaff Et Al

Appendix

1. Concentration index and decomposition of concentration index of infant mortality in national level urban (Methodology of Computation)

The value of the concentration index can vary between –1 and +1. Its negative values imply that a variable is concentrated among disadvantaged people while the opposite is true for its positive values. When there is no inequality, the concentration index will be zero.

$$C = \frac{2}{\mu}\mathrm{cov}_w\,(y_i,\ R_i)\,, \tag{1}$$

In above equation y_i and R_i are, respectively, the health status of the ith individual and the fractional rank of the ith individual (for weighted data) in terms of *the index of household economic status*; μ is the (weighted) mean of the health of the sample and cov_w denotes the weighted covariance.

The method proposed by Wagstaff *et al* was used to decompose socioeconomic inequality in infant mortality into its determinants. Wagstaff *et al*. showed that for any linear regression model linking the health variable of interest, y, to a set of k health determinants, x_k: Where ε is an error term? Given the relationship between y_i and x_{ki} in Equation (2), the concentration index for y (C) and μ is the mean of y, $\bar{x}_k$ is the mean of x_k, C_k is the concentration index for x_k (defined analogously to C).

$$y_i = \alpha + \sum_k \beta_k x_{k_i} + \varepsilon_i, \tag{2}$$

$$C = \sum_k \left(\frac{\beta_k \bar{x}_k}{\mu} \right) C_k + \frac{GC_\varepsilon}{\mu} = C_{\hat{y}} + \frac{GC_\varepsilon}{\mu}, \quad (3)$$

$$\text{Ln odds}_{\text{infant death}} = \alpha_i + \sum \beta_i x_i + \varepsilon_i \quad (4)$$

$$C_{\hat{y}} = \sum_k \left(\frac{\beta_k \bar{x}_k}{\mu} \right) C_k \quad (5)$$

In the last term (which can be computed as a residual), GC_ε is the generalized concentration index for ε_i. Since the logit model is intrinsically non-linear in the probability of death, but linear in the propensity to infant death (latent variable), i.e. the natural logarithm of the odds of infant death (rather than actual infant deaths), only the latter is appropriate to use for the linear. Moreover, since the inequality in *predicted* infant death will be described given the observed values of the *X* variable, attention is focused on the first term in the Decomposition equation, i.e. predicted inequality as measured by $C\hat{y}$.