International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Spatial Pattern and Level of Standard of Living of Rural Household in West Bengal: A Geographical Analysis

Bubun Mahata[1], Dr. Sarmistha Singh[2], Dr. Siba Sankar Sahu[3], Mukul Maity[4]

[1,4]Research Scholar, Department of Geography, Ravenshaw University, Cuttack, Odisha, 753003, India
[2]Doctorate degree in Geography from Centre for the study of Regional Development, Jawaharlal Nehru University, New Delhi, India. 110067
[3]Assistant Professor, Department of Geography, Ravenshaw University, Cuttack, Odisha, 753003, India.

Abstract:
The availability and accessibility of essential services and facilities are key in promoting living conditions. In India, regional differences and development inequities are major obstacles to sustainable development. The main objectives of this study are to analyse the level and pattern of the standard of living and explore inequality in the case of accessibility to basic services and amenities in Rural West Bengal. All data was collected from the Primary Census Abstract (PCA) and Housing and Household Basic Amenities Table from Census 2011. A composite index has been developed to measure the standard of living of rural households. This study also used the Location quotient and Pearson correlation method to measure the concentration level of different household facility and their relationship. This study reveals that there is a very high level of disparity of the level of development in terms of rural household living standards. The rural living standard is very high in norther region (Darjeeling and Koch Bihar) and middle part (Haora district) due to economic opportunity. Most of the districts have low coverage of various parameters of housing conditions, availability of basic amenities, and availability of assets. This study will guide policymakers in the future in making better policies.

Keywords: Regional Disparity, Standard of Living, Socio-economic Development, composite index, Basic amenities

1. Introduction

Quality of life is a deeply complex and dynamic subject that must be addressed holistically (Kironji, 2008). The availability of essential services like drinking water, drainage, sanitation, electricity, etc, are vital for a good standard of living. The necessity for these essential services has been widely acknowledged (Kumar, 2015). Human development is closely linked to improvements in living standards achieved through decent housing, sanitation, drinking water, and so on (Nallathiga, 2019). A positive environment for human development and prosperity is created by having access to essential household services. The

association between underdevelopment, poverty, and an absence of basic needs appears to be bidirectional. Evidence demonstrates that poor households struggle to achieve their fundamental demands, which impacts their quality of life (Shrestha, 2020). Another possibility is that a shortage of essential amenities decreases worker productivity, which leads to poverty. When the basic requirements of individuals aren't fulfilled, they may not be able to maintain good health, work productivity or educational potentiality and fall into poverty (ADB, 2006). Kundu et al. (2002) make an effort to examine how the socioeconomic status of villages changed by increasing the distance from the town.

Inequality is a common phenomenon in daily life for individuals, particularly those living in rural India. Approximately 70.0% of people in India reside in villages. The inequality between rural and urban areas in terms of two basic services and amenities presents a significant challenge for the policymaker. The government has worked extensively to decrease regional differences, but its current rate of development has not produced the desired results; rather, it has widened gaps at all levels of administrative areas. In the literature, inequalities in economic backwardness were measured across India's districts. It is also clear that the economic backwardness based on composite indexes has significantly increased (Das et al., 2020). Further attention is needed to improve housing conditions and the level of living of various social groups in India (Ahmad et al., 2014). A well-balanced development is essential for sustainable socio-economic growth in every region. The study's goal is to explore the level and pattern of the standard of living of rural households in West Bengal. The study of the geographic aspect of the level of living is extremely important, as planners can discover spatially disadvantageous locations. District-level analyses of essential amenities and service availability can help planners develop future guidelines. The primary goals of this study are (1) to analyse the level and pattern of the standard of living in rural West Bengal (2) to explore the inequality in the case of accessibility of basic services and amenities in rural West Bengal.

2. Materials and methods

2.1 Study Area

West Bengal is located between 85 degrees 50 minutes and 89 degrees 50 minutes east longitude, as well as 21 degrees 25 minutes and 27 degrees 13 minutes north latitude. The state extended from the outer Himalayas in the north to the Bay of Bengal in the south. It is bounded by Sikkim and Bhutan in the north, the Bay of Bengal in the south, Assam and Bangladesh in the east, and Odisha, Jharkhand, Bihar, and Nepal to the west. West Bengal's climate is mainly tropical, hot, and humid monsoon, with the exception of the northern mountains, where elevation plays the determining factor. According to the Census of 2011, West Bengal has a total population of 91,276,115, with 46,809,027 males and 44,467,088 females. West Bengal had a total rural population of 62,183,113 people.

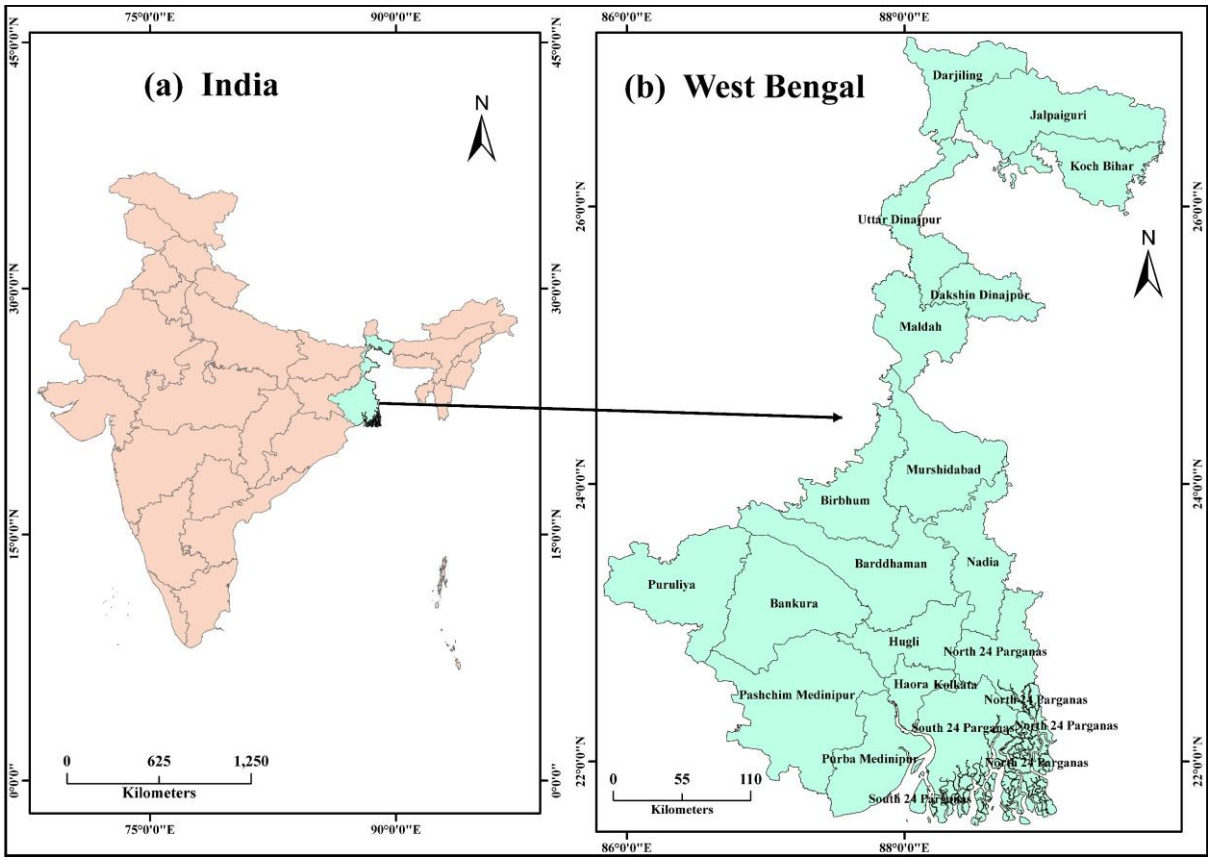

Fig. 1. Location map of the study area, (a) India, (b) West Bengal

2.2. Data

The primary sources of data for this study are the Primary Census Abstract (PCA) and the Housing and Household Basic Amenities Table from Census 2011. This data gives detailed information on household amenities and assets.

2.3. Selection of Domain and Indicators

To assess the standard of living of rural households in West Bengal, we have selected 14 indicators that fall into three major domains: (a) Housing index, (b) Basic amenities index, and (c) Asset index. Indicators of standard of living of rural households are

Housing Index

- % of households having Good Condition of the house
- % of households having roof with concrete materials house
- % of households having wall materials with burned brick
- % of households having cemented floor
- % of households having dwelling room -three

Basic amenities index

- % of households having drinking water within premises
- % of households having improved latrine facility
- % of households having bathroom within premises
- % of households having LPG used as fuel for cooking

Asset index

- % of households have Television
- % of households have a Computer/laptop with internet
- % of households having Scooters/motorcycle/moped
- % of households having a Car/Jeep/van
- % of households availing banking services

2.4. Rationale for selection of indicators

The standard of living of households is a complex phenomenon that is heavily influenced by various factors. In this study, to achieve the objectives, **first**, those indicators that are relevant and reflect the actual situation of household living standards were chosen, for example, access to housing, drinking water, access to education, and so on. **Second**, the indicators considered for assessing the standard of living of the household should be associated with one another. **Thirdly,** the indicator should be chosen based on the availability of data sources. In this study, we have used indicators for the standard of living of rural households from three primary domains: (a) housing index, (b) Basic amenities index, (e) Asset Index.

The housing condition of the household, such as good housing condition, permanent house, own house, number of dwelling rooms etc, does not influence only the economic condition of the people. It reflects many things about households, such as household income level; higher-income households are likely to have larger houses, single-family dwellings, and good housing conditions. The overall housing condition of the household influences various aspects of the household's well-being status. It was well documented by MEA (2005) that necessities for life, like access to housing, access to drinking water, access to sanitation facilities, etc., play a significant role in household living standard. In this study, the indicators have a significant role in enhancing household living standard as well social well-being.

2.5. Method

2.5.1. Normalisation of data by Min-Max Method

The normalisation method is very important for data mining. It transforms the data into a common scale. The Min-max method is one of the important methods of Normalisation strategy. It is applied to scale the data from 0 to 1. Here, the lowest value of a particular feature will convert into 0, the highest value of a particular will convert into 1, and other values will transform into a decimal between 0 and 1. We have found a formula for the Min-Max method from the OECD handbook for constructing the Composite index. When the variable has a positive relation with the development, the formula is

$$\frac{(Vi - MinA)}{(MaxA - MinA)} * (New\ MaxA - New\ MinA) + New\ MinA$$

On the other hand, when the variable is negatively related to the development, the formula

$$\frac{MaxA - Vi}{MaxA - MinA} * (New\ MaxA - New\ MinA) + New\ MinA$$

Where *Vi*=value of A variable of i place

MaxA= Maximum variable of A variable, *MinA*= Minimum variable of A variable

New MaxA=1, *New MinA* =0

2.5.2. Constructing Composite Index

It presents a single value, which represents the value of the multiple variables. So, we can also tell that it is a comprehensive and multidimensional index. It is a simple average of all indicators. We have used it

to measure the development. The value of the composite index extends from 0 to 1. In this study, we have taken many dimensions to make a composite index, such as housing conditions, basic amenities, availability of assets, and human capital, to show the level of development.

2.5.3. Correlation

The correlation method is applied to find out the strength of the relationship between variables. It measures the numerical strength of this association between variables. Such a measure will determine how well a linear or other equation explains the relationship between the variables. The value of r varies from -1 to +1.

$$r = \frac{\sum(x_i - \bar{x})\,(y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x})^2 + \sum(y_i - \bar{y})^2}}$$

r = correlation coefficient
x_i = values of the x-variable in a data series
$\bar{x}$ = mean of the values of the X variable
y_i = values of the Y variable in a data series
$\bar{y}$ = mean of the values of the Y variable

Table. 1. Description of Correlation Value (r).

Value of r	Properties	Value of r	Properties
1	Perfect positive relation	-1	Perfect negative relation
0.75	Strong positive relation	-0.75	Strong negative relation
0.5	Moderate positive relation	-0.5	Moderate negative relation
0.25	Poor positive relation	-0.25	Poor negative relation

2.5.4. Location Quotient

The 'Location Quotient' is a simple ratio used to determine the dominance of a particular phenomenon in a region compared to a larger region or benchmark region. It is used to compare a phenomenon of a local region with a component of a national region. It helps to identify the disparity of a phenomenon in a small region.

$$L.Q = \left(\frac{Xi}{Ni}\right)/\left(\frac{X}{N}\right)$$

Where, *L. Q*= Location Quotient
Xi=the amount of some X in region i
Ni= Total amount of X in region i
X= The amount of X in a larger region (nation, state, etc.)
N= Total amount of X in larger region (nation, state)

3. Result and Discussion

3.1. Spatial Pattern of Housing Condition in Rural West Bengal

Housing is a key element of life for people to satisfy everyday requirements and desires. On the eve of the 12th Plan, it was regarded as a key problem to resolve the discrepancy between housing requirements and housing shortages (Kundu 2006). Quantitative measurement and dissemination of the housing scarcity pattern would be the primary step towards alleviating the housing crisis.

Table. 2. Spatial Pattern of Various type dimension of household's condition in Rural West Bengal.

District	% of households having Good Condition of house	% of households having roof with concrete materials house	% of households having wall materials with burn bricks	% of households having cemented floor	% of households having dwelling room - three
Darjeeling	32.6	4.5	20.4	38.5	19.2
Jalpaiguri	22.5	0.7	31.6	38.6	11.1
Koch Bihar	24.2	0.9	9.3	11.4	4.9
Uttar Dinajpur	21.7	1.8	9.3	4.6	3.7
Dakshin Dinajpur	22.9	1	3.2	1.7	5
Maldah	25	3.9	14.6	3.2	5.7
Murshidabad	20.4	6.1	17.5	7.1	3.5
Birbhum	29	2.6	6.1	3.6	2.5
Barddhaman	27.1	4.6	12	8.5	5
Nadia	17.2	6.2	24	9.5	1.9
North Twenty-Four Parganas	17.5	4	19.5	5.5	1.2
Hugli	25.2	6.1	17.8	12.1	5.8
Bankura	27	4.1	6.9	5.1	3.5
Puruliya	24.9	3.5	7.3	4.7	4.5
Haora	27.1	16.7	51.4	27.9	4.1
South Twenty-Four Parganas	19.2	3.8	14.5	6.7	1.7
Paschim Medinipur	23.8	1.7	3.9	2.4	3.7
Purba Medinipur	23.1	7	23.5	8.1	2.5

Table 2 represents the various dimensions of housing conditions. In the case of good-condition of houses, a high share of good-condition houses is found in Darjiling (32.6 %), Birbhum (29%), Haora (27.1 %), Bankura (27 %), and a low share of good-condition of houses has been found in Nadia (17.2 %), North Twenty-Four Parganas (17.5 %), South Twenty-Four Parganas (19.2%). In the case of roofs with concrete materials, 16% of households of Haora have roofs with concrete house, taking the highest position. It was followed by Nadia (6.2 %), Murshidabad (6.1), Hugli (6.1), and Barddhaman (4.6 %). Most of the districts have less than 15% share of households with cemented floors. Among these districts, Jalpaiguri (38.6 %), Darjeeling (38.5%) and Haora (27.9 %) have experienced the lowest percentage of households having cemented floors.

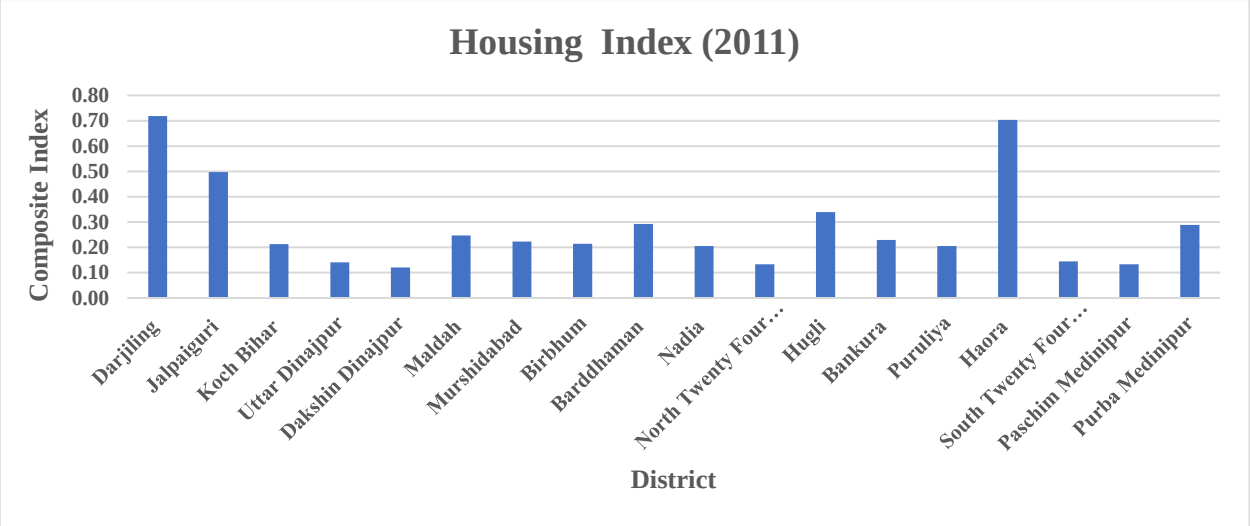

Fig. 2. Spatial Pattern of Rural Housing Index in Rural West Bengal (2011)

From the housing index of this region, the highest value has been found in Darjeeling (0.72), followed by Haora (0.70) and Jalpaiguri (0.50). Very low housing index has been found in Dakshin Dinajpur (0.12), Paschim Medinipur (0.13), North Twenty-Four Parganas (0.13), Uttar Dinajpur (0.14).

From the above study, we have identified huge inequality in various dimensions of housing conditions. Here, Darjeeling and Haora are very developed regions in terms of housing conditions., Haora is close to Kolkata, and Darjeeling is an attractive tourist spot. The lowest housing index has been found in Dakshin Dinajpur, Paschim Medinipur, North Twenty-Four Parganas, Uttar Dinajpur, and Puruliya, which belong to a physically and economically backward region. It indicates an unhealthy housing environment, poverty etc. Most of the districts are less developed in terms of housing conditions. There is a huge disparity in the development of housing conditions.

3.2. Spatial Pattern of availability of basic services to the households in rural West Bengal.

Access to basic services and facilities such as drinking water, sanitary facilities, electricity, banking, and drainage systems are vital for safe and healthy human lives (**Kumar 2015**). But in India, the availability of such essential services and amenities was not sufficient, which led to tremendous deprivation. Generally, disadvantaged people of society do not profit from the developmental efforts of the government. Therefore, the assessment of the accessibility of basic services and amenities to households is significant and very essential in the formulation of effective policies and programs in India

Table 3. Spatial Pattern of Basic Amenities Services in Rural West Bengal (2011)

District	% of household having drinking water within premises	% of household having latrine facility within premises	% of household having bathroom within premises	% of household having LPG connection for cooking
Darjeeling	15.9	43	23.2	12.7
Jalpaiguri	31.1	22.4	5.2	1.5
Koch Bihar	68.9	51.6	11.3	3
Uttar Dinajpur	42.1	8.2	3	0.8

Dakshin Dinajpur	15.1	10.1	2.1	0.4
Maldah	20.3	10.6	2.9	0.6
Murshidabad	17.7	16.4	4.7	1.2
Birbhum	3.5	4.2	1.8	0.5
Barddhaman	9.8	16.2	4.5	0.7
Nadia	41.7	41.3	5.4	1.6
North Twenty-Four Parganas	16.9	53.7	4	1
Hugli	6.1	19.9	5.1	1.7
Bankura	4.5	3.1	1.7	0.5
Puruliya	3	2.1	0.7	0.2
Haora	6.5	39.8	8.8	5.9
South Twenty-Four Parganas	3.8	44	3.3	2
Paschim Medinipur	10.1	14.8	1.6	0.4
Purba Medinipur	6.6	61.7	3.5	1.9

Table 3 shows the spatial pattern of various basic amenities services. Koch Bihar (68.9%) holds the top place in terms of drinking water within the premise, followed by Uttar Dinajpur (42.1%), Nadia (41.7), Jalpaiguri (31.1 %) etc. Available drinking Facilities is very low in Puruliya (3%), Birbhum (3.5%), South Twenty-Four Parganas (3.8 %) etc.

On the other side, households having latrine facilities within premises were found to be very high in Purba Medinipur (61.7%), North Twenty-Four Parganas (53.7 %), and Koch Bihar (51.6 %). Puruliya (2.1%) and Bankura (3.1 %), Birbhum (4.2) and Uttar Dinajpur (8.2 %) belong to low latrine facilities within premises services. On the other hand, in the case of use of LPG, 12.7% household of Darjeeling using LPG as fuel for cooking. And only 5.9 % of households in Haora use LPG for fuel. Use of this service is very low (<2%) in the remaining district.

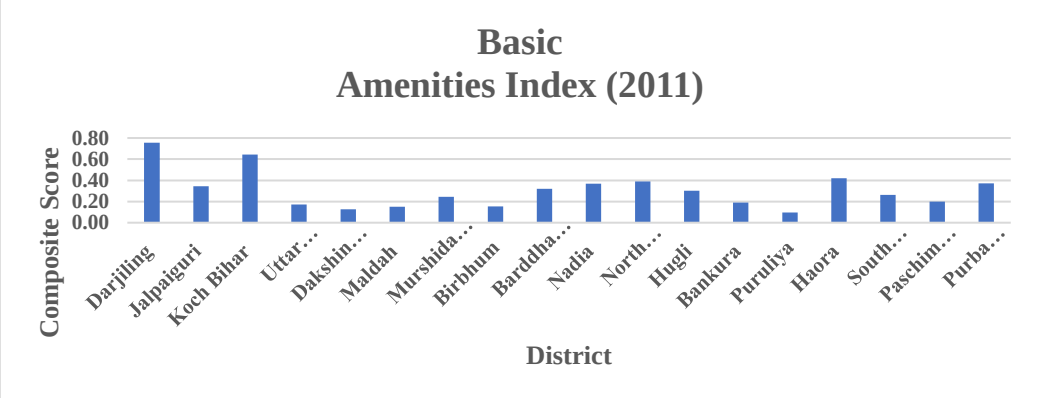

Fig. 3. Spatial Pattern of Basic Amenity Index (2011)

From **Figure 3**, we have found some characteristics. Darjeeling (0.75) holds the highest place, followed by Koch Bihar (0.64), Haora (0.42), and North Twenty-Four Parganas (0.39). The lowest value has been found in Puruliya (0.10), Dakshin Dinajpur (0.13), Maldah (0.15), and Birbhum (0.15). Most of the districts belong to the low to medium zone of the basic amenity index.

From the above analysis, we have found that Darjeeling holds the top place in all dimensions of household basic amenities without an improved pit latrine facility. This region is more developed than other regions.

It belongs to Natural tourist spots, and due to ecotourism, Rural development is higher than in other areas. Most households in the area do not have bathroom facilities or LPG connections for cooking. Puruliya, Bankura and Bhirbhun are more backward areas with very low % of households having various basic amenities. Some districts, such as Haora, North Twenty-Four Parganas, have better facilities for basic amenities than others. Because these districts are located closer to the Kolkata city. We have also found high regional disparity in terms of the availability of basic services and amenities. We know that the availability of basic amenities reflects the quality of living, health condition, awareness of people for healthy lifestyles etc. In all these areas where the availability of basic amenities is very high, people of this area have awareness about healthy lifestyles and good economic conditions, like Darjeeling, Koch Bihar, Haora.

3.3 Spatial pattern of availability of assets to the households in rural West Bengal.

The availability of assets is an important indicator of the economic condition of the household. It reflects the household income, expenditure, etc., and the availability of household assets, which also influences the quality of living conditions of the household. In this study, the disparity in household asset availability was measured through the assets index.

Table. 4. Spatial pattern of various Dimensions of Households in Rural West Bengal

District	% of households have Television	% of households having a Computer/Laptop	% of households having Scooter/ Motorcycle	% of households having a Car/Jeep	% of households availing banking services
Darjeeling	41.8	4.3	3.3	1.6	43.1
Jalpaiguri	21.7	3	2.4	0.4	36.6
Koch Bihar	12.3	8.1	4	0.7	33.9
Uttar Dinajpur	5.4	4.9	1.4	0.7	13.4
Dakshin Dinajpur	6.3	4.7	1	0.5	21.8
Maldah	4	7.8	1.6	0.4	21.1
Murshidabad	8	4.9	1.9	0.5	31.1
Birbhum	5.1	4.7	2.1	0.3	39
Barddhaman	9.7	4.8	2.7	0.6	52.9
Nadia	7.8	5.6	1.9	1.1	19
North Twenty-Four Parganas	6.9	7.4	1.6	1	32.4
Hugli	11.1	5.6	3.3	0.7	44.3
Bankura	4.2	4.2	2.8	0.3	46.4
Puruliya	4.2	4.6	2.9	0.4	32.2
Haora	30.1	7.2	4.2	1.1	31.7
South Twenty-Four Parganas	9.4	5.5	1.7	1.6	21.3
Paschim Medinipur	4.6	4.2	2.3	0.3	36
Purba Medinipur	10.5	6.6	3.2	1.1	26.5

Table 4 presents the spatial patterns of various dimensions of rural households' assets. In terms of the availability of television in the household, Darjeeling takes place top, here, 41.8% of a household has television. Television facilities are very low in Malda (4 %), Puruliya (4.2 %), Bankura (4.2 %), Paschim Medinipur (4.6 %), Uttar Dinajpur (5.4 %), Dakshin Dinajpur (6.3 %). On the other hand, the availability of computer-laptop is very low (<9 %) in this region.Availability of mobile phones is higher in Haora (4.2 %), Hugli (3.3 %) and Darjeeling (3.3 %) than in other regions.

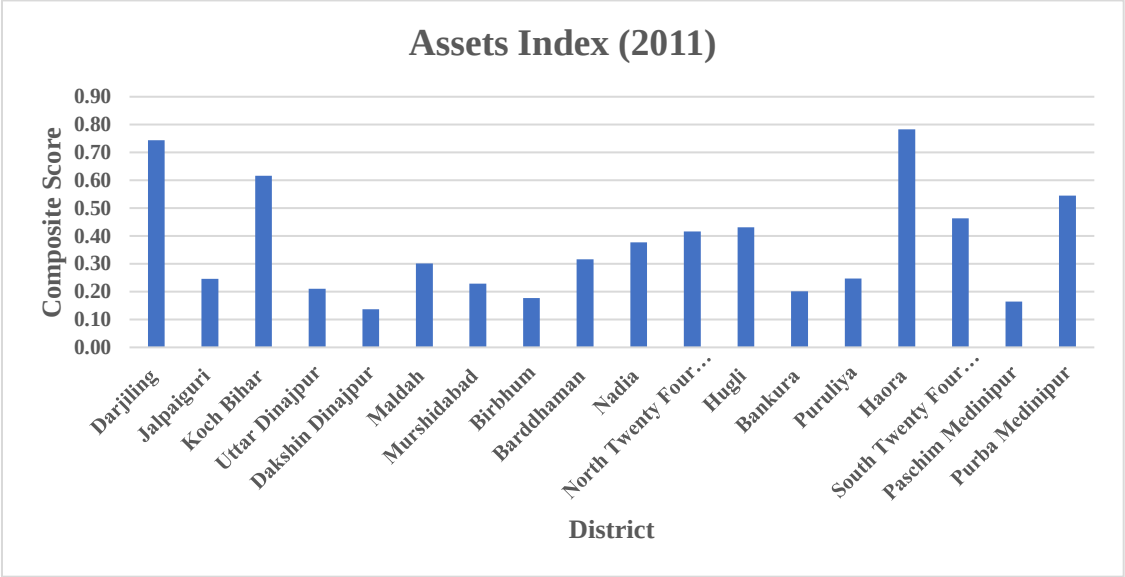

Fig. 4. Spatial Pattern of Basic Amenity Index (2011)

From the above **Table 4**, this study found some important points. As we know, household assets represent the income level, wealth, expenditure level, consumption, etc. From this concept, we have identified the disparity of income expenditure through the Asset Index. Haora (0.78), Darjeeling (0.74), Koch Bihar (0.62), and Purba Medinipur (0.55) are identified as a rich region where people's income, wealth and expenditure are high. On the other hand, Dakshin Dinajpur (0.14), Paschim Medinipur (0.16), and Birbhum (0.18) have been identified as backward regions where people's income, wealth, and level of consumption are very low. Therefore, we can tell that there is a huge disparity in terms of income, wealth and expenditure, and level of consumption.

3.4 Status of Standard of Living of Rural Households in West Bengal (2011)

Table. 5. Pattern of Rural household living standard through the composite index (2011)

Composite Index		
VALUE	ZONE	District
>0.60	VERY HIGH	Darjiling (0.74), Haora (0.63),
0.40-0.60	HIGH	Koch Bihar (0.49)
0.20-0.40	MODERATE	Purba Medinipur (0.40), Jalpaiguri (0.36), Hugli (0.36), Nadia (0.32), Bardhhaman (0.31), North Twenty-Four Parganas (0.31), South Twenty-Four Parganas (0.29), Murshidabad (0.23), Maldah (0.23), Bankura (0.21), Puruliya (0.18),

>0.20	LOW	Puruliya (0.18). Uttar Dinajpur (0.17), Birbhum (0.18), Paschim Medinipur (0.17), Dakshin Dinajpur (0.13)

The standard of living of rural households was evaluated based on the composite index method, which was the combination of 14 selected indicators. From the results of this research study, it was recorded that Darjeeling (0.74) ranked highest in the case of composite score, followed by Haora (0.63), Koch Bihar (0.49), Purba Medinipur (0.40). Low living standard status has been found in Dakshin Dinajpur (0.13), Paschim Medinipur (0.17), Birbhum (0.18), Uttar Dinajpur (0.17), Puruliya (0.18). High living standard status is found in economically strong districts, and low living standard status is found in economically and physically backward districts.

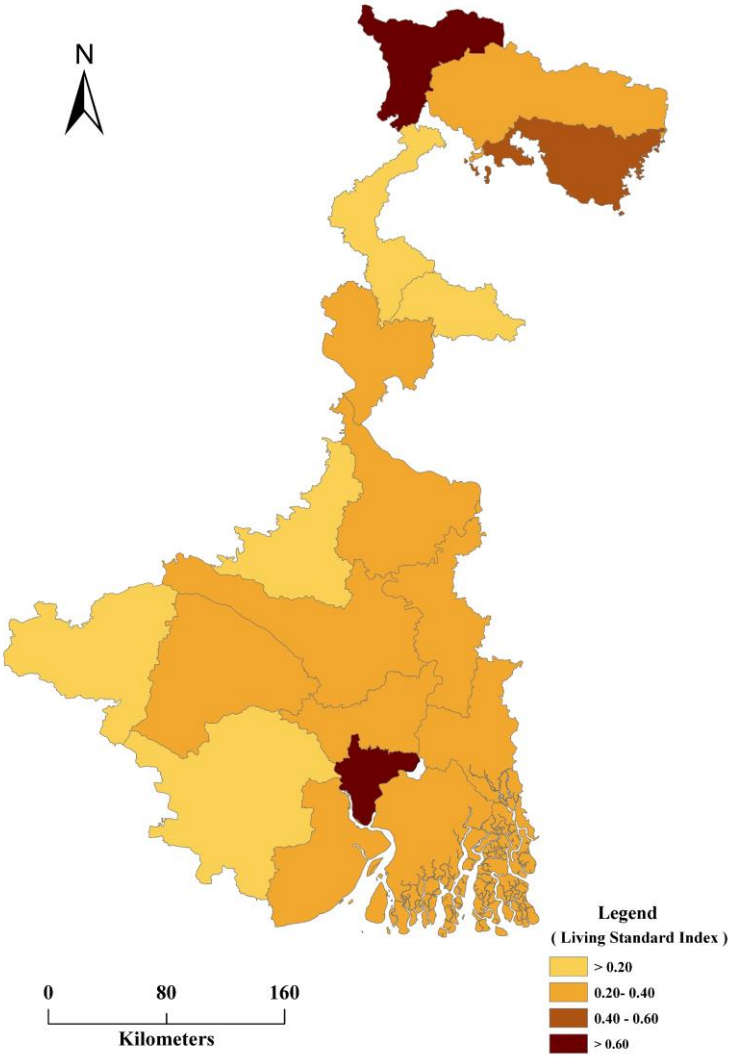

Fig. 5. Spatial Pattern of rural households living standard in New Town Kolkata (2011)

The composite index is developed through three domains the housing index, basic amenity index, and Assets index. This composite index reflects all the overall characteristics of all these domains. According to this index, the status of Rural living standards is very high in norther region (Darjeeling and Koch Bihar) and the middle part (Haora district) due to economic opportunity. Low rural living standards have been found in backward districts from the western and middle parts of the state.

3.5 Level of concentration of availability of various dimensions of housing condition amenities in rural West Bengal.

The 'Location Quotient' is a simple ratio that is used to determine the dominance of a particular phenomenon in a region as compared to the larger region or benchmark region. It is used to compare a phenomenon of a local region with a national region. It helps to identify the disparity of a phenomenon in a small region.

In this study, we measured the concentration of availability of various household amenities.

Table. 6. Pattern of Level of concentration of various household amenities (2011)

District	No of households having Good Condition of the house to Total Households	No households have wall materials with burn bricks to Total households	No of households have cemented floor to total households	No of households having drinking water within premises to Total Households	No of households have a latrine facility within the premises to Total Households	No of households have Television to Total Households	No of households availing banking services to Total Households
Darjeeling	1.33	1.49	3.21	1.05	2.35	3.91	1.23
Jalpaiguri	0.92	2.31	3.22	2.05	1.22	2.03	1.04
Koch Bihar	0.99	0.68	0.95	4.53	2.82	1.15	0.97
Uttar Dinajpur	0.89	0.68	0.38	2.77	0.45	0.50	0.38
Dakshin Dinajpur	0.93	0.23	0.14	0.99	0.55	0.59	0.62
Maldah	1.02	1.07	0.27	1.34	0.58	0.37	0.60
Murshidabad	0.83	1.28	0.59	1.16	0.90	0.75	0.89
Birbhum	1.18	0.45	0.30	0.23	0.23	0.48	1.11
Barddhaman	1.11	0.88	0.71	0.64	0.89	0.91	1.51
Nadia	0.70	1.75	0.79	2.74	2.26	0.73	0.54
North Twenty Four Parganas	0.71	1.42	0.46	1.11	2.93	0.64	0.92
Hugli	1.03	1.30	1.01	0.40	1.09	1.04	1.26
Bankura	1.10	0.50	0.43	0.30	0.17	0.39	1.32
Puruliya	1.02	0.53	0.39	0.20	0.11	0.39	0.92
Haora	1.11	3.75	2.33	0.43	2.17	2.81	0.90
South Twenty	0.78	1.06	0.56	0.25	2.40	0.88	0.61

Four Parganas							
Paschim Medinipur	0.97	0.28	0.20	0.66	0.81	0.43	1.03
Purba Medinipur	0.94	1.72	0.68	0.43	3.37	0.98	0.75

Here, > 1 value indicates high concentration, <1 value indicates low concentration, close to 0 indicates nearly concentration, and 0 indicates perfect balance concentration. In this study, to determine the level of concentration of households having different facilities to total household, we have selected seven dimensions a good condition house, wall materials with burn brick, cemented floor, drinking water facility, latrine facility within premises, Availability of Television, and banking facility. L.Q >1 value indicates that there is a higher concentration of value than the national or regional average. This region is unique from the main region.

From the study, the concentration level of various household facilities is unequal in the whole region. The level of concentration of various facilities of household is very high in Darjeeling, Jalpaiguri and Haora. And low concentration has been found in Uttar Dinajpur, Dakshin Dinajpur, Birbhum, Bankura, Puruliya, South Twenty-Four Parganas and Paschim Medinipur. All of this region belongs to the backward region.

Nearly balanced concentration has been found in only some areas, Koch Bihar, Maldah, Hugli and Puruliya, in terms of No of households having Good Condition of house, Hugli and Purba Medinipur in terms of households having Television. Jalpaiguri and Paschim Medinipur in terms of households availing banking services. There is no perfectly balanced concentration of various household amenities in this region.

3.6 Correlation among various household basic amenities facility

Table. 7. Correlation Matrix of Various Dimensions of Household Condition, amenities and Assets

Dimension	HHGCH	HHRCMH	HHWMBB	HHCF	HHDRT	HHDRP	HHILF	HHBP	HHLCC	HT	HCL	HSMM	HCJV	HABS
HHGCH	1													
HHRCMH	.294	1												
HHWMBB	.239	.798**	1											
HHCF	.384	.314	.698**	1										
HHDRT	.550*	-.032	.239	.793**	1									
HHDRP	.026	-.243	.058	.163	.136	1								

HHILF	.093	.365	.542*	.365	.107	.314	1							
HHBP	.441	.236	.394	.744*	.795**	.317	.512*	1						
HHLCC	.421	.370	.462*	.754**	.767**	.079	.471*	.951**	1					
HT	.477*	.449	.669**	.924**	.796**	.085	.465*	.882**	.926**	1				
HCL	.468*	.442	.386	-.002	-.066	.363	.583**	.219	.134	.129	1			
HSMM	.699**	.546*	.518*	.521*	.376	.145	.437	.528*	.496*	.582**	.506*	1		
HCJV	.259	.444	.511*	.431	.301	.097	.792**	.621**	.671**	.607**	.442	.349	1	
HABS	.766**	.193	.155	.357	.427	-.124	.064	.328	.254	.359	.218	.672**	.071	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

HHGCH- household having Good Condition of house, HHRCMH- household having roof with concrete materials house, HHWMBB- households having wall materials with burn bricks, HHCF- household having cemented floor, HHDRT- household having dwelling room -three, HHDRP- household having drinking water within premises, HHILF- household having improved latrine facility, HHBP- household having bathroom within premises, HHLCC- household having LPG connection for cooking, HT- household having Television, HCL-household having Computer/Laptop, HSMM- household having Scooter/ Motorcycle, HCJV- household having Car/ Jeep/Van, HABS- households availing banking services.

From the Pearson correlation matrix, we have found different types of relationship between different indicators. Very high positive relationships have been found between Roofs with concrete and wall materials with burn bricks (0.798), roofs with concrete materials house and household having dwelling room -three (0.793), households having dwelling room -three and household having bathroom within premises (0.795), LPG connection for cooking and household having bathroom within premises (0.951), household having cemented floor and household having television (0.924), household having improved latrine facility and household having Car/ Jeep/Van (0.792), household having Car/ Jeep/Van and household having bathroom within premises (0.621).

4. Conclusion

In this study, rural household living standard status has been measured using a composite index based on various indicators of housing conditions, basic amenities, and assets in West Bengal. This study reveals that there is a very high level of disparity in level of development in terms of rural household living standards. Most of the districts belong to low coverage of various parameters of housing conditions,

availability of basic amenities, availability of asset. The rural living standard is very high in the norther region (Darjeeling and Koch Bihar) and the middle part (Haora district) due to economic opportunity. The level of concentration of various facilities of household is very high in Darjeeling, Jalpaiguri and Haora. And low concentration has been found in Uttar Dinajpur, Dakshin Dinajpur, Birbhum, Bankura, Puruliya, South Twenty-Four Parganas and Paschim Medinipur. All these districts belong to the backward region. This study identifies the limited accessibility of households and high inequality of rural household living status, which can be a big challenge to the policy for sustainable development. Therefore, more attention is needed from the government and another stakeholder to reduce regional inequality in terms of the level of development of rural wellbeing status. Because inclusivity is essential for achieving sustainable development, this study also will guide the policymaker in future for better policymaking.

Declaration of conflict of interest

The authors declare that there is no conflict of interest.

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