



Standard of Living Index (SLI) and Inequalities in the Rural Areas of Uttar Pradesh

Alok Kumar Pandey¹ and Annapurna Dixit²

Societies are stratified on the basis of income, caste, religion, social status or place of residence. Socio economic development, of the entire population depends on a large number of factors such as size and distribution of population. The economic status of any society is determined by the amount of wealth and sources of income, social position and the mode of living. This economic measure to great extent, determines the standard of living of any group or society. The mode of living in any country depends primarily on the fundamental factors of food, shelter and clothing and an individual's power to attain them. Even in the same country the standard of living may vary from region to region and from one group to another due to occupational variation, social satisfaction and environmental life. Several efforts especially by the developing nations are being made to improve the standard of living, health, education etc. through various plans. Average growth rate of GDP which remained 3.5 per cent during 1950s, 1960s and 1970s increased to 5.4 per cent in the 1980s and 5.9 per cent in the 1990s. As a result, the GDP per person in India doubled from US \$ 260 in 1980 to US \$ 538 in 2003. However, growth has not been evenly distributed among India's various sectors, and the composition of GDP has changed. Agriculture used to be the leading sector, but its GDP share dropped from 57 per cent in 1950 to 22 per cent in 2002 and is estimated to 18.6 percent during 2006-2007 (Economic Survey 2006).

More than 65 per cent of India's population is rural, and 58 per cent of the rural labour force works in agriculture. These people are mainly marginal farmers or small

¹ Senior Lecturer, Invertis Institute of Management Studies, Bareilly

² Lecturer, Agrasen P. G. College, Varanasi

farmers that accounts for less than one third of the country's total farming area. In India the diversities in economic and social development have different capacities of poverty reduction for a variety of reasons (Drez and Sen, 1997)

Alter Kolm (1969), Atkinson (1975), Sen (1974) and others have given the foundations of the modern approach to inequality measurement, the Lorenz curve has been widely accepted as the primary measure of relative inequality. Along with associated summary index of inequality, the most notably the Gini coefficient, the Lorenz curve has become a staple of applied research.

The socio economic condition of the people in any region depends on a large number of inter-related factors, which are qualitative as well as quantitative in nature. Household is developed by defining a household as a group of persons who usually live together and take food from the same kitchen. The data collected in the survey "Concurrent Assessment of Health and Family Welfare Programmes and Technical Support to Districts of Uttar Pradesh", apart from other information, includes extensive data at household level like housing condition, household facilities, possession of various durable household goods for the three districts Lakhimpur, Barabanki and Baharaich. These information are capable of providing better idea of the socio-economic status of a household. Considering various items, the NFHS has defined a measure called Standard of Living Index (SLI) for a household. Data on certain other basic characteristics of households such as religion and caste have also been obtained. It is a well known fact that a number of caste exist in India which have their own traditions, values and mode of living. Because of the rigidity in caste system, a person born in a caste normally remains in the same caste till his/her death. Further, these castes occupy normally a rigid position in the social ladder. Consequently there is a tendency to group various castes into broader caste groups such as Scheduled Castes and Scheduled Tribes (SC/ST), Other Backward Castes (OBC) and remaining castes as 'Other Castes'. The SLI itself has been classified as Low, Medium and High (A description of the computation of SLI is given in the next section).

Broadly the SLI of a household has been classified by adding scores assigned to various items and the total score representing the SLI of the household. Though the total score of SLI has been tabulated with the help of raw data, the exact score for SLI of a household can be computed.

In this study the standard of living index of a household has been classified by adding scores assigned to various items and the total score representing the SLI of the household. The Lorenz curve can be obtained if we have the value of SLI for each household of the population.

Data and Methodology

The present study is based on the data taken from a survey entitled “Concurrent Assessment of Health and Family Welfare Programmes and Technical Support to Districts of Uttar Pradesh: 2005-06” conducted by the Population Research Centre, Lucknow University; Upgraded Department of Community Medicine, KGMU, Lucknow and Director General, Family Welfare Directorate of UP sponsored under sector Investment Programme, Government of India in partnership with European Commission. Information on various items relating to household structure, household facilities, economic and social characteristics of the households selected from three districts of Uttar Pradesh (Lakhimpur, Barabanki and Baharaich) following a WHO thirty-cluster methodology. In the present study, total 3669 households of the rural areas have been considered. Sampling unit (cluster) for the rural area was a revenue village. Selection of clusters was made following a systematic sampling scheme with population proportional to size¹. The data collection was done on pre-designed questionnaires. The researcher was engaged in the survey work as a district project coordinator.

The SLI of a household has been computed by giving weights to different items and adding these weights. The weights for different items are presented in table. The total score ranges from 0 to 67. Accordingly, scores from 0 to 14 have been considered as Low, scores from 15 to 24 have been considered as Medium and scores from 25 to 67 have been considered as High.

Inequalities in terms of standard of living index have been examined with the help of Lorenz curve and Gini-coefficient. In the Lorenz Curve technique, usually the households (units) are arranged according to the value of the characteristics (SLI). Then, the values (SLI) of the units (households) and the frequencies both are cumulated and taking the total as 1.0 for both the cases, the values x_i and y_i are computed which are the cumulated proportions of frequencies and SLI up to i^{th} unit (household), ($i=1,2,3,\dots,n$), n being the total number of households. These proportions (x_i and y_i) are plotted on a graph paper. If there is proportionately equal distribution of the frequencies over various values of the variant (SLI), the points

would lie in a straight line. This line is called the line of 'equal distribution'. If the distribution items are not proportionally equal, it indicates variability, and the curve would be away from the line of equal distribution. The farther the curve is from equal distribution, the greater is the inequality in the series. A higher Lorenz Curve implies more social welfare for the same total of SLI. The Gini-coefficient (or the Lorenz ratio as it is frequently called) measures the distance between the line of equal distribution and the Lorenz Curve, which is computed as twice the area of the Lorenz Curve.

Gini-coefficient is used to attach some absolute measures to the degree of inequality or to give some idea whether the inequality is large or small. The Gini-coefficient ranges from 0 to 1, where 0 represents perfect equality and 1 total inequality. It corresponds to twice the area between the Lorenz curve and diagonal. There are different methods to calculate the Gini-coefficient but a simple formula can be as follows. We know that

$$\text{Gini-Coefficient} = \frac{\text{Area between Lorenz curve and the diagonal}}{\text{Total area under the diagonal}}$$

Obviously the total area under diagonal is 0.5. Also area under the Lorenz curve can be computed as:

Area of Lorenz Curve [A] = 0.5 - Area below diagonal excluding area of Lorenz Curve Then Gini-coefficient

$$G(Y) = \frac{0.5 - \frac{1}{n} \left[y_1 + y_2 + \dots + y_{n-1} + \frac{y_n}{2} \right]}{0.5} = \frac{0.5 - [A]}{0.5}$$

Where;

G(Y) = Gini-coefficient

n = Number of units

(y_i) = Proportion of cumulated SLI upto ith unit

Results and Discussion

General Characteristics of Selected Households

In most of the studies, the main variables of interest are very much affected by the background characteristics. Consequently there is a customary to give a brief

description of the general characteristics of the study subjects. In this section an attempt has been made to present a brief description of the general characteristics of the selected head of the households. Table 2 represents the percent distribution of households head by selected background characteristics. The head of the households (93.59 %) is a male member and their median age comes out to be 41 years. The percentage of male head of household was the highest in Lakhimpur (95.29 %) but the lowest in Barabanki (91.47 %). About 78.39 percent of the households surveyed belong to Hindu religion and 20.44 percent have faith in Muslim religion. About 20.63 percent households belong to general category, 53.39 percent to other backward classes, 25.29 percent to schedule caste and 0.68 percent to schedule tribes. More than half of the household heads are illiterate (53.83 %) and among them only 0.57 percent are educated up to postgraduate level.

Disparity in terms of Standard of Living Index

The standard of living index (SLI) can be considered as an overall measure of social and economic development of a household. It is dependent not only on possession of various durable goods but includes some other variables also such as housing conditions, drinking water facilities, land holdings etc. and as such is likely to be more influenced by long term socio-economic development of the household. As mentioned earlier, NFHS has provided weights for various items to compute SLI of a household and the SLI has been computed using these weights for each household selected in the sample.

After computation of total score for each household, the households have been classified in three groups viz. Low, Medium and High with scores 0-14, 15-24 and 25 and above respectively. However, for better presentation of the Lorenz curve, individual SLI score for each household is needed which we have used in drawing the Lorenz curve. Along with the curves, the Gini-coefficients have also been obtained. To have an idea of average development, the average SLI has also been determined.

Table 3 presents the average SLI and values of Gini coefficient for the selected households. Table reveals that there are variations in terms of inequality in SLI among households. Baharaich shows the minimum while Lakhimpur occupies the status of most unequal districts with Gini coefficient 0.2337 and 0.2812 respectively. A Gini coefficient of all the households in the rural areas of three districts was recorded 0.2546. This table also reveal that average SLI of selected households. From the table we find that as average development increases disparity in rural areas is also increases.

Graph 1 represents the Lorenz curve for the selected household in rural areas. Similarly, Lorenz curve for selected households in rural Lakhimpur, rural Barabanki and rural Baharaich are presented in Graph 2, Graph 3 and Graph 4 respectively.

Now we examine the pattern of disparity in the populations classified according to religion, caste gender of the head of household and education of the head of household in rural areas. These are examined by computing the value average SLI and distribution of SLI. The results are presented in table 4, table 5, table 6 and table 7.

By and large, when we examine Average Standard of living index we observe more inequality in rural areas. When we investigate the values according to religion, we find, as a rule, Hindus show less disparity than Muslims. Here also the gaps are not uniform; some where more than the others. For the district Barabanki, we have considered Christian religion also which shows higher disparity than Hindu and Muslims in term of average SLI. As for as the gap is concerned, Baharaich shows larger gap between Hindu and Muslims.

As for as castes are concerned, Scheduled Castes and Scheduled Tribes (SC/ST) show more inequality than OBC's and Other Castes. Between OBC's and 'Others', more frequently OBC's show more inequality than 'Others'.

When we examine the values of average SLI, the results are on expected line. 'Other Castes' have highest average while SC/ST have the lowest average in all the states. Averages in urban areas are larger than in rural areas. Results are not that much straight when we examine the figures according to religion. Muslims of eight states viz. Maharastra, Keralala, Rajsthan, Tamilnadu, Gujrat, Madhya Pradesh, Andhra Pradesh and Orissa show more development (in terms of average SLI) than Hindus of these states while the reverse is true for the remaining five states. The details are exhibited in the tables.

Thus, after all, we observe striking differentials in inequality as well as development levels among rural areas of states. This is so even after lapse of more than half a century since independence. Thus the state government has to take steps to from policies aiming reducing inequality in the rural societies for a brighter future of the large state. Then and only then we will have a shining Uttar Pradesh approaching towards a golden bird.

Note

1. For selecting rural clusters in a district all revenue villages are listed with their total population according to the census 2001. The villages have been arranged in the same order as they appear in the census. The cumulative population against each village has been computed. The sampling interval is obtained by dividing the total population by 30. A random number less or equal to sampling interval is selected. The village corresponding to cumulative population equalled or exceeded the random number is selected as the first cluster. The sampling interval is added to random number and a new number is obtained. Subsequent village corresponding to cumulative population equalled or exceeded to new number is selected as second cluster. Similarly the third, fourth and subsequent clusters are selected by adding the sampling interval to the obtained numbers.

Table 1: Weights on different Facility and Items in the Household for SLI.

Name of the Facility	Classification	Score	Maximum Score
House Type	Pucca house	4	4
	Semi- pucca house	2	
	Kachha house	0	
Toilet facility	Own flush toilet	4	4
	Public or shared flush toilet or own pit toilet	2	
	Shared or public pit toilet	1	
	No facility;	0	
Main source of Light	Electricity/ Solar System	3	3
	Kerosene/Gas /Oil	1	
	Others	0	
Main fuel for cooking	Electricity, liquid petroleum gas, or biogas	2	2
	Coal, charcoal or kerosene	1	
	Other fuel;	0	
Source of drinking water	Pipe, hand pump or well in residence/yard/plot	2	2
	Public tap, hand pump or well	1	

	Other water source	0	
Separate room for cooking	Yes	1	1
	No	0	
Ownership of house	Yes	1	1
	No	0	
Ownership of agricultural land	For 5 acres or more	4	4
	For 2.0 - 4.9 acres	3	
	For less than 2 acres or acreage not known	2	
	For no agricultural land	0	
Ownership of irrigated land	Owens at least some irrigated land	2	2
	For no irrigated land	0	
Ownership of livestock	Owens livestock	2	2
	Does not own livestock	0	

Table 1: continued.....

Name of the Facility	Classification	Score	Maximum Score
Ownership of durable goods	Car	4	4
	Tractor	4	4
	Moped /Scooter/Motorcycle	3	3
	Telephon	3	3
	Refrigerator	3	3
	Color television	3	3
	Bicycle	2	2
	Electric fan	2	2
	Radio/ Transistor	2	2
	Sewing Machine	2	2
	B/W television	2	2
	Water pump	2	2

	Bullock cart	2	2
	Thresher	2	2
	Mattress	1	1
	Pressure Cooker	1	1
	Chair	1	1
	Cot /bed	1	1
	Table	1	1
	Clock/ Watch	1	1
Total		67	

Source: National Family Health Survey-2 (1998)

Table 2: General Characteristics of the rural head of the household in Uttar Pradesh, Lakhimpur, Barabanki and Baharaich.

Characteristics	Total		Lakhimpur		Barabanki		Baharaich	
	Perc ent	Nu mber	Pe rcent	N umber	Pe rcent	N umber	Pe rcent	Nu mber
Religion								
Hindu	78.39	2876	82.35	961	79.54	1007	73.46	908
Muslim	20.44	750	14.05	164	20.38	258	26.54	328
Sikha	1.09	40	3.43	40	-	-	-	-
Christian	0.03	1	-	-	0.08	1	-	-
Others	0.05	2	0.17	2	-	-	-	-
Caste								
General	20.63	757	22.37	261	19.75	250	19.90	246
SC	25.29	928	31.79	371	23.78	301	20.71	256
ST	0.68	25	1.63	19	0.39	5	0.08	1
OBC	53.39	1959	44.22	516	56.08	710	59.30	733
Gender								
Male	93.59	3434	95.29	1112	91.47	1158	94.17	1164
Female	6.41	235	4.71	55	8.53	108	5.83	72

Education								
Illiterate	53.83	1975	50.13	585	52.13	660	56.06	730
Literate	4.52	166	6.00	70	2.92	37	4.77	59
Primary	13.90	519	15.08	176	14.06	178	12.62	156
Middle	13.60	499	16.71	195	14.38	182	9.87	122
High School	6.98	256	6.60	77	7.74	98	6.55	81
Intermediate	4.36	160	3.43	40	5.69	72	3.88	48
Graduate	2.23	82	1.46	17	2.76	35	2.43	30
Postgraduate	0.57	21	0.60	7	0.32	4	0.81	10
Total Households		3669		1167		1266		1236
Mean household size	5.98		6.06		6.07		5.82	
Median age of HH	41		40		44		41	

Source: Field Survey

Table 3: Gini coefficient and Average SLI of the selected household.

Districts	Number of households	Average SLI	Gini-Coefficient
Lakhimpur	1167	17.74	0.2812
Barabanki	1266	17.66	0.2433
Baharaich	1236	15.90	0.2337
Total	3669	17.10	0.2546

Table 4: Average SLI, number of households and SLI of rural Uttar Pradesh

Characteristics	Average SLI	Number of households	SLI		
			Low SLI	Medium	High
Religion					
Hindu	17.32	2,876	41.52	44.19	14.29
Muslim	15.07	750	54.80	35.73	9.47
Sikha	38.90	40	10.00	12.50	77.50
Christian	15.00	1	-	100.00	-
Others	28.5	2	-	-	100.00
Caste					
General	21.89	757	26.42	44.39	29.19
SC	14.28	928	58.19	36.96	4.85
ST	15.64	25	56.00	32.00	12.00
OBC	16.60	1,959	43.64	43.80	12.56
Gender					
Male	17.23	3434	42.87	42.78	14.36
Female	15.19	235	58.30	32.34	9.36
Education					
Illiterate	14.60	1975	54.53	39.24	6.23
Below primary	16.22	166	45.78	43.98	10.24
Primary	17.16	510	42.55	44.31	13.14
Middle	19.58	499	30.26	48.70	21.04
High School	22.69	256	20.31	46.48	33.20
Intermediate	21.13	160	17.50	45.00	37.50
Graduate	28.39	82	8.54	39.02	52.44
Postgraduate	33.00	1	4.76	23.81	71.43
Total	17.10	3669	43.85	42.11	14.04

Source: Field Survey

Table 5: Average SLI, number of households and SLI of rural Lakhimpur

Characteristics	Average	Number	SLI
-----------------	---------	--------	-----

	SLI	of households	Low SLI	Medium	High
Religion					
Hindu	17.17	961	44.95	39.54	15.50
Muslim	15.85	164	46.95	42.68	10.37
Sikha	39.9	40	10.00	12.50	77.50
Christian	-	-	-	-	-
Others	28.5	2	-	-	100.0
Caste					
General	24.04	261	23.75	41.00	35.25
SC	13.98	371	61.46	34.50	4.04
ST	14.42	19	57.89	36.84	5.26
OBC	17.40	516	41.09	41.28	17.64
Gender					
Male	17.79	1112	43.17	39.66	17.18
Female	17.02	55	60.00	25.45	14.55
Education					
Illiterate	14.74	585	57.61	34.19	8.21
Below primary	15.46	70	54.43	41.43	7.14
Primary	18.01	176	39.20	45.45	15.34
Middle	21.85	195	23.59	47.69	28.72
High School	23.97	77	18.18	42.86	38.96
Intermediate	25.65	40	20.00	32.50	47.50
Graduate	28.65	17	17.65	35.29	47.06
Postgraduate	31.14	7	-	14.29	85.71
Total	17.74	1167	43.96	38.99	17.05

Source: Field Survey

Table 6: Average SLI, number of households and SLI of rural Barabanki

Characteristics	Average SLI	Number of households	SLI		
			Low SLI	Medium	High

Religion					
Hindu	18.09	1,007	35.65	48.36	15.99
Muslim	16.02	258	53.88	33.33	12.79
Sikha	-	-	-	-	-
Christian	15.00	1	-	100.00	-
Others	-	-	-	-	-
Caste					
General	21.61	250	22.00	49.60	28.40
SC	14.71	301	55.15	38.87	5.98
ST	22.20	5	40.00	20.00	40.00
OBC	17.50	710	38.73	46.76	14.51
Gender					
Male	17.89	1158	38.00	46.03	15.98
Female	15.24	108	53.70	37.96	8.33
Education					
Illiterate	15.32	660	48.18	43.79	8.03
Below primary	17.68	37	35.14	51.35	13.51
Primary	17.56	178	38.76	47.75	13.48
Middle	18.53	182	33.52	49.45	17.03
High School	22.06	98	22.45	43.88	36.67
Intermediate	24.74	72	16.67	47.22	36.11
Graduate	29.46	35	5.71	37.14	57.14
Postgraduate	31.25	4	25.00	25.00	50.00
Total	17.66	1,266	39.34	45.34	15.32

Source: Field Survey

Table 7: Average SLI, number of households and SLI of rural Baharaich

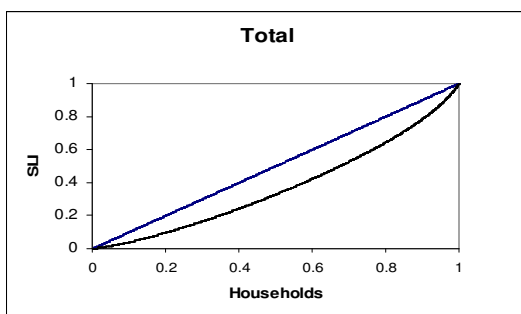
Characteristics	Average SLI	Number of households	SLI		
			Low SLI	Medium	High

Religion					
Hindu	16.62	908	44.38	44.49	11.12
Muslim	13.93	328	59.45	34.15	6.40
Sikha	-	-	-	-	-
Christian	-	-	-	-	-
Others	-	-	-	-	-
Caste					
General	19.88	246	33.74	42.68	23.58
SC	14.22	256	57.03	38.28	4.69
ST	6.00	1	100.00	-	-
OBC	15.18	733	50.20	42.70	7.09
Gender					
Male	16.04	1164	47.42	42.53	10.05
Female	13.72	72	63.89	29.17	6.94
Education					
Illiterate	13.84	730	57.81	39.18	3.01
Below primary	16.22	59	45.76	42.37	11.86
Primary	15.73	156	50.64	39.10	10.26
Middle	17.52	122	36.07	49.18	14.75
High School	22.22	81	19.75	53.09	27.16
Intermediate	21.94	48	16.67	52.08	31.25
Graduate	27.00	30	6.67	43.33	50.00
Postgraduate	35.00	10	-	30.00	70.00
Total	15.90	1236	48.38	41.75	9.87

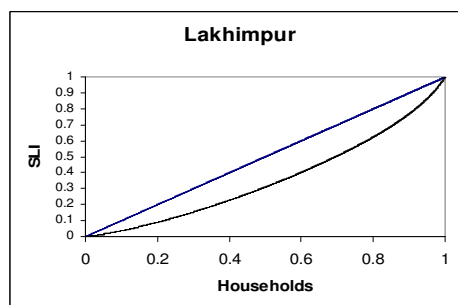
Source: Field Survey

Graph 1: Lorenz Curve for selected households in rural areas

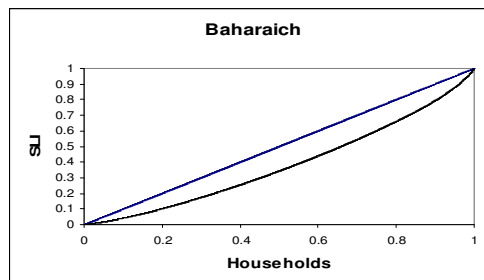
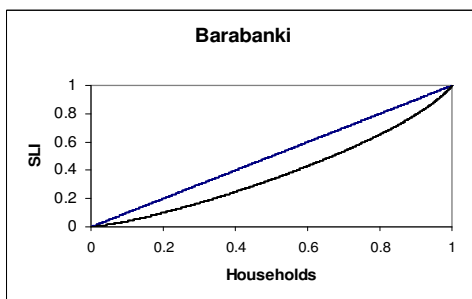
Graph 2: Lorenz Curve for selected rural Lakhimpur



Graph 3: Lorenz Curve for selected Baharaich



Graph 4: Lorenz Curve for rural Barabanki



References:

1. Atkinson, A. B., (1975), "The Economics of Inequality", Oxford University Press, Delhi.
2. Dreze, J. & A. Sen, (1997), "Indian Development: Selected Regional Perspectives", Oxford University Press, Delhi.
3. Economic Survey, (2006), Ministry of Finance, Government of India, New Delhi.
4. Kolm, S. C., (1969), "The optimal production of social justice, in, Public Economics", e.d. J Margolis and Huitton Macmillan, London, 145-200.
5. National Family Health Survey-2, (1998), International Institute of Population Science, Mumbai.

6. Sen, A. K., (1974), "Poverty, Inequality and Unemployment: Some conceptual issues in Measurement", in Poverty and Income Distribution in India, e.d. T. N. Srinivasan and P.K. Bardhan, Statistical Publishing Society, Calcutta.