Inequality In The Society: A Comparative Study Of Uttar Pradesh And Kerla

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Introduction[3]:

Inequality is the lack of equality. It is the degree to which the units of a distribution have shares of some attribute which are not equal in quantity. The meaning of inequality is the same for all type of distributions. In order to measure inequality, one needs to determine the meaning of the degree of being unequal. Inequality measure can be estimated for any distribution-not only for income, expenditure or other monetary variables but it can be calculated for land and other continuous variables.

The economic status of any group or society is determined by the source of income and position in the society. The standard of living is a good measure of economic status of any group. The standard of living in any country primarily depends on basic factors such as food, clothing, residence and individual power to get them. But in the different countries the standard of living varies due to the physiography of the various regions, racial characteristics of their people and the differing values of money. Even in the same country the standard of living may vary from region to region and from one society to another society due to social stratification and environmental life.

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Inequalities exist in all societies, but some societies are more unequal than the others. The degree of inequality in society is linked to the stage of social evolution. In more countries, there is a strong evidence of inequality in socio-economic status (Rootman, 1988). Drez and Sen (1995) have found the disparities in economic and social development amongst the Indian states. Noorbakhsh (2002) has also analysed regional disparities amongst major states in India.

A large number of studies have been done for measurements of inequality [Atkinson (1970), Sen (1973), Butler and McDonald (1986) etc.]. Deutsh and Silber (1999) have measured to capture the contribution to population inequality by subgroups defined by gender or other characteristics. Butler and McDonald (1987) have proposed ways to compare relative inequality between population subgroups using inter distributional Lorenz curves. Cornia (2004) has shown inequality in land concentration. Recently, Srinivasan and Mohanty (2004) have estimated level of deprivation among different caste groups based on possession of some basic social and physical amenities of life at the household level.

In this study, we have considered two states of India one from North (Uttar Pradesh) and other from south (Kerala). The objective of this present paper is to measure the inequality in terms of standard of living index for both states and Uttar Pradesh and Kerala by using popular statistical techniques for measurement of inequality.

Data:

In the present study the data has been taken from National Family Health Survey-2 (NFHS-2). A brief description of these sources of data is given below.

Since the mid –1990s, the Ministry of Health and Family Welfare, Government of India has been relying increasingly on the country's National Family Health Surveys (NFHS) to monitor and evaluate the success of its family planning and reproductive and child health programmes, both nation wide and in individual states.

The National Family Health Survey has collected, apart from other information's, extensive data at household level. Information wide source of income, household belonging, possession of various durable household goods etc. are sufficient to provide better idea of the socio-economic status of households. Using various items, the NFHS has defined a measure called standard of living index (SLI) for each household. The SLI of households is classified in three group's viz. low, medium and high groups.

Methodology:

The measurement of inequality is related to some mathematical concepts, including dispersion, skewness and variance. There are many ways to measure inequality. Here, we have taken some standard methods.

1. Range: Range is the simplest measure of dispersion. It is calculated by difference between the maximum and minimum observations of a particular variable. In this case, the range can be defined as the difference between value of maximum SLI and minimum SLI.

Range = Maximum SLI – Minimum SLI.

But range uses only two values from the overall data set. It does not take into consistent observations of other important underlying characteristics.

2. Range Ratios: The range ratio is computed by dividing a value at one predetermined percentile by the value at a lower predetermined percentile. Any two percentiles can be used for producing range ratios. Here, we have considered ratio of 90^{th} and 10^{th} percentiles.

$$\text{Range Ratio} = \frac{90^{th}\ percentile}{10^{th}\ percentile}$$

Value of range ratios lies between one and infinity. The smaller value shows the lower inequality and higher value reflect the more inequality.

3. McLoon Index: The McLoon Index is good inequality measure for comparing one part of distribution to another part. It takes a larger proportion of data into account. Here, to compute the McLoon Index value, divide the sum of all the observations at or below the median value of SLI by multipling of the number of observations at or below median SLI and the value of median SLI. Higher value of McLoon Index indicates a more equitable distribution.

4. Coefficient of Variation: The coefficient of variation is estimated by using the standard deviation (SD) and mean of the variable.

$$\text{Coefficient of variation} = \frac{SDofSLI}{MeanofSLI}$$

Main drawback of this measure is that, theoretically, it can take any value between 0 and infinity, and there is no standard that defines a reasonable value of the measure for particular phenomena.

5. Gini Coefficient: The Gini coefficient is good measure of the degree of inequality of distribution or gives some idea whether the inequality is large or small; it derives from the Lorenz curve. Lorenz curve is a graphical presentation of the cumulative distribution function of a probability distribution. The Gini coefficient is double the area between the equality diagonal and the Lorenz curve. In the graphical presentation of Lorenz curve, a diagonal line shows perfect equality and the greater deviation of the Lorenz curve from this line, the greater inequality. Gini coefficient lies between 0 to 1, where 0 shows to perfect equality (i.e everyone has same quantity) and 1 shows to perfect inequality (i.e one person has all the quantity).

In this study we have also estimated inequalities in terms of standard of living index 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 characteristic. Then, the values SLI of the units (households) and the frequencies are both cumulated and taking the total as 1.0 for both the cases, the values x_i and y_i are the cumulated proportions of frequencies and SLI up to i^{th} unit (household), (i=1,2,3,……n), n being the total number of households. These proportions (x_i and y_i) are plotted on a graph paper.

Gini-Coefficient (G) = Area between Lorenz curve and diagonal / Total area under diagonal

$$G = 2\left[\sum_{i=1}^{n}\frac{1}{n}(x_i - y_i)\right]$$

Where,

G = Gini-coefficient

n = Number of households

(y_i) = Proportion of cumulated SLI upto i^{th} unit

(x_i) = Proportion of cumulated households upto i^{th} unit

6. Theil's T statistics: We have calculated this inequality measurement by using the following formula. It is denoted by 'T'.

$$T = \sum_{i=1}^{n}\left[\left(\frac{1}{n}\right)*\left(\frac{SLI_i}{SLI_{average}}\right)*\ln\left(\frac{SLI_i}{SLI_{average}}\right)\right]$$

Where,

n = Number of households
SLI_i = SLI of i^{th} household.
$SLI_{average}$ = Average value of SLI

The high value of Theil's t Statistics shows the more inequality.

Results and Interpretation:

The standard of living index can be taken as overall measure of social and economic development of a household. The SLI of households have been classified in three groups viz. low, medium and high with value 0-14, 15-24 and 25 and above respectively.

Table 1 shows distribution of households according to low, medium and high groups. The percentage of households in low group for Uttar Pradesh is high in comparison to Kerala and only 22.07% households are falling in high group for Uttar Pradesh, whereas it is more for Kerala.

Table 2 presents some basic statistics of SLI for Uttar Pradesh as well as Kerala. The mean SLI for Kerala is greater than Uttar Pradesh. There are small differences between standard deviations, but maximum SLI of Uttar Pradesh is much more than that of Kerala.

Table 3 gives the measurements of inequality in terms of SLI for Uttar Pradesh and Kerala. The range of Uttar Pradesh is more than the range of Kerala, which indicates that Uttar Pradesh has a much more unequal structure than Kerala. The range ratio for Uttar Pradesh is 3.1 and for Kerala is 3.3. But according to this result we can say that Uttar Pradesh has more equal structure. The coefficient of variations is 0.45 and 0.41 for Uttar Pradesh and Kerala respectively. This concludes that Kerala has more equitable structure. McLoon Index for Uttar Pradesh is 0.76 and for Kerala it is 0.69. Unlike most of inequality measures, a higher value for the McLoon Index shows a more equitable distribution. This reveals that Uttar Pradesh has a more equal distribution structure in terms of SLI. The Gini coefficient facilitates direct comparison of two populations. For Uttar Pradesh, the Gini coefficient is 0.2478, while for Kerala, it is 0.2345, which shows that Kerala has more equal structure. The Thiel's T Statistics of Uttar Pradesh (0.097) is greater than that of Kerala (0.087), this also shows that Uttar Pradesh is more unequal than Kerala.

All measurements of inequality except Range Ratio and McLoon Index show that Kerala has more equitable distribution in comparison to Uttar Pradesh.

Table1: Distribution of Households SLI according to Low, Medium and High Groups.

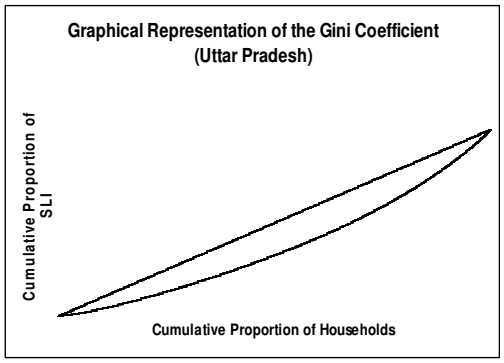
S No.	Groups	Uttar Pradesh		Kerala	
		Frequency	Percentage	Frequency	Percentage
1.	Low	3305	38.07	750	26.47
2.	Medium	3461	39.86	1189	41.97
3.	High	1916	22.07	894	31.56
	Total	8682	100.00	2833	100.00

Table 2: Descriptive Statistics of SLI for Both States.

S No.	Statistics	Uttar Pradesh	Kerala
1.	Mean	18.54	20.75
2.	Median	16	17
3.	Standard Deviation	8.39	8.56
4.	Maximum SLI	58	46
5.	Minimum SLI	2	3

Table 3: Table for Measurements of Inequality in Terms of SLI for Uttar Pradesh and Kerala.

S No.	Measurements of Inequality	Uttar Pradesh	Kerala
1.	Range	56	43
2.	Range Ratio	3.1	3.3
3.	Coefficient of Variation	0.45	0.41
4.	McLoon Index	0.76	0.69
5.	Gini Coefficient	0.2478	0.2345
6.	Theill's T Statistics	0.097	0.087



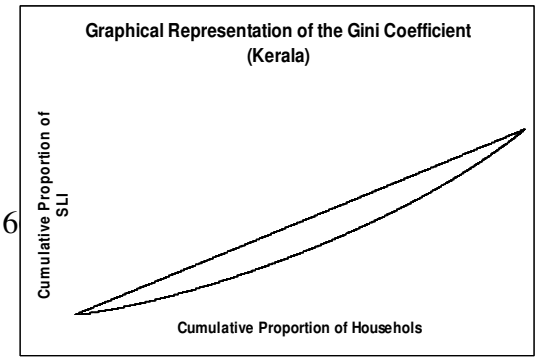


Figure 1: Gini Coefficient of Uttar Pradesh. Figure 1: Gini Coefficient of Kerla

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